REPORT

Assessment of Corrective Measures

Georgia Power Company - Plant McDonough Ash Pond 1
Cobb County, Georgia

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1.0 INTRODUCTION

This Assessment of Corrective Measures (ACM) has been prepared pursuant to the United States Environmental Protection Agency (US EPA) coal combustion residuals (CCR) rule (40 Code of Federal Regulations [CFR] Part 257 Subpart D) and the Georgia Environmental Protection Division (GA EPD) Administrative Code 391-3-4-.10(6), to evaluate potential groundwater corrective measures at Plant McDonough-Atkinson (Plant McDonough) Ash Pond 1 (AP-1, Site). This ACM evaluates potential corrective measures to address statistically significant levels (SSLs) of cobalt and molybdenum in groundwater at AP-1 identified on May 8, 2020.

The ACM was initiated on July 9, 2020, within 90 days of identifying SSLs. A 60-day extension until December 4, 2020 for completion of the ACM was documented on October 7, 2020. Based on the results of the ACM, further evaluation may be performed, site-specific studies completed, and a final long-term corrective action plan developed and implemented pursuant to 40 CFR 257.97-98 and 391-3-4-.10(6). As part of the ACM evaluation, the nature and extent of target constituents, namely, cobalt and molybdenum, in groundwater is ongoing. Due to the proximity of the engineered stream channel and the Chattahoochee River in the downgradient direction of the wells showing SSLs of molybdenum (DGWC-68A) and cobalt (DGWC-40), installation of additional wells to horizontally characterize this area is infeasible. Georgia Power proactively collected surface water samples from both the engineered stream channel and the Chattahoochee River downgradient of AP-1 in November 2020. The results from surface water samples collected indicate that molybdenum is not detected in the engineered stream channel and cobalt is not detected in the Chattahoochee River. Based on data collected to date, there are no impacts to surface water of constituents with SSLs at AP-1 at Plant McDonough. Further characterization and results of vertical delineation of target constituents and ongoing ACM evaluations will be provided in subsequent semi-annual remedy selection progress reports. These progress reports will be included as an attachment to the Semi-Annual Groundwater Monitoring and Corrective Action Reports. The next semi-annual report is planned for February 2021.

Georgia Power conducted a human health and ecological risk evaluation to evaluate constituents that exhibit SSLs in groundwater, (cobalt and molybdenum), at AP-1. The risk evaluation used a conservative, health-protective approach that is consistent with USEPA risk assessment guidance, Georgia EPD regulations and guidance, and industry standards and practice for risk assessment in the State of Georgia. As part of the risk evaluation, a well survey of potential groundwater wells within a three-mile radius of AP-1 was conducted and consisted of reviewing Federal, State, and County records and online sources, in addition to conducting a windshield survey of the area. The risk evaluation relied on groundwater data collected by Georgia Power from 2016 to March 2020 in compliance with the federal and state CCR rules. Based upon this risk evaluation, which included multiple conservative assumptions, concentrations of cobalt and molybdenum detected in groundwater at AP-1 are not expected to pose a risk to human health or the environment. The *Risk Evaluation Report* (Wood, 2020) and associated well survey are provided as Appendix A.

1.1 Purpose

The purpose of this ACM is to identify potential corrective measure(s) for groundwater at AP-1. 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-1.

Once potential corrective measures are identified, they will be further evaluated using the criteria outlined in 40 CFR 257.97-98 and 391-3-4-.10(6), which states that corrective measures assessment should include an analysis of the following:

- Performance
- Reliability
- Ease of implementation
- Potential impacts
- The time required to begin and complete the remedy
- Any institutional requirements that could affect implementation of the remedy.

These evaluation criteria, discussed in more detail in the following sections, were considered for each potential remedy.

1.2 Site Location and Description

Plant McDonough, formerly a coal-fired power generating facility, was converted to a natural gas combined-cycle power generating facility in 2011. Located approximately 7 miles northwest of Atlanta in southeast Cobb County (5551 South Cobb Dr SE, Atlanta, GA 30339), the property occupies approximately 390 acres and is bounded on the southeast by the Chattahoochee River. A site location map is included as Figure 1. Figure 2 presents each of the site monitoring wells, piezometers and surface water monitoring locations.

Four CCR surface impoundments are located on-site: Ash Pond 1 (AP-1), Ash Pond 2 (AP-2), Ash Pond 3 (AP-3) and Ash Pond 4 (AP-4). AP-1 has been closed in place. AP-2 has been closed by removal. AP-3 and AP-4 have historically operated together and are being closed as a combined unit AP-3/4; CCR will be consolidated into the AP-3 footprint and closed in place.

Groundwater monitoring and reporting for AP-1 are being performed in order to meet the alternate schedule in § 257.100(e)(5) of the revised US EPA CCR rule (August 5, 2016). A single unit monitoring network for AP-1 is established as allowed in the CCR Rule § 257.91.

1.3 Pond Closure and Source Control

The Closure Plan (Golder, 2019) was prepared in accordance with 40 CFR 257, Subpart D and meets the requirements of 40 CFR 257.102(b).

The surface impoundment referred to as AP-1 at Plant McDonough has been closed in place. The closure process included placement of a permanent cover system designed to minimize infiltration and erosion and to meet or exceed the requirements of 257.102(d)(3)(ii). Maintenance will be provided on the final cover system for the required post-closure care period so that the integrity and effectiveness of the final cover system is maintained. Maintenance activities will include, as needed, repairs to the final cover to correct any effects related to settlement, subsidence, erosion or other events, and will be performed to prevent run-on or run-off from eroding or otherwise damaging the final cover.

2.0 CONCEPTUAL SITE MODEL

The following section summarizes the geologic and hydrogeologic conditions at Plant McDonough as described in the *Hydrogeologic Assessment Report* (Golder, 2020a).

2.1 Regional and Hydrogeologic Setting

The following section and subsections include a general description of regional geologic and hydrogeologic characteristics of formations that occur beneath the site. Figure 3 presents a series of subsurface profiles for the site. Subsurface geologic profiles are included as Figures 4 through 7 and present a summary of the geologic and hydrogeologic information for Plant McDonough.

The Site is located in the Piedmont/Blue Ridge geologic province, which contains some of the oldest rock formations in the southeastern United States. These late Precambrian to late Paleozoic rocks have undergone repeated cycles of igneous intrusions and extrusions, metamorphism, folding, faulting, shearing, and silicification. Rock outcrops near the site consist of biotite gneiss, porphyritic gneiss, mica schist, and quartzite.

Residual soils, primarily clayey/sandy silt, sandy silt with clay, and silty sand, occur as a variably-thick blanket overlying bedrock across most of the site. These residual saprolitic soils along with saprolitic transitionally or partially weathered rock, collectively the overburden, range between approximately 9 to 61 feet in thickness across the site, with an average thickness of approximately 38 feet. Saprolitic rock is considered to be transitionally weathered rock (TWR) or partially weathered rock (PWR). PWR is defined by Standard Penetration Test (SPT) blow counts that exceed 50 blows/six inches.

A regional, unconfined surficial aquifer system is present at the site, existing within the overburden soils and weathered and fractured upper bedrock (e.g., approximately the first 30 feet), depending on topographic location. Recharge primarily occurs through precipitation and subsequent infiltration. Generally, groundwater flow occurs through intergranular pore spaces in the overburden and is controlled by topography and top of rock variations. However, a relatively higher transmissive zone is interpreted to occur at the base of the overburden, at the interface of weathered bedrock and competent bedrock and is believed to be the primary groundwater flow path. The overburden has an average horizontal hydraulic conductivity of 10^{-4} centimeters per second (cm/s) and is interpreted to flow south-southeast.

A limited and localized bedrock aquifer system also occurs beneath the site. The upper bedrock is fractured and weathered, connected hydraulically with groundwater in overburden soils, and is considered part of the unconfined surficial aquifer. The silt/clay-rich soils of the overburden may act to retard recharge into the aquifer system. Deeper bedrock (i.e., approximately greater than 30 feet into the bedrock) is unweathered with few discontinuities (e.g., fractures) available to store groundwater.

2.2 Uppermost Groundwater Aquifer

Boring logs and monitoring well/piezometer installation logs were used to evaluate the hydrostratigraphy of the Site. Piezometers at the Site have been used for water level measurements and enhance the understanding of local hydrogeology. Material types identified included residual soils, saprolitic soils, saprolitic rock (or PWR if blow counts were provided), TWR, and competent bedrock. Based on review of the logs, the screen/filter pack interval for most of the piezometers and monitoring wells installed on site provides connection to the overburden, indicating that the site is underlain by a regional groundwater aquifer that occurs within the overburden and upper

bedrock depending on topographic location. Wells and piezometers to the east and south of AP-1 are screened in the upper bedrock.

Localized groundwater flow directions within this aquifer are influenced by topographic and top of rock variations on site. As illustrated on both the January 14, 2020 and the September 21, 2020 potentiometric surface shown on Figures 8 and 9, the water table surface is a subdued reflection of topography at the site, with groundwater generally flowing towards the south and west of the ash ponds. As a result of ash pond operations and pond closure and dewatering activities groundwater flow in specific areas around AP-2 and 3/4 are currently seeing localized flow patterns that are atypical. Specifically, in the northern area, near DGWC-5, groundwater flow is toward the north away from the pond, influenced by pond operations. It is expected that ongoing pond closure activities will soon restore groundwater flow to a more southerly direction. The top of rock surface also generally follows topography. Regionally, groundwater flow is influenced by topographic and related top of rock variations on site. AP-3/4 is on a topographic high, creating radial flow around the ponds, with the exception of the one upland high upgradient northwest of AP-3/4. Currently, AP-2 is over excavated into subgrade soils, creating a topographic low point and low hydraulic gradient. Groundwater is interpreted to flow south-southeast from the topographic high northwest of AP-3/4 towards AP-2 and AP-1. The groundwater flow pattern interpreted on Figures 8 and 9 is consistent with previous observations.

2.3 Groundwater Flow Conditions

A significant amount of groundwater flow occurs in the residual soils, saprolite, and TWR/PWR - i.e., overburden. This is typical of the Piedmont, as discussed in Fetter (1988). The significance of groundwater flow between the overburden soils and upper fractured bedrock is dependent on the degree of hydraulic connectivity between the units. Generally, the majority of groundwater flow across the site occurs laterally within the overburden soils and weathered/fractured bedrock, above a relatively competent un-fractured bedrock. Figures 8 and 9 present the potentiometric surface elevation contours for the site.

Though the majority of groundwater is moving laterally across/atop the un-fractured bedrock, locally, a downward vertical gradient is generally observed in topographically high areas and a upward vertical gradient is generally observed in topographic low areas.

Based on review of the potentiometric contours (Figures 8 and 9), the horizontal hydraulic gradient is also variable and reflects topography at the site. The horizontal gradient appears steeper around the downgradient perimeter of the ash ponds, particularly along embankments where groundwater flow lines are influenced by the constructed slopes for the impoundment dams. Overall average hydraulic gradients for the Site is 0.026 ft/ft.

Field hydraulic conductivity tests (i.e., slug tests) and soil classification testing and information from a range of the site geologic materials are summarized in detail in the Hydrogeologic Assessment Report (Golder, 2020a).

3.0 NATURE AND EXTENT OF APPENDIX IV SSLS

The following sections describe Site assessment activities performed through October 2020 in support of 1) delineating the nature and extent of SSLs in groundwater and 2) evaluating potential corrective measures to address them.

3.1 Groundwater Monitoring and Constituents of Concern

3.1.1 Groundwater Monitoring Program

A groundwater monitoring well network was installed, 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 groundwater quality both upgradient of the units (i.e., background conditions) and passing the waste boundary for AP-1 at Plant McDonough. The general location of these wells (number, spacing, and depths) were selected based on the characterization of site-specific hydrogeologic conditions and justification for placement is presented in the *Hydrogeologic Assessment Report* (Golder, 2020a). The well network was certified by a professional engineer (PE) on April 17, 2019 and the certification is maintained in the AP-1 Operating Record. The certified compliance monitoring well network consists of a total of 10 monitoring wells: 3 upgradient wells and 7 downgradient wells. Detection monitoring well locations for AP-1 are tabulated in Table 1 and are shown on Figure 2.

The piezometer network for the ash ponds currently consists of sixty (60) site piezometers (Table 2) installed at the Site to characterize groundwater conditions. Piezometers are identified in Table 2 and shown on Figure 3. Groundwater is currently monitored in AP-1 under the assessment monitoring program pursuant to 40 CFR 257.95.

Boring logs and well construction logs for detection monitoring wells and site piezometers are presented in *Well Installation Report Addendum* (Golder, 2020b).

3.1.2 SSLs for Appendix IV Constituents

During the assessment sampling events, groundwater samples were collected and analyzed for Appendix IV parameters to meet the requirement of §257.95(b). Analytical data from the semi-annual assessment monitoring events have been statistically analyzed pursuant to §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 groundwater monitoring parameters. Site-specific GWPS are presented on Table 3. Details regarding the statistical analyses are provided in the 2020 *Annual Groundwater and Corrective Action Monitoring Report* (Golder, 2020c).

SSLs of Appendix IV groundwater monitoring parameters are presented on Table 3.1.2, below.

Table 3.1.2: April 2020 Statistically Significant Level Summary

AP-1 Statistically Significant Level Exceedances	
AP-1 Monitoring Well	**Appendix IV Parameter**
DGWC-40	Cobalt
DGWC-68A	Molybdenum

3.2 Field Investigation Activities

The following summarizes the field investigation activities and data evaluations completed since the 2020 Annual Groundwater Monitoring and Corrective action report in July 2020 (Golder, 2020c).

- August and September 2020: Two routine assessment monitoring events were conducted.
- October/November 2020: Delineation wells B-105D and B-110D were installed to vertically characterize the groundwater flow and groundwater quality downgradient of AP-1. Well development and well survey will be performed in December 2020.
- November 10, 2020: Surface Water was sampled at select locations to analyze for beryllium, cobalt, and molybdenum

3.2.1 Delineation Well Installation

To delineate groundwater impacts, additional monitoring wells and/or piezometers have been installed at locations downgradient of each detection monitoring well where Appendix IV SSLs have been observed. The AP-1 network and delineation wells along with the identified SSLs are shown on isoconcentration contour maps for cobalt and molybdenum, on Figures 10 through 13.

Horizontal delineation wells were installed in the surficial aquifer (overburden soils and/or weathered/fractured bedrock) at locations stepped out from detection monitoring wells DGWC-68A and DGWC-40. Piezometer locations B-62 and subsequently B-100 were installed to support delineation of cobalt at well DGWC-40. Installation of additional wells downgradient of well DGWC-68A to horizontally characterize this area is infeasible. As a result, surface water sampling was conducted. See section 3.2.3 for details.

Vertical delineation wells were installed within the weathered/fractured bedrock, slightly off-set from locations DGWC-40 (well B-105D) and DGWC-68A (well B-110D) resulting in a shallow and deep well pair at each of these locations. The locations of the vertical delineation wells are shown on Figure 2.

3.2.2 Groundwater Sampling

Pursuant to 40 CFR 257.96, groundwater in the vicinity of AP-1 continues to be monitored in accordance with the assessment monitoring program established for AP-1. During August 2020, groundwater samples were collected from the detection monitoring wells and select assessment monitoring wells listed in Table 3.2.1 and analyzed for the full suite of Appendix IV constituents per 40 CFR 257.95(b). Groundwater samples were also collected in September 2020, for Appendix III and detected Appendix IV constituents. Groundwater analytical results from the August and September sampling events are summarized in Tables 4A through 4D. Laboratory reports associated with these sampling events are provided in Appendix B.

3.2.3 Surface Water Sampling

Due to the proximity of the engineered stream channel and the Chattahoochee River in the downgradient direction of the wells showing SSLs [i.e., DGWC-40 (cobalt) and DGWC-68A (molybdenum)], installation of additional wells to horizontally characterize this area is infeasible. Georgia Power proactively collected surface water samples from both the engineered stream channel (a.k.a. unnamed tributary) and the Chattahoochee River on November 10, 2020. Seven (7) samples were collected, one from each of the locations presented on Figure 2. Analytical results are tabulated in Table 5 and presented in Appendix B. The results from surface water samples collected from the engineered stream channel and the Chattahoochee River indicate that cobalt and molybdenum is not

detected above laboratory reporting limits. Based on data collected to date, there are no impacts to surface water of constituents showing SSLs at AP-1 at Plant McDonough. Further characterization of the surface water and ACM evaluations are ongoing.

3.3 Nature and Extent Evaluation

Based on data collected to date, horizontal delineation of cobalt for AP-1 at Plant McDonough is considered complete. An additional surface water sample, adjacent to DGWC-68A, will be collected in January 2021 to complete horizontal delineation of molybdenum at AP-1. Vertical delineation of constituents with SSLs is ongoing for AP-1. Groundwater and surface water samples collected in December 2020 and January 2021 will be reported in the February 2021 semi-annual report. Additionally, data derived from horizontal and vertical delineation efforts have indicated that some potential for naturally derived sources of cobalt and molybdenum.

4.0 GROUNDWATER CORRECTIVE MEASURES

This section reviews potentially applicable remediation alternatives for groundwater corrective measures at the Site.

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), including performance, reliability, ease of implementation, potential impacts, remedy duration, and institutional and public health requirements, the following criteria listed in 40 CFR 257.97(b) must be met by the corrective measure when selected:

- Protect human health and the environment
- Attain applicable GWPS as specified pursuant to 40 CFR 257.95(h)
- Control the sources of releases to reduce or eliminate, to the maximum extent feasible, further releases of Appendix IV constituents to the environment
- Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, considering factors such as avoiding inappropriate disturbance of sensitive ecosystems
- Comply with standards for management of wastes as specified in 40 CFR 257.98(d).

Corrective measures selected for evaluation for potential use at AP-2 and 3/4 are anticipated to satisfy the above criteria.

4.2 Summary of Potential Groundwater Corrective Measures

The following presents a summary of potential corrective measures evaluated as part of this ACM. Georgia Power has decided to install a subsurface vertical barrier wall around AP-1 as an Advanced Engineering Method (AEM). The process of final design and subsequent installation of that vertical barrier wall is underway. While the purpose of the AEM is different than corrective measures, Georgia Power will retain and evaluate various applications of subsurface vertical barrier walls as part of this ACM. Corrective measures discussed in this ACM are being evaluated to address SSLs in groundwater at and downgradient of the waste boundary. Based on specific information, knowledge of remedial alternatives and site conditions at AP-1, the following remedies – or combination of remedies are being evaluated using the criteria specified in 40 CFR 257.96(c):

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

Following the preliminary assessment, a more detailed evaluation of these corrective measures is required to (i) verify the feasibility of each; and (ii) provide sufficient information to design a corrective action system that meets the criteria specified in 40 CFR 257.97(b). Table 6 provides a summary of the remedial technologies compared to the evaluation criteria as applied to site conditions.

4.2.1 Geochemical Approaches (In-Situ Injection)

Subsurface in-situ injections of reagents are a remediation technology for inorganic constituents. In-situ injections for inorganic constituents may be applied in three modes that influence solubility, mobility, and/or toxicity of inorganic constituents: (i) oxidation-reduction potential (redox) manipulation; (ii) adsorption to aluminum, iron oxyhydroxides, other metal oxyhydroxides, or various sulfate compounds under oxidizing groundwater conditions; and (iii) adsorption to, or coprecipitation with, iron or other metal sulfides under reducing conditions. This technology requires understanding of the subsurface transport and (geo)chemical characteristics and a thorough understanding of the reaction kinetics to derive appropriate reagent dosing is applied to the subsurface. Often this technology is field evaluated in a relatively small area (i.e., pilot test) to bolster the understanding of these factors prior to remedial selection, design, and/or implementation.

Cobalt and molybdenum 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 these constituents.

Recent success with cobalt has been the biological incorporation into biomass that retards and substantially immobilizes cobalt from parts per million (ppm) concentrations to less than ten of parts per billion (ppb) using active biogeochemistry. Previously this technique has been successful for reduction of ppb levels of cobalt with research then being applied to develop the ppm to ppb reductions in concentration. A key to this retardation is an understanding of and modifications to the amounts of exchangeable and non-exchangeable potassium, which also has the potential to enhance lithium attenuation (Anderson et al., 1989).

To understand the biogeochemical processes that would effectively immobilize the target constituents showing SSLs in groundwater, bench-scale treatability studies and/or field-scale pilot tests specific to the conditions at AP-1 are needed to evaluate amendment effectiveness to promote appropriate conditions for the precipitation and/or sorption of these inorganics without mobilizing other naturally-occurring constituents. Once precipitated, these minerals are often stable even if geochemical conditions revert to a different redox environment.

Air sparging can be used to provide oxygen to the subsurface in an attempt to precipitate (or make more "sorptive") compounds that are generally more soluble and mobile under reducing conditions. This can also promote the formation of aluminum, iron, or manganese (oxy-) hydroxides for subsequent sorption of arsenic (and potentially, cobalt) onto these mineral phases (Dzombak and Morel, 1990; Karamalidis and Dzombak, 2011). If sufficient iron is present in groundwater, the use of air sparging alone may be considered to precipitate iron (oxy-) hydroxides for sorption.

The key process limiting in-situ remedial implementation and effectiveness is often the delivery of amendments within the area of interest. Mixing and contact with the target constituents are necessary and can be difficult to achieve in heterogeneous materials and/or fine-grained materials. Additionally, some in-situ remedial approaches are unlikely to be successful for lithium, which is a near-conservative species that does not readily sorb or precipitate across a wide range of pH and redox conditions, but is primarily attenuated through ion exchange on clays and soils (Anderson et al., 1989).

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

In-situ injections may be considered a potentially viable corrective measure to address cobalt and molybdenum in groundwater at AP-1, especially in smaller, more localized areas. In-situ injection technology will be retained for further evaluation.

4.2.2 Hydraulic Containment (Pump and Treat)

Generally, pump and treat (P&T) refers to the use of groundwater extraction to artificially induce a hydraulic gradient for capture or control of the migration of impacted groundwater. It 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 body 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. However, P&T can be effective as a stand-alone remedy, a temporary (interim) measure, or in combination with another measure to provide hydraulic containment to limit constituent migration toward a potential receptor. At McDonough, P&T could be performed and/or associated with dewatering of ash to limit migration of constituents from ash porewater to groundwater and to restrict groundwater flow away from the ash pond.

Groundwater extraction for hydraulic control can often effectively address the variety of inorganic constituents encountered at CCR sites, including cobalt and molybdenum. Extraction technologies are more efficient for conservative species, such as molybdenum, which are not readily attenuated by other mechanisms (e.g., precipitation, adsorption). Extraction technologies also have the ability to overcome the limitations of in-situ injection-based technologies (i.e., subsurface mixing and contact with affected materials, access to impacted groundwater in lower permeability geologic formations). Space constraints are mainly limited to the above-ground conveyance and treatment component of a P&T system since extraction wells can generally be installed 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 reuse (as process water), irrigation (e.g., of a cover system or other

vegetated areas at Plant McDonough), or dust suppression purposes. Therefore, P&T is a potentially viable corrective measure for cobalt and molybdenum in groundwater at AP-1 and will be retained for further evaluation.

4.2.3 In-Situ Stabilization

In-situ stabilization (ISS) is a technique that uses mixing of the CCR with additives to solidify the material in place and reduce future dissolution of CCR compounds from the stabilized material. Additives typically include Portland cement, and the solidification is completed in-situ using large diameter augers. CCR located beneath the water table would be isolated by ISS, followed by capping of the surface impoundment. Groundwater impacts would be addressed through the processes of natural attenuation. This alternative would isolate/secure the source in a bound matrix, and over time, allow the concentrations of target constituents showing SSLs in downgradient groundwater to decline to below applicable standards.

In place closure and capping of AP-1 has already been conducted. ISS would require removal or destruction of the in-place cap to implement. ISS of AP-1 is predicted to take a number of years to complete, depending on the availability of specialized contractors and equipment. Additionally, implementation of ISS will require a detailed design effort with bench scale testing to determine the appropriate amendment mix for a variety of overburden geologic materials. Pilot testing will also be needed to verify the ability of equipment to solidify material at depth. ISS has not been commonly used to stabilize entire ash units as part of a closure strategy This technology is a potential viable option for targeted treatment areas and will be retained for further evaluation

4.2.4 Monitored Natural Attenuation

US EPA defines 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, and/or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of constituents in soil or groundwater. These in-situ processes include the following: dispersion; dilution; sorption; volatilization; radioactive decay; and chemical or biological stabilization, precipitation, transformation, or destruction of inorganic constituents (US EPA, 2015).

Attenuation mechanisms for inorganic constituents, such as cobalt and molybdenum are either physical (e.g., dilution, dispersion, flushing, and related processes) or biological/chemical (e.g., sorption or oxidation reduction reactions). Select chemical processes can be facilitated by (bio)geochemical reactions. Per US EPA (2015),

> *"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)."*

As discussed in Section 4.2.1, cobalt and molybdenum can undergo sorption to aluminum, iron and manganese oxides.

The US EPA uses four tiers to establish whether MNA can be successfully implemented for inorganics at a given site, including:

Tier 1: Demonstration that SSLs in groundwater are delineated and stable.

Tier 2: Evaluation of the mechanisms and rates of attenuation.

Tier 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.

Tier 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.

A successful MNA approach requires a good understanding of hydrogeologic conditions and long-term monitoring of site conditions. MNA is a relatively slow remedy to obtain site closure when used in isolation; as such, MNA is frequently used in combination with other remedies, including source control.

MNA is a potentially viable corrective measure for cobalt and molybdenum in groundwater at Plant McDonough and will be retained for further evaluation.

4.2.5 Permeable Reactive Barriers

Permeable reactive barriers (PRBs) typically involve the installation of a permeable subsurface wall constructed with reactive media for the removal of constituents as groundwater passes through. PRBs can be installed in downgradient locations using conventional excavation methods or one-pass trenching method. Excavated trenches are backfilled 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., zero-valent iron [ZVI] or similar) are generally higher than bentonite-based slurry wall construction, the funnel-and-gate configurations with a smaller treatment area help lower construction and maintenance costs. PRBs are typically keyed into an underlying low-permeability unit such as a clay layer.

PRBs may present a viable alternative for in-situ treatment of cobalt and molybdenum. The technology typically includes reactive media such as 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 installation depths of a PRB are generally limited to about 90 ft bgs. The installation of a PRB generally requires more space than extraction wells for a P&T system, but a PRB does not require above-ground treatment components and therefore, the overall treatment footprint is likely to be smaller compared to a P&T system. Given the proximity of the adjacent streams and surface water bodies to AP-1, space constraints may be an issue for installation of a PRB.

Additional subsurface investigations, reactive media testing, and compatibility testing of groundwater with the components of a PRB are needed to evaluate the feasibility of installing a PRB at Plant McDonough. Pending

these evaluations, the technology is currently considered to be a potentially viable corrective measure to address cobalt and molybdenum in groundwater at Plant McDonough and will be retained for further evaluation.

4.2.6 Phytoremediation

Phytoremediation is the use of plants to degrade, immobilize, or contain constituents in soil, groundwater, surface water, and sediments. It is a type of plant-based technologies and applications that enhance the environmental goals for a given site. Phytotechnologies include a variety of applications ranging from constructed wetlands to alternative landfill covers, from tree plantations for hydraulic control to the use of plants for slope stabilization, from planted (riparian) buffers for nutrient management and sediment control to the classical applications of constituent uptake and degradation (Goldemund and Gestler, 2019). Phytoremediation has emerged as a viable alternative to more active and costly environmental cleanup technologies, especially for large areas with relatively low levels of constituents in shallow soils or groundwater.

In general, the main mechanisms involved in the application of phytoremediation for inorganic constituents include:

- Phytosequestration, which is the ability of plants to sequester constituents in the rhizosphere (an area a few millimeters away from a root surface). This is a containment mechanism.
- Phytohydraulics is the ability of plants to capture and evaporate water. This is hydraulic control of a groundwater plume through plant root uptake and is considered a containment mechanism.
- Phytoextraction is the process of constituent uptake into the plant. This is remediation by removal.

Typically, a combination of these mechanisms acts in concert to achieve successful applications of phytoremediation for inorganic constituents.

The effectiveness of groundwater remediation using traditional phytoremediation approaches may be limited by compacted soil conditions that impede root penetration, or target groundwater that is too deep for root access. Given that groundwater wells at AP-1 exhibited SSLs for cobalt and molybdenum are screened at depths exceeding 60 ft bgs in some instances, traditional plantings for phytoremediation are not expected to be successful. However, more recently, an engineered approach to phytoremediation, the TreeWell® system (which is a proprietary system developed by Applied Natural Sciences), has been shown to overcome these constraints by utilizing a specialized lined planting unit constructed with optimum planting media designed to promote downward root growth, encourage constituent treatment, and focus groundwater extraction from a targeted depth interval (e.g., Gatliff et al., 2016).

By installing a cased “well” for tree planting using large diameter auger technology, extraction of relatively deeper groundwater zones can be achieved since the surface of the “well” is sealed and only groundwater from a targeted zone is allowed into the cased-off borehole. This type of system mirrors a traditional mechanical extraction system using the trees as pumps. The TreeWell® system can be used for both hydraulic control of groundwater and for treatment of constituents via degradation (for organic constituents) or immobilization/containment mechanisms (for organic and inorganic constituents). With respect to the specific conditions at AP-1, the system would be applied for hydraulic control, but cobalt and molybdenum are expected to be either immobilized within the root zone or incidentally taken up into the tree biomass.

The advantage of an engineered phytoremediation system includes no above-ground water management needs and limited long-term operation and maintenance (O&M) requirements following the establishment of the system. Such systems have been observed to meet design hydraulic control parameters typically within three years of installation. The layout for a phytoremediation remediation system is generally based on groundwater flow modeling.

Phytoremediation utilizing TreeWell® technology is technically feasible as a remedial technology for cobalt and molybdenum and will be retained for further evaluation

4.2.7 Subsurface Vertical Barrier Walls

Vertical barrier walls have been used for decades to control the flow of groundwater in both environmental applications as well as general foundation construction. Soil-bentonite walls are constructed by excavating a narrow vertical trench and injecting bentonite slurry to support the trench walls. The bentonite slurry used to support the trench walls is generally a mixture of pulverized bentonite in water. Water from the slurry bleeds into the trench wall, leaving behind a mat of particles known as filter cake, which along with the hydrostatic force of the slurry, holds the trench open. Once the trench reaches final grade, the trench is backfilled with a mixture of soil from the excavation, slurry, and soil from other sources, as necessary, to achieve the desired properties of strength and hydraulic conductivity. The backfill is generally placed with a tremie, clamshell, and/or a bulldozer, displacing the trench support slurry. The filter cake remains in place and, along with the gradation of the backfill used in the wall, is a function of the hydraulic conductivity of the final wall. Installation of soil-bentonite barrier walls can require significant amounts of space for mixing backfill (Bliss, 2014). At CCR facilities, berms may be constructed to provide the working space for barrier wall emplacement.

Cement-bentonite barrier walls are similar to soil-bentonite walls except that the stabilizing fluid used during excavation is a cement-bentonite water mix. The slurry remains in place to form the wall, so a separate operation to mix the backfill and displace the slurry is not necessary. Since the excavated material is not used in the backfill mix, significant amounts of spoil are generated with this type of barrier wall. Also, due to the method of excavation with the slurry, there can be a significant amount of slurry waste (up to 40% of the total trench/panel volume) during excavation (EPRI, 2015b).

Barrier walls could be used to improve the subsurface hydraulic (flow) conditions for PRB walls, pump-and-treat systems, or to improve MNA performance. For example, barrier walls could form the impermeable portions of a funnel-and-gate PRB wall to direct groundwater to the treatment gates containing reactive media and could be used in a similar way to direct groundwater toward pumping wells in a pump-and-treat system. Because they could be part of PRB or hydraulic control (pump-and-treat) systems, barriers walls are viable corrective measures at AP-1, and therefore will be retained for further evaluation.

5.0 REMEDY SELECTION PROCESS

The purpose of this ACM is to identify potential corrective measure(s) for groundwater 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 Source Control (Pond Closure) and Site Management Strategy

Georgia Power has completed closure of the CCR unit AP-1 by capping. The closure of AP-1 provides a source control measure that reduces the potential for migration of CCR constituents to groundwater. The current conceptual model may need to be refined and/or updated as more data are collected and analyzed.

Georgia Power will utilize adaptive management for Plant McDonough during implementation of the remedial strategy to address changes in AP-1 conditions (e.g., successful reduction of constituent concentrations or changing trends) as may occur. Under an adaptive 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 at least semi-annually;

3) The 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 remedial goals are met.

5.2 Additional Data Collection

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 supplemental sampling, if required.

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 combination of corrective measures that would provide and effective groundwater remedy, necessary steps will be taken to implement a remedy at the site in accordance with 40 CFR 257.98.

A groundwater remedy process that incorporates one or more remedies described in this ACM will be implemented at the former CCR Unit. The remedy process will be designed to meet the performance standards as referenced in EPD Rule 391-3-4-.10(6) and listed in 40 CFR 257.98(c). Since the groundwater remedy may incorporate multiple approaches, additional data and analysis will be required to (i) perform a thorough location-specific evaluation regarding the feasibility of each potential remedy and (ii) to design or configure a groundwater corrective action plan.

The following summarizes typical additional data needed to evaluate and select a remedy:

- Geochemical studies of groundwater and aquifer media
- Geochemical, groundwater flow, or fate and transport modeling
- Material compatibility tests

- Laboratory treatability studies on groundwater, aquifer media, reactive media, and potential treatment solutions for injection
- Field pilot studies based on results of laboratory treatability studies.

Some of the data needed to evaluate potential remedies may be collected concurrently with routine groundwater monitoring events or during supplementary sampling events, if required. Additional data collection or feasibility evaluations may require up to 18 to 24 months to complete.

5.3 Schedule, Reporting & Next Steps

Additional data collection is ongoing to refine the understanding of the nature and extent of constituents resulting in SSLs. Georgia Power will include semi-annual remedy selection progress reports as an appendix to the routine semi-annual and annual groundwater monitoring reports for the site. Progress summaries will be included to document groundwater conditions for AP-1 at Plant McDonough, and present results associated with additional data collection, and the progress in selecting and designing the remedy in accordance with 40 CFR 257.97(a).

Since data collection is ongoing at AP-1, data that may be included within the next (February 2021) semi-annual groundwater monitoring report includes:

- Vertical delineation well construction logs (Well installation is complete, and development is expected to be complete in December 2020)
- Groundwater and surface water sampling results (sampling is expected in January 2021)
- Additional data collected as described in Section 5.2

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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TABLE 2
Piezometer Network Summary
Georgia Power Company - Plant McDonough
Atlanta, GA

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation
PIEZOMETERS											
B-3	Downgradient	Overburden/Upper Bedrock	1394045.1	2202411.5	837.78	835.0	37.0	808.3	798.3	10	10/3/2012
B-6	Downgradient	Overburden	1394419.5	2203266.5	789.47	786.5	35.4	761.5	751.5	10	10/9/2012
B-7	Downgradient	Overburden	1394374.6	2203596.1	809.16	806.1	25.2	791.3	781.3	10	10/9/2012
B-16	Downgradient	Overburden	1392595.1	2203315.4	826.47	823.6	43.7	790.2	780.2	10	12/19/2012
B-18	Downgradient	Overburden	1392521.0	2202875.5	826.56	823.9	32.6	801.5	791.5	10	1/10/2013
B-24	Downgradient	Upper Bedrock	1392479.9	2201450.0	822.11	819.3	79.1	751.0	741.0	10	10/24/2012
B-25	Downgradient	Upper Bedrock	1392813.3	2201502.7	836.54	833.5	54.8	789.1	779.1	10	10/24/2012
B-26	Downgradient	Upper Bedrock	1393105.6	2201550.4	853.60	850.6	49.3	811.7	801.7	10	10/23/2012
B-27	Downgradient	Upper Bedrock	Abandoned								
B-28	Downgradient	Overburden/Upper Bedrock	1391967.4	2201679.2	816.08	813.3	69.4	754.3	744.3	10	10/31/2012
B-29	Downgradient	Overburden	1391890.0	2201422.0	816.43	813.5	54.4	769.4	759.4	10	1/11/2013
B-31	Downgradient	Upper Bedrock	1392034.3	2200928.5	797.47	794.9	45.1	760.2	750.2	10	1/22/2013
B-41	Downgradient	Overburden	1390920.8	2201751.9	795.20	792.4	60.0	743.0	733.0	10	11/14/2012
B-50	Downgradient	Overburden	1391657.1	2201841.0	809.67	809.2	36.0	784.4	774.4	10	6/24/2016
B-51	Downgradient	Overburden	1390501.2	2200906.5	765.92	763.3	65.0	708.3	698.3	10	6/27/2016
B-52	Downgradient	Overburden	1392308.3	2201314.8	822.89	820.3	50.0	781.4	771.4	10	9/28/2016
B-54	Downgradient	Overburden/Upper Bedrock	1394423.5	2203140.7	785.46	782.6	34.2	758.8	748.8	10	9/26/2016
B-55	Downgradient	Overburden	1394142.6	2204147.9	825.12	822.9	52.0	781.9	771.9	10	9/22/2016
B-56	Downgradient	Overburden	1393957.9	2204187.8	823.59	821.0	45.0	786.4	776.4	10	10/3/2016
B-57	Downgradient	Upper Bedrock	1391396.3	2202736.9	789.04	786.0	50.5	746.0	736.0	10	9/24/2016
B-58	Downgradient	Overburden	1391125.7	2202426.5	788.17	785.2	45.0	750.7	740.7	10	9/23/2016
B-59	Downgradient	Overburden/Upper Bedrock	1394349.1	2203001.1	788.00	785.5	30.3	765.3	755.3	10	9/23/2016
B-60	Downgradient	Overburden	1391100.7	2202881.6	782.13	779.2	49.8	739.9	729.9	10	9/29/2016
B-61	Downgradient	Overburden	1390957.8	2202505.8	782.09	779.0	51.9	737.5	727.5	10	9/29/2016
B-62	Downgradient	Upper Bedrock	1389828.1	2201811.2	760.08	760.4	39.9	730.7	720.7	10	10/4/2016
B-63	Downgradient	Overburden	1390999.1	2202978.1	777.10	777.3	46.0	741.8	731.8	10	10/6/2016

Signature Page

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Tables and Figures

TABLE 1
Monitoring Well Network Summary
Georgia Power Company - Plant McDonough
Atlanta, GA

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation
ASH POND 1 (AP-1) MONITORING WELL NETWORK											
DGWA-53	Upgradient	Upper Bedrock	1393472.8	2201668.8	844.26	841.3	28.9	823.7	813.7	10	9/24/2016
DGWA-70A	Upgradient	Overburden	1390481.4	2200591.6	808.52	805.8	59.3	756.9	746.9	10	5/10/2017
DGWA-71	Upgradient	Overburden	1393963.3	2201714.8	863.84	861.2	43.8	827.8	817.8	10	2/28/2017
DGWC-37	Downgradient	Overburden	1390482.2	2200919.8	766.21	763.7	39.7	734.4	724.4	10	11/28/2012
DGWC-38	Downgradient	Overburden	1390362.7	2201148.6	757.43	754.7	25.0	740.0	730.0	10	11/29/2012
DGWC-39	Downgradient	Overburden	1390303.6	2201540.1	759.89	757.0	21.2	746.2	736.2	10	11/6/2012
DGWC-40	Downgradient	Overburden	1390625.7	2201825.9	779.06	776.2	34.9	751.7	741.7	10	11/5/2012
DGWC-67	Downgradient	Overburden	1390953.8	2200830.7	766.70	767.0	56.3	720.7	710.7	10	3/14/2017
DGWC-68A	Downgradient	Overburden	1391301.2	2200734.9	765.33	765.4	29.8	746.0	736.0	10	4/20/2017
DGWC-69	Downgradient	Overburden	1391585.0	2200657.1	763.75	764.0	24.3	749.7	739.7	10	3/16/2017

Notes:
bgs = below ground surface
DGWC-68 and DGWA-70 are not used as monitoring well due to well replacement and modifications to the proposed well network. DGWA-70 was abandoned 5/1/2017.
Coordinate System: NAD 1983 State Plane Georgia West (U.S. feet)
NAD - North American Datum; NAVD - North American Vertical Datum

TABLE 2
Piezometer Network Summary
Georgia Power Company - Plant McDonough
Atlanta, GA

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation
PIEZOMETERS											
B-64	Downgradient	Overburden	1394381.9	2203031.3	785.83	786.1	30.4	766.1	756.1	10	11/2/2016
B-65	Downgradient	Overburden/Upper Bedrock	1394381.2	2204050.8	821.95	822.3	45.4	787.9	777.9	10	11/15/2016
B-66	Downgradient	Overburden	1393858.2	2204277.5	815.90	813.3	55.3	768.3	758.3	10	11/16/2016
B-68	Downgradient	Overburden	1391298.2	2200714.2	758.68	759.0	18.0	751.0	741.0	10	3/16/2017
B-70	Downgradient	Overburden	Abandoned								
B-72	Downgradient	Overburden	1391242.2	2200723.9	758.85	758.09	21.9	746.6	736.6	10	4/19/2017
B-73	Downgradient	Overburden	1391352.4	2200697.5	759.46	758.85	15.8	753.5	743.5	10	4/19/2017
B-74	Downgradient	Overburden	1391279.8	2200665.3	759.44	758.96	16.5	748.2	743.2	5	4/25/2017
B-77	Downgradient	Overburden	1390948.7	2202942.0	776.86	777.1	42	745.1	735.1	10	9/17/2019
B-78	Downgradient	Overburden/Upper Bedrock	1394328.2	2202958.2	790.75	788.0	30	768.0	758.5	10	9/22/2019
B-79	Downgradient	Overburden	1394458.6	2203223.0	788.66	785.9	34.93	761.0	751.5	10	9/21/2019
B-80	Downgradient	Overburden	1394372.6	2203533.9	804.47	801.8	30	782.0	772.5	10	9/20/2019
B-81	Downgradient	Overburden	1394364.9	2203741.1	820.56	817.7	50	778.5	768.5	10	9/22/2019
B-82	Downgradient	Overburden	1393750.0	2204258.1	810.07	807.5	45	773.0	763.0	10	9/21/2019
B-83	Downgradient	Overburden	1390735.5	2202695.6	776.98	777.1	48.6	738.5	728.5	10	9/30/2019
B-84	Downgradient	Overburden	1390411.9	2202241.9	776.34	776.6	49.1	737.5	727.5	10	10/1/2019
B-85	Downgradient	Overburden/Upper Bedrock	1394433.4	2203134.5	782.54	782.7	34.5	758.5	748.5	10	11/18/2019
B-86	Downgradient	Overburden/Upper Bedrock	1394480.0	2203206.6	784.29	784.6	34.1	760.5	750.5	10	11/18/2019
B-87	Downgradient	Overburden	1394401.9	2203531.3	803.37	800.4	42	768.7	758.7	10	11/17/2019
B-88	Downgradient	Overburden	1394401.1	2203738.3	820.07	817.0	72	755.0	745.0	10	11/15/2019
B-89	Downgradient	Upper Bedrock	1394398.4	2204049.4	822.36	822.6	49.5	783.1	773.1	10	11/19/2019
B-90	Downgradient	Overburden	1394501.0	2203212.6	784.00	784.2	33.4	760.8	750.8	10	12/10/2019
B-91	Downgradient	Overburden	1394447.1	2203123.9	782.98	783.1	34.6	758.5	748.5	10	12/11/2019
B-92	Downgradient	Overburden	1394392.7	2203026.7	785.08	785.3	24.6	770.7	760.7	10	12/11/2019
B-93	Downgradient	Overburden	1394348.7	2202946.7	789.07	789.2	28.9	770.3	760.3	10	12/12/2019
B-94	Downgradient	Overburden	1394402.0	2203513.7	801.74	799.2	45.24	764.6	754.6	10	1/23/2020

TABLE 2
Piezometer Network Summary
Georgia Power Company - Plant McDonough
Atlanta, GA

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation
PIEZOMETERS											
B-95	Downgradient	Overburden	1394518.6	2203167.7	784.00	784.3	33.3	761.3	751.3	10	2/11/2020
B-96	Downgradient	Overburden	1394478.7	2203099.3	784.92	785.3	33.1	762.2	752.2	10	2/10/2020
B-97	Downgradient	Overburden/Upper Bedrock	1394430.0	2203008.3	786.29	786.6	31	765.3	755.3	10	2/11/2020
B-98	Downgradient	Overburden	1394392.5	2202934.0	789.67	789.8	19.4	780.8	770.8	10	2/10/2020
B-99	Downgradient	Overburden	1394524.2	2203084.5	782.39	782.6	12.3	775.3	770.3	5	7/7/2020
B-100	Downgradient	Overburden	1390254.8	2202242.1	777.95	775.3	44.8	740.5	730.5	10	7/8/2020

Notes:
bgs = below ground surface
Coordinate System: NAD 1983 State Plane Georgia West (U.S. feet)
NAD - North American Datum; NAVD - North American Vertical Datum

TABLE 3
Summary of Groundwater Protection Standards
Plant McDonough AP-2 and 3/4
Smyrna, Georgia

Analyte	Units	Maximum Contaminant Level (MCL)	Site Specific Background March 2020[1]	GWPS [2]
Antimony	mg/L	0.006	0.003	0.006
Arsenic	mg/L	0.01	0.005	0.01
Barium	mg/L	2	0.19	2
Beryllium	mg/L	0.004	0.003	0.004
Cadmium	mg/L	0.005	0.0025	0.005
Chromium	mg/L	0.1	0.01	0.1
Cobalt	mg/L	NA[3]	0.0322	0.0322
Fluoride	mg/L	4	1.2	4
Lead	mg/L	NA[3]	0.005	0.005
Lithium	mg/L	NA[3]	0.03	0.030[4]
Mercury	mg/L	0.002	0.0005	0.002
Molybdenum	mg/L	NA[3]	0.0409	0.0409
Radium (226 + 228)	pCi/L	5	6.04	6.062
Selenium	mg/L	0.05	0.01	0.05
Thallium	mg/L	0.002	0.001	0.002

Notes:
mg/L = milligrams per liter; pCi/L = picocuries per liter; NA = Not Available

[1] The background limits are used when determining the groundwater protection standard (GWPS) under 40 CFR § 257.95(h) and Georgia Environmental Protection Division (GA EPD) Rule 391-3-4-.10(6)(a).

[2] Under existing EPD rules, the GWPS is: (i) the MCL, (ii) where the MCL is not established, the background concentration, or (iii) background levels for constituents where the background level is higher than the MCL. In accordance with 40 CFR §257(h)(1-3) the GWPS is: (i) the MCL/RSL, (ii) where the MCL is not established, the background concentration, or (iii) background levels for constituents where the background level is higher than the MCL or rule-specified GWPS.

[3] Regional Screening Levels (RSL) for cobalt, lead, lithium and molybdenum have been provided under the Federal Rule. However, RSLs have not yet been adopted by GA EPD. RSLs for cobalt (0.006 mg/L), lead (0.015 mg/L), lithium (0.040 mg/L) and Molybdenum (0.10 mg/L) will be considered when selecting an appropriate remedy for the site.

[4] The background tolerance limit (TL) used to evaluate GWPS for this analyte equals the laboratory specified reporting limit (RL). Per the SAP, and in accordance with the Unified [3] Guidance, a non-parametric limit approach was used since the data set contains greater than 50% non-detect results for this analyte. Under this approach, the TL equals the highest value reported, for which is the laboratory RL. We also note that the values reported herein have been updated from the previously established GWPS which was determined based on estimated data. The modified GWPS also reflects additional outlier identification.

TABLE 4A
ANALYTICAL DATA SUMMARY
Ash Pond 1 Detection Monitoring - August 2020
Georgia Power Company - Plant McDonough-Atkinson
Smyrna, GA

Analyte	Units	Well ID									
		DGWA-53	DGWA-70A	DGWA-71	DGWC-37	DGWC-38	DGWC-39	DGWC-40	DGWC-67	DGWC-68A	DGWC-69
		8/13/2020	8/11/2020	8/11/2020	8/13/2020	8/13/2020	8/13/2020	8/13/2020	8/13/2020	8/13/2020	8/13/2020
Appendix III											
BORON, TOTAL	mg/L	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
CALCIUM, TOTAL	mg/L	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
CHLORIDE, TOTAL	mg/L	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
FLUORIDE, TOTAL	mg/L	0.062 J	<0.050	<0.050	0.068 J	0.060 J	0.076 J	0.16	<0.050	0.076 J	0.084 J
pH	S.U.	6.17	5.86	5.96	6.34	6.05	6.39	4.65	6.28	6.63	6.26
SULFATE, TOTAL	mg/L	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
TOTAL DISSOLVED SOLIDS	mg/L	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
Appendix IV											
ANTIMONY, TOTAL	mg/L	0.00030 J	0.0013 J	0.0018 J	<0.00028	<0.00028	<0.00028	<0.00028	<0.00028	<0.00028	0.0019 J
ARSENIC, TOTAL	mg/L	<0.00078	<0.00078	<0.00078	<0.00078	<0.00078	<0.00078	<0.00078	<0.00078	<0.00078	0.029
BARIUM, TOTAL	mg/L	0.046	0.041	0.026	0.088	0.032	0.089	0.018	0.095	0.088	0.13
BERYLLIUM, TOTAL	mg/L	<0.000046	0.00013 J	0.00011 J	0.00010 J	<0.000046	<0.000046	0.0033	<0.000046	<0.000046	0.000063 J
CADMIUM, TOTAL	mg/L	<0.00012	<0.00012	<0.00012	<0.00012	0.00021 J	<0.00012	0.00084 J	0.00015 J	0.00021 J	<0.00012
CHROMIUM, TOTAL	mg/L	<0.00055	0.0016 J	0.00060 J	0.00058 J	<0.00055	<0.00055	0.00072 J	<0.00055	<0.00055	<0.00055
COBALT, TOTAL	mg/L	0.0051	0.0012 J	<0.00038	<0.00038	0.0014 J	0.0060	0.044	0.0015 J	<0.00038	<0.00038
FLUORIDE, TOTAL	mg/L	0.062 J	<0.050	<0.050	0.068 J	0.060 J	0.076 J	0.16	<0.050	0.076 J	0.084 J
LEAD, TOTAL	mg/L	<0.000036	0.00030 J	<0.000036	<0.000036	<0.000036	<0.000036	0.000049 J	0.000056 J	<0.000036	0.000059 J
LITHIUM, TOTAL	mg/L	0.0085 J	0.0019 J	0.0015 J	0.0023 J	0.0028 J	<0.00081	0.0022 J	0.0044 J	<0.00081	0.0031 J
MERCURY, TOTAL	mg/L	<0.000078	<0.000078	<0.000078	<0.000078	<0.000078	<0.000078	<0.000078	<0.000078	<0.000078	<0.000078
MOLYBDENUM, TOTAL	mg/L	0.012	<0.00069	<0.00069	<0.00069	0.00098 J	<0.00069	<0.00069	<0.00069	0.19	0.011
RADIUM (226 + 228)	pCi/L	1.04	0.812 U	0.965 U	0.990	0.132 U	0.626 U	1.60	0.897 U	1.46	2.66
SELENIUM, TOTAL	mg/L	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	0.0018 J	<0.0016	<0.0016	<0.0016
THALLIUM, TOTAL	mg/L	<0.00014	<0.00014	<0.00014	<0.00014	0.00016 J	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014

Notes:

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. < indicates the substance was not detected above the analytical method detection limit (MDL). The value displayed is the method detection limit.
4. J indicates the substance was detected at such low levels that the precision of the laboratory instruments could not produce a reliable value. Therefore, the value displayed is qualified by the laboratory as an estimated number.
5. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.
6. "Not Sampled" Each of these Appendix IV constituents were not detected during the Annual Appendix IV monitoring event and therefore are not required to be analyzed.

GOLDER

TABLE 4B
ANALYTICAL DATA SUMMARY
Ash Pond 1 Assessment Monitoring - August 2020
Georgia Power Company - Plant McDonough-Atkinson
Smyrna, GA

Analyte	UNITS	Well ID	
		B-62	B-100
		8/13/2020	8/17/2020
Appendix III			
BORON, TOTAL	mg/L	Not Sampled	Not Sampled
CALCIUM, TOTAL	mg/L	Not Sampled	Not Sampled
CHLORIDE, TOTAL	mg/L	Not Sampled	Not Sampled
FLUORIDE, TOTAL	mg/L	0.11	<0.050
pH	S.U.	6.40	5.02
SULFATE, TOTAL	mg/L	Not Sampled	Not Sampled
TOTAL DISSOLVED SOLIDS	mg/L	Not Sampled	Not Sampled
Appendix IV			
ANTIMONY, TOTAL	mg/L	<0.00028	0.0013 J
ARSENIC, TOTAL	mg/L	<0.00078	<0.00078
BARIUM, TOTAL	mg/L	0.026	0.015
BERYLLIUM, TOTAL	mg/L	0.00011 J	0.00040 J
CADMIUM, TOTAL	mg/L	<0.00012	0.00059 J
CHROMIUM, TOTAL	mg/L	<0.00055	<0.00055
COBALT, TOTAL	mg/L	<0.00038	0.077
FLUORIDE, TOTAL	mg/L	0.11	<0.050
LEAD, TOTAL	mg/L	<0.000036	0.000088 J
LITHIUM, TOTAL	mg/L	0.0087 J	0.0013 J
MERCURY, TOTAL	mg/L	<0.000078	0.00011 J
MOLYBDENUM, TOTAL	mg/L	<0.00069	<0.00069
RADIUM (226 + 228)	pCi/L	1.63	1.40 U
SELENIUM, TOTAL	mg/L	<0.0016	<0.0016
THALLIUM, TOTAL	mg/L	<0.00014	<0.00014

Notes:

1. mg/L - Milligrams per Liter

2. pCi/L - picocuries per Liter

3. S.U. - Standard Units

3. < indicates the substance was not detected above the analytical method detection limit (MDL). The value displayed is the method detection limit.

4. J indicates the substance was detected at such low levels that the precision of the laboratory instruments could not produce a reliable value. Therefore, the value displayed is qualified by the laboratory as an estimated number.

5. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.

6. Not Sampled - Sample not analyzed for this constituent. Constituent not detected during the August annual Appendix IV sampling event therefore not required.

GOLDER

TABLE 4C
ANALYTICAL DATA SUMMARY
Ash Pond 1 Detection Monitoring - September 2020
Georgia Power Company - Plant McDonough-Atkinson
Smyrna, GA

Analyte	Units	Well ID									
		DGWA-53	DGWA-70A	DGWA-71	DGWC-37	DGWC-38	DGWC-39	DGWC-40	DGWC-67	DGWC-68A	DGWC-69
		9/22/2020	9/22/2020	9/22/2020	9/24/2020	9/24/2020	9/25/2020	9/23/2020	9/23/2020	9/23/2020	9/23/2020
Appendix III											
BORON, TOTAL	mg/L	0.056 J	< 0.0052	< 0.0052	1.6	2.9	3.3	0.76	3.2	1.7	0.041 J
CALCIUM, TOTAL	mg/L	15.5	5.0	5.4	55.9	84.1	92.5	41.9	42.0	50.2	8.0
CHLORIDE, TOTAL	mg/L	1.6	1.9	5.2	5.6	8.2	7.9	19.7	7.1	3.6	4.7
FLUORIDE, TOTAL	mg/L	0.099 J	< 0.050	< 0.050	0.061 J	0.057 J	0.086 J	0.054 J	< 0.050	0.070 J	0.064 J
pH	S.U.	6.43	6.01	6.06	6.30	6.05	6.38	4.78	6.23	6.60	6.08
SULFATE, TOTAL	mg/L	13.5	< 0.50	6.5	84.1	240	153	190	99.8	38.7	5.9
TOTAL DISSOLVED SOLIDS	mg/L	142	46.0	74.0	280	489	460	357	296	251	102
Appendix IV											
ANTIMONY, TOTAL	mg/L	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028
ARSENIC, TOTAL	mg/L	0.00093 J	< 0.00078	< 0.00078	< 0.00078	< 0.00078	0.00087 J	< 0.00078	< 0.00078	< 0.00078	0.032
BARIUM, TOTAL	mg/L	0.070	0.038	0.024	0.094	0.032	0.10	0.019	0.10	0.094	0.055
BERYLLIUM, TOTAL	mg/L	< 0.000046	0.000068 J	0.000069 J	0.000088 J	0.000058 J	< 0.000046	0.0031	< 0.000046	< 0.000046	0.000061 J
CADMIUM, TOTAL	mg/L	< 0.00012	< 0.00012	< 0.00012	0.00027 J	0.00081 J	< 0.00012	0.00080 J	0.00018 J	0.00024 J	< 0.00012
CHROMIUM, TOTAL	mg/L	< 0.00055	0.00089 J	< 0.00055	< 0.00055	< 0.00055	< 0.00055	0.0011 J	< 0.00055	< 0.00055	0.0011 J
COBALT, TOTAL	mg/L	0.011	< 0.00038	< 0.00038	< 0.00038	0.0013 J	0.0061	0.046	0.0011 J	< 0.00038	< 0.00038
FLUORIDE, TOTAL	mg/L	0.099 J	< 0.050	< 0.050	0.061 J	0.057 J	0.086 J	0.054 J	< 0.050	0.070 J	0.064 J
LEAD, TOTAL	mg/L	< 0.000036	0.000078 J	< 0.000036	< 0.000036	0.00014 J	0.00022 J	0.00028 J	< 0.000036	0.00035 J	0.00017 J
LITHIUM, TOTAL	mg/L	0.0089 J	< 0.00081	0.0012 J	0.0021 J	0.0029 J	< 0.00081	0.0022 J	0.0043 J	< 0.00081	0.0023 J
MERCURY, TOTAL	mg/L	< 0.000078	< 0.000078	< 0.000078	0.000091 J	0.000085 J	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.000078
MOLYBDENUM, TOTAL	mg/L	0.039	< 0.00069	< 0.00069	< 0.00069	0.0010 J	< 0.00069	< 0.00069	< 0.00069	0.20	0.0056 J
RADIUM (226 + 228)	pCi/L	2.27	0.450 U	0.216 U	1.03 U	0.593 U	0.181 U	1.28 U	0.131 U	0.563 U	1.80
SELENIUM, TOTAL	mg/L	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	0.0067 J	< 0.0016	< 0.0016	< 0.0016
THALLIUM, TOTAL	mg/L	< 0.00014	< 0.00014	< 0.00014	< 0.00014	0.00015 J	< 0.00014	< 0.00014	< 0.00014	< 0.00014	< 0.00014

Notes:
1. mg/L - milligrams per Liter
2. pCi/L - picocuries per Liter
3. S.U. - Standard Units
4. < indicates the substance was not detected above the analytical method detection limit (MDL). The value displayed is the method detection limit.
5. J indicates the substance was detected at such low levels that the precision of the laboratory instruments could not produce a reliable value. Therefore, the value displayed is qualified by the laboratory as an estimated number.
6. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.

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TABLE 4D
ANALYTICAL DATA SUMMARY
Ash Pond 1 Assessment Monitoring - September 2020
Georgia Power Company - Plant McDonough-Atkinson
Smyrna, GA

Analyte	Units	Well ID	
		B-62	B-100
		9/24/2020	9/25/2020
Appendix III			
BORON, TOTAL	mg/L	0.074 J	0.27
CALCIUM, TOTAL	mg/L	28.8	44.7
CHLORIDE, TOTAL	mg/L	5.7	13.2
FLUORIDE, TOTAL	mg/L	0.093 J	< 0.050
pH	S.U.	6.55	5.53
SULFATE, TOTAL	mg/L	50.6	385
TOTAL DISSOLVED SOLIDS	mg/L	170	724
Appendix IV			
ANTIMONY, TOTAL	mg/L	0.00046 J	< 0.00028
ARSENIC, TOTAL	mg/L	< 0.00078	< 0.00078
BARIUM, TOTAL	mg/L	0.025	0.022
BERYLLIUM, TOTAL	mg/L	0.00013 J	0.00035 J
CADMIUM, TOTAL	mg/L	< 0.00012	0.00027 J
CHROMIUM, TOTAL	mg/L	< 0.00055	0.00094 J
COBALT, TOTAL	mg/L	< 0.00038	0.034
FLUORIDE, TOTAL	mg/L	0.093 J	< 0.050
LEAD, TOTAL	mg/L	< 0.000036	0.00021 J
LITHIUM, TOTAL	mg/L	0.0084 J	0.0027 J
MERCURY, TOTAL	mg/L	< 0.000078	< 0.000078
MOLYBDENUM, TOTAL	mg/L	< 0.00069	< 0.00069
RADIUM (226 + 228)	pCi/L	1.28 U	0.799 U
SELENIUM, TOTAL	mg/L	< 0.0016	< 0.0016
THALLIUM, TOTAL	mg/L	< 0.00014	< 0.00014

Notes:
1. mg/L - milligrams per Liter
2. pCi/L - picocuries per Liter
3. S.U. - Standard Units
4. < indicates the substance was not detected above the analytical method detection limit (MDL). The value displayed is the method detection limit.
5. J indicates the substance was detected at such low levels that the precision of the laboratory instruments could not produce a reliable value. Therefore, the value displayed is qualified by the laboratory as an estimated number.
6. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.

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TABLE 5
ANALYTICAL DATA SUMMARY
Ash Pond 1 Surface Water Monitoring - November 2020
Georgia Power Company - Plant McDonough
Smyrna, GA

Analyte	Units	SURFACE WATER SAMPLES									
		UT01_DS	UT01_US	UT02	CR+0.4	CR+0.2	Dewatering Upstream	Dewatering Downstream	CR-0.2	CR-0.5	CR-0.8
		11/10/2020	11/10/2020	11/10/2020	11/10/2020	11/10/2020	11/10/2020	11/10/2020	11/10/2020	11/10/2020	11/10/2020
Alkalinity, Total as CaCO3	mg/L	68.8	68.8	67.9	-	-	-	-	-	-	-
Alkalinity,Bicarbonate (CaCO3)	mg/L	68.8	68.8	67.9	-	-	-	-	-	-	-
Calcium	mg/L	22.3	21.3	21.9	-	-	-	-	-	-	-
Chloride	mg/L	11.5	12	11.7	-	-	-	-	-	-	-
Fluoride	mg/L	0.18	0.18	0.18	-	-	-	-	-	-	-
Magnesium	mg/L	4.8	4.2	4.4	2	2	2	2	2.1	2	2
Molybdenum	mg/L	<0.010	<0.010	<0.010	-	-	-	-	-	-	-
pH	SU	7.18	7.3	7.31	7.35	7.42	6.9	7.03	7.82	7.4	7.62
Potassium	mg/L	3.9	3.8	4.2	2.6	2.5	2.7	2.6	2.6	2.8	2.6
Sodium	mg/L	13.9	14.2	14.4	5.4	5.5	5.5	5.6	5.9	5.7	5.6
Sulfate	mg/L	20.5	16.1	16.5	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	145	132	127	-	-	-	-	-	-	-
Beryllium	mg/L	-	-	-	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cobalt	mg/L	-	-	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050

Notes:

< indicates the substance was not detected above the analytical reporting limit (RL). The value displayed is the RL.

"--" = analysis was not performed

TABLE 6
Evaluation of Remedial Technologies
Georgia Power – Plant McDonough-Atkinson
Smyrna, Georgia

Corrective Measure	REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)		
	Description	**Performance**	**Reliability**
Geochemical Approaches (in situ injection)	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; this approach might also increase the attenuation of Mo, particularly is combined with an organic amendment. 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 (and potentially, Mo) 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.	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. It is currently not well understood whether molybdenum can be efficiently attenuated using in-situ redox manipulations due to slow reaction kinetics. Mo attenuation under both aerobic and anaerobic conditions needs to be further evaluated but is expected to occur. Mo has been effectively immobilized under biologically enhanced conditions. Mo is more strongly sorbed to aluminum oxides than other metal oxides, and it is generally less sorptive and more mobile compared to Co.	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 and Mo in groundwater.
Hydraulic Containment (pump- and-treat)	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 and Mo.	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-1, 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.

TABLE 6
Evaluation of Remedial Technologies
Georgia Power – Plant McDonough-Atkinson
Smyrna, Georgia

Corrective Measure	REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)		
	Description	**Performance**	**Reliability**
In-Situ Solidification / Stabilization	In-situ stabilization is a technique that uses mixing of the CCR with additives to solidify the material in place and reduce future dissolution of CCR compounds from the stabilized material. Additives typically include Portland cement, and the solidification is completed in-situ using large diameter augers. CCR located beneath the water table would be isolated by ISS.	Medium to high, groundwater impacts would be addressed through the processes of natural attenuation. This alternative would isolate/secure the source in a bound matrix, and over time, allow the concentrations of COCs in downgradient groundwater to decline to below applicable standards.	In-situ stabilization can be a reliable corrective measure for As, Be, Co, and Li in groundwater. Reliability is dependent on the permeability of the subsurface and mechanics of injection.
Monitored Natural Attenuation (MNA)	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) and molybdenum (Mo) at AP-1, 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 and Mo, the main attenuation processes include sorption to iron and manganese oxides (Co and Mo), and formation of sparingly soluble sulfide minerals (Co).	Physical and chemical MNA mechanisms for Co and Mo, 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 and Mo are already occurring at the site as evidenced by groundwater 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 and Mo at AP-1 will further enhance ongoing MNA.	Reliable as long as the aquifer conditions that result in Co and Mo 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 and/or Mo, or in combination with a second technology.
Permeable Reactive Barrier (PRB)	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 likely viable for the concurrent removal of Co and Mo. The carbon could be composed of peat moss, mulch or another carbon source. Exact placement of the PRB would be 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, but additional testing is required for Mo to select the appropriate reactive media. The approach is expected to achieve GWPS for both constituents as impacted groundwater passes through the reactive barrier. Mo redox kinetics may be slow and hence a thicker wall might be needed relative to solely treating for Co. Furthermore, additional testing is required to select the appropriate sorptive media mix, especially related to Mo.	Reliable groundwater corrective measure technology, 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.

TABLE 6
Evaluation of Remedial Technologies
Georgia Power – Plant McDonough-Atkinson
Smyrna, Georgia

Corrective Measure	REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)		
	Description	**Performance**	**Reliability**
Phyto Remediation (TreeWall®)	Phytoremediation uses trees and other plants to degrade or immobilize constituents or achieve hydraulic control without the need for an above-ground water treatment system and infrastructure. Within the context of AP-1, this corrective measure would likely use an engineered (proprietary) TreeWell® phytoremediation system along the point of compliance or downgradient edge of the impacted groundwater for hydraulic control. The system promotes root development to the targeted groundwater zone (depth), allowing for hydraulic control of impacted groundwater. In addition, immobilization of Co and Mo within the root zone as well as incidental uptake of dissolved Co and Mo with groundwater is expected to occur concurrent with hydraulic control.	Once established (typically at the end of the third growing season), a TreeWell® system is effective for providing hydraulic containment of groundwater, and potential reduction of Co and Mo concentrations through immobilization and/or uptake and sequestration in the tree biomass; however, the main purpose is to provide hydraulic control. Given the current groundwater flow velocities, the approach is currently not considered viable. However, changing site conditions may make the corrective measure viable for the area downgradient of AP-1. Additional aquifer testing and/or groundwater flow modeling may be needed to confirm the suitability at that time.	Engineered phytoremediation is a proven technology where hydrogeologic factors are taken into account (e.g., hydraulic conductivity, flow velocity, depth to impacted groundwater zone, etc.). This is considered an active remedial approach through the use of trees as the "pumps" driving the system. Careful design will be needed to select the proper species, which will include consideration of groundwater chemistry, plant uptake of constituents, and groundwater flow modeling to evaluate the required number and placement of TreeWell® units.
Subsurface Vertical Barrier Wells	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 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-1, 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 and Mo 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 6
Evaluation of Remedial Technologies
Georgia Power – Plant McDonough-Atkinson
Smyrna, Georgia

Corrective Measure	REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)		
	Ease of Implementation	**Potential Impacts**	**Time Requirement to Begin/Complete**
Geochemical Approaches (in situ injection)	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.	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.	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.
Hydraulic Containment (pump- and-treat)	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 and Mo. Operation and maintenance (O&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.	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.	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 and Mo.
In-Situ Solidification / Stabilization	Easy to moderate, implementation of ISS will require a detailed design effort with bench scale testing to determine the appropriate amendment mix for a variety of overburden geologic materials. Pilot testing will also be needed to verify the ability of equipment to solidify material at depth. ISS has not been commonly used to stabilize entire ash units as part of a closure strategy.	Potential impacts of the remedy will be negligible.	In-situ stabilization of AP-1 is predicted to take a number of years to complete, depending on the availability of specialized contractors and equipment.
Monitored Natural Attenuation (MNA)	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.	None. MNA relies on the natural processes active in the aquifer matrix to reduce constituent concentrations without disturbing the surface or the subsurface.	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 the CCR unit 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.

TABLE 6
Evaluation of Remedial Technologies
Georgia Power – Plant McDonough-Atkinson
Smyrna, Georgia

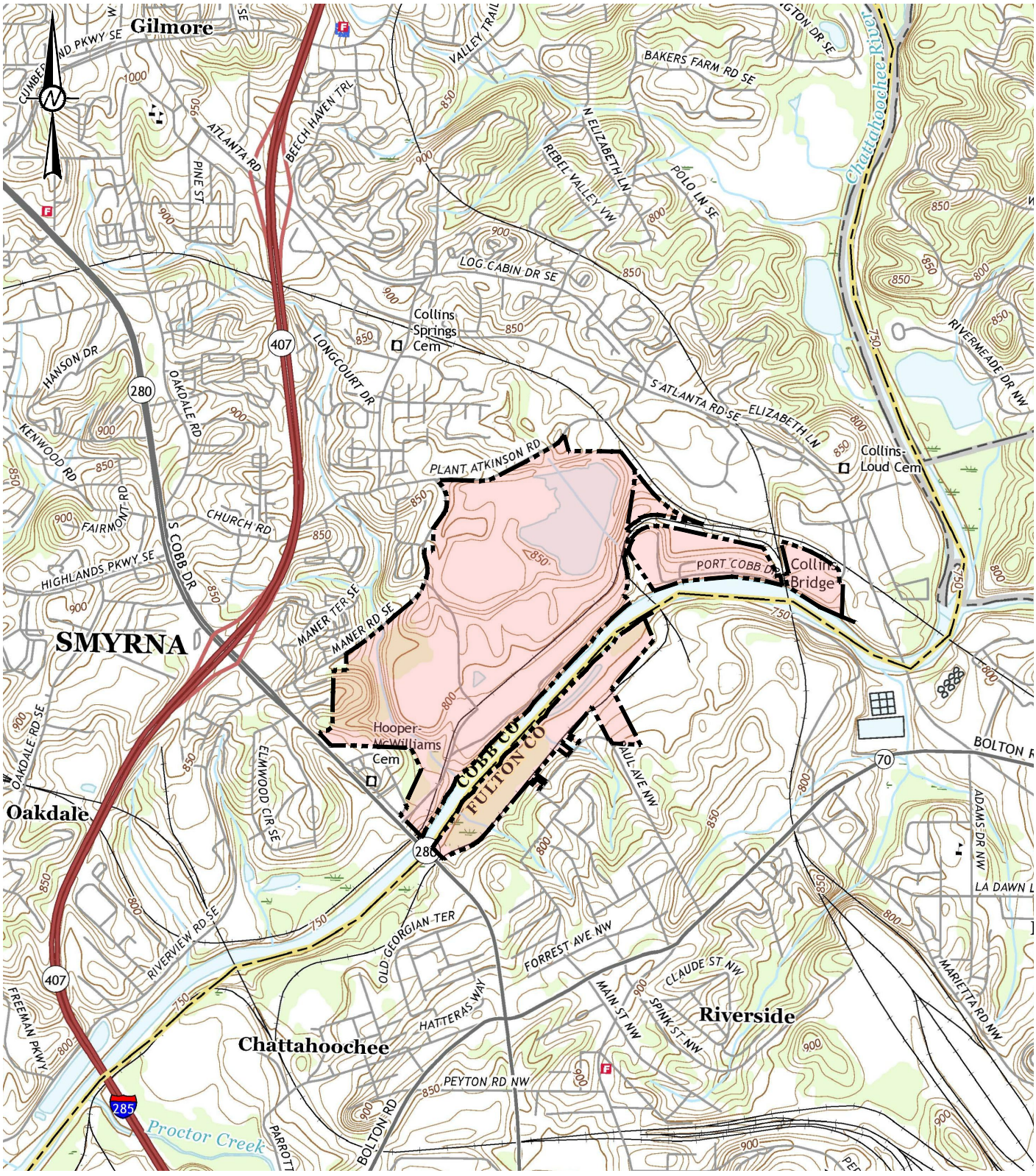
Corrective Measure	REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)		
	Ease of Implementation	**Potential Impacts**	**Time Requirement to Begin/Complete**
Permeable Reactive Barrier (PRB)	Moderate to difficult. Trenching would be required to install a mix of reactive materials in the subsurface. Continuous trenching may be the most feasible construction method. Installation methods and materials are readily available. Once installed, treatment will be passive and O&M requirements are minimal if replacement of the PRB is not necessary.	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.	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.
Phyto Remediation (TreeWall®)	Reasonably implementable to moderate. Engineered approach has been proven effective, and specific depth zones can be targeted. Trees are installed as "tree wells" in a large diameter boring to get the roots deep enough to intercept impacted groundwater flow paths. Area must be clear of above and below-ground structures (i.e., power lines). The system, once established (approximately three growing seasons), is a self-maintaining, sustainable remedial system that has no external energy requirements and little maintenance (i.e., efforts normally associated with landscaping).	Minimal impacts are expected. In fact, there are several positive impacts expected, including enhanced aesthetics, wildlife habitat, and limited energy consumption.	The design phase will require some groundwater modeling for optimal placement of the TreeWell® units, which may take up to 6 months. Depending on the number of required units, the installation effort is expected to last several weeks. Hydraulic capture/control is expected approximately three years after planting and system performance is expected to further improve over time.
Subsurface Vertical Barrier Wells	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&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.	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.	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.

TABLE 6
Evaluation of Remedial Technologies
Georgia Power – Plant McDonough-Atkinson
Smyrna, Georgia

Corrective Measure	REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)		
	Institutional Requirements	**Other Env. Or Public Health Requirements**	**Relative Costs**
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. Potential for mobilization of redox-sensitive constituents exists during implementation of an anerobic 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.	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)
In-Situ Solidification / Stabilization	Deed restrictions may be necessary until groundwater concentrations are below GWPS. No other institutional requirements that may limit application of this technology are expected at this time.	Changes to groundwater chemistry relative to the mobility of Appendix IV constituents following completion of ISS, where large volumes of amendments (typically Portland cement) are added to the subsurface, are unknown and would require pilot testing.	Medium, depending on permeability of aquifer
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.	Low to medium
Permeable Reactive Barrier (PRB)	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. 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
Phyto Remediation (TreeWall®)	Deed restrictions may be necessary for groundwater areas upgradient of the TreeWell system. No other institutional requirements are expected at this time.	None expected at this point. Following installation, the remedy is passive and does not require external energy.	Medium (for installation) - minimal O&M requirements

TABLE 6
Evaluation of Remedial Technologies
Georgia Power – Plant McDonough-Atkinson
Smyrna, Georgia

Corrective Measure	REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)		
	Institutional Requirements	**Other Env. Or Public Health Requirements**	**Relative Costs**
Subsurface Vertical Barrier Wells	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.	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)



0 1000 2000
1" = 2000' FEET

REFERENCE
USGS 7.5 MINUTE QUADRANGLE, NORTHWEST ATLANTA GEORGIA, 2017.

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
0	2020/10/26	ISSUED FOR REV 0	GLH	CCP	LS	GLH

CLIENT
GEORGIA POWER COMPANY

Georgia Power

PROJECT
PLANT MCDONOUGH AP-1
ASSESSMENT OF CORRECTIVE MEASURES

CONSULTANT
GOLDER

YYYY-MM-DD	2020/10/26
DESIGNED	GLH
PREPARED	CCP
CHECKED	LS
REVIEWED / APPROVED	GLH

TITLE
SITE LOCATION MAP

PROJECT NO. 166849618 | ---- | REV. 0 | FIGURE 1

Last Edited By: alerodriguez Date: 2020-10-26 Time:8:48:54 AM | Printed By: AleRodriguez Date: 2020-10-26 Time:8:49:22 AM
Path: \\Atlanta\cadd\southern company\166849618 plant mcdonough work plan for acm\AP1\production\ | File Name: Site Location Map.dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 1 in



LEGEND

- PROPOSED VERTICAL DELINEATION WELLS
- PIEZOMETER
- AP-1 MONITORING WELL
- AP-2,3/4 MONITORING WELL
- UPGRADIENT WELL
- AP-1 SURFACE WATER
- AP-2,3/4 SURFACE WATER
- PROPERTY BOUNDARY
- PERMIT BOUNDARY

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE

REFERENCE

1. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY

2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).

3. MONITORING WELL/PIEZOMETER LOCATIONS SURVEYED BY METRO ENGINEERING

0 600 1,200

1 IN= 600 FT

CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH

PROJECT
PLANT MCDONOUGH AP-1
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
AP-1 MONITORIMG WELL, PIEZOMETER AND SURFACE WATER LOCATION MAP

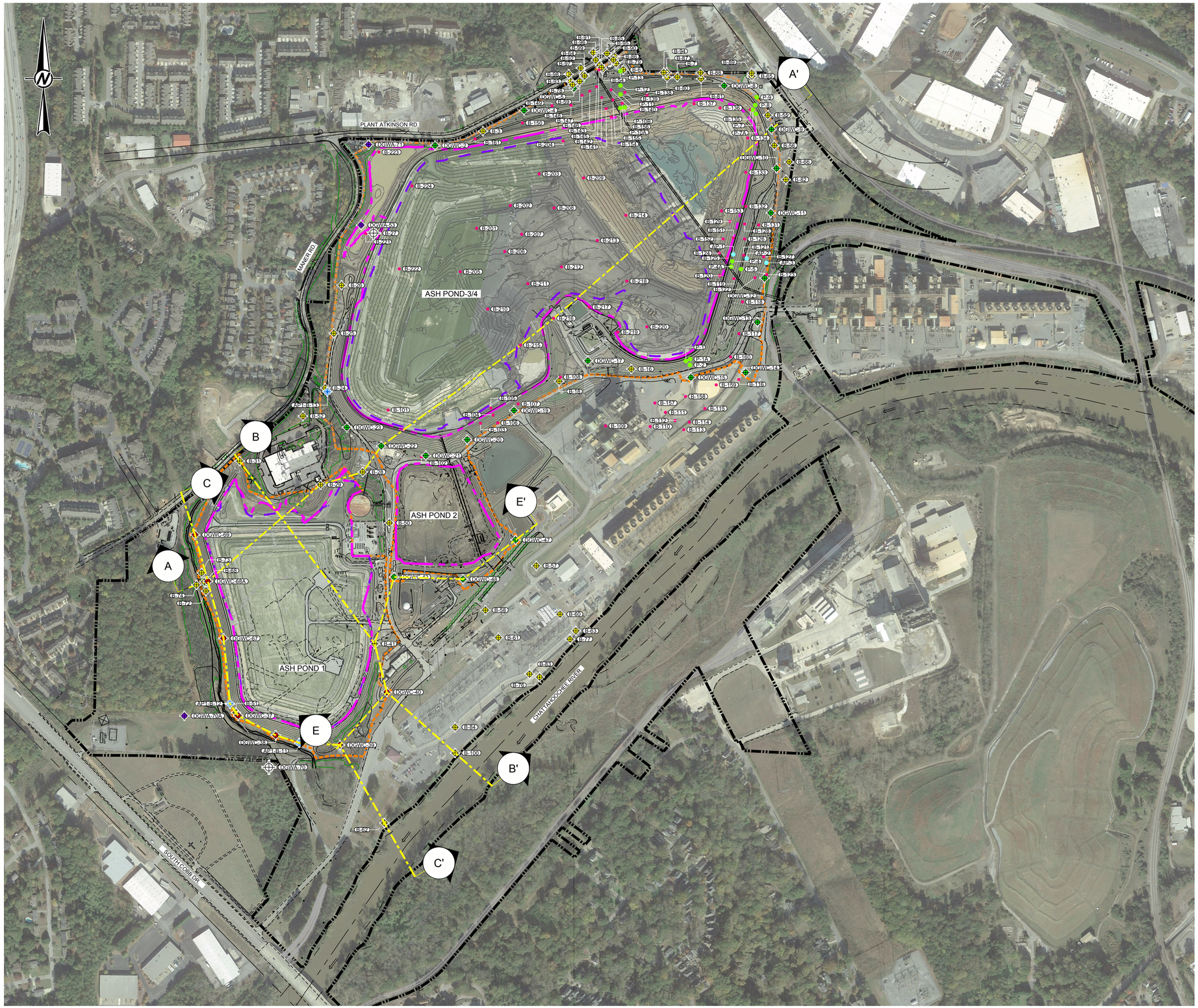
CONSULTANT
GOLDER

YYYY-MM-DD	2020-11-12
PREPARED	BAS
DESIGN	DJC
REVIEW	DLP
APPROVED	TIR

PROJECT No. 166849618
Rev. 0
FIGURE 2

Path: C:\Users\dcoat\Golder Associates\166849618 - SCS Plant McDonough GW Cons Svcs GA - Project Files\600_Shapefiles\MXD\ACM Isoconcentration Maps\Figure 2 - AP234 Location Map.mxd

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



LEGEND

- EXISTING CONTOURS (SEE REFERENCE 2)
- PROPERTY BOUNDARY (SEE REFERENCE 1)
- APPROXIMATE PRE-CLOSURE CCR LIMITS
- FINAL CLOSURE CCR LIMITS
- PERMIT BOUNDARY
- CROSS-SECTION LINES
- B-202 — LAW 1968 BORINGS (SEE REFERENCE 3)
- P-1 — P & W 1977 PIEZOMETERS (SEE REFERENCE 4)
- AP-1 — AT&E 1981 BORINGS (SEE REFERENCE 5)
- UPGRADIENT WELL (SEE REFERENCE 6)
- AP-1 MONITORING WELL (SEE REFERENCE 6)
- AP-2, 3/4 MONITORING WELL (SEE REFERENCE 6)
- PIEZOMETERS (SEE REFERENCE 6)
- GOLDER 2017 BORINGS (SEE REFERENCE 7)
- ABANDONED PIEZOMETER OR MONITORING WELL (SEE REFERENCE 6 AND NOTE 3)

NOTES

1. EXISTING TOPOGRAPHIC CONTOUR INTERVAL = 1 FOOT.

2. CLOSURE ACTIVITIES FOR AP-1 WERE INITIATED IN JANUARY 2016 AND FINAL COVER CONSTRUCTION ACTIVITIES WERE COMPLETED IN Q1 2017. COMPLETION OF FINAL POST COVER CONSTRUCTION ACTIVITIES AND IMPROVEMENTS INCLUDING A PLANNED BARRIER WALL AT AP-1 ARE EXPECTED BY 2023. CLOSURE ACTIVITIES FOR AP-2 WERE INITIATED IN JANUARY 2016. AP-2 CLOSURE ACTIVITIES CONSISTED OF CLOSURE BY REMOVAL OF CCR, WHERE CCR REMOVED FROM AP-2 WAS PLACED IN THE ADJACENT UNITS AP-1 AND AP-3. CLOSURE CONSTRUCTION ACTIVITIES AT AP-2 WERE COMPLETED IN Q1 OF 2017, AND BACKFILL DEVELOPMENT OF AP-2 WAS STARTED IN 2020 AND IS EXPECTED TO BE COMPLETE IN 2021. CLOSURE ACTIVITIES FOR AP-3 AND AP-4 WERE INITIATED IN JANUARY 2016. AP-3 AND AP-4 ARE CURRENTLY UNDERGOING CLOSURE AS COMBINED UNIT AP-3/4, AND CLOSURE CONSTRUCTION ACTIVITIES ARE EXPECTED TO BE COMPLETE IN 2021.

3. DGWA-70 AND B-27 ARE NOT USED AS MONITORING WELLS DUE TO WELL REPLACEMENT, PROXIMITY TO CLOSURE ACTIVITIES, OR MODIFICATIONS TO THE PROPOSED WELL NETWORK.

REFERENCES

1. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017).

2. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO, INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS 03-18-2018. REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET - DATE OF PHOTOGRAPHY 09-07-2018.

3. LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT (LAW, 1968).

4. PATTERSON & DEWAR ENGINEERS, PIEZOMETER INSTALLATION REPORT (P&W, 1977).

5. ATLANTA TESTING AND ENGINEERING, GEOTECHNICAL REPORT (AT&E, 1981).

6. SCS PLANT MCDONOUGH HYDROGEOLOGICAL INVESTIGATION (2012 TO 2020).

7. GOLDER ASSOCIATES, PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (2017).

8. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020.

0 300 600
1" = 300' FEET

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
1	2020/10/26	ISSUED FOR REV 0	DLP	CCP	LS	TIR

CLIENT
GEORGIA POWER COMPANY

Georgia Power

PROJECT
PLANT MCDONOUGH AP-1
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
SUBSURFACE PROFILE ORIENTATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020/10/26
DESIGNED	DLP
PREPARED	CCP
CHECKED	LS
REVIEWED / APPROVED	TIR

PROJECT NO. 166849618 | REV. 0 | FIGURE 3

Path: \\Atlanta\cadd\Southern Company\166849618 Plant McDonough Work Plan for ACM\AP1\Production\ | File Name: Geologic Cross Section Location Map.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

0 1 in

SW NE

UNNAMED CREEK
ASH POND 1 PERMIT BOUNDARY
ASH POND 1 PRE-CLOSURE CCR LIMITS
ASH POND 1 FINAL CLOSURE CCR LIMITS
ASH POND 1 PRE-CLOSURE CCR LIMITS
ASH POND 3/4 PRE-CLOSURE CCR LIMITS
ASH POND 3/4 FINAL CLOSURE CCR LIMITS
ASH PONDS 2, 3/4 PERMIT BOUNDARY
ASH POND 3/4 PRE-CLOSURE CCR LIMITS
ASH POND 3/4 FINAL CLOSURE CCR LIMITS
PROPOSED FINAL GRADE
SEE REFERENCES 1 AND 2
B-74 0'
B-68 -3'
DGWC-68A 0'
B-29 0'
B-28 0'
DGWC-22 0'
EXISTING CULVERT & CONCRETE ENCASEMENT
OZbs
MATCHLINE
ELEVATION (FEET)

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00

A - A'

LEGEND

- EXISTING GRADE (SEE REFERENCE 1 AND 2)
- ESTIMATED TOP OF ROCK SURFACE
- PROPOSED FINAL GRADE
- ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- ESTIMATED GROUNDWATER SURFACE (8-10-20)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE
- PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
- B-29 -144' — BORING ID; DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

REFERENCES

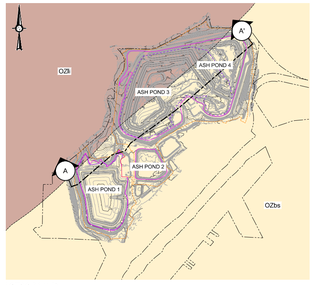
1. CLOSURE ACTIVITIES FOR AP-1 WERE INITIATED IN JANUARY 2016 AND FINAL COVER CONSTRUCTION ACTIVITIES WERE COMPLETED IN Q1 2017. COMPLETION OF FINAL POST COVER CONSTRUCTION ACTIVITIES AND IMPROVEMENTS INCLUDING A PLANNED BARRIER WALL AT AP-1 ARE EXPECTED BY 2023. CLOSURE ACTIVITIES FOR AP-2 WERE INITIATED IN JANUARY 2016. AP-2 CLOSURE ACTIVITIES CONSISTED OF CLOSURE BY REMOVAL OF CCR, WHERE CCR REMOVED FROM AP-2 WAS PLACED IN THE ADJACENT UNITS AP-1 AND AP-3. CLOSURE CONSTRUCTION ACTIVITIES AT AP-2 WERE COMPLETED IN Q1 OF 2017, AND BACKFILL DEVELOPMENT OF AP-2 WAS STARTED IN 2020 AND IS EXPECTED TO BE COMPLETE IN 2021. CLOSURE ACTIVITIES FOR AP-3 AND AP-4 WERE INITIATED IN JANUARY 2016. AP-3 AND AP-4 ARE CURRENTLY UNDERGOING CLOSURE AS COMBINED UNIT AP-3/4, AND CLOSURE CONSTRUCTION ACTIVITIES ARE EXPECTED TO BE COMPLETE IN 2021.

2. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO, INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS 03-18-2018. REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET.

3. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.

4. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.

5. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020.



KEY MAP

0 150 300
1" = 150' FEET
10X VERTICALLY EXAGGERATED

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
1	2020/10/26	ISSUED FOR REV 0	GLH	CCP	LS	GLH

CLIENT
GEORGIA POWER COMPANY

PROJECT
PLANT MCDONOUGH AP-1
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
GEOLOGIC CROSS-SECTION A-A'

CONSULTANT
GOLDER

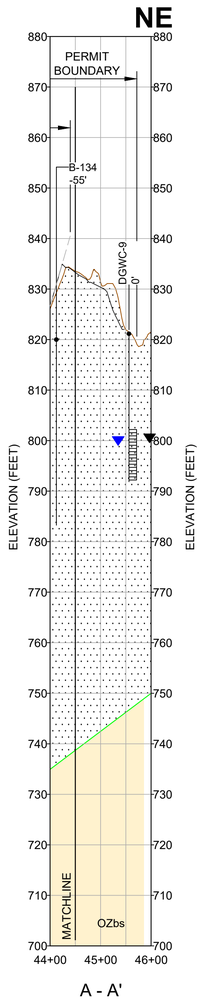
YYYY-MM-DD	2020/10/26
DESIGNED	GLH
PREPARED	CCP
CHECKED	LS
REVIEWED / APPROVED	GLH

PROJECT NO. 166849618 | REV. 0 | FIGURE 4

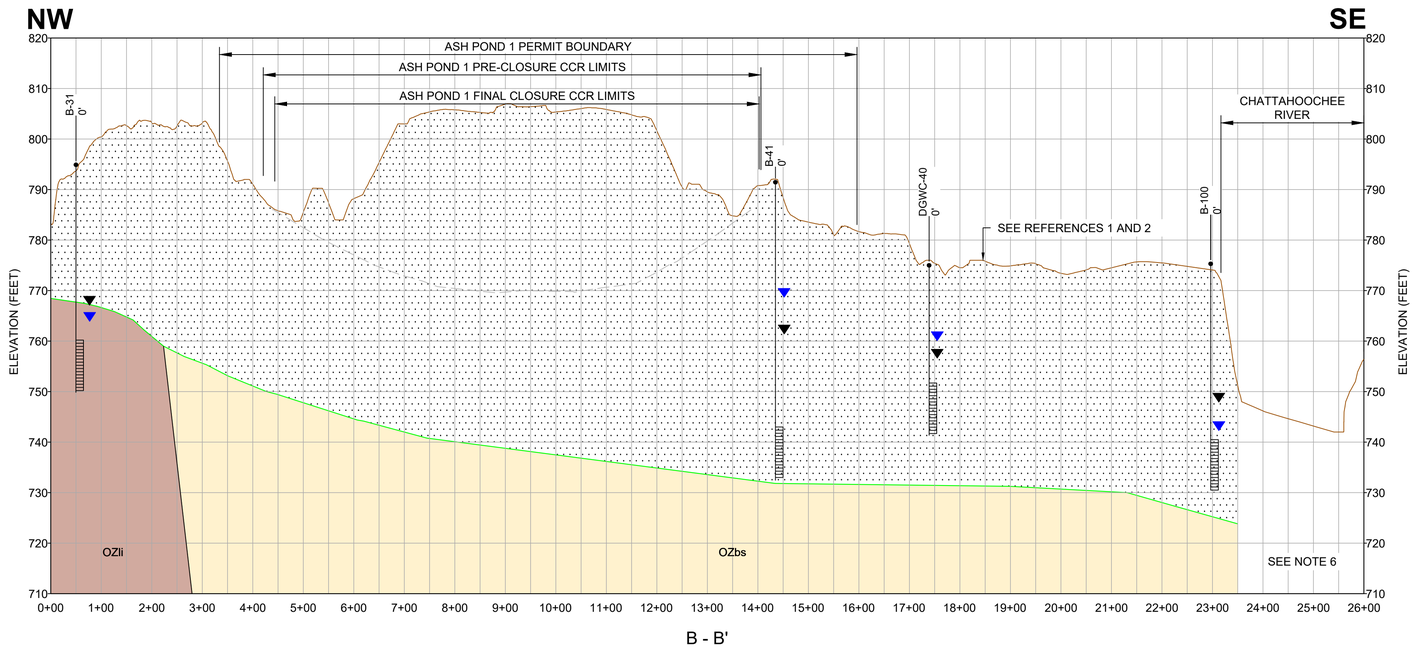
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0 1 in

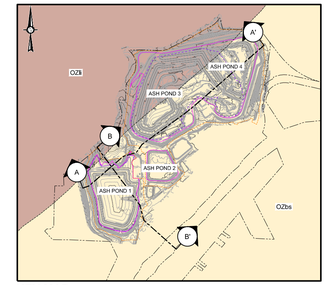
Path: \\Atlanta\cadd\southern company\166849618 plant mcdonough work plan for acm\AP1\production\ | File Name: GW-3 GEOLOGIC CROSS-SECTIONS A-B-C.dwg



A - A'



B - B'



KEY MAP

0 150 300
1" = 150' FEET
10X VERTICALLY EXAGGERATED

LEGEND

- EXISTING GRADE (SEE REFERENCE 1 AND 2)
- ESTIMATED TOP OF ROCK SURFACE
- PROPOSED FINAL GRADE
- ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
- ESTIMATED GROUNDWATER SURFACE (8-10-20)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE
- PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
- BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
- B-29 -144' — BORING ID; DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

REFERENCES

1. CLOSURE ACTIVITIES FOR AP-1 WERE INITIATED IN JANUARY 2016 AND FINAL COVER CONSTRUCTION ACTIVITIES WERE COMPLETED IN Q1 2017. COMPLETION OF FINAL POST COVER CONSTRUCTION ACTIVITIES AND IMPROVEMENTS INCLUDING A PLANNED BARRIER WALL AT AP-1 ARE EXPECTED BY 2023. CLOSURE ACTIVITIES FOR AP-2 WERE INITIATED IN JANUARY 2016. AP-2 CLOSURE ACTIVITIES CONSISTED OF CLOSURE BY REMOVAL OF CCR, WHERE CCR REMOVED FROM AP-2 WAS PLACED IN THE ADJACENT UNITS AP-1 AND AP-3. CLOSURE CONSTRUCTION ACTIVITIES AT AP-2 WERE COMPLETED IN Q1 OF 2017, AND BACKFILL DEVELOPMENT OF AP-2 WAS STARTED IN 2020 AND IS EXPECTED TO BE COMPLETE IN 2021. CLOSURE ACTIVITIES FOR AP-3 AND AP-4 WERE INITIATED IN JANUARY 2016. AP-3 AND AP-4 ARE CURRENTLY UNDERGOING CLOSURE AS COMBINED UNIT AP-3/4, AND CLOSURE CONSTRUCTION ACTIVITIES ARE EXPECTED TO BE COMPLETE IN 2021.

2. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO, INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS 03-18-2018. REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET.

3. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.

4. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.

5. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020.

6. SUBSURFACE GEOLOGIC DELINEATION INFORMATION DOES NOT EXIST IN THESE NON HATCHED AREAS.

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
0	2020/10/26	ISSUED FOR REV 0	GLH	CCP	LS	GLH

CLIENT
GEORGIA POWER COMPANY

PROJECT
PLANT MCDONOUGH AP-1
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
GEOLOGIC CROSS-SECTION B-B'

CONSULTANT
GOLDER

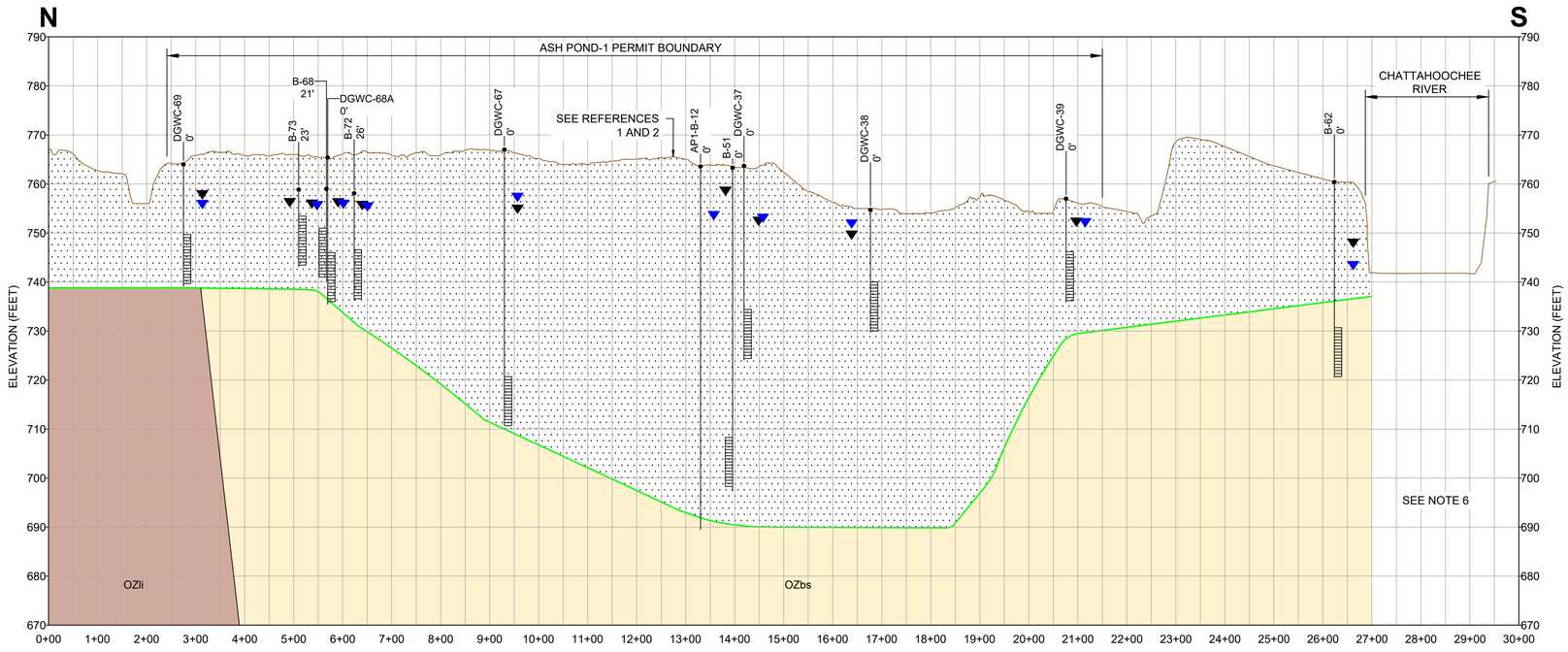
YYYY-MM-DD	2020/10/26
DESIGNED	GLH
PREPARED	CCP
CHECKED	LS
REVIEWED / APPROVED	GLH

PROJECT NO. 166849618 | REV. 0 | FIGURE 5

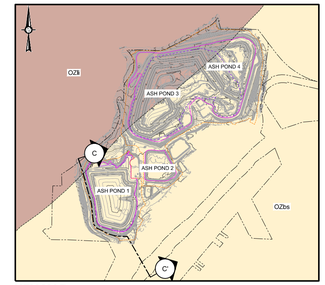
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

0 1 in

Path: \\Atlanta\cad\southern company\166849618 plant mcdonough work plan for acm\AP1\production\ | File Name: GW-3 GEOLOGIC CROSS-SECTIONS A-B-C.dwg



C - C'



KEY MAP

0 150 300
1" = 150' FEET
10X VERTICALLY EXAGGERATED

LEGEND

- EXISTING GRADE (SEE REFERENCE 1 AND 2)
- ESTIMATED TOP OF ROCK SURFACE
- ESTIMATED GROUNDWATER SURFACE (8-10-20)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE
- PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
- BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
- B-29 — BORING ID
- '-144' — DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

REFERENCES

1. CLOSURE ACTIVITIES FOR AP-1 WERE INITIATED IN JANUARY 2016 AND FINAL COVER CONSTRUCTION ACTIVITIES WERE COMPLETED IN Q1 2017. COMPLETION OF FINAL POST COVER CONSTRUCTION ACTIVITIES AND IMPROVEMENTS INCLUDING A PLANNED BARRIER WALL AT AP-1 ARE EXPECTED BY 2023. CLOSURE ACTIVITIES FOR AP-2 WERE INITIATED IN JANUARY 2016. AP-2 CLOSURE ACTIVITIES CONSISTED OF CLOSURE BY REMOVAL OF CCR, WHERE CCR REMOVED FROM AP-2 WAS PLACED IN THE ADJACENT UNITS AP-1 AND AP-3. CLOSURE CONSTRUCTION ACTIVITIES AT AP-2 WERE COMPLETED IN Q1 OF 2017, AND BACKFILL DEVELOPMENT OF AP-2 WAS STARTED IN 2020 AND IS EXPECTED TO BE COMPLETE IN 2021. CLOSURE ACTIVITIES FOR AP-3 AND AP-4 WERE INITIATED IN JANUARY 2016. AP-3 AND AP-4 ARE CURRENTLY UNDERGOING CLOSURE AS COMBINED UNIT AP-3/4, AND CLOSURE CONSTRUCTION ACTIVITIES ARE EXPECTED TO BE COMPLETE IN 2021.

2. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO, INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS 03-18-2018. REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET.

3. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.

4. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.

5. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020.

6. SUBSURFACE GEOLOGIC DELINEATION INFORMATION DOES NOT EXIST IN THESE NON HATCHED AREAS.

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
1	2020/10/26	ISSUED FOR REV 0	GLH	CCP	LS	GLH

CLIENT
GEORGIA POWER COMPANY

Georgia Power

PROJECT
PLANT MCDONOUGH AP-1
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
GEOLOGIC CROSS-SECTION C-C'

CONSULTANT

GOLDER

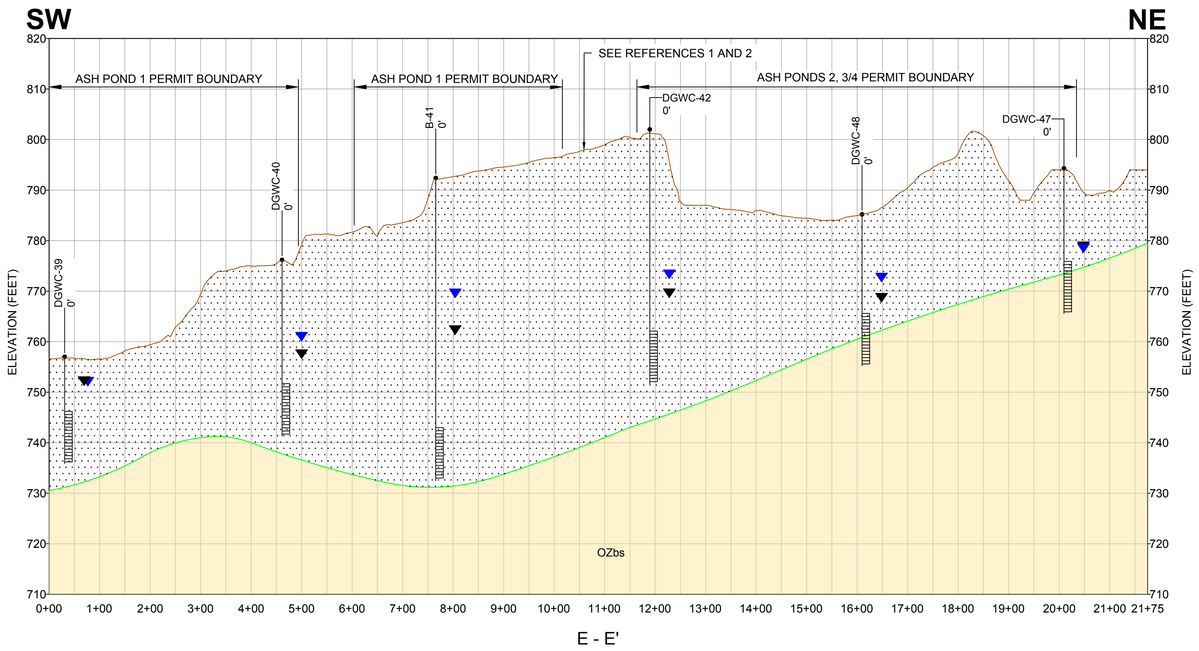
YYYY-MM-DD	2020/10/26
DESIGNED	GLH
PREPARED	CCP
CHECKED	LS
REVIEWED / APPROVED	GLH

PROJECT NO. 166849618 | REV. 0 | FIGURE 6

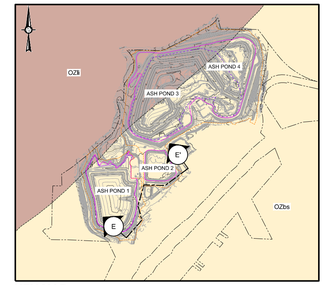
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

0 1 in

Path: \\Atlanta\cadd\southern company\166849618 plant mcdonough work plan for acm\AP1\production\ | File Name: GW-3 GEOLOGIC CROSS-SECTIONS A-B-C.dwg



E - E'



KEY MAP

0 150 300
1" = 150' FEET
10X VERTICALLY EXAGGERATED

LEGEND

- EXISTING GRADE (SEE REFERENCE 1 AND 2)
- ESTIMATED TOP OF ROCK SURFACE
- ESTIMATED GROUNDWATER SURFACE (8-10-20)
- PREDICTED POST-CLOSURE GROUNDWATER SURFACE
- PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
- OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)

B-29 '-144'
- BORING ID
- DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
- GROUND SURFACE ELEVATION
- SCREEN INTERNAL

REFERENCES

1. CLOSURE ACTIVITIES FOR AP-1 WERE INITIATED IN JANUARY 2016 AND FINAL COVER CONSTRUCTION ACTIVITIES WERE COMPLETED IN Q1 2017. COMPLETION OF FINAL POST COVER CONSTRUCTION ACTIVITIES AND IMPROVEMENTS INCLUDING A PLANNED BARRIER WALL AT AP-1 ARE EXPECTED BY 2023. CLOSURE ACTIVITIES FOR AP-2 WERE INITIATED IN JANUARY 2016. AP-2 CLOSURE ACTIVITIES CONSISTED OF CLOSURE BY REMOVAL OF CCR, WHERE CCR REMOVED FROM AP-2 WAS PLACED IN THE ADJACENT UNITS AP-1 AND AP-3. CLOSURE CONSTRUCTION ACTIVITIES AT AP-2 WERE COMPLETED IN Q1 OF 2017, AND BACKFILL DEVELOPMENT OF AP-2 WAS STARTED IN 2020 AND IS EXPECTED TO BE COMPLETE IN 2021. CLOSURE ACTIVITIES FOR AP-3 AND AP-4 WERE INITIATED IN JANUARY 2016. AP-3 AND AP-4 ARE CURRENTLY UNDERGOING CLOSURE AS COMBINED UNIT AP-3/4, AND CLOSURE CONSTRUCTION ACTIVITIES ARE EXPECTED TO BE COMPLETE IN 2021.

2. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA LAND DEPARTMENT AND METRO ENGINEERING AND SURVEYING CO, INC. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS 03-18-2018. REFER TO THE SURVEY DRAWING TITLED "TOPOGRAPHIC MAP PREPARED FOR GEORGIA POWER COMPANY PLANT MCDONOUGH - GEORGIA STATE PLANE WEST SURVEY FEET.

3. BORING/WELL/PIEZOMETER LOCATIONS AND ELEVATIONS PROVIDED BY SOUTHERN COMPANY SERVICES, INC. AND 1968 LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT.

4. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.

5. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020.

6. SUBSURFACE GEOLOGIC DELINEATION INFORMATION DOES NOT EXIST IN THESE NON HATCHED AREAS.

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
1	2020/10/30	ISSUED FOR REV 0	DLP	AVR	LS	TIR

CLIENT
GEORGIA POWER COMPANY

Georgia Power

PROJECT
PLANT MCDONOUGH AP-1
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
GEOLOGIC CROSS-SECTION E - E'

CONSULTANT

GOLDER

YYYY-MM-DD	2020/10/30
DESIGNED	DLP
PREPARED	AVR
CHECKED	LS
REVIEWED / APPROVED	TIR

PROJECT NO.

REV. 0

FIGURE 7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

0 1 in

Path: \\Atlanta\cadd\Southern Company\166848618 Plant McDonough Work Plan for ACM\AP1\Production\ | File Name: GW-3 GEOLOGIC CROSS-SECTIONS A-B-C.dwg



LEGEND

- PIEZOMETER
- AP-1 MONITORING WELL
- AP-2,3/4 MONITORING WELL
- UPGRADIENT WELL
- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (FT-NAVD)

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. GROUNDWATER ELEVATION MEAUSREMENTS OBTAINED JANUARY 14, 2020 BY GOLDER ASSOCIATES.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FEET-NAVD.
4. B-27, B-68, AND DGWA-70 ARE NOT USED AS MONITORING WELLS DUE TO WELL REPLACEMENT, PROXIMITY TO CLOSURE ACTIVITIES, OR MODIFICATIONS TO THE PROPOSED WELL NETWORK.
5. B-94 THROUGH B-98 WATER LEVELS NOT TAKEN DURING JANUARY 14TH, 2020 EVENT.

REFERENCE

1. AERIAL IMAGE DATED NOVEMBER 2018 FROM GOOGLE EARTH.
2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).
3. MONITORING WELL/PIEZOMETER LOCATIONS SURVEYED BY METRO ENGINEERING.

0 600 1,200

1 IN= 600 FT

CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH

PROJECT
PLANT MCDONOUGH AP-1
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
SITE POTENTIOMETRIC MAP
JANUARY 14, 2020

CONSULTANT
GOLDER

YYYY-MM-DD	2020-06-26
PREPARED	SEB
DESIGN	SEB
REVIEW	JRJ
APPROVED	TIR

PROJECT No. 166849618
Rev. 0
FIGURE 8

Path: Q:\GIS\Southern Company\166849618-SCS-Plant McDonough\Figures\SitePotentiometricMap_SEB_Jan2020.mxd

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



LEGEND

- PIEZOMETER
- AP-1 MONITORING WELL
- AP-2,3/4 MONITORING WELL
- UPGRADIENT WELL
- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (FT-NAVD)

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. GROUNDWATER ELEVATION MEAUSREMENTS OBTAINED SEPTEMBER 21, 2020 BY GOLDER ASSOCIATES.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FEET-NAVD.
4. B-27, B-68, AND DGWA-70 ARE NOT USED AS MONITORING WELLS DUE TO WELL REPLACEMENT, PROXIMITY TO CLOSURE ACTIVITIES, OR MODIFICATIONS TO THE PROPOSED WELL NETWORK.
5. B-72 THROUGH B-74 WATER LEVELS NOT TAKEN DURING SEPTEMBER 21ST, 2020 EVENT.
6. INTERSTITIAL WELLS GROUNDWATER ELEVATION DETERMINED USING TOPOGRAPHY.

REFERENCE

1. AERIAL IMAGE DATED NOVEMBER 2018 FROM GOOGLE EARTH.
2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).
3. MONITORING WELL/PIEZOMETER LOCATIONS SURVEYED BY METRO ENGINEERING.

0 600 1,200

1 IN= 600 FT

CLIENT
SOUTHERN COMPANY SERVICES, INC. PLANT MCDONOUGH

PROJECT
AP-1 PLANT MCDONOUGH
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
SITE POTENTIOMETRIC MAP
SEPTEMBER 21, 2020

CONSULTANT
GOLDER

YYYY-MM-DD	2020-09-21
PREPARED	SEB
DESIGN	SEB
REVIEW	BAS
REVIEWED/APPROVED	TIR

PROJECT No. 166849618
Rev. 0
FIGURE 9

Path: O:\GIS\Southern Company\166849618-SCS-Plant McDonough\figures\SitePotentiometricMap_SEB_Sept2020_WL.mxd

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



LEGEND

- PIEZOMETER
- AP-1 MONITORING WELL
- AP-2,3/4 MONITORING WELL
- UPGRADIENT WELL
- AP-1 SURFACE WATER
- AP-2,3/4 SURFACE WATER
- 0.0322 COBALT GWPS ISOCONTOUR (INFERRED)
- PROPERTY BOUNDARY
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (JAN 20)
- PERMIT BOUNDARY

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE

2. GOUNDWATER CONCENTRATIONS IN MILLIGRAMS PER LITER (MG/L). GWPS = GROUNDWATER PROTECTION STANDARD. RSL = (FEDERAL REGIONAL SCREENING LEVEL)

3. DATA SHOWN REPRESENT THE MARCH SEMI-ANNUAL MONITORING EVENT RESULTS AS WELL AS APPLICABLE DELINEATION WELL DATA.

4. GWPS IS EQUAL TO SITE SPECIFIC BACKGROUND CONCENTRATION AS THERE IS NO MCL AND THE RSL IS BELOW SITE SPECIFIC BACKGROUND

Analyte	Units	GWPS
Cobalt	mg/L	0.0322

REFERENCE

1. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY

2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).

3. MONITORING WELL/PIEZOMETER LOCATIONS SURVEYED BY METRO ENGINEERING

0 600 1,200

1 IN= 600 FT

CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH

PROJECT
PLANT MCDONOUGH AP-1
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
COBALT ISOCONCENTRATION CONTOUR MAP MARCH 2020

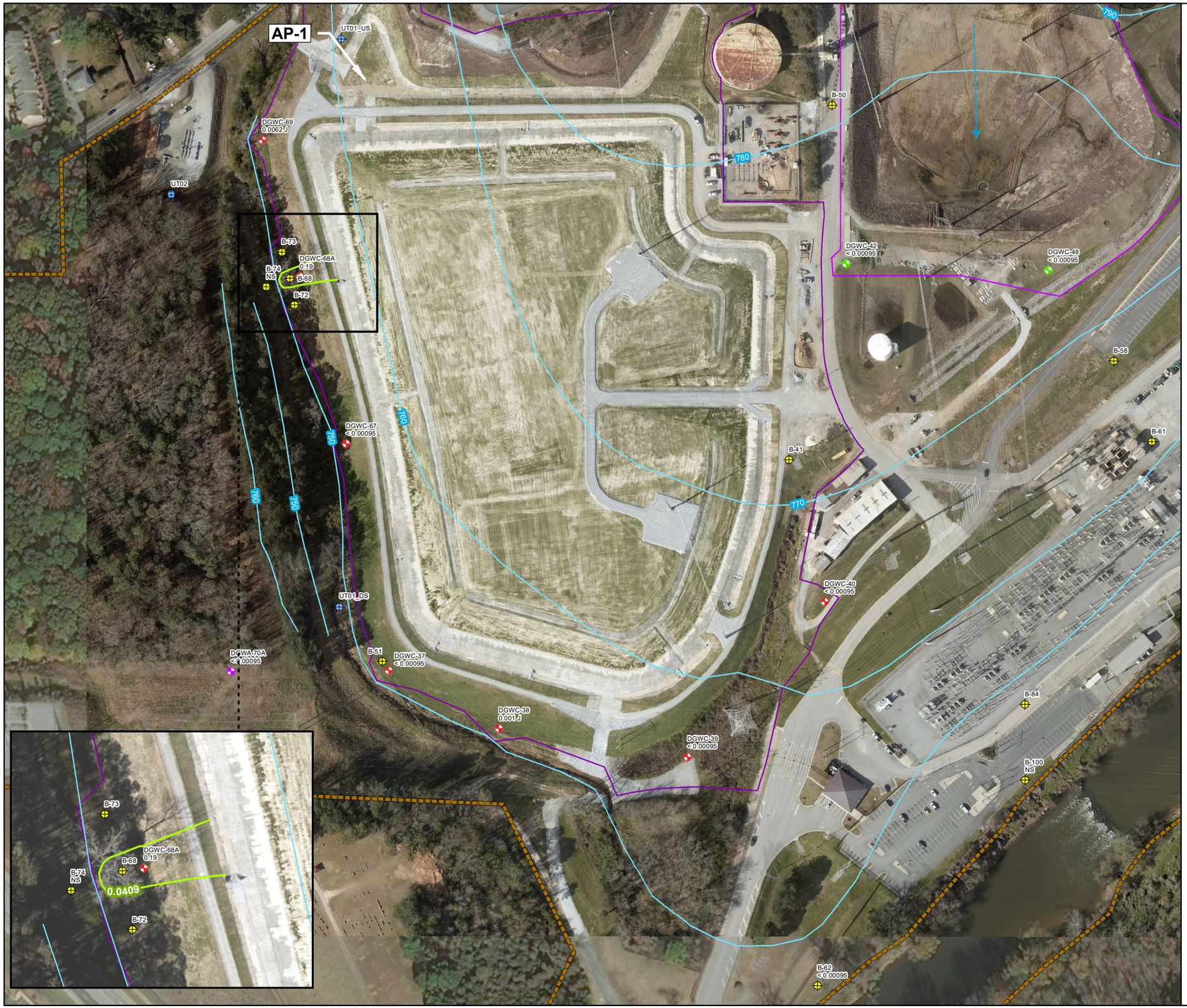
CONSULTANT
GOLDER

YYYY-MM-DD	2020-11-12
PREPARED	DJC
DESIGN	BAS
REVIEW	DLP
APPROVED	TIR

PROJECT No. 166849618
Rev. 0
FIGURE 10

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

Path: C:\Jarredoss\Golder Associates\166849\...\SCS Plant McDonough GW Cons Svcs GA - Project Files\90\0_Shapefiles\MXD\ACM Isoconcentration Maps\Figure 10 - AP1 Cobalt Isoconcentration Map March 2020.mxd



LEGEND

- PIEZOMETER
- AP-1 MONITORING WELL
- AP-2,3/4 MONITORING WELL
- UPGRADIENT WELL
- AP-1 SURFACE WATER
- AP-2,3/4 SURFACE WATER
- 0.0409 MOLYBDENUM GWPS ISOCONTOUR (INFERRED)
- PROPERTY BOUNDARY
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (JAN 20)
- PERMIT BOUNDARY

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE
2. GOUNDWATER CONCENTRATIONS IN MILLIGRAMS PER LITER (MG/L)
3. DATA SHOWN REPRESENT THE MARCH SEMI-ANNUAL MONITORING EVENT RESULTS AS WELL AS APPLICABLE DELINEATION WELL DATA.

Analyte	Units	FED GWPS	STATE GWPS
Molybdenum	mg/L	0.1	0.0409

REFERENCE

1. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY
2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).
3. MONITORING WELL/PIEZOMETER LOCATIONS SURVEYED BY METRO ENGINEERING

0 200 400

1 IN=200 FT

CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH

PROJECT
PLANT MCDONOUGH AP-1
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
MOLYBDENUM ISOCONCENTRATION CONTOUR MAP MARCH 2020

CONSULTANT
GOLDER

YYYY-MM-DD	2020-06-18
PREPARED	BAS
DESIGN	BAS
REVIEW	DLP
APPROVED	TIR

PROJECT No. 166849618
Rev. 1
FIGURE 11

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

Path: C:\Users\dcoss\Golder Associates\166849618, SCS Plant McDonough GW Cons Svcs GA - Project Files\600_SheetFiles\MXD\ACM Isoconcentration Maps\Figure 11 - AP-1 Molybdenum Isoconcentration Map March 2020.mxd



LEGEND

- PIEZOMETER
- AP-1 MONITORING WELL
- AP-2,3/4 MONITORING WELL
- UPGRADIENT WELL
- AP-1 SURFACE WATER
- AP-2,3/4 SURFACE WATER
- 0.0322 COBALT GWPS ISOCONTOUR (INFERRED)
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (SEPT 20)
- PROPERTY BOUNDARY
- PERMIT BOUNDARY

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE

2. GOUNDWATER CONCENTRATIONS IN MILLIGRAMS PER LITER (MG/L). GWPS = GROUNDWATER PROTECTION STANDARD. RSL = (FEDERAL REGIONAL SCREENING LEVEL)

3. DATA SHOWN REPRESENT THE SEPTEMBER SEMI-ANNUAL MONITORING EVENT RESULTS AS WELL AS APPLICABLE DELINEATION WELL DATA.

4. * SURFACE WATER QUALITY DATA, (AECOM NOVEMBER 2020).

5. GWPS IS EQUAL TO SITE SPECIFIC BACKGROUND

Analyte	Units	GWPS
Cobalt	mg/L	0.0322

REFERENCE

1. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY

2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).

3. MONITORING WELL/PIEZOMETER LOCATIONS SURVEYED BY METRO ENGINEERING

0 600 1,200

1 IN= 600 FT

CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH

PROJECT
PLANT MCDONOUGH AP-1
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
COBALT ISOCONCENTRATION CONTOUR MAP
SEPTEMBER 2020

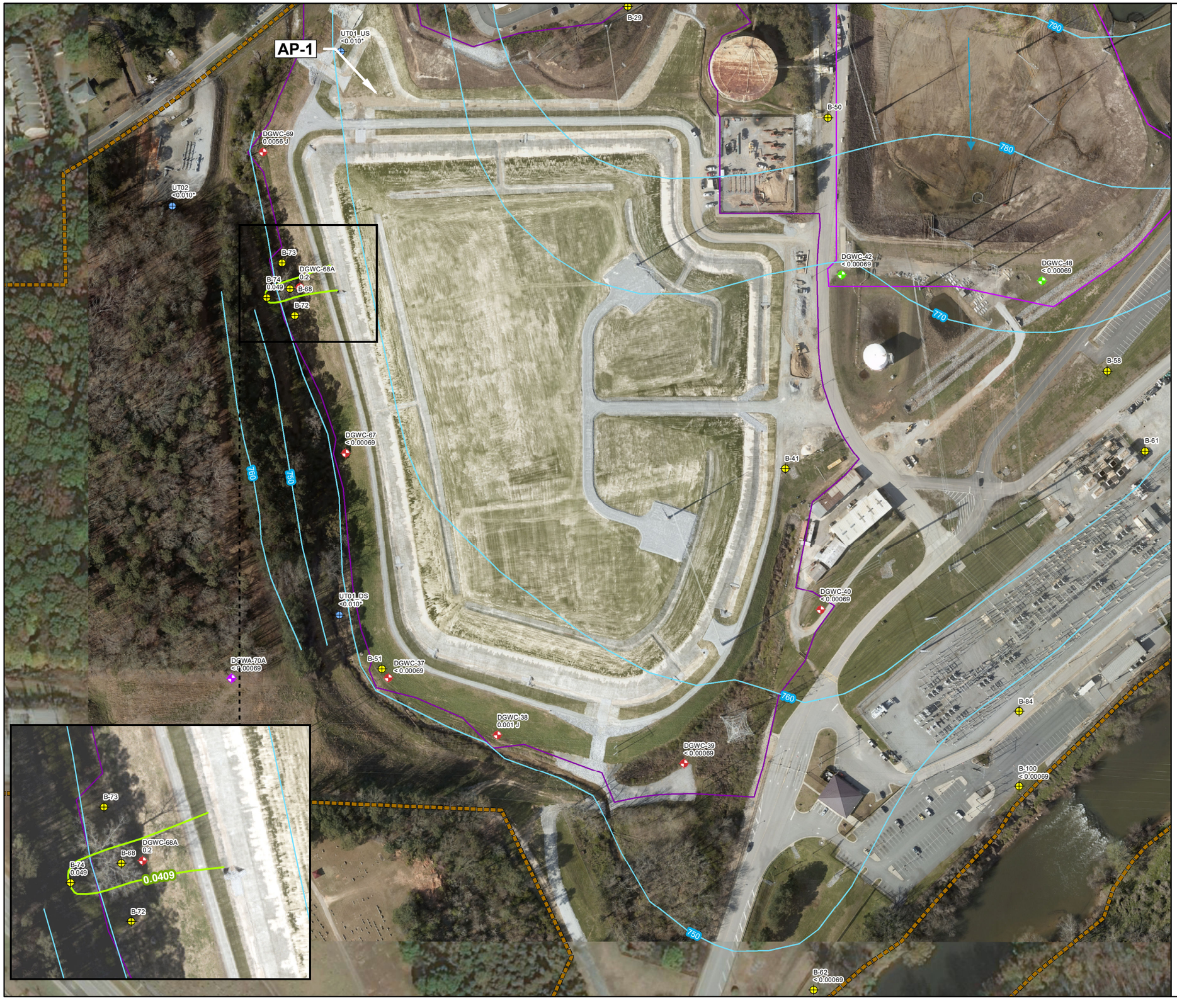
CONSULTANT
GOLDER

YYYY-MM-DD	2020-11-12
PREPARED	DJC
DESIGN	BAS
REVIEW	DLP
APPROVED	TIR

PROJECT No. 166849618
Rev. 0
FIGURE 12

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

Path: C:\Users\dcoss\Golder Associates\166849618, SCS Plant McDonough GW Cons Svcs GA - Project Files\600_Shapefiles\MXD\ACM Isoconcentration Maps\Figure 12 - AP-1 Cobalt Isoconcentration Map September 2020.mxd



LEGEND

- PIEZOMETER
- AP-1 MONITORING WELL
- AP-2,3/4 MONITORING WELL
- UPGRADIENT WELL
- AP-1 SURFACE WATER
- AP-2,3/4 SURFACE WATER
- 0.0409 MOLYBDENUM GWPS ISOCONTOUR (INFERRED)
- PROPERTY BOUNDARY
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (SEPT 20)
- PERMIT BOUNDARY

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE
2. GOUNDWATER CONCENTRATIONS IN MILLIGRAMS PER LITER (MG/L)
3. REPORTED CONCENTRATIONS AT DETECTION MONITORING WELLS ARE REPRESENTATIVE OF THE SEPTEMBER 2020 SAMPLING EVENT IN 2020. B-3 CONCETRATIONS FROM AUGUST 2020 SAMPLING EVENT.
4. * SURFACE WATER QUALITY DATA, (AECOM, NOVEMBER 2020).
5. GWPS IS EQUAL TO SITE SPECIFIC BACKGROUND

Analyte	Units	FED GWPS	STATE GWPS
Molybdenum	mg/L	0.1	0.0409

REFERENCE

1. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY
2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).
3. MONITORING WELL/PIEZOMETER LOCATIONS SURVEYED BY METRO ENGINEERING

0 200 400

1 IN=200 FT

CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH

PROJECT
PLANT MCDONOUGH AP-1
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
MOLYBDENUM ISOCONCENTRATION CONTOUR MAP SEPTEMBER 2020

CONSULTANT
GOLDER

YYYY-MM-DD	2020-11-11
PREPARED	BAS
DESIGN	DJC
REVIEW	DLP
APPROVED	TIR

PROJECT No. 166849618
Rev. 0
FIGURE 13

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

Path: C:\Users\dcoss\Golder Associates\166849\6_SCS Plant McDonough GW Cons Svcs GA - Project Files\6\0_Shapefiles\MXD\ACM Isoconcentration Maps\Figure 13 - AP-1 Molybdenum Isoconcentration Map September 2020.mxd

APPENDIX A

Risk Evaluation Report

RISK EVALUATION REPORT
PLANT MCDONOUGH
ASH POND 1
COBB COUNTY, GEORGIA

Prepared for

Georgia Power
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Atlanta, Georgia 30308

Prepared by

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Project Number 6123-20-1473

December 2020

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LIST OF ACRONYMS AND ABBREVIATIONS

AP	Ash Pond
CCR	Coal Combustion Residual
CEM	Conceptual Exposure Model
CFR	Code of Federal Regulations
COI	Constituent of Interest
COPI	Constituent of Potential Interest
EPC	Exposure Point Concentration
EPD	[Georgia] Environmental Protection Division
GWPS	Groundwater Protection Standard
HUC	Hydrologic Unit Code
ISWQC	In-stream Water Quality Criteria
MCL	Maximum Contaminant Level
NAWQC	National Ambient Water Quality Criteria
HSRA	Hazardous Site Response Act
mg/L	Milligrams per liter
ProUCL	ProUCL software version 5.1
PWR	partially weathered rock
RRS	Risk Reduction Standards
RSL	Regional Screening Level
SPT	Standard Penetration Test
SSL	Statistically Significant Level
UCL	95 Percent Upper Confidence Limit of the Arithmetic Mean
USEPA	United States Environmental Protection Agency
VRP	Voluntary Remediation Program

EXECUTIVE SUMMARY

Georgia Power's Plant McDonough-Atkinson (Plant McDonough) (site) is a former coal-fired, electric-generating facility located in southeast Cobb County, Georgia, approximately seven miles northwest of Atlanta. The site occupies approximately 390 acres and is bounded on the southeast by the Chattahoochee River. Georgia Power retired its coal-fired units at Plant McDonough-Atkinson in 2011 and began commercial operation of three natural gas combined cycle units in 2012. In compliance with applicable regulations, coal combustion residual (CCR) material resulting from power generation has historically been stored at the site in four surface impoundments: ash ponds (AP) AP-1, AP-2, AP-3, and AP-4. This report focuses on AP-1.

Georgia Power is closing AP-1 in place with an anticipated completion date of 2021, in accordance with the Federal CCR Rule, 40 Code of Federal Regulations (CFR) Part 257 Subpart D - Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments[1] and the State CCR Rule, Georgia Environmental Protection Division (EPD) Coal Combustion Residuals, Rule 391-3-4-.10. A permanent cover consisting of an engineered cover system designed to minimize infiltration and erosion was substantially constructed in 2016 through 2017. Semi-annual groundwater monitoring and reporting are ongoing per Federal and State CCR Rules.

This report presents the results of a human health risk evaluation for CCR constituents[2] that exhibit statistically significant levels (SSLs) in groundwater at the site (cobalt and molybdenum) and the supporting human health and ecological risk evaluation for the adjacent downgradient surface water bodies, an engineered stream channel (referred to as an unnamed tributary) and the Chattahoochee River. A conservative, health-protective approach was used that is consistent with United States Environmental Protection Agency (USEPA) risk assessment guidance, Georgia EPD regulations and guidance, and standard practice for risk assessment in the State of Georgia. Using the groundwater protection standards (GWPS) established for AP-1 according to the Federal and State CCR Rules, cobalt and molybdenum were previously identified as both federal and state SSL-related constituents (Golder, 2020a). The risk evaluation relies on recent (2016 through March

[1] The full citation for the Federal CCR Rule is: 40 C.F.R. § 257, Subpart D – *Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments*. The rule was finalized with an effective date of October 14, 2015 and last amended August 28, 2020 with an effective date of September 28, 2020 (USEPA, 2020a).

[2] The constituents included in the risk evaluation also occur naturally in the site geologic setting.

2020) groundwater data collected by Georgia Power in compliance with the Federal and State CCR Rules.

Consistent with USEPA guidance, this risk evaluation used a tiered approach to evaluate potential risks, which included the following steps:

1. Development of a conceptual exposure model (CEM) for AP-1.
2. Initial groundwater risk screening: Comparison of groundwater concentrations for SSL-related constituents (cobalt and molybdenum) to conservative, health-protective criteria and/or background concentrations to assess whether constituents pose a risk to human health.
3. Refined groundwater risk evaluation: Performance of a more refined analysis for Constituents of Potential Interest (COPIs) that were not excluded in the initial risk screening in order to evaluate the potential risks for hypothetical off-site residential receptors exposed to groundwater.
4. Surface water screening: Comparison of surface water concentrations for those constituents identified as groundwater constituents of interest (COIs) to conservative, health-protective criteria to assess whether those constituents pose a risk to human health and/or the environment as an additional line of evidence.
5. Development of risk conclusions and identification of associated uncertainties.

Using this approach that includes multiple conservative assumptions, cobalt and molybdenum are not expected to pose a risk to human health or the environment. Accordingly, no further risk evaluation of groundwater and surface water is warranted. Compliance monitoring for AP-1 under the Federal and State CCR Rules will continue with the additional recommended piezometer sampling for two consecutive events as discussed herein. Georgia Power will proactively evaluate the data and update this evaluation, if necessary.

1 INTRODUCTION

This report summarizes a risk evaluation of AP-1, located at Georgia Power Plant McDonough in Cobb County, Georgia (**Figure 1**). AP-1 is being closed in place with an engineered cover system in accordance with the Federal CCR Rule (USEPA, 2020a) and the State CCR Rule (EPD, 2018a).

This risk evaluation provides additional technical review of the human health and environmental protectiveness associated with the closure of AP-1 with respect to constituent concentrations in groundwater identified at SSLs above GWPS. The evaluation relies on a conservative, health-protective approach that is consistent with the risk approaches outlined in Voluntary Remediation Program (VRP) (Georgia Voluntary Remediation Act, OCGA §12-8-100) (EPD, 2009) and USEPA Regional Screening Levels (RSLs) User's Guide (USEPA, 2020b). This evaluation also incorporated principles and assumptions consistent with the Federal and State CCR Rules.

The risk evaluation includes the development of a site-specific CEM and a stepwise risk screening process for identified SSL-related constituents for AP-1. Cobalt and molybdenum were previously identified as federal and state SSL-related constituents[3] in certain wells (**Figure 2**) using the GWPS established for AP-1 according to the Federal and State CCR Rules (Golder, 2020a). Cobalt was identified as an SSL-related constituent in well DGWC-40. Molybdenum was identified as an SSL-related constituent in well DGWC-68A. Based on the results of the risk evaluation for these SSL-related constituents, a site-specific recommended path forward is provided.

The remainder of the report is organized as follows:

- ***Section 2, Basis and Background for the Development of the Conceptual Exposure Model*** – Presents site-specific information related to the site history, monitoring network, topography and surface hydrology, geology and hydrogeology, potential transport pathways, and receptors that could potentially be exposed to SSL-related constituents.

[3] A state SSL-related constituent is determined by comparing the confidence intervals developed to either the constituent's MCL, if available, or the calculated background interwell prediction limit. A federal SSL-related constituent is determined by comparing the confidence intervals developed to either the constituent's MCL, if available, the USEPA RSL, if no MCL is available, or the calculated background interwell prediction limit.

- ***Section 3, Risk Evaluation Screening*** – Describes the process for the initial risk-based screening of SSL-related constituents to identify COPIs in groundwater.

- ***Section 4, Refined Risk Evaluation*** – Describes the risk screening process for the groundwater COPIs, including calculation of exposure point concentrations (EPCs) and analysis of concentration trends over time, as well as the risk screening process for those constituents evaluated in surface water in the adjacent downgradient surface water bodies.

- ***Section 5, Uncertainty Assessment*** – Describes the uncertainties associated with the risk screening process.

- ***Section 6, Conclusions*** – Presents the conclusions of the risk evaluation.

- ***Section 7, References*** – Provides reference information for the sources cited in this document.

2 BASIS AND BACKGROUND FOR THE DEVELOPMENT OF THE CONCEPTUAL EXPOSURE MODEL

This section provides a brief overview of the site location and operational history, site regulatory status, and geology/hydrogeology.

A CEM representing the site-specific processes and conditions that are relevant to the potential migration of groundwater and potential exposure to SSL-related constituents has been developed based on a review and compilation of information previously presented in Plant McDonough AP-1 documents, including the *2020 Annual Groundwater Monitoring and Corrective Action Report* for AP-1 (Golder, 2020b) and the *Geological and Hydrogeological Report-REV 01 – Plant McDonough-Atkinston CCR Unit AP-1, CCR Unit AP-2, Combined CCR Unit AP-3/4* (Golder, 2020c). The CEM includes a conservative evaluation of potential exposure pathways and potential human and ecological receptors.

2.1 Site Description

Plant McDonough is located approximately seven miles northwest of Atlanta in southeast Cobb County. The site occupies approximately 390 acres and is bounded on the southeast by the Chattahoochee River and on the southwest by an unnamed tributary of the Chattahoochee River (**Figure 1**). Plant McDonough was once a coal-fired power generating facility, but was converted to natural gas combined-cycle power generating facility in 2011. Four CCR surface impoundments are located at Plant McDonough: AP-1, AP-2, AP-3, and AP-4. This report documents the risk evaluation performed for AP-1.

AP-1 is being closed in place. CCR grading and consolidation began in February 2016 and was completed in March 2017. The final cover system consists of a Subtitle D compliant engineered turf system for the closure cap, designed to minimize infiltration and erosion and to meet or exceed Federal CCR Rule requirements of 40 CFR §257.102(d)(3)(ii)) (USEPA, 2020a; Georgia Power Company, 2019).

Semi-annual groundwater monitoring and reporting for AP-1 is performed in accordance with the monitoring program requirements of the Georgia EPD Solid Waste Management Program, Rule 391-3-4. In accordance with 40 CFR §257.91, a groundwater monitoring network was installed at AP-1 in the uppermost aquifer to monitor groundwater quality both upgradient and downgradient of AP-1. The AP-1 certified monitoring well network consists of 3 upgradient monitoring wells and 7 downgradient monitoring wells.

Additionally, piezometers were installed for water level measurements and/or non-routine sample collection. The locations of the certified compliance well network and the piezometers are provided on **Figure 2**.

2.1.1 Topography and Surface Hydrology

The site is located within the Piedmont Physiographic Province of central Georgia, which is characterized by gently rolling hills and narrow valleys, with locally pronounced linear ridges. Overall, the property slopes gently south towards the Chattahoochee River (Golder, 2020c).

AP-1 is located within the Proctor Creek-Chattahoochee River Watershed (Hydrologic Unit Code [HUC]-12-031300020101). The watershed encompasses 15,229 acres and is part of the larger Middle Chattahoochee – Lake Harding Watershed (HUC 12 – 0313002).

AP-1 is located in the western limits of the site on ground topographically sloped downward to the southwest, creating an impoundment via side hill embankments constructed along the southern portions of AP-1 that tie into higher natural ground in the northeast quadrant of AP-1. A small unnamed creek originally flowed through the footprint of the current AP-1 area, and was rerouted into an engineered stream channel that now flows parallel and adjacent to the western and southern boundary of AP-1 towards the Chattahoochee River (Golder, 2018). This engineered stream channel (referred to as "unnamed tributary") abuts the site to the southwest and discharges to the Chattahoochee River. The Chattahoochee River abuts the site to the southeast.

2.1.2 Geology and Hydrogeology

The geologic and hydrogeologic characteristics of the site have been extensively evaluated and compiled in previous reports. The following presents a brief summary of this information from the *2020 Annual Groundwater Monitoring and Corrective Action Report* (Golder, 2020b):

> *The site is located in the Piedmont/Blue Ridge geologic province, which contains some of the oldest rock formations in the southeastern United States. These late Precambrian to late Paleozoic rocks have undergone repeated cycles of igneous intrusions and extrusions, metamorphism, folding, faulting, shearing, and silicification. Rock outcrops near the site consist of biotite gneiss, porphyritic gneiss, mica schist, and quartzite.*
>
> *Residual soils, primarily clayey/sandy silt, sandy silt with clay, and silty sand, occur as a variably-thick blanket overlying bedrock across most of the site.*

These residual saprolitic soils along with saprolitic transitionally or partially weathered rock, collectively the overburden, range between approximately 9 to 61 feet in thickness across the site, with an average thickness of approximately 38 feet. Saprolitic rock is considered to be transitionally weathered rock or partially weathered rock (PWR). PWR is defined by Standard Penetration Test (SPT) blow counts that exceed 50 blows/six inches.

A regional, unconfined surficial aquifer system is present at the site, existing within the overburden and weathered and fractured upper bedrock (e.g., approximately the first 30 feet), depending on topographic location. Recharge primarily occurs through precipitation and subsequent infiltration. Generally, groundwater flow occurs through intergranular pore spaces in the overburden and is controlled by topography and top of rock variations. However, a relatively higher transmissive zone is interpreted to occur at the base of the overburden, at the interface of weathered bedrock and competent bedrock and is believed to be the primary groundwater flow path. The overburden has an average horizontal hydraulic conductivity of 10^{-4} centimeters per second (cm/s) and is interpreted to flow south-southeast.

A limited and localized bedrock aquifer system also occurs beneath the site. The upper bedrock is fractured and weathered, connected hydraulically with the overburden groundwater, and is considered part of the uppermost aquifer. The overlying silt/clay-rich overburden may act to retard recharge into the bedrock aquifer system. However, deeper bedrock (i.e., approximately greater than 30 feet into the bedrock) is unweathered with few discontinuities (e.g., fractures) available to store groundwater.

The potentiometric surface elevation contours for January 2020 are presented in **Figure 3**. The general direction of groundwater flow across AP-1 is west-southwest.

2.2 Potential Transport Pathways

A variety of geologic, hydrogeologic, and geochemical mechanisms can occur in the subsurface and serve to attenuate constituent concentrations in groundwater such as soil or rock characteristics, the local geology and hydrogeology, and the distance the groundwater must travel before reaching a potential receptor. A summary of potential transport pathways is shown on the CEM in **Figure 4.**

A conservative assumption for this assessment was made that the groundwater from the site flows to the downgradient surface water bodies. An unnamed tributary flows to the

south, parallel and adjacent to the western and southern boundary of AP-1, and into the Chattahoochee River. The Chattahoochee River flows to the south/southwest (Figure 2). In addition, for the purposes of this evaluation, the Chattahoochee River is assumed to represent a regional hydraulic discharge boundary for groundwater flow in the upper aquifer from the nearby region.

2.3 Potential Exposure Pathways and Receptors

The exposure pathways for groundwater and surface water, assumed to be complete as a conservative measure for the purposes of this risk evaluation, were used to identify potential receptors and estimate potential risk. The CEM (**Figure 4)** depicts the assumed potential exposure pathways and receptors included in the risk evaluation.

The following potential exposure pathways and receptors were considered:

- On-site industrial worker: The groundwater exposure pathway for the on-site industrial worker was considered incomplete because there are no wells on-site that are classified for use as potable wells.

- On-site construction worker: While there is a potential for limited exposure to groundwater by a future construction worker through dermal contact with on-site shallow groundwater during subsurface activities, future construction workers would be expected to have little to no direct contact with on-site groundwater due to safety procedures outlined in their site-specific health and safety plans.

- On-site resident: The groundwater exposure pathway for the on-site resident was considered incomplete because there is no residential use on-site under current site conditions and future residential use of the site is considered unlikely. Property in the vicinity of the site is predominantly zoned Residential with the exception of some Light Industrial and General Commercial zoning adjacent to the north and east of the site (Cobb County, 2020). Beyond the Chattahoochee River to the southeast, land use is predominantly zoned Industrial with some Residential land use beyond (Fulton County, 2020).

- Off-site industrial/construction worker: The potential for off-site worker exposure through direct contact with groundwater was addressed through the evaluation of hypothetical off-site residential receptors. Health-protective screening levels for residential receptors would be more conservative than industrial and construction worker screening levels.

- Off-site resident: The groundwater exposure pathway for hypothetical off-site residential receptors was assumed potentially complete. An off-site well survey of potential groundwater wells within a three-mile radius of AP-1 was conducted and consisted of reviewing Federal, State, and County records and online sources, in addition to conducting a windshield survey of the area (Newfields, 2020). The off-site well survey results are included as **Appendix A**. Results of the survey are presented on **Figure 5**. Combining well information from all sources with parcel data, 48 possible wells were identified; 18 may be active or former drinking water wells. None of these wells are located downgradient of the site as the Chattahoochee River is assumed to represent a regional hydraulic discharge boundary for groundwater flow in the upper aquifer from the nearby region.

  No public wells were identified within the three-mile radius. Municipal water is available throughout the area. The surface water intake for the City of Atlanta is located upstream and across the Chattahoochee River, 0.85 miles to the east of Plant McDonough. Use of surface water within three miles downgradient of the site as a source of potable drinking water is an incomplete exposure pathway; therefore, drinking water exposure assumptions for surface water do not apply.

  SSL-related constituents in on-site groundwater monitoring wells either were delineated in on-site groundwater to concentrations below background (i.e., cobalt) or were detected below health-protective screening criteria (i.e., molybdenum) in adjacent downgradient surface water (i.e., an unnamed tributary to the Chattahoochee River and Chattahoochee River). As a conservative measure, potential off-site residential exposure to SSL-related constituents was evaluated using on-site groundwater wells around the perimeter and downgradient of AP-1. This comparison makes the conservative assumption that on-site groundwater may potentially migrate to off-site drinking water wells, through advective transport in groundwater without any attenuation within the aquifer media through factors such as dilution, dispersion, or adsorption. The risk evaluation screening conservatively assumed that hypothetical off-site residential receptors could be exposed to the concentrations of SSL-related constituents in groundwater through its use as a potable water supply by ingestion and dermal contact with groundwater.

- Off-site recreational surface water receptors: The surface water exposure pathway for recreational receptors was assumed potentially complete. Routes of exposure include ingestion of aquatic organisms (mainly fish) and potential incidental

ingestion and dermal contact with surface water by adult and child recreational receptors. (i.e., unnamed tributary and Chattahoochee River).

- Off-site ecological surface water receptors: The surface water exposure pathway for potential off-site ecological receptors was assumed potentially complete. Potential routes of exposure include direct contact to surface water by aquatic receptors as well as ingestion.

3 RISK EVALUATION SCREENING

The CEM developed in Section 2 was used to identify the potentially complete exposure pathways to human and ecological receptors that are considered in the risk evaluation. The initial step in the risk evaluation is the comparison of SSL-related constituent concentrations in groundwater to health-protective levels for potentially complete exposure pathways. The approach used is consistent with the Georgia EPD regulations and guidance, USEPA guidance, and standard practice for risk assessment in the State of Georgia. The Georgia EPD allows for the site-specific evaluation of risk in programs such as the Voluntary Remediation Program (EPD, 2009).

The initial risk evaluation screening was performed for the potential groundwater exposure pathway by comparing the concentrations of on-site groundwater wells determined to have SSL-related constituents to appropriate health-protective screening criteria or background. These criteria included the risk reduction standards (RRS) established in accordance with the Hazardous Site Response Act (HSRA) for drinking water and site-specific background for the protection of human health. If the maximum concentration of a SSL-related constituent exceeded the screening criterion, the constituent was identified as a COPI for further evaluation in the refined risk evaluation. The methodology and screening criteria used were identified in accordance with regulatory guidance and standard risk assessment practices using an approach designed to conservatively estimate possible exposures and risks, providing an additional level of confidence in the conclusions. The methodology is summarized on **Figure 6** and discussed in more detail below.

3.1 Data Used in Risk Evaluation Screening

This section provides information on the groundwater dataset used in the risk evaluation screening.

3.1.1 Groundwater Data

For the initial risk screening evaluation, groundwater data from samples collected between 2016 and March 2020 from the on-site wells that were identified to have constituents with SSLs were used in the risk screening evaluation for hypothetical off-site residential exposure. The wells that were previously identifed to have SSL-related constituents under the Federal and State CCR Rules included well DGWC-40 for cobalt and well DGWC-68A for molybdenum. Data for these SSL-related constituents from the wells listed above were screened against relevant health-protective screening criteria or background.

The wells with SSL-related constituents are depicted on **Figure 2** and the groundwater dataset used in the risk evaluation is presented in **Appendix B-1.** Method detection limits for the groundwater datasets used in the risk evaluation were reviewed and confirmed to be less than the screening levels.

3.1.2 Background Groundwater Quality

Statistical analysis of groundwater monitoring data is performed at Plant McDonough pursuant to §257.93-95 following the professional engineer-certified Statistical Analysis Method Certification (Rev 01, amended January 2020) (Golder, 2020d) and the Unified Guidance (USEPA, 2009) for AP-1; background values are routinely updated under the program. Three monitoring wells in the certified monitoring well network are designated as upgradient or background locations, including DGWA-53, DGWA-70A, and DGWA-71. Statistical analyses were performed on the groundwater data using Sanitas groundwater statistical software, as described the *2020 Annual Groundwater Monitoring & Corrective Action Report* (Golder, 2020b), as presented below:

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

Naturally occurring or site-specific background concentrations can exceed health-protective screening criteria. Therefore, site-specific background values were used as the groundwater screening values where such background concentrations were identified as greater than the groundwater screening values (i.e., cobalt), as further described in Section 3.2.

3.2 Groundwater Screening Evaluation

The process of screening SSL-related constituents in groundwater against human health screening levels for groundwater is discussed below and presented in **Figure 6**. The HSRA RRS evaluated under the VRP approach presented herein included Type 1 and Type 2

standards for residential receptors. The Hazardous Site Response Act, Rule 391-3-19.07(1) notes that "*[a]ll risk reduction standards will, when implemented, provide adequate protection of human health and the environment*". In addition, Rule 391-3-19.07(3) notes a corrective action, if needed, may be considered complete when "*a site meets any or a combination of the applicable risk reduction standards described in Rule 391-3-19-.07".*

In accordance with standard practice and methodologies approved by the Georgia EPD, the screening level hierarchy for the SSL-related constituents as follows:

- The higher of the Type 1 and Type 2 RRS for hypothetical off-site residential exposures, which are considered protective of human health for those constituents regulated under HSRA. The calculation of risk-based groundwater RRS for residential receptors is presented in **Appendix C**.

- A site-specific screening level was used for molybdenum. Site-specific screening levels are calculated for those chemical constituents like molybdenum that do not have RRS under HSRA using residential exposure assumptions consistent with the HSRA rules (EPD, 2018b). The site-specific screening level for molybdenum is equivalent to the USEPA tapwater RSL. The screening level for molybdenum is essentially a Type 2 RRS calculated at a target hazard quotient of 1, consistent with Georgia EPD guidance, and has been adopted by USEPA as the risk-based level for the Federal CCR Rule (USEPA, 2020a). The calculation of risk-based groundwater RRS for residential receptors is presented in **Appendix C**.

- As the background concentration for cobalt is higher at the site than the criteria described above, it was used as the screening level for this evaluation in accordance with the CCR methodology for development of groundwater protection standards (USEPA, 2020a).

Groundwater data collected from the wells identified to have SSL-related constituents were compared to residential screening criteria in order to protect hypothetical off-site receptors. Concentrations of SSL-related constituents were compared to the higher of the HSRA Type 1 RRS, Type 2 RRS, site-specific, and background values for groundwater pursuant to standard practice for risk assessment within the State of Georgia.

Table 1 presents the maximum detected concentration of each SSL-related constituent, which was used to represent potential off-site groundwater quality for comparison to the selected screening levels for hypothetical off-site residential receptors (health- or

background-based). The maximum detected cobalt concentration of 0.055 mg/L and molybdenum concentration of 0.28 mg/L exceeded the respective screening levels of 0.032 mg/L and 0.10 mg/L, were identified as COPIs, and were retained for further evaluation in the refined risk evaluation.

4 REFINED RISK EVALUATION

A refined risk evaluation was conducted for the groundwater COPIs (i.e., cobalt and molybdenum) that were detected at concentrations that exceeded the health protective screening criteria or background. The refined risk evaluation identified EPCs for these constituents in groundwater for the purposes of characterizing potential risk to human receptors. If the EPC is greater than the respective screening level, then the constituent is identified as having the potential for risk that warrants additional evaluation (e.g., performing a surface water evaluation). Molybdenum was evaluated in the adjacent downgradient surface water bodies (i.e., unnamed tributary and Chattahoochee River) because it was identified as a groundwater COI in the refined groundwater risk evaluation.

4.1 Refined Groundwater Risk Evaluation

Potential risk associated with exposure to cobalt and molybdenum by hypothetical off-site residential receptors was refined using the methodology described in the HSRA and VRP guidance (EPD, 2018b; EPD, 2009) and is presented in the following section and on **Figure 7**.

For the refined risk evaluation, groundwater data from samples collected between 2016 and March 2020 from the on-site wells that were identified to have SSL-related constituents and downgradient piezometers that represent groundwater flow in the same hydraulically downgradient direction were used to evaluate hypothetical off-site residential exposure.

The downgradient groundwater monitoring wells and piezometers included in the refined risk evaluation are depicted with yellow well labels on **Figure 2**. The following list of wells used to assess hypothetical off-site residential exposure include those wells with SSL-related constituents along with the piezometers downgradient of the wells exhibiting SSLs:

DGWC-40 (SSL)	B-62
DGWC-68A (SSL)	B-68

Groundwater data used in the risk screening level evaluation were collected from the uppermost aquifer and are considered to be representative of groundwater conditions at the site. The groundwater dataset used in the refined risk evaluation is presented in **Appendix B-1.**

4.1.1 Groundwater Exposure Point Calculation

The refined risk evaluation for the groundwater COPIs (cobalt and molybdenum) includes the development of EPCs. The EPC is a conservative estimate of potential exposure to a receptor. The EPC is based on the 95 percent upper confidence limit of the arithmetic mean (UCL) and accounts for uncertainty and variability in the dataset (USEPA, 2002). Consistent with USEPA guidance for developing groundwater EPCs (USEPA, 2014), UCLs were calculated using USEPA ProUCL 5.1 software (ProUCL) (USEPA, 2016) and user's guide (USEPA, 2015a). For the refined risk evaluation, the UCLs for the COPIs in groundwater were calculated for the following specific datasets:

- UCLs for the individual well(s) with an SSL-related constituent;
- UCLs based on combined data from the well with an SSL-related constituent and other well(s)/piezometer(s) in the general vicinity to include additional downgradient monitoring well(s)/piezometer(s) that represent groundwater flow in the same hydraulically downgradient direction; and
- UCLs based on the combined data from the farthest downgradient well(s)/piezometer(s) that are hydraulically downgradient of the well(s) with an SSL-related constituent.

Other assumptions made in the calculations of the UCLs include:

- Primary samples (no duplicates) were used to calculate EPCs as duplicate samples were analyzed for quality assurance purposes.
- If the calculated UCL exceeded the maximum detected concentration, then the maximum detected concentration was used as the EPC.

ProUCL software calculates multiple UCLs and provides a recommended UCL that was selected as the EPC. If there were multiple UCLs recommended by ProUCL, the maximum UCL value was selected. **Appendix D-1** provides a detailed summary of the UCLs calculated using the methods described above, and **Appendix D-2** presents figures showing the wells/piezometers used in the calculation of the EPCs for each groundwater COPI. **Appendix D-3** provides the input and output files associated with the ProUCL software.

Table 2 summarizes the groundwater EPCs selected for the COPIs of cobalt and molybdenum. This table shows the number of samples, the maximum detected concentration, the UCL recommended by ProUCL software, and the selected EPC.

4.1.2 COPI Concentration Trend Analysis

Concentration trends over time were evaluated as one line of evidence in the refined risk evaluation for cobalt and molybdenum. The Mann-Kendall trend test with an alpha value equal to 0.05 and the Theil-Sen line test were conducted on the data from the wells exhibiting SSLs for cobalt and molybdenum to evaluate the trends in concentrations over time. The tests were conducted using the USEPA ProUCL 5.1 software (USEPA, 2016).

The Mann-Kendall and Theil-Sen test results are presented on time series graphs in **Appendix D-4** and indicated no statistically significant trend in molybdenum concentrations over time at DGWC-68A. A statistically significant increasing trend was observed for cobalt in DGWC-40.

4.1.3 Refined Groundwater Risk Evaluation Results

In the refined risk evaluation, comparison of the calculated EPCs to the screening levels was used to identify COIs that may pose a potential risk to hypothetical off-site residential receptors exposed through the use of groundwater as potable water. If the EPC from the farthest downgradient well(s)/piezometer(s) is greater than the respective screening level, then the constituent is identified as having the potential for risk that warrants additional evaluation (e.g., performing a surface water evaluation).

4.1.3.1 Cobalt

Cobalt was detected in 10 out of 11 groundwater samples collected from well DGWC-40 at concentrations that exceeded the groundwater background value. For the refined risk evaluation, the following EPCs were calculated for cobalt using the monitoring wells shown in **Appendices D-1** and **D-2**:

- Data from DGWC-40 were used to determine if the UCL complied with the screening level (EPC Step 1 in **Appendix D-1**).
- Data from DGWC-40 and the downgradient piezometer B-62 were combined to represent groundwater exposure in the same hydraulically downgradient direction (EPC Step 2 in **Appendix D-1**).
- Data from B-62 were used to represent groundwater exposure using the piezometer that is the farthest hydraulically downgradient of well DGWC-40 (EPC Step 3 in **Appendix D-1**).

Both the UCL for DGWC-40 of 0.044 milligram per liter (mg/L) and the UCL for the combined dataset from DGWC-40 and B-62 of 0.055 mg/L exceeded the groundwater background value of 0.032 mg/L. However, the maximum concentration from B-62 of 0.00031 was less than the groundwater background value of 0.032 mg/L. The distance from DGWC-40 to the nearest property boundary within the potential groundwater flow direction is approximately 600 feet.

Table 3 presents the results of the refined screening comparing the farthest hydraulically downgradient EPC to the screening criterion. Cobalt was not identified as a groundwater COI for hypothetical off-site residential receptors and is not expected to pose a risk to human health through potable water use.

4.1.3.2 Molybdenum

Molybdenum was detected in all 11 groundwater samples collected from well DGWC-68A at concentrations that exceeded the site-specific screening level. For the refined risk evaluation, the following EPCs were calculated for molybdenum using the monitoring wells/piezometers shown in **Appendices D-1** and **D-2**:

- Data from DGWC-68A were used to determine if the UCL complied with the screening level (EPC Step 1 in **Appendix D-1**).

- Data from DGWC-68A and the downgradient piezometer B-68 were combined to represent groundwater exposure in the same hydraulically downgradient direction (EPC Step 2 in **Appendix D-1**).

- Data from B-68 were used to represent groundwater exposure using the piezometer that is the farthest hydraulically downgradient of well DGW-68A (EPC Step 3 in **Appendix D-1**).

The UCL for DGWC-68A of 0.23 mg/L, the UCL for the combined dataset (DGWC-68A and B-68) of 0.22 mg/L, and the maximum concentration from the farthest downgradient piezometer (B-68) of 0.23 mg/L exceeded the site-specific screening level of 0.10 mg/L. The distance from DGWC-68A to the nearest property boundary within the potential groundwater flow direction is approximately 700 feet.

Table 3 presents the results of the refined screening comparing the farthest hydraulically downgradient EPC to the screening criterion. Molybdenum was identified as a groundwater COI for hypothetical off-site residential receptors, and therefore, molybdenum is further evaluated in the surface water risk evaluation below (**Section 4.2**).

4.2 Surface Water Risk Evaluation

A surface water screening evaluation was conducted for the unnamed tributary and Chattahoochee River for the groundwater COI (molybdenum) identified in the downgradient groundwater risk evaluation for hypothetical off-site residential receptors.

Both human and ecological receptors have the potential to come into contact with surface water. Routes of exposure include ingestion of aquatic organisms (mainly fish) and potential incidental ingestion and dermal contact with surface water by adult and child recreational receptors. Potential routes of exposure for ecological receptors include direct contact to surface water and ingestion.

Surface water screening was performed using surface water data for the constituent identified as a groundwater COI. The surface water screening process for the COI identified in groundwater (molybdenum) is discussed below and presented in **Figure 8**.

4.2.1 Surface Water Data

Surface water data were compiled for the COI identified in the refined groundwater risk evaluation (molybdenum). Surface water data for molybdenum include one sampling event for Plant McDonough in September 2019 at three locations in the unnamed tributary. One of these locations (UT01_US) is upstream of AP-1 and was used as the background surface water location. In addition, data from 2016 to 2019 were available from the Water Quality Portal (2020) for molybdenum at a downstream location (Bankhead Highway) in the Chattahoochee River. The surface water sampling locations are shown on **Figure 9**. The surface water dataset used in the risk evaluation is presented in **Appendix B-2**.

4.2.2 Human Health Screening

Surface water human health screening values for the groundwater COI were selected from the following order of hierarchy:

- Georgia In-Stream Water Quality Criteria (ISWQC) for human health (EPD, 2015), when available.

- National Ambient Water Quality Criteria [NAWQC] (USEPA, 2015b) for human health protective through ingestion of water and organisms. When there is no numerical value for a constituent in surface water, USEPA (2015b) states that EPA has issued a maximum contiminant level (MCL) which may be more stringent than

the NAWQC for these constituents suggesting the use of the MCL for surface water screening. This is a conservative approach.

- In accordance with standard practice using methodologies approved by the Georgia EPD, the higher of the residential groundwater screening levels described in Section 3.2 was used for the remaining constituents due to lack of human health surface water screening levels for these constituents, which is a conservative approach.

- Maximum detected upstream (i.e., background) concentration if the maximum upstream surface water concentration is greater than the surface water screening value.

For molybdenum, the higher of the residential groundwater screening levels described in Section 3.2 was used because of the lack of human health surface water screening levels for Georgia ISWQC (EPD, 2015) and NAWQC (USEPA, 2015b). The calculated site-specific groundwater screening level was used as the surface water screening value for molybdenum. The use of drinking water screening levels for surface water exposure is a conservative approach likely to overestimate risk as use of unnamed tributary and Chattahoochee River surface water downgradient of the site as a source of potable drinking water is an incomplete exposure pathway.

The surface water human health screening level was compared to the maximum detected concentration of molybdenum in surface water, as shown in **Table 4**. Molybdenum was detected in 1 out of 15 surface water samples, at a concentration below the practical quantitation limit (0.0026 J[4] mg/L) and two orders of magnitude lower than the screening level (0.10 mg/L). Therefore, molybdenum was not retained as a COPI in surface water for further evaluation and is not expected to pose a risk to human health.

4.2.1 Ecological Screening

Surface water screening values for aquatic ecological receptors were selected from the following order of hierarchy for the COPIs:

- Chronic freshwater Georgia ISWQC (EPD, 2015), when available.

- USEPA Region 4 chronic freshwater screening levels (USEPA, 2018).

[4] J flag indicates an estimated value less than the reporting limit but greater than the method detection limit.

- Maximum detected upstream (i.e., background) concentration if the maximum upstream surface water concentration is greater than the surface water screening value.

Because molybdenum does not have a chronic freshwater Georgia ISWQC for ecological receptors (EPD, 2015), the USEPA Region 4 chronic freshwater screening level (USEPA, 2018) was used in the surface water ecological screening for aquatic ecological receptors.

The ecological surface water screening level was compared to the maximum detected concentration of molybdenum in surface water, as shown in **Table 5**. Molybdenum was detected in 1 out 15 surface water samples, at a concentration below the practical quantitation limit (0.0026 J mg/L) and two orders of magnitude lower than the screening level (0.80 mg/L). Therefore, molybdenum was not retained as a COPI in surface water for further evaluation and is not expected to pose a risk to ecological receptors.

4.2.2 Refined Groundwater and Surface Water Risk Evaluation Summary and Conclusions

Detections of cobalt and molybdenum were reported at concentrations above the corresponding groundwater screening values. However, the results of the refined groundwater and surface water risk evaluations indicate the following:

- Cobalt was not identified as a groundwater COI for hypothetical off-site residential receptors and is not expected to pose a risk to human health.

- Molybdenum was identified as a groundwater COI for hypothetical off-site residential receptors and was evaluated further in the adjacent downgradient surface water bodies (unnamed tributary and Chattahoochee River) for potential exposure to human and ecological receptors. It is worth noting again that no public wells were identified within a three-mile radius of the site. Municipal water is available throughout the area.

- Unnamed tributary and Chattahoochee River surface water concentrations of molybdenum were below health-protective surface water screening criteria for human and ecological receptors. Therefore, molybdenum was not retained as a COPI in surface water for further evaluation and is not expected to pose a risk to human health or ecological receptors.

Based on the multiple lines of evidence and various conservative assumptions, further risk evaluation for groundwater and surface water is not warranted. Compliance monitoring under the Federal and State CCR Rules will continue.

5 UNCERTAINTY ASSESSMENT

USEPA guidance stresses the importance of providing an analysis of uncertainties so that risk managers are better informed when evaluating risk assessment conclusions (USEPA, 1989). The uncertainty assessment provides a better understanding of the key uncertainties that are most likely to affect the risk assessment results and conclusions.

The potential uncertainties associated with the risk evaluation are as follows:

Health-Protective Screening Criteria Uncertainties:

- In accordance with standard practice and methodologies approved by the Georgia EPD, the higher of the Type 1 or Type 2 standard was selected for screening criteria. Selection of the screening criteria per standard practice is considered appropriate for risk quantification for AP-1. The Hazardous Site Response Act, Rule 391-3-19.07(1) notes that "*[a]ll risk reduction standards will, when implemented, provide adequate protection of human health and the environment*". Thus, this approach is likely to overestimate risks for hypothetical off-site receptors.

- In the surface water screening, the higher of the residential groundwater screening levels was used for molybdenum because of the lack of human health surface water screening levels within the Georgia ISWQC for human health (EPD, 2015) and NAWQC (USEPA, 2015b). The use of drinking water screening levels for surface water screening is a conservative approach likely to overestimate exposure as use of downgradient surface water from the unnamed tributary and Chattahoochee River as a source of potable drinking water is an incomplete exposure pathway.

Exposure Uncertainties:

- The maximum detected concentrations of AP-1 SSL-related constituents were compared to conservative screening criteria to identify the COPIs. Use of the maximum detected concentration is consistent with standard practice; however, use of the maximum detected concentration for exposure likely overestimates potential risk.

- The constituents included in the risk evaluation occur naturally in the site geologic setting. Although background concentrations were evaluated and used in the screening process, contributions to exposure and risk were assumed to be

entirely CCR-related and natural background sources were not quantified. Thus, SSL-related exposures were likely overestimated.

- Hypothetical off-site residential exposure was evaluated using on-site groundwater data from wells around the perimeter and downgradient of AP-1. This comparison makes the conservative assumption that on-site groundwater may potentially migrate to off-site drinking water wells through advective transport in groundwater, but without any attenuation within the aquifer media through factors such as dilution, dispersion, or adsorption. This assumption may overestimate exposure and risk to hypothetical off-site receptors.

- EPCs for metals in groundwater were assumed to be 100 percent bioavailable by ingestion and dermal contact. This assumption may tend to overestimate risk.

- An off-site well survey of potential groundwater wells within a three-mile radius of Plant McDonough was conducted by NewFields in 2020 and consisted of reviewing publicly available federal, state, and county records as well as a windshield survey of the area (**Appendix A)**. Wood relied on the data collected by NewFields.

  Although off-site potable wells identified in the well survey were not included in the risk evaluation, the presence of these wells do not appear to impact the conclusions of the risk evaluation because concentrations of SSL-related constituents were either delineated in on-site groundwater to concentrations below background (i.e., cobalt) or were not detected above health-protective screening criteria (i.e., molybdenum) in adjacent downgradient surface water (i.e., an unnamed tributary to the Chattahoochee River and Chattahoochee River).

Toxicity Uncertainties:

- Toxicity factors used to calculate health-protective criteria are established at conservative levels to account for uncertainties and often result in criteria that are many times lower than the levels observed to cause effects in human or animal studies. Therefore, a screening level exceedance does not necessarily equate to an adverse effect.

6 CONCLUSIONS

This human health and ecological risk evaluation for SSL-related constituents in groundwater at AP-1, along with a surface water risk evaluation for the downgradient unnamed tributary and Chattahoochee River, was conducted using methods consistent with Georgia EPD and USEPA guidance and included multiple conservative assumptions. Based on this evaluation, cobalt and molybdenum are not expected to pose a risk to human health or the environment.

Accordingly, no further risk evaluation of groundwater and surface water is recommended. Compliance monitoring for AP-1 under the Federal and State CCR Rules will continue. Georgia Power will proactively evaluate the data and update this evaluation, if necessary.

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TABLES

Table 1
SSL-Related Constituent Groundwater Screening
McDonough AP-1 Risk Evaluation Report
Plant McDonough, Cobb County, GA

CCR Rule Designation	Constituent	CAS No.	Detection Frequency[1]	Exceedance Frequency[2]	Maximum Concentration (mg/L)	Screening Level (mg/L)	Source	Site-Specific Background (mg/L)	COPI? (Y/N)	Rationale[3]
Appendix IV	Cobalt	7440-48-4	11 / 11	10 / 11	0.055	0.032	Background[4]	0.032	Y	ASL
	Molybdenum	7439-98-7	11 / 11	11 / 11	0.28	0.10	Site-Specific[5]	0.041	Y	ASL

Notes:

[1] Evaluation includes 2016 - March 2020 groundwater analytical data from downgradient wells DGWC-40 (cobalt) and DGWC-68A (molybdenum).
[2] Exceedance frequency is for the specific constituent that exceeds the first screening value in the hierarchy of screening values.
[3] Rationale for classification of constituent as a COPI or exclusion as a COPI:
ASL = Above respective screening level
BSL = Equal to or below respective screening level
[4] For constituents with site-specific background concentrations greater than applicable screening values, the site-specific background value was used as the screening value.
[5] The Site-Specific value is calculated by the EPA RSL calculator using residential exposure factor inputs from HSRA Appendix III, Table 3.

Definitions:
CAS = Chemical Abstract Service
CCR = Coal Combustion Residuals
COPI = Constituent of Potential Interest
mg/L = milligrams per Liter

Prepared by/Date: RRP 9/13/2020
Checked by/Date: RMB 9/22/2020

Table 2
Groundwater Exposure Point Concentration Summary
McDonough AP-1 Risk Evaluation Report
Plant McDonough, Cobb County, GA

Exposure Unit	CCR Rule Designation	Constituent	CAS No.	Detection Frequency	Maximum Concentration (mg/L)	95% UCL (mg/L)	Recommended UCL Method	Selected EPC[1] (mg/L)
AP-1	Appendix IV	Cobalt	7440-48-4	2 / 3	0.00031	NA[2]	NA	0.00031
		Molybdenum	7439-97-7	3 / 3	0.23	NA	NA	0.23

Notes:

[1] EPCs calculated in accordance with USEPA, 2014. Memorandum for Determining Groundwater Exposure Point Concentrations, Supplemental Guidance. OSWER Directive 9283.1-42, February 2014. Located at https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236917. For further detail on the selected EPC, refer to Appendix D.
[2] NA = Not available. 95% UCL not calculated because dataset had fewer than 5 values or all samples were non-detect.

Definitions:

CAS = Chemical Abstract Service
CCR = Coal Combustion Residuals
mg/L = milligrams per liter
95% UCL = 95 percent upper confidence limit
EPC = Exposure Point Concentration

Prepared by/Date: RRP 09/14/2020
Checked by/Date: RMB 9/22/2020

Table 3
Downgradient Groundwater Refined Screening
McDonough AP-1 Risk Evaluation Report
Plant McDonough, Cobb County, GA

Exposure Unit	CCR Rule Designation	Constituent	CAS No.	Detection Frequency	Exceedance Frequency[1]	Selected EPC[2] (mg/L)	Screening Level (mg/L)	Source	Site-Specific Background (mg/L)	COI? (Y/N)	Rationale[3]
AP-1	Appendix IV	Cobalt	7440-48-4	2 / 3	0 / 3	0.00031	0.032	Background[4]	0.032	N	BSL
		Molybdenum	7439-97-7	3 / 3	3 / 3	0.23	0.10	Site-Specific[5]	0.041	Y	ASL

Notes:

[1] The exceedance frequency is based on the number of samples with detected concentrations that exceed the identified screening level.

[2] EPCs calculated in accordance with USEPA, 2014. Memorandum for Determining Groundwater Exposure Point Concentrations, Supplemental Guidance. OSWER Directive 9283.1-42, February 2014. Located at https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236917. For further detail on the selected EPC, refer to Appendix D.

[3] Rationale for classification of constituent as a COI or exclusion as a COI:

ASL = Above respective screening level

BSL = Below respective screening level

[4] For constituents with site-specific background concentrations greater than applicable screening values, the site-specific background value was used as the screening value.

[5] The Site-Specific value is calculated by the EPA RSL calculator using residential exposure factor inputs from HSRA Appendix III, Table 3.

Definitions:

CAS = Chemical Abstract Service
CCR = Coal Combustion Residuals
COI = Constituent of Interest
EPC = Exposure Point Concentration
mg/L = milligrams per liter

Prepared by/Date: RRP 09/01/2020
Checked by/Date: RMB 9/22/2020

Table 4
Human Health Surface Water Screening[1]
McDonough AP-1 Risk Evaluation Report
Plant McDonough, Cobb County, GA

CCR Rule Designation	Constituents	CAS No.	Detection Frequency	Exceedance Frequency[2]	Maximum Concentration (mg/L)	Screening Level (mg/L)	Source[3, 4]	Site-Specific Background (mg/L)	COPI? (Y/N)	Rationale[5]
Appendix IV	Molybdenum	7439-98-7	1 / 15	0 / 15	0.0026 J	0.1	Type 2 RRS	ND (0.01)	N	BSL

Notes:

[1] Evaluation includes data from 2018-2019 for McDonough UT01_US (upstream or background location) and data from 2016-2019 for the downstream locations including UT02, UT01_DS, and Chattahoochee River at Bankhead Highway located approximately 2.2 miles downstream of the site boundary.

[2] Exceedance frequency is for the specific constituent that exceeds the first screening value in the hierarchy of screening values.

- The hierarchy of screening values is GA ISWQC > NRWQC > Selected residential groundwater screening level if no surface water screening level available
- For sites with site-specific background concentrations greater than all applicable screening values, the site-specific background value was used as the screening value.

[3] The Type 2 RRS was calculated by the EPA RSL calculator using residential exposure factor inputs from HSRA Appendix III, Table 3.

[4] The residential groundwater screening level was used because no human health surface water screening level was available. The use of drinking water screening levels for surface water exposure is a conservative approach as domestic use of Chattahoochee surface water in the vicinity of the site for human receptors is an incomplete exposure pathway.

[5] Rationale for classification of constituent as a COPI or exclusion as a COPI:

ASL = Above respective screening level
BSL = Below respective screening level

Definitions:

CAS = Chemical Abstract Service
CCR = Coal Combustion Residuals
COPI = Constituent of Potential Interest
EPA = United States Environmental Protection Agency
GA ISWQC = Georgia Instream Water Quality Criteria
HSRA = Georgia Hazardous Site Response Act
mg/L = milligrams per Liter
NRWQC = National Recommended Water Quality Criteria
RRS = Risk Reduction Standard
RSL = Regional Screening Level
ND = Not detected (maximum practical quantitation limit [PQL])

Prepared by/Date: RRP 09/01/2020
Checked by/Date: RMB 10/23/2020

Table 5
Ecological Health Surface Water Screening[1]
McDonough AP-1 Risk Evaluation Report
Plant McDonough, Cobb County, GA

CCR Rule Designation	Constituents	CAS No.	Detection Frequency	Exceedance Frequency[2]	Maximum Concentration (mg/L)	Screening Level (mg/L)	Hardness Dependent? (Y/N)	Source[3]	Site-Specific Background (mg/L)	COPI (Y/N)	Rationale[4]
Appendix IV	Molybdenum	7439-98-7	1 / 15	0 / 15	0.0026 J	0.8	N	EPA Reg. 4	ND (0.01)	N	BSL

Notes:

[1] Evaluation includes data from 2018-2019 for McDonough UT01_US (upstream or background location) and data from 2016-2019 for the downstream locations including UT02, UT01_DS, and Chattahoochee River at Bankhead Highway located approximately 2.2 miles downstream of the site boundary.

[2] Exceedance frequency is for the specific constituent that exceeds the first screening value in the hierarchy of screening values

- The hierarchy of screening value sources is GA ISWQC > EPA Region 4
- For sites with site-specific background concentrations greater than all applicable screening values, the site-specific background value was used as the screening value

[3] Screening value from GA ISWQC was not available from GA Administrative Code 391-3-6-.0 (5)(e)(iii; value selected from Table 1a of the Region 4 Ecological Risk Assessment Supplemental Guidance (EPA, 2018).

[4] Rationale for classification of constituent as a COPI or exclusion as a COPI:

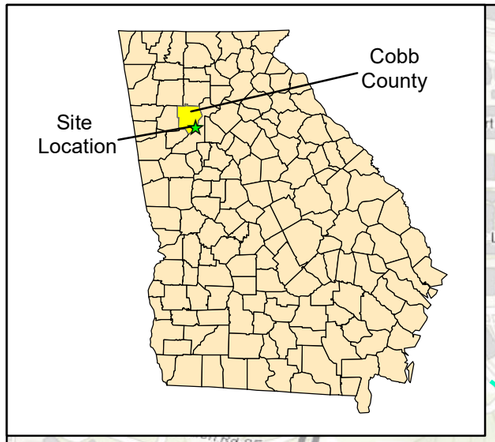
ASL = Above respective screening level
BSL = Below respective screening level

Prepared by/Date: RRP 09/01/2020
Checked by/Date: RMB 10/23/2020

Definitions:

CAS = Chemical Abstract Service
CCR = Coal Combustion Residuals
COPI = Constituent of Potential Interest
EPA = United States Environmental Protection Agency
GA ISWQC = Georgia Instream Water Quality Criteria
mg/L = milligrams per Liter
ND = Not detected (maximum practical quantitation limit [PQL])

FIGURES



N

0 500 1,000 2,000 Feet

Ash Pond 3 & 4

Ash Pond 2

Ash Pond 1

Chattahoochee River

Peachtree Creek

Oakdale

Bolton

Rivers and Streams

Property Boundary

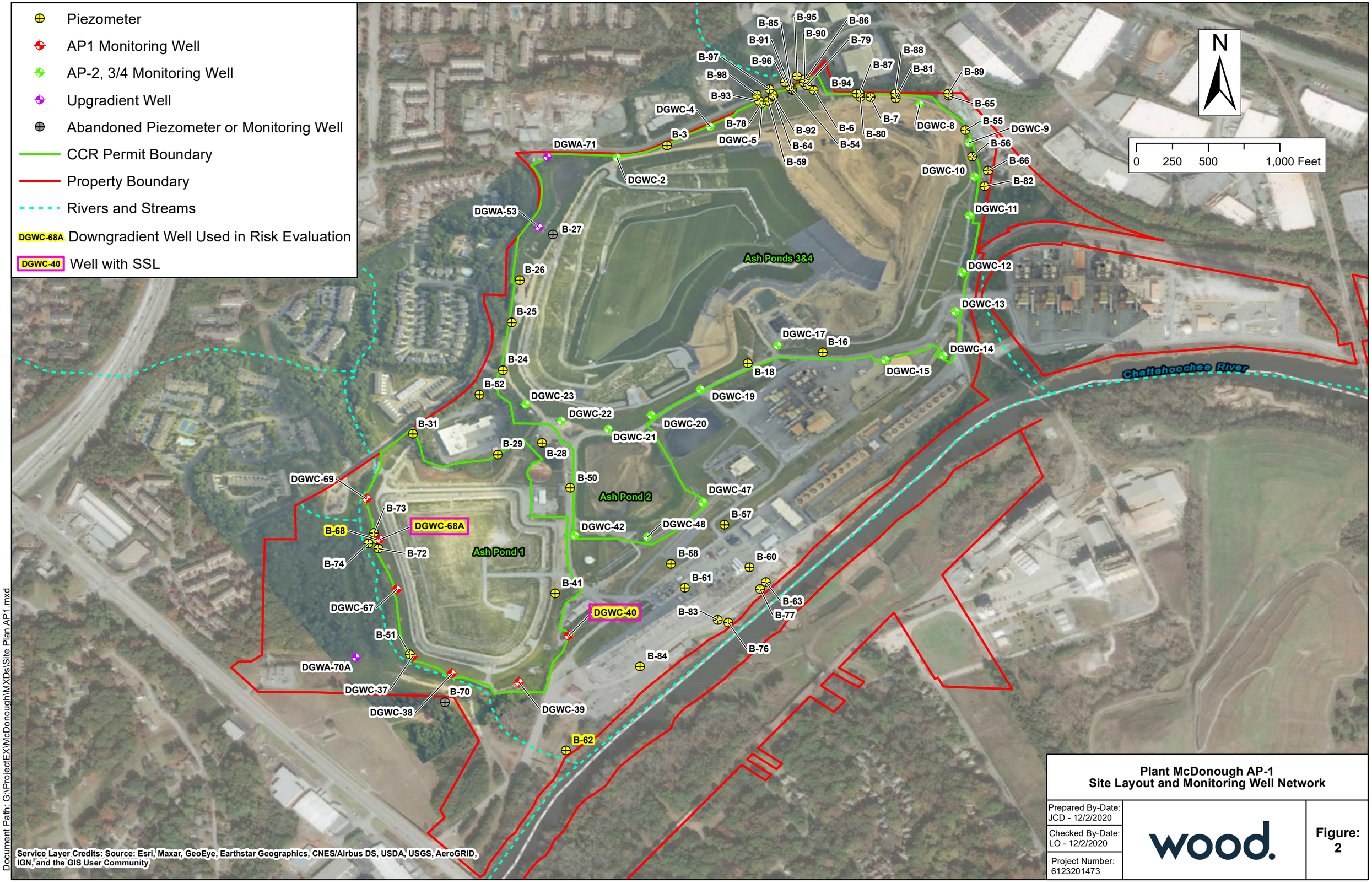
CCR Permit Boundary

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase,

Document Path: G:\ProjectEX\McDonough\MXDs\Site Location.mxd

Plant McDonough AP-1
Site Location

Prepared By-Date: JCD - 11/23/2020	wood.
Checked By-Date: RRP - 11/23/2020	Figure: 1
Project Number: 6123201473	



Document Path: G:\ProjectEX\McDonough\MXDs\Site Plan AP1.mxd

Plant McDonough AP-1
Site Layout and Monitoring Well Network

Prepared By-Date: JCD - 12/2/2020	wood.	Figure: 2
Checked By-Date: LO - 12/2/2020		
Project Number: 6123201473		

- Piezometer
- AP-1 Monitoring Well
- AP-2, 3/4 Monitoring Well
- Upgradient Well
- Abandoned Piezometer or Monitoring Well
- Groundwater Contours
- Approximate Groundwater Flow Direction
- CCR Permit Boundary
- Approximate Site Boundary
- Rivers and Streams

N

0 250 500 1,000 Feet

Ash Ponds 3&4

Ash Pond 2

Ash Pond 1

Chattahoochee River

B-91 B-90 B-95 B-86 B-96 B-98 B-97 B-79 B-87 B-7 B-88 B-89 B-93 B-78 B-6 B-65 DGWC-5 B-94 DGWC-8 B-80 B-81 DGWC-2 DGWC-4 B-3 B-59 B-55 DGWC-9 B-54 DGWA-71 B-85 B-56 B-64 B-92 B-66 DGWC-10 B-82 DGWA-53 DGWC-11 B-27 B-26 B-25 B-24 DGWC-12 DGWC-13 DGWC-17 B-16 B-18 DGWC-15 DGWC-14 B-52 DGWC-23 DGWC-19 DGWC-22 DGWC-20 B-31 B-28 DGWC-21 B-29 B-50 DGWC-47 DGWC-69 B-73 DGWC-68A B-57 DGWC-42 DGWC-48 B-68 B-72 B-58 B-60 B-74 DGWC-67 B-61 B-63 B-41 B-77 B-83 B-51 DGWC-40 B-76 DGWA-70A B-84 DGWC-38 DGWC-39 DGWC-37 B-70 B-62

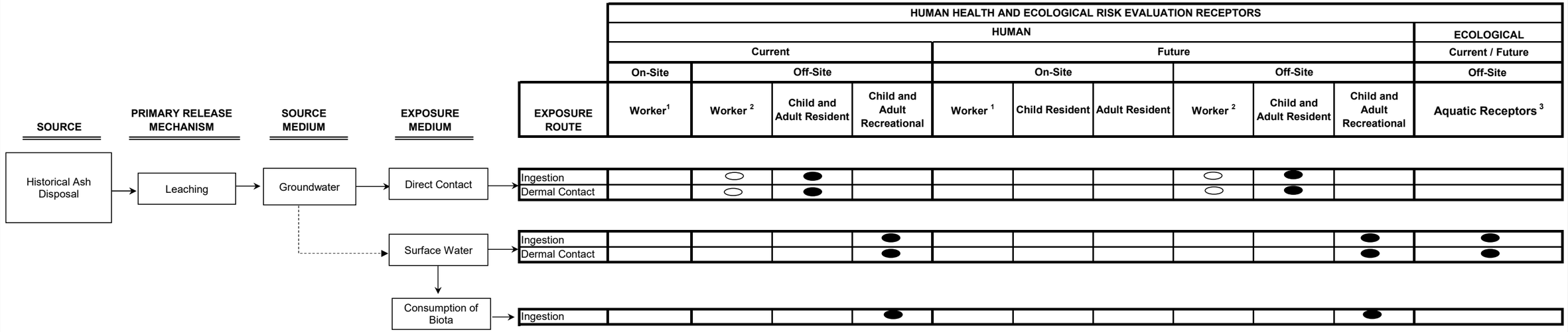
Potentiometric Surface Map Source: 2020 Annual Groundwater Monitoring & Corrective Action Report. Georgia Power Company - Plant McDonough-Atkinson. Ash Pond 1. July 30

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Document Path: G:\ProjectEX\McDonough\MXDs\Monitoring Well and Jan 2020 Pot Map AP1.mxd

Plant McDonough
Potentiometric Surface Elevation Contours (January 2020)

Prepared By-Date: JCD - 11/23/2020	wood.	Figure: 3
Checked By-Date: LO - 11/23/2020		
Project Number: 6123201473		



Legend

A conservative assumption for this assessment was made that groundwater from the site flows to the downgradient surface water.

Indicates potentially complete pathway to receptors, which are evaluated quantitatively.

Indicates potentially complete pathway to receptors, which are evaluated qualitatively.

Footnotes

1. Industrial worker was considered incomplete because there are no wells on-site that are classified for use as potable wells. On-site construction workers would be expected to have little to no direct contact with on-site groundwater due to safety procedures outlined in their site-specific health and safety plans.
2. Off-site industrial/construction worker addressed through the evaluation of hypothetical off-site residential receptors as health-protective screening levels for residential receptors would be more conservative than industrial and construction worker screening levels.
3. Generalized receptor for ecological health risk evaluation.

Plant McDonough AP-1
Conceptual Exposure Model

Figure 4

Project Number
6123201473

Prepared by/Date: RMB 9/1/2020
Checked by/Date: SBM 10/28/2020

- Inactive Well
- Surface Water Intake
- Monitoring Well
- Private Drinking Well
- Private Irrigation Well
- Borehole
- Commercial Well
- Spring
- Unknown Well Type
- CCR Permit Boundary
- Property Boundary

N

Ash Ponds 3&4

Ash Pond 1

Ash Pond 2

Oakdale

Chattahoochee River National Recreation Area

Bolton

Tilford

Nickajack

Nickajack Park

Smyrna

Whitlock Mill Park

Chattahoochee

Chattahoochee River

Castlewn Cemetery

Hills Park

Source: Well Survey, Plant McDonough Ash Pond 1, Ash Pond 2, and Ash Ponds 3/4, NewFields, March 5, 2020.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

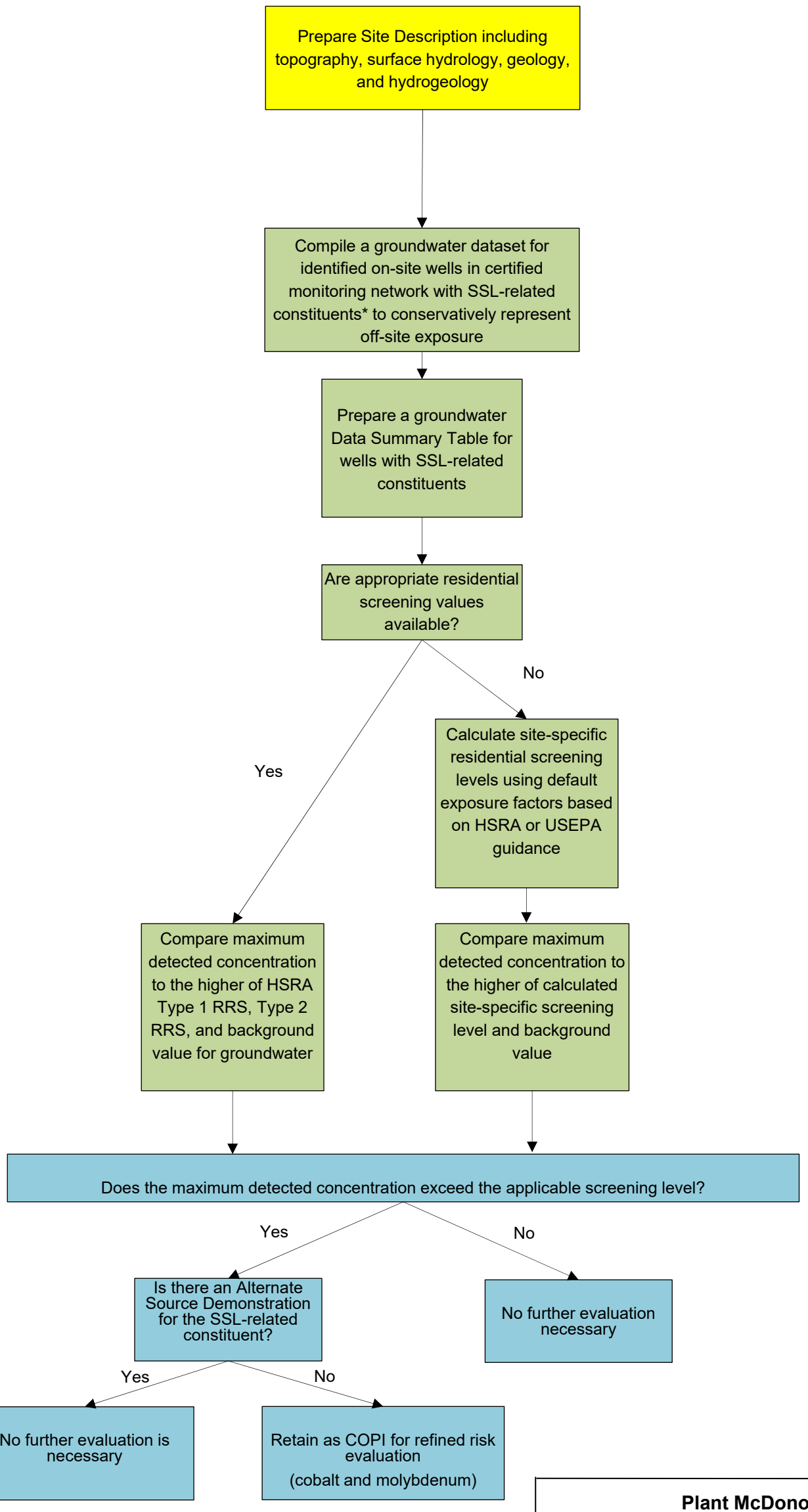
0 1,000 2,000 4,000 Feet

Document Path: G:\Project\EX\McDonough\MXDs\Well Survey Locations.mxd

Plant McDonough
Off-Site Well Survey Results

Prepared By-Date: JCD - 11/23/2020	wood.	Figure: 5
Checked By-Date: LO - 11/23/2020		
Project Number: 6123201473		

Risk Screening Approach (Groundwater) for AP-1



Notes:

* Initial screen evaluates AP-1 wells with SSL-related constituents: cobalt (DGWC-40); molybdenum (DGWC-68A).

SSL = Statistically Significant Level

COPI = Constituent of Potential Interest

HSRA = Hazardous Site Response Act

RRS = Risk Reduction Standard

USEPA = United States Environmental Protection Agency

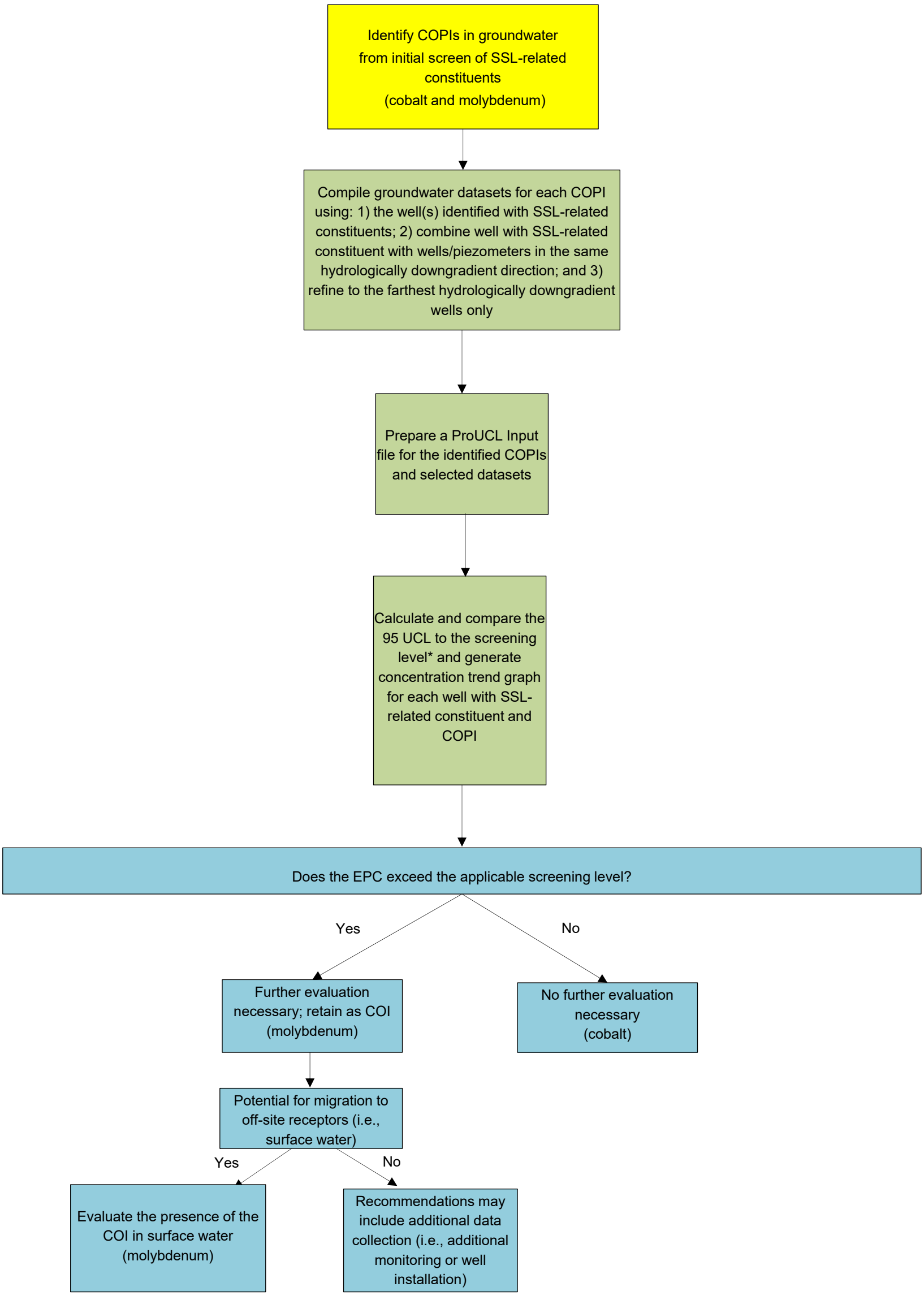
Plant McDonough AP-1
Groundwater Risk Screening Approach

Figure 6

Project Number
6123201473

Prepared by/Date: RMB 9/1/2020
Checked by/Date: SBM 10/1/2020

Approach for Refined Risk Evaluation (Groundwater) for AP-1



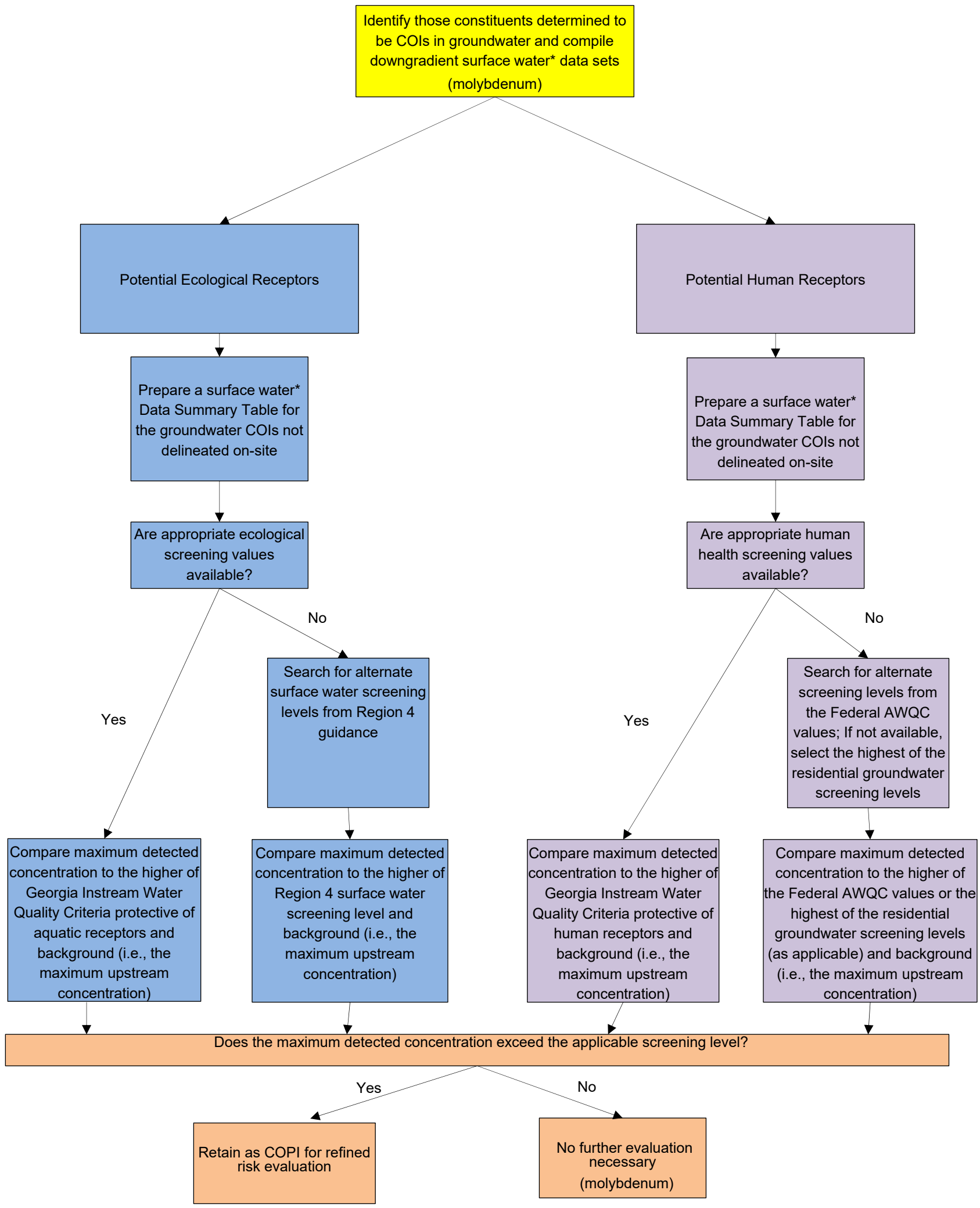
Notes:
*If the 95 UCL exceeds the maximum concentration, use the maximum as the EPC.
SSL = Statistically Significant Level
COPI = Constituent of Potential Interest
EPC = Exposure Point Concentration
UCL = Upper Confidence Limit
COI = Constituent of Interest

Plant McDonough AP-1
Approach for Refined Groundwater Risk Evaluation

Figure 7

Project Number	Prepared by/Date: RMB 9/1/2020
6123201473	Checked by/Date: SBM 10/1/2020

Risk Screening Approach (Surface Water) for AP-1



* Surface water data collected from two site-related locations in the unnamed tributary west of AP-1, one upstream background location in the unnamed tributary, and one downstream location in the Chattahoochee River.
SSL = Statistically Significant Level
AWQC = Ambient Water Quality Criteria
COI = Constituent of Interest
COPI = Constituent of Potential Interest

Plant McDonough AP-1
Surface Water Risk Screening Approach

Figure 8

Project Number
6123201473

Prepared by/Date: SBM 10/1/2020
Checked by/Date: RMB 10/2/2020

Surface Water Sample Location
Background Surface Water Sample Location
Piezometer
AP-1 Monitoring Well
Rivers and Streams
CCR Permit Boundary
Property Boundary

N

0 100 200 400 Feet

McDonough UT01_US
McDonough UT02
McDonough UT01_DS
DGWC-69
DGWC-68A
DGWC-67
DGWC-37
DGWC-38
DGWC-39
DGWC-40
B-16
B-18
B-24
B-52
B-31
B-28
B-29
B-50
B-73
B-68
B-74
B-72
B-51
B-70
B-41
B-57
B-58
B-60
B-61
B-63
B-77
B-76
B-83
B-84
B-62
Ash Pond 1
Ash Pond 2

Chattahoochee River at Bankhead Highway located ~2.2 miles downstream.

Inset
Chattahoochee River at Bankhead Highway

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Document Path: G:\Project\EX\McDonough\MXDs\Surface Water Sites AP1.mxd

Plant McDonough AP-1
Surface Water Sample Locations

Prepared By-Date: JCD - 11/23/2020	wood.	Figure: 9
Checked By-Date: LO - 11/23/2020		
Project Number: 6123201473		

APPENDIX A

Plant McDonough Well Survey (Off-Site)

Well Survey

Plant McDonough

Ash Pond 1, Ash Pond 2, and Ash Ponds 3/4

Cobb County, GA

Prepared for

Georgia Power Company

241 Ralph McGill Blvd., Atlanta, GA 30308

Prepared by

NewFields

1349 W. Peachtree Street, Suite 2000

Atlanta, GA 30309

March 5, 2020

Introduction

Plant McDonough is located at 5551 South Cobb Dr. in southeast Cobb County.

Newfields conducted a well survey of potential drinking water wells within a three-mile radius of the Coal Combustion Residual (CCR) facilities at Plant McDonough: Ash Pond 1, Ash Pond 2, and Ash Ponds 3/4 ("Investigated Area"). This area is referred to in this report as the Investigated Area, and is shown on Figure 1.

As part of this survey, NewFields accessed and reviewed information from a number of Federal, State, and County records and online sources, as well as a windshield survey of the Investigated Area. Information from each identified well was then compiled into a geographic information system (GIS) database.

Information Collection

This section summarizes the sources utilized for identifying potential drinking water wells within the Investigated Area.

1. Federal Sources
    a. **United States Geological Survey (USGS).** USGS maintains an inventory database of wells sampled by a USGS-affiliated program for ground-water levels and/or water quality parameters at any time in the past.[1] Well information and coordinates were downloaded for the state of Georgia and compiled into the GIS database. Wells in this database in the Investigated Area are labelled 'human drinking water wells' or 'monitoring wells.' One spring in the Investigated Area is identified 1.9 miles southeast of the Ash Ponds in this database. Many of the monitoring wells appear to be co-located with drinking water wells and may be private drinking water wells utilized for monitoring purposes by USGS. Some listings in this database are over 50 years old and may be inactive.

       In addition, the USGS data contains information about major surface water intakes, including both industrial and municipal drinking water intakes. Specific information about the operator and use of the water is not included, but can be determined using parcel data, aerial photography, and visual identification during the windshield survey discussed in section 4.

    b. **Safe Drinking Water Information System (SDWIS).** This EPA database has listings of public water systems but does not have well location information. SDWIS information was used to help identify the suppliers of public water in the vicinity of the facility. Water in the area is supplied by the Cobb County Water System or the City of Atlanta.

[1] http://waterdata.usgs.gov/ga/nwis/inventory?introduction

2. State Sources
    a. **Georgia Environmental Protection Division (EPD)**
        i. **Drinking Water Branch.** EPD maintains records about municipal and industrial wells, whose presence or absence within a radius of a site can be ascertained by contacting the agency. An email was sent to Michael Gillis of EPD on October 23rd, 2019 requesting information about wells in the Investigated Area. Mr. Gillis confirmed that there were no public wells in the Investigated Area.

        ii. **Hazardous Site Inventory (HSI) files.** EPD maintains HSI files for site which are undergoing state-led corrective action. These files usually contain groundwater data and well surveys. There is one HSI site within the Investigated Area, the Southern States Landfill across the Chattahoochee River from Plant McDonough Ash Ponds. There are several monitoring wells at this landfill.

        iii. **Hazardous Site Response Act (HSRA) notifications.** EPD maintains non-HSI HRSA notification reports (i.e., notifications submitted after releases of reportable substances). Reports associated with sites in Cobb and Fulton counties were reviewed and well surveys for sites within a 5-mile radius of Plant McDonough were retrieved. A large number of well surveys have been conducted in the Investigated Area. Wells identified on these surveys were added to the database.

    b. **Agricultural and Environmental Services Laboratory (AESL) records.** The University of Georgia's AESL Laboratory tests drinking water samples submitted by private individuals to their local county extension service. Maps of these sampling results can be viewed online.[2] Precise coordinates are not available, but NewFields was able to use online images to find approximate locations.

3. County Sources
    a. **Health Department Records.** County health departments (DOH) maintain records of the permits for "on-site sewage management systems" (septic tanks). However, in Fulton and Cobb counties, these files are not managed in a way that is feasible to search geographically.

    b. **Tax Assessor Records.** NewFields attempted to acquire parcel shape and improvement data from the Cobb County and Fulton County Tax Assessors' offices. Because of the density of parcels in this area, acquiring this information was not feasible. Parcel data was obtained for just the area within a half-mile of the Ash Ponds.

4. Windshield Survey
    a. A windshield survey of the Investigated Area was conducted on November 5, 2019. Six wells were identified during the windshield survey. One well location was a clearly decorative well in front of a church. Three wells were identified for apparent irrigation use on lawns or a

[2] http://aesl.ces.uga.edu/water/map/

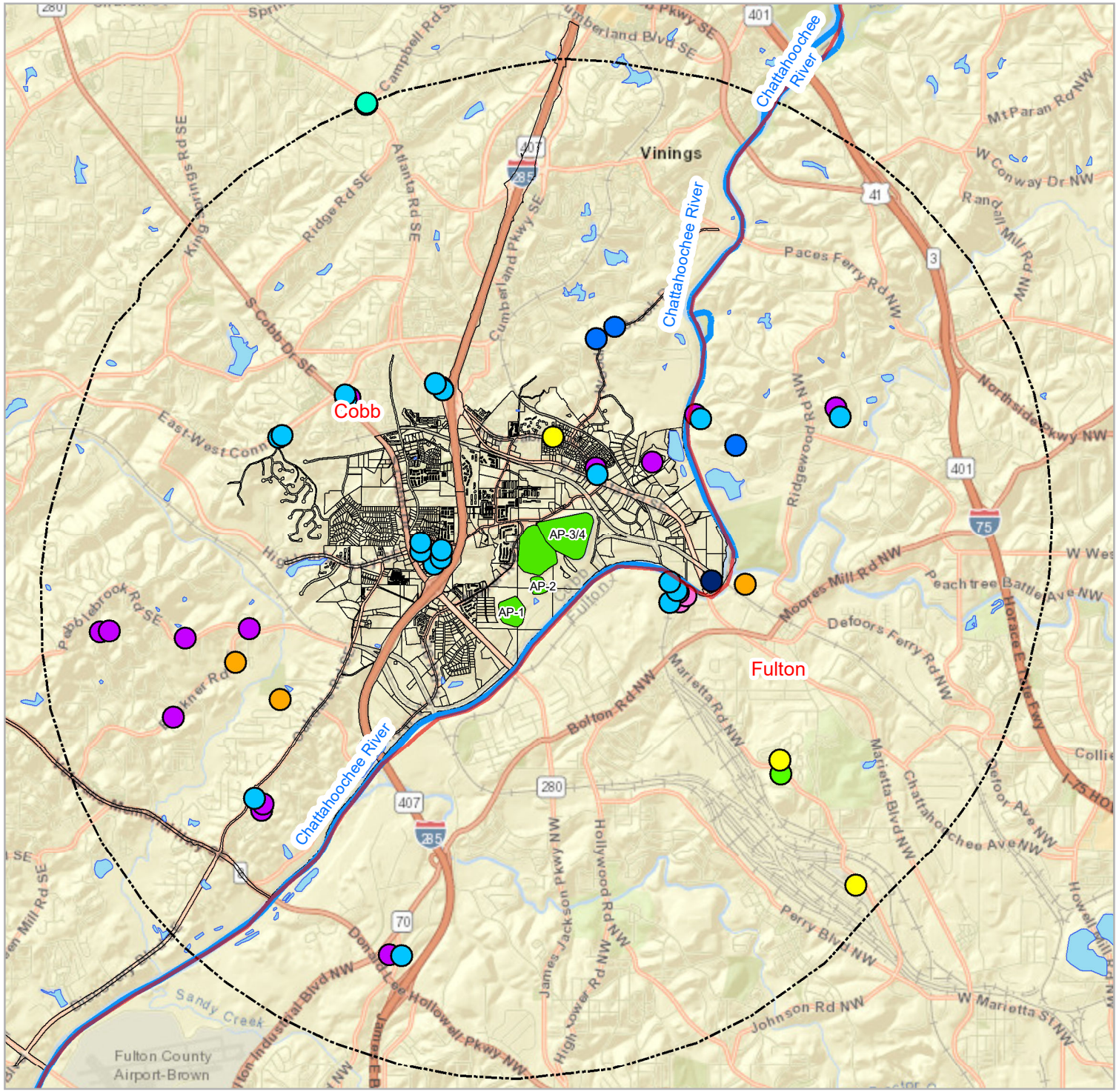
greenhouse. NewFields personnel were unable to locate most of the USGS monitoring wells at the locations listed in the database. NewFields also visited the location of the USGS-identified surface water intake, which is the drinking water treatment plant for the City of Atlanta. Identified wells and the surface water intake were compiled into the GIS database.

Summary

Municipal water is available throughout the surveyed area. The surface water intake for the City of Atlanta is located upstream and across the Chattahoochee River, 0.85 miles to the east of Plant McDonough.

NewFields identified 48 possible wells. The majority of these are boreholes or monitoring wells associated with nearby industrial sites, and several are inactive. Eighteen of these wells may be active or former drinking water wells.

Figure 1 shows points for identified wells. It also shows the surface water intake for the City of Atlanta. When viewed as a PDF file, the figure is interactive, and wells identified using different sources can be turned on and off.



- Unknown Well Type
- Inactive Well
- Spring
- Borehole
- Monitoring Well
- Irrigation Well
- Private Drinking Well
- Commercial Well
- Surface Water Intake
- 3-Mile Radius
- Ash Ponds
- Major Waterways
- Lakes and Ponds
- Parcels
- County Line

0 2,350 4,700 9,400 Feet

Title	**Plant McDonough AP-1, AP-2, & AP-3/4**
Project	**GPC Plants Georgia**
NewFields	Two Midtown Plaza 1349 W. Peachtree St, #2000 Atlanta, Georgia 30309 Tel: 404-347-9050
Date	1/2/2019
Rev. No.	0
MXD	gpc_ccr_2019/agis
Figure No.	1

APPENDIX B
Data Used in Risk Evaluation

Appendix B-1
McDonough AP-1 Risk Evaluation Report
Site Groundwater Data (2016-2020) for Evaluation of SSLs[1]
McDonough AP-1
Plant McDonough, Smyrna County, GA

Well	Date	CAS	Constituent	Units	Obs	Flags	MDL	PQL
DGWC-40	09/02/16	7440-48-4	Cobalt	mg/L	0.0382		0.0005	0.01
DGWC-40	12/08/16	7440-48-4	Cobalt	mg/L	0.0318		0.0005	0.01
DGWC-40	03/30/17	7440-48-4	Cobalt	mg/L	0.0364		0.0005	0.01
DGWC-40	07/13/17	7440-48-4	Cobalt	mg/L	0.0394		0.0003	0.01
DGWC-40	10/26/17	7440-48-4	Cobalt	mg/L	0.0371		0.0003	0.01
DGWC-40	03/02/18	7440-48-4	Cobalt	mg/L	0.0425		0.00052	0.01
DGWC-40	07/12/18	7440-48-4	Cobalt	mg/L	0.044		0.00052	0.01
DGWC-40	11/08/18	7440-48-4	Cobalt	mg/L	0.036		0.00052	0.01
DGWC-40	08/28/19	7440-48-4	Cobalt	mg/L	0.044		0.0003	0.005
DGWC-40	10/18/19	7440-48-4	Cobalt	mg/L	0.043		0.0003	0.005
DGWC-40	03/04/20	7440-48-4	Cobalt	mg/L	0.055		0.0003	0.005
B-62	01/30/19	7440-48-4	Cobalt	mg/L		ND	0.00052	0.01
B-62	09/11/19	7440-48-4	Cobalt	mg/L	0.0003	J	0.0003	0.005
B-62	10/21/19	7440-48-4	Cobalt	mg/L	0.00031	J	0.0003	0.005
DGWC-68A	05/12/17	7439-98-7	Molybdenum	mg/L	0.275		0.0006	0.01
DGWC-68A	06/16/17	7439-98-7	Molybdenum	mg/L	0.19		0.001	0.01
DGWC-68A	07/13/17	7439-98-7	Molybdenum	mg/L	0.211		0.001	0.01
DGWC-68A	08/08/17	7439-98-7	Molybdenum	mg/L	0.207		0.001	0.01
DGWC-68A	10/26/17	7439-98-7	Molybdenum	mg/L	0.226		0.001	0.01
DGWC-68A	03/02/18	7439-98-7	Molybdenum	mg/L	0.215		0.0019	0.01
DGWC-68A	07/13/18	7439-98-7	Molybdenum	mg/L	0.22		0.0019	0.01
DGWC-68A	11/08/18	7439-98-7	Molybdenum	mg/L	0.2		0.0019	0.01
DGWC-68A	08/28/19	7439-98-7	Molybdenum	mg/L	0.21		0.00095	0.01
DGWC-68A	10/16/19	7439-98-7	Molybdenum	mg/L	0.22		0.00095	0.01
DGWC-68A	03/09/20	7439-98-7	Molybdenum	mg/L	0.19		0.00095	0.01
B-68	03/31/17	7439-98-7	Molybdenum	mg/L	0.175		0.0006	0.01
B-68	01/22/18	7439-98-7	Molybdenum	mg/L	0.225		0.001	0.01
B-68	10/22/19	7439-98-7	Molybdenum	mg/L	0.21		0.00095	0.01

Notes:
1) Highlighted rows indicate constituent identified in the well at a statistically significant level (SSL).

J - indicates an estimated value; the substance was detected between the laboratory MDL and PQL.
MDL - method detection limit
mg/L - milligrams per liter
n/a - not available
ND - not detected above the laboratory MDL
PQL - practical quantitation limit

Prepared by/Date: LO 09/24/20
Checked by/Date: RMB 10/1/2020

Appendix B-2
McDonough AP-1 Risk Evaluation Report
Surface Water Data (2016-2019)
McDonough AP-1
Plant McDonough, Cobb County, GA

Location	Sample Designation	Date	CAS	Constituent	Units	Obs	Flags	MDL	PQL
Chattahoochee River at Bankhead Highway	Downgradient	3/1/2016	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
Chattahoochee River at Bankhead Highway	Downgradient	6/20/2016	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
Chattahoochee River at Bankhead Highway	Downgradient	9/22/2016	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
Chattahoochee River at Bankhead Highway	Downgradient	12/5/2016	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
Chattahoochee River at Bankhead Highway	Downgradient	3/9/2017	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
Chattahoochee River at Bankhead Highway	Downgradient	6/19/2017	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
Chattahoochee River at Bankhead Highway	Downgradient	9/13/2017	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
Chattahoochee River at Bankhead Highway	Downgradient	12/7/2017	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
Chattahoochee River at Bankhead Highway	Downgradient	3/5/2018	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
Chattahoochee River at Bankhead Highway	Downgradient	6/21/2018	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
Chattahoochee River at Bankhead Highway	Downgradient	9/4/2018	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
Chattahoochee River at Bankhead Highway	Downgradient	12/4/2018	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
Chattahoochee River at Bankhead Highway	Downgradient	12/9/2019	7439-98-7	Molybdenum	mg/L		ND	n/a	0.005
McDonough UT01_DS	Downgradient	9/17/2019	7439-98-7	Molybdenum	mg/L	0.0026	J	0.00095	0.01
McDonough UT02	Downgradient	9/17/2019	7439-98-7	Molybdenum	mg/L		ND	0.00095	0.01
McDonough UT01_US	Background	9/17/2019	7439-98-7	Molybdenum	mg/L		ND	0.00095	0.01

Notes:
J - indicates an estimated value; the substance was detected between the laboratory MDL and PQL.
MDL - method detection limit
mg/L - milligrams per liter
n/a - not available
ND - not detected above the laboratory MDL
PQL - practical quantitation limit

Prepared by/Date: RMB 10/26/2020
Checked by/Date: SBM 10/26/2020

APPENDIX C

USEPA RSL Calculator Generated Residential Screening Levels

Appendix C-1
McDonough AP-1
Plant McDonough, Cobb County, GA

Variable	Value
THQ (target hazard quotient) unitless	1
TR (target risk) unitless	0.00001
LT (lifetime) years	70
K (volatilization factor of Andelman) L/m^3	0.5
l_{sc} (apparent thickness of stratum corneum) cm	0.001
ED_{res} (exposure duration - resident) years	26
$ED_{res\text{-}c}$ (exposure duration - child) years	6
$ED_{res\text{-}a}$ (exposure duration - adult) years	20
$ED_{0\text{-}2}$ (mutagenic exposure duration first phase) years	2
$ED_{2\text{-}6}$ (mutagenic exposure duration second phase) years	4
$ED_{6\text{-}16}$ (mutagenic exposure duration third phase) years	10
$ED_{16\text{-}26}$ (mutagenic exposure duration fourth phase) years	10
EF_{res} (exposure frequency) days/year	350
$EF_{res\text{-}c}$ (exposure frequency - child) days/year	350
$EF_{res\text{-}a}$ (exposure frequency - adult) days/year	350
$EF_{0\text{-}2}$ (mutagenic exposure frequency first phase) days/year	350
$EF_{2\text{-}6}$ (mutagenic exposure frequency second phase) days/year	350
$EF_{6\text{-}16}$ (mutagenic exposure frequency third phase) days/year	350
$EF_{16\text{-}26}$ (mutagenic exposure frequency fourth phase) days/year	350
$ET_{event\text{-}res\text{-}adj}$ (age-adjusted exposure time) hours/event	0.67077
$ET_{event\text{-}res\text{-}madj}$ (mutagenic age-adjusted exposure time) hours/event	0.67077
ET_{res} (exposure time) hours/day	24
$ET_{res\text{-}c}$ (dermal exposure time - child) hours/event	0.54
$ET_{res\text{-}a}$ (dermal exposure time - adult) hours/event	0.71
$ET_{res\text{-}c}$ (inhalation exposure time - child) hours/day	24
$ET_{res\text{-}a}$ (inhalation exposure time - adult) hours/day	24
Appendix D-3	24
Scherer AP-1	24
Plant Scherer, Juliette, GA	24
$ET_{16\text{-}26}$ (mutagenic inhalation exposure time fourth phase) hours/day	24
$ET_{0\text{-}2}$ (mutagenic dermal exposure time first phase) hours/event	0.54
$ET_{2\text{-}6}$ (mutagenic dermal exposure time second phase) hours/event	0.54
$ET_{6\text{-}16}$ (mutagenic dermal exposure time third phase) hours/event	0.71
$ET_{16\text{-}26}$ (mutagenic dermal exposure time fourth phase) hours/event	0.71
$BW_{res\text{-}a}$ (body weight - adult) kg	80

Appendix C-1
McDonough AP-1
Plant McDonough, Cobb County, GA

Variable	Value
BW_{res-c} (body weight - child) kg	15
BW_{0-2} (mutagenic body weight) kg	15
BW_{2-6} (mutagenic body weight) kg	15
BW_{6-16} (mutagenic body weight) kg	80
BW_{16-26} (mutagenic body weight) kg	80
$IFW_{res-adj}$ (adjusted intake factor) L/kg	327.95
$IFW_{res-adj}$ (adjusted intake factor) L/kg	327.95
$IFWM_{res-adj}$ (mutagenic adjusted intake factor) L/kg	1019.9
$IFWM_{res-adj}$ (mutagenic adjusted intake factor) L/kg	1019.9
IRW_{res-c} (water intake rate - child) L/day	0.78
IRW_{res-a} (water intake rate - adult) L/day	2.5
IRW_{0-2} (mutagenic water intake rate) L/day	0.78
IRW_{2-6} (mutagenic water intake rate) L/day	0.78
IRW_{6-16} (mutagenic water intake rate) L/day	2.5
IRW_{16-26} (mutagenic water intake rate) L/day	2.5
EV_{res-a} (events - adult) per day	1
EV_{res-c} (events - child) per day	1
EV_{0-2} (mutagenic events) per day	1
EV_{2-6} (mutagenic events) per day	1
EV_{6-16} (mutagenic events) per day	1
EV_{16-26} (mutagenic events) per day	1
$DFW_{res-adj}$ (age-adjusted dermal factor) cm^2-event/kg	2610650
$DFWM_{res-adj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	8191633
SA_{res-c} (skin surface area - child) cm^2	6365
SA_{res-a} (skin surface area - adult) cm^2	19652
SA_{0-2} (mutagenic skin surface area) cm^2	6365
SA_{2-6} (mutagenic skin surface area) cm^2	6365
SA_{6-16} (mutagenic skin surface area) cm^2	19652
SA_{16-26} (mutagenic skin surface area) cm^2	19652

Output generated 06AUG2020:16:09:05

Appendix C-2
Default
Resident Risk-Based Regional Screening Levels (RSL) for Tap Water

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF_o $(mg/kg\text{-}day)^{-1}$	SF_o Ref	IUR $(ug/m^3)^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS
Cobalt	7440-48-4	No	No	Inorganics	-		9.00E-03	P	3.00E-04	P	6.00E-06	P	1.00E+00
Molybdenum	7439-98-7	No	No	Inorganics	-		-		5.00E-03	I	-		1.00E+00

Output generated 06AUG2020:16:09:05

Appendix C-2
Default
Resident Risk-Based Regional Screening Levels (RSL) for Tap Water

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	K_p (cm/hr)	MW	B (unitless)	t^* (hr)	T_{event} (hr/event)	FA (unitless)	In EPD?	$DA_{event\ (ca)}$	$DA_{event\ (nc\ child)}$
Cobalt	7440-48-4	No	No	Inorganics	4.00E-04	5.89E+01	1.18E-03	5.40E-01	2.25E-01	1.00E+00	Yes	-	7.37E-04
Molybdenum	7439-98-7	No	No	Inorganics	1.00E-03	9.59E+01	3.77E-03	8.70E-01	3.62E-01	1.00E+00	Yes	-	1.23E-02

Output generated 06AUG2020:16:09:05

Appendix C-2
Default
Resident Risk-Based Regional Screening Levels (RSL) for Tap Water

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	$DA_{event\ (nc\ adult)}$	MCL (ug/L)	Ingestion SL TR=1E-05 (ug/L)	Dermal SL TR=1E-05 (ug/L)	Inhalation SL TR=1E-05 (ug/L)	Carcinogenic SL TR=1E-05 (ug/L)
Cobalt	7440-48-4	No	No	Inorganics	1.27E-03	-	-	-	-	-
Molybdenum	7439-98-7	No	No	Inorganics	2.12E-02	-	-	-	-	-

Output generated 06AUG2020:16:09:05

Appendix C-2
Default
Resident Risk-Based Regional Screening Levels (RSL) for Tap Water

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	Ingestion SL Child THQ=1 (ug/L)	Dermal SL Child THQ=1 (ug/L)	Inhalation SL Child THQ=1 (ug/L)	Noncarcinogenic SL Child THI=1 (ug/L)	Ingestion SL Adult THQ=1 (ug/L)
Cobalt	7440-48-4	No	No	Inorganics	6.02E+00	3.41E+03	-	6.01E+00	1.00E+01
Molybdenum	7439-98-7	No	No	Inorganics	1.00E+02	2.28E+04	-	9.98E+01	1.67E+02

Output generated 06AUG2020:16:09:05

Appendix C-2
Default
Resident Risk-Based Regional Screening Levels (RSL) for Tap Water

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	Dermal SL Adult THQ=1 (ug/L)	Inhalation SL Adult THQ=1 (ug/L)	Noncarcinogenic SL Adult THI=1 (ug/L)	Screening Level (ug/L)
Cobalt	7440-48-4	No	No	Inorganics	4.48E+03	-	9.99E+00	6.01E+00 nc
Molybdenum	7439-98-7	No	No	Inorganics	2.99E+04	-	1.66E+02	9.98E+01 nc

Output generated 06AUG2020:16:09:05

APPENDIX D

Support for Refined Risk Evaluation

Appendix D-1

Exposure Point Concentration Calculation Results

Appendix D-1
Exposure Point Calculation Details[1]
McDonough AP-1
Plant McDonough, Cobb County, GA

CCR Rule Designation	Constituent	Well IDs Included	Maximum Concentration (mg/L)	Detection Frequency	Exceedance Frequency	EPC Step 1 Individual Target Well(s) 2016-2020 (mg/L)	EPC Step 2 Target Well(s) & Downgradient Well(s) 2016-2020 (mg/L)	EPC Step 3 Farthest Downgradient Well(s) 2016-2020 (mg/L)
Appendix IV	Cobalt	DGWC-40	0.055	11 / 11	10 / 11	0.044		
		DGWC-40 B-62	0.055	13 / 14	10 / 14		0.055	
		B-62	0.00031	2 / 3	0 / 3			0.00031
	Molybdenum	DGWC-68A	0.28	11 / 11	11 / 11	0.23		
		DGWC-68A B-68	0.28	14 / 14	14 / 14		0.22	
		B-68	0.23	3 / 3	3 / 3			0.23

Notes:

Highlighted value is the EPC selected for the refined screening.

1 - EPCs calculated in accordance with USEPA, 2014. Memorandum for Determining Groundwater Exposure Point Concentrations, Supplemental Guidance. OSWER Directive 9283.1-42, February 2014. Located at https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236917

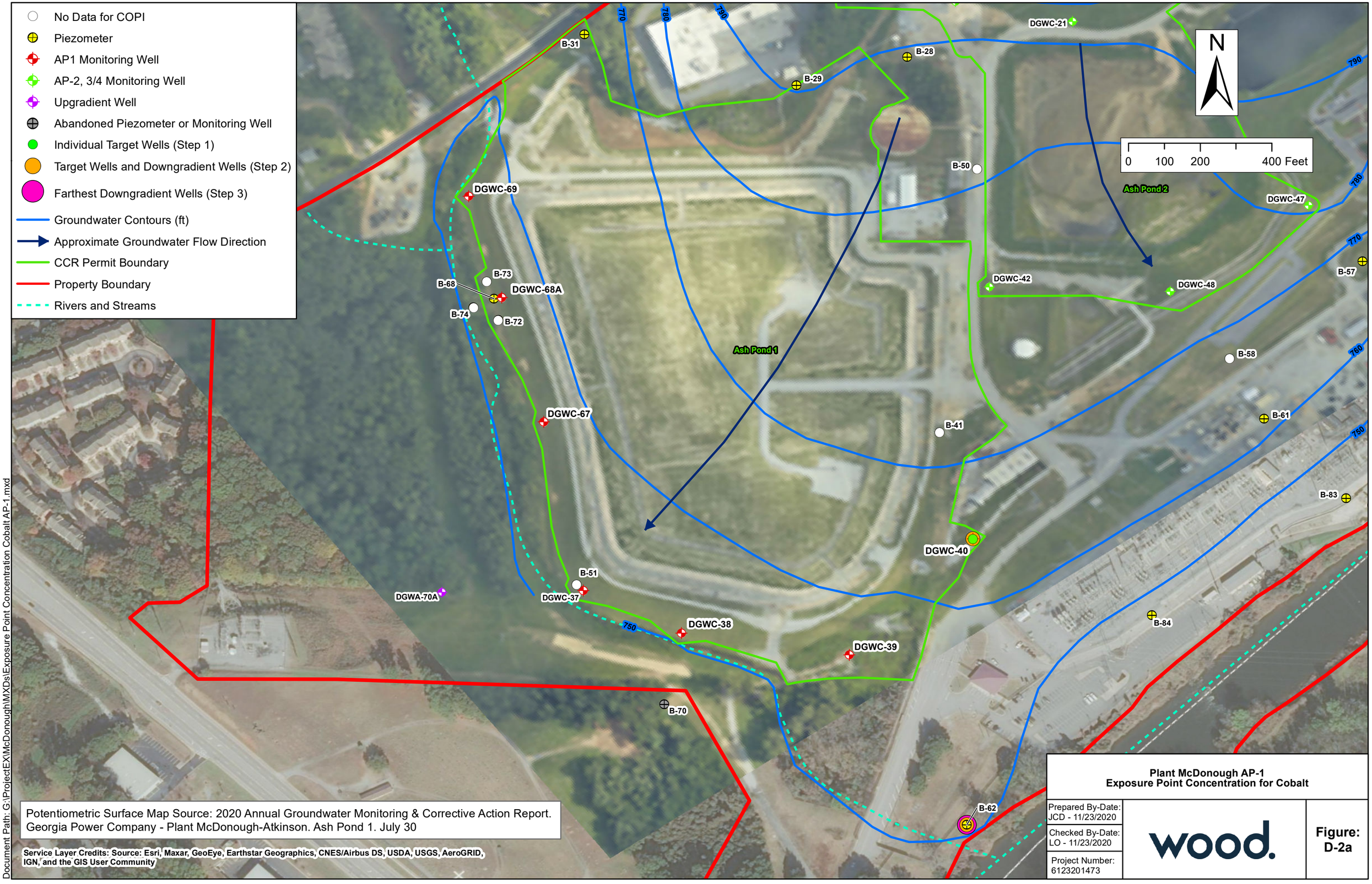
Definitions:

CCR = Coal Combustion Residuals
EPC = Exposure Point Concentration
mg/L = milligrams per liter

Prepared by/Date: RRP 09/14/2020
Checked by/Date: RMB 9/22/2020

Appendix D-2

Exposure Point Concentration Figures



Potentiometric Surface Map Source: 2020 Annual Groundwater Monitoring & Corrective Action Report. Georgia Power Company - Plant McDonough-Atkinson. Ash Pond 1. July 30

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Document Path: G:\Project\EX\McDonough\MXDs\Exposure Point Concentration Cobalt AP-1.mxd

Plant McDonough AP-1
Exposure Point Concentration for Cobalt

Prepared By-Date: JCD - 11/23/2020	wood.	Figure: D-2a
Checked By-Date: LO - 11/23/2020		
Project Number: 6123201473		

No Data for COPI
Piezometer
AP1 Monitoring Well
AP-2, 3/4 Monitoring Well
Upgradient Well
Abandoned Piezometer or Monitoring Well
Individual Target Wells (Step 1)
Target Wells and Downgradient Wells (Step 2)
Farthest Downgradient Wells (Step 3)
Groundwater Contours (ft)
Approximate Groundwater Flow Direction
CCR Permit Boundary
Property Boundary
Rivers and Streams

N

0 100 200 400 Feet

B-31
B-28
B-29
DGWC-21
B-50
DGWC-69
Ash Pond 2
DGWC-47
B-73
B-68
DGWC-68A
B-74
B-72
DGWC-42
DGWC-48
B-57
Ash Pond 1
B-58
DGWC-67
B-41
B-61
DGWC-40
B-83
B-51
DGWA-70A
DGWC-37
DGWC-38
B-84
DGWC-39
B-70
B-62

770 780 790 750 760

Potentiometric Surface Map Source: 2020 Annual Groundwater Monitoring & Corrective Action Report. Georgia Power Company - Plant McDonough-Atkinson. Ash Pond 1. July 30

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Document Path: G:\Project\EX\McDonough\MXDs\SSL Exposure Point Concentration for Molybdenum.mxd

Plant McDonough AP-1
Exposure Point Concentration for Molybdenum

Prepared By-Date: JCD - 11/23/2020	wood.	Figure: D-2b
Checked By-Date: LO - 11/23/2020		
Project Number: 6123201473		

Appendix D-3

ProUCL Input/Output Files

Appendix D-3a
Groundwater ProUCL Input - Cobalt
McDonough Draft Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

Step 1

Well(1)	Date(1)	Cobalt1	D_Cobalt1
DGWC-40	09/02/16	0.0382	1
DGWC-40	12/08/16	0.0318	1
DGWC-40	03/30/17	0.0364	1
DGWC-40	07/13/17	0.0394	1
DGWC-40	10/26/17	0.0371	1
DGWC-40	03/02/18	0.0425	1
DGWC-40	07/12/18	0.044	1
DGWC-40	11/08/18	0.036	1
DGWC-40	08/28/19	0.044	1
DGWC-40	10/18/19	0.043	1
DGWC-40	03/04/20	0.055	1

Step 2

Well(2)	Date(2)	Cobalt2	D_Cobalt2
DGWC-40	09/02/16	0.0382	1
DGWC-40	12/08/16	0.0318	1
DGWC-40	03/30/17	0.0364	1
DGWC-40	07/13/17	0.0394	1
DGWC-40	10/26/17	0.0371	1
DGWC-40	03/02/18	0.0425	1
DGWC-40	07/12/18	0.044	1
DGWC-40	11/08/18	0.036	1
DGWC-40	08/28/19	0.044	1
DGWC-40	10/18/19	0.043	1
DGWC-40	03/04/20	0.055	1
B-62	01/30/19	0.00052	0
B-62	09/11/19	0.0003	1
B-62	10/21/19	0.00031	1

Step 3

Well(3)	Date(3)	Cobalt3	D_Cobalt3
B-62	01/30/19	0.00052	0
B-62	09/11/19	0.0003	1
B-62	10/21/19	0.00031	1

Notes:
1) Concentrations in units of mg/L.

Prepared by/Date: LO 9/24/20
Checked by/Date: RMB 10/1/2020

Appendix D-3b
Groundwater ProUCL Output - Cobalt
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.19/14/2020 3:56:56 PM
From File	20200914_input_GW_Co_Step123.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Cobalt1

General Statistics

Total Number of Observations	11	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	0.0318	Mean	0.0407
Maximum	0.055	Median	0.0394
SD	0.00613	Std. Error of Mean	0.00185
Coefficient of Variation	0.151	Skewness	1.111

Normal GOF Test

Shapiro Wilk Test Statistic	0.912	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.203	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.044	95% Adjusted-CLT UCL (Chen-1995)	0.0444
		95% Modified-t UCL (Johnson-1978)	0.0441

Gamma GOF Test

A-D Test Statistic	0.345	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.728	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.177	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.255	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	51.59	k star (bias corrected MLE)	37.58
Theta hat (MLE)	7.8833E-4	Theta star (bias corrected MLE)	0.00108
nu hat (MLE)	1135	nu star (bias corrected)	826.8
MLE Mean (bias corrected)	0.0407	MLE Sd (bias corrected)	0.00663
		Approximate Chi Square Value (0.05)	761.1
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	750.8

Appendix D-3b
Groundwater ProUCL Output - Cobalt
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.0442	95% Adjusted Gamma UCL (use when n<50)	0.0448

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.948	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.179	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.251	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-3.448	Mean of logged Data	-3.212
Maximum of Logged Data	-2.9	SD of logged Data	0.144

Assuming Lognormal Distribution

95% H-UCL	0.0442	90% Chebyshev (MVUE) UCL	0.046
95% Chebyshev (MVUE) UCL	0.0484	97.5% Chebyshev (MVUE) UCL	0.0517
99% Chebyshev (MVUE) UCL	0.0583		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0437	95% Jackknife UCL	0.044
95% Standard Bootstrap UCL	0.0436	95% Bootstrap-t UCL	0.0449
95% Hall's Bootstrap UCL	0.0467	95% Percentile Bootstrap UCL	0.0437
95% BCA Bootstrap UCL	0.0442		
90% Chebyshev(Mean, Sd) UCL	0.0462	95% Chebyshev(Mean, Sd) UCL	0.0487
97.5% Chebyshev(Mean, Sd) UCL	0.0522	99% Chebyshev(Mean, Sd) UCL	0.0591

Suggested UCL to Use

95% Student's-t UCL	0.044

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Cobalt2

General Statistics

Total Number of Observations	14	Number of Distinct Observations	13
Number of Detects	13	Number of Non-Detects	1
Number of Distinct Detects	12	Number of Distinct Non-Detects	1
Minimum Detect	3.0000E-4	Minimum Non-Detect	5.2000E-4
Maximum Detect	0.055	Maximum Non-Detect	5.2000E-4
Variance Detects	2.6110E-4	Percent Non-Detects	7.143%
Mean Detects	0.0345	SD Detects	0.0162
Median Detects	0.0382	CV Detects	0.469
Skewness Detects	-1.587	Kurtosis Detects	1.993
Mean of Logged Detects	-3.963	SD of Logged Detects	1.839

Appendix D-3b
Groundwater ProUCL Output - Cobalt
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.759	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.866	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.307	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.234	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.032	KM Standard Error of Mean	0.00483
KM SD	0.0174	95% KM (BCA) UCL	0.0392
95% KM (t) UCL	0.0406	95% KM (Percentile Bootstrap) UCL	0.0396
95% KM (z) UCL	0.04	95% KM Bootstrap t UCL	0.0394
90% KM Chebyshev UCL	0.0465	95% KM Chebyshev UCL	0.0531
97.5% KM Chebyshev UCL	0.0622	99% KM Chebyshev UCL	0.0801

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.037	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.451	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.243	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.973	k star (bias corrected MLE)	0.8
Theta hat (MLE)	0.0354	Theta star (bias corrected MLE)	0.0431
nu hat (MLE)	25.29	nu star (bias corrected)	20.79
Mean (detects)	0.0345		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	3.0000E-4	Mean	0.0335
Maximum	0.055	Median	0.0377
SD	0.0159	CV	0.475
k hat (MLE)	1.028	k star (bias corrected MLE)	0.855
Theta hat (MLE)	0.0326	Theta star (bias corrected MLE)	0.0392
nu hat (MLE)	28.79	nu star (bias corrected)	23.95
Adjusted Level of Significance (β)	0.0312		
Approximate Chi Square Value (23.95, α)	13.81	Adjusted Chi Square Value (23.95, β)	12.8
95% Gamma Approximate UCL (use when n>=50)	0.0581	95% Gamma Adjusted UCL (use when n<50)	0.0627

Appendix D-3b
Groundwater ProUCL Output - Cobalt
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.032	SD (KM)	0.0174
Variance (KM)	3.0118E-4	SE of Mean (KM)	0.00483
k hat (KM)	3.405	k star (KM)	2.723
nu hat (KM)	95.33	nu star (KM)	76.24
theta hat (KM)	0.00941	theta star (KM)	0.0118
80% gamma percentile (KM)	0.0462	90% gamma percentile (KM)	0.058
95% gamma percentile (KM)	0.0691	99% gamma percentile (KM)	0.0933

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (76.24, α)	57.12	Adjusted Chi Square Value (76.24, β)	54.93
95% Gamma Approximate KM-UCL (use when n>=50)	0.0427	95% Gamma Adjusted KM-UCL (use when n<50)	0.0444

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.515	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.866	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.456	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.234	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0322	Mean in Log Scale	-4.118
SD in Original Scale	0.0178	SD in Log Scale	1.859
95% t UCL (assumes normality of ROS data)	0.0406	95% Percentile Bootstrap UCL	0.0391
95% BCA Bootstrap UCL	0.039	95% Bootstrap t UCL	0.0393
95% H-UCL (Log ROS)	0.881		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.258	KM Geo Mean	0.0141
KM SD (logged)	2.008	95% Critical H Value (KM-Log)	4.69
KM Standard Error of Mean (logged)	0.558	95% H-UCL (KM -Log)	1.445
KM SD (logged)	2.008	95% Critical H Value (KM-Log)	4.69
KM Standard Error of Mean (logged)	0.558		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.032	Mean in Log Scale	-4.27
SD in Original Scale	0.018	SD in Log Scale	2.106
95% t UCL (Assumes normality)	0.0405	95% H-Stat UCL	2.236

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

975% KM (Chebyshev) UCL	0.0622

Warning: Recommended UCL exceeds the maximum observation

Appendix D-3b
Groundwater ProUCL Output - Cobalt
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Cobalt3

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
Number of Detects	2	Number of Non-Detects	1
Number of Distinct Detects	2	Number of Distinct Non-Detects	1
Minimum Detect	3.0000E-4	Minimum Non-Detect	5.2000E-4
Maximum Detect	3.1000E-4	Maximum Non-Detect	5.2000E-4
Variance Detects	5.000E-11	Percent Non-Detects	33.33%
Mean Detects	3.0500E-4	SD Detects	7.0711E-6
Median Detects	3.0500E-4	CV Detects	0.0232
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-8.095	SD of Logged Detects	0.0232

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3.0500E-4	KM Standard Error of Mean	5.0000E-6
KM SD	5.0000E-6	95% KM (BCA) UCL	N/A
95% KM (t) UCL	3.1960E-4	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	3.1322E-4	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	3.2000E-4	95% KM Chebyshev UCL	3.2679E-4
97.5% KM Chebyshev UCL	3.3622E-4	99% KM Chebyshev UCL	3.5475E-4

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	3721	k star (bias corrected MLE)	N/A
Theta hat (MLE)	8.1975E-8	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	14883	nu star (bias corrected)	N/A
Mean (detects)	3.0500E-4		

Appendix D-3b
Groundwater ProUCL Output - Cobalt
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3.0500E-4	SD (KM)	5.0000E-6
Variance (KM)	2.500E-11	SE of Mean (KM)	5.0000E-6
k hat (KM)	3721	k star (KM)	N/A
nu hat (KM)	22326	nu star (KM)	N/A
theta hat (KM)	8.1967E-8	theta star (KM)	N/A
80% gamma percentile (KM)	N/A	90% gamma percentile (KM)	N/A
95% gamma percentile (KM)	N/A	99% gamma percentile (KM)	N/A

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.00136
Approximate Chi Square Value (N/A, α)	N/A	Adjusted Chi Square Value (N/A, β)	N/A
95% Gamma Approximate KM-UCL (use when n>=50)	N/A	95% Gamma Adjusted KM-UCL (use when n<50)	N/A

Lognormal GOF Test on Detected Observations Only
Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.0499E-4	Mean in Log Scale	-8.095
SD in Original Scale	5.0001E-6	SD in Log Scale	0.0164
95% t UCL (assumes normality of ROS data)	3.1342E-4	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A	95% Bootstrap t UCL	N/A
95% H-UCL (Log ROS)	N/A		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-8.095	KM Geo Mean	3.0496E-4
KM SD (logged)	0.0164	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.0164	95% H-UCL (KM -Log)	N/A
KM SD (logged)	0.0164	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.0164		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2.9000E-4	Mean in Log Scale	-8.148
SD in Original Scale	2.6458E-5	SD in Log Scale	0.0935
95% t UCL (Assumes normality)	3.3460E-4	95% H-Stat UCL	N/A

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	3.20E-04	KM H-UCL	N/A
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!
Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Appendix D-3c
Groundwater ProUCL Input - Molybdenum
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

Step 1

Well(1)	Date(1)	Mo1	D_Mo1
DGWC-68A	05/12/17	0.275	1
DGWC-68A	06/16/17	0.19	1
DGWC-68A	07/13/17	0.211	1
DGWC-68A	08/08/17	0.207	1
DGWC-68A	10/26/17	0.226	1
DGWC-68A	03/02/18	0.215	1
DGWC-68A	07/13/18	0.22	1
DGWC-68A	11/08/18	0.2	1
DGWC-68A	08/28/19	0.21	1
DGWC-68A	10/16/19	0.22	1
DGWC-68A	03/09/20	0.19	1

Step 2

Well(2)	Date(2)	Mo2	D_Mo2
DGWC-68A	05/12/17	0.275	1
DGWC-68A	06/16/17	0.19	1
DGWC-68A	07/13/17	0.211	1
DGWC-68A	08/08/17	0.207	1
DGWC-68A	10/26/17	0.226	1
DGWC-68A	03/02/18	0.215	1
DGWC-68A	07/13/18	0.22	1
DGWC-68A	11/08/18	0.2	1
DGWC-68A	08/28/19	0.21	1
DGWC-68A	10/16/19	0.22	1
DGWC-68A	03/09/20	0.19	1
B-68	03/31/17	0.175	1
B-68	01/22/18	0.225	1
B-68	10/22/19	0.21	1

Step 3

Well(3)	Date(3)	Mo3	D_Mo3
B-68	03/31/17	0.175	1
B-68	01/22/18	0.225	1
B-68	10/22/19	0.21	1

Notes:
1) Concentrations in units of mg/L.

Prepared by/Date: LO 9/24/20
Checked by/Date: RMB 10/1/2020

Appendix D-3d
Groundwater ProUCL Output - Molybdenum
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.19/14/2020 3:52:40 PM
From File	20200914_input_GW_Mb_Step123.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Molybdenum1

General Statistics

Total Number of Observations	11	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	0.19	Mean	0.215
Maximum	0.275	Median	0.211
SD	0.0231	Std. Error of Mean	0.00697
Coefficient of Variation	0.108	Skewness	1.814

Normal GOF Test

Shapiro Wilk Test Statistic	0.821	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.231	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.228	95% Adjusted-CLT UCL (Chen-1995)	0.23
		95% Modified-t UCL (Johnson-1978)	0.228

Gamma GOF Test

A-D Test Statistic	0.608	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.726	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.211	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.254	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	103.7	k star (bias corrected MLE)	75.49
Theta hat (MLE)	0.00207	Theta star (bias corrected MLE)	0.00285
nu hat (MLE)	2282	nu star (bias corrected)	1661
MLE Mean (bias corrected)	0.215	MLE Sd (bias corrected)	0.0247
		Approximate Chi Square Value (0.05)	1567
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	1552

Appendix D-3d
Groundwater ProUCL Output - Molybdenum
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.228	95% Adjusted Gamma UCL (use when n<50)	0.23

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.862	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.208	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.251	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-1.661	Mean of logged Data	-1.542
Maximum of Logged Data	-1.291	SD of logged Data	0.101

Assuming Lognormal Distribution

95% H-UCL	0.228	90% Chebyshev (MVUE) UCL	0.235
95% Chebyshev (MVUE) UCL	0.243	97.5% Chebyshev (MVUE) UCL	0.256
99% Chebyshev (MVUE) UCL	0.28		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.226	95% Jackknife UCL	0.228
95% Standard Bootstrap UCL	0.226	95% Bootstrap-t UCL	0.234
95% Hall's Bootstrap UCL	0.285	95% Percentile Bootstrap UCL	0.227
95% BCA Bootstrap UCL	0.23		
90% Chebyshev(Mean, Sd) UCL	0.236	95% Chebyshev(Mean, Sd) UCL	0.245
97.5% Chebyshev(Mean, Sd) UCL	0.258	99% Chebyshev(Mean, Sd) UCL	0.284

Suggested UCL to Use

95% Student's-t UCL	0.228

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Molybdenum2

General Statistics

Total Number of Observations	14	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	0.175	Mean	0.212
Maximum	0.275	Median	0.211
SD	0.0232	Std. Error of Mean	0.00619
Coefficient of Variation	0.109	Skewness	1.249

Appendix D-3d
Groundwater ProUCL Output - Molybdenum
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

Normal GOF Test

Shapiro Wilk Test Statistic	0.886	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.874	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.208	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.226	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.223	95% Adjusted-CLT UCL (Chen-1995)	0.225
		95% Modified-t UCL (Johnson-1978)	0.224

Gamma GOF Test

A-D Test Statistic	0.511	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.733	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.188	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.228	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	95.75	k star (bias corrected MLE)	75.28
Theta hat (MLE)	0.00222	Theta star (bias corrected MLE)	0.00282
nu hat (MLE)	2681	nu star (bias corrected)	2108
MLE Mean (bias corrected)	0.212	MLE Sd (bias corrected)	0.0245
		Approximate Chi Square Value (0.05)	2002
Adjusted Level of Significance	0.0312	Adjusted Chi Square Value	1988

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.224	95% Adjusted Gamma UCL (use when n<50)	0.225

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.921	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.874	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.19	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.226	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-1.743	Mean of logged Data	-1.554
Maximum of Logged Data	-1.291	SD of logged Data	0.105

Assuming Lognormal Distribution

95% H-UCL	0.224	90% Chebyshev (MVUE) UCL	0.23
95% Chebyshev (MVUE) UCL	0.238	97.5% Chebyshev (MVUE) UCL	0.25
99% Chebyshev (MVUE) UCL	0.272		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Appendix D-3d
Groundwater ProUCL Output - Molybdenum
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

Nonparametric Distribution Free UCLs

95% CLT UCL	0.223	95% Jackknife UCL	0.223
95% Standard Bootstrap UCL	0.222	95% Bootstrap-t UCL	0.226
95% Hall's Bootstrap UCL	0.238	95% Percentile Bootstrap UCL	0.223
95% BCA Bootstrap UCL	0.224		
90% Chebyshev(Mean, Sd) UCL	0.231	95% Chebyshev(Mean, Sd) UCL	0.239
97.5% Chebyshev(Mean, Sd) UCL	0.251	99% Chebyshev(Mean, Sd) UCL	0.274

Suggested UCL to Use

95% Student's-t UCL	0.223

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Molybdenum3

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	0.175	Mean	0.203
Maximum	0.225	Median	0.21
SD	0.0257	Std. Error of Mean	0.0148
Coefficient of Variation	0.126	Skewness	-1.09

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.949	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.269	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.247	95% Adjusted-CLT UCL (Chen-1995)	0.218
		95% Modified-t UCL (Johnson-1978)	0.245

Gamma GOF Test
Not Enough Data to Perform GOF Test

Appendix D-3d
Groundwater ProUCL Output - Molybdenum
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA

Gamma Statistics

k hat (MLE)	90.82	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00224	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	544.9	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.937	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.281	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-1.743	Mean of logged Data	-1.598
Maximum of Logged Data	-1.492	SD of logged Data	0.13

Assuming Lognormal Distribution

95% H-UCL	0.266	90% Chebyshev (MVUE) UCL	0.249
95% Chebyshev (MVUE) UCL	0.27	97.5% Chebyshev (MVUE) UCL	0.298
99% Chebyshev (MVUE) UCL	0.355		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.228	95% Jackknife UCL	0.247
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	0.248	95% Chebyshev(Mean, Sd) UCL	0.268
97.5% Chebyshev(Mean, Sd) UCL	0.296	99% Chebyshev(Mean, Sd) UCL	0.351

Suggested UCL to Use

95% Student's-t UCL	0.247

Recommended UCL exceeds the maximum observation

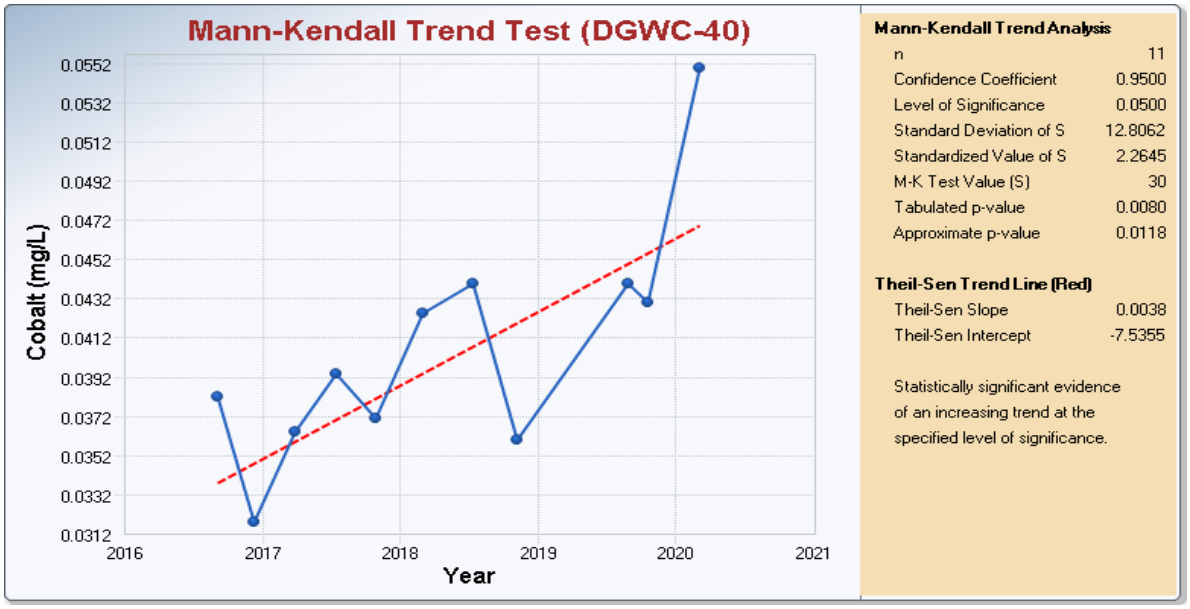
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Appendix D-4

Groundwater Trend Graphs

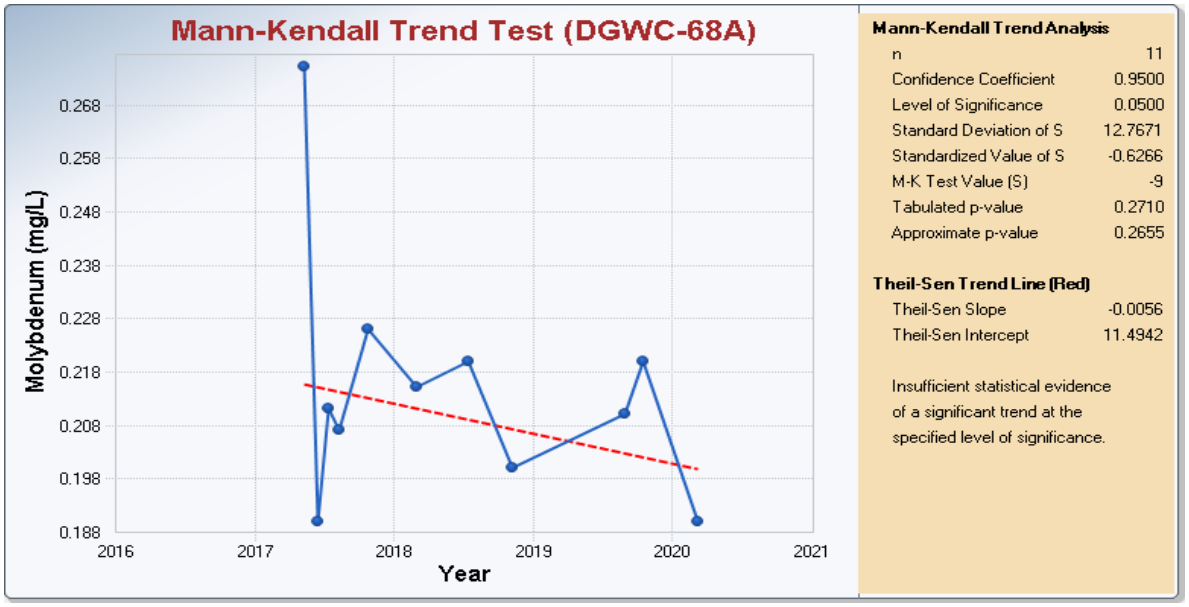
Appendix D-4
Groundwater Mann-Kendall Trend Graphs
McDonough AP-1 Risk Evaluation Report
McDonough AP-1
Plant McDonough, Cobb County, GA



Mann-Kendall Trend Analysis	
n	11
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	12.8062
Standardized Value of S	2.2645
M-K Test Value (S)	30
Tabulated p-value	0.0080
Approximate p-value	0.0118

Theil-Sen Trend Line (Red)	
Theil-Sen Slope	0.0038
Theil-Sen Intercept	-7.5355

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis	
n	11
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	12.7671
Standardized Value of S	-0.6266
M-K Test Value (S)	-9
Tabulated p-value	0.2710
Approximate p-value	0.2655

Theil-Sen Trend Line (Red)	
Theil-Sen Slope	-0.0056
Theil-Sen Intercept	11.4942

Insufficient statistical evidence of a significant trend at the specified level of significance.

Prepared by/Date: LO 09/28/20
Checked by/Date: RMB 10/20/20

APPENDIX B

Laboratory Analytical Results

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

September 09, 2020

Joju Abraham
Georgia Power-CCR
2480 Maner Road
Atlanta, GA 30339

RE: Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory between August 12, 2020 and August 14, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville
- Pace Analytical Services - Charlotte
- Pace Analytical Services - Peachtree Corners, GA
- Pace Analytical Services - Greensburg

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
1(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Ms. Lauren Petty, Southern Co. Services
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta

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

CERTIFICATIONS

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

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

Pace Analytical Services Charlotte
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

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

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SAMPLE SUMMARY

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92490488001	**DGWA-70A**	Water	08/11/20 11:37	08/12/20 08:57
92490488002	**DGWA-71**	Water	08/11/20 14:55	08/12/20 08:57
92490488003	**EB-1**	Water	08/11/20 12:50	08/12/20 08:57
92490488004	**DGWA-53**	Water	08/13/20 13:07	08/14/20 14:30

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SAMPLE ANALYTE COUNT

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92490488001	**DGWA-70A**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490488002	**DGWA-71**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490488003	**EB-1**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490488004	**DGWA-53**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A

PASI-A = Pace Analytical Services - Asheville
PASI-C = Pace Analytical Services - Charlotte
PASI-GA = Pace Analytical Services - Peachtree Corners, GA
PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

Sample: DGWA-70A **Lab ID: 92490488001** Collected: 08/11/20 11:37 Received: 08/12/20 08:57 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**5.86**	Std. Units			1		08/20/20 17:23		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	**0.0013J**	mg/L	0.0030	0.00028	1	08/13/20 10:10	08/17/20 18:33	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/13/20 10:10	08/17/20 18:33	7440-38-2	
Barium	**0.041**	mg/L	0.010	0.00071	1	08/13/20 10:10	08/17/20 18:33	7440-39-3	
Beryllium	**0.00013J**	mg/L	0.0030	0.000046	1	08/13/20 10:10	08/17/20 18:33	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/13/20 10:10	08/17/20 18:33	7440-43-9	
Chromium	**0.0016J**	mg/L	0.010	0.00055	1	08/13/20 10:10	08/17/20 18:33	7440-47-3	B
Cobalt	**0.0012J**	mg/L	0.0050	0.00038	1	08/13/20 10:10	08/17/20 18:33	7440-48-4	
Lead	**0.00030J**	mg/L	0.0050	0.000036	1	08/13/20 10:10	08/17/20 18:33	7439-92-1	
Lithium	**0.0019J**	mg/L	0.030	0.00081	1	08/13/20 10:10	08/17/20 18:33	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/13/20 10:10	08/17/20 18:33	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/13/20 10:10	08/17/20 18:33	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/13/20 10:10	08/17/20 18:33	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/14/20 08:10	08/14/20 13:26	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	ND	mg/L	0.10	0.050	1		08/13/20 23:59	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

Sample: DGWA-71 **Lab ID: 92490488002** Collected: 08/11/20 14:55 Received: 08/12/20 08:57 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**5.96**	Std. Units			1		08/20/20 17:23		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	**0.0018J**	mg/L	0.0030	0.00028	1	08/13/20 10:10	08/17/20 18:56	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/13/20 10:10	08/17/20 18:56	7440-38-2	
Barium	**0.026**	mg/L	0.010	0.00071	1	08/13/20 10:10	08/17/20 18:56	7440-39-3	
Beryllium	**0.00011J**	mg/L	0.0030	0.000046	1	08/13/20 10:10	08/17/20 18:56	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/13/20 10:10	08/17/20 18:56	7440-43-9	
Chromium	**0.00060J**	mg/L	0.010	0.00055	1	08/13/20 10:10	08/17/20 18:56	7440-47-3	B
Cobalt	ND	mg/L	0.0050	0.00038	1	08/13/20 10:10	08/17/20 18:56	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/13/20 10:10	08/17/20 18:56	7439-92-1	
Lithium	**0.0015J**	mg/L	0.030	0.00081	1	08/13/20 10:10	08/17/20 18:56	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/13/20 10:10	08/17/20 18:56	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/13/20 10:10	08/17/20 18:56	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/13/20 10:10	08/17/20 18:56	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/14/20 08:10	08/14/20 13:29	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	ND	mg/L	0.10	0.050	1		08/14/20 01:08	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

Sample: EB-1 **Lab ID: 92490488003** Collected: 08/11/20 12:50 Received: 08/12/20 08:57 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	**0.00038J**	mg/L	0.0030	0.00028	1	08/13/20 10:10	08/17/20 19:13	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/13/20 10:10	08/17/20 19:13	7440-38-2	
Barium	ND	mg/L	0.010	0.00071	1	08/13/20 10:10	08/17/20 19:13	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	08/13/20 10:10	08/17/20 19:13	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/13/20 10:10	08/17/20 19:13	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/13/20 10:10	08/17/20 19:13	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	08/13/20 10:10	08/17/20 19:13	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/13/20 10:10	08/17/20 19:13	7439-92-1	
Lithium	ND	mg/L	0.030	0.00081	1	08/13/20 10:10	08/17/20 19:13	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/13/20 10:10	08/17/20 19:13	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/13/20 10:10	08/17/20 19:13	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/13/20 10:10	08/17/20 19:13	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/14/20 08:10	08/14/20 13:31	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	ND	mg/L	0.10	0.050	1		08/14/20 01:22	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

Sample: DGWA-53 **Lab ID: 92490488004** Collected: 08/13/20 13:07 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.17**	Std. Units			1		08/20/20 17:23		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	**0.00030J**	mg/L	0.0030	0.00028	1	08/18/20 18:30	08/19/20 18:37	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 18:37	7440-38-2	
Barium	**0.046**	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 18:37	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 18:37	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 18:37	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 18:37	7440-47-3	
Cobalt	**0.0051**	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 18:37	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 18:37	7439-92-1	
Lithium	**0.0085J**	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 18:37	7439-93-2	
Molybdenum	**0.012**	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 18:37	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 18:37	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 18:37	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 11:13	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.062J**	mg/L	0.10	0.050	1		08/18/20 19:53	16984-48-8	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

QC Batch: 559731
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490488001, 92490488002, 92490488003

METHOD BLANK: 2969713 Matrix: Water
Associated Lab Samples: 92490488001, 92490488002, 92490488003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	08/17/20 18:05	
Arsenic	mg/L	ND	0.0050	0.00078	08/17/20 18:05	
Barium	mg/L	ND	0.010	0.00071	08/17/20 18:05	
Beryllium	mg/L	ND	0.0030	0.000046	08/17/20 18:05	
Cadmium	mg/L	ND	0.0025	0.00012	08/17/20 18:05	
Chromium	mg/L	0.00061J	0.010	0.00055	08/17/20 18:05	
Cobalt	mg/L	ND	0.0050	0.00038	08/17/20 18:05	
Lead	mg/L	ND	0.0050	0.000036	08/17/20 18:05	
Lithium	mg/L	ND	0.030	0.00081	08/17/20 18:05	
Molybdenum	mg/L	ND	0.010	0.00069	08/17/20 18:05	
Selenium	mg/L	ND	0.010	0.0016	08/17/20 18:05	
Thallium	mg/L	ND	0.0010	0.00014	08/17/20 18:05	

LABORATORY CONTROL SAMPLE: 2969714

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	0.099	99	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.11	106	80-120	
Cadmium	mg/L	0.1	0.098	98	80-120	
Chromium	mg/L	0.1	0.098	98	80-120	
Cobalt	mg/L	0.1	0.098	98	80-120	
Lead	mg/L	0.1	0.10	102	80-120	
Lithium	mg/L	0.1	0.11	106	80-120	
Molybdenum	mg/L	0.1	0.10	101	80-120	
Selenium	mg/L	0.1	0.097	97	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2973381 2973382

Parameter	Units	92490488001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	0.0013J	0.1	0.1	0.11	0.11	110	105	75-125	4	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.098	102	98	75-125	4	20	
Barium	mg/L	0.041	0.1	0.1	0.15	0.15	112	106	75-125	4	20	
Beryllium	mg/L	0.00013J	0.1	0.1	0.11	0.10	105	103	75-125	2	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2973381 2973382

Parameter	Units	92490488001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20	
Chromium	mg/L	0.0016J	0.1	0.1	0.10	0.096	102	95	75-125	7	20	
Cobalt	mg/L	0.0012J	0.1	0.1	0.10	0.097	101	96	75-125	5	20	
Lead	mg/L	0.00030J	0.1	0.1	0.11	0.10	106	101	75-125	5	20	
Lithium	mg/L	0.0019J	0.1	0.1	0.11	0.11	106	104	75-125	2	20	
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.098	102	98	75-125	4	20	
Selenium	mg/L	ND	0.1	0.1	0.097	0.095	96	95	75-125	1	20	
Thallium	mg/L	ND	0.1	0.1	0.10	0.10	105	102	75-125	3	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

QC Batch: 560739
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490488004

METHOD BLANK: 2974806 Matrix: Water
Associated Lab Samples: 92490488004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	08/19/20 17:51	
Arsenic	mg/L	ND	0.0050	0.00078	08/19/20 17:51	
Barium	mg/L	ND	0.010	0.00071	08/19/20 17:51	
Beryllium	mg/L	ND	0.0030	0.000046	08/19/20 17:51	
Cadmium	mg/L	ND	0.0025	0.00012	08/19/20 17:51	
Chromium	mg/L	ND	0.010	0.00055	08/19/20 17:51	
Cobalt	mg/L	ND	0.0050	0.00038	08/19/20 17:51	
Lead	mg/L	ND	0.0050	0.000036	08/19/20 17:51	
Lithium	mg/L	ND	0.030	0.00081	08/19/20 17:51	
Molybdenum	mg/L	ND	0.010	0.00069	08/19/20 17:51	
Selenium	mg/L	ND	0.010	0.0016	08/19/20 17:51	
Thallium	mg/L	ND	0.0010	0.00014	08/19/20 17:51	

LABORATORY CONTROL SAMPLE: 2974807

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	111	80-120	
Arsenic	mg/L	0.1	0.099	99	80-120	
Barium	mg/L	0.1	0.10	102	80-120	
Beryllium	mg/L	0.1	0.099	99	80-120	
Cadmium	mg/L	0.1	0.10	100	80-120	
Chromium	mg/L	0.1	0.10	103	80-120	
Cobalt	mg/L	0.1	0.10	101	80-120	
Lead	mg/L	0.1	0.10	100	80-120	
Lithium	mg/L	0.1	0.10	104	80-120	
Molybdenum	mg/L	0.1	0.11	106	80-120	
Selenium	mg/L	0.1	0.10	102	80-120	
Thallium	mg/L	0.1	0.099	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974808 2974809

Parameter	Units	92490942006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	114	109	75-125	5	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.099	100	99	75-125	2	20	
Barium	mg/L	0.088	0.1	0.1	0.22	0.21	131	119	75-125	6	20	M1
Beryllium	mg/L	ND	0.1	0.1	0.099	0.096	99	96	75-125	3	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974808 2974809

Parameter	Units	92490942006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	mg/L	0.00021J	0.1	0.1	0.10	0.098	99	98	75-125	1	20	
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	102	101	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	1	20	
Lead	mg/L	ND	0.1	0.1	0.098	0.097	98	97	75-125	0	20	
Lithium	mg/L	ND	0.1	0.1	0.10	0.098	102	97	75-125	4	20	
Molybdenum	mg/L	0.19	0.1	0.1	0.31	0.29	122	105	75-125	5	20	
Selenium	mg/L	ND	0.1	0.1	0.10	0.093	99	92	75-125	7	20	
Thallium	mg/L	ND	0.1	0.1	0.097	0.096	97	96	75-125	1	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

QC Batch: 559929
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490488001, 92490488002, 92490488003

METHOD BLANK: 2971190 Matrix: Water
Associated Lab Samples: 92490488001, 92490488002, 92490488003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00020	0.000078	08/14/20 12:55	

LABORATORY CONTROL SAMPLE: 2971191

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0024	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2971192 2971193

Parameter	Units	92489844052 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0025	98	99	75-125	1	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

QC Batch: 560630
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490488004

METHOD BLANK: 2974336 Matrix: Water
Associated Lab Samples: 92490488004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00020	0.000078	08/19/20 10:06	

LABORATORY CONTROL SAMPLE: 2974337

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0024	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974338 2974339

Parameter	Units	92490825001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	3.1 ug/L	0.0025	0.0025	0.0060	0.0058	118	111	75-125	3	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

QC Batch: 559792
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92490488001, 92490488002, 92490488003

METHOD BLANK: 2970272 Matrix: Water
Associated Lab Samples: 92490488001, 92490488002, 92490488003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	08/13/20 23:31	

LABORATORY CONTROL SAMPLE: 2970273

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2970274 2970275

Parameter	Units	92490488001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	2.7	2.6	106	104	90-110	2	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2970276 2970277

Parameter	Units	92490503008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	2.6	2.4	102	98	90-110	4	10	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

QC Batch: 560576
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92490488004

METHOD BLANK: 2974090 Matrix: Water
Associated Lab Samples: 92490488004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	08/18/20 13:07	

LABORATORY CONTROL SAMPLE: 2974091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974092 2974093

Parameter	Units	92490804001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.82	2.5	2.5	3.3	3.3	100	101	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974094 2974095

Parameter	Units	92490867001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.37	2.5	2.5	3.0	3.1	107	107	90-110	1	10	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

Sample: DGWA-70A **Lab ID: 92490488001** Collected: 08/11/20 11:37 Received: 08/12/20 08:57 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.178 ± 0.171 (0.324) C:89% T:NA**	pCi/L	08/24/20 07:35	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.634 ± 0.446 (0.869) C:64% T:88%**	pCi/L	08/27/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.812 ± 0.617 (1.19)**	pCi/L	09/04/20 08:28	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

Sample: DGWA-71 **Lab ID: 92490488002** Collected: 08/11/20 14:55 Received: 08/12/20 08:57 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.217 ± 0.159 (0.256) C:94% T:NA**	pCi/L	08/24/20 07:23	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.748 ± 0.451 (0.847) C:69% T:85%**	pCi/L	08/27/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.965 ± 0.610 (1.10)**	pCi/L	09/04/20 08:28	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

Sample: EB-1 **Lab ID: 92490488003** Collected: 08/11/20 12:50 Received: 08/12/20 08:57 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**-0.0219 ± 0.117 (0.336) C:88% T:NA**	pCi/L	08/24/20 07:36	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.168 ± 0.413 (0.918) C:66% T:83%**	pCi/L	08/27/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.168 ± 0.530 (1.25)**	pCi/L	09/04/20 08:38	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

Sample: DGWA-53 **Lab ID: 92490488004** Collected: 08/13/20 13:07 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.706 ± 0.192 (0.183) C:81% T:NA**	pCi/L	08/31/20 19:25	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.337 ± 0.382 (0.798) C:61% T:83%**	pCi/L	09/08/20 11:52	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.04 ± 0.574 (0.981)**	pCi/L	09/09/20 08:53	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

QC Batch: 411433
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92490488004

METHOD BLANK: 1990338 Matrix: Water
Associated Lab Samples: 92490488004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.527 ± 0.407 (0.796) C:61% T:86%	pCi/L	09/08/20 11:52	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

QC Batch: 410124
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92490488001, 92490488002, 92490488003

METHOD BLANK: 1984702
Matrix: Water
Associated Lab Samples: 92490488001, 92490488002, 92490488003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.731 ± 0.425 (0.763) C:63% T:81%	pCi/L	08/27/20 11:50	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

QC Batch: 410046
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92490488001, 92490488002, 92490488003

METHOD BLANK: 1984358 Matrix: Water
Associated Lab Samples: 92490488001, 92490488002, 92490488003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0476 ± 0.101 (0.237) C:93% T:NA	pCi/L	08/24/20 07:55	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

QC Batch: 411372
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92490488004

METHOD BLANK: 1989991 Matrix: Water
Associated Lab Samples: 92490488004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0430 ± 0.0800 (0.185) C:87% T:NA	pCi/L	08/31/20 19:25	

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QUALIFIERS

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92490488001	**DGWA-70A**				
92490488002	**DGWA-71**				
92490488004	**DGWA-53**				
92490488001	**DGWA-70A**	EPA 3005A	559731	EPA 6020B	559753
92490488002	**DGWA-71**	EPA 3005A	559731	EPA 6020B	559753
92490488003	**EB-1**	EPA 3005A	559731	EPA 6020B	559753
92490488004	**DGWA-53**	EPA 3005A	560739	EPA 6020B	560802
92490488001	**DGWA-70A**	EPA 7470A	559929	EPA 7470A	559986
92490488002	**DGWA-71**	EPA 7470A	559929	EPA 7470A	559986
92490488003	**EB-1**	EPA 7470A	559929	EPA 7470A	559986
92490488004	**DGWA-53**	EPA 7470A	560630	EPA 7470A	560770
92490488001	**DGWA-70A**	EPA 9315	410046		
92490488002	**DGWA-71**	EPA 9315	410046		
92490488003	**EB-1**	EPA 9315	410046		
92490488004	**DGWA-53**	EPA 9315	411372		
92490488001	**DGWA-70A**	EPA 9320	410124		
92490488002	**DGWA-71**	EPA 9320	410124		
92490488003	**EB-1**	EPA 9320	410124		
92490488004	**DGWA-53**	EPA 9320	411433		
92490488001	**DGWA-70A**	Total Radium Calculation	412557		
92490488002	**DGWA-71**	Total Radium Calculation	412557		
92490488003	**EB-1**	Total Radium Calculation	412558		
92490488004	**DGWA-53**	Total Radium Calculation	413004		
92490488001	**DGWA-70A**	EPA 300.0 Rev 2.1 1993	559792		
92490488002	**DGWA-71**	EPA 300.0 Rev 2.1 1993	559792		
92490488003	**EB-1**	EPA 300.0 Rev 2.1 1993	559792		
92490488004	**DGWA-53**	EPA 300.0 Rev 2.1 1993	560576		

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Pace Analytical

Sample Condition Upon Rec

WO# : 92490488

92490488

Client Name: G.A Power

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

Tracking #: _____

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

Proj. Due Date:
Proj. Name:

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

Thermometer Used 233

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

Cooler Temperature 1.6

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 8/12/2008

Temp should be above freezing to 6°C

Comments:

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

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

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

Pace Analytical	Document Name: Bottle Identification Form (BIF)	Document Issued: March 14, 2019 Page 1 of 1
	Document No.: F-CAR-CS-043-Rev.00	Issuing Authority: Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg
**Bottom half of box is to list number of bottle

Project #

WO#: 92490488

PM: KLH1 Due Date: 08/26/20

CLIENT: GA-GA Power

Matrix	Items	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4N-125 mL Plastic NaOH (pH > 12) (Cl-)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)
	1		—				1																		2			
	2		—				1																		2			
	3		—				1																		2			
	4																											
	5																											
	6																											
	7																											
	8																											
	9																											
	10																											
	11																											
	12																											

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A – Required Client Information:		Section B – Required Project Information:		Section C – Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Golder	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone:	(404) 506-7239 Fax:	Project Name:	Plant McDonough Background	Pace Project Manager:	Kevin Herring
Requested Due Date:		Project #:	166849618	Pace Profile #:	

Regulatory Agency: —

State / Location: GA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (Enter valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	Preservatives: Ice	Preservatives: H2SO4	Preservatives: HNO3	Preservatives: HCl	Preservatives: NaOH + Zn Acetate	Preservatives: Na2S2O3	Preservatives: Methanol	Preservatives: Other	Analysis Test Y/N	Requested Analysis Filtered (Y/N): App IV Metals*	Fluoride	Radium 226/228	Residual Chlorine (Y/N)	624904488
	MATRIX: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS																Y/N	N	N	N		
1	DGWA-70A	WT	G	8/11/2020	1137		3	1		2								X	X	X		pH 5.86
2	DGWA-71	WT	G	8/11/2020	1455		3	1		2								X	X	X		pH 5.96
3	EB-1	WT	G	8/11/2020	1250		3	1		2								X	X	X		
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
App IV metals = Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl		8/12	855	Pace	8/12	857				
	Pace	8/12	1436		8/12/20	1445	1.8	Y	N	Y

SAMPLER NAME AND SIGNATURE

SAMPLER NAME: Kevin Herring

SAMPLER SIGNATURE: [signature] DATE Signed: 8.12.20

Quality Control Sample Performance Assessment

Test: Ra-226
Analyst: JJY
Date: 8/21/2020
Worklist: 55663
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1984358
MB concentration:	0.048
M/B Counting Uncertainty:	0.101
MB MDC:	0.237
MB Numerical Performance Indicator:	0.93
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55663	LCSD55663
Count Date:	8/24/2020	8/24/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.045	24.045
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.505	0.503
Target Conc. (pCi/L, g, F):	4.760	4.776
Uncertainty (Calculated):	0.057	0.057
Result (pCi/L, g, F):	4.133	5.003
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.579	0.603
Numerical Performance Indicator:	-2.12	0.74
Percent Recovery:	86.81%	104.76%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS55663	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD55663	
Sample Result (pCi/L, g, F):	4.133	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.579	
Sample Duplicate Result (pCi/L, g, F):	5.003	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.603	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-2.043	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	18.74%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

JJY 8/24/2020

JJ 8-24-20

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	JJY
Date:	8/21/2020
Worklist:	55663
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1984358
MB concentration:	0.048
M/B Counting Uncertainty:	0.101
MB MDC:	0.237
MB Numerical Performance Indicator:	0.93
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS55663	LCSD55663
Count Date:	8/24/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.045	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.505	
Target Conc. (pCi/L, g, F):	4.760	
Uncertainty (Calculated):	0.057	
Result (pCi/L, g, F):	4.133	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.579	
Numerical Performance Indicator:	-2.12	
Percent Recovery:	86.81%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92490503014	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92490503014DUP	
Sample Result (pCi/L, g, F):	0.870	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.276	
Sample Duplicate Result (pCi/L, g, F):	0.731	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.266	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	0.709	92490503014
Duplicate RPD:	17.33%	92490503014DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

JJY 8/24/2020

JJY 8-24-20

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test: Ra-226
Analyst: LAL
Date: 8/31/2020
Worklist: 55836
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1989991
MB concentration:	-0.043
M/B Counting Uncertainty:	0.080
MB MDC:	0.185
MB Numerical Performance Indicator:	-1.06
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS55836	LCSD55836
Count Date:	9/1/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.045	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.501	
Target Conc. (pCi/L, g, F):	4.798	
Uncertainty (Calculated):	0.058	
Result (pCi/L, g, F):	4.493	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.750	
Numerical Performance Indicator:	-0.79	
Percent Recovery:	93.65%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92490503020	Enter Duplicate
Duplicate Sample I.D.	92490503020DUP	sample IDs if
Sample Result (pCi/L, g, F):	0.717	other than
Sample Result Counting Uncertainty (pCi/L, g, F):	0.321	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	0.626	the space below.
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.314	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	0.399	92490503020
Duplicate RPD:	13.61%	92490503020DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

VAM 9/1/2020

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test: Ra-226
Analyst: LAL
Date: 8/31/2020
Worklist: 55836
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1989991
MB concentration:	-0.043
M/B Counting Uncertainty:	0.080
MB MDC:	0.185
MB Numerical Performance Indicator:	-1.06
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55836	LCSD55836
Count Date:	9/1/2020	9/1/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.045	24.045
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.501	0.500
Target Conc. (pCi/L, g, F):	4.798	4.808
Uncertainty (Calculated):	0.058	0.058
Result (pCi/L, g, F):	4.493	5.168
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.750	0.855
Numerical Performance Indicator:	-0.79	0.82
Percent Recovery:	93.65%	107.49%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Duplicate Sample Assessment		
Sample I.D.:	LCS55836	Enter Duplicate
Duplicate Sample I.D.	LCSD55836	sample IDs if
Sample Result (pCi/L, g, F):	4.493	other than
Sample Result Counting Uncertainty (pCi/L, g, F):	0.750	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	5.168	the space below.
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.855	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-1.163	92490503020
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	13.75%	92490503020DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

VAM 9/1/2020

9.1.20

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test:	Ra-228
Analyst:	VAL
Date:	8/24/2020
Worklist:	55667
Matrix:	WT

Method Blank Assessment	
MB Sample ID	1984702
MB concentration:	0.731
M/B 2 Sigma CSU:	0.425
MB MDC:	0.763
MB Numerical Performance Indicator:	3.37
MB Status vs Numerical Indicator:	Fail*
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55667	LCSD55667
Count Date:	8/27/2020	8/27/2020
Spike I.D.:	20-030	20-030
Decay Corrected Spike Concentration (pCi/mL):	38.637	38.637
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.809	0.805
Target Conc. (pCi/L, g, F):	4.773	4.800
Uncertainty (Calculated):	0.234	0.235
Result (pCi/L, g, F):	6.454	5.781
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.448	1.299
Numerical Performance Indicator:	2.25	1.45
Percent Recovery:	135.21%	120.42%
Status vs Numerical Indicator:	Warning	N/A
Status vs Recovery:	Fail High**	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS55667	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD55667	
Sample Result (pCi/L, g, F):	6.454	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.448	
Sample Duplicate Result (pCi/L, g, F):	5.781	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.299	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.678	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	11.57%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*If the lowest activity sample in this batch is greater than ten times the blank value, the blank is acceptable; otherwise this batch must be re-prepped.

~~**If all sample results are below MDC, the batch is acceptable, otherwise this batch must be reprepped due to LCS failure.~~

LCS NPI < 3 JJT 8-28-2020

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test: Ra-228
Analyst: VAL
Date: 9/2/2020
Worklist: 55850
Matrix: WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1990338
MB concentration:	0.527
M/B 2 Sigma CSU:	0.407
MB MDC:	0.796
MB Numerical Performance Indicator:	2.54
MB Status vs Numerical Indicator:	Warning
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55850	LCSD55850
Count Date:	9/8/2020	9/8/2020
Spike I.D.:	20-030	20-030
Decay Corrected Spike Concentration (pCi/mL):	38.485	38.485
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.807	0.803
Target Conc. (pCi/L, g, F):	4.769	4.794
Uncertainty (Calculated):	0.234	0.235
Result (pCi/L, g, F):	4.945	4.330
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.130	1.089
Numerical Performance Indicator:	0.30	-0.82
Percent Recovery:	103.69%	90.32%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS55850	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD55850	
Sample Result (pCi/L, g, F):	4.945	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.130	
Sample Duplicate Result (pCi/L, g, F):	4.330	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.089	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.769	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	13.79%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

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

September 10, 2020

Joju Abraham
Georgia Power-CCR
2480 Maner Road
Atlanta, GA 30339

RE: Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 14, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville
- Pace Analytical Services - Charlotte
- Pace Analytical Services - Peachtree Corners, GA
- Pace Analytical Services - Greensburg

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
1(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Ms. Lauren Petty, Southern Co. Services
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta

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CERTIFICATIONS

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

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

Pace Analytical Services Charlotte
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

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

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92490942001	**DGWC-37**	Water	08/13/20 11:00	08/14/20 14:30
92490942002	**DGWC-38**	Water	08/13/20 10:00	08/14/20 14:30
92490942003	**DGWC-39**	Water	08/13/20 15:05	08/14/20 14:30
92490942004	**DGWC-40**	Water	08/13/20 11:22	08/14/20 14:30
92490942005	**DGWC-67**	Water	08/13/20 16:25	08/14/20 14:30
92490942006	**DGWC-68A**	Water	08/13/20 15:25	08/14/20 14:30
92490942007	**DGWC-69**	Water	08/13/20 14:35	08/14/20 14:30
92490942008	**EB-2**	Water	08/13/20 17:30	08/14/20 14:30

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SAMPLE ANALYTE COUNT

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92490942001	**DGWC-37**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490942002	**DGWC-38**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490942003	**DGWC-39**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490942004	**DGWC-40**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490942005	**DGWC-67**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490942006	**DGWC-68A**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490942007	**DGWC-69**	EPA 6020B	CW1	12	PASI-GA

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SAMPLE ANALYTE COUNT

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490942008	**EB-2**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A

PASI-A = Pace Analytical Services - Asheville
PASI-C = Pace Analytical Services - Charlotte
PASI-GA = Pace Analytical Services - Peachtree Corners, GA
PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-37 **Lab ID: 92490942001** Collected: 08/13/20 11:00 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.34**	Std. Units			1		08/20/20 17:23		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/17/20 16:46	08/20/20 20:00	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/17/20 16:46	08/20/20 20:00	7440-38-2	
Barium	**0.088**	mg/L	0.010	0.00071	1	08/17/20 16:46	08/20/20 20:00	7440-39-3	
Beryllium	**0.00010J**	mg/L	0.0030	0.000046	1	08/17/20 16:46	08/20/20 20:00	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/17/20 16:46	08/20/20 20:00	7440-43-9	
Chromium	**0.00058J**	mg/L	0.010	0.00055	1	08/17/20 16:46	08/20/20 20:00	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	08/17/20 16:46	08/20/20 20:00	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/17/20 16:46	08/20/20 20:00	7439-92-1	
Lithium	**0.0023J**	mg/L	0.030	0.00081	1	08/17/20 16:46	08/20/20 20:00	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/17/20 16:46	08/20/20 20:00	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/17/20 16:46	08/20/20 20:00	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/17/20 16:46	08/20/20 20:00	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 12:38	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.068J**	mg/L	0.10	0.050	1		08/18/20 17:33	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-38 **Lab ID: 92490942002** Collected: 08/13/20 10:00 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.05**	Std. Units			1		08/20/20 17:23		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/17/20 16:46	08/20/20 20:06	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/17/20 16:46	08/20/20 20:06	7440-38-2	
Barium	**0.032**	mg/L	0.010	0.00071	1	08/17/20 16:46	08/20/20 20:06	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	08/17/20 16:46	08/20/20 20:06	7440-41-7	
Cadmium	**0.00021J**	mg/L	0.0025	0.00012	1	08/17/20 16:46	08/20/20 20:06	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/17/20 16:46	08/20/20 20:06	7440-47-3	
Cobalt	**0.0014J**	mg/L	0.0050	0.00038	1	08/17/20 16:46	08/20/20 20:06	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/17/20 16:46	08/20/20 20:06	7439-92-1	
Lithium	**0.0028J**	mg/L	0.030	0.00081	1	08/17/20 16:46	08/20/20 20:06	7439-93-2	
Molybdenum	**0.00098J**	mg/L	0.010	0.00069	1	08/17/20 16:46	08/20/20 20:06	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/17/20 16:46	08/20/20 20:06	7782-49-2	
Thallium	**0.00016J**	mg/L	0.0010	0.00014	1	08/17/20 16:46	08/20/20 20:06	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 12:48	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.060J**	mg/L	0.10	0.050	1		08/18/20 17:47	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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Peachtree Corners, GA 30092
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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-39 **Lab ID: 92490942003** Collected: 08/13/20 15:05 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.39**	Std. Units			1		08/20/20 17:23		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/17/20 16:46	08/20/20 20:12	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/17/20 16:46	08/20/20 20:12	7440-38-2	
Barium	**0.089**	mg/L	0.010	0.00071	1	08/17/20 16:46	08/20/20 20:12	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	08/17/20 16:46	08/20/20 20:12	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/17/20 16:46	08/20/20 20:12	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/17/20 16:46	08/20/20 20:12	7440-47-3	
Cobalt	**0.0060**	mg/L	0.0050	0.00038	1	08/17/20 16:46	08/20/20 20:12	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/17/20 16:46	08/20/20 20:12	7439-92-1	
Lithium	ND	mg/L	0.030	0.00081	1	08/17/20 16:46	08/20/20 20:12	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/17/20 16:46	08/20/20 20:12	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/17/20 16:46	08/20/20 20:12	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/17/20 16:46	08/20/20 20:12	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 12:50	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.076J**	mg/L	0.10	0.050	1		08/18/20 18:01	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-40 **Lab ID: 92490942004** Collected: 08/13/20 11:22 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**4.65**	Std. Units			1		08/20/20 17:23		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/17/20 16:46	08/20/20 20:17	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/17/20 16:46	08/20/20 20:17	7440-38-2	
Barium	**0.018**	mg/L	0.010	0.00071	1	08/17/20 16:46	08/20/20 20:17	7440-39-3	
Beryllium	**0.0033**	mg/L	0.0030	0.000046	1	08/17/20 16:46	08/20/20 20:17	7440-41-7	
Cadmium	**0.00084J**	mg/L	0.0025	0.00012	1	08/17/20 16:46	08/20/20 20:17	7440-43-9	
Chromium	**0.00072J**	mg/L	0.010	0.00055	1	08/17/20 16:46	08/20/20 20:17	7440-47-3	
Cobalt	**0.044**	mg/L	0.0050	0.00038	1	08/17/20 16:46	08/20/20 20:17	7440-48-4	
Lead	**0.000049J**	mg/L	0.0050	0.000036	1	08/17/20 16:46	08/20/20 20:17	7439-92-1	
Lithium	**0.0022J**	mg/L	0.030	0.00081	1	08/17/20 16:46	08/20/20 20:17	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/17/20 16:46	08/20/20 20:17	7439-98-7	
Selenium	**0.0018J**	mg/L	0.010	0.0016	1	08/17/20 16:46	08/20/20 20:17	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/17/20 16:46	08/20/20 20:17	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 12:52	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.16**	mg/L	0.10	0.050	1		08/18/20 18:43	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-67 **Lab ID: 92490942005** Collected: 08/13/20 16:25 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.28**	Std. Units			1		08/20/20 17:23		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/17/20 16:46	08/20/20 20:23	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/17/20 16:46	08/20/20 20:23	7440-38-2	
Barium	**0.095**	mg/L	0.010	0.00071	1	08/17/20 16:46	08/20/20 20:23	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	08/17/20 16:46	08/20/20 20:23	7440-41-7	
Cadmium	**0.00015J**	mg/L	0.0025	0.00012	1	08/17/20 16:46	08/20/20 20:23	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/17/20 16:46	08/20/20 20:23	7440-47-3	
Cobalt	**0.0015J**	mg/L	0.0050	0.00038	1	08/17/20 16:46	08/20/20 20:23	7440-48-4	
Lead	**0.000056J**	mg/L	0.0050	0.000036	1	08/17/20 16:46	08/20/20 20:23	7439-92-1	
Lithium	**0.0044J**	mg/L	0.030	0.00081	1	08/17/20 16:46	08/20/20 20:23	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/17/20 16:46	08/20/20 20:23	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/17/20 16:46	08/20/20 20:23	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/17/20 16:46	08/20/20 20:23	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 12:55	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	ND	mg/L	0.10	0.050	1		08/18/20 18:57	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-68A **Lab ID: 92490942006** Collected: 08/13/20 15:25 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.63**	Std. Units			1		08/20/20 17:23		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/18/20 18:30	08/19/20 18:02	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 18:02	7440-38-2	
Barium	**0.088**	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 18:02	7440-39-3	M1
Beryllium	ND	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 18:02	7440-41-7	
Cadmium	**0.00021J**	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 18:02	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 18:02	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 18:02	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 18:02	7439-92-1	
Lithium	ND	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 18:02	7439-93-2	
Molybdenum	**0.19**	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 18:02	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 18:02	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 18:02	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 13:02	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.076J**	mg/L	0.10	0.050	1		08/18/20 19:11	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-69 **Lab ID: 92490942007** Collected: 08/13/20 14:35 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.26**	Std. Units			1		08/20/20 17:23		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	**0.0019J**	mg/L	0.0030	0.00028	1	08/18/20 18:30	08/19/20 18:25	7440-36-0	
Arsenic	**0.029**	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 18:25	7440-38-2	
Barium	**0.13**	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 18:25	7440-39-3	
Beryllium	**0.000063J**	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 18:25	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 18:25	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 18:25	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 18:25	7440-48-4	
Lead	**0.000059J**	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 18:25	7439-92-1	
Lithium	**0.0031J**	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 18:25	7439-93-2	
Molybdenum	**0.011**	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 18:25	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 18:25	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 18:25	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 13:04	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.084J**	mg/L	0.10	0.050	1		08/18/20 19:25	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: EB-2 **Lab ID: 92490942008** Collected: 08/13/20 17:30 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	**0.00049J**	mg/L	0.0030	0.00028	1	08/18/20 18:30	08/19/20 18:31	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 18:31	7440-38-2	
Barium	ND	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 18:31	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 18:31	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 18:31	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 18:31	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 18:31	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 18:31	7439-92-1	
Lithium	ND	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 18:31	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 18:31	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 18:31	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 18:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 13:07	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	ND	mg/L	0.10	0.050	1		08/18/20 19:39	16984-48-8	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

QC Batch: 560481
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490942001, 92490942002, 92490942003, 92490942004, 92490942005

METHOD BLANK: 2973740 Matrix: Water
Associated Lab Samples: 92490942001, 92490942002, 92490942003, 92490942004, 92490942005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	08/20/20 17:20	
Arsenic	mg/L	ND	0.0050	0.00078	08/20/20 17:20	
Barium	mg/L	ND	0.010	0.00071	08/20/20 17:20	
Beryllium	mg/L	ND	0.0030	0.000046	08/20/20 17:20	
Cadmium	mg/L	ND	0.0025	0.00012	08/20/20 17:20	
Chromium	mg/L	ND	0.010	0.00055	08/20/20 17:20	
Cobalt	mg/L	ND	0.0050	0.00038	08/20/20 17:20	
Lead	mg/L	ND	0.0050	0.000036	08/20/20 17:20	
Lithium	mg/L	ND	0.030	0.00081	08/20/20 17:20	
Molybdenum	mg/L	ND	0.010	0.00069	08/20/20 17:20	
Selenium	mg/L	ND	0.010	0.0016	08/20/20 17:20	
Thallium	mg/L	ND	0.0010	0.00014	08/20/20 17:20	

LABORATORY CONTROL SAMPLE: 2973741

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	0.097	97	80-120	
Barium	mg/L	0.1	0.098	98	80-120	
Beryllium	mg/L	0.1	0.10	102	80-120	
Cadmium	mg/L	0.1	0.098	98	80-120	
Chromium	mg/L	0.1	0.10	101	80-120	
Cobalt	mg/L	0.1	0.099	99	80-120	
Lead	mg/L	0.1	0.10	101	80-120	
Lithium	mg/L	0.1	0.11	105	80-120	
Molybdenum	mg/L	0.1	0.10	100	80-120	
Selenium	mg/L	0.1	0.098	98	80-120	
Thallium	mg/L	0.1	0.10	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2973742 2973743

Parameter	Units	92490503010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.11	0.10	108	103	75-125	5	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.098	102	97	75-125	5	20	
Barium	mg/L	0.036	0.1	0.1	0.14	0.13	107	91	75-125	12	20	
Beryllium	mg/L	0.00024J	0.1	0.1	0.090	0.086	90	86	75-125	4	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2973742 2973743

Parameter	Units	92490503010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	mg/L	0.00080J	0.1	0.1	0.098	0.095	97	94	75-125	3	20	
Chromium	mg/L	ND	0.1	0.1	0.099	0.094	98	94	75-125	5	20	
Cobalt	mg/L	0.0018J	0.1	0.1	0.098	0.095	96	93	75-125	3	20	
Lead	mg/L	ND	0.1	0.1	0.097	0.092	97	92	75-125	5	20	
Lithium	mg/L	0.0031J	0.1	0.1	0.095	0.092	92	88	75-125	4	20	
Molybdenum	mg/L	0.0057J	0.1	0.1	0.11	0.10	102	97	75-125	5	20	
Selenium	mg/L	ND	0.1	0.1	0.10	0.099	101	99	75-125	2	20	
Thallium	mg/L	ND	0.1	0.1	0.098	0.094	98	94	75-125	4	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

QC Batch: 560739
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490942006, 92490942007, 92490942008

METHOD BLANK: 2974806 Matrix: Water
Associated Lab Samples: 92490942006, 92490942007, 92490942008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	08/19/20 17:51	
Arsenic	mg/L	ND	0.0050	0.00078	08/19/20 17:51	
Barium	mg/L	ND	0.010	0.00071	08/19/20 17:51	
Beryllium	mg/L	ND	0.0030	0.000046	08/19/20 17:51	
Cadmium	mg/L	ND	0.0025	0.00012	08/19/20 17:51	
Chromium	mg/L	ND	0.010	0.00055	08/19/20 17:51	
Cobalt	mg/L	ND	0.0050	0.00038	08/19/20 17:51	
Lead	mg/L	ND	0.0050	0.000036	08/19/20 17:51	
Lithium	mg/L	ND	0.030	0.00081	08/19/20 17:51	
Molybdenum	mg/L	ND	0.010	0.00069	08/19/20 17:51	
Selenium	mg/L	ND	0.010	0.0016	08/19/20 17:51	
Thallium	mg/L	ND	0.0010	0.00014	08/19/20 17:51	

LABORATORY CONTROL SAMPLE: 2974807

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	111	80-120	
Arsenic	mg/L	0.1	0.099	99	80-120	
Barium	mg/L	0.1	0.10	102	80-120	
Beryllium	mg/L	0.1	0.099	99	80-120	
Cadmium	mg/L	0.1	0.10	100	80-120	
Chromium	mg/L	0.1	0.10	103	80-120	
Cobalt	mg/L	0.1	0.10	101	80-120	
Lead	mg/L	0.1	0.10	100	80-120	
Lithium	mg/L	0.1	0.10	104	80-120	
Molybdenum	mg/L	0.1	0.11	106	80-120	
Selenium	mg/L	0.1	0.10	102	80-120	
Thallium	mg/L	0.1	0.099	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974808 2974809

Parameter	Units	92490942006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	114	109	75-125	5	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.099	100	99	75-125	2	20	
Barium	mg/L	0.088	0.1	0.1	0.22	0.21	131	119	75-125	6	20	M1
Beryllium	mg/L	ND	0.1	0.1	0.099	0.096	99	96	75-125	3	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974808 2974809

Parameter	Units	92490942006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	mg/L	0.00021J	0.1	0.1	0.10	0.098	99	98	75-125	1	20	
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	102	101	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	1	20	
Lead	mg/L	ND	0.1	0.1	0.098	0.097	98	97	75-125	0	20	
Lithium	mg/L	ND	0.1	0.1	0.10	0.098	102	97	75-125	4	20	
Molybdenum	mg/L	0.19	0.1	0.1	0.31	0.29	122	105	75-125	5	20	
Selenium	mg/L	ND	0.1	0.1	0.10	0.093	99	92	75-125	7	20	
Thallium	mg/L	ND	0.1	0.1	0.097	0.096	97	96	75-125	1	20	

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(770)734-4200

QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

QC Batch: 560634 — Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A — Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490942001, 92490942002, 92490942003, 92490942004, 92490942005, 92490942006, 92490942007, 92490942008

METHOD BLANK: 2974354 — Matrix: Water
Associated Lab Samples: 92490942001, 92490942002, 92490942003, 92490942004, 92490942005, 92490942006, 92490942007, 92490942008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00020	0.000078	08/19/20 12:33	

LABORATORY CONTROL SAMPLE: 2974355

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0023	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974356 2974357

Parameter	Units	92490942001 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	0.0022	0.0025	86	98	75-125	13	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

QC Batch: 560576
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92490942001, 92490942002, 92490942003, 92490942004, 92490942005, 92490942006, 92490942007, 92490942008

METHOD BLANK: 2974090 Matrix: Water
Associated Lab Samples: 92490942001, 92490942002, 92490942003, 92490942004, 92490942005, 92490942006, 92490942007, 92490942008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	08/18/20 13:07	

LABORATORY CONTROL SAMPLE: 2974091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974092 2974093

Parameter	Units	92490804001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.82	2.5	2.5	3.3	3.3	100	101	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974094 2974095

Parameter	Units	92490867001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.37	2.5	2.5	3.0	3.1	107	107	90-110	1	10	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-37 **Lab ID: 92490942001** Collected: 08/13/20 11:00 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.166 ± 0.103 (0.163) C:82% T:NA**	pCi/L	08/31/20 19:25	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.824 ± 0.429 (0.748) C:69% T:81%**	pCi/L	09/08/20 11:52	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.990 ± 0.532 (0.911)**	pCi/L	09/09/20 08:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-38 **Lab ID: 92490942002** Collected: 08/13/20 10:00 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.132 ± 0.113 (0.200) C:74% T:NA**	pCi/L	08/31/20 19:25	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**-0.316 ± 0.282 (0.756) C:66% T:77%**	pCi/L	09/08/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.132 ± 0.395 (0.956)**	pCi/L	09/09/20 08:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-39 **Lab ID: 92490942003** Collected: 08/13/20 15:05 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.255 ± 0.164 (0.283) C:81% T:NA**	pCi/L	08/31/20 19:25	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.371 ± 0.469 (0.999) C:64% T:78%**	pCi/L	09/08/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.626 ± 0.633 (1.28)**	pCi/L	09/09/20 08:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-40 **Lab ID: 92490942004** Collected: 08/13/20 11:22 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.193 ± 0.129 (0.218) C:79% T:NA**	pCi/L	08/31/20 19:25	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**1.41 ± 0.556 (0.875) C:64% T:87%**	pCi/L	09/08/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.60 ± 0.685 (1.09)**	pCi/L	09/09/20 08:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-67 **Lab ID: 92490942005** Collected: 08/13/20 16:25 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.305 ± 0.125 (0.171) C:87% T:NA**	pCi/L	08/31/20 19:25	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.592 ± 0.415 (0.803) C:68% T:84%**	pCi/L	09/08/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.897 ± 0.540 (0.974)**	pCi/L	09/09/20 08:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-68A **Lab ID: 92490942006** Collected: 08/13/20 15:25 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.160 ± 0.111 (0.187) C:81% T:NA**	pCi/L	08/31/20 19:25	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**1.30 ± 0.619 (1.08) C:64% T:76%**	pCi/L	09/08/20 12:16	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.46 ± 0.730 (1.27)**	pCi/L	09/09/20 14:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: DGWC-69 **Lab ID: 92490942007** Collected: 08/13/20 14:35 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**1.54 ± 0.314 (0.171) C:82% T:NA**	pCi/L	08/31/20 18:35	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**1.12 ± 0.550 (0.959) C:65% T:76%**	pCi/L	09/08/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**2.66 ± 0.864 (1.13)**	pCi/L	09/09/20 14:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Sample: EB-2 **Lab ID: 92490942008** Collected: 08/13/20 17:30 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.0684 ± 0.0776 (0.142) C:88% T:NA**	pCi/L	08/31/20 18:35	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.501 ± 0.409 (0.820) C:66% T:88%**	pCi/L	09/08/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.569 ± 0.487 (0.962)**	pCi/L	09/09/20 14:53	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

QC Batch: 411433
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92490942001, 92490942002, 92490942003, 92490942004, 92490942005, 92490942006, 92490942007, 92490942008

METHOD BLANK: 1990338 Matrix: Water
Associated Lab Samples: 92490942001, 92490942002, 92490942003, 92490942004, 92490942005, 92490942006, 92490942007, 92490942008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.527 ± 0.407 (0.796) C:61% T:86%	pCi/L	09/08/20 11:52	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

QC Batch: 411372
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92490942001, 92490942002, 92490942003, 92490942004, 92490942005, 92490942006, 92490942007, 92490942008

METHOD BLANK: 1989991
Matrix: Water
Associated Lab Samples: 92490942001, 92490942002, 92490942003, 92490942004, 92490942005, 92490942006, 92490942007, 92490942008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0430 ± 0.0800 (0.185) C:87% T:NA	pCi/L	08/31/20 19:25	

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QUALIFIERS

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92490942001	**DGWC-37**				
92490942002	**DGWC-38**				
92490942003	**DGWC-39**				
92490942004	**DGWC-40**				
92490942005	**DGWC-67**				
92490942006	**DGWC-68A**				
92490942007	**DGWC-69**				
92490942001	**DGWC-37**	EPA 3005A	560481	EPA 6020B	560487
92490942002	**DGWC-38**	EPA 3005A	560481	EPA 6020B	560487
92490942003	**DGWC-39**	EPA 3005A	560481	EPA 6020B	560487
92490942004	**DGWC-40**	EPA 3005A	560481	EPA 6020B	560487
92490942005	**DGWC-67**	EPA 3005A	560481	EPA 6020B	560487
92490942006	**DGWC-68A**	EPA 3005A	560739	EPA 6020B	560802
92490942007	**DGWC-69**	EPA 3005A	560739	EPA 6020B	560802
92490942008	**EB-2**	EPA 3005A	560739	EPA 6020B	560802
92490942001	**DGWC-37**	EPA 7470A	560634	EPA 7470A	560773
92490942002	**DGWC-38**	EPA 7470A	560634	EPA 7470A	560773
92490942003	**DGWC-39**	EPA 7470A	560634	EPA 7470A	560773
92490942004	**DGWC-40**	EPA 7470A	560634	EPA 7470A	560773
92490942005	**DGWC-67**	EPA 7470A	560634	EPA 7470A	560773
92490942006	**DGWC-68A**	EPA 7470A	560634	EPA 7470A	560773
92490942007	**DGWC-69**	EPA 7470A	560634	EPA 7470A	560773
92490942008	**EB-2**	EPA 7470A	560634	EPA 7470A	560773
92490942001	**DGWC-37**	EPA 9315	411372		
92490942002	**DGWC-38**	EPA 9315	411372		
92490942003	**DGWC-39**	EPA 9315	411372		
92490942004	**DGWC-40**	EPA 9315	411372		
92490942005	**DGWC-67**	EPA 9315	411372		
92490942006	**DGWC-68A**	EPA 9315	411372		
92490942007	**DGWC-69**	EPA 9315	411372		
92490942008	**EB-2**	EPA 9315	411372		
92490942001	**DGWC-37**	EPA 9320	411433		
92490942002	**DGWC-38**	EPA 9320	411433		
92490942003	**DGWC-39**	EPA 9320	411433		
92490942004	**DGWC-40**	EPA 9320	411433		
92490942005	**DGWC-67**	EPA 9320	411433		
92490942006	**DGWC-68A**	EPA 9320	411433		
92490942007	**DGWC-69**	EPA 9320	411433		
92490942008	**EB-2**	EPA 9320	411433		
92490942001	**DGWC-37**	Total Radium Calculation	413004		
92490942002	**DGWC-38**	Total Radium Calculation	413004		
92490942003	**DGWC-39**	Total Radium Calculation	413004		
92490942004	**DGWC-40**	Total Radium Calculation	413004		
92490942005	**DGWC-67**	Total Radium Calculation	413004		
92490942006	**DGWC-68A**	Total Radium Calculation	413154		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT MCDONOUGH AP-1
Pace Project No.: 92490942

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92490942007	**DGWC-69**	Total Radium Calculation	413154		
92490942008	**EB-2**	Total Radium Calculation	413154		
92490942001	**DGWC-37**	EPA 300.0 Rev 2.1 1993	560576		
92490942002	**DGWC-38**	EPA 300.0 Rev 2.1 1993	560576		
92490942003	**DGWC-39**	EPA 300.0 Rev 2.1 1993	560576		
92490942004	**DGWC-40**	EPA 300.0 Rev 2.1 1993	560576		
92490942005	**DGWC-67**	EPA 300.0 Rev 2.1 1993	560576		
92490942006	**DGWC-68A**	EPA 300.0 Rev 2.1 1993	560576		
92490942007	**DGWC-69**	EPA 300.0 Rev 2.1 1993	560576		
92490942008	**EB-2**	EPA 300.0 Rev 2.1 1993	560576		

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Golder	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone:	(404) 506-7239 Fax	Project Name:	Plant McDonough AP-1	Pace Project Manager:	Kevin Herring
Requested Due Date:		Project #:	166849618	Pace Profile #:	

Regulatory Agency
State / Location
GA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Analysis Test Y/N	Requested Analysis Filtered (Y/N): App IV Metals*	Fluoride	Radium 226/228	Residual Chlorine (Y/N)	92490942
	MATRIX: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS															N	N	N			
1	DGWC-37	WT	G	8/13/2020	1110		4	1		3							X	X	X			pH: 6.34
2	DGWC-38	WT	G	8/13/2020	1000		4	1		3							X	X	X			pH: 6.05 ; see comment below
3	DGWC-39	WT	G	8/13/2020	1505		4	1		3							X	X	X			pH: 6.39
4	DGWC-40	WT	G	8/13/2020	1122		4	1		3							X	X	X			pH: 4.65
5	DGWC-67	WT	G	8/13/2020	1625		4	1		3							X	X	X			pH: 6.28
6	DGWC-68A	WT	G	8/13/2020	1525		4	1		3							X	X	X			pH: 6.63
7	DGWC-69	WT	G	8/13/2020	1435		4	1		3							X	X	X			pH: 6.26
8	EB-2	WT	G	8/13/2020	1730		4	1		3							X	X	X			
9																						
10																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
App IV metals = Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl	JW/SAMPLER	08/14/20	1430	Charles Hunt	8/14/20	1430	3.1	Y	N	Y
DGWC-38: Preservative flushed from (1) Radium bottle										

SAMPLER NAME AND SIGNATURE			
SAMPLER NAME	JODE WAGUESPACK		
SAMPLER SIGNATURE		DATE Signed:	08/14/20

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

Pace Analytical	Document Name: Bottle Identification Form (BIF)	Document Issued: March 14, 2019 Page 1 of 1
	Document No.: F-CAR-CS-043-Rev.00	Issuing Authority: Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle.

Project # **WO# : 92490942**

PM: KLH1 Due Date: 08/28/20

CLIENT: GA-GA Power

Matrix	Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)	BP3N - ROA	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)
	1		—				—																			2		
	2		—				—																			2		
	3		—				—																			2		
	4		—				—																			2		
	5		—				—																			2		
	6		—				—																			2		
	7		—				—																			2		
	8		—				—																					
	9																											
	10																											
	11																											
	12																											

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	

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 Out of hold, incorrect preservative, out of temp, incorrect containers

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test: Ra-226
Analyst: JJY
Date: 8/21/2020
Worklist: 55663
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1984358
MB concentration:	0.048
M/B Counting Uncertainty:	0.101
MB MDC:	0.237
MB Numerical Performance Indicator:	0.93
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55663	LCSD55663
Count Date:	8/24/2020	8/24/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.045	24.045
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.505	0.503
Target Conc. (pCi/L, g, F):	4.760	4.776
Uncertainty (Calculated):	0.057	0.057
Result (pCi/L, g, F):	4.133	5.003
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.579	0.603
Numerical Performance Indicator:	-2.12	0.74
Percent Recovery:	86.81%	104.76%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS55663	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD55663	
Sample Result (pCi/L, g, F):	4.133	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.579	
Sample Duplicate Result (pCi/L, g, F):	5.003	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.603	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-2.043	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	18.74%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

JJY 8/24/2020

JJ 8-24-20

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	JJY
Date:	8/21/2020
Worklist:	55663
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1984358
MB concentration:	0.048
M/B Counting Uncertainty:	0.101
MB MDC:	0.237
MB Numerical Performance Indicator:	0.93
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS55663	LCSD55663
Count Date:	8/24/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.045	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.505	
Target Conc. (pCi/L, g, F):	4.760	
Uncertainty (Calculated):	0.057	
Result (pCi/L, g, F):	4.133	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.579	
Numerical Performance Indicator:	-2.12	
Percent Recovery:	86.81%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92490503014	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92490503014DUP	
Sample Result (pCi/L, g, F):	0.870	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.276	
Sample Duplicate Result (pCi/L, g, F):	0.731	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.266	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	0.709	92490503014
Duplicate RPD:	17.33%	92490503014DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

JJY 8/24/2020

JJY 8-24-20

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test: Ra-226
Analyst: LAL
Date: 8/31/2020
Worklist: 55836
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1989991
MB concentration:	-0.043
M/B Counting Uncertainty:	0.080
MB MDC:	0.185
MB Numerical Performance Indicator:	-1.06
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS55836	LCSD55836
Count Date:	9/1/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.045	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.501	
Target Conc. (pCi/L, g, F):	4.798	
Uncertainty (Calculated):	0.058	
Result (pCi/L, g, F):	4.493	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.750	
Numerical Performance Indicator:	-0.79	
Percent Recovery:	93.65%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92490503020	Enter Duplicate
Duplicate Sample I.D.	92490503020DUP	sample IDs if
Sample Result (pCi/L, g, F):	0.717	other than
Sample Result Counting Uncertainty (pCi/L, g, F):	0.321	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	0.626	the space below.
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.314	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	0.399	92490503020
Duplicate RPD:	13.61%	92490503020DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

VAM 9/1/2020

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test: Ra-226
Analyst: LAL
Date: 8/31/2020
Worklist: 55836
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1989991
MB concentration:	-0.043
M/B Counting Uncertainty:	0.080
MB MDC:	0.185
MB Numerical Performance Indicator:	-1.06
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55836	LCSD55836
Count Date:	9/1/2020	9/1/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.045	24.045
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.501	0.500
Target Conc. (pCi/L, g, F):	4.798	4.808
Uncertainty (Calculated):	0.058	0.058
Result (pCi/L, g, F):	4.493	5.168
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.750	0.855
Numerical Performance Indicator:	-0.79	0.82
Percent Recovery:	93.65%	107.49%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Duplicate Sample Assessment		
Sample I.D.:	LCS55836	Enter Duplicate
Duplicate Sample I.D.	LCSD55836	sample IDs if
Sample Result (pCi/L, g, F):	4.493	other than
Sample Result Counting Uncertainty (pCi/L, g, F):	0.750	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	5.168	the space below.
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.855	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-1.163	92490503020
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	13.75%	92490503020DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

VAM 9/1/2020

9.1.20

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	9/1/2020
Worklist:	55837
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1989993
MB concentration:	0.067
M/B Counting Uncertainty:	0.195
MB MDC:	0.481
MB Numerical Performance Indicator:	0.67
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS55837	LCSD55837
Count Date:	9/2/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.045	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.508	
Target Conc. (pCi/L, g, F):	4.738	
Uncertainty (Calculated):	0.057	
Result (pCi/L, g, F):	5.286	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.868	
Numerical Performance Indicator:	1.24	
Percent Recovery:	111.58%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92490963004	Enter Duplicate
Duplicate Sample I.D.	92490963004DUP	sample IDs if
Sample Result (pCi/L, g, F):	0.116	other than
Sample Result Counting Uncertainty (pCi/L, g, F):	0.301	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	0.448	the space below.
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.277	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-1.591	92490963004
Duplicate RPD:	117.70%	92490963004DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

~~***Batch must be re-prepped due to unacceptable precision.~~ N/A LAM 9/2/2020

LAM 9/2/2020

LAM 9/2/2020

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	9/1/2020
Worklist:	55837
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1989993
MB concentration:	0.067
M/B Counting Uncertainty:	0.195
MB MDC:	0.481
MB Numerical Performance Indicator:	0.67
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55837	LCSD55837
Count Date:	9/2/2020	9/2/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.045	24.045
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.508	0.501
Target Conc. (pCi/L, g, F):	4.738	4.797
Uncertainty (Calculated):	0.057	0.058
Result (pCi/L, g, F):	5.286	4.329
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.868	0.805
Numerical Performance Indicator:	1.24	-1.13
Percent Recovery:	111.58%	90.26%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS55837	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD55837	
Sample Result (pCi/L, g, F):	5.286	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.868	
Sample Duplicate Result (pCi/L, g, F):	4.329	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.805	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	1.584	92490963004
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	21.13%	92490963004DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

LAM 9/1/2020

LAM 9/2/2020

Quality Control Sample Performance Assessment

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Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test:	Ra-228
Analyst:	VAL
Date:	8/24/2020
Worklist:	55667
Matrix:	WT

Method Blank Assessment	
MB Sample ID	1984702
MB concentration:	0.731
M/B 2 Sigma CSU:	0.425
MB MDC:	0.763
MB Numerical Performance Indicator:	3.37
MB Status vs Numerical Indicator:	Fail*
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55667	LCSD55667
Count Date:	8/27/2020	8/27/2020
Spike I.D.:	20-030	20-030
Decay Corrected Spike Concentration (pCi/mL):	38.637	38.637
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.809	0.805
Target Conc. (pCi/L, g, F):	4.773	4.800
Uncertainty (Calculated):	0.234	0.235
Result (pCi/L, g, F):	6.454	5.781
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.448	1.299
Numerical Performance Indicator:	2.25	1.45
Percent Recovery:	135.21%	120.42%
Status vs Numerical Indicator:	Warning	N/A
Status vs Recovery:	Fail High**	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS55667	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD55667	
Sample Result (pCi/L, g, F):	6.454	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.448	
Sample Duplicate Result (pCi/L, g, F):	5.781	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.299	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.678	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	11.57%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*If the lowest activity sample in this batch is greater than ten times the blank value, the blank is acceptable; otherwise this batch must be re-prepped.

~~**If all sample results are below MDC, the batch is acceptable, otherwise this batch must be reprepped due to LCS failure.~~

LCS NPI < 3 JJT 8-28-2020

Quality Control Sample Performance Assessment

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Test: Ra-228
Analyst: VAL
Date: 9/2/2020
Worklist: 55850
Matrix: WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1990338
MB concentration:	0.527
M/B 2 Sigma CSU:	0.407
MB MDC:	0.796
MB Numerical Performance Indicator:	2.54
MB Status vs Numerical Indicator:	Warning
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55850	LCSD55850
Count Date:	9/8/2020	9/8/2020
Spike I.D.:	20-030	20-030
Decay Corrected Spike Concentration (pCi/mL):	38.485	38.485
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.807	0.803
Target Conc. (pCi/L, g, F):	4.769	4.794
Uncertainty (Calculated):	0.234	0.235
Result (pCi/L, g, F):	4.945	4.330
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.130	1.089
Numerical Performance Indicator:	0.30	-0.82
Percent Recovery:	103.69%	90.32%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS55850	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD55850	
Sample Result (pCi/L, g, F):	4.945	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.130	
Sample Duplicate Result (pCi/L, g, F):	4.330	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.089	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.769	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	13.79%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test: Ra-226
Analyst: LAL
Date: 8/31/2020
Worklist: 55836
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1989991
MB concentration:	-0.043
M/B Counting Uncertainty:	0.080
MB MDC:	0.185
MB Numerical Performance Indicator:	-1.06
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS55836	LCSD55836
Count Date:	9/1/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.045	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.501	
Target Conc. (pCi/L, g, F):	4.798	
Uncertainty (Calculated):	0.058	
Result (pCi/L, g, F):	4.493	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.750	
Numerical Performance Indicator:	-0.79	
Percent Recovery:	93.65%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92490503020	Enter Duplicate
Duplicate Sample I.D.	92490503020DUP	sample IDs if
Sample Result (pCi/L, g, F):	0.717	other than
Sample Result Counting Uncertainty (pCi/L, g, F):	0.321	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	0.626	the space below.
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.314	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	0.399	92490503020
Duplicate RPD:	13.61%	92490503020DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

VAM 9/1/2020

AM 9/1/20

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test: Ra-226
Analyst: LAL
Date: 8/31/2020
Worklist: 55836
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1989991
MB concentration:	-0.043
M/B Counting Uncertainty:	0.080
MB MDC:	0.185
MB Numerical Performance Indicator:	-1.06
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55836	LCSD55836
Count Date:	9/1/2020	9/1/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.045	24.045
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.501	0.500
Target Conc. (pCi/L, g, F):	4.798	4.808
Uncertainty (Calculated):	0.058	0.058
Result (pCi/L, g, F):	4.493	5.168
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.750	0.855
Numerical Performance Indicator:	-0.79	0.82
Percent Recovery:	93.65%	107.49%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Duplicate Sample Assessment		
Sample I.D.:	LCS55836	Enter Duplicate
Duplicate Sample I.D.	LCSD55836	sample IDs if
Sample Result (pCi/L, g, F):	4.493	other than
Sample Result Counting Uncertainty (pCi/L, g, F):	0.750	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	5.168	the space below.
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.855	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-1.163	92490503020
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	13.75%	92490503020DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

VAM 9/1/2020

9.1.20

Quality Control Sample Performance Assessment

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Test: Ra-228
Analyst: VAL
Date: 9/2/2020
Worklist: 55850
Matrix: WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1990338
MB concentration:	0.527
M/B 2 Sigma CSU:	0.407
MB MDC:	0.796
MB Numerical Performance Indicator:	2.54
MB Status vs Numerical Indicator:	Warning
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55850	LCSD55850
Count Date:	9/8/2020	9/8/2020
Spike I.D.:	20-030	20-030
Decay Corrected Spike Concentration (pCi/mL):	38.485	38.485
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.807	0.803
Target Conc. (pCi/L, g, F):	4.769	4.794
Uncertainty (Calculated):	0.234	0.235
Result (pCi/L, g, F):	4.945	4.330
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.130	1.089
Numerical Performance Indicator:	0.30	-0.82
Percent Recovery:	103.69%	90.32%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS55850	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD55850	
Sample Result (pCi/L, g, F):	4.945	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.130	
Sample Duplicate Result (pCi/L, g, F):	4.330	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.089	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.769	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	13.79%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

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

September 14, 2020

Joju Abraham
Georgia Power-CCR
2480 Maner Road
Atlanta, GA 30339

RE: Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory between August 14, 2020 and August 19, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville
- Pace Analytical Services - Charlotte
- Pace Analytical Services - Peachtree Corners, GA
- Pace Analytical Services - Greensburg

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

Sincerely,

Tyler Forney for
Kevin Herring
kevin.herring@pacelabs.com
1(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Ms. Lauren Petty, Southern Co. Services
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta

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

CERTIFICATIONS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

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

Pace Analytical Services Charlotte
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

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

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92490963001	**B-62**	Water	08/13/20 17:06	08/14/20 14:30
92490963002	**B-77**	Water	08/13/20 16:55	08/14/20 14:30
92490963003	**B-74**	Water	08/14/20 11:34	08/14/20 14:30
92490963004	**B-89**	Water	08/14/20 10:03	08/14/20 14:30
92490963005	**FD-3**	Water	08/14/20 00:00	08/14/20 14:30
92490963006	**B-83**	Water	08/14/20 13:00	08/14/20 14:30
92490963007	**B-88**	Water	08/17/20 10:45	08/18/20 10:54
92490963008	**B-100**	Water	08/17/20 10:49	08/18/20 10:54
92490963009	**B-56**	Water	08/17/20 12:00	08/18/20 10:54
92490963010	**B-3**	Water	08/17/20 13:08	08/18/20 10:54
92490963011	**B-82**	Water	08/17/20 14:25	08/18/20 10:54
92490963012	**B-93**	Water	08/19/20 12:29	08/19/20 13:55

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SAMPLE ANALYTE COUNT

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92490963001	**B-62**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490963002	**B-77**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490963003	**B-74**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490963004	**B-89**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490963005	**FD-3**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490963006	**B-83**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490963007	**B-88**	EPA 6020B	CW1	12	PASI-GA

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SAMPLE ANALYTE COUNT

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490963008	**B-100**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490963009	**B-56**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490963010	**B-3**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490963011	**B-82**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
92490963012	**B-93**	EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A

PASI-A = Pace Analytical Services - Asheville
PASI-C = Pace Analytical Services - Charlotte

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory

PASI-GA = Pace Analytical Services - Peachtree Corners, GA
PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-62 **Lab ID: 92490963001** Collected: 08/13/20 17:06 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.40**	Std. Units			1		08/20/20 17:22		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/18/20 18:30	08/19/20 20:08	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 20:08	7440-38-2	
Barium	**0.026**	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 20:08	7440-39-3	
Beryllium	**0.00011J**	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 20:08	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 20:08	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 20:08	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 20:08	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 20:08	7439-92-1	
Lithium	**0.0087J**	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 20:08	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 20:08	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 20:08	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 20:08	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 13:09	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.11**	mg/L	0.10	0.050	1		08/20/20 06:20	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-77 **Lab ID: 92490963002** Collected: 08/13/20 16:55 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.14**	Std. Units			1		08/20/20 17:22		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	**0.00043J**	mg/L	0.0030	0.00028	1	08/18/20 18:30	08/19/20 20:14	7440-36-0	
Arsenic	**0.0020J**	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 20:14	7440-38-2	
Barium	**0.11**	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 20:14	7440-39-3	
Beryllium	**0.00014J**	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 20:14	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 20:14	7440-43-9	
Chromium	**0.0021J**	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 20:14	7440-47-3	
Cobalt	**0.0011J**	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 20:14	7440-48-4	
Lead	**0.0016J**	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 20:14	7439-92-1	
Lithium	**0.0018J**	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 20:14	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 20:14	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 20:14	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 20:14	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 13:11	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	ND	mg/L	0.10	0.050	1		08/20/20 06:34	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-74 **Lab ID: 92490963003** Collected: 08/14/20 11:34 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.19**	Std. Units			1		08/20/20 17:22		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/18/20 18:30	08/19/20 20:20	7440-36-0	
Arsenic	**0.010**	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 20:20	7440-38-2	
Barium	**0.077**	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 20:20	7440-39-3	
Beryllium	**0.000076J**	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 20:20	7440-41-7	
Cadmium	**0.00026J**	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 20:20	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 20:20	7440-47-3	
Cobalt	**0.0023J**	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 20:20	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 20:20	7439-92-1	
Lithium	**0.0011J**	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 20:20	7439-93-2	
Molybdenum	**0.052**	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 20:20	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 20:20	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 20:20	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 13:14	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.16**	mg/L	0.10	0.050	1		08/20/20 07:16	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-89 **Lab ID: 92490963004** Collected: 08/14/20 10:03 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**5.83**	Std. Units			1		08/20/20 17:22		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/18/20 18:30	08/19/20 20:26	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 20:26	7440-38-2	
Barium	**0.031**	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 20:26	7440-39-3	
Beryllium	**0.000074J**	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 20:26	7440-41-7	
Cadmium	**0.00063J**	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 20:26	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 20:26	7440-47-3	
Cobalt	**0.0058**	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 20:26	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 20:26	7439-92-1	
Lithium	**0.0055J**	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 20:26	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 20:26	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 20:26	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 20:26	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	**0.00014J**	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 13:16	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	ND	mg/L	0.10	0.050	1		08/20/20 07:30	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: FD-3 **Lab ID: 92490963005** Collected: 08/14/20 00:00 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/18/20 18:30	08/19/20 20:31	7440-36-0	
Arsenic	**0.0099**	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 20:31	7440-38-2	
Barium	**0.074**	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 20:31	7440-39-3	
Beryllium	**0.000066J**	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 20:31	7440-41-7	
Cadmium	**0.00021J**	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 20:31	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 20:31	7440-47-3	
Cobalt	**0.0023J**	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 20:31	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 20:31	7439-92-1	
Lithium	**0.0011J**	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 20:31	7439-93-2	
Molybdenum	**0.052**	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 20:31	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 20:31	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 20:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 13:18	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.15**	mg/L	0.10	0.050	1		08/20/20 07:44	16984-48-8	

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(770)734-4200

ANALYTICAL RESULTS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-83 **Lab ID: 92490963006** Collected: 08/14/20 13:00 Received: 08/14/20 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**5.59**	Std. Units			1		08/20/20 17:22		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/18/20 18:26	08/20/20 18:20	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:26	08/20/20 18:20	7440-38-2	
Barium	**0.056**	mg/L	0.010	0.00071	1	08/18/20 18:26	08/20/20 18:20	7440-39-3	
Beryllium	**0.00070J**	mg/L	0.0030	0.000046	1	08/18/20 18:26	08/21/20 15:22	7440-41-7	
Cadmium	**0.00037J**	mg/L	0.0025	0.00012	1	08/18/20 18:26	08/20/20 18:20	7440-43-9	
Chromium	**0.0050J**	mg/L	0.010	0.00055	1	08/18/20 18:26	08/20/20 18:20	7440-47-3	
Cobalt	**0.021**	mg/L	0.0050	0.00038	1	08/18/20 18:26	08/20/20 18:20	7440-48-4	
Lead	**0.00092J**	mg/L	0.0050	0.000036	1	08/18/20 18:26	08/20/20 18:20	7439-92-1	
Lithium	**0.0045J**	mg/L	0.030	0.00081	1	08/18/20 18:26	08/20/20 18:20	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:26	08/20/20 18:20	7439-98-7	
Selenium	**0.015**	mg/L	0.010	0.0016	1	08/18/20 18:26	08/20/20 18:20	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:26	08/20/20 18:20	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 13:21	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.050J**	mg/L	0.10	0.050	1		08/20/20 07:58	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-88 **Lab ID: 92490963007** Collected: 08/17/20 10:45 Received: 08/18/20 10:54 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**5.76**	Std. Units			1		08/20/20 17:22		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/18/20 18:26	08/20/20 18:26	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:26	08/20/20 18:26	7440-38-2	
Barium	**0.022**	mg/L	0.010	0.00071	1	08/18/20 18:26	08/20/20 18:26	7440-39-3	
Beryllium	**0.0014J**	mg/L	0.0030	0.000046	1	08/18/20 18:26	08/21/20 15:28	7440-41-7	
Cadmium	**0.0018J**	mg/L	0.0025	0.00012	1	08/18/20 18:26	08/20/20 18:26	7440-43-9	
Chromium	**0.0014J**	mg/L	0.010	0.00055	1	08/18/20 18:26	08/20/20 18:26	7440-47-3	
Cobalt	**0.0031J**	mg/L	0.0050	0.00038	1	08/18/20 18:26	08/20/20 18:26	7440-48-4	
Lead	**0.00081J**	mg/L	0.0050	0.000036	1	08/18/20 18:26	08/20/20 18:26	7439-92-1	
Lithium	**0.0060J**	mg/L	0.030	0.00081	1	08/18/20 18:26	08/20/20 18:26	7439-93-2	
Molybdenum	**0.0012J**	mg/L	0.010	0.00069	1	08/18/20 18:26	08/20/20 18:26	7439-98-7	
Selenium	**0.0017J**	mg/L	0.010	0.0016	1	08/18/20 18:26	08/20/20 18:26	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:26	08/20/20 18:26	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	**0.00011J**	mg/L	0.00020	0.000078	1	08/19/20 12:30	08/20/20 15:05	7439-97-6	B
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	ND	mg/L	0.10	0.050	1		08/20/20 16:15	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-100 **Lab ID: 92490963008** Collected: 08/17/20 10:49 Received: 08/18/20 10:54 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**5.02**	Std. Units			1		08/20/20 17:22		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	**0.0013J**	mg/L	0.0030	0.00028	1	08/18/20 18:26	08/20/20 19:00	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:26	08/20/20 19:00	7440-38-2	
Barium	**0.015**	mg/L	0.010	0.00071	1	08/18/20 18:26	08/20/20 19:00	7440-39-3	
Beryllium	**0.00040J**	mg/L	0.0030	0.000046	1	08/18/20 18:26	08/21/20 15:45	7440-41-7	
Cadmium	**0.00059J**	mg/L	0.0025	0.00012	1	08/18/20 18:26	08/20/20 19:00	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:26	08/20/20 19:00	7440-47-3	
Cobalt	**0.077**	mg/L	0.0050	0.00038	1	08/18/20 18:26	08/20/20 19:00	7440-48-4	
Lead	**0.000088J**	mg/L	0.0050	0.000036	1	08/18/20 18:26	08/20/20 19:00	7439-92-1	
Lithium	**0.0013J**	mg/L	0.030	0.00081	1	08/18/20 18:26	08/20/20 19:00	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:26	08/20/20 19:00	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:26	08/20/20 19:00	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:26	08/20/20 19:00	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	**0.00011J**	mg/L	0.00020	0.000078	1	08/19/20 12:30	08/20/20 15:07	7439-97-6	B
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	ND	mg/L	0.10	0.050	1		08/20/20 16:59	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-56 **Lab ID: 92490963009** Collected: 08/17/20 12:00 Received: 08/18/20 10:54 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**4.82**	Std. Units			1		08/20/20 17:22		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/18/20 18:26	08/20/20 19:06	7440-36-0	
Arsenic	**0.0032J**	mg/L	0.0050	0.00078	1	08/18/20 18:26	08/20/20 19:06	7440-38-2	
Barium	**0.030**	mg/L	0.010	0.00071	1	08/18/20 18:26	08/20/20 19:06	7440-39-3	
Beryllium	**0.0013J**	mg/L	0.0030	0.000046	1	08/18/20 18:26	08/21/20 15:50	7440-41-7	
Cadmium	**0.00029J**	mg/L	0.0025	0.00012	1	08/18/20 18:26	08/20/20 19:06	7440-43-9	
Chromium	**0.0014J**	mg/L	0.010	0.00055	1	08/18/20 18:26	08/20/20 19:06	7440-47-3	
Cobalt	**0.042**	mg/L	0.0050	0.00038	1	08/18/20 18:26	08/20/20 19:06	7440-48-4	
Lead	**0.00022J**	mg/L	0.0050	0.000036	1	08/18/20 18:26	08/20/20 19:06	7439-92-1	
Lithium	**0.0056J**	mg/L	0.030	0.00081	1	08/18/20 18:26	08/20/20 19:06	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:26	08/20/20 19:06	7439-98-7	
Selenium	**0.011**	mg/L	0.010	0.0016	1	08/18/20 18:26	08/20/20 19:06	7782-49-2	
Thallium	**0.00016J**	mg/L	0.0010	0.00014	1	08/18/20 18:26	08/20/20 19:06	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	**0.00016J**	mg/L	0.00020	0.000078	1	08/19/20 12:30	08/20/20 15:10	7439-97-6	B
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.19**	mg/L	0.10	0.050	1		08/20/20 17:14	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-3 **Lab ID: 92490963010** Collected: 08/17/20 13:08 Received: 08/18/20 10:54 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**5.51**	Std. Units			1		08/20/20 17:22		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/18/20 18:26	08/20/20 19:12	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:26	08/20/20 19:12	7440-38-2	
Barium	**0.026**	mg/L	0.010	0.00071	1	08/18/20 18:26	08/20/20 19:12	7440-39-3	
Beryllium	**0.0035**	mg/L	0.0030	0.000046	1	08/18/20 18:26	08/21/20 15:56	7440-41-7	
Cadmium	**0.00077J**	mg/L	0.0025	0.00012	1	08/18/20 18:26	08/20/20 19:12	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:26	08/20/20 19:12	7440-47-3	
Cobalt	**0.061**	mg/L	0.0050	0.00038	1	08/18/20 18:26	08/20/20 19:12	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:26	08/20/20 19:12	7439-92-1	
Lithium	**0.58**	mg/L	0.030	0.00081	1	08/18/20 18:26	08/20/20 19:12	7439-93-2	
Molybdenum	**0.0015J**	mg/L	0.010	0.00069	1	08/18/20 18:26	08/20/20 19:12	7439-98-7	
Selenium	**0.0021J**	mg/L	0.010	0.0016	1	08/18/20 18:26	08/20/20 19:12	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:26	08/20/20 19:12	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	**0.00010J**	mg/L	0.00020	0.000078	1	08/19/20 12:30	08/20/20 15:12	7439-97-6	B
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.077J**	mg/L	0.10	0.050	1		08/20/20 17:29	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-82 **Lab ID: 92490963011** Collected: 08/17/20 14:25 Received: 08/18/20 10:54 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**5.48**	Std. Units			1		08/20/20 17:22		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/18/20 18:26	08/20/20 19:17	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:26	08/20/20 19:17	7440-38-2	
Barium	**0.024**	mg/L	0.010	0.00071	1	08/18/20 18:26	08/20/20 19:17	7440-39-3	
Beryllium	**0.0014J**	mg/L	0.0030	0.000046	1	08/18/20 18:26	08/21/20 16:24	7440-41-7	
Cadmium	**0.00058J**	mg/L	0.0025	0.00012	1	08/18/20 18:26	08/20/20 19:17	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:26	08/20/20 19:17	7440-47-3	
Cobalt	**0.0028J**	mg/L	0.0050	0.00038	1	08/18/20 18:26	08/20/20 19:17	7440-48-4	
Lead	**0.000059J**	mg/L	0.0050	0.000036	1	08/18/20 18:26	08/20/20 19:17	7439-92-1	
Lithium	**0.0016J**	mg/L	0.030	0.00081	1	08/18/20 18:26	08/20/20 19:17	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:26	08/20/20 19:17	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:26	08/20/20 19:17	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:26	08/20/20 19:17	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	**0.00011J**	mg/L	0.00020	0.000078	1	08/19/20 12:30	08/20/20 15:14	7439-97-6	B
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	ND	mg/L	0.10	0.050	1		08/20/20 17:44	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-93 **Lab ID: 92490963012** Collected: 08/19/20 12:29 Received: 08/19/20 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**4.78**	Std. Units			1		08/20/20 17:22		
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	08/24/20 15:05	08/25/20 17:00	7440-36-0	
Arsenic	**0.0013J**	mg/L	0.0050	0.00078	1	08/24/20 15:05	08/25/20 17:00	7440-38-2	
Barium	**0.018**	mg/L	0.010	0.00071	1	08/24/20 15:05	08/25/20 17:00	7440-39-3	
Beryllium	**0.015**	mg/L	0.0030	0.000046	1	08/24/20 15:05	08/25/20 17:00	7440-41-7	
Cadmium	**0.00077J**	mg/L	0.0025	0.00012	1	08/24/20 15:05	08/25/20 17:00	7440-43-9	
Chromium	**0.00057J**	mg/L	0.010	0.00055	1	08/24/20 15:05	08/25/20 17:00	7440-47-3	
Cobalt	**0.068**	mg/L	0.0050	0.00038	1	08/24/20 15:05	08/25/20 17:00	7440-48-4	
Lead	**0.00012J**	mg/L	0.0050	0.000036	1	08/24/20 15:05	08/26/20 17:06	7439-92-1	
Lithium	**0.011J**	mg/L	0.030	0.00081	1	08/24/20 15:05	08/25/20 17:00	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/24/20 15:05	08/25/20 17:00	7439-98-7	
Selenium	**0.018**	mg/L	0.010	0.0016	1	08/24/20 15:05	08/25/20 17:00	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/24/20 15:05	08/26/20 17:06	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	**0.00026**	mg/L	0.00020	0.000078	1	08/24/20 11:30	08/25/20 08:52	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	**0.32**	mg/L	0.10	0.050	1		08/21/20 03:44	16984-48-8	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch: 560739
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490963001, 92490963002, 92490963003, 92490963004, 92490963005

METHOD BLANK: 2974806 Matrix: Water
Associated Lab Samples: 92490963001, 92490963002, 92490963003, 92490963004, 92490963005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	08/19/20 17:51	
Arsenic	mg/L	ND	0.0050	0.00078	08/19/20 17:51	
Barium	mg/L	ND	0.010	0.00071	08/19/20 17:51	
Beryllium	mg/L	ND	0.0030	0.000046	08/19/20 17:51	
Cadmium	mg/L	ND	0.0025	0.00012	08/19/20 17:51	
Chromium	mg/L	ND	0.010	0.00055	08/19/20 17:51	
Cobalt	mg/L	ND	0.0050	0.00038	08/19/20 17:51	
Lead	mg/L	ND	0.0050	0.000036	08/19/20 17:51	
Lithium	mg/L	ND	0.030	0.00081	08/19/20 17:51	
Molybdenum	mg/L	ND	0.010	0.00069	08/19/20 17:51	
Selenium	mg/L	ND	0.010	0.0016	08/19/20 17:51	
Thallium	mg/L	ND	0.0010	0.00014	08/19/20 17:51	

LABORATORY CONTROL SAMPLE: 2974807

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	111	80-120	
Arsenic	mg/L	0.1	0.099	99	80-120	
Barium	mg/L	0.1	0.10	102	80-120	
Beryllium	mg/L	0.1	0.099	99	80-120	
Cadmium	mg/L	0.1	0.10	100	80-120	
Chromium	mg/L	0.1	0.10	103	80-120	
Cobalt	mg/L	0.1	0.10	101	80-120	
Lead	mg/L	0.1	0.10	100	80-120	
Lithium	mg/L	0.1	0.10	104	80-120	
Molybdenum	mg/L	0.1	0.11	106	80-120	
Selenium	mg/L	0.1	0.10	102	80-120	
Thallium	mg/L	0.1	0.099	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974808 2974809

Parameter	Units	92490942006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	114	109	75-125	5	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.099	100	99	75-125	2	20	
Barium	mg/L	0.088	0.1	0.1	0.22	0.21	131	119	75-125	6	20	M1
Beryllium	mg/L	ND	0.1	0.1	0.099	0.096	99	96	75-125	3	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974808 2974809

Parameter	Units	92490942006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	mg/L	0.00021J	0.1	0.1	0.10	0.098	99	98	75-125	1	20	
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	102	101	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	1	20	
Lead	mg/L	ND	0.1	0.1	0.098	0.097	98	97	75-125	0	20	
Lithium	mg/L	ND	0.1	0.1	0.10	0.098	102	97	75-125	4	20	
Molybdenum	mg/L	0.19	0.1	0.1	0.31	0.29	122	105	75-125	5	20	
Selenium	mg/L	ND	0.1	0.1	0.10	0.093	99	92	75-125	7	20	
Thallium	mg/L	ND	0.1	0.1	0.097	0.096	97	96	75-125	1	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch: 560791
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490963006, 92490963007, 92490963008, 92490963009, 92490963010, 92490963011

METHOD BLANK: 2975067 Matrix: Water
Associated Lab Samples: 92490963006, 92490963007, 92490963008, 92490963009, 92490963010, 92490963011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	08/20/20 16:30	
Arsenic	mg/L	ND	0.0050	0.00078	08/20/20 16:30	
Barium	mg/L	ND	0.010	0.00071	08/20/20 16:30	
Beryllium	mg/L	ND	0.0030	0.000046	08/20/20 16:30	
Cadmium	mg/L	ND	0.0025	0.00012	08/20/20 16:30	
Chromium	mg/L	ND	0.010	0.00055	08/20/20 16:30	
Cobalt	mg/L	ND	0.0050	0.00038	08/20/20 16:30	
Lead	mg/L	ND	0.0050	0.000036	08/20/20 16:30	
Lithium	mg/L	ND	0.030	0.00081	08/20/20 16:30	
Molybdenum	mg/L	ND	0.010	0.00069	08/20/20 16:30	
Selenium	mg/L	ND	0.010	0.0016	08/20/20 16:30	
Thallium	mg/L	ND	0.0010	0.00014	08/20/20 16:30	

LABORATORY CONTROL SAMPLE: 2975068

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	103	80-120	
Arsenic	mg/L	0.1	0.099	99	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.11	109	80-120	
Cadmium	mg/L	0.1	0.098	98	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	101	80-120	
Lithium	mg/L	0.1	0.11	113	80-120	
Molybdenum	mg/L	0.1	0.10	100	80-120	
Selenium	mg/L	0.1	0.099	99	80-120	
Thallium	mg/L	0.1	0.099	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2975069 2975070

Parameter	Units	92490963007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.099	0.10	99	102	75-125	3	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.10	100	103	75-125	3	20	
Barium	mg/L	0.022	0.1	0.1	0.12	0.12	99	99	75-125	0	20	
Beryllium	mg/L	0.0014J	0.1	0.1	0.094	0.095	92	93	75-125	1	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2975069 2975070

Parameter	Units	92490963007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	mg/L	0.0018J	0.1	0.1	0.10	0.10	99	98	75-125	1	20	
Chromium	mg/L	0.0014J	0.1	0.1	0.10	0.10	102	101	75-125	1	20	
Cobalt	mg/L	0.0031J	0.1	0.1	0.10	0.099	97	96	75-125	1	20	
Lead	mg/L	0.00081J	0.1	0.1	0.088	0.095	87	94	75-125	8	20	
Lithium	mg/L	0.0060J	0.1	0.1	0.095	0.096	89	90	75-125	1	20	
Molybdenum	mg/L	0.0012J	0.1	0.1	0.098	0.10	97	101	75-125	4	20	
Selenium	mg/L	0.0017J	0.1	0.1	0.098	0.10	96	100	75-125	4	20	
Thallium	mg/L	ND	0.1	0.1	0.085	0.094	85	94	75-125	10	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch: 561963
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490963012

METHOD BLANK: 2980652 Matrix: Water
Associated Lab Samples: 92490963012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	08/25/20 16:08	
Arsenic	mg/L	ND	0.0050	0.00078	08/25/20 16:08	
Barium	mg/L	ND	0.010	0.00071	08/25/20 16:08	
Beryllium	mg/L	ND	0.0030	0.000046	08/25/20 16:08	
Cadmium	mg/L	ND	0.0025	0.00012	08/25/20 16:08	
Chromium	mg/L	ND	0.010	0.00055	08/25/20 16:08	
Cobalt	mg/L	ND	0.0050	0.00038	08/25/20 16:08	
Lead	mg/L	ND	0.0050	0.000036	08/26/20 16:20	
Lithium	mg/L	ND	0.030	0.00081	08/25/20 16:08	
Molybdenum	mg/L	ND	0.010	0.00069	08/25/20 16:08	
Selenium	mg/L	ND	0.010	0.0016	08/25/20 16:08	
Thallium	mg/L	ND	0.0010	0.00014	08/26/20 16:20	

LABORATORY CONTROL SAMPLE: 2980653

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	100	80-120	
Arsenic	mg/L	0.1	0.096	96	80-120	
Barium	mg/L	0.1	0.097	97	80-120	
Beryllium	mg/L	0.1	0.098	98	80-120	
Cadmium	mg/L	0.1	0.099	99	80-120	
Chromium	mg/L	0.1	0.099	99	80-120	
Cobalt	mg/L	0.1	0.098	98	80-120	
Lead	mg/L	0.1	0.10	100	80-120	
Lithium	mg/L	0.1	0.098	98	80-120	
Molybdenum	mg/L	0.1	0.097	97	80-120	
Selenium	mg/L	0.1	0.098	98	80-120	
Thallium	mg/L	0.1	0.10	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2980654 2980655

Parameter	Units	92491455013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	0.00064J	0.1	0.1	0.10	0.10	101	99	75-125	2	20	
Arsenic	mg/L	ND	0.1	0.1	0.099	0.099	99	99	75-125	0	20	
Barium	mg/L	0.12	0.1	0.1	0.24	0.23	115	114	75-125	0	20	
Beryllium	mg/L	ND	0.1	0.1	0.098	0.099	98	99	75-125	0	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2980654 2980655

Parameter	Units	92491455013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	mg/L	0.00058J	0.1	0.1	0.096	0.096	95	95	75-125	0	20	
Chromium	mg/L	0.0015J	0.1	0.1	0.10	0.10	100	100	75-125	0	20	
Cobalt	mg/L	0.00040J	0.1	0.1	0.10	0.10	99	99	75-125	0	20	
Lead	mg/L	0.00035J	0.1	0.1	0.094	0.093	94	93	75-125	1	20	
Lithium	mg/L	ND	0.1	0.1	0.096	0.098	96	97	75-125	1	20	
Molybdenum	mg/L	0.00077J	0.1	0.1	0.10	0.10	102	99	75-125	2	20	
Selenium	mg/L	0.0028J	0.1	0.1	0.10	0.10	99	99	75-125	0	20	
Thallium	mg/L	0.00021J	0.1	0.1	0.094	0.093	94	93	75-125	1	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch: 560634 — Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A — Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490963001, 92490963002, 92490963003, 92490963004, 92490963005, 92490963006

METHOD BLANK: 2974354 — Matrix: Water
Associated Lab Samples: 92490963001, 92490963002, 92490963003, 92490963004, 92490963005, 92490963006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00020	0.000078	08/19/20 12:33	

LABORATORY CONTROL SAMPLE: 2974355

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0023	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974356 2974357

Parameter	Units	92490942001 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	0.0022	0.0025	86	98	75-125	13	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch: 560972 | Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A | Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490963007, 92490963008, 92490963009, 92490963010, 92490963011

METHOD BLANK: 2975790 Matrix: Water
Associated Lab Samples: 92490963007, 92490963008, 92490963009, 92490963010, 92490963011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	0.00012J	0.00020	0.000078	08/20/20 14:39	

LABORATORY CONTROL SAMPLE: 2975791

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0024	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2975792 2975793

Parameter	Units	92491341001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	0.51 ug/L	0.0025	0.0025	0.0030	0.0025	101	81	75-125	18	20	M1,R1

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch: 561894
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490963012

METHOD BLANK: 2980088 Matrix: Water
Associated Lab Samples: 92490963012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00020	0.000078	08/25/20 08:19	

LABORATORY CONTROL SAMPLE: 2980089

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0026	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2980090 2980091

Parameter	Units	92491616002 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	0.0026	90	102	75-125	12	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch: 561129
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92490963001, 92490963002, 92490963003, 92490963004, 92490963005, 92490963006

METHOD BLANK: 2976672 Matrix: Water
Associated Lab Samples: 92490963001, 92490963002, 92490963003, 92490963004, 92490963005, 92490963006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	08/20/20 00:59	

LABORATORY CONTROL SAMPLE: 2976673

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2976674 2976675

Parameter	Units	92491362001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	2.9	2.9	113	115	90-110	1	10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2976676 2976677

Parameter	Units	92491256001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.28	2.5	2.5	2.8	2.8	99	99	90-110	0	10	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch: 561131
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92490963007, 92490963008, 92490963009, 92490963010, 92490963011

METHOD BLANK: 2976682 Matrix: Water
Associated Lab Samples: 92490963007, 92490963008, 92490963009, 92490963010, 92490963011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	08/20/20 15:45	

LABORATORY CONTROL SAMPLE: 2976683

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.7	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2976684 2976685

Parameter	Units	92490963007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	2.6	2.6	104	102	90-110	2	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2976686 2976687

Parameter	Units	92490847002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	2.7	2.7	105	105	90-110	0	10	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch: 561238
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92490963012

METHOD BLANK: 2977016 Matrix: Water
Associated Lab Samples: 92490963012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	08/21/20 01:16	

LABORATORY CONTROL SAMPLE: 2977017

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.7	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2977018 2977019

Parameter	Units	92491455012 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	2.5	2.5	98	99	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2977020 2977021

Parameter	Units	92490037060 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	2.5	2.5	97	100	90-110	3	10	

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

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-62 **Lab ID: 92490963001** Collected: 08/13/20 17:06 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.647 ± 0.395 (0.610) C:75% T:NA**	pCi/L	09/02/20 07:31	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.986 ± 0.474 (0.809) C:65% T:85%**	pCi/L	09/09/20 12:03	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.63 ± 0.869 (1.42)**	pCi/L	09/10/20 13:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-77 **Lab ID: 92490963002** Collected: 08/13/20 16:55 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.782 ± 0.417 (0.602) C:81% T:NA**	pCi/L	09/02/20 07:31	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**1.39 ± 0.593 (0.977) C:66% T:78%**	pCi/L	09/09/20 12:04	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**2.17 ± 1.01 (1.58)**	pCi/L	09/10/20 13:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-74 **Lab ID: 92490963003** Collected: 08/14/20 11:34 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.678 ± 0.362 (0.450) C:79% T:NA**	pCi/L	09/02/20 08:26	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.989 ± 0.494 (0.872) C:66% T:84%**	pCi/L	09/09/20 12:04	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.67 ± 0.856 (1.32)**	pCi/L	09/10/20 13:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-89 **Lab ID: 92490963004** Collected: 08/14/20 10:03 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.116 ± 0.302 (0.720) C:79% T:NA**	pCi/L	09/02/20 07:31	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**1.37 ± 0.567 (0.907) C:64% T:82%**	pCi/L	09/09/20 12:04	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.49 ± 0.869 (1.63)**	pCi/L	09/10/20 13:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: FD-3 **Lab ID: 92490963005** Collected: 08/14/20 00:00 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.113 ± 0.250 (0.588) C:86% T:NA**	pCi/L	09/02/20 07:31	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.881 ± 0.508 (0.942) C:61% T:88%**	pCi/L	09/09/20 12:04	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.994 ± 0.758 (1.53)**	pCi/L	09/10/20 13:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-83 **Lab ID: 92490963006** Collected: 08/14/20 13:00 Received: 08/14/20 14:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.367 ± 0.263 (0.414) C:91% T:NA**	pCi/L	09/02/20 07:31	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.583 ± 0.517 (1.05) C:66% T:71%**	pCi/L	09/09/20 12:04	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.950 ± 0.780 (1.46)**	pCi/L	09/10/20 13:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-88 **Lab ID: 92490963007** Collected: 08/17/20 10:45 Received: 08/18/20 10:54 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.556 ± 0.309 (0.385) C:93% T:NA**	pCi/L	09/02/20 07:32	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**1.91 ± 0.689 (1.02) C:66% T:71%**	pCi/L	09/09/20 12:04	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**2.47 ± 0.998 (1.41)**	pCi/L	09/10/20 13:23	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-100 **Lab ID: 92490963008** Collected: 08/17/20 10:49 Received: 08/18/20 10:54 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.277 ± 0.266 (0.509) C:92% T:NA**	pCi/L	09/02/20 07:32	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**1.12 ± 0.565 (0.994) C:62% T:77%**	pCi/L	09/09/20 12:04	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.40 ± 0.831 (1.50)**	pCi/L	09/10/20 13:23	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-56 **Lab ID: 92490963009** Collected: 08/17/20 12:00 Received: 08/18/20 10:54 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.436 ± 0.307 (0.501) C:89% T:NA**	pCi/L	09/02/20 07:32	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.712 ± 0.484 (0.933) C:61% T:86%**	pCi/L	09/09/20 12:04	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.15 ± 0.791 (1.43)**	pCi/L	09/10/20 13:23	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-3 **Lab ID: 92490963010** Collected: 08/17/20 13:08 Received: 08/18/20 10:54 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.992 ± 0.457 (0.654) C:94% T:NA**	pCi/L	09/02/20 07:32	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.784 ± 0.970 (2.06) C:34% T:74%**	pCi/L	09/09/20 12:05	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.78 ± 1.43 (2.71)**	pCi/L	09/10/20 13:23	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-82 **Lab ID: 92490963011** Collected: 08/17/20 14:25 Received: 08/18/20 10:54 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.119 ± 0.187 (0.404) C:91% T:NA**	pCi/L	09/02/20 07:40	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.543 ± 0.463 (0.930) C:61% T:78%**	pCi/L	09/09/20 12:05	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.662 ± 0.650 (1.33)**	pCi/L	09/10/20 13:23	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Sample: B-93 **Lab ID: 92490963012** Collected: 08/19/20 12:29 Received: 08/19/20 13:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.725 ± 0.347 (0.405) C:96% T:NA**	pCi/L	09/02/20 07:42	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.467 ± 0.517 (1.09) C:63% T:83%**	pCi/L	09/09/20 12:06	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.19 ± 0.864 (1.50)**	pCi/L	09/10/20 13:18	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch: 411435
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92490963001, 92490963002, 92490963003, 92490963004, 92490963005, 92490963006, 92490963007, 92490963008, 92490963009, 92490963010, 92490963011, 92490963012

METHOD BLANK: 1990342 Matrix: Water
Associated Lab Samples: 92490963001, 92490963002, 92490963003, 92490963004, 92490963005, 92490963006, 92490963007, 92490963008, 92490963009, 92490963010, 92490963011, 92490963012

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.664 ± 0.374 (0.672) C:70% T:89%	pCi/L	09/09/20 12:03	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch: 411373 Analysis Method: EPA 9315
QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92490963001, 92490963002, 92490963003, 92490963004, 92490963005, 92490963006, 92490963007, 92490963008, 92490963009, 92490963010, 92490963011, 92490963012

METHOD BLANK: 1989993 Matrix: Water
Associated Lab Samples: 92490963001, 92490963002, 92490963003, 92490963004, 92490963005, 92490963006, 92490963007, 92490963008, 92490963009, 92490963010, 92490963011, 92490963012

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0671 ± 0.195 (0.481) C:88% T:NA	pCi/L	09/02/20 07:31	

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QUALIFIERS

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92490963001	B-62				
92490963002	B-77				
92490963003	B-74				
92490963004	B-89				
92490963006	B-83				
92490963007	B-88				
92490963008	B-100				
92490963009	B-56				
92490963010	B-3				
92490963011	B-82				
92490963012	B-93				
92490963001	B-62	EPA 3005A	560739	EPA 6020B	560802
92490963002	B-77	EPA 3005A	560739	EPA 6020B	560802
92490963003	B-74	EPA 3005A	560739	EPA 6020B	560802
92490963004	B-89	EPA 3005A	560739	EPA 6020B	560802
92490963005	FD-3	EPA 3005A	560739	EPA 6020B	560802
92490963006	B-83	EPA 3005A	560791	EPA 6020B	560801
92490963007	B-88	EPA 3005A	560791	EPA 6020B	560801
92490963008	B-100	EPA 3005A	560791	EPA 6020B	560801
92490963009	B-56	EPA 3005A	560791	EPA 6020B	560801
92490963010	B-3	EPA 3005A	560791	EPA 6020B	560801
92490963011	B-82	EPA 3005A	560791	EPA 6020B	560801
92490963012	B-93	EPA 3005A	561963	EPA 6020B	562039
92490963001	B-62	EPA 7470A	560634	EPA 7470A	560773
92490963002	B-77	EPA 7470A	560634	EPA 7470A	560773
92490963003	B-74	EPA 7470A	560634	EPA 7470A	560773
92490963004	B-89	EPA 7470A	560634	EPA 7470A	560773
92490963005	FD-3	EPA 7470A	560634	EPA 7470A	560773
92490963006	B-83	EPA 7470A	560634	EPA 7470A	560773
92490963007	B-88	EPA 7470A	560972	EPA 7470A	561213
92490963008	B-100	EPA 7470A	560972	EPA 7470A	561213
92490963009	B-56	EPA 7470A	560972	EPA 7470A	561213
92490963010	B-3	EPA 7470A	560972	EPA 7470A	561213
92490963011	B-82	EPA 7470A	560972	EPA 7470A	561213
92490963012	B-93	EPA 7470A	561894	EPA 7470A	562048
92490963001	B-62	EPA 9315	411373		
92490963002	B-77	EPA 9315	411373		
92490963003	B-74	EPA 9315	411373		
92490963004	B-89	EPA 9315	411373		
92490963005	FD-3	EPA 9315	411373		
92490963006	B-83	EPA 9315	411373		
92490963007	B-88	EPA 9315	411373		
92490963008	B-100	EPA 9315	411373		
92490963009	B-56	EPA 9315	411373		
92490963010	B-3	EPA 9315	411373		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92490963011	**B-82**	EPA 9315	411373		
92490963012	**B-93**	EPA 9315	411373		
92490963001	**B-62**	EPA 9320	411435		
92490963002	**B-77**	EPA 9320	411435		
92490963003	**B-74**	EPA 9320	411435		
92490963004	**B-89**	EPA 9320	411435		
92490963005	**FD-3**	EPA 9320	411435		
92490963006	**B-83**	EPA 9320	411435		
92490963007	**B-88**	EPA 9320	411435		
92490963008	**B-100**	EPA 9320	411435		
92490963009	**B-56**	EPA 9320	411435		
92490963010	**B-3**	EPA 9320	411435		
92490963011	**B-82**	EPA 9320	411435		
92490963012	**B-93**	EPA 9320	411435		
92490963001	**B-62**	Total Radium Calculation	413340		
92490963002	**B-77**	Total Radium Calculation	413340		
92490963003	**B-74**	Total Radium Calculation	413340		
92490963004	**B-89**	Total Radium Calculation	413340		
92490963005	**FD-3**	Total Radium Calculation	413340		
92490963006	**B-83**	Total Radium Calculation	413340		
92490963007	**B-88**	Total Radium Calculation	413341		
92490963008	**B-100**	Total Radium Calculation	413341		
92490963009	**B-56**	Total Radium Calculation	413341		
92490963010	**B-3**	Total Radium Calculation	413341		
92490963011	**B-82**	Total Radium Calculation	413341		
92490963012	**B-93**	Total Radium Calculation	413342		
92490963001	**B-62**	EPA 300.0 Rev 2.1 1993	561129		
92490963002	**B-77**	EPA 300.0 Rev 2.1 1993	561129		
92490963003	**B-74**	EPA 300.0 Rev 2.1 1993	561129		
92490963004	**B-89**	EPA 300.0 Rev 2.1 1993	561129		
92490963005	**FD-3**	EPA 300.0 Rev 2.1 1993	561129		
92490963006	**B-83**	EPA 300.0 Rev 2.1 1993	561129		
92490963007	**B-88**	EPA 300.0 Rev 2.1 1993	561131		
92490963008	**B-100**	EPA 300.0 Rev 2.1 1993	561131		
92490963009	**B-56**	EPA 300.0 Rev 2.1 1993	561131		
92490963010	**B-3**	EPA 300.0 Rev 2.1 1993	561131		
92490963011	**B-82**	EPA 300.0 Rev 2.1 1993	561131		
92490963012	**B-93**	EPA 300.0 Rev 2.1 1993	561238		

REPORT OF LABORATORY ANALYSIS

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

WO# : 92490963

92490963

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Golder	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone	Fax	Project Name:	Plant McDonough Assessment	Pace Project Manager:	Kevin Herring
	(404) 506-7239				
Requested Due Date:		Project #:	166849618	Pace Profile #:	

Regulatory Agency	
State / Location	GA

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Analyses Test Y/N	Requested Analysis Filtered (Y/N): App IV Metals*	Fluoride	Radium 226/228	Residual Chlorine (Y/N)	
																Y/N	N	N	N		92490963
1	B-62	WT	G	8/13/2020	1706		4	1		3							X	X	X		pH: 6.40
2	B-77	WT	G	8/13/2020	1655		4	1		3							X	X	X		pH: 6.14
3	B-74			8/14/20	1134		4	1		3							X	X	X		pH: 6.19
4	B-89			"	1007		6	1		5							X	X	X		pH: 5.83, extra vials
5	FD-3			"	—		4	1		3							X	X	X		
6	B-83			"	1300		4	1		3							X	X	X		pH: 5.59
7																					
8																					
9																					
10																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
App IV metals = Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl	JW/SAMPLER	08/14/20	14:30	[signature]	8/14/20	1430	

SAMPLER NAME AND SIGNATURE			TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SAMPLER NAME	JUDE WAGUESPACK					
SAMPLER SIGNATURE	[signature]	DATE Signed: 08/14/20				

Sample Condition Upon Receipt

Pace Analytical

Client Name: GA Power

WO#: 92490963

PM: KLH1 Due Date: 08/28/20

CLIENT: GA-GA Power

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

Tracking #: _____

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

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

Thermometer Used THR214 Type of Ice: ☑ Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 3.8 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Comments:

Date and Initials of person examining contents: KLH 8/18/20

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

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

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

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Jeju Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Golder	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone:	(404) 506-7239 Fax:	Project Name:	Plant McDonough Assessment	Pace Project Manager:	Kevin Herring
Requested Due Date:		Project #:	166849618	Pace Profile #:	

Regulatory Agency

State / Location: GA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N): Y/N	Analyses Test: App IV Metals*	Fluoride	Radium 226/228	Residual Chlorine (Y/N)	9246093
																N	N	N			
1	B-88	WT	G	8/17/2020	10:45		4	1		3						X	X	X			pH=5.76
2	B-100	WT	G	8/17/2020	10:49		4	1		3						X	X	X			pH=5.02
3	B-56	WT	G	8/17/2020	12:00		4	1		3						X	X	X			pH=4.82
4	B-3	WT	G	8/17/2020	13:08		4	1		3						X	X	X			pH=5.51
5	B-82	WT	G	8/17/2020	14:25		4	1		3						X	X	X			pH= 5.48
6																					
7																					
8																					
9																					
10																					

007
008
009
010
011

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
App IV metals = Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl	JW/SAMPLER	08/18/20	1054	K.Herring/Pace	8/18/20	1054	3.8	Y	N	Y

SAMPLER NAME AND SIGNATURE

SAMPLER NAME: JUDE WAGUESPACK

SAMPLER SIGNATURE: JW

DATE Signed: 08/18/20

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	scservoices@southernco.com DAWN_PRELL @GOLDER.COM
Address:	2480 Maner Road Atlanta, GA 30339	Copy To:	Golder	Company Name:	
Email:	jabraham@southernco.com	Purchase Order #:		Address:	
Phone:	(404) 506-7239 Fax	Project Name:	Plant McDonough Assessment	Pace Quote:	
Requested Due Date:		Project #:	168849618	Pace Project Manager:	Kevin Herring
				Pace Profile #:	

Regulatory Agency

State / Location: GA

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Analyses Test Y/N	App IV Metals*	Fluoride	Radium 226/228	Residual Chlorine (Y/N)	
	MATRIX: Drinking Water, Water, Waste Water, Product, Soil/Solid, Oil, Wipe, Air, Other, Tissue — CODE: DW, WT, WW, P, SL, OL, WP, AR, OT, TS															N	N	N			92490963
1	B-93	WT	G	8/19/2020	12:29		4	1		3						X	X	X			pH= 4.78 SU2
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
App IV metals = Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl	JW / SAMPLER	08/19/20	1355	K. Williams	08/19/20	1355	AD	Y	Y	Y

SAMPLER NAME AND SIGNATURE

SAMPLER NAME: JOE WAGUESPACK

SAMPLER SIGNATURE: JW

DATE Signed: 08/19/20

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

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	9/1/2020
Worklist:	55837
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1989993
MB concentration:	0.067
M/B Counting Uncertainty:	0.195
MB MDC:	0.481
MB Numerical Performance Indicator:	0.67
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS55837	LCSD55837
Count Date:	9/2/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.045	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.508	
Target Conc. (pCi/L, g, F):	4.738	
Uncertainty (Calculated):	0.057	
Result (pCi/L, g, F):	5.286	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.868	
Numerical Performance Indicator:	1.24	
Percent Recovery:	111.58%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92490963004	Enter Duplicate
Duplicate Sample I.D.	92490963004DUP	sample IDs if
Sample Result (pCi/L, g, F):	0.116	other than
Sample Result Counting Uncertainty (pCi/L, g, F):	0.301	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	0.448	the space below.
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.277	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-1.591	92490963004
Duplicate RPD:	117.70%	92490963004DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

~~***Batch must be re-prepped due to unacceptable precision.~~ N/A LAM 9/2/2020

LAM 9/2/2020

LAM 9/2/2020

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	9/1/2020
Worklist:	55837
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1989993
MB concentration:	0.067
M/B Counting Uncertainty:	0.195
MB MDC:	0.481
MB Numerical Performance Indicator:	0.67
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55837	LCSD55837
Count Date:	9/2/2020	9/2/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.045	24.045
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.508	0.501
Target Conc. (pCi/L, g, F):	4.738	4.797
Uncertainty (Calculated):	0.057	0.058
Result (pCi/L, g, F):	5.286	4.329
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.868	0.805
Numerical Performance Indicator:	1.24	-1.13
Percent Recovery:	111.58%	90.26%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS55837	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD55837	
Sample Result (pCi/L, g, F):	5.286	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.868	
Sample Duplicate Result (pCi/L, g, F):	4.329	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.805	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	1.584	92490963004
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	21.13%	92490963004DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

LAM 9/1/2020

LAM 9/2/2020

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	9/2/2020
Worklist:	55851
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1990342
MB concentration:	0.664
M/B 2 Sigma CSU:	0.374
MB MDC:	0.672
MB Numerical Performance Indicator:	3.48
MB Status vs Numerical Indicator:	Fail*
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS55851	LCSD55851
Count Date:	9/9/2020	9/9/2020
Spike I.D.:	20-030	20-030
Decay Corrected Spike Concentration (pCi/mL):	38.472	38.472
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.812	0.803
Target Conc. (pCi/L, g, F):	4.737	4.789
Uncertainty (Calculated):	0.232	0.235
Result (pCi/L, g, F):	5.598	4.322
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.288	1.030
Numerical Performance Indicator:	1.29	-0.87
Percent Recovery:	118.17%	90.24%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS55851	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD55851	
Sample Result (pCi/L, g, F):	5.598	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.288	
Sample Duplicate Result (pCi/L, g, F):	4.322	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.030	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	1.516	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	26.80%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:
*If the lowest activity sample in this batch is greater than ten times the blank value, the blank is acceptable; otherwise this batch must be re-prepped.

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

October 16, 2020

Joju Abraham
Georgia Power-CCR
2480 Maner Road
Atlanta, GA 30339

RE: Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on September 23, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville
- Pace Analytical Services - Charlotte
- Pace Analytical Services - Peachtree Corners, GA

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
1(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Ms. Lauren Petty, Southern Co. Services
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta

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110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

Pace Analytical Services Charlotte
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

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

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SAMPLE SUMMARY

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92496940001	**DGWA-53**	Water	09/22/20 12:40	09/23/20 09:35
92496940002	**DGWA-70A**	Water	09/22/20 10:20	09/23/20 09:35
92496940003	**DGWA-71**	Water	09/22/20 11:45	09/23/20 09:35
92496940004	**EB-1**	Water	09/22/20 11:45	09/23/20 09:35

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

Lab ID	Sample ID	Method	Analysts	Analytes Reported
92496940001	**DGWA-53**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92496940002	**DGWA-70A**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92496940003	**DGWA-71**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92496940004	**EB-1**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3

PASI-A = Pace Analytical Services - Asheville
PASI-C = Pace Analytical Services - Charlotte
PASI-GA = Pace Analytical Services - Peachtree Corners, GA

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ANALYTICAL RESULTS

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

Sample: DGWA-53 **Lab ID: 92496940001** Collected: 09/22/20 12:40 Received: 09/23/20 09:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.43**	Std. Units			1		10/08/20 08:14		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**15.5**	mg/L	1.0	0.070	1	09/24/20 14:20	09/25/20 22:29	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/28/20 15:08	09/29/20 18:55	7440-36-0	
Arsenic	**0.00093J**	mg/L	0.0050	0.00078	1	09/28/20 15:08	09/29/20 18:55	7440-38-2	
Barium	**0.070**	mg/L	0.010	0.00071	1	09/28/20 15:08	09/29/20 18:55	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	09/28/20 15:08	09/29/20 18:55	7440-41-7	
Boron	**0.056J**	mg/L	0.10	0.0052	1	09/28/20 15:08	09/29/20 18:55	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00012	1	09/28/20 15:08	09/29/20 18:55	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/28/20 15:08	09/29/20 18:55	7440-47-3	
Cobalt	**0.011**	mg/L	0.0050	0.00038	1	09/28/20 15:08	09/29/20 18:55	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	09/28/20 15:08	09/29/20 18:55	7439-92-1	
Lithium	**0.0089J**	mg/L	0.030	0.00081	1	09/28/20 15:08	09/29/20 18:55	7439-93-2	
Molybdenum	**0.039**	mg/L	0.010	0.00069	1	09/28/20 15:08	09/29/20 18:55	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/28/20 15:08	09/29/20 18:55	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/28/20 15:08	09/29/20 18:55	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/28/20 09:15	09/29/20 09:13	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**142**	mg/L	10.0	10.0	1		09/24/20 10:30		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**1.6**	mg/L	1.0	0.60	1		09/27/20 03:05	16887-00-6	M1
Fluoride	**0.099J**	mg/L	0.10	0.050	1		09/27/20 03:05	16984-48-8	M1
Sulfate	**13.5**	mg/L	1.0	0.50	1		09/27/20 03:05	14808-79-8	M1

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

Sample: DGWA-70A **Lab ID: 92496940002** Collected: 09/22/20 10:20 Received: 09/23/20 09:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.01**	Std. Units			1		10/08/20 08:14		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**5.0**	mg/L	1.0	0.070	1	09/24/20 14:20	09/25/20 22:33	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/28/20 15:08	09/29/20 19:12	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/28/20 15:08	09/29/20 19:12	7440-38-2	
Barium	**0.038**	mg/L	0.010	0.00071	1	09/28/20 15:08	09/29/20 19:12	7440-39-3	
Beryllium	**0.000068J**	mg/L	0.0030	0.000046	1	09/28/20 15:08	09/29/20 19:12	7440-41-7	
Boron	ND	mg/L	0.10	0.0052	1	09/28/20 15:08	09/29/20 19:12	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00012	1	09/28/20 15:08	09/29/20 19:12	7440-43-9	
Chromium	**0.00089J**	mg/L	0.010	0.00055	1	09/28/20 15:08	09/29/20 19:12	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	09/28/20 15:08	09/29/20 19:12	7440-48-4	
Lead	**0.000078J**	mg/L	0.0050	0.000036	1	09/28/20 15:08	09/29/20 19:12	7439-92-1	
Lithium	ND	mg/L	0.030	0.00081	1	09/28/20 15:08	09/29/20 19:12	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/28/20 15:08	09/29/20 19:12	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/28/20 15:08	09/29/20 19:12	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/28/20 15:08	09/29/20 19:12	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/28/20 09:15	09/29/20 09:15	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**46.0**	mg/L	10.0	10.0	1		09/24/20 10:30		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**1.9**	mg/L	1.0	0.60	1		09/27/20 03:48	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/27/20 03:48	16984-48-8	
Sulfate	ND	mg/L	1.0	0.50	1		09/27/20 03:48	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

Sample: DGWA-71 **Lab ID: 92496940003** Collected: 09/22/20 11:45 Received: 09/23/20 09:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.06**	Std. Units			1		10/08/20 08:14		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**5.4**	mg/L	1.0	0.070	1	09/24/20 14:20	09/25/20 22:37	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/28/20 15:08	09/29/20 19:18	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/28/20 15:08	09/29/20 19:18	7440-38-2	
Barium	**0.024**	mg/L	0.010	0.00071	1	09/28/20 15:08	09/29/20 19:18	7440-39-3	
Beryllium	**0.000069J**	mg/L	0.0030	0.000046	1	09/28/20 15:08	09/29/20 19:18	7440-41-7	
Boron	ND	mg/L	0.10	0.0052	1	09/28/20 15:08	09/29/20 19:18	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00012	1	09/28/20 15:08	09/29/20 19:18	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/28/20 15:08	09/29/20 19:18	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	09/28/20 15:08	09/29/20 19:18	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	09/28/20 15:08	09/29/20 19:18	7439-92-1	
Lithium	**0.0012J**	mg/L	0.030	0.00081	1	09/28/20 15:08	09/29/20 19:18	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/28/20 15:08	09/29/20 19:18	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/28/20 15:08	09/29/20 19:18	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/28/20 15:08	09/29/20 19:18	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/28/20 09:15	09/29/20 09:17	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**74.0**	mg/L	10.0	10.0	1		09/24/20 10:31		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**5.2**	mg/L	1.0	0.60	1		09/27/20 04:02	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/27/20 04:02	16984-48-8	
Sulfate	**6.5**	mg/L	1.0	0.50	1		09/27/20 04:02	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

Sample: EB-1 **Lab ID: 92496940004** Collected: 09/22/20 11:45 Received: 09/23/20 09:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	ND	mg/L	1.0	0.070	1	09/24/20 14:20	09/25/20 22:42	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/28/20 15:08	09/29/20 19:24	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/28/20 15:08	09/29/20 19:24	7440-38-2	
Barium	ND	mg/L	0.010	0.00071	1	09/28/20 15:08	09/29/20 19:24	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	09/28/20 15:08	09/29/20 19:24	7440-41-7	
Boron	ND	mg/L	0.10	0.0052	1	09/28/20 15:08	09/29/20 19:24	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00012	1	09/28/20 15:08	09/29/20 19:24	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/28/20 15:08	09/29/20 19:24	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	09/28/20 15:08	09/29/20 19:24	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	09/28/20 15:08	09/29/20 19:24	7439-92-1	
Lithium	ND	mg/L	0.030	0.00081	1	09/28/20 15:08	09/29/20 19:24	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/28/20 15:08	09/29/20 19:24	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/28/20 15:08	09/29/20 19:24	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/28/20 15:08	09/29/20 19:24	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/28/20 09:15	09/29/20 09:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		09/24/20 10:31		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	ND	mg/L	1.0	0.60	1		09/27/20 22:22	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/27/20 22:22	16984-48-8	
Sulfate	**0.64J**	mg/L	1.0	0.50	1		09/27/20 22:22	14808-79-8	

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QUALITY CONTROL DATA

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

QC Batch: 568748
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D ATL
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92496940001, 92496940002, 92496940003, 92496940004

METHOD BLANK: 3013298 Matrix: Water
Associated Lab Samples: 92496940001, 92496940002, 92496940003, 92496940004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.070	09/25/20 20:40	

LABORATORY CONTROL SAMPLE: 3013299

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	0.95J	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3013300 3013301

Parameter	Units	92495894022 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	75.3	1	1	79.7	76.2	438	83	75-125	5	20	M1

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

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QUALITY CONTROL DATA

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

QC Batch: 569382
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92496940001, 92496940002, 92496940003, 92496940004

METHOD BLANK: 3016873 Matrix: Water
Associated Lab Samples: 92496940001, 92496940002, 92496940003, 92496940004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	09/29/20 18:03	
Arsenic	mg/L	ND	0.0050	0.00078	09/29/20 18:03	
Barium	mg/L	ND	0.010	0.00071	09/29/20 18:03	
Beryllium	mg/L	ND	0.0030	0.000046	09/29/20 18:03	
Boron	mg/L	ND	0.10	0.0052	09/29/20 18:03	
Cadmium	mg/L	ND	0.0025	0.00012	09/29/20 18:03	
Chromium	mg/L	ND	0.010	0.00055	09/29/20 18:03	
Cobalt	mg/L	ND	0.0050	0.00038	09/29/20 18:03	
Lead	mg/L	ND	0.0050	0.000036	09/29/20 18:03	
Lithium	mg/L	ND	0.030	0.00081	09/29/20 18:03	
Molybdenum	mg/L	ND	0.010	0.00069	09/29/20 18:03	
Selenium	mg/L	ND	0.010	0.0016	09/29/20 18:03	
Thallium	mg/L	ND	0.0010	0.00014	09/29/20 18:03	

LABORATORY CONTROL SAMPLE: 3016874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	102	80-120	
Arsenic	mg/L	0.1	0.095	95	80-120	
Barium	mg/L	0.1	0.098	98	80-120	
Beryllium	mg/L	0.1	0.095	95	80-120	
Boron	mg/L	1	0.94	94	80-120	
Cadmium	mg/L	0.1	0.097	97	80-120	
Chromium	mg/L	0.1	0.094	94	80-120	
Cobalt	mg/L	0.1	0.094	94	80-120	
Lead	mg/L	0.1	0.098	98	80-120	
Lithium	mg/L	0.1	0.091	91	80-120	
Molybdenum	mg/L	0.1	0.095	95	80-120	
Selenium	mg/L	0.1	0.096	96	80-120	
Thallium	mg/L	0.1	0.098	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3016875 3016876

Parameter	Units	92495870024 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.10	0.099	101	99	75-125	2	20	
Arsenic	mg/L	ND	0.1	0.1	0.097	0.094	97	94	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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Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3016875 3016876

Parameter	Units	92495870024 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.013	0.1	0.1	0.11	0.11	98	95	75-125	3	20	
Beryllium	mg/L	ND	0.1	0.1	0.096	0.094	96	94	75-125	1	20	
Boron	mg/L	ND	1	1	0.97	0.93	96	93	75-125	4	20	
Cadmium	mg/L	ND	0.1	0.1	0.098	0.095	98	95	75-125	3	20	
Chromium	mg/L	0.00089J	0.1	0.1	0.098	0.095	98	94	75-125	4	20	
Cobalt	mg/L	ND	0.1	0.1	0.097	0.094	97	94	75-125	3	20	
Lead	mg/L	0.000075J	0.1	0.1	0.095	0.094	95	94	75-125	1	20	
Lithium	mg/L	ND	0.1	0.1	0.094	0.092	94	92	75-125	2	20	
Molybdenum	mg/L	ND	0.1	0.1	0.099	0.096	98	96	75-125	3	20	
Selenium	mg/L	ND	0.1	0.1	0.092	0.093	91	91	75-125	1	20	
Thallium	mg/L	ND	0.1	0.1	0.096	0.096	96	96	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

QC Batch: 569298
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92496940001, 92496940002, 92496940003, 92496940004

METHOD BLANK: 3016185 Matrix: Water
Associated Lab Samples: 92496940001, 92496940002, 92496940003, 92496940004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.000078	09/29/20 08:13	

LABORATORY CONTROL SAMPLE: 3016186

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: 3016187 3016188

Parameter	Units	92497302002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0026	0.0024	102	96	75-125	6	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

QC Batch: 568649
QC Batch Method: SM 2450C-2011
Analysis Method: SM 2450C-2011
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92496940001, 92496940002, 92496940003, 92496940004

METHOD BLANK: 3012742 Matrix: Water
Associated Lab Samples: 92496940001, 92496940002, 92496940003, 92496940004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10.0	09/24/20 10:30	

LABORATORY CONTROL SAMPLE: 3012743

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	407	102	84-108	

SAMPLE DUPLICATE: 3012744

Parameter	Units	92496914002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	107	113	5	10	

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QUALITY CONTROL DATA

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

QC Batch: 569206
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92496940001, 92496940002, 92496940003, 92496940004

METHOD BLANK: 3015927 Matrix: Water
Associated Lab Samples: 92496940001, 92496940002, 92496940003, 92496940004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	09/27/20 02:07	
Fluoride	mg/L	ND	0.10	0.050	09/27/20 02:07	
Sulfate	mg/L	ND	1.0	0.50	09/27/20 02:07	

LABORATORY CONTROL SAMPLE: 3015928

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	53.4	107	90-110	
Fluoride	mg/L	2.5	2.7	109	90-110	
Sulfate	mg/L	50	52.9	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3015931 3015932

Parameter	Units	92496941006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.2	50	50	57.3	57.2	108	108	90-110	0	10	
Fluoride	mg/L	ND	2.5	2.5	2.5	2.5	99	99	90-110	0	10	
Sulfate	mg/L	40.2	50	50	93.6	93.5	107	106	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3015973 3015974

Parameter	Units	92496940001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.6	50	50	64.7	63.0	126	123	90-110	3	10	M1
Fluoride	mg/L	0.099J	2.5	2.5	3.3	3.2	130	126	90-110	3	10	M1
Sulfate	mg/L	13.5	50	50	78.6	76.7	130	126	90-110	2	10	M1

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REPORT OF LABORATORY ANALYSIS

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(770)734-4200

QUALIFIERS

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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

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Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92496940001	**DGWA-53**				
92496940002	**DGWA-70A**				
92496940003	**DGWA-71**				
92496940001	**DGWA-53**	EPA 3010A	568748	EPA 6010D	568812
92496940002	**DGWA-70A**	EPA 3010A	568748	EPA 6010D	568812
92496940003	**DGWA-71**	EPA 3010A	568748	EPA 6010D	568812
92496940004	**EB-1**	EPA 3010A	568748	EPA 6010D	568812
92496940001	**DGWA-53**	EPA 3005A	569382	EPA 6020B	569504
92496940002	**DGWA-70A**	EPA 3005A	569382	EPA 6020B	569504
92496940003	**DGWA-71**	EPA 3005A	569382	EPA 6020B	569504
92496940004	**EB-1**	EPA 3005A	569382	EPA 6020B	569504
92496940001	**DGWA-53**	EPA 7470A	569298	EPA 7470A	569454
92496940002	**DGWA-70A**	EPA 7470A	569298	EPA 7470A	569454
92496940003	**DGWA-71**	EPA 7470A	569298	EPA 7470A	569454
92496940004	**EB-1**	EPA 7470A	569298	EPA 7470A	569454
92496940001	**DGWA-53**	SM 2450C-2011	568649		
92496940002	**DGWA-70A**	SM 2450C-2011	568649		
92496940003	**DGWA-71**	SM 2450C-2011	568649		
92496940004	**EB-1**	SM 2450C-2011	568649		
92496940001	**DGWA-53**	EPA 300.0 Rev 2.1 1993	569206		
92496940002	**DGWA-70A**	EPA 300.0 Rev 2.1 1993	569206		
92496940003	**DGWA-71**	EPA 300.0 Rev 2.1 1993	569206		
92496940004	**EB-1**	EPA 300.0 Rev 2.1 1993	569206		

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Sample Condition Upon Receipt

Pace Analytical

Client Name: GA Power - Coal (

WO#: 92496940

92496940

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

Tracking #: _____

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

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

Thermometer Used 230 Type of Ice: (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 3.5 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: CO

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

Field Data Required? Y / N

Client Notification/ Resolution:

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)

F-ALLC003rev.3, 11September2006

Pace Analytical

Document Name: Bottle Identification Form (BIF)	Document Issued: March 14, 2019 Page 1 of 1
Document No.: F-CAR-CS-043-Rev.00	Issuing Authority: Pace Carolinas Quality Office

Project #

WO#: 92496940

PM: KLH1 Due Date: 10/07/20

CLIENT: GA-GA Power

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Matrix	Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG1H-1 liter Amber Unpreserved (N/A) (Cl-)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)	BP1N	BPSA-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)
	1																												
	2																												
	3																												
	4																												
	5																												
	6																												
	7																												
	8																												
	9																												
	10																												
	11																												
	12																												

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot

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

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Golder	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone:	(404) 506-7239 Fax	Project Name:	Plant McDonough Upgradient	Pace Project Manager:	Kevin Herring
Requested Due Date:	10 Day TAT	Project #:	166849618	Pace Profile #:	

Regulatory Agency
State / Location
GA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Analyses Test Y/N	*Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	TDS	Residual Chlorine (Y/N)	6246440
																Requested Analysis Filtered (Y/N)	N	N	N	N		
1	DGWA-53	WT	G	9/22/2020	12:40		5	2		3							X	X	X	X		pH= 6.44
2	DGWA-70A	WT	G	9/22/2020	10:20		5	2		3							X	X	X	X		pH= 6.01
3	DGWA-71	WT	G	9/22/2020	11:45		5	2		3							X	X	X	X		pH= 6.06
4	EB-1	WT	G	9/22/2020	10:40		5	2		3							X	X	X	X		-
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*App III / IV Metals = As, Sb, B, Be, Ba, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Th	C. Trowell/Golder	9/23/20	09:05	M. BAH	9-23-20	9:05				
	M. BAH	9-23-20	9:35	K. Wells/Pace	9/23/20	0935	3.5	Y	Y	Y

Sampled by: Chris Trowell

DATE Signed: 9/23/20

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

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

October 14, 2020

Joju Abraham
Georgia Power-CCR
2480 Maner Road
Atlanta, GA 30339

RE: Project: MCDONOUGH UPGRADIENT RADS
Pace Project No.: 92496907

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on September 23, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
1(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Ms. Lauren Petty, Southern Co. Services
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta

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(770)734-4200

CERTIFICATIONS

Project: MCDONOUGH UPGRADIENT RADS
Pace Project No.: 92496907

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

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110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: MCDONOUGH UPGRADIENT RADS
Pace Project No.: 92496907

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92496907001	**DGWA-53**	Water	09/22/20 12:40	09/23/20 09:35
92496907002	**DGWA-70A**	Water	09/22/20 10:20	09/23/20 09:35
92496907003	**DGWA-71**	Water	09/22/20 11:45	09/23/20 09:35
92496907004	**EB-1**	Water	09/22/20 10:40	09/23/20 09:35

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110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: MCDONOUGH UPGRADIENT RADS
Pace Project No.: 92496907

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92496907001	**DGWA-53**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92496907002	**DGWA-70A**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92496907003	**DGWA-71**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92496907004	**EB-1**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH UPGRADIENT RADS
Pace Project No.: 92496907

Sample: DGWA-53 **Lab ID: 92496907001** Collected: 09/22/20 12:40 Received: 09/23/20 09:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.950 ± 0.407 (0.455) C:79% T:NA**	pCi/L	10/08/20 07:22	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**1.32 ± 0.588 (0.987) C:61% T:85%**	pCi/L	10/12/20 11:46	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**2.27 ± 0.995 (1.44)**	pCi/L	10/14/20 09:21	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH UPGRADIENT RADS
Pace Project No.: 92496907

Sample: DGWA-70A **Lab ID: 92496907002** Collected: 09/22/20 10:20 Received: 09/23/20 09:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.178 ± 0.200 (0.398) C:96% T:NA**	pCi/L	10/08/20 07:22	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.272 ± 0.423 (0.915) C:63% T:86%**	pCi/L	10/12/20 11:46	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.450 ± 0.623 (1.31)**	pCi/L	10/14/20 09:21	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH UPGRADIENT RADS
Pace Project No.: 92496907

Sample: DGWA-71 **Lab ID: 92496907003** Collected: 09/22/20 11:45 Received: 09/23/20 09:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.216 ± 0.243 (0.484) C:83% T:NA**	pCi/L	10/08/20 07:22	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**-0.365 ± 0.384 (0.955) C:67% T:84%**	pCi/L	10/12/20 11:46	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.216 ± 0.627 (1.44)**	pCi/L	10/14/20 09:21	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH UPGRADIENT RADS
Pace Project No.: 92496907

Sample: EB-1 **Lab ID: 92496907004** Collected: 09/22/20 10:40 Received: 09/23/20 09:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**-0.0348 ± 0.133 (0.424) C:80% T:NA**	pCi/L	10/08/20 07:22	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.962 ± 0.578 (1.09) C:66% T:76%**	pCi/L	10/12/20 11:46	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.962 ± 0.711 (1.51)**	pCi/L	10/14/20 09:21	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH UPGRADIENT RADS
Pace Project No.: 92496907

QC Batch: 415887
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92496907001, 92496907002, 92496907003, 92496907004

METHOD BLANK: 2010984 Matrix: Water
Associated Lab Samples: 92496907001, 92496907002, 92496907003, 92496907004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.452 ± 0.429 (0.882) C:72% T:83%	pCi/L	10/12/20 11:46	

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: MCDONOUGH UPGRADIENT RADS
Pace Project No.: 92496907

QC Batch: 415889
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92496907001, 92496907002, 92496907003, 92496907004

METHOD BLANK: 2010986 Matrix: Water
Associated Lab Samples: 92496907001, 92496907002, 92496907003, 92496907004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.196 ± 0.238 (0.495) C:89% T:NA	pCi/L	10/08/20 07:29	

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: MCDONOUGH UPGRADIENT RADS
Pace Project No.: 92496907

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH UPGRADIENT RADS
Pace Project No.: 92496907

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92496907001	**DGWA-53**	EPA 9315	415889		
92496907002	**DGWA-70A**	EPA 9315	415889		
92496907003	**DGWA-71**	EPA 9315	415889		
92496907004	**EB-1**	EPA 9315	415889		
92496907001	**DGWA-53**	EPA 9320	415887		
92496907002	**DGWA-70A**	EPA 9320	415887		
92496907003	**DGWA-71**	EPA 9320	415887		
92496907004	**EB-1**	EPA 9320	415887		
92496907001	**DGWA-53**	Total Radium Calculation	418329		
92496907002	**DGWA-70A**	Total Radium Calculation	418329		
92496907003	**DGWA-71**	Total Radium Calculation	418329		
92496907004	**EB-1**	Total Radium Calculation	418329		

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Sample Condition Upon Receipt

Pace Analytical

Client Name: GA Power - Coal Coml

WO#: 92496907

92496907

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

Tracking #: _____

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

Proj. Name:

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

Thermometer Used 230 Type of Ice: (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 3.5 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: CO

Comments:

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

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

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

F-ALLC003rev.3, 11September2006

Pace Analytical	Document Name: Bottle Identification Form (BIF)	Document Issued: March 14, 2019 Page 1 of 1
	Document No.: F-CAR-CS-043-Rev.00	Issuing Authority: Pace Carolinas Quality Office

Project #

WO#: 92496907

PM: KLH1 Due Date: 10/14/20

CLIENT: GA-GA Power

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Matrix	Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG8A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)	BP1N	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)
	1																											
	2																											
	3																											
	4																											
	5																											
	6																											
	7																											
	8																											
	9																											
	10																											
	11																											
	12																											

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification O

Out of hold, incorrect preservative, out of temp, incorrect containers.

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Georgia Power - Coal Combustion Residuals	Report To: Joju Abraham	Attention: scainvoices@southernco.com
Address: 2480 Maner Road Atlanta, GA 30339	Copy To: Golder	Company Name:
		Address:
Email: jabraham@southernco.com	Purchase Order #:	Pace Quote:
Phone: (404) 506-7239 Fax	Project Name: Plant McDonough Upgradient	Pace Project Manager: Kevin Herring
Requested Due Date: 10 Day TAT	Project #: 166849618	Pace Profile #:

Regulatory Agency

State / Location: GA

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample ids must be unique) MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Y/N	Analyses Test: Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	TDS	Residual Chlorine (Y/N)	9246487
1	DGWA-53	WT	G	9/22/2020	12:40		5	2		3						N	X	X	X	X		pH= 6.44
2	DGWA-70A	WT	G	9/22/2020	10:20		5	2		3						N	X	X	X	X		pH= 6.01
3	DGWA-71	WT	G	9/22/2020	11:45		5	2		3						N	X	X	X	X		pH= 6.06
4	EB-1	WT	G	9/22/2020	10:40		5	2		3						N	X	X	X	X		-
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*App III / IV Metals = As, Sb, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl	C. Trowell/Golder	9/23/20	09:05	M. BAH	9-23-20	9:05				
	M. BAH	9-23-20	9:35	K. Wellington/Pace	9/23/20	0935	3.5	Y	Y	Y

Sampled by: Chris Trowell

DATE Signed: 9/23/20

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	10/7/2020
Worklist:	56441
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2010986
MB concentration:	0.196
M/B Counting Uncertainty:	0.236
MB MDC:	0.495
MB Numerical Performance Indicator:	1.62
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS56441	LCSD56441
Count Date:	10/8/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.044	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.524	
Target Conc. (pCi/L, g, F):	4.587	
Uncertainty (Calculated):	0.055	
Result (pCi/L, g, F):	4.928	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.804	
Numerical Performance Indicator:	0.83	
Percent Recovery:	107.44%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92496907001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92496907001DUP	
Sample Result (pCi/L, g, F):	0.950	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.383	
Sample Duplicate Result (pCi/L, g, F):	1.227	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.469	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-0.896 OK	92496907001
Duplicate RPD:	25.43%	92496907001DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

~~***Batch must be re-prepped due to unacceptable precision.***~~ N/A LAM 10/8/2020

LAM 10/8/2020

CMT 10/8/2020

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	10/7/2020
Worklist:	56441
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2010986
MB concentration:	0.196
M/B Counting Uncertainty:	0.236
MB MDC:	0.495
MB Numerical Performance Indicator:	1.62
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS56441	LCSD56441
Count Date:	10/8/2020	10/8/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.044	24.044
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.524	0.512
Target Conc. (pCi/L, g, F):	4.587	4.700
Uncertainty (Calculated):	0.055	0.056
Result (pCi/L, g, F):	4.928	4.118
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.804	0.734
Numerical Performance Indicator:	0.83	-1.55
Percent Recovery:	107.44%	87.60%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS56441	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD56441	
Sample Result (pCi/L, g, F):	4.928	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.804	
Sample Duplicate Result (pCi/L, g, F):	4.118	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.734	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	1.459	92496907001
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	20.34%	92496907001DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

LAM 10/8/2020

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	10/6/2020
Worklist:	56439
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2010984
MB concentration:	0.452
M/B 2 Sigma CSU:	0.429
MB MDC:	0.882
MB Numerical Performance Indicator:	2.07
MB Status vs Numerical Indicator:	Warning
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS56439	LCSD56439
Count Date:	10/12/2020	10/12/2020
Spike I.D.:	20-030	20-030
Decay Corrected Spike Concentration (pCi/mL):	38.055	38.055
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.805	0.809
Target Conc. (pCi/L, g, F):	4.730	4.702
Uncertainty (Calculated):	0.232	0.230
Result (pCi/L, g, F):	5.342	4.034
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.236	1.010
Numerical Performance Indicator:	0.95	-1.26
Percent Recovery:	112.95%	85.79%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS56439	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD56439	
Sample Result (pCi/L, g, F):	5.342	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.236	
Sample Duplicate Result (pCi/L, g, F):	4.034	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.010	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	1.607	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	27.34%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

10-13-20

10.13.20

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

October 16, 2020

Joju Abraham
Georgia Power-CCR
2480 Maner Road
Atlanta, GA 30339

RE: Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory between September 24, 2020 and September 25, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville
- Pace Analytical Services - Charlotte
- Pace Analytical Services - Peachtree Corners, GA

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
1(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Ms. Lauren Petty, Southern Co. Services
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta

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CERTIFICATIONS

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Pace Analytical Services Charlotte
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

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

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SAMPLE SUMMARY

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92497129001	**DGWC-40**	Water	09/23/20 14:15	09/24/20 09:25
92497129002	**DGWC-67**	Water	09/23/20 15:10	09/24/20 09:25
92497129003	**DGWC-68A**	Water	09/23/20 14:00	09/24/20 09:25
92497129004	**DGWC-69**	Water	09/23/20 11:50	09/24/20 09:25
92497129005	**FD-2**	Water	09/23/20 00:00	09/24/20 09:25
92497129006	**DGWC-37**	Water	09/24/20 10:00	09/25/20 13:30
92497129007	**DGWC-38**	Water	09/24/20 14:15	09/25/20 13:30
92497129008	**DGWC-39**	Water	09/25/20 11:05	09/25/20 13:30

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Lab ID	Sample ID	Method	Analysts	Analytes Reported
92497129001	**DGWC-40**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92497129002	**DGWC-67**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92497129003	**DGWC-68A**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92497129004	**DGWC-69**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92497129005	**FD-2**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92497129006	**DGWC-37**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92497129007	**DGWC-38**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92497129008	**DGWC-39**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3

PASI-A = Pace Analytical Services - Asheville
PASI-C = Pace Analytical Services - Charlotte
PASI-GA = Pace Analytical Services - Peachtree Corners, GA

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Sample: DGWC-40 **Lab ID: 92497129001** Collected: 09/23/20 14:15 Received: 09/24/20 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**4.78**	Std. Units			1		10/09/20 15:26		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**41.9**	mg/L	1.0	0.070	1	09/29/20 14:17	09/29/20 21:10	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/29/20 18:39	10/01/20 11:52	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:39	10/01/20 11:52	7440-38-2	
Barium	**0.019**	mg/L	0.010	0.00071	1	09/29/20 18:39	10/01/20 11:52	7440-39-3	
Beryllium	**0.0031**	mg/L	0.0030	0.000046	1	09/29/20 18:39	10/01/20 11:52	7440-41-7	
Boron	**0.76**	mg/L	0.10	0.0052	1	09/29/20 18:39	10/01/20 11:52	7440-42-8	
Cadmium	**0.00080J**	mg/L	0.0025	0.00012	1	09/29/20 18:39	10/01/20 11:52	7440-43-9	
Chromium	**0.0011J**	mg/L	0.010	0.00055	1	09/29/20 18:39	10/01/20 11:52	7440-47-3	
Cobalt	**0.046**	mg/L	0.0050	0.00038	1	09/29/20 18:39	10/01/20 11:52	7440-48-4	
Lead	**0.00028J**	mg/L	0.0050	0.000036	1	09/29/20 18:39	10/01/20 11:52	7439-92-1	
Lithium	**0.0022J**	mg/L	0.030	0.00081	1	09/29/20 18:39	10/01/20 11:52	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 18:39	10/01/20 11:52	7439-98-7	
Selenium	**0.0067J**	mg/L	0.010	0.0016	1	09/29/20 18:39	10/01/20 11:52	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:39	10/01/20 11:52	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/28/20 09:15	09/29/20 10:10	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**357**	mg/L	10.0	10.0	1		09/28/20 14:19		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**19.7**	mg/L	1.0	0.60	1		09/29/20 12:52	16887-00-6	
Fluoride	**0.054J**	mg/L	0.10	0.050	1		09/29/20 12:52	16984-48-8	
Sulfate	**190**	mg/L	3.0	1.5	3		09/29/20 21:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Sample: DGWC-67 **Lab ID: 92497129002** Collected: 09/23/20 15:10 Received: 09/24/20 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.23**	Std. Units			1		10/09/20 15:26		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**42.0**	mg/L	1.0	0.070	1	09/29/20 14:17	09/29/20 21:14	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/29/20 18:39	10/01/20 11:58	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:39	10/01/20 11:58	7440-38-2	
Barium	**0.10**	mg/L	0.010	0.00071	1	09/29/20 18:39	10/01/20 11:58	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	09/29/20 18:39	10/01/20 11:58	7440-41-7	
Boron	**3.2**	mg/L	0.10	0.0052	1	09/29/20 18:39	10/01/20 11:58	7440-42-8	
Cadmium	**0.00018J**	mg/L	0.0025	0.00012	1	09/29/20 18:39	10/01/20 11:58	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/29/20 18:39	10/01/20 11:58	7440-47-3	
Cobalt	**0.0011J**	mg/L	0.0050	0.00038	1	09/29/20 18:39	10/01/20 11:58	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	09/29/20 18:39	10/01/20 11:58	7439-92-1	
Lithium	**0.0043J**	mg/L	0.030	0.00081	1	09/29/20 18:39	10/01/20 11:58	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 18:39	10/01/20 11:58	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/29/20 18:39	10/01/20 11:58	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:39	10/01/20 11:58	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/28/20 09:15	09/29/20 10:12	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**296**	mg/L	10.0	10.0	1		09/28/20 14:19		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**7.1**	mg/L	1.0	0.60	1		09/29/20 13:07	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/29/20 13:07	16984-48-8	
Sulfate	**99.8**	mg/L	2.0	1.0	2		09/29/20 21:21	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Sample: DGWC-68A **Lab ID: 92497129003** Collected: 09/23/20 14:00 Received: 09/24/20 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.60**	Std. Units			1		10/09/20 15:26		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**50.2**	mg/L	1.0	0.070	1	09/29/20 14:17	09/29/20 21:18	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/29/20 18:39	10/01/20 12:03	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:39	10/01/20 12:03	7440-38-2	
Barium	**0.094**	mg/L	0.010	0.00071	1	09/29/20 18:39	10/01/20 12:03	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	09/29/20 18:39	10/01/20 12:03	7440-41-7	
Boron	**1.7**	mg/L	0.10	0.0052	1	09/29/20 18:39	10/01/20 12:03	7440-42-8	
Cadmium	**0.00024J**	mg/L	0.0025	0.00012	1	09/29/20 18:39	10/01/20 12:03	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/29/20 18:39	10/01/20 12:03	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	09/29/20 18:39	10/01/20 12:03	7440-48-4	
Lead	**0.00035J**	mg/L	0.0050	0.000036	1	09/29/20 18:39	10/01/20 12:03	7439-92-1	
Lithium	ND	mg/L	0.030	0.00081	1	09/29/20 18:39	10/01/20 12:03	7439-93-2	
Molybdenum	**0.20**	mg/L	0.010	0.00069	1	09/29/20 18:39	10/01/20 12:03	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/29/20 18:39	10/01/20 12:03	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:39	10/01/20 12:03	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/28/20 09:15	09/29/20 10:14	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**251**	mg/L	10.0	10.0	1		09/28/20 14:26		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**3.6**	mg/L	1.0	0.60	1		09/29/20 13:21	16887-00-6	
Fluoride	**0.070J**	mg/L	0.10	0.050	1		09/29/20 13:21	16984-48-8	
Sulfate	**38.7**	mg/L	1.0	0.50	1		09/29/20 13:21	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Sample: DGWC-69 **Lab ID: 92497129004** Collected: 09/23/20 11:50 Received: 09/24/20 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.08**	Std. Units			1		10/09/20 15:26		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**8.0**	mg/L	1.0	0.070	1	09/29/20 14:17	09/29/20 21:23	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/29/20 18:39	10/01/20 12:22	7440-36-0	
Arsenic	**0.032**	mg/L	0.0050	0.00078	1	09/29/20 18:39	10/01/20 12:22	7440-38-2	
Barium	**0.055**	mg/L	0.010	0.00071	1	09/29/20 18:39	10/01/20 12:22	7440-39-3	
Beryllium	**0.000061J**	mg/L	0.0030	0.000046	1	09/29/20 18:39	10/01/20 12:22	7440-41-7	
Boron	**0.041J**	mg/L	0.10	0.0052	1	09/29/20 18:39	10/01/20 12:22	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00012	1	09/29/20 18:39	10/01/20 12:22	7440-43-9	
Chromium	**0.0011J**	mg/L	0.010	0.00055	1	09/29/20 18:39	10/01/20 12:22	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	09/29/20 18:39	10/01/20 12:22	7440-48-4	
Lead	**0.00017J**	mg/L	0.0050	0.000036	1	09/29/20 18:39	10/01/20 12:22	7439-92-1	
Lithium	**0.0023J**	mg/L	0.030	0.00081	1	09/29/20 18:39	10/01/20 12:22	7439-93-2	
Molybdenum	**0.0056J**	mg/L	0.010	0.00069	1	09/29/20 18:39	10/01/20 12:22	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/29/20 18:39	10/01/20 12:22	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:39	10/01/20 12:22	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/28/20 09:15	09/29/20 10:17	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**102**	mg/L	10.0	10.0	1		09/28/20 14:27		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**4.7**	mg/L	1.0	0.60	1		09/29/20 13:36	16887-00-6	
Fluoride	**0.064J**	mg/L	0.10	0.050	1		09/29/20 13:36	16984-48-8	
Sulfate	**5.9**	mg/L	1.0	0.50	1		09/29/20 13:36	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Sample: FD-2 **Lab ID: 92497129005** Collected: 09/23/20 00:00 Received: 09/24/20 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**48.0**	mg/L	1.0	0.070	1	09/29/20 14:17	09/29/20 21:27	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/29/20 18:39	10/01/20 12:28	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:39	10/01/20 12:28	7440-38-2	
Barium	**0.092**	mg/L	0.010	0.00071	1	09/29/20 18:39	10/01/20 12:28	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	09/29/20 18:39	10/01/20 12:28	7440-41-7	
Boron	**1.8**	mg/L	0.10	0.0052	1	09/29/20 18:39	10/01/20 12:28	7440-42-8	
Cadmium	**0.00024J**	mg/L	0.0025	0.00012	1	09/29/20 18:39	10/01/20 12:28	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/29/20 18:39	10/01/20 12:28	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	09/29/20 18:39	10/01/20 12:28	7440-48-4	
Lead	**0.000038J**	mg/L	0.0050	0.000036	1	09/29/20 18:39	10/01/20 12:28	7439-92-1	
Lithium	ND	mg/L	0.030	0.00081	1	09/29/20 18:39	10/01/20 12:28	7439-93-2	
Molybdenum	**0.18**	mg/L	0.010	0.00069	1	09/29/20 18:39	10/01/20 12:28	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/29/20 18:39	10/01/20 12:28	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:39	10/01/20 12:28	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/28/20 09:15	09/29/20 10:19	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**241**	mg/L	10.0	10.0	1		09/28/20 14:27		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**3.6**	mg/L	1.0	0.60	1		09/29/20 14:19	16887-00-6	
Fluoride	**0.071J**	mg/L	0.10	0.050	1		09/29/20 14:19	16984-48-8	
Sulfate	**38.4**	mg/L	1.0	0.50	1		09/29/20 14:19	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Sample: DGWC-37 **Lab ID: 92497129006** Collected: 09/24/20 10:00 Received: 09/25/20 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
Performed by	**CUSTOMER**				1		10/09/20 15:26		
pH	**6.30**	Std. Units			1		10/09/20 15:26		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**55.9**	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 21:02	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/30/20 17:48	10/03/20 19:11	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 17:48	10/03/20 19:11	7440-38-2	
Barium	**0.094**	mg/L	0.010	0.00071	1	09/30/20 17:48	10/03/20 19:11	7440-39-3	
Beryllium	**0.000088J**	mg/L	0.0030	0.000046	1	09/30/20 17:48	10/03/20 19:11	7440-41-7	
Boron	**1.6**	mg/L	0.10	0.0052	1	09/30/20 17:48	10/03/20 19:11	7440-42-8	
Cadmium	**0.00027J**	mg/L	0.0025	0.00012	1	09/30/20 17:48	10/03/20 19:11	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 17:48	10/03/20 19:11	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	09/30/20 17:48	10/03/20 19:11	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	09/30/20 17:48	10/03/20 19:11	7439-92-1	
Lithium	**0.0021J**	mg/L	0.030	0.00081	1	09/30/20 17:48	10/03/20 19:11	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:48	10/03/20 19:11	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 17:48	10/03/20 19:11	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:48	10/03/20 19:11	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	**0.000091J**	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 11:45	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**280**	mg/L	10.0	10.0	1		09/29/20 19:05		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**5.6**	mg/L	1.0	0.60	1		09/30/20 04:05	16887-00-6	
Fluoride	**0.061J**	mg/L	0.10	0.050	1		09/30/20 04:05	16984-48-8	
Sulfate	**84.1**	mg/L	1.0	0.50	1		09/30/20 04:05	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Sample: DGWC-38 **Lab ID: 92497129007** Collected: 09/24/20 14:15 Received: 09/25/20 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**6.05**	Std. Units			1		10/16/20 09:34		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**84.1**	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 21:06	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/30/20 17:48	10/03/20 19:17	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 17:48	10/03/20 19:17	7440-38-2	
Barium	**0.032**	mg/L	0.010	0.00071	1	09/30/20 17:48	10/03/20 19:17	7440-39-3	
Beryllium	**0.000058J**	mg/L	0.0030	0.000046	1	09/30/20 17:48	10/03/20 19:17	7440-41-7	
Boron	**2.9**	mg/L	0.10	0.0052	1	09/30/20 17:48	10/03/20 19:17	7440-42-8	
Cadmium	**0.00081J**	mg/L	0.0025	0.00012	1	09/30/20 17:48	10/03/20 19:17	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 17:48	10/03/20 19:17	7440-47-3	
Cobalt	**0.0013J**	mg/L	0.0050	0.00038	1	09/30/20 17:48	10/03/20 19:17	7440-48-4	
Lead	**0.00014J**	mg/L	0.0050	0.000036	1	09/30/20 17:48	10/03/20 19:17	7439-92-1	
Lithium	**0.0029J**	mg/L	0.030	0.00081	1	09/30/20 17:48	10/03/20 19:17	7439-93-2	
Molybdenum	**0.0010J**	mg/L	0.010	0.00069	1	09/30/20 17:48	10/03/20 19:17	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 17:48	10/03/20 19:17	7782-49-2	
Thallium	**0.00015J**	mg/L	0.0010	0.00014	1	09/30/20 17:48	10/03/20 19:17	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	**0.000085J**	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 11:48	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**489**	mg/L	10.0	10.0	1		09/29/20 19:24		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**8.2**	mg/L	1.0	0.60	1		09/30/20 04:20	16887-00-6	
Fluoride	**0.057J**	mg/L	0.10	0.050	1		09/30/20 04:20	16984-48-8	
Sulfate	**240**	mg/L	5.0	2.5	5		09/30/20 18:38	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Sample: DGWC-39 **Lab ID: 92497129008** Collected: 09/25/20 11:05 Received: 09/25/20 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
Performed by	**CUSTOMER**				1		10/09/20 15:26		
pH	**6.38**	Std. Units			1		10/09/20 15:26		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**92.5**	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 21:11	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/30/20 17:48	10/03/20 19:23	7440-36-0	
Arsenic	**0.00087J**	mg/L	0.0050	0.00078	1	09/30/20 17:48	10/03/20 19:23	7440-38-2	
Barium	**0.10**	mg/L	0.010	0.00071	1	09/30/20 17:48	10/03/20 19:23	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	09/30/20 17:48	10/03/20 19:23	7440-41-7	
Boron	**3.3**	mg/L	0.10	0.0052	1	09/30/20 17:48	10/03/20 19:23	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00012	1	09/30/20 17:48	10/03/20 19:23	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 17:48	10/03/20 19:23	7440-47-3	
Cobalt	**0.0061**	mg/L	0.0050	0.00038	1	09/30/20 17:48	10/03/20 19:23	7440-48-4	
Lead	**0.00022J**	mg/L	0.0050	0.000036	1	09/30/20 17:48	10/03/20 19:23	7439-92-1	
Lithium	ND	mg/L	0.030	0.00081	1	09/30/20 17:48	10/03/20 19:23	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:48	10/03/20 19:23	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 17:48	10/03/20 19:23	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:48	10/03/20 19:23	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 11:50	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**460**	mg/L	10.0	10.0	1		10/01/20 15:22		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**7.9**	mg/L	1.0	0.60	1		09/30/20 04:34	16887-00-6	
Fluoride	**0.086J**	mg/L	0.10	0.050	1		09/30/20 04:34	16984-48-8	
Sulfate	**153**	mg/L	3.0	1.5	3		09/30/20 18:53	14808-79-8	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

QC Batch: 569672 | Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A | Analysis Description: 6010D ATL
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497129001, 92497129002, 92497129003, 92497129004, 92497129005

METHOD BLANK: 3017857 Matrix: Water
Associated Lab Samples: 92497129001, 92497129002, 92497129003, 92497129004, 92497129005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.070	09/29/20 19:56	

LABORATORY CONTROL SAMPLE: 3017858

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	0.97J	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017859 3017860

Parameter	Units	92496847006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	2510 ug/L	1	1	3.4	3.4	93	92	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.

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

QC Batch: 570008
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D ATL
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497129006, 92497129007, 92497129008

METHOD BLANK: 3019452 Matrix: Water
Associated Lab Samples: 92497129006, 92497129007, 92497129008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.070	10/01/20 19:24	

LABORATORY CONTROL SAMPLE: 3019453

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	0.96J	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3019454 3019455

Parameter	Units	92496941020 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	53.1	1	1	55.5	54.3	237	115	75-125	2	20	M1

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

QC Batch: 569774
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497129001, 92497129002, 92497129003, 92497129004, 92497129005

METHOD BLANK: 3018372 Matrix: Water
Associated Lab Samples: 92497129001, 92497129002, 92497129003, 92497129004, 92497129005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	10/01/20 09:53	
Arsenic	mg/L	ND	0.0050	0.00078	10/01/20 09:53	
Barium	mg/L	ND	0.010	0.00071	10/01/20 09:53	
Beryllium	mg/L	ND	0.0030	0.000046	10/01/20 09:53	
Boron	mg/L	ND	0.10	0.0052	10/01/20 09:53	
Cadmium	mg/L	ND	0.0025	0.00012	10/01/20 09:53	
Chromium	mg/L	ND	0.010	0.00055	10/01/20 09:53	
Cobalt	mg/L	ND	0.0050	0.00038	10/01/20 09:53	
Lead	mg/L	ND	0.0050	0.000036	10/01/20 09:53	
Lithium	mg/L	ND	0.030	0.00081	10/01/20 09:53	
Molybdenum	mg/L	ND	0.010	0.00069	10/01/20 09:53	
Selenium	mg/L	ND	0.010	0.0016	10/01/20 09:53	
Thallium	mg/L	ND	0.0010	0.00014	10/01/20 09:53	

LABORATORY CONTROL SAMPLE: 3018373

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	103	80-120	
Arsenic	mg/L	0.1	0.097	97	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.093	93	80-120	
Boron	mg/L	1	0.91	91	80-120	
Cadmium	mg/L	0.1	0.095	95	80-120	
Chromium	mg/L	0.1	0.092	92	80-120	
Cobalt	mg/L	0.1	0.092	92	80-120	
Lead	mg/L	0.1	0.096	96	80-120	
Lithium	mg/L	0.1	0.092	92	80-120	
Molybdenum	mg/L	0.1	0.098	98	80-120	
Selenium	mg/L	0.1	0.097	97	80-120	
Thallium	mg/L	0.1	0.095	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018374 3018375

Parameter	Units	92497149004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	101	102	75-125	0	20	
Arsenic	mg/L	ND	0.1	0.1	0.099	0.099	99	99	75-125	0	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018374 3018375

Parameter	Units	92497149004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.0039J	0.1	0.1	0.10	0.10	99	100	75-125	1	20	
Beryllium	mg/L	0.000059J	0.1	0.1	0.090	0.091	90	91	75-125	1	20	
Boron	mg/L	0.0073J	1	1	0.88	0.90	87	89	75-125	2	20	
Cadmium	mg/L	ND	0.1	0.1	0.097	0.096	97	96	75-125	1	20	
Chromium	mg/L	ND	0.1	0.1	0.095	0.095	94	94	75-125	0	20	
Cobalt	mg/L	ND	0.1	0.1	0.095	0.095	95	95	75-125	0	20	
Lead	mg/L	0.00015J	0.1	0.1	0.093	0.094	92	94	75-125	1	20	
Lithium	mg/L	0.013J	0.1	0.1	0.10	0.10	91	91	75-125	0	20	
Molybdenum	mg/L	0.010	0.1	0.1	0.11	0.11	96	97	75-125	1	20	
Selenium	mg/L	ND	0.1	0.1	0.099	0.096	98	95	75-125	3	20	
Thallium	mg/L	0.00016J	0.1	0.1	0.094	0.095	94	95	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

QC Batch: 570089
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497129006, 92497129007, 92497129008

METHOD BLANK: 3020046 Matrix: Water
Associated Lab Samples: 92497129006, 92497129007, 92497129008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	10/03/20 17:40	
Arsenic	mg/L	ND	0.0050	0.00078	10/03/20 17:40	
Barium	mg/L	ND	0.010	0.00071	10/03/20 17:40	
Beryllium	mg/L	ND	0.0030	0.000046	10/03/20 17:40	
Boron	mg/L	ND	0.10	0.0052	10/03/20 17:40	
Cadmium	mg/L	ND	0.0025	0.00012	10/03/20 17:40	
Chromium	mg/L	ND	0.010	0.00055	10/03/20 17:40	
Cobalt	mg/L	ND	0.0050	0.00038	10/03/20 17:40	
Lead	mg/L	ND	0.0050	0.000036	10/03/20 17:40	
Lithium	mg/L	ND	0.030	0.00081	10/03/20 17:40	
Molybdenum	mg/L	ND	0.010	0.00069	10/03/20 17:40	
Selenium	mg/L	ND	0.010	0.0016	10/03/20 17:40	
Thallium	mg/L	ND	0.0010	0.00014	10/03/20 17:40	

LABORATORY CONTROL SAMPLE: 3020047

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	100	80-120	
Arsenic	mg/L	0.1	0.092	92	80-120	
Barium	mg/L	0.1	0.097	97	80-120	
Beryllium	mg/L	0.1	0.096	96	80-120	
Boron	mg/L	1	0.97	97	80-120	
Cadmium	mg/L	0.1	0.098	98	80-120	
Chromium	mg/L	0.1	0.099	99	80-120	
Cobalt	mg/L	0.1	0.097	97	80-120	
Lead	mg/L	0.1	0.099	99	80-120	
Lithium	mg/L	0.1	0.097	97	80-120	
Molybdenum	mg/L	0.1	0.096	96	80-120	
Selenium	mg/L	0.1	0.096	96	80-120	
Thallium	mg/L	0.1	0.099	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020048 3020049

Parameter	Units	92496941025 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.095	0.10	95	100	75-125	6	20	
Arsenic	mg/L	0.00088J	0.1	0.1	0.095	0.095	94	94	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020048 3020049

Parameter	Units	92496941025 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.032	0.1	0.1	0.13	0.13	95	98	75-125	3	20	
Beryllium	mg/L	0.00070J	0.1	0.1	0.099	0.097	98	97	75-125	1	20	
Boron	mg/L	0.84	1	1	2.0	1.9	112	107	75-125	3	20	
Cadmium	mg/L	0.00028J	0.1	0.1	0.097	0.097	97	97	75-125	0	20	
Chromium	mg/L	0.0028J	0.1	0.1	0.10	0.10	100	100	75-125	1	20	
Cobalt	mg/L	0.027	0.1	0.1	0.13	0.13	99	98	75-125	1	20	
Lead	mg/L	0.00022J	0.1	0.1	0.087	0.094	86	93	75-125	8	20	
Lithium	mg/L	0.0012J	0.1	0.1	0.10	0.10	102	100	75-125	2	20	
Molybdenum	mg/L	ND	0.1	0.1	0.098	0.10	98	102	75-125	4	20	
Selenium	mg/L	0.012	0.1	0.1	0.11	0.11	96	95	75-125	1	20	
Thallium	mg/L	0.00034J	0.1	0.1	0.093	0.094	93	94	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

QC Batch: 569299 | Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A | Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497129001, 92497129002, 92497129003, 92497129004, 92497129005

METHOD BLANK: 3016189 Matrix: Water
Associated Lab Samples: 92497129001, 92497129002, 92497129003, 92497129004, 92497129005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.000078	09/29/20 09:22	

LABORATORY CONTROL SAMPLE: 3016190

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3016191 3016192

Parameter	Units	92495870020 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0027	99	108	75-125	8	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

QC Batch: 569680
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497129006, 92497129007, 92497129008

METHOD BLANK: 3017897 Matrix: Water
Associated Lab Samples: 92497129006, 92497129007, 92497129008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.000078	09/30/20 10:46	

LABORATORY CONTROL SAMPLE: 3017898

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017899 3017900

Parameter	Units	92497149005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0026	0.0025	103	98	75-125	4	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

QC Batch: 569386 | Analysis Method: SM 2450C-2011
QC Batch Method: SM 2450C-2011 | Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497129001, 92497129002, 92497129003, 92497129004, 92497129005

METHOD BLANK: 3016890 Matrix: Water
Associated Lab Samples: 92497129001, 92497129002, 92497129003, 92497129004, 92497129005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10.0	09/28/20 14:18	

LABORATORY CONTROL SAMPLE: 3016891

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	429	107	84-108	

SAMPLE DUPLICATE: 3016892

Parameter	Units	92497125001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	260	295	13	10	D6

SAMPLE DUPLICATE: 3016893

Parameter	Units	92497141008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	81.0	59.0	31	10	D6

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

QC Batch: 569806
QC Batch Method: SM 2450C-2011
Analysis Method: SM 2450C-2011
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497129006, 92497129007

METHOD BLANK: 3018686 Matrix: Water
Associated Lab Samples: 92497129006, 92497129007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10.0	09/29/20 18:54	

LABORATORY CONTROL SAMPLE: 3018687

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	402	100	84-108	

SAMPLE DUPLICATE: 3018688

Parameter	Units	92497721002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	386	353	9	10	

SAMPLE DUPLICATE: 3018689

Parameter	Units	92497141012 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	69.0	74.0	7	10	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

QC Batch: 570219
QC Batch Method: SM 2450C-2011
Analysis Method: SM 2450C-2011
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497129008

METHOD BLANK: 3020458 Matrix: Water
Associated Lab Samples: 92497129008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10.0	10/01/20 15:22	

LABORATORY CONTROL SAMPLE: 3020459

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	412	103	84-108	

SAMPLE DUPLICATE: 3020460

Parameter	Units	92497125005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	134	142	6	10	

SAMPLE DUPLICATE: 3020461

Parameter	Units	92497146006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	878	918	4	10	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

QC Batch: 569514
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92497129001, 92497129002, 92497129003, 92497129004, 92497129005

METHOD BLANK: 3017398 Matrix: Water
Associated Lab Samples: 92497129001, 92497129002, 92497129003, 92497129004, 92497129005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	09/29/20 11:26	
Fluoride	mg/L	ND	0.10	0.050	09/29/20 11:26	
Sulfate	mg/L	ND	1.0	0.50	09/29/20 11:26	

LABORATORY CONTROL SAMPLE: 3017399

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	53.9	108	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	50	52.6	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017400 3017401

Parameter	Units	92496941018 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	50	50	52.4	51.8	105	104	90-110	1	10	
Fluoride	mg/L	ND	2.5	2.5	2.3	2.4	93	94	90-110	0	10	
Sulfate	mg/L	ND	50	50	51.0	50.1	101	100	90-110	2	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017402 3017403

Parameter	Units	92496941019 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	50	50	51.7	51.7	103	103	90-110	0	10	
Fluoride	mg/L	ND	2.5	2.5	2.3	2.4	91	95	90-110	5	10	
Sulfate	mg/L	ND	50	50	50.0	49.9	100	100	90-110	0	10	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

QC Batch: 569830
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92497129006, 92497129007, 92497129008

METHOD BLANK: 3018757 Matrix: Water
Associated Lab Samples: 92497129006, 92497129007, 92497129008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	09/30/20 03:36	
Fluoride	mg/L	ND	0.10	0.050	09/30/20 03:36	
Sulfate	mg/L	ND	1.0	0.50	09/30/20 03:36	

LABORATORY CONTROL SAMPLE: 3018758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	53.0	106	90-110	
Fluoride	mg/L	2.5	2.7	108	90-110	
Sulfate	mg/L	50	52.7	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018759 3018760

Parameter	Units	92497149012 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	50	50	51.5	51.6	103	103	90-110	0	10	
Fluoride	mg/L	ND	2.5	2.5	2.6	2.6	102	103	90-110	1	10	
Sulfate	mg/L	ND	50	50	50.5	50.6	101	101	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018761 3018762

Parameter	Units	92497149013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	50	50	51.9	51.6	104	103	90-110	1	10	
Fluoride	mg/L	ND	2.5	2.5	2.6	2.6	104	103	90-110	1	10	
Sulfate	mg/L	ND	50	50	50.9	50.6	102	101	90-110	1	10	

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QUALIFIERS

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92497129001	**DGWC-40**				
92497129002	**DGWC-67**				
92497129003	**DGWC-68A**				
92497129004	**DGWC-69**				
92497129006	**DGWC-37**				
92497129007	**DGWC-38**				
92497129008	**DGWC-39**				
92497129001	**DGWC-40**	EPA 3010A	569672	EPA 6010D	569722
92497129002	**DGWC-67**	EPA 3010A	569672	EPA 6010D	569722
92497129003	**DGWC-68A**	EPA 3010A	569672	EPA 6010D	569722
92497129004	**DGWC-69**	EPA 3010A	569672	EPA 6010D	569722
92497129005	**FD-2**	EPA 3010A	569672	EPA 6010D	569722
92497129006	**DGWC-37**	EPA 3010A	570008	EPA 6010D	570053
92497129007	**DGWC-38**	EPA 3010A	570008	EPA 6010D	570053
92497129008	**DGWC-39**	EPA 3010A	570008	EPA 6010D	570053
92497129001	**DGWC-40**	EPA 3005A	569774	EPA 6020B	569814
92497129002	**DGWC-67**	EPA 3005A	569774	EPA 6020B	569814
92497129003	**DGWC-68A**	EPA 3005A	569774	EPA 6020B	569814
92497129004	**DGWC-69**	EPA 3005A	569774	EPA 6020B	569814
92497129005	**FD-2**	EPA 3005A	569774	EPA 6020B	569814
92497129006	**DGWC-37**	EPA 3005A	570089	EPA 6020B	570110
92497129007	**DGWC-38**	EPA 3005A	570089	EPA 6020B	570110
92497129008	**DGWC-39**	EPA 3005A	570089	EPA 6020B	570110
92497129001	**DGWC-40**	EPA 7470A	569299	EPA 7470A	569455
92497129002	**DGWC-67**	EPA 7470A	569299	EPA 7470A	569455
92497129003	**DGWC-68A**	EPA 7470A	569299	EPA 7470A	569455
92497129004	**DGWC-69**	EPA 7470A	569299	EPA 7470A	569455
92497129005	**FD-2**	EPA 7470A	569299	EPA 7470A	569455
92497129006	**DGWC-37**	EPA 7470A	569680	EPA 7470A	569886
92497129007	**DGWC-38**	EPA 7470A	569680	EPA 7470A	569886
92497129008	**DGWC-39**	EPA 7470A	569680	EPA 7470A	569886
92497129001	**DGWC-40**	SM 2450C-2011	569386		
92497129002	**DGWC-67**	SM 2450C-2011	569386		
92497129003	**DGWC-68A**	SM 2450C-2011	569386		
92497129004	**DGWC-69**	SM 2450C-2011	569386		
92497129005	**FD-2**	SM 2450C-2011	569386		
92497129006	**DGWC-37**	SM 2450C-2011	569806		
92497129007	**DGWC-38**	SM 2450C-2011	569806		
92497129008	**DGWC-39**	SM 2450C-2011	570219		
92497129001	**DGWC-40**	EPA 300.0 Rev 2.1 1993	569514		
92497129002	**DGWC-67**	EPA 300.0 Rev 2.1 1993	569514		
92497129003	**DGWC-68A**	EPA 300.0 Rev 2.1 1993	569514		
92497129004	**DGWC-69**	EPA 300.0 Rev 2.1 1993	569514		
92497129005	**FD-2**	EPA 300.0 Rev 2.1 1993	569514		

REPORT OF LABORATORY ANALYSIS

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Peachtree Corners, GA 30092
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH AP-1
Pace Project No.: 92497129

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92497129006	**DGWC-37**	EPA 300.0 Rev 2.1 1993	569830		
92497129007	**DGWC-38**	EPA 300.0 Rev 2.1 1993	569830		
92497129008	**DGWC-39**	EPA 300.0 Rev 2.1 1993	569830		

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Pace Analytical

Sample Condition Upon Receipt

WO#: 92497129

92497129

Client Name: GA Power

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

Tracking #: _____

Proj. Name:

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

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

Thermometer Used THR214 Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 1.9 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: KDW 9/24/20

Temp should be above freezing to 6°C

Comments:

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

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

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

Pace Analytical	Document Name: Bottle Identification Form (BIF)	Document Issued: March 14, 2019 Page 1 of 1
	Document No.: F-CAR-CS-043-Rev.00	Issuing Authority: Pace Carolinas Quality Office

•Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

••Bottom half of box is to list number of bottle

Project # **WO# : 92497129**

PM: KLH1 Due Date: 10/08/20

CLIENT: GA-GA Power

Matrix	Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)
	1																								2		
	2																								2		
	3																								2		
	4																								2		
	5																										
	6																										
	7																										
	8																										
	9																										
	10																										
	11																										
	12																										

BP1N - Radium

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification O

Out of hold, incorrect preservative, out of temp, incorrect containers.

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Golder	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone:	(404) 506-7239 Fax:	Project Name:	Plant McDonough AP-1	Pace Project Manager:	Kevin Herring
Requested Due Date:	10 Day TAT	Project #:	168849618	Pace Profile #:	

Regulatory Agency

State / Location: GA

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Y/N	Analyses Test: *Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	TDS	Residual Chlorine (Y/N)	92497129
																	N	N	N	N		
1	DGWC-40	WT	G	9/23/2020	14:15		5	2		3							X	X	X	X		pH= 4.78
2	DGWC-67	WT	G	9/23/2020	15:10		5	2		3							X	X	X	X		pH= 6.23
3	DGWC-68A	WT	G	9/23/2020	14:00		5	2		3							X	X	X	X		pH= 6.60
4	DGWC-69	WT	G	9/23/2020	11:50		5	2		3							X	X	X	X		pH= 6.08
5	FD-2	WT	G	9/23/2020	-		5	2		3							X	X	X	X		
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*App III / IV Metals = As, Sb, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Mo, Se, Tl	C Tidwell Golder	9-24-20	08:55	T Elrod	9-24	465				
	T Elrod	9-24	925	K. Herring/Pace	9/24/20	0925	1.9	Y	N	Y

Sampler by: Chris Tidwell

DATE Signed: 9-23-20

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

October 20, 2020

Joju Abraham
Georgia Power-CCR
2480 Maner Road
Atlanta, GA 30339

RE: Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory between September 24, 2020 and September 25, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
1(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Ms. Lauren Petty, Southern Co. Services
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta

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CERTIFICATIONS

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

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

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SAMPLE SUMMARY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92497118001	**DGWC-40**	Water	09/23/20 14:15	09/24/20 09:25
92497118002	**DGWC-67**	Water	09/23/20 15:10	09/24/20 09:25
92497118003	**DGWC-68A**	Water	09/23/20 14:00	09/24/20 09:25
92497118004	**DGWC-69**	Water	09/23/20 11:50	09/24/20 09:25
92497118005	**FD-2**	Water	09/23/20 00:00	09/24/20 09:25
92497118006	**DGWC-37**	Water	09/24/20 10:00	09/25/20 13:30
92497118007	**DGWC-38**	Water	09/24/20 14:15	09/25/20 13:30
92497118008	**DGWC-39**	Water	09/25/20 11:05	09/25/20 13:30

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92497118001	**DGWC-40**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92497118002	**DGWC-67**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92497118003	**DGWC-68A**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92497118004	**DGWC-69**	EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
92497118005	**FD-2**	EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
92497118006	**DGWC-37**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92497118007	**DGWC-38**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92497118008	**DGWC-39**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

Sample: DGWC-40 **Lab ID: 92497118001** Collected: 09/23/20 14:15 Received: 09/24/20 09:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.414 ± 0.302 (0.493) C:79% T:NA**	pCi/L	10/09/20 09:55	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.869 ± 0.790 (1.60) C:64% T:73%**	pCi/L	10/12/20 19:08	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.28 ± 1.09 (2.09)**	pCi/L	10/14/20 09:27	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

Sample: DGWC-67 **Lab ID: 92497118002** Collected: 09/23/20 15:10 Received: 09/24/20 09:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.131 ± 0.225 (0.507) C:81% T:NA**	pCi/L	10/09/20 09:55	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**-0.234 ± 0.678 (1.68) C:64% T:60%**	pCi/L	10/12/20 19:08	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.131 ± 0.903 (2.19)**	pCi/L	10/14/20 09:27	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

Sample: DGWC-68A **Lab ID: 92497118003** Collected: 09/23/20 14:00 Received: 09/24/20 09:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.110 ± 0.212 (0.486) C:77% T:NA**	pCi/L	10/09/20 09:55	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.453 ± 0.657 (1.41) C:68% T:72%**	pCi/L	10/12/20 19:08	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.563 ± 0.869 (1.90)**	pCi/L	10/14/20 09:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

Sample: DGWC-69 **Lab ID: 92497118004** Collected: 09/23/20 11:50 Received: 09/24/20 09:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**1.20 ± 0.454 (0.482) C:95% T:NA**	pCi/L	10/07/20 07:52	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.596 ± 0.494 (0.990) C:65% T:76%**	pCi/L	10/05/20 15:07	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.80 ± 0.948 (1.47)**	pCi/L	10/09/20 14:09	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

Sample: FD-2 **Lab ID: 92497118005** Collected: 09/23/20 00:00 Received: 09/24/20 09:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.307 ± 0.244 (0.374) C:81% T:NA**	pCi/L	10/07/20 07:52	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.414 ± 0.467 (0.977) C:62% T:77%**	pCi/L	10/05/20 15:07	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.721 ± 0.711 (1.35)**	pCi/L	10/09/20 14:09	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

Sample: DGWC-37 **Lab ID: 92497118006** Collected: 09/24/20 10:00 Received: 09/25/20 13:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.280 ± 0.274 (0.533) C:82% T:NA**	pCi/L	10/14/20 06:26	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.746 ± 0.424 (0.777) C:81% T:87%**	pCi/L	10/15/20 14:16	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.03 ± 0.698 (1.31)**	pCi/L	10/19/20 11:01	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

Sample: DGWC-38 **Lab ID: 92497118007** Collected: 09/24/20 14:15 Received: 09/25/20 13:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.156 ± 0.207 (0.433) C:83% T:NA**	pCi/L	10/14/20 06:26	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.437 ± 0.425 (0.878) C:82% T:84%**	pCi/L	10/15/20 14:16	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.593 ± 0.632 (1.31)**	pCi/L	10/19/20 11:01	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

Sample: DGWC-39 **Lab ID: 92497118008** Collected: 09/25/20 11:05 Received: 09/25/20 13:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.0807 ± 0.186 (0.444) C:77% T:NA**	pCi/L	10/14/20 06:26	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.0999 ± 0.405 (0.918) C:76% T:78%**	pCi/L	10/15/20 14:16	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.181 ± 0.591 (1.36)**	pCi/L	10/19/20 11:01	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

QC Batch: 415890
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92497118001, 92497118002, 92497118003

METHOD BLANK: 2010987 Matrix: Water
Associated Lab Samples: 92497118001, 92497118002, 92497118003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.214 ± 0.231 (0.446) C:86% T:NA	pCi/L	10/09/20 08:12	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

QC Batch: 416287
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92497118004, 92497118005

METHOD BLANK: 2012789 Matrix: Water
Associated Lab Samples: 92497118004, 92497118005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.286 ± 0.336 (0.704) C:68% T:81%	pCi/L	10/05/20 11:57	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

QC Batch: 416276
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92497118004, 92497118005

METHOD BLANK: 2012761 Matrix: Water
Associated Lab Samples: 92497118004, 92497118005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.169 ± 0.216 (0.447) C:97% T:NA	pCi/L	10/07/20 07:50	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

QC Batch: 417133
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92497118006, 92497118007, 92497118008

METHOD BLANK: 2016815 Matrix: Water
Associated Lab Samples: 92497118006, 92497118007, 92497118008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.00961 ± 0.301 (0.708) C:79% T:84%	pCi/L	10/15/20 14:13	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

QC Batch: 417132
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92497118006, 92497118007, 92497118008

METHOD BLANK: 2016814 Matrix: Water
Associated Lab Samples: 92497118006, 92497118007, 92497118008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0977 ± 0.149 (0.503) C:90% T:NA	pCi/L	10/14/20 06:25	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

QC Batch: 415888
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92497118001, 92497118002, 92497118003

METHOD BLANK: 2010985 Matrix: Water
Associated Lab Samples: 92497118001, 92497118002, 92497118003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.197 ± 0.376 (0.826) C:67% T:78%	pCi/L	10/12/20 14:59	

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QUALIFIERS

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH AP-1 RADS
Pace Project No.: 92497118

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92497118001	**DGWC-40**	EPA 9315	415890		
92497118002	**DGWC-67**	EPA 9315	415890		
92497118003	**DGWC-68A**	EPA 9315	415890		
92497118004	**DGWC-69**	EPA 9315	416276		
92497118005	**FD-2**	EPA 9315	416276		
92497118006	**DGWC-37**	EPA 9315	417132		
92497118007	**DGWC-38**	EPA 9315	417132		
92497118008	**DGWC-39**	EPA 9315	417132		
92497118001	**DGWC-40**	EPA 9320	415888		
92497118002	**DGWC-67**	EPA 9320	415888		
92497118003	**DGWC-68A**	EPA 9320	415888		
92497118004	**DGWC-69**	EPA 9320	416287		
92497118005	**FD-2**	EPA 9320	416287		
92497118006	**DGWC-37**	EPA 9320	417133		
92497118007	**DGWC-38**	EPA 9320	417133		
92497118008	**DGWC-39**	EPA 9320	417133		
92497118001	**DGWC-40**	Total Radium Calculation	418331		
92497118002	**DGWC-67**	Total Radium Calculation	418331		
92497118003	**DGWC-68A**	Total Radium Calculation	418331		
92497118004	**DGWC-69**	Total Radium Calculation	417873		
92497118005	**FD-2**	Total Radium Calculation	417873		
92497118006	**DGWC-37**	Total Radium Calculation	419143		
92497118007	**DGWC-38**	Total Radium Calculation	419143		
92497118008	**DGWC-39**	Total Radium Calculation	419143		

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Sample Condition Upon Receipt

Pace Analytical

Client Name: GA Power

WO#: 92497118

92497118

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☒ Commercial ☐ Pace Ot

Tracking #: _____

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

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☒ Other Ziploc

Thermometer Used THR214 Type of Ice: ~~Wet~~ Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 1.9 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C Comments:

Date and Initials of person examining contents: KDW 9/24/20

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

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

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

Pace Analytical	Document Name: Bottle Identification Form (BIF)	Document Issued: March 14, 2019 Page 1 of 1
	Document No.: F-CAR-CS-043-Rev.00	Issuing Authority:

Project #

WO#: 92497118

PM: KLH1 Due Date: 10/15/20

CLIENT: GA-GA Power

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Matrix	Items	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SPST-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)
	1		—	—			—																		BIN - Radium		
	2		—	—			—																				
	3		—	—			—																				
	4		—	—			—																				
	5		—	—																							
	6																										
	7																										
	8																										
	9																										
	10																										
	11																										
	12																										

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification O

Out of hold, incorrect preservative, out of temp, incorrect containers.

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Golder	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone:	(404) 506-7239 Fax:	Project Name:	Plant McDonough AP-1	Pace Project Manager:	Kevin Herring
Requested Due Date:	10 Day TAT	Project #:	168849618	Pace Profile #:	

Regulatory Agency

State / Location: GA

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Analyses Test Y/N	*Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	TDS	Residual Chlorine (Y/N)	92497118
																Y/N	N	N	N	N		
1	DGWC-40	WT	G	9/23/2020	14:15		5	2		3							X	X	X	X		pH= 4.78
2	DGWC-67	WT	G	9/23/2020	15:10		5	2		3							X	X	X	X		pH= 6.23
3	DGWC-68A	WT	G	9/23/2020	14:00		5	2		3							X	X	X	X		pH= 6.80
4	DGWC-69	WT	G	9/23/2020	11:50		5	2		3							X	X	X	X		pH= 6.08
5	FD-2	WT	G	9/23/2020	–		5	2		3							X	X	X	X		
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*App III / IV Metals = As, Sb, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Mo, Se, Th	C. Tidwell Golder	9-24-20	08:55	T Elrod	9-24	465				
	T Elrod	9-24	925	K. Herring/Pace	9/24/20	0925	1.9	Y	N	Y
							TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Samples by: Chris Tidwell

DATE Signed: 9-23-20

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	10/8/2020
Worklist:	56442
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2010987
MB concentration:	0.214
M/B Counting Uncertainty:	0.229
MB MDC:	0.446
MB Numerical Performance Indicator:	1.83
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS56442	LCSD56442
Count Date:	10/9/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.044	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.507	
Target Conc. (pCi/L, g, F):	4.741	
Uncertainty (Calculated):	0.057	
Result (pCi/L, g, F):	4.940	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.794	
Numerical Performance Indicator:	0.49	
Percent Recovery:	104.19%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92497110001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92497110001DUP	
Sample Result (pCi/L, g, F):	0.477	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.309	
Sample Duplicate Result (pCi/L, g, F):	0.448	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.340	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	0.121	92497110001
Duplicate RPD:	6.12%	92497110001DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

LAM 10/9/2020

Quality Control Sample Performance Assessment

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Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test:	Ra-226
Analyst:	LAL
Date:	10/8/2020
Worklist:	56442
Matrix:	DW

Method Blank Assessment	
MB Sample ID	2010987
MB concentration:	0.214
M/B Counting Uncertainty:	0.229
MB MDC:	0.446
MB Numerical Performance Indicator:	1.83
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS56442	LCSD56442
Count Date:	10/9/2020	10/9/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.044	24.044
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.507	0.514
Target Conc. (pCi/L, g, F):	4.741	4.677
Uncertainty (Calculated):	0.057	0.056
Result (pCi/L, g, F):	4.940	4.201
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.794	0.785
Numerical Performance Indicator:	0.49	-1.18
Percent Recovery:	104.19%	89.83%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS56442	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD56442	
Sample Result (pCi/L, g, F):	4.940	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.794	
Sample Duplicate Result (pCi/L, g, F):	4.201	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.785	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	1.297	92497110001
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	14.81%	92497110001DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

LAM 10/9/2020

Quality Control Sample Performance Assessment

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Test: Ra-226
Analyst: JJY
Date: 10/6/2020
Worklist: 56467
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2012760
MB concentration:	0.169
M/B Counting Uncertainty:	0.215
MB MDC:	0.447
MB Numerical Performance Indicator:	1.54
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS56467	LCSD56467
Count Date:	10/7/2020	10/7/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.044	24.044
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.508	0.512
Target Conc. (pCi/L, g, F):	4.730	4.694
Uncertainty (Calculated):	0.057	0.056
Result (pCi/L, g, F):	4.261	5.199
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.778	0.803
Numerical Performance Indicator:	-1.18	1.23
Percent Recovery:	90.09%	110.74%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	9/22/2020	
Sample I.D.	30384536001	
Sample MS I.D.	30384536001MS	
Sample MSD I.D.		
Spike I.D.:	19-033	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	24.044	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.494	
MS Target Conc.(pCi/L, g, F):	9.739	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.117	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.047	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.218	
Sample Matrix Spike Result:	8.672	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.154	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:	-1.850	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	88.56%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	N/A	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	125%	
MS/MSD Lower % Recovery Limits:	75%	

Duplicate Sample Assessment		
Sample I.D.:	LCS56467	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD56467	
Sample Result (pCi/L, g, F):	4.261	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.778	
Sample Duplicate Result (pCi/L, g, F):	5.199	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.803	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-1.644	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	20.57%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

JJY 10-8-20

CMS 10/8/2020

Quality Control Sample Performance Assessment

Pace Analytical
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Test:	Ra-226
Analyst:	LAL
Date:	10/13/2020
Worklist:	56589
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2016814
MB concentration:	-0.098
M/B Counting Uncertainty:	0.148
MB MDC:	0.503
MB Numerical Performance Indicator:	-1.30
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS56589	LCSD56589
Count Date:	10/14/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.044	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.508	
Target Conc. (pCi/L, g, F):	4.736	
Uncertainty (Calculated):	0.057	
Result (pCi/L, g, F):	4.957	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.812	
Numerical Performance Indicator:	0.53	
Percent Recovery:	104.66%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92497114005	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92497114005DUP	
Sample Result (pCi/L, g, F):	0.265	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.249	
Sample Duplicate Result (pCi/L, g, F):	-0.086	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.079	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	2.633	92497114005
Duplicate RPD:	390.92%	92497114005DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

~~***Batch must be re-prepped due to unacceptable precision.~~ N/A LAM 10/14/2020

LAM 10/14/2020

10-15-20

Quality Control Sample Performance Assessment

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Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test:	Ra-226
Analyst:	LAL
Date:	10/13/2020
Worklist:	56589
Matrix:	DW

Method Blank Assessment	
MB Sample ID	2016814
MB concentration:	-0.098
M/B Counting Uncertainty:	0.148
MB MDC:	0.503
MB Numerical Performance Indicator:	-1.30
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS56589	LCSD56589
Count Date:	10/14/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.044	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.508	
Target Conc. (pCi/L, g, F):	4.736	
Uncertainty (Calculated):	0.057	
Result (pCi/L, g, F):	4.957	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.812	
Numerical Performance Indicator:	0.53	
Percent Recovery:	104.66%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92497118006	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92497118006DUP	
Sample Result (pCi/L, g, F):	0.280	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.271	
Sample Duplicate Result (pCi/L, g, F):	0.399	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.250	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-0.631	92497118006
Duplicate RPD:	34.99%	92497118006DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

~~***Batch must be re-prepped due to unacceptable precision.~~ N/A LAM 10/14/2020

LAM 10/14/2020

10.15.20

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test: Ra-228
Analyst: VAL
Date: 10/13/2020
Worklist: 56590
Matrix: WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2016815
MB concentration:	-0.010
M/B 2 Sigma CSU:	0.301
MB MDC:	0.708
MB Numerical Performance Indicator:	-0.06
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS56590	LCSD56590
Count Date:	10/15/2020	
Spike I.D.:	20-030	
Decay Corrected Spike Concentration (pCi/mL):	38.016	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.815	
Target Conc. (pCi/L, g, F):	4.665	
Uncertainty (Calculated):	0.229	
Result (pCi/L, g, F):	3.340	
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.875	
Numerical Performance Indicator:	-2.87	
Percent Recovery:	71.58%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	60%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92497118006	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92497118006DUP	
Sample Result (pCi/L, g, F):	0.746	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.424	
Sample Duplicate Result (pCi/L, g, F):	0.204	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.426	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	1.767	92497118006
Duplicate RPD:	114.06%	92497118006DUP
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

10/16/2020

Quality Control Sample Performance Assessment

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Test:	Ra-228
Analyst:	VAL
Date:	10/2/2020
Worklist:	56476
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2012789
MB concentration:	0.286
M/B 2 Sigma CSU:	0.336
MB MDC:	0.704
MB Numerical Performance Indicator:	1.67
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS56476	LCSD56476
Count Date:	10/5/2020	10/5/2020
Spike I.D.:	20-030	20-030
Decay Corrected Spike Concentration (pCi/mL):	38.143	38.143
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.808	0.823
Target Conc. (pCi/L, g, F):	4.719	4.636
Uncertainty (Calculated):	0.231	0.227
Result (pCi/L, g, F):	5.880	6.157
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.341	1.375
Numerical Performance Indicator:	1.67	2.14
Percent Recovery:	124.59%	132.81%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS56476	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD56476	
Sample Result (pCi/L, g, F):	5.880	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.341	
Sample Duplicate Result (pCi/L, g, F):	6.157	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.375	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.283	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	6.39%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

10/6/20

10-6-20

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	10/6/2020
Worklist:	56440
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2010985
MB concentration:	0.197
M/B 2 Sigma CSU:	0.376
MB MDC:	0.826
MB Numerical Performance Indicator:	1.03
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS56440	LCSD56440
Count Date:	10/12/2020	10/12/2020
Spike I.D.:	20-030	20-030
Decay Corrected Spike Concentration (pCi/mL):	38.054	38.054
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.803	0.803
Target Conc. (pCi/L, g, F):	4.741	4.737
Uncertainty (Calculated):	0.232	0.232
Result (pCi/L, g, F):	3.863	4.161
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.965	1.023
Numerical Performance Indicator:	-1.73	-1.08
Percent Recovery:	81.48%	87.84%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS56440	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD56440	
Sample Result (pCi/L, g, F):	3.863	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.965	
Sample Duplicate Result (pCi/L, g, F):	4.161	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.023	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.416	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	7.51%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

KWB 10-13-2020

VAL 10/13/20

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

October 09, 2020

Joju Abraham
Georgia Power-CCR
2480 Maner Road
Atlanta, GA 30339

RE: Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory between September 24, 2020 and September 28, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville
- Pace Analytical Services - Charlotte
- Pace Analytical Services - Peachtree Corners, GA

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
1(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Ms. Lauren Petty, Southern Co. Services
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta

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CERTIFICATIONS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Pace Analytical Services Charlotte
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

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

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SAMPLE SUMMARY

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92497125001	**B-89**	Water	09/23/20 15:30	09/24/20 09:25
92497125002	**B-62**	Water	09/24/20 10:18	09/25/20 13:30
92497125003	**B-77**	Water	09/24/20 14:19	09/25/20 13:30
92497125004	**FB-3**	Water	09/24/20 11:00	09/25/20 13:30
92497125005	**B-74**	Water	09/25/20 10:05	09/25/20 13:30
92497125006	**B-83**	Water	09/25/20 09:10	09/25/20 13:30
92497125007	**B-88**	Water	09/25/20 10:15	09/25/20 13:30
92497125008	**B-100**	Water	09/25/20 10:50	09/25/20 13:30
92497125009	**B-56**	Water	09/28/20 11:14	09/28/20 14:21
92497125010	**B-82**	Water	09/28/20 10:14	09/28/20 14:21
92497125011	**B-93**	Water	09/28/20 09:50	09/28/20 14:21

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Lab ID	Sample ID	Method	Analysts	Analytes Reported
92497125001	**B-89**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92497125002	**B-62**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	CDC	3
92497125003	**B-77**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	CDC	3
92497125004	**FB-3**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	CDC	3
92497125005	**B-74**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	CDC	3
92497125006	**B-83**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	CDC	3
92497125007	**B-88**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	CDC	3
92497125008	**B-100**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	CDC	3
92497125009	**B-56**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92497125010	**B-82**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92497125011	**B-93**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3

PASI-A = Pace Analytical Services - Asheville
PASI-C = Pace Analytical Services - Charlotte
PASI-GA = Pace Analytical Services - Peachtree Corners, GA

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ANALYTICAL RESULTS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Sample: B-89 **Lab ID: 92497125001** Collected: 09/23/20 15:30 Received: 09/24/20 09:25 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**5.87**	Std. Units			1		09/29/20 15:24		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**31.4**	mg/L	1.0	0.070	1	09/29/20 14:17	09/29/20 21:06	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/29/20 18:39	10/01/20 11:46	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:39	10/01/20 11:46	7440-38-2	
Barium	**0.028**	mg/L	0.010	0.00071	1	09/29/20 18:39	10/01/20 11:46	7440-39-3	
Beryllium	**0.000054J**	mg/L	0.0030	0.000046	1	09/29/20 18:39	10/01/20 11:46	7440-41-7	
Boron	**0.76**	mg/L	0.10	0.0052	1	09/29/20 18:39	10/01/20 11:46	7440-42-8	
Cadmium	**0.00057J**	mg/L	0.0025	0.00012	1	09/29/20 18:39	10/01/20 11:46	7440-43-9	
Chromium	**0.00072J**	mg/L	0.010	0.00055	1	09/29/20 18:39	10/01/20 11:46	7440-47-3	
Cobalt	**0.0025J**	mg/L	0.0050	0.00038	1	09/29/20 18:39	10/01/20 11:46	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	09/29/20 18:39	10/01/20 11:46	7439-92-1	
Lithium	**0.0055J**	mg/L	0.030	0.00081	1	09/29/20 18:39	10/01/20 11:46	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 18:39	10/01/20 11:46	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/29/20 18:39	10/01/20 11:46	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:39	10/01/20 11:46	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	**0.000080J**	mg/L	0.00050	0.000078	1	09/28/20 09:15	09/29/20 08:11	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**260**	mg/L	10.0	10.0	1		09/28/20 14:18		D6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**9.1**	mg/L	1.0	0.60	1		09/29/20 12:38	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/29/20 12:38	16984-48-8	
Sulfate	**138**	mg/L	2.0	1.0	2		09/29/20 20:51	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Sample: B-62 **Lab ID: 92497125002** Collected: 09/24/20 10:18 Received: 09/25/20 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
Performed by	**CUSTOMER**				1		09/29/20 15:24		
pH	**6.55**	Std. Units			1		09/29/20 15:24		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**28.8**	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 20:24	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	**0.00046J**	mg/L	0.0030	0.00028	1	09/30/20 17:48	10/03/20 18:20	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 17:48	10/03/20 18:20	7440-38-2	
Barium	**0.025**	mg/L	0.010	0.00071	1	09/30/20 17:48	10/03/20 18:20	7440-39-3	
Beryllium	**0.00013J**	mg/L	0.0030	0.000046	1	09/30/20 17:48	10/03/20 18:20	7440-41-7	
Boron	**0.074J**	mg/L	0.10	0.0052	1	09/30/20 17:48	10/03/20 18:20	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00012	1	09/30/20 17:48	10/03/20 18:20	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 17:48	10/03/20 18:20	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	09/30/20 17:48	10/03/20 18:20	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	09/30/20 17:48	10/03/20 18:20	7439-92-1	
Lithium	**0.0084J**	mg/L	0.030	0.00081	1	09/30/20 17:48	10/03/20 18:20	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:48	10/03/20 18:20	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 17:48	10/03/20 18:20	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:48	10/03/20 18:20	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 12:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**170**	mg/L	10.0	10.0	1		09/30/20 09:29		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**5.7**	mg/L	1.0	0.60	1		09/30/20 20:53	16887-00-6	
Fluoride	**0.093J**	mg/L	0.10	0.050	1		09/30/20 20:53	16984-48-8	
Sulfate	**50.6**	mg/L	1.0	0.50	1		09/30/20 20:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Sample: B-77 **Lab ID: 92497125003** Collected: 09/24/20 14:19 Received: 09/25/20 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
Performed by	**CUSTOMER**				1		09/29/20 15:24		
pH	**6.46**	Std. Units			1		09/29/20 15:24		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**17.9**	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 20:28	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	**0.00036J**	mg/L	0.0030	0.00028	1	09/30/20 17:48	10/03/20 18:25	7440-36-0	
Arsenic	**0.0025J**	mg/L	0.0050	0.00078	1	09/30/20 17:48	10/03/20 18:25	7440-38-2	
Barium	**0.12**	mg/L	0.010	0.00071	1	09/30/20 17:48	10/03/20 18:25	7440-39-3	
Beryllium	**0.000053J**	mg/L	0.0030	0.000046	1	09/30/20 17:48	10/03/20 18:25	7440-41-7	
Boron	**0.27**	mg/L	0.10	0.0052	1	09/30/20 17:48	10/03/20 18:25	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00012	1	09/30/20 17:48	10/03/20 18:25	7440-43-9	
Chromium	**0.00070J**	mg/L	0.010	0.00055	1	09/30/20 17:48	10/03/20 18:25	7440-47-3	
Cobalt	**0.00040J**	mg/L	0.0050	0.00038	1	09/30/20 17:48	10/03/20 18:25	7440-48-4	
Lead	**0.00021J**	mg/L	0.0050	0.000036	1	09/30/20 17:48	10/03/20 18:25	7439-92-1	
Lithium	**0.00095J**	mg/L	0.030	0.00081	1	09/30/20 17:48	10/03/20 18:25	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:48	10/03/20 18:25	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 17:48	10/03/20 18:25	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:48	10/03/20 18:25	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 12:40	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**124**	mg/L	10.0	10.0	1		09/30/20 09:30		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**5.3**	mg/L	1.0	0.60	1		09/30/20 21:08	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/30/20 21:08	16984-48-8	
Sulfate	**2.9**	mg/L	1.0	0.50	1		09/30/20 21:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Sample: FB-3 **Lab ID: 92497125004** Collected: 09/24/20 11:00 Received: 09/25/20 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	ND	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 20:32	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/30/20 17:48	10/03/20 18:31	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 17:48	10/03/20 18:31	7440-38-2	
Barium	ND	mg/L	0.010	0.00071	1	09/30/20 17:48	10/03/20 18:31	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	09/30/20 17:48	10/03/20 18:31	7440-41-7	
Boron	ND	mg/L	0.10	0.0052	1	09/30/20 17:48	10/03/20 18:31	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00012	1	09/30/20 17:48	10/03/20 18:31	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 17:48	10/03/20 18:31	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	09/30/20 17:48	10/03/20 18:31	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	09/30/20 17:48	10/03/20 18:31	7439-92-1	
Lithium	ND	mg/L	0.030	0.00081	1	09/30/20 17:48	10/03/20 18:31	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:48	10/03/20 18:31	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 17:48	10/03/20 18:31	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:48	10/03/20 18:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 12:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		09/30/20 09:31		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	ND	mg/L	1.0	0.60	1		09/30/20 21:22	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/30/20 21:22	16984-48-8	
Sulfate	ND	mg/L	1.0	0.50	1		09/30/20 21:22	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Sample: B-74 **Lab ID: 92497125005** Collected: 09/25/20 10:05 Received: 09/25/20 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
Performed by	**CUSTOMER**				1		09/29/20 15:24		
pH	**6.16**	Std. Units			1		09/29/20 15:24		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**18.6**	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 20:37	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/30/20 17:48	10/03/20 18:48	7440-36-0	
Arsenic	**0.012**	mg/L	0.0050	0.00078	1	09/30/20 17:48	10/03/20 18:48	7440-38-2	
Barium	**0.066**	mg/L	0.010	0.00071	1	09/30/20 17:48	10/03/20 18:48	7440-39-3	
Beryllium	**0.000097J**	mg/L	0.0030	0.000046	1	09/30/20 17:48	10/03/20 18:48	7440-41-7	
Boron	**0.30**	mg/L	0.10	0.0052	1	09/30/20 17:48	10/03/20 18:48	7440-42-8	
Cadmium	**0.00017J**	mg/L	0.0025	0.00012	1	09/30/20 17:48	10/03/20 18:48	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 17:48	10/03/20 18:48	7440-47-3	
Cobalt	**0.0028J**	mg/L	0.0050	0.00038	1	09/30/20 17:48	10/03/20 18:48	7440-48-4	
Lead	**0.000041J**	mg/L	0.0050	0.000036	1	09/30/20 17:48	10/03/20 18:48	7439-92-1	
Lithium	**0.0014J**	mg/L	0.030	0.00081	1	09/30/20 17:48	10/03/20 18:48	7439-93-2	
Molybdenum	**0.049**	mg/L	0.010	0.00069	1	09/30/20 17:48	10/03/20 18:48	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 17:48	10/03/20 18:48	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:48	10/03/20 18:48	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 12:45	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**134**	mg/L	10.0	10.0	1		10/01/20 15:22		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**6.0**	mg/L	1.0	0.60	1		09/30/20 22:05	16887-00-6	
Fluoride	**0.14**	mg/L	0.10	0.050	1		09/30/20 22:05	16984-48-8	
Sulfate	**20.1**	mg/L	1.0	0.50	1		09/30/20 22:05	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Sample: B-83 **Lab ID: 92497125006** Collected: 09/25/20 09:10 Received: 09/25/20 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
Performed by	**CUSTOMER**				1		09/29/20 15:24		
pH	**5.97**	Std. Units			1		09/29/20 15:24		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**39.8**	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 20:41	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/30/20 17:48	10/03/20 18:54	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 17:48	10/03/20 18:54	7440-38-2	
Barium	**0.027**	mg/L	0.010	0.00071	1	09/30/20 17:48	10/03/20 18:54	7440-39-3	
Beryllium	**0.00028J**	mg/L	0.0030	0.000046	1	09/30/20 17:48	10/03/20 18:54	7440-41-7	
Boron	**0.35**	mg/L	0.10	0.0052	1	09/30/20 17:48	10/03/20 18:54	7440-42-8	
Cadmium	**0.00026J**	mg/L	0.0025	0.00012	1	09/30/20 17:48	10/03/20 18:54	7440-43-9	
Chromium	**0.0051J**	mg/L	0.010	0.00055	1	09/30/20 17:48	10/03/20 18:54	7440-47-3	
Cobalt	**0.0073**	mg/L	0.0050	0.00038	1	09/30/20 17:48	10/03/20 18:54	7440-48-4	
Lead	**0.000065J**	mg/L	0.0050	0.000036	1	09/30/20 17:48	10/03/20 18:54	7439-92-1	
Lithium	**0.0018J**	mg/L	0.030	0.00081	1	09/30/20 17:48	10/03/20 18:54	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:48	10/03/20 18:54	7439-98-7	
Selenium	**0.019**	mg/L	0.010	0.0016	1	09/30/20 17:48	10/03/20 18:54	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:48	10/03/20 18:54	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 12:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**244**	mg/L	10.0	10.0	1		10/01/20 15:22		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**3.0**	mg/L	1.0	0.60	1		09/30/20 22:49	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/30/20 22:49	16984-48-8	
Sulfate	**107**	mg/L	2.0	1.0	2		10/01/20 04:52	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Sample: B-88 **Lab ID: 92497125007** Collected: 09/25/20 10:15 Received: 09/25/20 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
Performed by	**CUSTOMER**				1		09/29/20 15:24		
pH	**5.75**	Std. Units			1		09/29/20 15:24		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**79.8**	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 20:45	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/30/20 17:48	10/03/20 19:00	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 17:48	10/03/20 19:00	7440-38-2	
Barium	**0.021**	mg/L	0.010	0.00071	1	09/30/20 17:48	10/03/20 19:00	7440-39-3	
Beryllium	**0.00063J**	mg/L	0.0030	0.000046	1	09/30/20 17:48	10/03/20 19:00	7440-41-7	
Boron	**1.8**	mg/L	0.10	0.0052	1	09/30/20 17:48	10/03/20 19:00	7440-42-8	
Cadmium	**0.00022J**	mg/L	0.0025	0.00012	1	09/30/20 17:48	10/03/20 19:00	7440-43-9	
Chromium	**0.00085J**	mg/L	0.010	0.00055	1	09/30/20 17:48	10/03/20 19:00	7440-47-3	
Cobalt	**0.0015J**	mg/L	0.0050	0.00038	1	09/30/20 17:48	10/03/20 19:00	7440-48-4	
Lead	**0.00035J**	mg/L	0.0050	0.000036	1	09/30/20 17:48	10/03/20 19:00	7439-92-1	
Lithium	**0.0016J**	mg/L	0.030	0.00081	1	09/30/20 17:48	10/03/20 19:00	7439-93-2	
Molybdenum	**0.0012J**	mg/L	0.010	0.00069	1	09/30/20 17:48	10/03/20 19:00	7439-98-7	
Selenium	**0.0033J**	mg/L	0.010	0.0016	1	09/30/20 17:48	10/03/20 19:00	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:48	10/03/20 19:00	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 12:50	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**624**	mg/L	20.0	20.0	1		10/01/20 15:22		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**10**	mg/L	1.0	0.60	1		09/30/20 23:03	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/30/20 23:03	16984-48-8	
Sulfate	**344**	mg/L	7.0	3.5	7		10/01/20 05:06	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Sample: B-100 **Lab ID: 92497125008** Collected: 09/25/20 10:50 Received: 09/25/20 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
Performed by	**CUSTOMER**				1		09/29/20 15:24		
pH	**5.53**	Std. Units			1		09/29/20 15:24		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**44.7**	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 20:58	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	09/30/20 17:48	10/03/20 19:06	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 17:48	10/03/20 19:06	7440-38-2	
Barium	**0.022**	mg/L	0.010	0.00071	1	09/30/20 17:48	10/03/20 19:06	7440-39-3	
Beryllium	**0.00035J**	mg/L	0.0030	0.000046	1	09/30/20 17:48	10/03/20 19:06	7440-41-7	
Boron	**0.27**	mg/L	0.10	0.0052	1	09/30/20 17:48	10/03/20 19:06	7440-42-8	
Cadmium	**0.00027J**	mg/L	0.0025	0.00012	1	09/30/20 17:48	10/03/20 19:06	7440-43-9	
Chromium	**0.00094J**	mg/L	0.010	0.00055	1	09/30/20 17:48	10/03/20 19:06	7440-47-3	
Cobalt	**0.034**	mg/L	0.0050	0.00038	1	09/30/20 17:48	10/03/20 19:06	7440-48-4	
Lead	**0.00021J**	mg/L	0.0050	0.000036	1	09/30/20 17:48	10/03/20 19:06	7439-92-1	
Lithium	**0.0027J**	mg/L	0.030	0.00081	1	09/30/20 17:48	10/03/20 19:06	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:48	10/03/20 19:06	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 17:48	10/03/20 19:06	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:48	10/03/20 19:06	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 12:52	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**724**	mg/L	20.0	20.0	1		10/01/20 15:22		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**13.2**	mg/L	1.0	0.60	1		09/30/20 23:18	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/30/20 23:18	16984-48-8	
Sulfate	**385**	mg/L	8.0	4.0	8		10/01/20 05:20	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Sample: B-56 **Lab ID: 92497125009** Collected: 09/28/20 11:14 Received: 09/28/20 14:21 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
Performed by	**CUSTOMER**				1		09/29/20 15:24		
pH	**4.90**	Std. Units			1		09/29/20 15:24		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**15.1**	mg/L	1.0	0.070	1	10/01/20 15:00	10/02/20 19:50	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	10/01/20 15:24	10/02/20 19:51	7440-36-0	
Arsenic	**0.0047J**	mg/L	0.0050	0.00078	1	10/01/20 15:24	10/02/20 19:51	7440-38-2	
Barium	**0.026**	mg/L	0.010	0.00071	1	10/01/20 15:24	10/02/20 19:51	7440-39-3	
Beryllium	**0.0012J**	mg/L	0.0030	0.000046	1	10/01/20 15:24	10/02/20 19:51	7440-41-7	
Boron	**1.4**	mg/L	0.10	0.0052	1	10/01/20 15:24	10/02/20 19:51	7440-42-8	
Cadmium	**0.00024J**	mg/L	0.0025	0.00012	1	10/01/20 15:24	10/02/20 19:51	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	10/01/20 15:24	10/02/20 19:51	7440-47-3	
Cobalt	**0.042**	mg/L	0.0050	0.00038	1	10/01/20 15:24	10/02/20 19:51	7440-48-4	
Lead	**0.000091J**	mg/L	0.0050	0.000036	1	10/01/20 15:24	10/02/20 19:51	7439-92-1	
Lithium	**0.0050J**	mg/L	0.030	0.00081	1	10/01/20 15:24	10/02/20 19:51	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	10/01/20 15:24	10/02/20 19:51	7439-98-7	
Selenium	**0.029**	mg/L	0.010	0.0016	1	10/01/20 15:24	10/02/20 19:51	7782-49-2	
Thallium	**0.00023J**	mg/L	0.0010	0.00014	1	10/01/20 15:24	10/02/20 19:51	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 12:54	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**320**	mg/L	10.0	10.0	1		10/01/20 15:26		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**8.7**	mg/L	1.0	0.60	1		09/30/20 18:20	16887-00-6	
Fluoride	**0.098J**	mg/L	0.10	0.050	1		09/30/20 18:20	16984-48-8	
Sulfate	**211**	mg/L	4.0	2.0	4		09/30/20 22:35	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Sample: B-82 **Lab ID: 92497125010** Collected: 09/28/20 10:14 Received: 09/28/20 14:21 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
Performed by	**CUSTOMER**				1		09/29/20 15:24		
pH	**5.54**	Std. Units			1		09/29/20 15:24		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**26.5**	mg/L	1.0	0.070	1	10/01/20 15:00	10/02/20 19:54	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00028	1	10/01/20 19:00	10/03/20 15:51	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	10/01/20 19:00	10/03/20 15:51	7440-38-2	
Barium	**0.023**	mg/L	0.010	0.00071	1	10/01/20 19:00	10/03/20 15:51	7440-39-3	
Beryllium	**0.0015J**	mg/L	0.0030	0.000046	1	10/01/20 19:00	10/03/20 15:51	7440-41-7	
Boron	**1.1**	mg/L	0.10	0.0052	1	10/01/20 19:00	10/03/20 15:51	7440-42-8	
Cadmium	**0.00066J**	mg/L	0.0025	0.00012	1	10/01/20 19:00	10/03/20 15:51	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	10/01/20 19:00	10/03/20 15:51	7440-47-3	
Cobalt	**0.0053**	mg/L	0.0050	0.00038	1	10/01/20 19:00	10/03/20 15:51	7440-48-4	
Lead	**0.00011J**	mg/L	0.0050	0.000036	1	10/01/20 19:00	10/03/20 15:51	7439-92-1	
Lithium	**0.0010J**	mg/L	0.030	0.00081	1	10/01/20 19:00	10/03/20 15:51	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	10/01/20 19:00	10/03/20 15:51	7439-98-7	
Selenium	**0.0021J**	mg/L	0.010	0.0016	1	10/01/20 19:00	10/03/20 15:51	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	10/01/20 19:00	10/03/20 15:51	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 12:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**454**	mg/L	10.0	10.0	1		10/01/20 15:27		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**9.9**	mg/L	1.0	0.60	1		09/30/20 18:35	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/30/20 18:35	16984-48-8	
Sulfate	**287**	mg/L	6.0	3.0	6		09/30/20 22:56	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Sample: B-93 **Lab ID: 92497125011** Collected: 09/28/20 09:50 Received: 09/28/20 14:21 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**4.67**	Std. Units			1		09/29/20 15:24		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**110**	mg/L	1.0	0.070	1	10/01/20 15:00	10/02/20 19:58	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	**0.0014J**	mg/L	0.0030	0.00028	1	10/01/20 19:00	10/03/20 16:14	7440-36-0	
Arsenic	**0.0027J**	mg/L	0.0050	0.00078	1	10/01/20 19:00	10/03/20 16:14	7440-38-2	
Barium	**0.017**	mg/L	0.010	0.00071	1	10/01/20 19:00	10/03/20 16:14	7440-39-3	
Beryllium	**0.015**	mg/L	0.0030	0.000046	1	10/01/20 19:00	10/03/20 16:14	7440-41-7	
Boron	**3.0**	mg/L	0.10	0.0052	1	10/01/20 19:00	10/03/20 16:14	7440-42-8	
Cadmium	**0.00074J**	mg/L	0.0025	0.00012	1	10/01/20 19:00	10/03/20 16:14	7440-43-9	
Chromium	**0.00066J**	mg/L	0.010	0.00055	1	10/01/20 19:00	10/03/20 16:14	7440-47-3	
Cobalt	**0.064**	mg/L	0.0050	0.00038	1	10/01/20 19:00	10/03/20 16:14	7440-48-4	
Lead	**0.00012J**	mg/L	0.0050	0.000036	1	10/01/20 19:00	10/03/20 16:14	7439-92-1	
Lithium	**0.011J**	mg/L	0.030	0.00081	1	10/01/20 19:00	10/03/20 16:14	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	10/01/20 19:00	10/03/20 16:14	7439-98-7	
Selenium	**0.036**	mg/L	0.010	0.0016	1	10/01/20 19:00	10/03/20 16:14	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	10/01/20 19:00	10/03/20 16:14	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	**0.00024J**	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 12:59	7439-97-6	B
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**686**	mg/L	20.0	20.0	1		10/01/20 15:27		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**10.8**	mg/L	1.0	0.60	1		10/01/20 14:53	16887-00-6	
Fluoride	**0.30**	mg/L	0.10	0.050	1		10/01/20 14:53	16984-48-8	
Sulfate	**419**	mg/L	9.0	4.5	9		10/01/20 20:35	14808-79-8	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 569672
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D ATL
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497125001

METHOD BLANK: 3017857 Matrix: Water
Associated Lab Samples: 92497125001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.070	09/29/20 19:56	

LABORATORY CONTROL SAMPLE: 3017858

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	0.97J	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017859 3017860

Parameter	Units	92496847006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	2510 ug/L	1	1	3.4	3.4	93	92	75-125	0	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 570008 — Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A — Analysis Description: 6010D ATL
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497125002, 92497125003, 92497125004, 92497125005, 92497125006, 92497125007, 92497125008

METHOD BLANK: 3019452 — Matrix: Water
Associated Lab Samples: 92497125002, 92497125003, 92497125004, 92497125005, 92497125006, 92497125007, 92497125008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.070	10/01/20 19:24	

LABORATORY CONTROL SAMPLE: 3019453

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	0.96J	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3019454 3019455

Parameter	Units	92496941020 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	53.1	1	1	55.5	54.3	237	115	75-125	2	20	M1

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 570301
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D ATL
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497125009, 92497125010, 92497125011

METHOD BLANK: 3020964 Matrix: Water
Associated Lab Samples: 92497125009, 92497125010, 92497125011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.070	10/02/20 18:13	

LABORATORY CONTROL SAMPLE: 3020965

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	1.0	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020966 3020967

Parameter	Units	92497149010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	38.6	1	1	37.8	39.0	-77	45	75-125	3	20	M1

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 569774
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA

Associated Lab Samples: 92497125001

METHOD BLANK: 3018372 Matrix: Water
Associated Lab Samples: 92497125001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	10/01/20 09:53	
Arsenic	mg/L	ND	0.0050	0.00078	10/01/20 09:53	
Barium	mg/L	ND	0.010	0.00071	10/01/20 09:53	
Beryllium	mg/L	ND	0.0030	0.000046	10/01/20 09:53	
Boron	mg/L	ND	0.10	0.0052	10/01/20 09:53	
Cadmium	mg/L	ND	0.0025	0.00012	10/01/20 09:53	
Chromium	mg/L	ND	0.010	0.00055	10/01/20 09:53	
Cobalt	mg/L	ND	0.0050	0.00038	10/01/20 09:53	
Lead	mg/L	ND	0.0050	0.000036	10/01/20 09:53	
Lithium	mg/L	ND	0.030	0.00081	10/01/20 09:53	
Molybdenum	mg/L	ND	0.010	0.00069	10/01/20 09:53	
Selenium	mg/L	ND	0.010	0.0016	10/01/20 09:53	
Thallium	mg/L	ND	0.0010	0.00014	10/01/20 09:53	

LABORATORY CONTROL SAMPLE: 3018373

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	103	80-120	
Arsenic	mg/L	0.1	0.097	97	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.093	93	80-120	
Boron	mg/L	1	0.91	91	80-120	
Cadmium	mg/L	0.1	0.095	95	80-120	
Chromium	mg/L	0.1	0.092	92	80-120	
Cobalt	mg/L	0.1	0.092	92	80-120	
Lead	mg/L	0.1	0.096	96	80-120	
Lithium	mg/L	0.1	0.092	92	80-120	
Molybdenum	mg/L	0.1	0.098	98	80-120	
Selenium	mg/L	0.1	0.097	97	80-120	
Thallium	mg/L	0.1	0.095	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018374 3018375

Parameter	Units	92497149004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	101	102	75-125	0	20	
Arsenic	mg/L	ND	0.1	0.1	0.099	0.099	99	99	75-125	0	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018374 3018375

Parameter	Units	92497149004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.0039J	0.1	0.1	0.10	0.10	99	100	75-125	1	20	
Beryllium	mg/L	0.000059J	0.1	0.1	0.090	0.091	90	91	75-125	1	20	
Boron	mg/L	0.0073J	1	1	0.88	0.90	87	89	75-125	2	20	
Cadmium	mg/L	ND	0.1	0.1	0.097	0.096	97	96	75-125	1	20	
Chromium	mg/L	ND	0.1	0.1	0.095	0.095	94	94	75-125	0	20	
Cobalt	mg/L	ND	0.1	0.1	0.095	0.095	95	95	75-125	0	20	
Lead	mg/L	0.00015J	0.1	0.1	0.093	0.094	92	94	75-125	1	20	
Lithium	mg/L	0.013J	0.1	0.1	0.10	0.10	91	91	75-125	0	20	
Molybdenum	mg/L	0.010	0.1	0.1	0.11	0.11	96	97	75-125	1	20	
Selenium	mg/L	ND	0.1	0.1	0.099	0.096	98	95	75-125	3	20	
Thallium	mg/L	0.00016J	0.1	0.1	0.094	0.095	94	95	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 570089
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497125002, 92497125003, 92497125004, 92497125005, 92497125006, 92497125007, 92497125008

METHOD BLANK: 3020046 Matrix: Water
Associated Lab Samples: 92497125002, 92497125003, 92497125004, 92497125005, 92497125006, 92497125007, 92497125008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	10/03/20 17:40	
Arsenic	mg/L	ND	0.0050	0.00078	10/03/20 17:40	
Barium	mg/L	ND	0.010	0.00071	10/03/20 17:40	
Beryllium	mg/L	ND	0.0030	0.000046	10/03/20 17:40	
Boron	mg/L	ND	0.10	0.0052	10/03/20 17:40	
Cadmium	mg/L	ND	0.0025	0.00012	10/03/20 17:40	
Chromium	mg/L	ND	0.010	0.00055	10/03/20 17:40	
Cobalt	mg/L	ND	0.0050	0.00038	10/03/20 17:40	
Lead	mg/L	ND	0.0050	0.000036	10/03/20 17:40	
Lithium	mg/L	ND	0.030	0.00081	10/03/20 17:40	
Molybdenum	mg/L	ND	0.010	0.00069	10/03/20 17:40	
Selenium	mg/L	ND	0.010	0.0016	10/03/20 17:40	
Thallium	mg/L	ND	0.0010	0.00014	10/03/20 17:40	

LABORATORY CONTROL SAMPLE: 3020047

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	100	80-120	
Arsenic	mg/L	0.1	0.092	92	80-120	
Barium	mg/L	0.1	0.097	97	80-120	
Beryllium	mg/L	0.1	0.096	96	80-120	
Boron	mg/L	1	0.97	97	80-120	
Cadmium	mg/L	0.1	0.098	98	80-120	
Chromium	mg/L	0.1	0.099	99	80-120	
Cobalt	mg/L	0.1	0.097	97	80-120	
Lead	mg/L	0.1	0.099	99	80-120	
Lithium	mg/L	0.1	0.097	97	80-120	
Molybdenum	mg/L	0.1	0.096	96	80-120	
Selenium	mg/L	0.1	0.096	96	80-120	
Thallium	mg/L	0.1	0.099	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020048 3020049

Parameter	Units	92496941025 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.095	0.10	95	100	75-125	6	20	
Arsenic	mg/L	0.00088J	0.1	0.1	0.095	0.095	94	94	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020048 3020049

Parameter	Units	92496941025 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.032	0.1	0.1	0.13	0.13	95	98	75-125	3	20	
Beryllium	mg/L	0.00070J	0.1	0.1	0.099	0.097	98	97	75-125	1	20	
Boron	mg/L	0.84	1	1	2.0	1.9	112	107	75-125	3	20	
Cadmium	mg/L	0.00028J	0.1	0.1	0.097	0.097	97	97	75-125	0	20	
Chromium	mg/L	0.0028J	0.1	0.1	0.10	0.10	100	100	75-125	1	20	
Cobalt	mg/L	0.027	0.1	0.1	0.13	0.13	99	98	75-125	1	20	
Lead	mg/L	0.00022J	0.1	0.1	0.087	0.094	86	93	75-125	8	20	
Lithium	mg/L	0.0012J	0.1	0.1	0.10	0.10	102	100	75-125	2	20	
Molybdenum	mg/L	ND	0.1	0.1	0.098	0.10	98	102	75-125	4	20	
Selenium	mg/L	0.012	0.1	0.1	0.11	0.11	96	95	75-125	1	20	
Thallium	mg/L	0.00034J	0.1	0.1	0.093	0.094	93	94	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 570307
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA

Associated Lab Samples: 92497125009

METHOD BLANK: 3020982 Matrix: Water
Associated Lab Samples: 92497125009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	10/02/20 17:11	
Arsenic	mg/L	ND	0.0050	0.00078	10/02/20 17:11	
Barium	mg/L	ND	0.010	0.00071	10/02/20 17:11	
Beryllium	mg/L	ND	0.0030	0.000046	10/02/20 17:11	
Boron	mg/L	ND	0.10	0.0052	10/02/20 17:11	
Cadmium	mg/L	ND	0.0025	0.00012	10/02/20 17:11	
Chromium	mg/L	ND	0.010	0.00055	10/02/20 17:11	
Cobalt	mg/L	ND	0.0050	0.00038	10/02/20 17:11	
Lead	mg/L	ND	0.0050	0.000036	10/02/20 17:11	
Lithium	mg/L	ND	0.030	0.00081	10/02/20 17:11	
Molybdenum	mg/L	ND	0.010	0.00069	10/02/20 17:11	
Selenium	mg/L	ND	0.010	0.0016	10/02/20 17:11	
Thallium	mg/L	ND	0.0010	0.00014	10/02/20 17:11	

LABORATORY CONTROL SAMPLE: 3020983

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	100	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.10	100	80-120	
Beryllium	mg/L	0.1	0.099	99	80-120	
Boron	mg/L	1	1.0	101	80-120	
Cadmium	mg/L	0.1	0.097	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	0.10	100	80-120	
Lithium	mg/L	0.1	0.098	98	80-120	
Molybdenum	mg/L	0.1	0.099	99	80-120	
Selenium	mg/L	0.1	0.095	95	80-120	
Thallium	mg/L	0.1	0.10	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020984 3020985

Parameter	Units	92497149015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	102	102	75-125	0	20	
Arsenic	mg/L	ND	0.1	0.1	0.098	0.099	98	98	75-125	0	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020984 3020985

Parameter	Units	92497149015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.079	0.1	0.1	0.18	0.18	101	99	75-125	1	20	
Beryllium	mg/L	ND	0.1	0.1	0.096	0.096	96	96	75-125	0	20	
Boron	mg/L	2.1	1	1	3.1	3.1	99	97	75-125	1	20	
Cadmium	mg/L	0.00027J	0.1	0.1	0.098	0.098	98	98	75-125	0	20	
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	101	102	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.10	0.10	101	100	75-125	1	20	
Lead	mg/L	ND	0.1	0.1	0.097	0.097	97	97	75-125	0	20	
Lithium	mg/L	0.0065J	0.1	0.1	0.10	0.10	97	97	75-125	0	20	
Molybdenum	mg/L	0.0012J	0.1	0.1	0.10	0.10	101	100	75-125	1	20	
Selenium	mg/L	ND	0.1	0.1	0.095	0.094	95	94	75-125	0	20	
Thallium	mg/L	ND	0.1	0.1	0.10	0.10	101	100	75-125	0	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 570375
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497125010, 92497125011

METHOD BLANK: 3021668 Matrix: Water
Associated Lab Samples: 92497125010, 92497125011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	10/03/20 14:31	
Arsenic	mg/L	ND	0.0050	0.00078	10/03/20 14:31	
Barium	mg/L	ND	0.010	0.00071	10/03/20 14:31	
Beryllium	mg/L	ND	0.0030	0.000046	10/03/20 14:31	
Boron	mg/L	ND	0.10	0.0052	10/03/20 14:31	
Cadmium	mg/L	ND	0.0025	0.00012	10/03/20 14:31	
Chromium	mg/L	ND	0.010	0.00055	10/03/20 14:31	
Cobalt	mg/L	ND	0.0050	0.00038	10/03/20 14:31	
Lead	mg/L	ND	0.0050	0.000036	10/03/20 14:31	
Lithium	mg/L	ND	0.030	0.00081	10/03/20 14:31	
Molybdenum	mg/L	ND	0.010	0.00069	10/03/20 14:31	
Selenium	mg/L	ND	0.010	0.0016	10/03/20 14:31	
Thallium	mg/L	ND	0.0010	0.00014	10/03/20 14:31	

LABORATORY CONTROL SAMPLE: 3021669

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.097	97	80-120	
Arsenic	mg/L	0.1	0.092	92	80-120	
Barium	mg/L	0.1	0.098	98	80-120	
Beryllium	mg/L	0.1	0.10	101	80-120	
Boron	mg/L	1	1.0	104	80-120	
Cadmium	mg/L	0.1	0.096	96	80-120	
Chromium	mg/L	0.1	0.098	98	80-120	
Cobalt	mg/L	0.1	0.097	97	80-120	
Lead	mg/L	0.1	0.095	95	80-120	
Lithium	mg/L	0.1	0.10	101	80-120	
Molybdenum	mg/L	0.1	0.097	97	80-120	
Selenium	mg/L	0.1	0.092	92	80-120	
Thallium	mg/L	0.1	0.096	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3021670 3021671

Parameter	Units	92497125010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	101	100	75-125	1	20	
Arsenic	mg/L	ND	0.1	0.1	0.095	0.094	94	94	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3021670 3021671

Parameter	Units	92497125010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.023	0.1	0.1	0.12	0.12	97	99	75-125	1	20	
Beryllium	mg/L	0.0015J	0.1	0.1	0.098	0.10	97	100	75-125	3	20	
Boron	mg/L	1.1	1	1	2.1	2.2	101	114	75-125	6	20	
Cadmium	mg/L	0.00066J	0.1	0.1	0.097	0.097	96	97	75-125	0	20	
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	100	101	75-125	1	20	
Cobalt	mg/L	0.0053	0.1	0.1	0.10	0.10	98	99	75-125	1	20	
Lead	mg/L	0.00011J	0.1	0.1	0.095	0.095	95	95	75-125	1	20	
Lithium	mg/L	0.0010J	0.1	0.1	0.10	0.10	100	103	75-125	3	20	
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	102	102	75-125	0	20	
Selenium	mg/L	0.0021J	0.1	0.1	0.097	0.094	95	92	75-125	3	20	
Thallium	mg/L	ND	0.1	0.1	0.094	0.096	94	96	75-125	2	20	

SAMPLE DUPLICATE: 3021683

Parameter	Units	92497981001 Result	Dup Result	RPD	Max RPD	Qualifiers
Antimony	mg/L	ND	ND		20	
Arsenic	mg/L	ND	0.0078	4	20	
Barium	mg/L	ND	0.0046J		20	
Beryllium	mg/L	ND	ND		20	
Boron	mg/L	ND	0.018J		20	
Cadmium	mg/L	ND	ND		20	
Chromium	mg/L	ND	0.00061J		20	
Cobalt	mg/L	ND	0.00074J		20	
Lead	mg/L	ND	0.00016J		20	
Lithium	mg/L	ND	ND		20	
Molybdenum	mg/L	ND	ND		20	
Selenium	mg/L	ND	ND		20	
Thallium	mg/L	ND	ND		20	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 569295
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497125001

METHOD BLANK: 3016173 Matrix: Water
Associated Lab Samples: 92497125001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.000078	09/29/20 07:07	

LABORATORY CONTROL SAMPLE: 3016174

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3016175 3016176

Parameter	Units	92496847015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0026	99	104	75-125	5	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 569682 — Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A — Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497125002, 92497125003, 92497125004, 92497125005, 92497125006, 92497125007, 92497125008, 92497125009, 92497125010, 92497125011

METHOD BLANK: 3017915 — Matrix: Water
Associated Lab Samples: 92497125002, 92497125003, 92497125004, 92497125005, 92497125006, 92497125007, 92497125008, 92497125009, 92497125010, 92497125011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	0.000096J	0.00050	0.000078	09/30/20 11:53	

LABORATORY CONTROL SAMPLE: 3017916

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0025	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017917 3017918

Parameter	Units	92497141011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0025	96	98	75-125	2	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 569386
QC Batch Method: SM 2450C-2011
Analysis Method: SM 2450C-2011
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Peachtree Corners, GA

Associated Lab Samples: 92497125001

METHOD BLANK: 3016890 Matrix: Water
Associated Lab Samples: 92497125001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10.0	09/28/20 14:18	

LABORATORY CONTROL SAMPLE: 3016891

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	429	107	84-108	

SAMPLE DUPLICATE: 3016892

Parameter	Units	92497125001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	260	295	13	10	D6

SAMPLE DUPLICATE: 3016893

Parameter	Units	92497141008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	81.0	59.0	31	10	D6

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 569874
QC Batch Method: SM 2450C-2011
Analysis Method: SM 2450C-2011
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497125002

METHOD BLANK: 3018862 Matrix: Water
Associated Lab Samples: 92497125002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10.0	09/30/20 09:26	

LABORATORY CONTROL SAMPLE: 3018863

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	389	97	84-108	

SAMPLE DUPLICATE: 3018864

Parameter	Units	92497404001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	130	150	14	10	D6

SAMPLE DUPLICATE: 3018865

Parameter	Units	92495894026 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	790	774	2	10	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 569876
QC Batch Method: SM 2450C-2011
Analysis Method: SM 2450C-2011
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497125003, 92497125004

METHOD BLANK: 3018866 Matrix: Water
Associated Lab Samples: 92497125003, 92497125004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10.0	09/30/20 09:30	

LABORATORY CONTROL SAMPLE: 3018867

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

SAMPLE DUPLICATE: 3018868

Parameter	Units	92497125003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	124	118	5	10	

SAMPLE DUPLICATE: 3018869

Parameter	Units	92497149013 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	ND	ND		10	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 570219 | Analysis Method: SM 2450C-2011
QC Batch Method: SM 2450C-2011 | Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497125005, 92497125006, 92497125007, 92497125008

METHOD BLANK: 3020458 Matrix: Water
Associated Lab Samples: 92497125005, 92497125006, 92497125007, 92497125008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10.0	10/01/20 15:22	

LABORATORY CONTROL SAMPLE: 3020459

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	412	103	84-108	

SAMPLE DUPLICATE: 3020460

Parameter	Units	92497125005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	134	142	6	10	

SAMPLE DUPLICATE: 3020461

Parameter	Units	92497146006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	878	918	4	10	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 570220 | Analysis Method: SM 2450C-2011
QC Batch Method: SM 2450C-2011 | Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92497125009, 92497125010, 92497125011

METHOD BLANK: 3020462 Matrix: Water
Associated Lab Samples: 92497125009, 92497125010, 92497125011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10.0	10/01/20 15:26	

LABORATORY CONTROL SAMPLE: 3020463

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

SAMPLE DUPLICATE: 3020464

Parameter	Units	92496524014 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	188	205	9	10	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 569514
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92497125001

METHOD BLANK: 3017398 Matrix: Water
Associated Lab Samples: 92497125001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	09/29/20 11:26	
Fluoride	mg/L	ND	0.10	0.050	09/29/20 11:26	
Sulfate	mg/L	ND	1.0	0.50	09/29/20 11:26	

LABORATORY CONTROL SAMPLE: 3017399

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	53.9	108	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	50	52.6	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017400 3017401

Parameter	Units	92496941018 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	50	50	52.4	51.8	105	104	90-110	1	10	
Fluoride	mg/L	ND	2.5	2.5	2.3	2.4	93	94	90-110	0	10	
Sulfate	mg/L	ND	50	50	51.0	50.1	101	100	90-110	2	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017402 3017403

Parameter	Units	92496941019 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	50	50	51.7	51.7	103	103	90-110	0	10	
Fluoride	mg/L	ND	2.5	2.5	2.3	2.4	91	95	90-110	5	10	
Sulfate	mg/L	ND	50	50	50.0	49.9	100	100	90-110	0	10	

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 569832
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92497125002, 92497125003, 92497125004, 92497125005, 92497125006, 92497125007, 92497125008

METHOD BLANK: 3018769 Matrix: Water
Associated Lab Samples: 92497125002, 92497125003, 92497125004, 92497125005, 92497125006, 92497125007, 92497125008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	09/30/20 20:24	
Fluoride	mg/L	ND	0.10	0.050	09/30/20 20:24	
Sulfate	mg/L	ND	1.0	0.50	09/30/20 20:24	

LABORATORY CONTROL SAMPLE: 3018770

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	51.0	102	90-110	
Fluoride	mg/L	2.5	2.7	108	90-110	
Sulfate	mg/L	50	49.8	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018771 3018772

Parameter	Units	92497125004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	50	50	51.9	51.4	104	103	90-110	1	10	
Fluoride	mg/L	ND	2.5	2.5	2.6	2.6	105	103	90-110	2	10	
Sulfate	mg/L	ND	50	50	50.5	50.0	101	100	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018773 3018774

Parameter	Units	92497141016 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	50	50	51.8	51.5	104	103	90-110	1	10	
Fluoride	mg/L	ND	2.5	2.5	2.6	2.5	105	100	90-110	4	10	
Sulfate	mg/L	ND	50	50	50.5	50.1	101	100	90-110	1	10	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 569922
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92497125009, 92497125010

METHOD BLANK: 3019036 Matrix: Water
Associated Lab Samples: 92497125009, 92497125010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	09/30/20 11:24	
Fluoride	mg/L	ND	0.10	0.050	09/30/20 11:24	
Sulfate	mg/L	ND	1.0	0.50	09/30/20 11:24	

LABORATORY CONTROL SAMPLE: 3019037

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	49.9	100	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	50	50.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3019038 3019039

Parameter	Units	92497713005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	25.7	50	50	75.8	77.8	100	104	90-110	3	10	
Fluoride	mg/L	ND	2.5	2.5	2.3	2.9	92	116	90-110	23	10	M1,R1
Sulfate	mg/L	1.3	50	50	53.1	55.8	104	109	90-110	5	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3019040 3019041

Parameter	Units	92497146005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	7.5	50	50	59.7	61.3	104	108	90-110	3	10	
Fluoride	mg/L	ND	2.5	2.5	1.8	2.0	71	81	90-110	13	10	M1,R1
Sulfate	mg/L	7.2	50	50	59.9	61.2	105	108	90-110	2	10	

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Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 570137
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92497125011

METHOD BLANK: 3020267 Matrix: Water
Associated Lab Samples: 92497125011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	10/01/20 07:56	
Fluoride	mg/L	ND	0.10	0.050	10/01/20 07:56	
Sulfate	mg/L	ND	1.0	0.50	10/01/20 07:56	

LABORATORY CONTROL SAMPLE: 3020268

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	53.3	107	90-110	
Fluoride	mg/L	2.5	2.7	109	90-110	
Sulfate	mg/L	50	53.4	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020269 3020270

Parameter	Units	92495894028 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	542	50	50	583	587	82	89	90-110	1	10	M6
Fluoride	mg/L	0.41	2.5	2.5	3.2	3.1	110	109	90-110	1	10	
Sulfate	mg/L	3480	50	50	3520	3530	86	111	90-110	0	10	M6

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020271 3020272

Parameter	Units	92496914018 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.6	50	50	56.0	56.5	109	110	90-110	1	10	
Fluoride	mg/L	0.063J	2.5	2.5	2.8	2.8	109	111	90-110	2	10	M1
Sulfate	mg/L	110	50	50	160	161	101	103	90-110	1	10	

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(770)734-4200

QUALIFIERS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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.
R1	RPD value was outside control limits.

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110 Technology Parkway
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(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92497125001	**B-89**				
92497125002	**B-62**				
92497125003	**B-77**				
92497125005	**B-74**				
92497125006	**B-83**				
92497125007	**B-88**				
92497125008	**B-100**				
92497125009	**B-56**				
92497125010	**B-82**				
92497125011	**B-93**				
92497125001	**B-89**	EPA 3010A	569672	EPA 6010D	569722
92497125002	**B-62**	EPA 3010A	570008	EPA 6010D	570053
92497125003	**B-77**	EPA 3010A	570008	EPA 6010D	570053
92497125004	**FB-3**	EPA 3010A	570008	EPA 6010D	570053
92497125005	**B-74**	EPA 3010A	570008	EPA 6010D	570053
92497125006	**B-83**	EPA 3010A	570008	EPA 6010D	570053
92497125007	**B-88**	EPA 3010A	570008	EPA 6010D	570053
92497125008	**B-100**	EPA 3010A	570008	EPA 6010D	570053
92497125009	**B-56**	EPA 3010A	570301	EPA 6010D	570373
92497125010	**B-82**	EPA 3010A	570301	EPA 6010D	570373
92497125011	**B-93**	EPA 3010A	570301	EPA 6010D	570373
92497125001	**B-89**	EPA 3005A	569774	EPA 6020B	569814
92497125002	**B-62**	EPA 3005A	570089	EPA 6020B	570110
92497125003	**B-77**	EPA 3005A	570089	EPA 6020B	570110
92497125004	**FB-3**	EPA 3005A	570089	EPA 6020B	570110
92497125005	**B-74**	EPA 3005A	570089	EPA 6020B	570110
92497125006	**B-83**	EPA 3005A	570089	EPA 6020B	570110
92497125007	**B-88**	EPA 3005A	570089	EPA 6020B	570110
92497125008	**B-100**	EPA 3005A	570089	EPA 6020B	570110
92497125009	**B-56**	EPA 3005A	570307	EPA 6020B	570372
92497125010	**B-82**	EPA 3005A	570375	EPA 6020B	570411
92497125011	**B-93**	EPA 3005A	570375	EPA 6020B	570411
92497125001	**B-89**	EPA 7470A	569295	EPA 7470A	569452
92497125002	**B-62**	EPA 7470A	569682	EPA 7470A	569887
92497125003	**B-77**	EPA 7470A	569682	EPA 7470A	569887
92497125004	**FB-3**	EPA 7470A	569682	EPA 7470A	569887
92497125005	**B-74**	EPA 7470A	569682	EPA 7470A	569887
92497125006	**B-83**	EPA 7470A	569682	EPA 7470A	569887
92497125007	**B-88**	EPA 7470A	569682	EPA 7470A	569887
92497125008	**B-100**	EPA 7470A	569682	EPA 7470A	569887
92497125009	**B-56**	EPA 7470A	569682	EPA 7470A	569887
92497125010	**B-82**	EPA 7470A	569682	EPA 7470A	569887
92497125011	**B-93**	EPA 7470A	569682	EPA 7470A	569887
92497125001	**B-89**	SM 2450C-2011	569386		

REPORT OF LABORATORY ANALYSIS

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110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92497125002	**B-62**	SM 2450C-2011	569874		
92497125003	**B-77**	SM 2450C-2011	569876		
92497125004	**FB-3**	SM 2450C-2011	569876		
92497125005	**B-74**	SM 2450C-2011	570219		
92497125006	**B-83**	SM 2450C-2011	570219		
92497125007	**B-88**	SM 2450C-2011	570219		
92497125008	**B-100**	SM 2450C-2011	570219		
92497125009	**B-56**	SM 2450C-2011	570220		
92497125010	**B-82**	SM 2450C-2011	570220		
92497125011	**B-93**	SM 2450C-2011	570220		
92497125001	**B-89**	EPA 300.0 Rev 2.1 1993	569514		
92497125002	**B-62**	EPA 300.0 Rev 2.1 1993	569832		
92497125003	**B-77**	EPA 300.0 Rev 2.1 1993	569832		
92497125004	**FB-3**	EPA 300.0 Rev 2.1 1993	569832		
92497125005	**B-74**	EPA 300.0 Rev 2.1 1993	569832		
92497125006	**B-83**	EPA 300.0 Rev 2.1 1993	569832		
92497125007	**B-88**	EPA 300.0 Rev 2.1 1993	569832		
92497125008	**B-100**	EPA 300.0 Rev 2.1 1993	569832		
92497125009	**B-56**	EPA 300.0 Rev 2.1 1993	569922		
92497125010	**B-82**	EPA 300.0 Rev 2.1 1993	569922		
92497125011	**B-93**	EPA 300.0 Rev 2.1 1993	570137		

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Sample Condition Upon Receipt

Pace Analytical

Client Name: GA Power

WO#: 92497125

92497125

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

Tracking #: _____

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

Proj. Name:

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

Thermometer Used THR214 Type of Ice: ~~Wet~~ Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 1.0 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: KRW

Temp should be above freezing to 6°C

Comments:

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

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

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

F-ALLC003rev.3, 11September2006

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	ecainvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Golder	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone:	(404) 506-7239 Fax	Project Name:	Plant McDonough Assessment	Pace Project Manager:	Kevin Herring
Requested Due Date:	10 Day TAT	Project #:	168849618	Pace Profile #:	

Regulatory Agency

State / Location GA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N): Y/N	Analyses Test	*Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	TDS	Residual Chlorine (Y/N)	9/24/1125
		MATRIX: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS															N	N	N	N			
1	B-89	WT	G	9/23/2020	15:30		5	2		3							X	X	X	X			pH= 5.87
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							
13																							
14																							
15																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*App III / IV Metals = As, Sb, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl	C Tidwell / Golder	9-24-20	08:55	T Elrod	9/24	1455				
	T Elrod	9-24	925	K. Williams / Pace	9/24/20	0925	1.0	Y	N	Y

Sampled by: Chris Tidwell

DATE Signed: 9-23-20

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

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page : 1 Of 1

Section A — Required Client Information:

Company:	Georgia Power - Coal Combustion Residuals
Address:	2480 Maner Road, Atlanta, GA 30339
Email:	jabraham@southernco.com
Phone: (404) 506-7239	Fax
Requested Due Date:	10 Day TAT

Section B — Required Project Information:

Report To:	Jeju Abraham
Copy To:	Golder
Purchase Order #:	
Project Name:	Plant McDonough Assessment
Project #:	166849618

Section C — Invoice Information:

Attention:	scsinvoices@southernco.com
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	Kevin Herring
Pace Profile #:	

Regulatory Agency: | State / Location: GA

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

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Analyses Test Y/N	Requested Analysis Filtered (Y/N): *Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	TDS	Residual Chlorine (Y/N)	
																Y/N	N	N	N	N		92467125
1	B-62	WT	G	9/24/2020	10:18		5	2		3							X	X	X	X		pH= 6.55 002
2	B-77	WT	G	9/24/2020	14:19		5	2		3							X	X	X	X		pH=6.46 003
3	FB-3	WT	G	9/24/2020	11:00		5	2		3							X	X	X	X		004
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
*App III / IV Metals = As, Sb, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Th		9-25-20	1330		9/25/20	1330	

Sampled by: Chris Tomau

DATE Signed: 9-25-20

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

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	acsinvoices@southernco.com
Address:	2480 Maner Road Atlanta, GA 30339	Copy To:	Golder	Company Name:	
Email:	jabraham@southernco.com	Purchase Order #:		Address:	
Phone:	(404) 506-7239 Fax	Project Name:	Plant McDonough Assessment	Pace Quote:	
Requested Due Date:	10 Day TAT	Project #:	166849618	Pace Project Manager:	Kevin Herring
				Pace Profile #:	

Regulatory Agency

State / Location: GA

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Analyses Test Y/N	Requested Analysis Filtered (Y/N): *Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	TDS	Residual Chlorine (Y/N)	
																Y/N	N	N	N	N		
1	B-74	WT	G	9/25/2020	1005		5	2		3							X	X	X	X		pH= 6.16 005
2	B-83	WT	G	9/25/2020	910		5	2		3							X	X	X	X		pH= 5.97 006
3	B-88	WT	G	9/25/2020	1015		5	2		3							X	X	X	X		pH= 5.75 007
4	B-100	WT	G	9/25/2020	1050		5	2		3							X	X	X	X		pH= 5.53 008
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

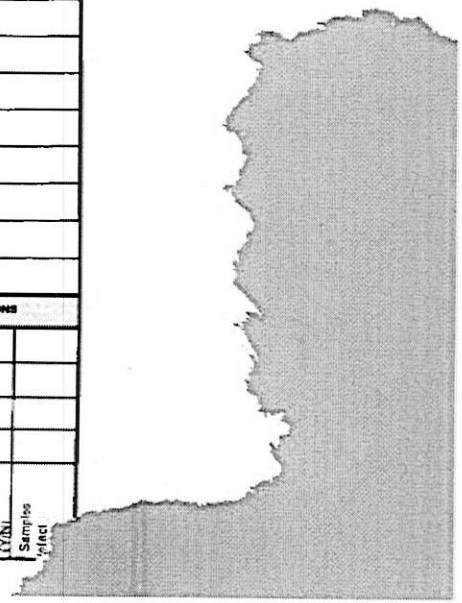
42647125

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
*App III / IV Metals = As, Sb, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Th	[signature]	9-25-20	1330	[signature]	9/25/20	1330	

Samples by: Chris Tigwell

DATE Signed: 9-25-20

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



Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	acsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Golder	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone:	(404) 506-7239 Fax:	Project Name:	Plant McDonough Assessment	Pace Project Manager:	Kevin Herring
Requested Due Date:	10 Day TAT	Project #:	166849618	Pace Profile #:	

Regulatory Agency	
State / Location	GA

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

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Analyses Test Y/N	*Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	TDS	Residual Chlorine (Y/N)	92497125
																Requested Analysis Filtered (Y/N)	N	N	N	N		
1	B-56	WT	G	9/28/2020	11:14		5	2		3							X	X	X	X		pH= 4.90 005
2	B-82	WT	G	9/28/2020	10:14		5	2		3							X	X	X	X		pH= 5.64 010
3	B-93	WT	G	9/28/2020	9:50		5	2		3							X	X	X	X		pH= 4.67 011
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*App III / IV Metals = As, Sb, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Th	JW/SAMPLER	09/28/20	14:21	Cheryl Fenton Pace	9/28/20 9/29/20	1424	13.8	Y	N	Y
							TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Sampled by: Chris Tidwell, Devin Thomas, Jude Waguespack

DATE Signed: 9-28-20

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

October 20, 2020

Joju Abraham
Georgia Power-CCR
2480 Maner Road
Atlanta, GA 30339

RE: Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory between September 24, 2020 and September 28, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
1(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Ms. Lauren Petty, Southern Co. Services
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta

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CERTIFICATIONS

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

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

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SAMPLE SUMMARY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92497117001	**B-89**	Water	09/23/20 15:30	09/24/20 09:25
92497117002	**B-62**	Water	09/24/20 10:18	09/25/20 13:30
92497117003	**B-77**	Water	09/24/20 14:19	09/25/20 13:30
92497117004	**FB-3**	Water	09/24/20 11:00	09/25/20 13:30
92497117005	**B-74**	Water	09/25/20 10:05	09/25/20 13:30
92497117006	**B-83**	Water	09/25/20 09:10	09/25/20 13:30
92497117007	**B-88**	Water	09/25/20 10:15	09/25/20 13:30
92497117008	**B-100**	Water	09/25/20 10:50	09/25/20 13:30
92497117009	**B-56**	Water	09/28/20 11:14	09/28/20 14:21
92497117010	**B-82**	Water	09/28/20 10:14	09/28/20 14:21
92497117011	**B-93**	Water	09/28/20 09:50	09/28/20 14:21

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92497117001	**B-89**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92497117002	**B-62**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92497117003	**B-77**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92497117004	**FB-3**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92497117005	**B-74**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92497117006	**B-83**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92497117007	**B-88**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92497117008	**B-100**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92497117009	**B-56**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92497117010	**B-82**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92497117011	**B-93**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Sample: B-89 **Lab ID: 92497117001** Collected: 09/23/20 15:30 Received: 09/24/20 09:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.232 ± 0.237 (0.453) C:86% T:NA**	pCi/L	10/09/20 09:55	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.305 ± 0.529 (1.15) C:90% T:75%**	pCi/L	10/12/20 19:08	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.537 ± 0.766 (1.60)**	pCi/L	10/14/20 09:27	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Sample: B-62 **Lab ID: 92497117002** Collected: 09/24/20 10:18 Received: 09/25/20 13:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.669 ± 0.364 (0.523) C:77% T:NA**	pCi/L	10/14/20 06:26	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.608 ± 0.461 (0.920) C:80% T:85%**	pCi/L	10/15/20 14:16	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.28 ± 0.825 (1.44)**	pCi/L	10/19/20 11:01	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Sample: B-77 **Lab ID: 92497117003** Collected: 09/24/20 14:19 Received: 09/25/20 13:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.664 ± 0.343 (0.476) C:89% T:NA**	pCi/L	10/14/20 06:26	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.0967 ± 0.397 (0.897) C:83% T:81%**	pCi/L	10/15/20 14:17	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.761 ± 0.740 (1.37)**	pCi/L	10/19/20 11:01	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Sample: FB-3 **Lab ID: 92497117004** Collected: 09/24/20 11:00 Received: 09/25/20 13:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.0243 ± 0.241 (0.620) C:87% T:NA**	pCi/L	10/14/20 06:27	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.506 ± 0.523 (1.09) C:78% T:73%**	pCi/L	10/15/20 14:17	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.530 ± 0.764 (1.71)**	pCi/L	10/19/20 11:01	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Sample: B-74 **Lab ID: 92497117005** Collected: 09/25/20 10:05 Received: 09/25/20 13:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.485 ± 0.285 (0.380) C:85% T:NA**	pCi/L	10/14/20 06:40	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.804 ± 0.575 (1.13) C:74% T:76%**	pCi/L	10/15/20 14:17	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.29 ± 0.860 (1.51)**	pCi/L	10/19/20 11:01	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Sample: B-83 **Lab ID: 92497117006** Collected: 09/25/20 09:10 Received: 09/25/20 13:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.0359 ± 0.141 (0.374) C:76% T:NA**	pCi/L	10/14/20 06:40	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**-0.0284 ± 0.399 (0.932) C:74% T:81%**	pCi/L	10/15/20 14:17	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.0359 ± 0.540 (1.31)**	pCi/L	10/19/20 11:01	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Sample: B-88 **Lab ID: 92497117007** Collected: 09/25/20 10:15 Received: 09/25/20 13:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.925 ± 0.386 (0.410) C:90% T:NA**	pCi/L	10/14/20 06:40	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**-0.198 ± 0.363 (0.893) C:78% T:74%**	pCi/L	10/15/20 14:17	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.925 ± 0.749 (1.30)**	pCi/L	10/19/20 11:01	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Sample: B-100 **Lab ID: 92497117008** Collected: 09/25/20 10:50 Received: 09/25/20 13:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.132 ± 0.213 (0.472) C:84% T:NA**	pCi/L	10/14/20 06:40	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.667 ± 0.517 (1.02) C:77% T:67%**	pCi/L	10/15/20 14:17	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.799 ± 0.730 (1.49)**	pCi/L	10/19/20 11:01	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Sample: B-56 **Lab ID: 92497117009** Collected: 09/28/20 11:14 Received: 09/28/20 14:21 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.471 ± 0.280 (0.380) C:84% T:NA**	pCi/L	10/14/20 07:51	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.914 ± 0.481 (0.853) C:77% T:79%**	pCi/L	10/15/20 14:17	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.39 ± 0.761 (1.23)**	pCi/L	10/19/20 11:59	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Sample: B-82 **Lab ID: 92497117010** Collected: 09/28/20 10:14 Received: 09/28/20 14:21 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.157 ± 0.184 (0.362) C:89% T:NA**	pCi/L	10/14/20 06:41	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.590 ± 0.432 (0.845) C:79% T:80%**	pCi/L	10/15/20 14:17	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.747 ± 0.616 (1.21)**	pCi/L	10/19/20 11:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Sample: B-93 **Lab ID: 92497117011** Collected: 09/28/20 09:50 Received: 09/28/20 14:21 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.391 ± 0.271 (0.423) C:82% T:NA**	pCi/L	10/14/20 06:41	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**1.15 ± 0.502 (0.825) C:83% T:72%**	pCi/L	10/19/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.54 ± 0.773 (1.25)**	pCi/L	10/20/20 08:55	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

QC Batch: 415890
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92497117001

METHOD BLANK: 2010987
Matrix: Water
Associated Lab Samples: 92497117001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.214 ± 0.231 (0.446) C:86% T:NA	pCi/L	10/09/20 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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Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

QC Batch: 417134
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92497117011

METHOD BLANK: 2016817
Matrix: Water
Associated Lab Samples: 92497117011

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.280 ± 0.239 (0.418) C:85% T:NA	pCi/L	10/14/20 06:41	

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(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

QC Batch: 417133
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92497117002, 92497117003, 92497117004, 92497117005, 92497117006, 92497117007, 92497117008, 92497117009, 92497117010

METHOD BLANK: 2016815 Matrix: Water
Associated Lab Samples: 92497117002, 92497117003, 92497117004, 92497117005, 92497117006, 92497117007, 92497117008, 92497117009, 92497117010

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.00961 ± 0.301 (0.708) C:79% T:84%	pCi/L	10/15/20 14:13	

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Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

QC Batch: 417132
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92497117002, 92497117003, 92497117004, 92497117005, 92497117006, 92497117007, 92497117008, 92497117009, 92497117010

METHOD BLANK: 2016814 Matrix: Water
Associated Lab Samples: 92497117002, 92497117003, 92497117004, 92497117005, 92497117006, 92497117007, 92497117008, 92497117009, 92497117010

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0977 ± 0.149 (0.503) C:90% T:NA	pCi/L	10/14/20 06:25	

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Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

QC Batch: 417135
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92497117011

METHOD BLANK: 2016818 Matrix: Water
Associated Lab Samples: 92497117011

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.274 ± 0.291 (0.602) C:84% T:86%	pCi/L	10/15/20 11:05	

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110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

QC Batch: 415888
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92497117001

METHOD BLANK: 2010985 Matrix: Water
Associated Lab Samples: 92497117001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.197 ± 0.376 (0.826) C:67% T:78%	pCi/L	10/12/20 14:59	

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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Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

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110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH ASSESSMENT RADS
Pace Project No.: 92497117

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92497117001	**B-89**	EPA 9315	415890		
92497117002	**B-62**	EPA 9315	417132		
92497117003	**B-77**	EPA 9315	417132		
92497117004	**FB-3**	EPA 9315	417132		
92497117005	**B-74**	EPA 9315	417132		
92497117006	**B-83**	EPA 9315	417132		
92497117007	**B-88**	EPA 9315	417132		
92497117008	**B-100**	EPA 9315	417132		
92497117009	**B-56**	EPA 9315	417132		
92497117010	**B-82**	EPA 9315	417132		
92497117011	**B-93**	EPA 9315	417134		
92497117001	**B-89**	EPA 9320	415888		
92497117002	**B-62**	EPA 9320	417133		
92497117003	**B-77**	EPA 9320	417133		
92497117004	**FB-3**	EPA 9320	417133		
92497117005	**B-74**	EPA 9320	417133		
92497117006	**B-83**	EPA 9320	417133		
92497117007	**B-88**	EPA 9320	417133		
92497117008	**B-100**	EPA 9320	417133		
92497117009	**B-56**	EPA 9320	417133		
92497117010	**B-82**	EPA 9320	417133		
92497117011	**B-93**	EPA 9320	417135		
92497117001	**B-89**	Total Radium Calculation	418331		
92497117002	**B-62**	Total Radium Calculation	419143		
92497117003	**B-77**	Total Radium Calculation	419143		
92497117004	**FB-3**	Total Radium Calculation	419143		
92497117005	**B-74**	Total Radium Calculation	419143		
92497117006	**B-83**	Total Radium Calculation	419143		
92497117007	**B-88**	Total Radium Calculation	419143		
92497117008	**B-100**	Total Radium Calculation	419143		
92497117009	**B-56**	Total Radium Calculation	419145		
92497117010	**B-82**	Total Radium Calculation	419145		
92497117011	**B-93**	Total Radium Calculation	419262		

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Sample Condition Upon Rec

Client Name: GA Power

WO#: 92497117

92497117

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Oth

Tracking #: _____

Proj. Due Date:
Proj. Name:

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

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

Thermometer Used THR214 Type of Ice: ~~Wet~~ Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 1.0 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: KRW

Temp should be above freezing to 6°C

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

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

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

F-ALLC003rev.3, 11September2006

Pace Analytical

Document Name: Bottle Identification Form (BIF)	Document Issued: March 14, 2019 Page 1 of 1
Document No.: F-CAR-CS-043-Rev.00	Issuing Authority:

Project #

WO#: 92497117

PM: KLH1 Due Date: 10/15/20

CLIENT: GA-GA Power

•Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

••Bottom half of box is to list number of bottle

Matrix	Items#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)	BPIN - Radium	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)
	1		—	—			—																					
	2																											
	3																											
	4																											
	5																											
	6																											
	7																											
	8																											
	9																											
	10																											
	11																											
	12																											

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot

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

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	ecainvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Golder	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone:	(404) 506-7239 Fax	Project Name:	Plant McDonough Assessment	Pace Project Manager:	Kevin Herring
Requested Due Date:	10 Day TAT	Project #:	166849618	Pace Profile #:	

Regulatory Agency

State / Location GA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N): Analyses Test Y/N	*Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	TDS	Residual Chlorine (Y/N)	92467117
1	B-89	WT	G	9/23/2020	15:30		5	2		3						X	X	X	X			pH= 5.87
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*App III / IV Metals = As, Sb, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Th	C Tidwell / Golder	9-24-20	08:55	T Elrod	9-24	855				
	T Elrod	9-24	925	K Kelly/Pace	9/24/20	0925	1.0	Y	N	Y

Sampled by: Chris Tidwell

DATE Signed: 9-23-20

Pace Analytical

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Page : 1 Of 1

Section A – Required Client Information:		Section B – Required Project Information:		Section C – Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Jeju Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Golder	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone:	(404) 506-7239 Fax	Project Name:	Plant McDonough Assessment	Pace Project Manager:	Kevin Herring
Requested Due Date:	10 Day TAT	Project #:	166849618	Pace Profile #:	

Regulatory Agency: —

State / Location: GA

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Y/N	Analyses Test: *Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	TDS	Residual Chlorine (Y/N)	9246117
1	B-62	WT	G	9/24/2020	10:18		5	2		3						N	X	X	X	X		pH= 6.55 002
2	B-77	WT	G	9/24/2020	14:19		5	2		3						N	X	X	X	X		pH=6.46 003
3	FB-3	WT	G	9/24/2020	11:00		5	2		3						N	X	X	X	X		004
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

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

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
*App III / IV Metals = As, Sb, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl		9-25-20	1330	K. Kelly/Pace	9/25/20	1330	

Sampled by: Chris Tomau

DATE Signed: 9-25-20

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

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Page : 1 Of 1

Section A — Required Client Information:

Company:	Georgia Power - Coal Combustion Residuals
Address:	2480 Maner Road Atlanta, GA 30339
Email:	jabraham@southernco.com
Phone:	(404) 506-7239
Fax:	
Requested Due Date:	10 Day TAT

Section B — Required Project Information:

Report To:	Joju Abraham
Copy To:	Golder
Purchase Order #:	
Project Name:	Plant McDonough Assessment
Project #:	166849618

Section C — Invoice Information:

Attention:	scsinvoices@southernco.com
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	Kevin Herring
Pace Profile #:	

Regulatory Agency: —

State / Location: GA

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Analyses Test: Y/N	*Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	TDS	Residual Chlorine (Y/N)	9246747
	Requested Analysis Filtered (Y/N)															N	N	N	N	N		
1	B-74	WT	G	9/25/2020	10:05		5	2		3							X	X	X	X		pH= 6.16 005
2	B-83	WT	G	9/25/2020	9:10		5	2		3							X	X	X	X		pH= 5.97 006
3	B-88	WT	G	9/25/2020	10:10		5	2		3							X	X	X	X		pH= 5.75 007
4	B-100	WT	G	9/25/2020	10:50		5	2		3							X	X	X	X		pH= 5.53 008
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

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

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
*App III / IV Metals = As, Sb, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Th		9-25-20	1330		9/25/20	1330	

Samples by: Chris Trowell

DATE Signed: 9-25-20

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

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	acsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Golder	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone:	(404) 506-7239 Fax	Project Name:	Plant McDonough Assessment	Pace Project Manager:	Kevin Herring
Requested Due Date:	10 Day TAT	Project #:	166849618	Pace Profile #:	

Regulatory Agency

State / Location: GA

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Analyses Test Y/N	*Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	TDS	Residual Chlorine (Y/N)	9246117
	MATRIX: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS															N	N	N	N			
1	B-56	WT	G	9/28/2020	11:14		5	2		3							X	X	X	X			pH= 4.90 005
2	B-82	WT	G	9/28/2020	10:14		5	2		3							X	X	X	X			pH= 5.54 010
3	B-93	WT	G	9/28/2020	9:50		5	2		3							X	X	X	X			pH= 4.67 011
4																							
5																							
6																							
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14																							
15																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*App III / IV Metals = As, Sb, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Th	JW/SAMPLER	09/28/20	14:21	Pace	9/28/20 9/28/20	1421	13.8	Y	N	Y
							TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Sampled by: Chris Tidwell, Devin Thomas, Jude Waguespack

DATE Signed: 9-28-20

Quality Control Sample Performance Assessment

Pace Analytical™
www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	10/8/2020
Worklist:	56442
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2010987
MB concentration:	0.214
M/B Counting Uncertainty:	0.229
MB MDC:	0.446
MB Numerical Performance Indicator:	1.83
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS56442	LCSD56442
Count Date:	10/9/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.044	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.507	
Target Conc. (pCi/L, g, F):	4.741	
Uncertainty (Calculated):	0.057	
Result (pCi/L, g, F):	4.940	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.794	
Numerical Performance Indicator:	0.49	
Percent Recovery:	104.19%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92497110001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92497110001DUP	
Sample Result (pCi/L, g, F):	0.477	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.309	
Sample Duplicate Result (pCi/L, g, F):	0.448	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.340	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	0.121	92497110001
Duplicate RPD:	6.12%	92497110001DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

LAM 10/9/2020

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test:	Ra-226
Analyst:	LAL
Date:	10/8/2020
Worklist:	56442
Matrix:	DW

Method Blank Assessment	
MB Sample ID	2010987
MB concentration:	0.214
M/B Counting Uncertainty:	0.229
MB MDC:	0.446
MB Numerical Performance Indicator:	1.83
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS56442	LCSD56442
Count Date:	10/9/2020	10/9/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.044	24.044
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.507	0.514
Target Conc. (pCi/L, g, F):	4.741	4.677
Uncertainty (Calculated):	0.057	0.056
Result (pCi/L, g, F):	4.940	4.201
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.794	0.785
Numerical Performance Indicator:	0.49	-1.18
Percent Recovery:	104.19%	89.83%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS56442	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD56442	
Sample Result (pCi/L, g, F):	4.940	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.794	
Sample Duplicate Result (pCi/L, g, F):	4.201	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.785	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	1.297	92497110001
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	14.81%	92497110001DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

LAM 10/9/2020

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	10/13/2020
Worklist:	56589
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2016814
MB concentration:	-0.098
M/B Counting Uncertainty:	0.148
MB MDC:	0.503
MB Numerical Performance Indicator:	-1.30
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS56589	LCSD56589
Count Date:	10/14/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.044	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.508	
Target Conc. (pCi/L, g, F):	4.736	
Uncertainty (Calculated):	0.057	
Result (pCi/L, g, F):	4.957	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.812	
Numerical Performance Indicator:	0.53	
Percent Recovery:	104.66%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92497114005	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92497114005DUP	
Sample Result (pCi/L, g, F):	0.265	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.249	
Sample Duplicate Result (pCi/L, g, F):	-0.086	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.079	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	2.633	92497114005
Duplicate RPD:	390.92%	92497114005DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

***~~Batch must be re-prepped due to unacceptable precision.~~ N/A LAM 10/14/2020

LAM 10/14/2020

10-15-20

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test: Ra-226
Analyst: LAL
Date: 10/13/2020
Worklist: 56589
Matrix: DW

Method Blank Assessment	
MB Sample ID	2016814
MB concentration:	-0.098
M/B Counting Uncertainty:	0.148
MB MDC:	0.503
MB Numerical Performance Indicator:	-1.30
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS56589	LCSD56589
Count Date:	10/14/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.044	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.508	
Target Conc. (pCi/L, g, F):	4.736	
Uncertainty (Calculated):	0.057	
Result (pCi/L, g, F):	4.957	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.812	
Numerical Performance Indicator:	0.53	
Percent Recovery:	104.66%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92497118006	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92497118006DUP	
Sample Result (pCi/L, g, F):	0.280	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.271	
Sample Duplicate Result (pCi/L, g, F):	0.399	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.250	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-0.631	92497118006
Duplicate RPD:	34.99%	92497118006DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

~~***Batch must be re-prepped due to unacceptable precision.~~ N/A LAM 10/14/2020

LAM 10/14/2020

10.15.20

Quality Control Sample Performance Assessment

Pace Analytical
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Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test:	Ra-226
Analyst:	LAL
Date:	10/13/2020
Worklist:	56591
Matrix:	DW

Method Blank Assessment	
MB Sample ID	2016817
MB concentration:	0.280
M/B Counting Uncertainty:	0.235
MB MDC:	0.418
MB Numerical Performance Indicator:	2.33
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS56591	LCSD56591
Count Date:	10/14/2020	10/14/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.044	24.044
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.512	0.510
Target Conc. (pCi/L, g, F):	4.697	4.711
Uncertainty (Calculated):	0.056	0.057
Result (pCi/L, g, F):	4.666	4.350
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.761	0.758
Numerical Performance Indicator:	-0.08	-0.93
Percent Recovery:	99.33%	92.35%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS56591	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD56591	
Sample Result (pCi/L, g, F):	4.666	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.761	
Sample Duplicate Result (pCi/L, g, F):	4.350	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.758	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.577	92496904020
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	7.29%	92496904020DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

LAM 10/14/2020

CMW 10/14/2020

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	10/13/2020
Worklist:	56591
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2016817
MB concentration:	0.280
M/B Counting Uncertainty:	0.235
MB MDC:	0.418
MB Numerical Performance Indicator:	2.33
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS56591	LCSD56591
Count Date:	10/14/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.044	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.512	
Target Conc. (pCi/L, g, F):	4.697	
Uncertainty (Calculated):	0.056	
Result (pCi/L, g, F):	4.666	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.761	
Numerical Performance Indicator:	-0.08	
Percent Recovery:	99.33%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92496904020	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92496904020DUP	
Sample Result (pCi/L, g, F):	0.317	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.241	
Sample Duplicate Result (pCi/L, g, F):	0.374	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.240	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-0.331	92496904020
Duplicate RPD:	16.61%	92496904020DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

CWM 10/14/2020

CWM 10/14/2020

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	10/6/2020
Worklist:	56440
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2010985
MB concentration:	0.197
M/B 2 Sigma CSU:	0.376
MB MDC:	0.826
MB Numerical Performance Indicator:	1.03
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS56440	LCSD56440
Count Date:	10/12/2020	10/12/2020
Spike I.D.:	20-030	20-030
Decay Corrected Spike Concentration (pCi/mL):	38.054	38.054
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.803	0.803
Target Conc. (pCi/L, g, F):	4.741	4.737
Uncertainty (Calculated):	0.232	0.232
Result (pCi/L, g, F):	3.863	4.161
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.965	1.023
Numerical Performance Indicator:	-1.73	-1.08
Percent Recovery:	81.48%	87.84%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS56440	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD56440	
Sample Result (pCi/L, g, F):	3.863	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.965	
Sample Duplicate Result (pCi/L, g, F):	4.161	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.023	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.416	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	7.51%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

KUB 10-13-2020

VAL 10/13/20

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	10/13/2020
Worklist:	56590
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2016815
MB concentration:	-0.010
M/B 2 Sigma CSU:	0.301
MB MDC:	0.708
MB Numerical Performance Indicator:	-0.06
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS56590	LCSD56590
Count Date:	10/15/2020	
Spike I.D.:	20-030	
Decay Corrected Spike Concentration (pCi/mL):	38.016	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.815	
Target Conc. (pCi/L, g, F):	4.665	
Uncertainty (Calculated):	0.229	
Result (pCi/L, g, F):	3.340	
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.875	
Numerical Performance Indicator:	-2.87	
Percent Recovery:	71.58%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	60%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92497118006	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92497118006DUP	
Sample Result (pCi/L, g, F):	0.746	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.424	
Sample Duplicate Result (pCi/L, g, F):	0.204	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.426	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	1.767	92497118006
Duplicate RPD:	114.06%	92497118006DUP
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

10/16/2020

Quality Control Sample Performance Assessment

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Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test:	Ra-228
Analyst:	VAL
Date:	10/16/2020
Worklist:	56592
Matrix:	WT

Method Blank Assessment	
MB Sample ID	
MB concentration:	
M/B 2 Sigma CSU:	
MB MDC:	
MB Numerical Performance Indicator:	
MB Status vs Numerical Indicator:	
MB Status vs. MDC:	

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS56592	LCSD56592
Count Date:	10/19/2020	10/19/2020
Spike I.D.:	20-030	20-030
Decay Corrected Spike Concentration (pCi/mL):	37.968	37.968
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.813	0.836
Target Conc. (pCi/L, g, F):	4.670	4.542
Uncertainty (Calculated):	0.229	0.223
Result (pCi/L, g, F):	4.645	4.409
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.050	1.018
Numerical Performance Indicator:	-0.04	-0.25
Percent Recovery:	99.48%	97.06%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS56592	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD56592	
Sample Result (pCi/L, g, F):	4.645	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.050	
Sample Duplicate Result (pCi/L, g, F):	4.409	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.018	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.317	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	2.46%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

10/20/2020

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	10/13/2020
Worklist:	56592
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2016818
MB concentration:	0.274
M/B 2 Sigma CSU:	0.291
MB MDC:	0.602
MB Numerical Performance Indicator:	1.85
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS56592	LCSD56592
Count Date:	10/15/2020	10/15/2020
Spike I.D.:	20-030	20-030
Decay Corrected Spike Concentration (pCi/mL):	38.018	38.018
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.813	0.836
Target Conc. (pCi/L, g, F):	4.676	4.548
Uncertainty (Calculated):	0.229	0.223
Result (pCi/L, g, F):	2.226	2.963
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.629	0.764
Numerical Performance Indicator:	-7.18	-3.91
Percent Recovery:	47.60%	65.14%
Status vs Numerical Indicator:	Fail**	N/A
Status vs Recovery:	Fail Low**	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS56592	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD56592	
Sample Result (pCi/L, g, F):	2.226	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.629	
Sample Duplicate Result (pCi/L, g, F):	2.963	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.764	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-1.460	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	31.10%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

**Batch must be re-prepped due to LCS failure.

10/20/2020

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

November 16, 2020

Kelley Sharpe
ARCADIS - Atlanta
2839 Paces Ferry Rd
STE 900
Atlanta, GA 30339

RE: Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Dear Kelley Sharpe:

Enclosed are the analytical results for sample(s) received by the laboratory on November 10, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville
- Pace Analytical Services - Charlotte
- Pace Analytical Services - Peachtree Corners, GA

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

Sincerely,

Maiya Parks
maiya.parks@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Joju Abraham, Georgia Power-CCR
Ben Hodges, Georgia Power
Warren Johnson, ARCADIS - Atlanta

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CERTIFICATIONS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Pace Analytical Services Charlotte
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

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

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SAMPLE SUMMARY

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92505233001	**CR+0.4**	Water	11/10/20 11:40	11/10/20 17:57
92505233002	**CR+0.2**	Water	11/10/20 11:50	11/10/20 17:57
92505233003	**Dewatering Upstream**	Water	11/10/20 11:55	11/10/20 17:57
92505233004	**Dewatering Downstream**	Water	11/10/20 12:25	11/10/20 17:57
92505233005	**CR-0.2**	Water	11/10/20 12:47	11/10/20 17:57
92505233006	**CR-0.5**	Water	11/10/20 12:55	11/10/20 17:57
92505233007	**CR-0.8**	Water	11/10/20 13:15	11/10/20 17:57

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SAMPLE ANALYTE COUNT

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92505233001	**CR+0.4**	EPA 6010D	DRB, KH	4	PASI-GA
		EPA 6020B	CW1	2	PASI-GA
		SM 2450C-2011	ALW	1	PASI-GA
		SM 2320B-2011	KDF1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
92505233002	**CR+0.2**	EPA 6010D	DRB, KH	4	PASI-GA
		EPA 6020B	CW1	2	PASI-GA
		SM 2450C-2011	ALW	1	PASI-GA
		SM 2320B-2011	KDF1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
92505233003	**Dewatering Upstream**	EPA 6010D	DRB, KH	4	PASI-GA
		EPA 6020B	CW1	2	PASI-GA
		SM 2450C-2011	ALW	1	PASI-GA
		SM 2320B-2011	KDF1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
92505233004	**Dewatering Downstream**	EPA 6010D	DRB, KH	4	PASI-GA
		EPA 6020B	CW1	2	PASI-GA
		SM 2450C-2011	ALW	1	PASI-GA
		SM 2320B-2011	KDF1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
92505233005	**CR-0.2**	EPA 6010D	DRB, KH	4	PASI-GA
		EPA 6020B	CW1	2	PASI-GA
		SM 2450C-2011	ALW	1	PASI-GA
		SM 2320B-2011	KDF1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
92505233006	**CR-0.5**	EPA 6010D	DRB, KH	4	PASI-GA
		EPA 6020B	CW1	2	PASI-GA
		SM 2450C-2011	ALW	1	PASI-GA
		SM 2320B-2011	KDF1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
92505233007	**CR-0.8**	EPA 6010D	DRB, KH	4	PASI-GA
		EPA 6020B	CW1	2	PASI-GA
		SM 2450C-2011	ALW	1	PASI-GA
		SM 2320B-2011	KDF1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A

PASI-A = Pace Analytical Services - Asheville
PASI-C = Pace Analytical Services - Charlotte

REPORT OF LABORATORY ANALYSIS

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Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory

PASI-GA = Pace Analytical Services - Peachtree Corners, GA

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Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Sample: CR+0.4 **Lab ID: 92505233001** Collected: 11/10/20 11:40 Received: 11/10/20 17:57 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte							
Performed by	**Client**			1		11/10/20 11:40		
pH	**7.35**	Std. Units		1		11/10/20 11:40		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA							
Potassium	**2.4**	mg/L	0.20	1	11/11/20 12:44	11/15/20 15:48	7440-09-7	
Sodium	**5.4**	mg/L	1.0	1	11/11/20 12:44	11/11/20 19:42	7440-23-5	M1
Calcium	**4.2**	mg/L	1.0	1	11/11/20 12:44	11/11/20 19:42	7440-70-2	M1
Magnesium	**2.0**	mg/L	0.050	1	11/11/20 12:44	11/11/20 19:42	7439-95-4	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA							
Beryllium	ND	mg/L	0.00050	1	11/11/20 12:31	11/11/20 16:04	7440-41-7	
Cobalt	ND	mg/L	0.0050	1	11/11/20 12:31	11/11/20 16:04	7440-48-4	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA							
Total Dissolved Solids	**43.0**	mg/L	10.0	1		11/11/20 15:48		D6
2320B Alkalinity	Analytical Method: SM 2320B-2011 Pace Analytical Services - Asheville							
Alkalinity,Bicarbonate (CaCO3)	**17.3**	mg/L	5.0	1		11/12/20 17:22		
Alkalinity, Total as CaCO3	**17.3**	mg/L	5.0	1		11/12/20 17:22		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville							
Chloride	**4.8**	mg/L	1.0	1		11/12/20 18:09	16887-00-6	
Fluoride	ND	mg/L	0.10	1		11/12/20 18:09	16984-48-8	
Sulfate	**3.0**	mg/L	1.0	1		11/12/20 18:09	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Sample: CR+0.2 **Lab ID: 92505233002** Collected: 11/10/20 11:50 Received: 11/10/20 17:57 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte							
Performed by	**Client**			1		11/10/20 11:50		
pH	**7.42**	Std. Units		1		11/10/20 11:50		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA							
Sodium	**5.5**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:03	7440-23-5	
Calcium	**4.1**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:03	7440-70-2	
Magnesium	**2.0**	mg/L	0.050	1	11/11/20 12:44	11/11/20 20:03	7439-95-4	
Potassium	**2.5**	mg/L	0.20	1	11/11/20 12:44	11/15/20 15:53	7440-09-7	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA							
Beryllium	ND	mg/L	0.00050	1	11/11/20 12:31	11/11/20 16:10	7440-41-7	
Cobalt	ND	mg/L	0.0050	1	11/11/20 12:31	11/11/20 16:10	7440-48-4	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA							
Total Dissolved Solids	**45.0**	mg/L	10.0	1		11/11/20 15:48		
2320B Alkalinity	Analytical Method: SM 2320B-2011 Pace Analytical Services - Asheville							
Alkalinity,Bicarbonate (CaCO3)	**20.2**	mg/L	5.0	1		11/12/20 17:43		
Alkalinity, Total as CaCO3	**20.2**	mg/L	5.0	1		11/12/20 17:43		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville							
Chloride	**4.8**	mg/L	1.0	1		11/12/20 18:52	16887-00-6	
Fluoride	ND	mg/L	0.10	1		11/12/20 18:52	16984-48-8	
Sulfate	**3.0**	mg/L	1.0	1		11/12/20 18:52	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Sample: Dewatering Upstream **Lab ID: 92505233003** Collected: 11/10/20 11:55 Received: 11/10/20 17:57 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte							
Performed by	**Client**			1		11/10/20 11:55		
pH	**6.90**	Std. Units		1		11/10/20 11:55		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA							
Sodium	**5.5**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:08	7440-23-5	
Calcium	**4.2**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:08	7440-70-2	
Magnesium	**2.0**	mg/L	0.050	1	11/11/20 12:44	11/11/20 20:08	7439-95-4	
Potassium	**2.6**	mg/L	0.20	1	11/11/20 12:44	11/15/20 15:58	7440-09-7	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA							
Beryllium	ND	mg/L	0.00050	1	11/11/20 12:31	11/11/20 16:44	7440-41-7	
Cobalt	ND	mg/L	0.0050	1	11/11/20 12:31	11/11/20 16:44	7440-48-4	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA							
Total Dissolved Solids	**43.0**	mg/L	10.0	1		11/11/20 15:48		
2320B Alkalinity	Analytical Method: SM 2320B-2011 Pace Analytical Services - Asheville							
Alkalinity,Bicarbonate (CaCO3)	**20.3**	mg/L	5.0	1		11/12/20 17:49		
Alkalinity, Total as CaCO3	**20.3**	mg/L	5.0	1		11/12/20 17:49		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville							
Chloride	**4.9**	mg/L	1.0	1		11/12/20 19:06	16887-00-6	
Fluoride	ND	mg/L	0.10	1		11/12/20 19:06	16984-48-8	
Sulfate	**3.1**	mg/L	1.0	1		11/12/20 19:06	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Sample: Dewatering Downstream **Lab ID: 92505233004** Collected: 11/10/20 12:25 Received: 11/10/20 17:57 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte							
Performed by	**Client**			1		11/10/20 12:25		
pH	**7.03**	Std. Units		1		11/10/20 12:25		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA							
Sodium	**5.6**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:14	7440-23-5	
Calcium	**4.3**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:14	7440-70-2	
Magnesium	**2.0**	mg/L	0.050	1	11/11/20 12:44	11/11/20 20:14	7439-95-4	
Potassium	**2.5**	mg/L	0.20	1	11/11/20 12:44	11/15/20 16:03	7440-09-7	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA							
Beryllium	ND	mg/L	0.00050	1	11/11/20 12:31	11/12/20 09:41	7440-41-7	
Cobalt	ND	mg/L	0.0050	1	11/11/20 12:31	11/11/20 16:50	7440-48-4	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA							
Total Dissolved Solids	**38.0**	mg/L	10.0	1		11/11/20 15:49		
2320B Alkalinity	Analytical Method: SM 2320B-2011 Pace Analytical Services - Asheville							
Alkalinity,Bicarbonate (CaCO3)	**17.7**	mg/L	5.0	1		11/12/20 17:54		
Alkalinity, Total as CaCO3	**17.7**	mg/L	5.0	1		11/12/20 17:54		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville							
Chloride	**4.8**	mg/L	1.0	1		11/12/20 19:21	16887-00-6	
Fluoride	ND	mg/L	0.10	1		11/12/20 19:21	16984-48-8	
Sulfate	**3.0**	mg/L	1.0	1		11/12/20 19:21	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Sample: CR-0.2 **Lab ID: 92505233005** Collected: 11/10/20 12:47 Received: 11/10/20 17:57 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte							
Performed by	**Client**			1		11/10/20 12:47		
pH	**7.82**	Std. Units		1		11/10/20 12:47		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA							
Sodium	**5.9**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:19	7440-23-5	
Calcium	**4.3**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:19	7440-70-2	
Magnesium	**2.1**	mg/L	0.050	1	11/11/20 12:44	11/11/20 20:19	7439-95-4	
Potassium	**2.6**	mg/L	0.20	1	11/11/20 12:44	11/15/20 16:09	7440-09-7	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA							
Beryllium	ND	mg/L	0.00050	1	11/11/20 12:31	11/11/20 16:55	7440-41-7	
Cobalt	ND	mg/L	0.0050	1	11/11/20 12:31	11/11/20 16:55	7440-48-4	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA							
Total Dissolved Solids	**48.0**	mg/L	10.0	1		11/11/20 15:49		
2320B Alkalinity	Analytical Method: SM 2320B-2011 Pace Analytical Services - Asheville							
Alkalinity,Bicarbonate (CaCO3)	**20.7**	mg/L	5.0	1		11/12/20 18:00		
Alkalinity, Total as CaCO3	**20.7**	mg/L	5.0	1		11/12/20 18:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville							
Chloride	**11.2**	mg/L	1.0	1		11/12/20 19:35	16887-00-6	
Fluoride	ND	mg/L	0.10	1		11/12/20 19:35	16984-48-8	
Sulfate	**3.2**	mg/L	1.0	1		11/12/20 19:35	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Sample: CR-0.5 **Lab ID: 92505233006** Collected: 11/10/20 12:55 Received: 11/10/20 17:57 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte							
Performed by	**Client**			1		11/10/20 12:55		
pH	**7.40**	Std. Units		1		11/10/20 12:55		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA							
Sodium	**5.7**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:24	7440-23-5	
Calcium	**4.3**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:24	7440-70-2	
Magnesium	**2.0**	mg/L	0.050	1	11/11/20 12:44	11/11/20 20:24	7439-95-4	
Potassium	**2.5**	mg/L	0.20	1	11/11/20 12:44	11/15/20 16:14	7440-09-7	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA							
Beryllium	ND	mg/L	0.00050	1	11/11/20 12:31	11/11/20 17:29	7440-41-7	
Cobalt	ND	mg/L	0.0050	1	11/11/20 12:31	11/11/20 17:29	7440-48-4	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA							
Total Dissolved Solids	**47.0**	mg/L	10.0	1		11/11/20 15:49		
2320B Alkalinity	Analytical Method: SM 2320B-2011 Pace Analytical Services - Asheville							
Alkalinity,Bicarbonate (CaCO3)	**20.2**	mg/L	5.0	1		11/12/20 18:06		
Alkalinity, Total as CaCO3	**20.2**	mg/L	5.0	1		11/12/20 18:06		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville							
Chloride	**4.9**	mg/L	1.0	1		11/12/20 19:50	16887-00-6	
Fluoride	ND	mg/L	0.10	1		11/12/20 19:50	16984-48-8	
Sulfate	**3.0**	mg/L	1.0	1		11/12/20 19:50	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Sample: CR-0.8 **Lab ID: 92505233007** Collected: 11/10/20 13:15 Received: 11/10/20 17:57 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte							
Performed by	**Client**			1		11/10/20 13:15		
pH	**7.62**	Std. Units		1		11/10/20 13:15		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA							
Sodium	**5.6**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:40	7440-23-5	
Calcium	**4.4**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:40	7440-70-2	
Magnesium	**2.0**	mg/L	0.050	1	11/11/20 12:44	11/11/20 20:40	7439-95-4	
Potassium	**2.5**	mg/L	0.20	1	11/11/20 12:44	11/15/20 16:19	7440-09-7	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA							
Beryllium	ND	mg/L	0.00050	1	11/11/20 12:31	11/11/20 17:35	7440-41-7	
Cobalt	ND	mg/L	0.0050	1	11/11/20 12:31	11/11/20 17:35	7440-48-4	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA							
Total Dissolved Solids	**50.0**	mg/L	10.0	1		11/11/20 15:49		
2320B Alkalinity	Analytical Method: SM 2320B-2011 Pace Analytical Services - Asheville							
Alkalinity,Bicarbonate (CaCO3)	**20.0**	mg/L	5.0	1		11/12/20 18:22		
Alkalinity, Total as CaCO3	**20.0**	mg/L	5.0	1		11/12/20 18:22		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville							
Chloride	**5.1**	mg/L	1.0	1		11/12/20 20:33	16887-00-6	
Fluoride	ND	mg/L	0.10	1		11/12/20 20:33	16984-48-8	
Sulfate	**3.2**	mg/L	1.0	1		11/12/20 20:33	14808-79-8	

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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

QC Batch: 579547
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D ATL
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92505233001, 92505233002, 92505233003, 92505233004, 92505233005, 92505233006, 92505233007

METHOD BLANK: 3065899 Matrix: Water
Associated Lab Samples: 92505233001, 92505233002, 92505233003, 92505233004, 92505233005, 92505233006, 92505233007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	11/11/20 19:22	
Magnesium	mg/L	ND	0.050	11/11/20 19:22	
Potassium	mg/L	ND	0.20	11/11/20 19:22	
Sodium	mg/L	ND	1.0	11/11/20 19:22	

LABORATORY CONTROL SAMPLE: 3065900

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	1.1	105	80-120	
Magnesium	mg/L	1	1.1	106	80-120	
Potassium	mg/L	1	0.98	98	80-120	
Sodium	mg/L	1	1.2	119	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3065901 3065902

Parameter	Units	92505233001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	4.2	1	1	5.4	5.5	120	129	75-125	2	20	M1
Magnesium	mg/L	2.0	1	1	3.1	3.1	111	110	75-125	0	20	
Potassium	mg/L	2.4	1	1	3.9	3.7	143	125	75-125	5	20	
Sodium	mg/L	5.4	1	1	6.6	6.8	120	133	75-125	2	20	M1

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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

QC Batch: 579551
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92505233001, 92505233002, 92505233003, 92505233004, 92505233005, 92505233006, 92505233007

METHOD BLANK: 3065931 Matrix: Water
Associated Lab Samples: 92505233001, 92505233002, 92505233003, 92505233004, 92505233005, 92505233006, 92505233007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Beryllium	mg/L	ND	0.00050	11/11/20 15:52	
Cobalt	mg/L	ND	0.0050	11/11/20 15:52	

LABORATORY CONTROL SAMPLE: 3065932

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Beryllium	mg/L	0.1	0.097	97	80-120	
Cobalt	mg/L	0.1	0.096	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3065933 3065934

Parameter	Units	92505233002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Beryllium	mg/L	ND	0.1	0.1	0.10	0.095	100	94	75-125	5	20	
Cobalt	mg/L	ND	0.1	0.1	0.098	0.098	98	97	75-125	1	20	

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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

QC Batch: 579634 | Analysis Method: SM 2450C-2011
QC Batch Method: SM 2450C-2011 | Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92505233001, 92505233002, 92505233003, 92505233004, 92505233005, 92505233006, 92505233007

METHOD BLANK: 3066400 Matrix: Water
Associated Lab Samples: 92505233001, 92505233002, 92505233003, 92505233004, 92505233005, 92505233006, 92505233007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	11/11/20 15:42	

LABORATORY CONTROL SAMPLE: 3066401

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	397	99	84-108	

SAMPLE DUPLICATE: 3066402

Parameter	Units	92505233001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	43.0	49.0	13	10	D6

SAMPLE DUPLICATE: 3066403

Parameter	Units	92505230001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	684	670	2	10	

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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

QC Batch: 580018
QC Batch Method: SM 2320B-2011
Analysis Method: SM 2320B-2011
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92505233001, 92505233002, 92505233003, 92505233004, 92505233005, 92505233006, 92505233007

METHOD BLANK: 3068228 Matrix: Water
Associated Lab Samples: 92505233001, 92505233002, 92505233003, 92505233004, 92505233005, 92505233006, 92505233007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	11/12/20 16:26	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	5.0	11/12/20 16:26	

LABORATORY CONTROL SAMPLE: 3068229

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	50	53.1	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3068230 3068231

Parameter	Units	92505233001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	17.3	50	50	70.0	70.7	105	107	80-120	1	25	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3068232 3068233

Parameter	Units	92504167001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	452	50	50	482	482	61	60	80-120	0	25	M1

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REPORT OF LABORATORY ANALYSIS

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110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

QC Batch: 579993
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92505233001, 92505233002, 92505233003, 92505233004, 92505233005, 92505233006, 92505233007

METHOD BLANK: 3068011 Matrix: Water
Associated Lab Samples: 92505233001, 92505233002, 92505233003, 92505233004, 92505233005, 92505233006, 92505233007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/12/20 17:40	
Fluoride	mg/L	ND	0.10	11/12/20 17:40	
Sulfate	mg/L	ND	1.0	11/12/20 17:40	

LABORATORY CONTROL SAMPLE: 3068012

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	47.5	95	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	50	47.9	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3068013 3068014

Parameter	Units	92505233001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	4.8	50	50	56.6	55.1	103	100	90-110	3	10	
Fluoride	mg/L	ND	2.5	2.5	2.6	2.5	103	99	90-110	3	10	
Sulfate	mg/L	3.0	50	50	55.0	52.8	104	100	90-110	4	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3068378 3068379

Parameter	Units	92505059003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	18.2	50	50	68.7	68.7	101	101	90-110	0	10	
Fluoride	mg/L	0.23	2.5	2.5	3.0	2.9	111	107	90-110	3	10	M1
Sulfate	mg/L	426	50	50	497	511	142	170	90-110	3	10	M6

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QUALIFIERS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92505233001	**CR+0.4**				
92505233002	**CR+0.2**				
92505233003	**Dewatering Upstream**				
92505233004	**Dewatering Downstream**				
92505233005	**CR-0.2**				
92505233006	**CR-0.5**				
92505233007	**CR-0.8**				
92505233001	**CR+0.4**	EPA 3010A	579547	EPA 6010D	579657
92505233002	**CR+0.2**	EPA 3010A	579547	EPA 6010D	579657
92505233003	**Dewatering Upstream**	EPA 3010A	579547	EPA 6010D	579657
92505233004	**Dewatering Downstream**	EPA 3010A	579547	EPA 6010D	579657
92505233005	**CR-0.2**	EPA 3010A	579547	EPA 6010D	579657
92505233006	**CR-0.5**	EPA 3010A	579547	EPA 6010D	579657
92505233007	**CR-0.8**	EPA 3010A	579547	EPA 6010D	579657
92505233001	**CR+0.4**	EPA 3005A	579551	EPA 6020B	579656
92505233002	**CR+0.2**	EPA 3005A	579551	EPA 6020B	579656
92505233003	**Dewatering Upstream**	EPA 3005A	579551	EPA 6020B	579656
92505233004	**Dewatering Downstream**	EPA 3005A	579551	EPA 6020B	579656
92505233005	**CR-0.2**	EPA 3005A	579551	EPA 6020B	579656
92505233006	**CR-0.5**	EPA 3005A	579551	EPA 6020B	579656
92505233007	**CR-0.8**	EPA 3005A	579551	EPA 6020B	579656
92505233001	**CR+0.4**	SM 2450C-2011	579634		
92505233002	**CR+0.2**	SM 2450C-2011	579634		
92505233003	**Dewatering Upstream**	SM 2450C-2011	579634		
92505233004	**Dewatering Downstream**	SM 2450C-2011	579634		
92505233005	**CR-0.2**	SM 2450C-2011	579634		
92505233006	**CR-0.5**	SM 2450C-2011	579634		
92505233007	**CR-0.8**	SM 2450C-2011	579634		
92505233001	**CR+0.4**	SM 2320B-2011	580018		
92505233002	**CR+0.2**	SM 2320B-2011	580018		
92505233003	**Dewatering Upstream**	SM 2320B-2011	580018		
92505233004	**Dewatering Downstream**	SM 2320B-2011	580018		
92505233005	**CR-0.2**	SM 2320B-2011	580018		
92505233006	**CR-0.5**	SM 2320B-2011	580018		
92505233007	**CR-0.8**	SM 2320B-2011	580018		
92505233001	**CR+0.4**	EPA 300.0 Rev 2.1 1993	579993		
92505233002	**CR+0.2**	EPA 300.0 Rev 2.1 1993	579993		
92505233003	**Dewatering Upstream**	EPA 300.0 Rev 2.1 1993	579993		
92505233004	**Dewatering Downstream**	EPA 300.0 Rev 2.1 1993	579993		
92505233005	**CR-0.2**	EPA 300.0 Rev 2.1 1993	579993		
92505233006	**CR-0.5**	EPA 300.0 Rev 2.1 1993	579993		
92505233007	**CR-0.8**	EPA 300.0 Rev 2.1 1993	579993		

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 : Of

WO# : 92505233

92505233

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	ARCADIS - Atlanta	Report To:	Warren Johnson	Attention:	
Address:	2839 Paces Ferry Rd	Copy To:	Joju Abraham and Ben Hodges	Company Name:	GPC
	Atlanta, GA 30339			Address:	
Email:	warren.johnson@arcadis.com	Purchase Order #:	SCS10382775	Pace Quote:	
Phone:	(770)384-6584 Fax	Project Name:	Plant McDonough/CCR Ash-Pond Closure	Pace Project Manager:	maiya.parks@pacelabs.com,
Requested Due Date:	7-Day TAT	Project #:		Pace Profile #:	12896

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Requested: Alkalinity (Total/BiCarb), Cl	TDS	App IV Metals, Be & Co Only	Residual Chlorine (Y/N)
1	CR+0.4 pH - 7.35	WT		11.10.20	11:40													X	X	X		
2	CR+0.2 pH - 7.42	WT		11.10.20	11:50													X	X	X		
3	DEWATERING UP STREAM pH - 7.46 6.90	WT		11.10.20	11:55													X	X	X		
4	DEWATERING DOWN STREAM pH - 7.03	WT		11.10.20	12:25													X	X	X		
5	CR-0.2 pH - 7.82	WT		11.10.20	12:47													X	X	X		
6	CR-0.5 pH - 7.40	WT		11.10.20	12:55													X	X	X		
7	CR0 0.8 pH - 7.62	WT		11.10.20	13:15													X	X	X		
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Chad Tomlinson	11.10.2020	17:57	Pace	11/10/20	1757	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Tomlinson

SIGNATURE of SAMPLER: Chad Tomlinson DATE Signed: 11-10-20

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

Pace Analytical®	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: October 28, 2020 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.07	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☐ Raleigh ☐ Mechanicsville ☐ Atlanta ☑ Kernersville ☐

Sample Condition Upon Receipt

Client Name: Arcadis Atlanta

Project #: WO#: 92505233

PM: MP Due Date: 11/13/20
CLIENT: GA-ArcadAtl

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

Custody Seal Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☐ No

Date/Initials Person Examining Contents: 11/11/20 DH

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

Biological Tissue Frozen? ☐ Yes ☐ No ☐ N/A

Thermometer: ☐ IR Gun ID: 214 ☑ Wet ☐ Blue ☐ None

Type of Ice:

Cooler Temp: 2.1°C **Correction Factor:** Add/Subtract (°C) 0

Cooler Temp Corrected (°C): 2.1°C

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☐ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: W	☑ Yes	☐ No	☐ N/A	9.
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☐ No	☑ N/A	10.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	11.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: Date/Time:

Project Manager SCURF Review: **Date:**

Project Manager SRF Review: **Date:**

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

November 16, 2020

Kelley Sharpe
ARCADIS - Atlanta
2839 Paces Ferry Rd
STE 900
Atlanta, GA 30339

RE: Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

Dear Kelley Sharpe:

Enclosed are the analytical results for sample(s) received by the laboratory on November 10, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville
- Pace Analytical Services - Charlotte
- Pace Analytical Services - Peachtree Corners, GA

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

Sincerely,

Maiya Parks
maiya.parks@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Joju Abraham, Georgia Power-CCR
Ben Hodges, Georgia Power
Warren Johnson, ARCADIS - Atlanta

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CERTIFICATIONS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

Pace Analytical Services Charlotte
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

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

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SAMPLE SUMMARY

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92505235001	**UT01_US**	Water	11/10/20 14:05	11/10/20 17:57
92505235002	**UT02**	Water	11/10/20 14:20	11/10/20 17:57
92505235003	**UT01_DS**	Water	11/10/20 14:35	11/10/20 17:57

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SAMPLE ANALYTE COUNT

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92505235001	**UT01_US**	EPA 6010D	DRB, KH	4	PASI-GA
		EPA 6020B	CW1	1	PASI-GA
		SM 2450C-2011	ALW	1	PASI-GA
		SM 2320B-2011	KDF1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
92505235002	**UT02**	EPA 6010D	DRB, KH	4	PASI-GA
		EPA 6020B	CW1	1	PASI-GA
		SM 2450C-2011	ALW	1	PASI-GA
		SM 2320B-2011	KDF1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
92505235003	**UT01_DS**	EPA 6010D	DRB, KH	4	PASI-GA
		EPA 6020B	CW1	1	PASI-GA
		SM 2450C-2011	ALW	1	PASI-GA
		SM 2320B-2011	KDF1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A

PASI-A = Pace Analytical Services - Asheville
PASI-C = Pace Analytical Services - Charlotte
PASI-GA = Pace Analytical Services - Peachtree Corners, GA

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ANALYTICAL RESULTS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

Sample: UT01_US **Lab ID: 92505235001** Collected: 11/10/20 14:05 Received: 11/10/20 17:57 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte							
Performed by	**Client**			1		11/10/20 14:05		
pH	**7.30**	Std. Units		1		11/10/20 14:05		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA							
Potassium	**3.6**	mg/L	0.20	1	11/11/20 12:44	11/15/20 16:35	7440-09-7	
Sodium	**14.2**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:45	7440-23-5	
Calcium	**21.3**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:45	7440-70-2	
Magnesium	**4.2**	mg/L	0.050	1	11/11/20 12:44	11/11/20 20:45	7439-95-4	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA							
Molybdenum	ND	mg/L	0.010	1	11/11/20 12:31	11/11/20 17:41	7439-98-7	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA							
Total Dissolved Solids	**132**	mg/L	10.0	1		11/11/20 15:49		
2320B Alkalinity	Analytical Method: SM 2320B-2011 Pace Analytical Services - Asheville							
Alkalinity,Bicarbonate (CaCO3)	**68.8**	mg/L	5.0	1		11/12/20 18:27		
Alkalinity, Total as CaCO3	**68.8**	mg/L	5.0	1		11/12/20 18:27		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville							
Chloride	**12.0**	mg/L	1.0	1		11/12/20 20:48	16887-00-6	
Fluoride	**0.18**	mg/L	0.10	1		11/12/20 20:48	16984-48-8	
Sulfate	**16.1**	mg/L	1.0	1		11/12/20 20:48	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

Sample: UT02 **Lab ID: 92505235002** Collected: 11/10/20 14:20 Received: 11/10/20 17:57 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte							
Performed by	**Client**			1		11/10/20 14:20		
pH	**7.31**	Std. Units		1		11/10/20 14:20		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA							
Sodium	**14.4**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:50	7440-23-5	
Calcium	**21.9**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:50	7440-70-2	
Magnesium	**4.4**	mg/L	0.050	1	11/11/20 12:44	11/11/20 20:50	7439-95-4	
Potassium	**3.8**	mg/L	0.20	1	11/11/20 12:44	11/15/20 16:40	7440-09-7	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA							
Molybdenum	ND	mg/L	0.010	1	11/11/20 12:31	11/11/20 17:46	7439-98-7	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA							
Total Dissolved Solids	**127**	mg/L	10.0	1		11/11/20 15:49		
2320B Alkalinity	Analytical Method: SM 2320B-2011 Pace Analytical Services - Asheville							
Alkalinity,Bicarbonate (CaCO3)	**67.9**	mg/L	5.0	1		11/12/20 18:34		
Alkalinity, Total as CaCO3	**67.9**	mg/L	5.0	1		11/12/20 18:34		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville							
Chloride	**11.7**	mg/L	1.0	1		11/12/20 21:02	16887-00-6	
Fluoride	**0.18**	mg/L	0.10	1		11/12/20 21:02	16984-48-8	
Sulfate	**16.5**	mg/L	1.0	1		11/12/20 21:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

Sample: UT01_DS **Lab ID: 92505235003** Collected: 11/10/20 14:35 Received: 11/10/20 17:57 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte							
Performed by	**Client**			1		11/10/20 14:35		
pH	**7.18**	Std. Units		1		11/10/20 14:35		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA							
Sodium	**13.9**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:55	7440-23-5	
Calcium	**22.3**	mg/L	1.0	1	11/11/20 12:44	11/11/20 20:55	7440-70-2	
Magnesium	**4.8**	mg/L	0.050	1	11/11/20 12:44	11/11/20 20:55	7439-95-4	
Potassium	**3.9**	mg/L	0.20	1	11/11/20 12:44	11/15/20 16:45	7440-09-7	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA							
Molybdenum	ND	mg/L	0.010	1	11/11/20 12:31	11/11/20 17:52	7439-98-7	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA							
Total Dissolved Solids	**145**	mg/L	10.0	1		11/11/20 15:50		
2320B Alkalinity	Analytical Method: SM 2320B-2011 Pace Analytical Services - Asheville							
Alkalinity,Bicarbonate (CaCO3)	**68.8**	mg/L	5.0	1		11/12/20 18:42		
Alkalinity, Total as CaCO3	**68.8**	mg/L	5.0	1		11/12/20 18:42		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville							
Chloride	**11.5**	mg/L	1.0	1		11/12/20 21:17	16887-00-6	
Fluoride	**0.18**	mg/L	0.10	1		11/12/20 21:17	16984-48-8	
Sulfate	**20.5**	mg/L	1.0	1		11/12/20 21:17	14808-79-8	

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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

QC Batch: 579547
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D ATL
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92505235001, 92505235002, 92505235003

METHOD BLANK: 3065899 Matrix: Water
Associated Lab Samples: 92505235001, 92505235002, 92505235003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	11/11/20 19:22	
Magnesium	mg/L	ND	0.050	11/11/20 19:22	
Potassium	mg/L	ND	0.20	11/11/20 19:22	
Sodium	mg/L	ND	1.0	11/11/20 19:22	

LABORATORY CONTROL SAMPLE: 3065900

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	1.1	105	80-120	
Magnesium	mg/L	1	1.1	106	80-120	
Potassium	mg/L	1	0.98	98	80-120	
Sodium	mg/L	1	1.2	119	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3065901 3065902

Parameter	Units	92505233001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	4.2	1	1	5.4	5.5	120	129	75-125	2	20	M1
Magnesium	mg/L	2.0	1	1	3.1	3.1	111	110	75-125	0	20	
Potassium	mg/L	2.4	1	1	3.9	3.7	143	125	75-125	5	20	
Sodium	mg/L	5.4	1	1	6.6	6.8	120	133	75-125	2	20	M1

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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

QC Batch: 579551
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92505235001, 92505235002, 92505235003

METHOD BLANK: 3065931 Matrix: Water
Associated Lab Samples: 92505235001, 92505235002, 92505235003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Molybdenum	mg/L	ND	0.010	11/11/20 15:52	

LABORATORY CONTROL SAMPLE: 3065932

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Molybdenum	mg/L	0.1	0.096	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3065933 3065934

Parameter	Units	92505233002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	101	100	75-125	1	20	

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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

QC Batch: 579634
QC Batch Method: SM 2450C-2011
Analysis Method: SM 2450C-2011
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92505235001, 92505235002, 92505235003

METHOD BLANK: 3066400 Matrix: Water
Associated Lab Samples: 92505235001, 92505235002, 92505235003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	11/11/20 15:42	

LABORATORY CONTROL SAMPLE: 3066401

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	397	99	84-108	

SAMPLE DUPLICATE: 3066402

Parameter	Units	92505233001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	43.0	49.0	13	10	D6

SAMPLE DUPLICATE: 3066403

Parameter	Units	92505230001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	684	670	2	10	

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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

QC Batch: 580018
QC Batch Method: SM 2320B-2011
Analysis Method: SM 2320B-2011
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92505235001, 92505235002, 92505235003

METHOD BLANK: 3068228 Matrix: Water
Associated Lab Samples: 92505235001, 92505235002, 92505235003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	11/12/20 16:26	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	5.0	11/12/20 16:26	

LABORATORY CONTROL SAMPLE: 3068229

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	50	53.1	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3068230 3068231

Parameter	Units	92505233001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	17.3	50	50	70.0	70.7	105	107	80-120	1	25	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3068232 3068233

Parameter	Units	92504167001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	452	50	50	482	482	61	60	80-120	0	25	M1

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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

QC Batch: 579993
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92505235001, 92505235002, 92505235003

METHOD BLANK: 3068011 Matrix: Water
Associated Lab Samples: 92505235001, 92505235002, 92505235003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/12/20 17:40	
Fluoride	mg/L	ND	0.10	11/12/20 17:40	
Sulfate	mg/L	ND	1.0	11/12/20 17:40	

LABORATORY CONTROL SAMPLE: 3068012

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	47.5	95	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	50	47.9	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3068013 3068014

Parameter	Units	92505233001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	4.8	50	50	56.6	55.1	103	100	90-110	3	10	
Fluoride	mg/L	ND	2.5	2.5	2.6	2.5	103	99	90-110	3	10	
Sulfate	mg/L	3.0	50	50	55.0	52.8	104	100	90-110	4	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3068378 3068379

Parameter	Units	92505059003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	18.2	50	50	68.7	68.7	101	101	90-110	0	10	
Fluoride	mg/L	0.23	2.5	2.5	3.0	2.9	111	107	90-110	3	10	M1
Sulfate	mg/L	426	50	50	497	511	142	170	90-110	3	10	M6

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QUALIFIERS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505235

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92505235001	**UT01_US**				
92505235002	**UT02**				
92505235003	**UT01_DS**				
92505235001	**UT01_US**	EPA 3010A	579547	EPA 6010D	579657
92505235002	**UT02**	EPA 3010A	579547	EPA 6010D	579657
92505235003	**UT01_DS**	EPA 3010A	579547	EPA 6010D	579657
92505235001	**UT01_US**	EPA 3005A	579551	EPA 6020B	579656
92505235002	**UT02**	EPA 3005A	579551	EPA 6020B	579656
92505235003	**UT01_DS**	EPA 3005A	579551	EPA 6020B	579656
92505235001	**UT01_US**	SM 2450C-2011	579634		
92505235002	**UT02**	SM 2450C-2011	579634		
92505235003	**UT01_DS**	SM 2450C-2011	579634		
92505235001	**UT01_US**	SM 2320B-2011	580018		
92505235002	**UT02**	SM 2320B-2011	580018		
92505235003	**UT01_DS**	SM 2320B-2011	580018		
92505235001	**UT01_US**	EPA 300.0 Rev 2.1 1993	579993		
92505235002	**UT02**	EPA 300.0 Rev 2.1 1993	579993		
92505235003	**UT01_DS**	EPA 300.0 Rev 2.1 1993	579993		

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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 : Of

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	ARCADIS - Atlanta	Report To:	Warren Johnson	Attention:	
Address:	2839 Paces Ferry Rd	Copy To:	Joju Abraham and Ben Hodges	Company Name:	GPC
	Atlanta, GA 30339			Address:	
Email:	warren.johnson@arcadis.com	Purchase Order #:	SCS10382775	Pace Quote:	
Phone:	(770)384-6584 Fax	Project Name:	Plant McDonough/CCR Ash-Pond Closure	Pace Project Manager:	maiya.parks@pacelabs.co
Requested Due Date:	7-Day TAT	Project #:		Pace Profile #:	12896

Regulatory Agency

WO# : 92505235

92505235

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Alkalinity (Total/BiCarb), Cl	TDS	App III Constituents	Residual Chlorine (Y
1	UT01_US pH - 7.30	WT		11.10.20	14:05														X	X	X	
2	UT02 pH - 7.31	WT		11.10.20	14:20														X	X	X	
3	UT01_DS pH - 7.28	WT		11.10.20	14:35														X	X	X	
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

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

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Requested Analysis - Major Cations, Mo Only	Chad Tomlingson	11.10.2020	17:57	Pace	11/10/20	1757	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Tomlingson

SIGNATURE of SAMPLER: Chad Tomlingson DATE Signed: 11.10.20

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

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: October 28, 2020 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.07	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☐ Raleigh ☐ Mechanicsville ☐ Atlanta ☑ Kernersville ☐

Sample Condition Upon Receipt

Client Name: Arcadis

Project #: WO#: 92505235
PM: MP Due Date: 11/13/20
CLIENT: GA-ArcadAtl

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

Custody Seal Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☐ No

Date/Initials Person Examining Contents: 11/11/2020 CM

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

Biological Tissue Frozen? ☐ Yes ☑ No ☐ N/A

Thermometer: ☐ IR Gun ID: 214

Type of Ice: ☑ Wet ☐ Blue ☐ None

Cooler Temp: 2.1°C **Correction Factor:** Add/Subtract (°C) 0

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 2.1°C

USDA Regulated Soil (☐ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: W				
Headspace in VOA Vials (>S-6mm)?	☐ Yes	☐ No	☑ N/A	10.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	11.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

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

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



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