



REPORT

Assessment of Corrective Measures

Georgia Power Company - Plant McDonough Ash Pond 2 and 3/4

Submitted to:



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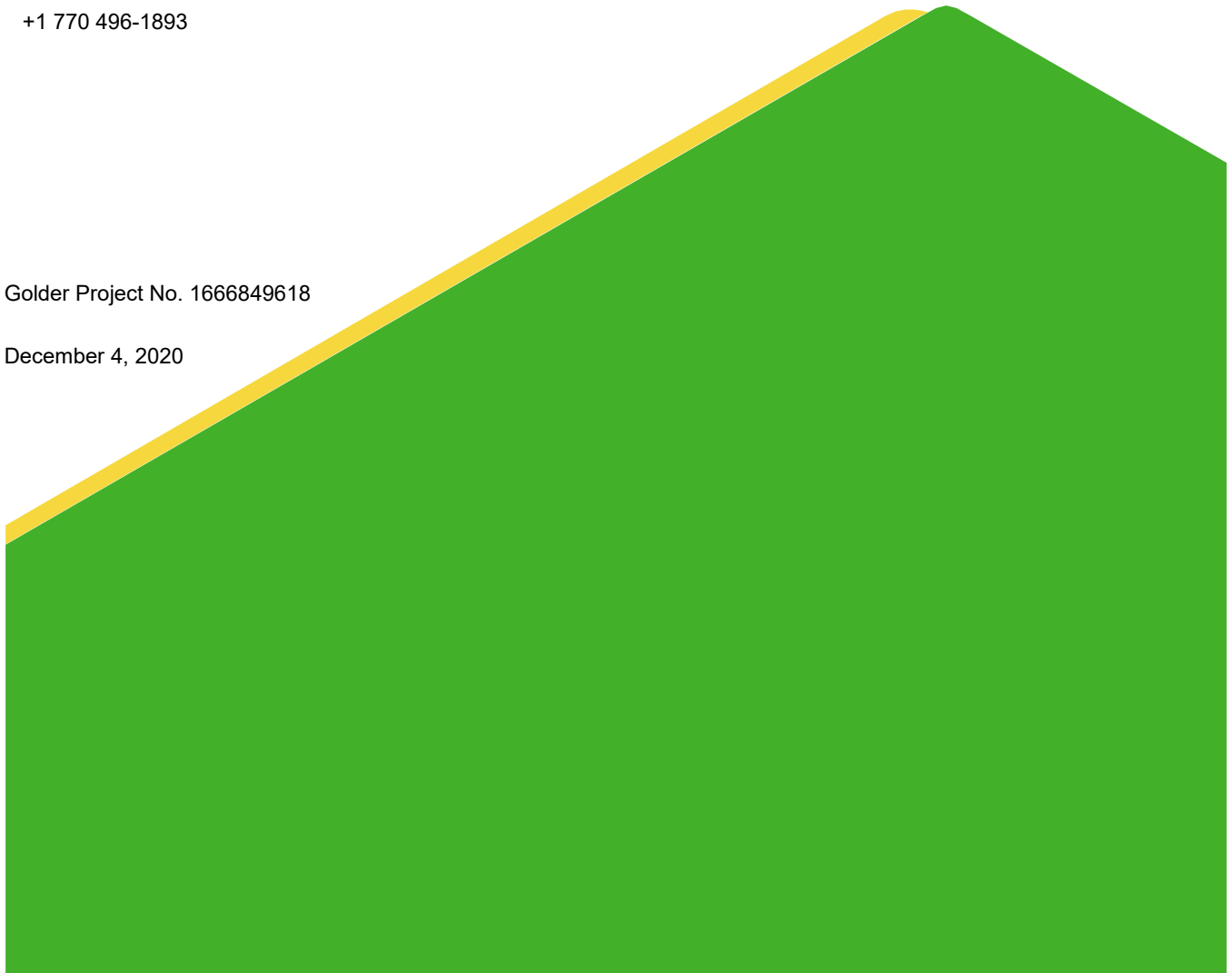


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1.0 INTRODUCTION

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, to evaluate potential groundwater corrective measures at Plant McDonough-Atkinson (Plant McDonough) Ash Pond 2, Ash Pond 3 and Ash Pond 4, collectively referred to as Ash Pond 2 and 3/4 (AP-2 and 3/4, Site). This ACM evaluates potential corrective measures to address statistically significant levels (SSLs) of arsenic, beryllium, cobalt, and lithium in groundwater at AP-2 and 3/4 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, the nature and extent evaluation of target constituents, namely, arsenic, beryllium, cobalt, and lithium, in groundwater is ongoing. Groundwater concentrations of arsenic, beryllium and lithium, are horizontally delineated in onsite groundwater monitoring wells. Due to the proximity of the Chattahoochee River in the downgradient direction of the wells showing SSLs of cobalt (i.e., DGWC-47, and DGWC-48), installation of additional wells to horizontally characterize this area is infeasible. Georgia Power proactively collected surface water samples from the Chattahoochee River downgradient of AP-2 and 3/4 in November 2020. The results from surface water samples collected indicate that cobalt is not detected in the Chattahoochee River. Based on data collected to date, there are no impacts to surface water by constituents with SSLs at AP-2 and 3/4 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, (arsenic, beryllium, cobalt, and lithium) at AP-2 and 3/4. 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-2 and 3/4 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 arsenic, beryllium, cobalt, and lithium detected in groundwater at AP-2 and 3/4 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-2 and 3/4. This process is typically iterative and may be composed of multiple steps to analyze the effectiveness of corrective measures to address the potential migration of CCR constituents in groundwater at AP-2 and 3/4.

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. A notification of intent to initiate closure of the inactive CCR surface impoundment was certified on December 7, 2015 for AP-2 and December 8, 2015 for AP-3 and AP-4 and posted to Georgia Power's website. A revised permit application package for AP-2 and 3/4 was submitted to Georgia EPD on November 20, 2020 and is currently pending approval.

Groundwater monitoring and reporting for AP-2 and 3/4 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) and being done so as a combined multi-unit AP-2 and 3/4.

1.3 Pond Closure

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).

AP-2 has been closed by removal and removal of ash is complete. Closure procedures included excavating all visible ash, over excavating into the subgrade soils, and placement of topsoil and seeding for vegetative cover. AP-2 ash removal was completed in September 2016. A closure certification report was submitted to EPD in March 30, 2020. AP-3 and adjacent AP-4 are currently being consolidated and closed in place as combined unit AP-3/4 in accordance with 257.102(d), no longer receive CCR, and are in the process of obtaining a solid waste permit under the GA Rules for Solid Waste Management 391-3-4-.10(6). CCR in the eastern portion of AP-4 will be relocated to the western portion of AP-4 as well as dry stacked on AP-3. During closure, AP-3 and AP-4 are

being dewatered as required to facilitate consolidation and closure in place. CCR will be graded within the footprint of the impoundment to create a subgrade for the final cover system.

The final cover system for AP-3 and AP-4 was designed in accordance with 40 CFR 257.102(d)(3)(ii) to minimize maintenance after closure of the CCR units. The final cover system was designed to prevent the future impoundment of water, and includes measures to prevent infiltration, sloughing, minimize erosion from wind and water, and settling. The largest area requiring a final cover is approximately 64 acres and covers both AP-3 and AP-4. Closure activities for AP-3/4 are expected to be complete by 2021.

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.

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 included as Figures 4 through 10 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-2 and AP-3/4 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 by the January 14, 2020 and September 21, 2020 Potentiometric Surface Maps shown on Figures 11 and 12, 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 11 and 12 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 11 and 12 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 an upward vertical gradient is generally observed in topographic low areas.

Based on review of the potentiometric contours (Figures 11 and 12), 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 the groundwater quality both upgradient of the units (i.e., background conditions) and passing the waste boundary for combined units AP-2 and 3/4 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-2 and AP-3/4 Operating Record. The certified compliance monitoring well network consists of a total of 23 monitoring wells: 3 upgradient wells and 20 downgradient wells. Detection monitoring well locations for AP-2 and 3/4 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 2. Groundwater is currently monitored in AP-2 and 3/4 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-2 and 3/4 Monitoring Well	Appendix IV Parameter
DGWC-2 ^[1]	Lithium
DGWC-5	Beryllium
DGWC-8	Cobalt
DGWC-9	Arsenic, Beryllium, Cobalt
DGWC-10	Beryllium, Cobalt
DGWC-19	Cobalt
DGWC-20	Cobalt
DGWC-47	Beryllium, Cobalt, Lithium
DGWC-48	Beryllium, Lithium

[1] When considering the Regional Screening Level (RSL), (0.04 mg/L) for lithium following federal rules, lithium concentrations at DGWC-2 would not result in an SSL. Concentrations recorded at DGWC-2 for the 2020 monitoring events are below the reporting limit.

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-101D through B-111D were installed to vertically characterize the groundwater flow and groundwater quality downgradient of AP-2 and 3/4. 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 and cobalt.

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-2 and 3/4 network and delineation wells along with the identified SSLs are shown on isoconcentration contour maps for arsenic, beryllium, cobalt and lithium, on Figures 13 through 20.

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-2, DGWC-5, DGWC-8, DGWC-9, DGWC-10, DWGC-19, DGWC-20, DGWC-47 and DGWC-48. Refer to Table 3.2.1 below for delineation well position relative to the detection well with identified SSLs. Installation of additional wells downgradient of well DGWC-47 and DGWC-48 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-2, DGWC-5, DGWC-8, DGWC-9, DGWC-10, DWGC-19, DGWC-20, DGWC-47 and DGWC-48 resulting in a shallow and deep well pair at each of these locations. Refer to Table 3.2.1 below for delineation well details.

Table 3.2.1: Horizontal and Vertical Delineation Well Summary

Detection Monitoring Well	Constituent	Horizontal Delineation	Vertical Delineation ^[1]
DGWC-2	Lithium	B-3	B-109D (pending)
DGWC-5	Beryllium	B-93	B-111D (pending)
DGWC-8	Cobalt	B-88	B-106D (pending)
DGWC-9	Arsenic Beryllium Cobalt	B-56	B-101D (pending)
DGWC-10	Beryllium Cobalt	B-82	B-102D (pending)
DGWC-19	Cobalt	B-77	B-107D (pending)
DGWC-20	Cobalt	B-77 B-83	B-108D (pending)
DGWC-47	Beryllium Cobalt Lithium	B-77	B-103D (pending)
DGWC-48	Beryllium Cobalt Lithium	B-83	B-104D (pending)

Notes:

[1] Refer to Figure 2 for the proposed locations of the vertical delineation wells; installation is ongoing.

3.2.2 Groundwater Sampling

Pursuant to 40 CFR 257.96, groundwater in the vicinity of AP-2 and 3/4 continues to be monitored in accordance with the assessment monitoring program established for AP-2 and 3/4. 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 Chattahoochee River in the downgradient direction of the wells showing SSLs (i.e., DGWC-47 and DGWC-48), installation of additional wells to horizontally characterize this area is infeasible. Georgia Power proactively collected surface water samples from 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 Chattahoochee River indicate that cobalt 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-2 and 3/4 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 arsenic, beryllium and lithium for AP-2 and 3/4 at Plant McDonough is considered complete. An additional surface water sample, adjacent to B-100 will be collected in January 2021 to complete horizontal delineation of cobalt for AP-2 and 3/4. Vertical delineation of constituents with SSLs is ongoing for AP-2 and 3/4. 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 some potential for naturally derived sources of arsenic, beryllium, cobalt, and lithium.

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. Based on specific information, knowledge of remedial alternatives and site conditions at AP-2 and 3/4, 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 (TreeWall®)
- 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, or 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.

Arsenic, beryllium, cobalt, and to a lesser degree lithium 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.

For example, insoluble (or sparingly soluble) arsenic-containing minerals such as arsenopyrite (FeAsS), realgar (AsS), or orpiment (As_2S_3) can be formed under sulfate-reducing, anaerobic conditions by indigenous microbial populations (Onstott et al., 2011).

These conditions can be induced by injecting electron donors such as emulsified vegetable oil, lactate, or ethanol into arsenic-impacted groundwater together with a sufficient supply of iron and sulfate. Further, arsenic can be sorbed to iron and manganese oxides under aerobic conditions (Dzombak and Morel, 1990; Tonkin et al., 2004).

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-2 and 3/4 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, beryllium, cobalt, and to a lesser degree lithium) 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.

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 arsenic, beryllium, cobalt, and lithium.

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).

While in-situ injections are likely not an effective remedial technology for lithium, it may be considered a potentially viable corrective measure to address arsenic, beryllium, and cobalt in groundwater at AP-2 and 3/4, especially in smaller, more localized areas. In-situ injection would likely need to be combined with an alternative technology to address lithium to provide a complete remedy for AP-2 and 3/4. This 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 and extracted water sent to the existing onsite treatment system.

Groundwater extraction for hydraulic control can often effectively address the variety of inorganic constituents encountered at CCR sites, including arsenic, beryllium, cobalt, and lithium. Extraction technologies are more efficient for conservative species, such as lithium, 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 arsenic, beryllium, cobalt and lithium in groundwater at AP-2 and 3/4 and will be retained for further evaluation.

4.2.3 In-Situ 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, 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-situ stabilization of AP-2 and 3/4 would likely 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 arsenic, beryllium, cobalt and, lithium, 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.”*

As discussed in Section 4.2.1, arsenic, beryllium, cobalt and lithium can undergo sorption to iron and manganese oxides. Also, redox reactions, via abiotic or biotic processes, can transform arsenic into sparingly soluble sulfide minerals.

Lithium does exhibit more conservative behavior, as it is generally non-reactive and tends to move readily with groundwater flow. Thus, the predominant attenuation mechanisms for lithium are likely to be dispersion or dilution from mixing with groundwater. MNA for conservative species such as lithium is most appropriate at sites with active source control, such as source removal for AP-2 and the ongoing installation of the final cover system on 3/4.

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 arsenic, beryllium, cobalt and lithium 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 or bedrock layer.

PRBs may present a viable alternative for in-situ treatment of arsenic, beryllium, and cobalt. 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). PRBs are unlikely to be a viable alternative for in-situ treatment of lithium due to its limited reactivity and highly conservative nature.

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 the AP-2 and 3/4 units, 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 arsenic, beryllium, and cobalt in groundwater at Plant McDonough and will be retained for further evaluation. This technology would likely need to be combined with an alternative technology to address lithium to provide a complete remedy.

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 (Goldmund and Gestler, 2019). Phytoremediation has emerged as a viable alternative to more active 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-2 and 3/4 exhibited SSLs for arsenic, beryllium, cobalt and lithium 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-2 and 3/4, the system would be applied for hydraulic control, but arsenic, beryllium, cobalt and lithium 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 arsenic, beryllium, cobalt and lithium, 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 and 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, barrier walls are viable corrective measures at AP-2 and 3/4, 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

Pond closure at Plant McDonough is ongoing. Removal efforts for AP-2 have been completed and ash consolidation for AP-3/4 is substantially completed and is anticipated to be complete in 2021. Closure activities for AP-3 and AP-4 were initiated in January 2016. During and after pond closure activities, temporary changes in site conditions may occur. The current conceptual model may need to be refined and/or updated as more data are collected and analyzed.

Georgia Power plans to proactively utilize adaptive management for Plant McDonough to support the remedial strategy and to address changes in AP-2 and 3/4 conditions (e.g., successful reduction of constituent concentrations or changing trends) as appropriate. 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
- 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 Gathering

Additional data, data analysis, and site-specific evaluation are necessary to refine the conceptual site model and to further evaluate the feasibility of each corrective measure presented herein such that an appropriate groundwater corrective measure may be selected. Some of the data needed to refine the conceptual site model may be collected concurrent with routine groundwater monitoring events under the assessment monitoring program, or during 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 an 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-2 and 3/4 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-2 and 3/4, data that will be provided 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.

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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 2 and ASH PONDS 3/4 (AP-2, 3/4) 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-2	Downgradient	Overburden/Upper Bedrock	1393958.0	2202119.5	850.88	848.3	49.0	809.6	799.6	10	10/2/2012
DGWC-4	Downgradient	Overburden	1394171.5	2202662.4	814.85	812.1	45.0	777.4	767.4	10	10/3/2012
DGWC-5	Downgradient	Overburden/Upper Bedrock	1394306.3	2202965.1	791.75	788.7	30.0	769.0	759.0	10	10/4/2012
DGWC-8	Downgradient	Overburden	1394322.2	2203882.1	826.38	824.1	49.1	785.4	775.4	10	10/10/2012
DGWC-9	Downgradient	Overburden	1394055.9	2204170.0	824.35	821.8	30.0	802.2	792.2	10	10/10/2012
DGWC-10	Downgradient	Overburden	1393818.3	2204201.1	823.55	820.9	45.4	785.9	775.9	10	10/11/2012
DGWC-11	Downgradient	Overburden	1393547.1	2204166.2	800.57	798.1	49.1	759.3	749.3	10	10/15/2012
DGWC-12	Downgradient	Overburden	1393149.4	2204128.3	773.86	771.2	25.1	756.5	746.5	10	10/15/2012
DGWC-13	Downgradient	Overburden	1392881.1	2204084.6	794.10	791.3	43.8	757.9	747.9	10	11/29/2012
DGWC-14	Downgradient	Overburden/Upper Bedrock	1392574.2	2204013.3	792.40	789.8	34.3	765.9	755.9	10	12/18/2012
DGWC-15	Downgradient	Overburden	1392544.1	2203679.0	824.50	821.5	67.1	764.8	754.8	10	11/29/2012
DGWC-17	Downgradient	Overburden	1392645.6	2203051.0	837.05	834.2	44.5	800.0	790.0	10	1/9/2013
DGWC-19	Downgradient	Overburden	1392342.6	2202601.0	825.46	822.9	39.8	793.5	783.5	10	3/12/2013
DGWC-20	Downgradient	Overburden	1392164.5	2202315.6	822.14	819.8	39.7	790.7	780.7	10	3/5/2013
DGWC-21	Downgradient	Overburden/Upper Bedrock	1392067.5	2202063.5	816.28	813.5	69.0	754.9	744.9	10	10/31/2012
DGWC-22	Downgradient	Upper Bedrock	1392126.3	2201791.9	816.59	813.7	60.0	764.0	754.0	10	10/25/2012
DGWC-23	Downgradient	Upper Bedrock	1392239.7	2201582.0	818.37	815.7	60.1	765.9	755.9	10	10/25/2012
DGWC-42	Downgradient	Overburden	1391327.8	2201870.2	804.68	802.0	50.4	762.1	752.1	10	11/12/2012
DGWC-47	Downgradient	Overburden/Upper Bedrock	1391553.8	2202610.5	797.45	794.3	28.8	775.9	765.9	10	6/23/2016
DGWC-48	Downgradient	Overburden/Upper Bedrock	1391314.6	2202290.2	788.33	785.2	30.0	765.6	755.6	10	6/22/2016

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 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

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 2 and 3/4 Detection Monitoring - August 2020
Georgia Power Company - Plant McDonough
Smyrna, GA

Analyte	UNITS	Well ID													
		DGWA-53	DGWA-70A	DGWA-71	DGWC-2	DGWC-4	DGWC-5	DGWC-8	DGWC-9	DGWC-10	DGWC-11	DGWC-12	DGWC-13	DGWC-14	DGWC-15
		8/13/2020	8/11/2020	8/11/2020	8/11/2020	8/12/2020	8/12/2020	8/12/2020	8/12/2020	8/11/2020	8/11/2020	8/11/2020	8/11/2020	8/12/2020	8/11/2020
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	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	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	Not Sampled	Not Sampled	Not Sampled	Not Sampled
FLUORIDE, TOTAL	mg/L	0.062 J	<0.050	<0.050	<0.050	<0.050	0.13	0.056 J	1.3	1.4	<0.050	<0.050	0.051 J	<0.050	<0.050
pH	S.U.	6.17	5.86	5.96	6.04	5.93	4.84	5.36	4.00	4.92	5.68	5.69	5.68	5.73	6.58
SULFATE, TOTAL	mg/L	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
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	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	<0.00028	<0.00028	<0.00028	<0.00028	0.00073 J
ARSENIC, TOTAL	mg/L	<0.00078	<0.00078	<0.00078	<0.00078	<0.00078	0.0020 J	<0.00078	0.022	0.0028 J	<0.00078	<0.00078	<0.00078	<0.00078	0.0013 J
BARIUM, TOTAL	mg/L	0.046	0.041	0.026	0.022	0.036	0.017	0.034	0.016	0.024	0.064	0.028	0.032	0.061	0.060
BERYLLIUM, TOTAL	mg/L	<0.000046	0.00013 J	0.00011 J	<0.000046	0.00024 J	0.0081	0.0018 J	0.0062	0.0066	0.00011 J	0.00024 J	0.000078 J	<0.000046	0.00022 J
CADMIUM, TOTAL	mg/L	<0.00012	<0.00012	<0.00012	<0.00012	0.00080 J	0.00079 J	0.0021 J	0.00059 J	0.00071 J	<0.00012	0.00038 J	<0.00012	<0.00012	0.00013 J
CHROMIUM, TOTAL	mg/L	<0.00055	0.0016 J	0.00060 J	0.00067 J	<0.00055	<0.00055	0.0028 J	0.00061 J	0.00097 J	0.00061 J	0.00094 J	0.00074 J	<0.00055	0.0048 J
COBALT, TOTAL	mg/L	0.0051	0.0012 J	<0.00038	0.0064	0.0018 J	0.021	0.053	0.22	0.11	0.00055 J	0.0060	<0.00038	<0.00038	0.0024 J
FLUORIDE, TOTAL	mg/L	0.062 J	<0.050	<0.050	<0.050	<0.050	0.13	0.056 J	1.3	1.4	<0.050	<0.050	0.051 J	<0.050	<0.050
LEAD, TOTAL	mg/L	<0.000036	0.00030 J	<0.000036	0.000064 J	<0.000036	0.000063 J	0.00070 J	<0.00018	0.00007 J	0.000053 J	<0.000036	<0.000036	0.000096 J	0.0012 J
LITHIUM, TOTAL	mg/L	0.0085 J	0.0019 J	0.0015 J	0.028 J	0.0031 J	0.0067 J	0.0058 J	0.032	0.0033 J	0.0028 J	0.0011 J	0.0034 J	0.0035 J	0.0089 J
MERCURY, TOTAL	mg/L	<0.000078	<0.000078	<0.000078	<0.000078	<0.000078	0.00017 J	0.000079 J	0.00026	<0.000078	<0.000078	<0.000078	<0.000078	<0.000078	<0.000078
MOLYBDENUM, TOTAL	mg/L	0.012	<0.00069	<0.00069	0.0020 J	0.0057 J	<0.00069	<0.00069	<0.00069	<0.00069	<0.00069	<0.00069	0.012	<0.00069	<0.00069
RADIUM (226 + 228)	pCi/L	1.04	0.812 U	0.965 U	1.37	1.95	1.13	0.721 U	0.819 U	1.45	1.02	0.770 U	1.63	1.17 U	3.58
SELENIUM, TOTAL	mg/L	<0.0016	<0.0016	<0.0016	0.0053 J	<0.0016	0.011	<0.0016	0.11	0.023	<0.0016	0.0019 J	0.0038 J	<0.0016	0.0018 J
THALLIUM, TOTAL	mg/L	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	0.00023 J	<0.00072	0.00037 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
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 size 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.

TABLE 4A
ANALYTICAL DATA SUMMARY
Ash Pond 2 and 3/4 Detection Monitoring - August 2020
Georgia Power Company - Plant McDonough
Smyrna, GA

Analyte	UNITS	Well ID								
		DGWC-17	DGWC-19	DGWC-20	DGWC-21	DGWC-22	DGWC-23	DGWC-42	DGWC-47	DGWC-48
		8/14/2020	8/11/2020	8/13/2020	8/14/2020	8/14/2020	8/13/2020	8/13/2020	8/12/2020	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
CALCIUM, TOTAL	mg/L	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
FLUORIDE, TOTAL	mg/L	0.069 J	0.20	0.90	<0.050	<0.050	0.10	<0.050	0.22	0.47
pH	S.U.	5.01	4.90	4.36	5.66	5.76	6.00	5.34	4.43	4.26
SULFATE, TOTAL	mg/L	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
Appendix IV										
ANTIMONY, TOTAL	mg/L	<0.00028	<0.00028	<0.00028	<0.00028	<0.00028	<0.00028	<0.00028	<0.00028	<0.00028
ARSENIC, TOTAL	mg/L	<0.00078	0.0014 J	0.014	<0.00078	<0.00078	<0.00078	<0.00078	0.00081 J	<0.00078
BARIUM, TOTAL	mg/L	0.046	0.027	0.019	0.027	0.035	0.027	0.027	0.016	0.013
BERYLLIUM, TOTAL	mg/L	0.00064 J	0.0020 J	0.0063	0.00020 J	0.00016 J	0.00041 J	0.0026 J	0.0068	0.0071
CADMIUM, TOTAL	mg/L	0.00029 J	0.00030 J	0.0021 J	0.00054 J	0.00057 J	0.00027 J	0.0013 J	0.0010 J	0.0028
CHROMIUM, TOTAL	mg/L	0.0033 J	0.0024 J	0.0023 J	<0.00055	<0.00055	0.00085 J	0.0021 J	<0.00055	<0.00055
COBALT, TOTAL	mg/L	0.026	0.049	0.73	0.0098	0.0087	0.00048 J	0.025	0.21	0.35
FLUORIDE, TOTAL	mg/L	0.069 J	0.20	0.90	<0.050	<0.050	0.10	<0.050	0.22	0.47
LEAD, TOTAL	mg/L	0.00017 J	0.000053 J	0.00044 J	<0.000036	<0.000036	<0.000036	0.0016 J	0.00040 J	0.00092 J
LITHIUM, TOTAL	mg/L	0.0015 J	0.0031 J	0.012 J	0.0058 J	0.0039 J	0.0052 J	0.011 J	0.054	0.098
MERCURY, TOTAL	mg/L	0.000098 J	<0.000078	<0.000078	<0.000078	<0.000078	0.00014 J	<0.000078	<0.000078	<0.000078
MOLYBDENUM, TOTAL	mg/L	<0.00069	<0.00069	<0.00069	<0.00069	<0.00069	0.013	<0.00069	<0.00069	<0.00069
RADIUM (226 + 228)	pCi/L	0.804 U	0.723 U	1.77	0.602 U	1.83	1.48 U	1.23 U	2.56	1.74
SELENIUM, TOTAL	mg/L	0.0084 J	0.0096 J	0.091	<0.0016	<0.0016	<0.0016	<0.0016	0.0020 J	0.0029 J
THALLIUM, TOTAL	mg/L	0.00019 J	0.00059 J	0.0016 J	<0.00014	<0.00014	<0.00014	<0.00014	0.00018 J	<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 size 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.

TABLE 4B
ANALYTICAL DATA SUMMARY
Ash Pond 2 and 3/4 Assessment Monitoring - August 2020
Georgia Power Company - Plant McDonough
Smyrna, GA

Analyte	UNITS	Well ID						
		B-3	B-56	B-77	B-82	B-83	B-88	B-93
		8/17/2020	8/17/2020	8/13/2020	8/17/2020	8/14/2020	8/17/2020	8/19/2020
Appendix III								
BORON, TOTAL	mg/L	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
CHLORIDE, TOTAL	mg/L	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
FLUORIDE, TOTAL	mg/L	0.077 J	0.19	<0.050	<0.050	0.050 J	<0.050	0.32
pH	S.U.	5.51	4.82	6.14	5.48	5.59	5.76	4.78
SULFATE, TOTAL	mg/L	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
Appendix IV								
ANTIMONY, TOTAL	mg/L	<0.00028	<0.00028	0.00043 J	<0.00028	<0.00028	<0.00028	<0.00028
ARSENIC, TOTAL	mg/L	<0.00078	0.0032 J	0.0020 J	<0.00078	<0.00078	<0.00078	0.0013 J
BARIUM, TOTAL	mg/L	0.026	0.030	0.11	0.024	0.056	0.022	0.018
BERYLLIUM, TOTAL	mg/L	0.0035	0.0013 J	0.00014 J	0.0014 J	0.00070 J	0.0014 J	0.015
CADMIUM, TOTAL	mg/L	0.00077 J	0.00029 J	<0.00012	0.00058 J	0.00037 J	0.0018 J	0.00077 J
CHROMIUM, TOTAL	mg/L	<0.00055	0.0014 J	0.0021 J	<0.00055	0.0050 J	0.0014 J	0.00057 J
COBALT, TOTAL	mg/L	0.061	0.042	0.0011 J	0.0028 J	0.021	0.0031 J	0.068
FLUORIDE, TOTAL	mg/L	0.077 J	0.19	<0.050	<0.050	0.050 J	<0.050	0.32
LEAD, TOTAL	mg/L	<0.000036	0.00022 J	0.0016 J	0.000059 J	0.00092 J	0.00081 J	0.00012 J
LITHIUM, TOTAL	mg/L	0.58	0.0056 J	0.0018 J	0.0016 J	0.0045 J	0.0060 J	0.011 J
MERCURY, TOTAL	mg/L	0.00010 J	0.00016 J	<0.000078	0.00011 J	<0.000078	0.00011 J	0.00026
MOLYBDENUM, TOTAL	mg/L	0.0015 J	<0.00069	<0.00069	<0.00069	<0.00069	0.0012 J	<0.00069
RADIUM (226 + 228)	pCi/L	1.78 U	1.15 U	2.17	0.662 U	0.950 U	2.47	1.19 U
SELENIUM, TOTAL	mg/L	0.0021 J	0.011	<0.0016	<0.0016	0.015	0.0017 J	0.018
THALLIUM, TOTAL	mg/L	<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. 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.

TABLE 4C
ANALYTICAL DATA SUMMARY
Ash Pond 2 and 3/4 Detection Monitoring - September 2020
Georgia Power Company - Plant McDonough
Atlanta, GA

Analyte	UNITS	Well ID													
		DGWA-53	DGWA-70A	DGWA-71	DGWC-2	DGWC-4	DGWC-5	DGWC-8	DGWC-9	DGWC-10	DGWC-11	DGWC-12	DGWC-13	DGWC-14	DGWC-15
		9/22/2020	9/22/2020	9/22/2020	9/23/2020	9/22/2020	9/22/2020	9/23/2020	9/22/2020	9/24/2020	9/22/2020	9/22/2020	9/23/2020	9/22/2020	9/23/2020
Appendix III															
BORON, TOTAL	mg/L	0.056 J	< 0.0052	< 0.0052	0.570	4.300	4.600	1.000	0.780	0.450	1.300	4.200	0.570	0.086 J	1.600
CALCIUM, TOTAL	mg/L	15.500	5.000	5.400	44.400	263.000	99.200	39.300	54.700	53.100	72.700	55.400	39.000	11.600	35.600
CHLORIDE, TOTAL	mg/L	1.600	1.900	5.200	2.100	17.000	10.500	9.100	8.000	5.900	16.000	10.800	12.600	3.200	22.400
FLUORIDE, TOTAL	mg/L	0.099 J	< 0.050	< 0.050	< 0.050	< 0.050	0.12	< 0.050	0.99	0.97	< 0.050	< 0.050	0.058 J	< 0.050	< 0.050
pH	S.U.	6.44	6.01	6.06	5.99	5.88	4.83	5.21	4.00	4.89	5.54	6	5.72	5.7	5.85
SULFATE, TOTAL	mg/L	13.5	< 0.50	7	122	800	423	178	282	204	267	183	134	40	146
TOTAL DISSOLVED SOLIDS	mg/L	142	46	74	267	1400	716	333	461	283	481	338	278	105	317
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	< 0.00028	< 0.00028	0.0011 J	< 0.00028
ARSENIC, TOTAL	mg/L	0.00093 J	< 0.00078	< 0.00078	< 0.00078	< 0.00078	0.0062	< 0.00078	0.04	0.0078	< 0.00078	< 0.00078	< 0.00078	< 0.00078	< 0.00078
BARIUM, TOTAL	mg/L	0.07	0.038	0.024	0.023	0.03	0.017	0.025	0.015	0.021	0.058	0.036	0.03	0.06	0.043
BERYLLIUM, TOTAL	mg/L	< 0.000046	0.000068 J	0.000069 J	< 0.000046	0.00019 J	0.0081	0.0015 J	0.0049	0.0077	0.00015 J	0.00017 J	0.000068 J	< 0.000046	0.000058 J
CADMIUM, TOTAL	mg/L	< 0.00012	< 0.00012	< 0.00012	0.00013 J	0.00065 J	0.00072 J	0.0018 J	0.00059 J	0.00055 J	0.00016 J	0.00017 J	< 0.00012	< 0.00012	< 0.00012
CHROMIUM, TOTAL	mg/L	< 0.00055	0.00089 J	< 0.00055	< 0.00055	< 0.00055	< 0.00055	0.00086 J	< 0.00055	0.0010 J	0.00058 J	< 0.00055	0.00059 J	< 0.00055	< 0.00055
COBALT, TOTAL	mg/L	0.0110	< 0.00038	< 0.00038	0.0062	0.0014 J	0.020	0.04	0.16	0.086	0.00098 J	0.0130	0.00038 J	< 0.00038	0.0018 J
FLUORIDE, TOTAL	mg/L	0.099 J	< 0.050	< 0.050	< 0.050	< 0.050	0.12	< 0.050	0.99	0.97	< 0.050	< 0.050	0.058 J	< 0.050	< 0.050
LEAD, TOTAL	mg/L	< 0.000036	0.000078 J	< 0.000036	0.000094 J	< 0.000036	0.000048 J	0.00011 J	0.00015 J	0.00013 J	0.00010 J	0.00011 J	0.000098 J	0.000044 J	0.000082 J
LITHIUM, TOTAL	mg/L	0.0089 J	< 0.00081	0.0012 J	0.022 J	0.0026 J	0.0065 J	0.0045 J	0.025 J	0.0049 J	0.0019 J	< 0.00081	0.0033 J	0.0038 J	0.0060 J
MERCURY, TOTAL	mg/L	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.000078	0.00020 J	< 0.000078	0.00013 J	0.000081 J	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.000078
MOLYBDENUM, TOTAL	mg/L	0.039	< 0.00069	< 0.00069	0.0022 J	0.0028 J	< 0.00069	< 0.00069	< 0.00069	< 0.00069	< 0.00069	< 0.00069	0.012	< 0.00069	< 0.00069
RADIUM (226 + 228)	pCi/L	2.27	0.450 U	0.216 U	1.96 U	1.43 U	1.40 U	0.800 U	1.15 U	1.39	0.502 U	0.515 U	0.935 U	1.20 U	1.69 U
SELENIUM, TOTAL	mg/L	< 0.0016	< 0.0016	< 0.0016	0.0046 J	< 0.0016	0.04	0.0028 J	0.23	0.074	< 0.0016	< 0.0016	0.0053 J	< 0.0016	< 0.0016
THALLIUM, TOTAL	mg/L	< 0.00014	< 0.00014	< 0.00014	< 0.00014	< 0.00014	< 0.00014	0.00020 J	0.00043 J	0.00034 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
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.

TABLE 4C
ANALYTICAL DATA SUMMARY
Ash Pond 2 and 3/4 Detection Monitoring - September 2020
Georgia Power Company - Plant McDonough
Atlanta, GA

Analyte	UNITS	Well ID								
		DGWC-17	DGWC-19	DGWC-20	DGWC-21	DGWC-22	DGWC-23	DGWC-42	DGWC-47	DGWC-48
		9/24/2020	9/22/2020	9/22/2020	9/24/2020	9/24/2020	9/24/2020	9/22/2020	9/23/2020	9/23/2020
Appendix III										
BORON, TOTAL	mg/L	0.880	2.600	4.900	6.100	4.100	4.600	0.880	0.210	0.650
CALCIUM, TOTAL	mg/L	12.700	103.000	79.200	80.000	62.600	73.700	43.800	22.300	72.200
CHLORIDE, TOTAL	mg/L	22.700	27.600	25.800	20.000	21.500	13.700	22.100	3.300	8.000
FLUORIDE, TOTAL	mg/L	0.056 J	0.084 J	0.15	< 0.050	< 0.050	0.075 J	< 0.050	0.11	0.32
pH	S.U.	5.10	4.91	4.66	5.64	5.69	6.19	5.76	4.4	4.64
SULFATE, TOTAL	mg/L	259	310	408	269	262	215	320	111	313
TOTAL DISSOLVED SOLIDS	mg/L	411	513	724	494	455	456	547	229	575
Appendix IV										
ANTIMONY, TOTAL	mg/L	0.00045 J	0.00036 J	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	0.0012 J	0.00039 J
ARSENIC, TOTAL	mg/L	0.0011 J	0.0017 J	0.0063	< 0.00078	< 0.00078	< 0.00078	< 0.00078	< 0.00078	< 0.00078
BARIUM, TOTAL	mg/L	0.033	0.026	0.011	0.024	0.031	0.02	0.016	0.014	0.013
BERYLLIUM, TOTAL	mg/L	0.00060 J	0.0020 J	0.0027 J	0.00018 J	0.00017 J	0.00045 J	0.0013 J	0.0069	0.0072
CADMIUM, TOTAL	mg/L	0.00024 J	0.00036 J	0.0014 J	0.00073 J	0.00058 J	0.00018 J	0.00070 J	0.0013 J	0.0025
CHROMIUM, TOTAL	mg/L	0.0029 J	0.0030 J	0.0013 J	0.00096 J	< 0.00055	0.00084 J	0.0010 J	< 0.00055	< 0.00055
COBALT, TOTAL	mg/L	0.028	0.051	0.47	0.0100	0.01	< 0.00038	0.014	0.17	0.37
FLUORIDE, TOTAL	mg/L	0.056 J	0.084 J	0.15	< 0.050	< 0.050	0.075 J	< 0.050	0.11	0.32
LEAD, TOTAL	mg/L	0.000079 J	0.00016 J	0.00013 J	0.00014 J	< 0.000036	< 0.000036	0.00074 J	0.00053 J	0.0010 J
LITHIUM, TOTAL	mg/L	0.00096 J	0.0034 J	0.0026 J	0.0062 J	0.0037 J	0.0045 J	0.0099 J	0.046	0.1
MERCURY, TOTAL	mg/L	0.000082 J	< 0.000078	< 0.000078	0.00012 J	< 0.000078	0.00020 J	< 0.000078	< 0.000078	< 0.000078
MOLYBDENUM, TOTAL	mg/L	< 0.00069	< 0.00069	< 0.00069	< 0.00069	< 0.00069	0.0088 J	< 0.00069	< 0.00069	< 0.00069
RADIUM (226 + 228)	pCi/L	0.369 U	0.960 U	1.61 U	0.396 U	1.02 U	1.49	1.03 U	2.30 U	1.51 U
SELENIUM, TOTAL	mg/L	0.015	0.0052 J	0.023	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	0.0016 J
THALLIUM, TOTAL	mg/L	0.00018 J	0.00050 J	0.00055 J	< 0.00014	< 0.00014	< 0.00014	< 0.00014	0.00026 J	< 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.

TABLE 4D
ANALYTICAL DATA SUMMARY
Ash Pond 2 and 3/4 Assessment Monitoring - September 2020
Georgia Power Company - Plant McDonough
Smyrna, GA

Analyte	UNITS	Well ID							
		B-3	B-56	B-77	B-82	B-83	B-88	B-89	B-93
		pending	9/28/2020	9/24/2020	9/28/2020	9/25/2020	9/25/2020	9/23/2020	9/28/2020
Appendix III									
BORON, TOTAL	mg/L	pending	1.40	0.27	1.10	0.35	1.80	0.76	3.00
CALCIUM, TOTAL	mg/L	pending	15.1	17.9	26.5	39.8	79.8	31.4	110.0
CHLORIDE, TOTAL	mg/L	pending	8.7	5.3	9.9	3.0	10.0	9.1	10.8
FLUORIDE, TOTAL	mg/L	pending	0.098 J	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.3
pH	S.U.	pending	4.90	6.46	5.54	5.97	5.75	5.87	4.67
SULFATE, TOTAL	mg/L	pending	211	3	287	107	344	138	419
TOTAL DISSOLVED SOLIDS	mg/L	pending	320	124	454	244	624	260	686
Appendix IV									
ANTIMONY, TOTAL	mg/L	pending	< 0.00028	0.00036 J	< 0.00028	< 0.00028	< 0.00028	< 0.00028	0.0014 J
ARSENIC, TOTAL	mg/L	pending	0.0047 J	0.0025 J	< 0.00078	< 0.00078	< 0.00078	< 0.00078	0.0027 J
BARIUM, TOTAL	mg/L	pending	0.026	0.12	0.023	0.027	0.021	0.028	0.017
BERYLLIUM, TOTAL	mg/L	pending	0.0012 J	0.000053 J	0.0015 J	0.00028 J	0.00063 J	0.000054 J	0.0150
CADMIUM, TOTAL	mg/L	pending	0.00024 J	< 0.00012	0.00066 J	0.00026 J	0.00022 J	0.00057 J	0.00074 J
CHROMIUM, TOTAL	mg/L	pending	< 0.00055	0.00070 J	< 0.00055	0.0051 J	0.00085 J	0.00072 J	0.00066 J
COBALT, TOTAL	mg/L	pending	0.042	0.00040 J	0.005	0.0073	0.0015 J	0.0025 J	0.064
FLUORIDE, TOTAL	mg/L	pending	0.098 J	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.3
LEAD, TOTAL	mg/L	pending	0.000091 J	0.00021 J	0.00011 J	0.000065 J	0.00035 J	< 0.000036	0.00012 J
LITHIUM, TOTAL	mg/L	pending	0.0050 J	0.00095 J	0.0010 J	0.0018 J	0.0016 J	0.0055 J	0.011 J
MERCURY, TOTAL	mg/L	pending	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.000078	0.000080 J	0.00024 J
MOLYBDENUM, TOTAL	mg/L	pending	< 0.00069	< 0.00069	< 0.00069	< 0.00069	0.0012 J	< 0.00069	< 0.00069
RADIUM (226 + 228)	pCi/L	pending	1.39	0.761 U	0.747 U	0.0359 U	0.925 U	0.537 U	1.54
SELENIUM, TOTAL	mg/L	pending	0.029	< 0.0016	0.0021 J	0.019	0.0033 J	< 0.0016	0.036
THALLIUM, TOTAL	mg/L	pending	0.00023 J	< 0.00014	< 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

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.

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



Analyte	Units	SURFACE WATER SAMPLES						
		CR+0.2	CR+0.4	CR-0.2	CR-0.5	CR-0.8	Upstream	Downstream
		11/10/2020	11/10/2020	11/10/2020	11/10/2020	11/10/2020	11/10/2020	11/10/2020
Alkalinity, Total as CaCO ₃	mg/L	20.2	17.3	20.7	20.2	20	20.3	17.7
Alkalinity, Bicarbonate (CaCO ₃)	mg/L	20.2	17.3	20.7	20.2	20	20.3	17.7
Beryllium	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Calcium	mg/L	4.1	4.2	4.3	4.3	4.4	4.2	4.3
Chloride	mg/L	4.8	4.8	11.2	4.9	5.1	4.9	4.8
Cobalt	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoride	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium	mg/L	2	2	2.1	2	2	2	2
pH	SU	7.42	7.35	7.82	7.4	7.62	6.9	7.03
Potassium	mg/L	2.5	2.4	2.6	2.5	2.5	2.6	2.5
Sodium	mg/L	5.5	5.4	5.9	5.7	5.6	5.5	5.6
Sulfate	mg/L	3	3	3.2	3	3.2	3.1	3
Total Dissolved Solids	mg/L	45	43	48	47	50	43	38

Notes:

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

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.

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 As, Be, Co and Li. Under anaerobic conditions, As would be attenuated within sparingly soluble sulfide minerals. Under aerobic conditions, soluble iron or manganese and oxygen (either via air sparging or through a chemical oxidant) would be injected to promote the formation of iron or manganese (oxy-) hydroxides for subsequent sorption of As, Be, Co, and to a lesser degree Li 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 As.	The effective immobilization of As, Be, Co, Li has been shown under aerobic and anaerobic conditions; however, the anaerobic approach (involving the injection of an electron donor together with iron or manganese and sulfur) requires careful study and testing. While aerobic approaches are somewhat less complex, additional aquifer characterization is needed to further evaluate these options.	Reliability dependent on permeability of the subsurface and the amount and distribution of secondary iron or manganese (oxy-) hydroxides (for aerobic approach), or electron donors and soluble iron or manganese and sulfur that can be consistently distributed (for anaerobic approach). Reliable technology if injected materials can be distributed throughout the impacted aquifer. Bench- and/or pilot-scale treatability testing programs are needed to understand the biogeochemical processes that would effectively reduce migration of As, Be, Co, and Li 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 As, Be, Co, and Li.	Pump and treat (P&T) is effective at providing hydraulic control, but it is unclear whether full groundwater remediation can be achieved without further understanding attenuation mechanisms at the Site. At AP-2 & 3/4, 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.
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.

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
Monitored Natural Attenuation (MNA)	<p>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 As, Be, Co, and Li at AP-2 & 3/4, 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 Be and Li, the main attenuation processes include sorption to iron and manganese oxides.</p>	<p>Physical and chemical MNA mechanisms for As, Be, Co, and Li, 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 As, Be, Co, and Li 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 As, Be, Co, and Li at AP-2 & 3/4 will further enhance ongoing MNA.</p>	<p>Reliable as long as the aquifer conditions that result in As, Be, Co, and Li 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 As, Be, Co, and Li, or in combination with a second technology.</p>
Permeable Reactive Barrier (PRB)	<p>Permeable reactive barrier (PRB) technology typically involves the installation of a permeable subsurface wall constructed with reactive media for the removal of constituents as groundwater passes through. Either ZVI-Carbon matrix or solid carbon (bio-barrier) are currently proposed for the concurrent removal of As, Be, Co, and Li. The carbon could be composed of peat moss, mulch or another carbon source. Exact placement of the PRB is contingent on finalization of the nature and extent characterization. PRB walls are typically keyed into the bedrock. While the shallow groundwater in the residuum and fractured bedrock is connected to the groundwater in more competent bedrock, the higher permeability/conductivity of the PRB is not expected to impede groundwater flow. PRBs can also be constructed as “funnel and gate” systems, where a barrier wall directs groundwater to a smaller “treatment gate” filled with reactive media.</p>	<p>PRBs have been shown to effectively address As, Be, Co, and Li in groundwater, but additional testing is required for Be and Li to select the appropriate reactive media. The approach is expected to achieve GWPS for both constituents as impacted groundwater passes through the reactive barrier. Certain redox kinetics may be slow and hence a thicker wall might be needed. Furthermore, additional testing is required to select the appropriate sorptive media mix, especially related to Be and Li.</p>	<p>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.</p>

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-2 & 3/4, 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 As, Be, Co, and Li within the root zone as well as incidental uptake of dissolved As, Be, Co, and Li 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 As, Be, Co, and Li 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-2 & 3/4. 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 seepage control and/or groundwater cutoff at impoundments. Slurry walls are limited by the depth of installation, which is approximately 90 ft bgs. However, site-specific geologic and technology-specific considerations may limit this depth to shallower installations. Within the context of AP-2 & 3/4, 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 As, Be, Co, and Li 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 As, Be, Co, and Li. 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 As, Be, Co, and Li.
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 AP-2 & 3/4 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.
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-2 & 3/4 is predicted to take a number of years to complete, depending on the availability of specialized contractors and equipment.

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

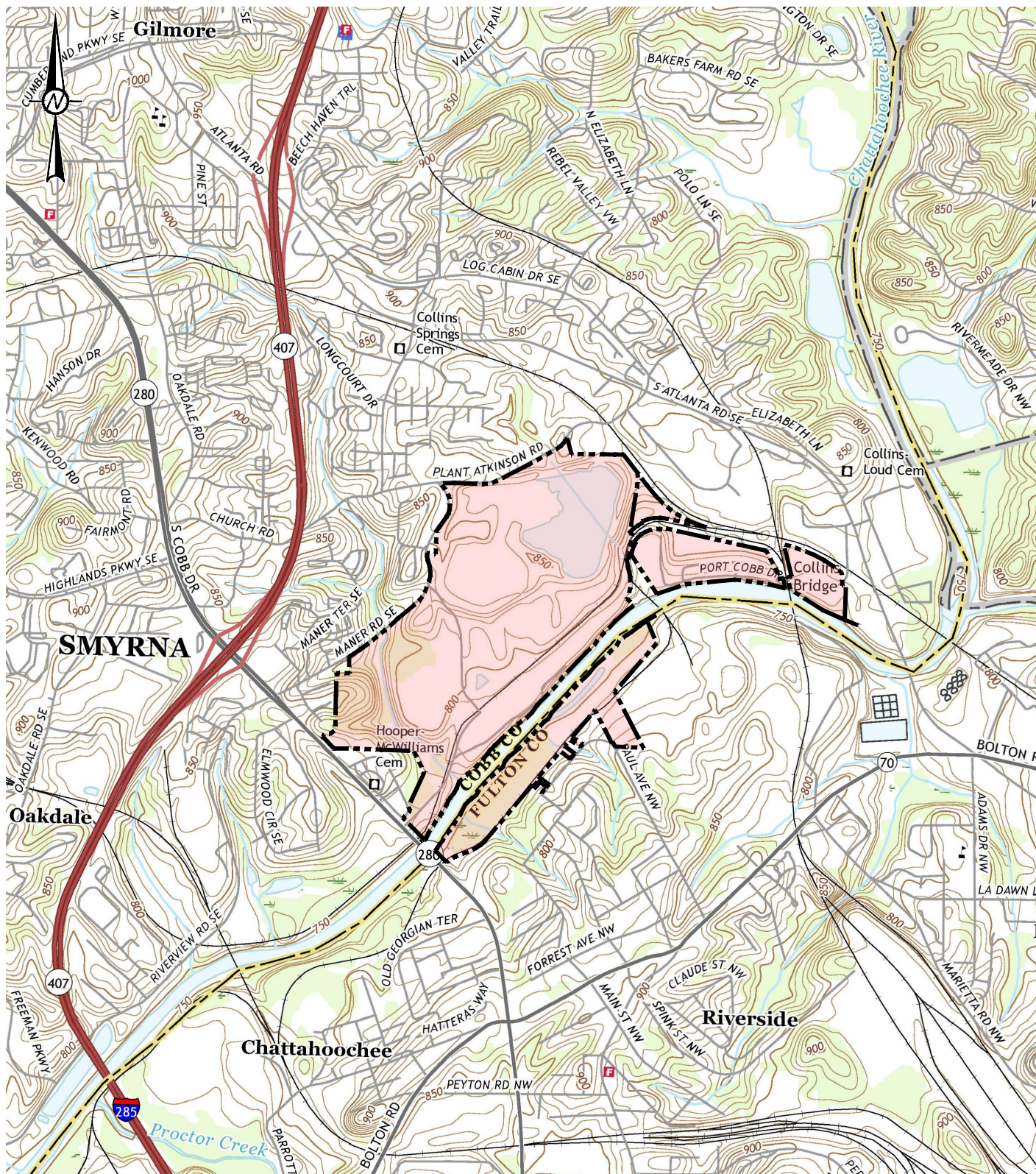
Corrective Measure	REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)		
	Ease of Implementation	Potential Impacts	Time Requirement to Begin/Complete
Permeable Reactive Barrier (PRB)	Moderate to difficult. Trenching would be required to install a mix of reactive materials in the subsurface. Continuous 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 Walls	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)
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
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
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)



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

CLIENT
 GEORGIA POWER COMPANY



CONSULTANT



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

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

PROJECT
 PLANT MCDONOUGH AP-2, AP 3/4
 ASSESSMENT OF CORRECTIVE MEASURES

TITLE
 SITE LOCATION MAP

PROJECT NO.
 166849618

REV.
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FIGURE
 1



LEGEND

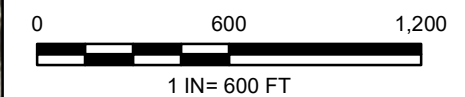
- PROPOSED VERTICAL DELINEATION WELLS
- PIEZOMETER
- ⊕ AP-1 MONITORING WELL
- ⊕ AP-2,3/4 MONITORING WELL
- ⊕ UPGRADIENT WELL
- ⊕ AP-1 SURFACE WATER
- ⊗ AP-2,3/4 SURFACE WATER
- PROPERTY BOUNDARY
- PERMIT BOUNDARY

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE

REFERENCE

1. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, 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



CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH



PROJECT
PLANT MCDONOUGH AP-2,3/4
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
AP-2, 3/4 MONITORING WELL, PIEZOMETER AND SURFACE WATER LOCATION MAP

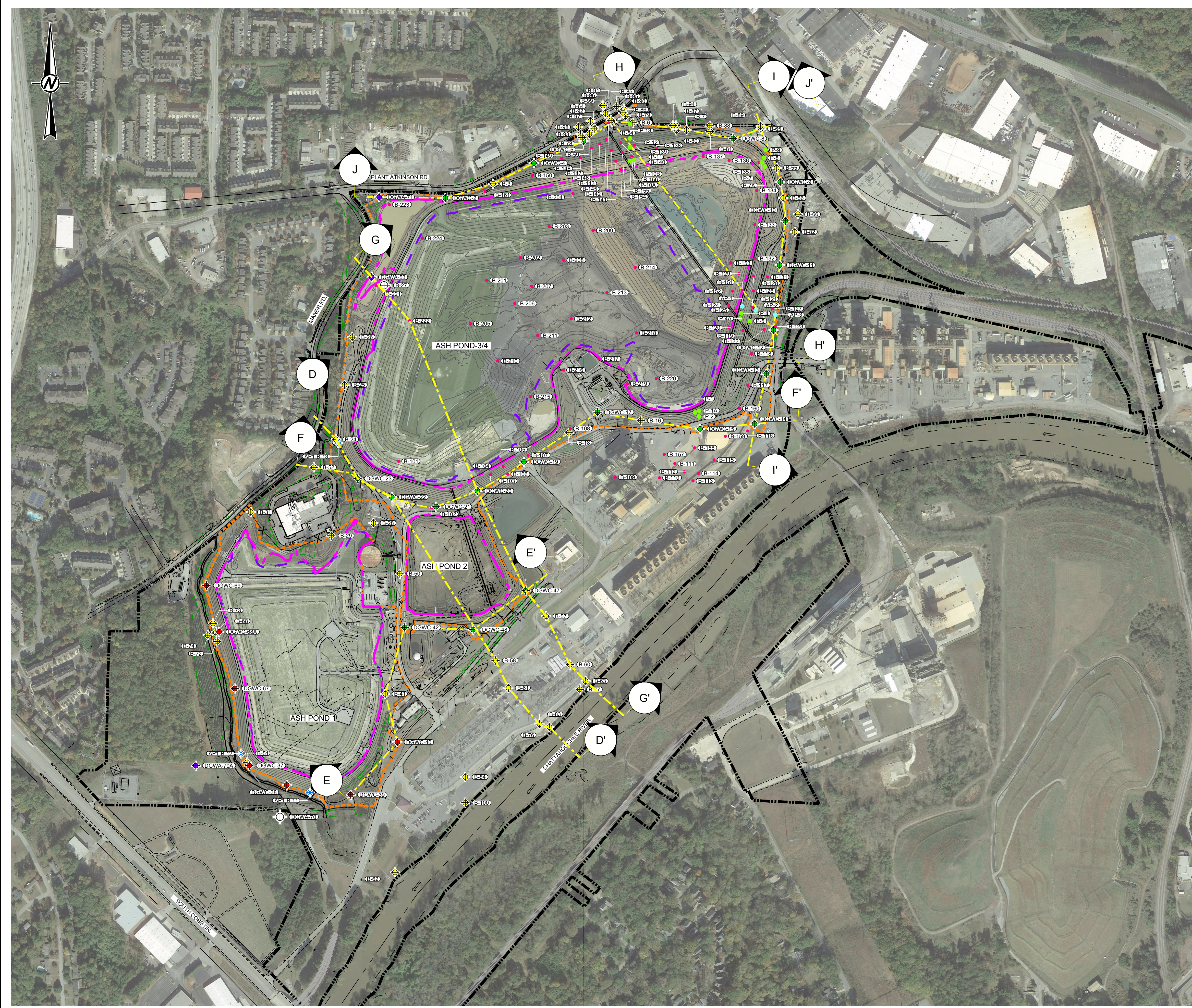
CONSULTANT	YYYY-MM-DD	2020-11-12
	PREPARED	BAS
	DESIGN	DJC
	REVIEW	DLP
	APPROVED	TIR

PROJECT No.
166849618

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FIGURE
2

Path: \\atlantafacstaff\Southern Company\166849616\Plant McDonough Work\Plan for ACP\AP2 and AP3\AP2Production\1 File Name: AIR AND ACPW SECTIONS.dwg



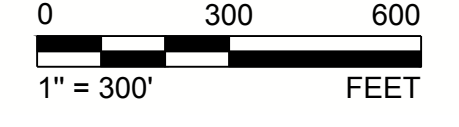
LEGEND

- 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

- EXISTING TOPOGRAPHIC CONTOUR INTERVAL = 1 FOOT.
- 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.
- 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
- APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017).
 - 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.
 - LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT (LAW, 1968).
 - PATTERSON & DEWAR ENGINEERS, PIEZOMETER INSTALLATION REPORT (P&W, 1977).
 - ATLANTA TESTING AND ENGINEERING, GEOTECHNICAL REPORT (AT&E, 1981).
 - SCS PLANT MCDONOUGH HYDROGEOLOGICAL INVESTIGATION (2012 TO 2020).
 - GOLDER ASSOCIATES, PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (2017).
 - SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020.



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

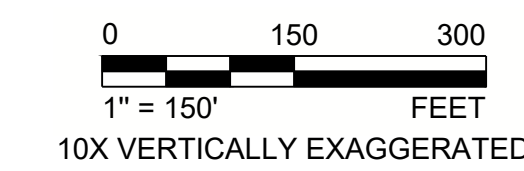
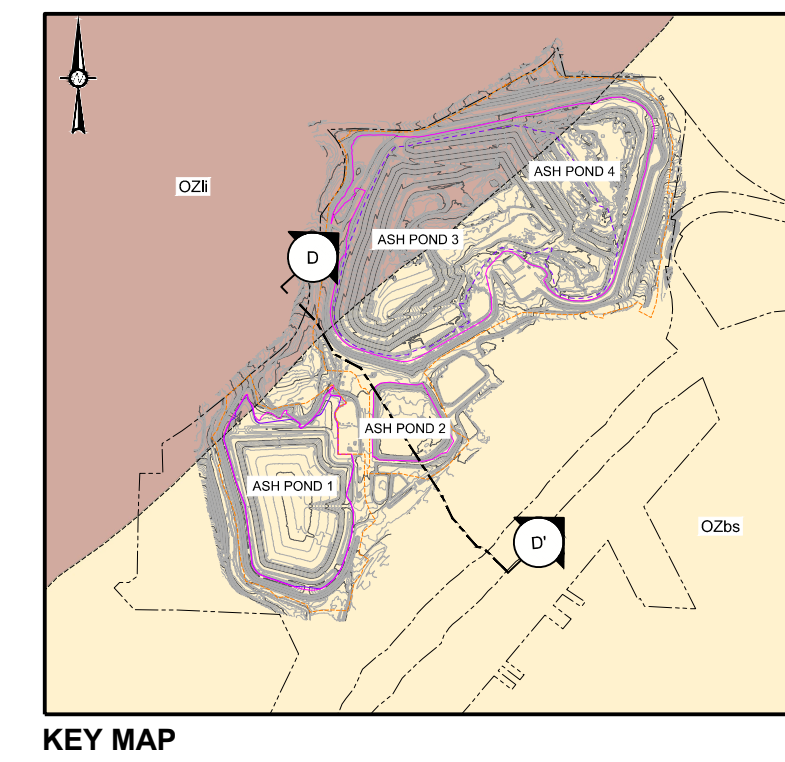
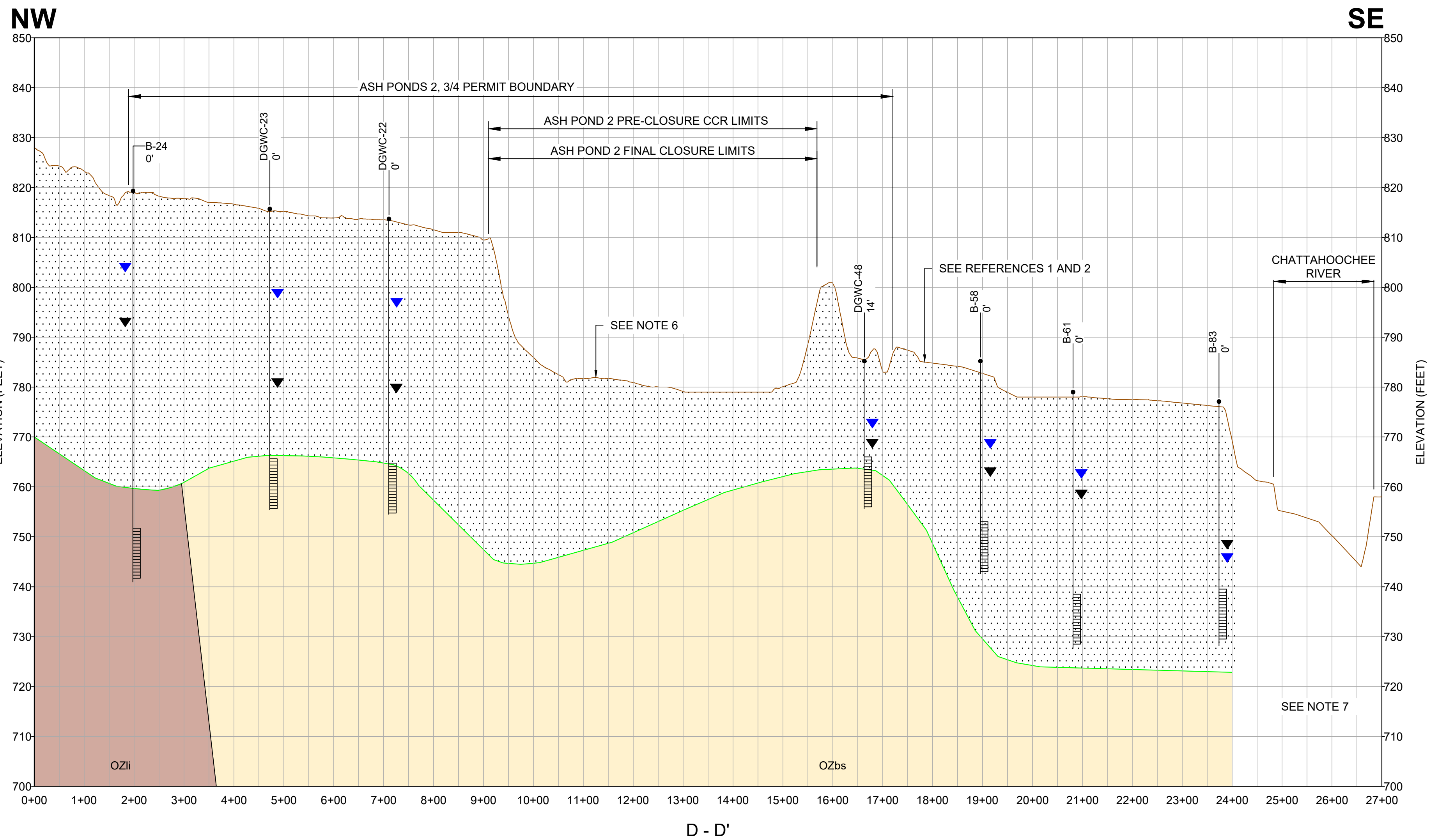
CLIENT
GEORGIA POWER COMPANY

PROJECT
**PLANT MCDONOUGH AP-2, AP 3/4
ASSESSMENT OF CORRECTIVE MEASURES**

TITLE
SUBSURFACE PROFILE ORIENTATION MAP

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

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



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 (OZii)
- 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. ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS FOR AP-2 GENERALLY FOLLOW 1 OR MORE FEET ABOVE POST REMOVAL GRADES.
7. SUBSURFACE GEOLOGIC DELINEATION INFORMATION DOES NOT EXIST IN THESE NON HATCHED AREAS.

△	2020/10/26	ISSUED FOR REV 0	DLP	AVR	LS	TIR
REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RWV

CLIENT
GEORGIA POWER COMPANY

PROJECT
**PLANT MCDONOUGH AP-2, AP 3/4
 ASSESSMENT OF CORRECTIVE MEASURES**

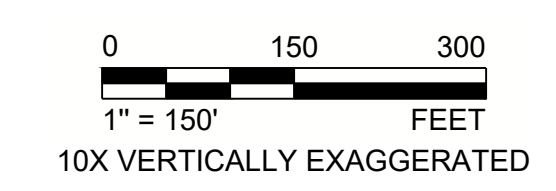
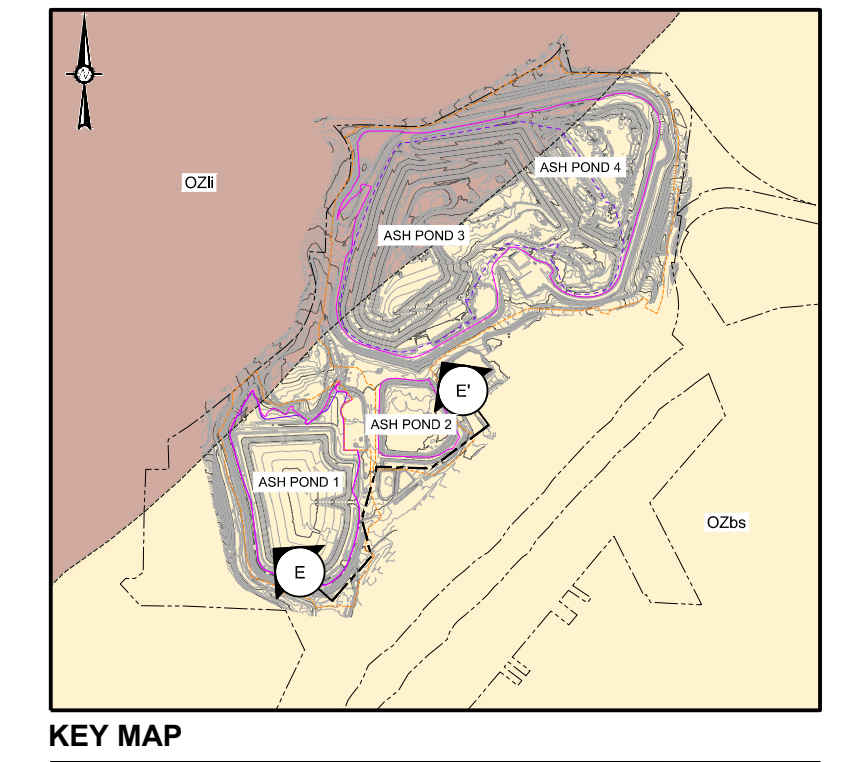
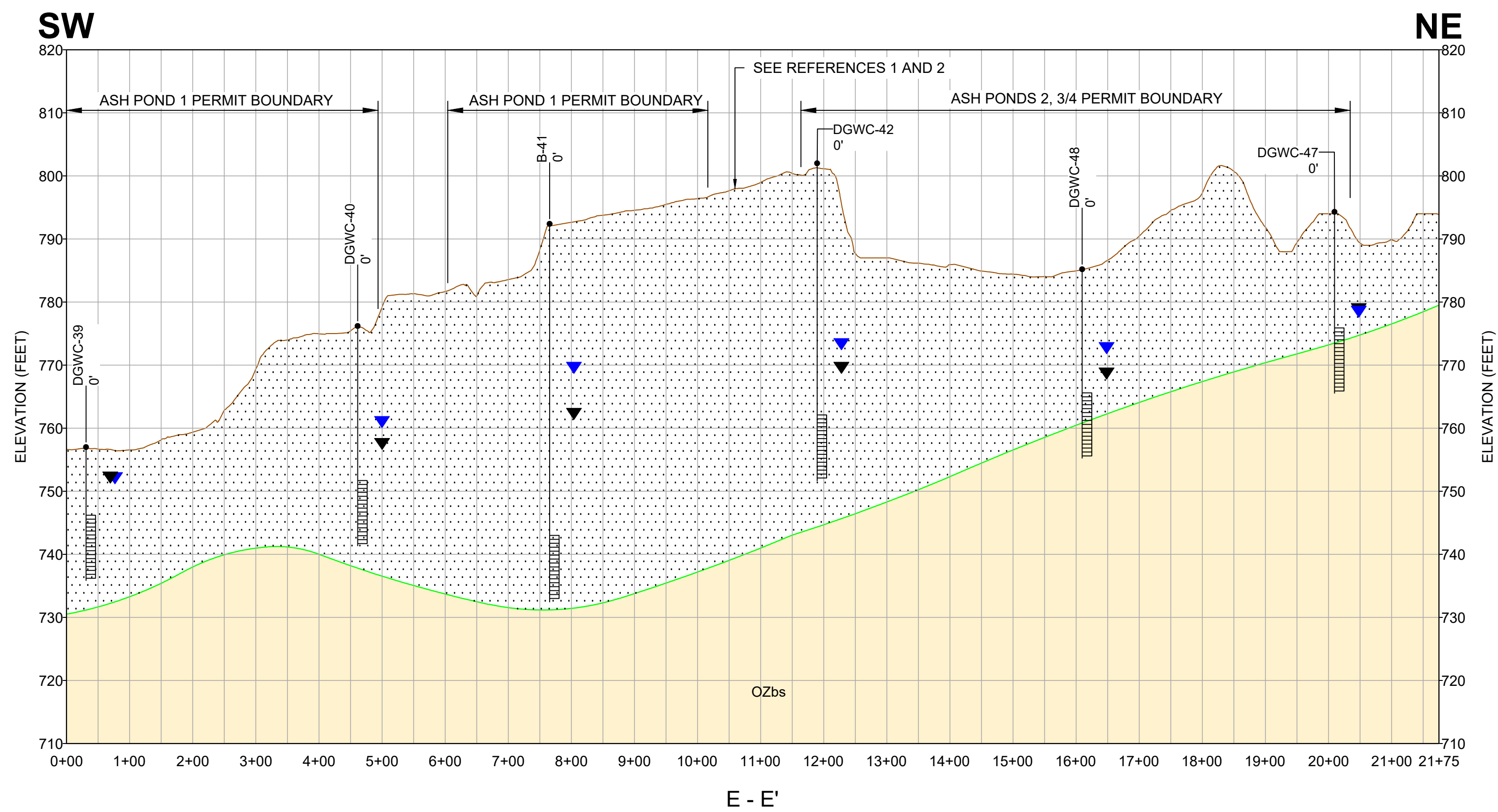
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GEOLOGIC CROSS-SECTION D - D'

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PREPARED	AVR	
CHECKED	LS	
REVIEWED / APPROVED	TIR	

PROJECT NO. 166849618 REV. 0 FIGURE 4

Path: \\atlantafacade\external\company\166849618\plant_mcdonough\work\plan_for_barrage2_and_ap3\ap2\production\1 File Name: Geologic Cross Sections D-E-F-G-H-I.dwg

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



- 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)
 - 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.

△	2020/10/26	ISSUED FOR REV 0	DLP	AVR	LS	TIR
REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RWV

CLIENT
GEORGIA POWER COMPANY

PROJECT
**PLANT MCDONOUGH AP-2, AP 3/4
 ASSESSMENT OF CORRECTIVE MEASURES**

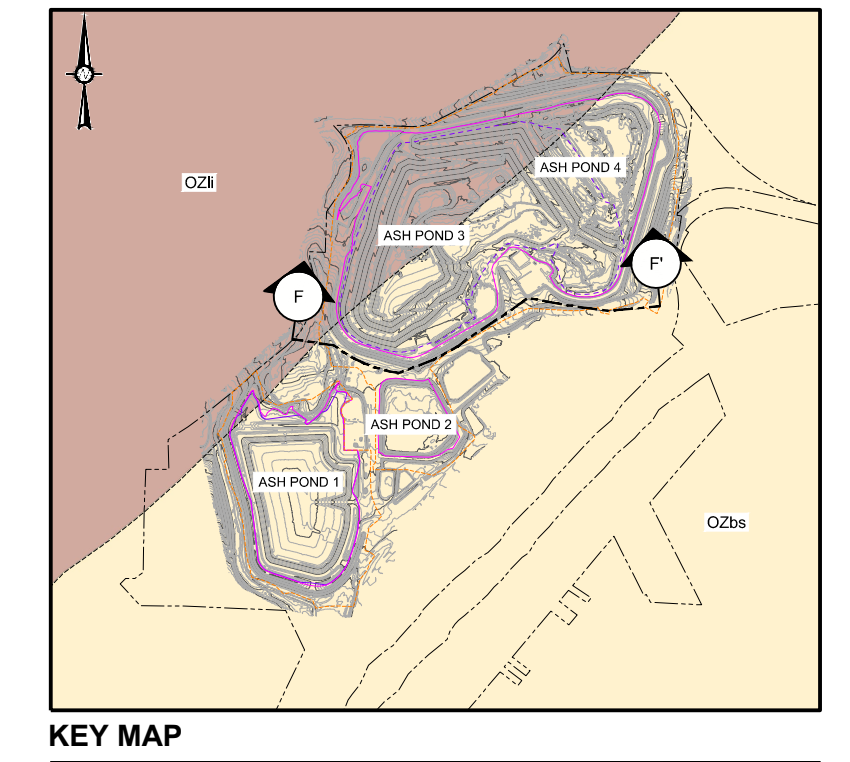
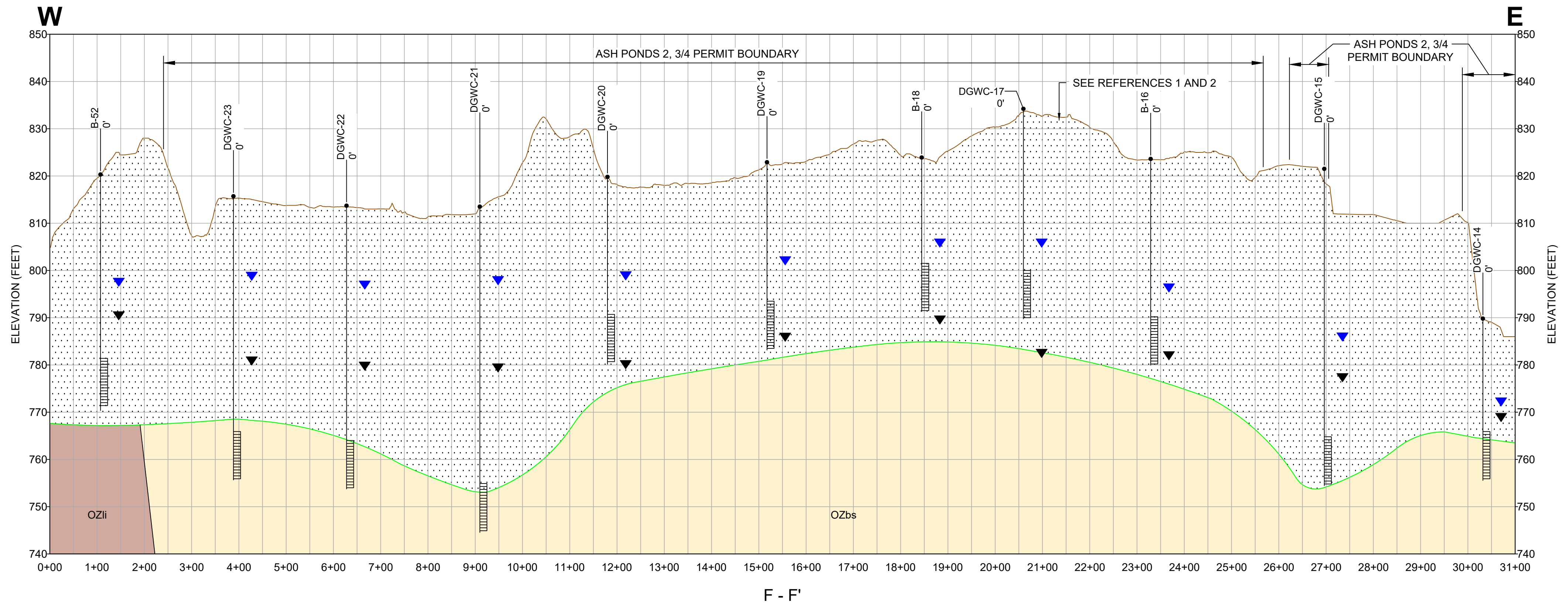
TITLE
GEOLOGIC CROSS-SECTION E - E'

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

PROJECT NO. 166849618 REV. 0 FIGURE 5

Path: \\atlantafacade\share\company\166849618\plant_mcdonough\work\plan_for_barrage_and_ap3\ap3\production\1 File Name: Geologic Cross Sections D-E-E'-G-H.dwg

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



- 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)
- BORING ID**
 — DISTANCE FROM CROSS-SECTION (FEET)
 (- REPRESENTS LEFT OF ALIGNMENT)
 ● GROUND SURFACE ELEVATION
 ▮ SCREEN INTERNAL

- REFERENCES**
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 - GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.
 - SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020.

△	2020/10/26	ISSUED FOR REV 0	DLP	AVR	LS	TIR
REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	R/W

CLIENT
GEORGIA POWER COMPANY

PROJECT
**PLANT MCDONOUGH AP-2, AP 3/4
 ASSESSMENT OF CORRECTIVE MEASURES**

TITLE
GEOLOGIC CROSS-SECTION F - F'

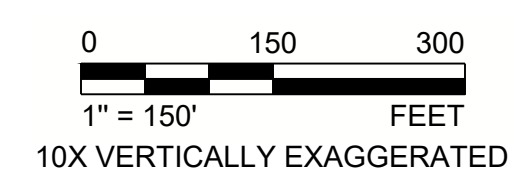
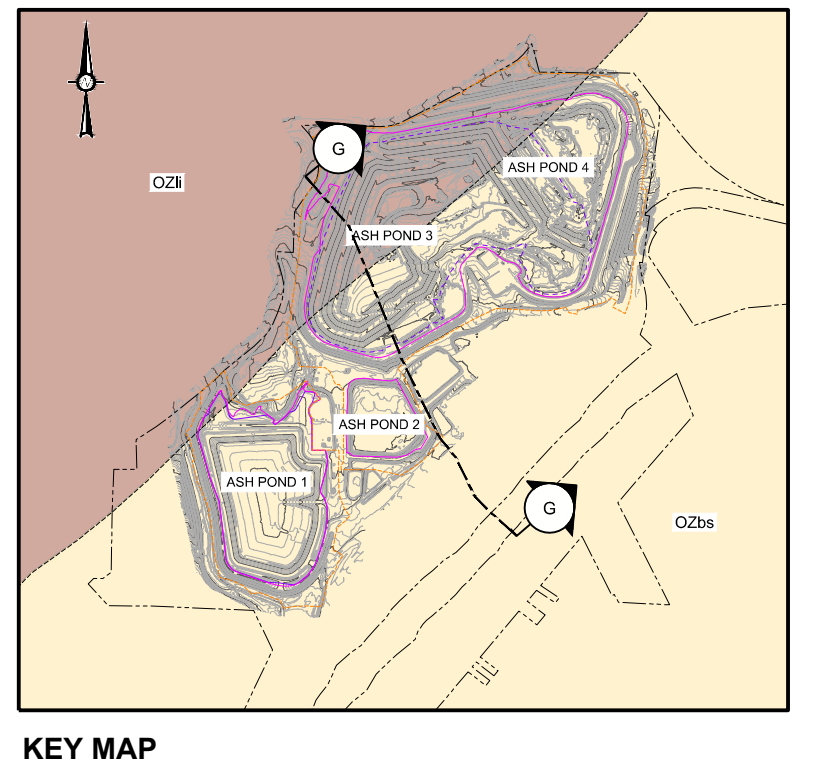
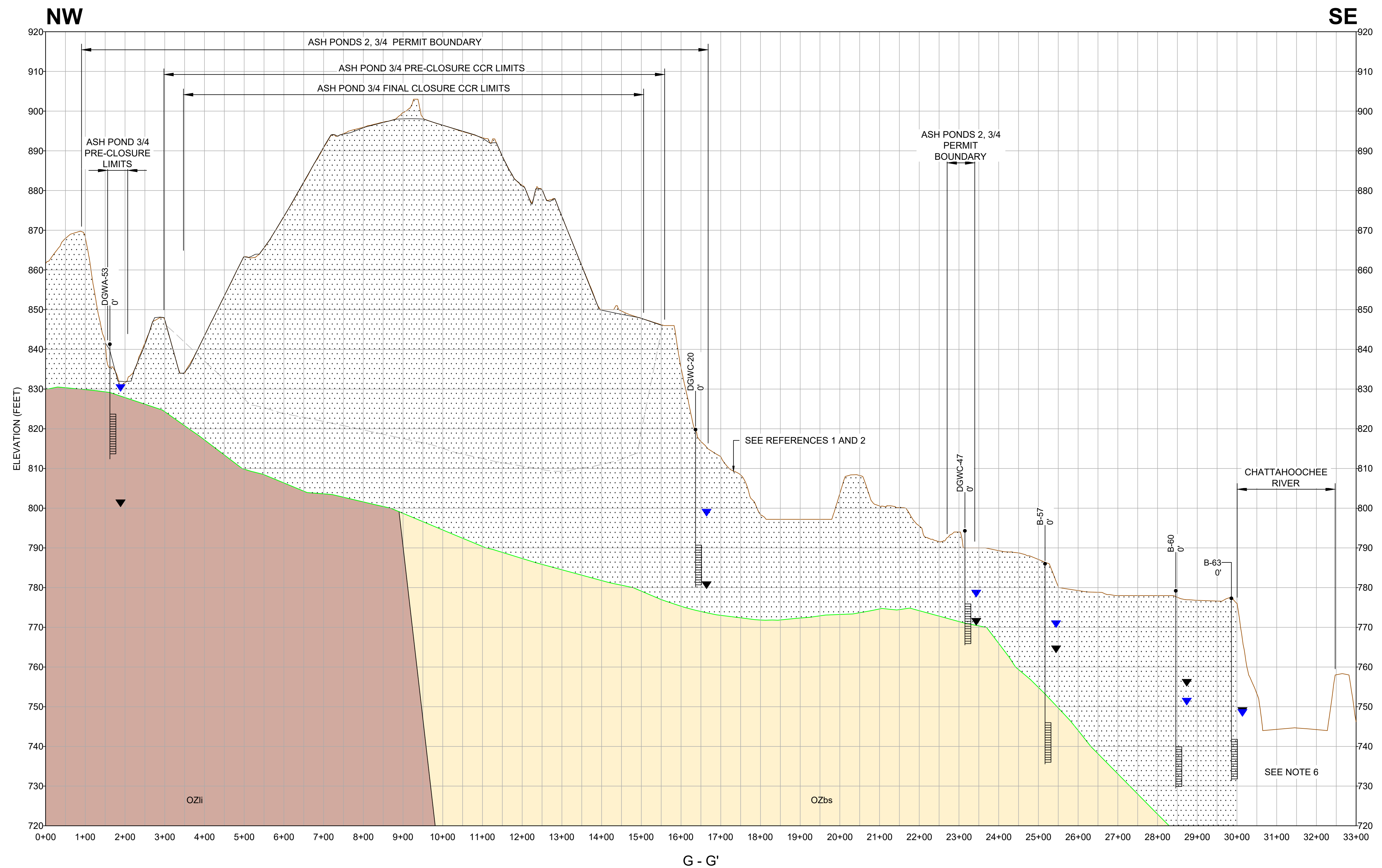
CONSULTANT	YYYY-MM-DD	2020/10/26
DESIGNED	DLP	
PREPARED	AVR	
CHECKED	LS	
REVIEWED / APPROVED	TIR	

PROJECT NO. 166849618 REV. 0 FIGURE 6

Path: \\slartan\slartan\company\166849618\plant_mcdonough\work\plan_for_barrage_and_ap3\ap3\production\1 File Name: Geologic Cross Sections D-E-F-G-H-I.dwg

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

Path: \\slair\as\ad\as\m\company\166849618\plant\mcdonough\work\plan\for\design\and\sp\sp\sp\production\1\file\name\geologic\cross\sections\D-E-F-G-H-I.dwg



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 (OZII)
	BORING ID
	DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
	GROUND SURFACE ELEVATION
	SCREEN INTERNAL

- REFERENCES**
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 - GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.
 - SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020.
 - SUBSURFACE GEOLOGIC DELINEATION INFORMATION DOES NOT EXIST IN THESE NON HATCHED AREAS.

REV	DATE	ISSUED FOR REV 0	DES	CADD	CHK	R/W
	2020/10/26	ISSUED FOR REV 0	DLP	AVR	LS	TIR

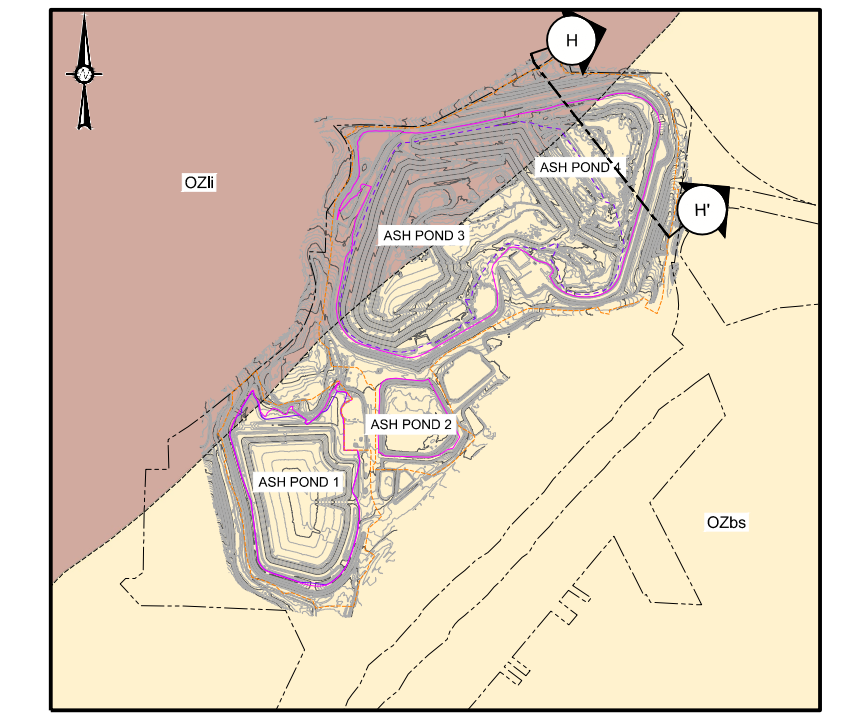
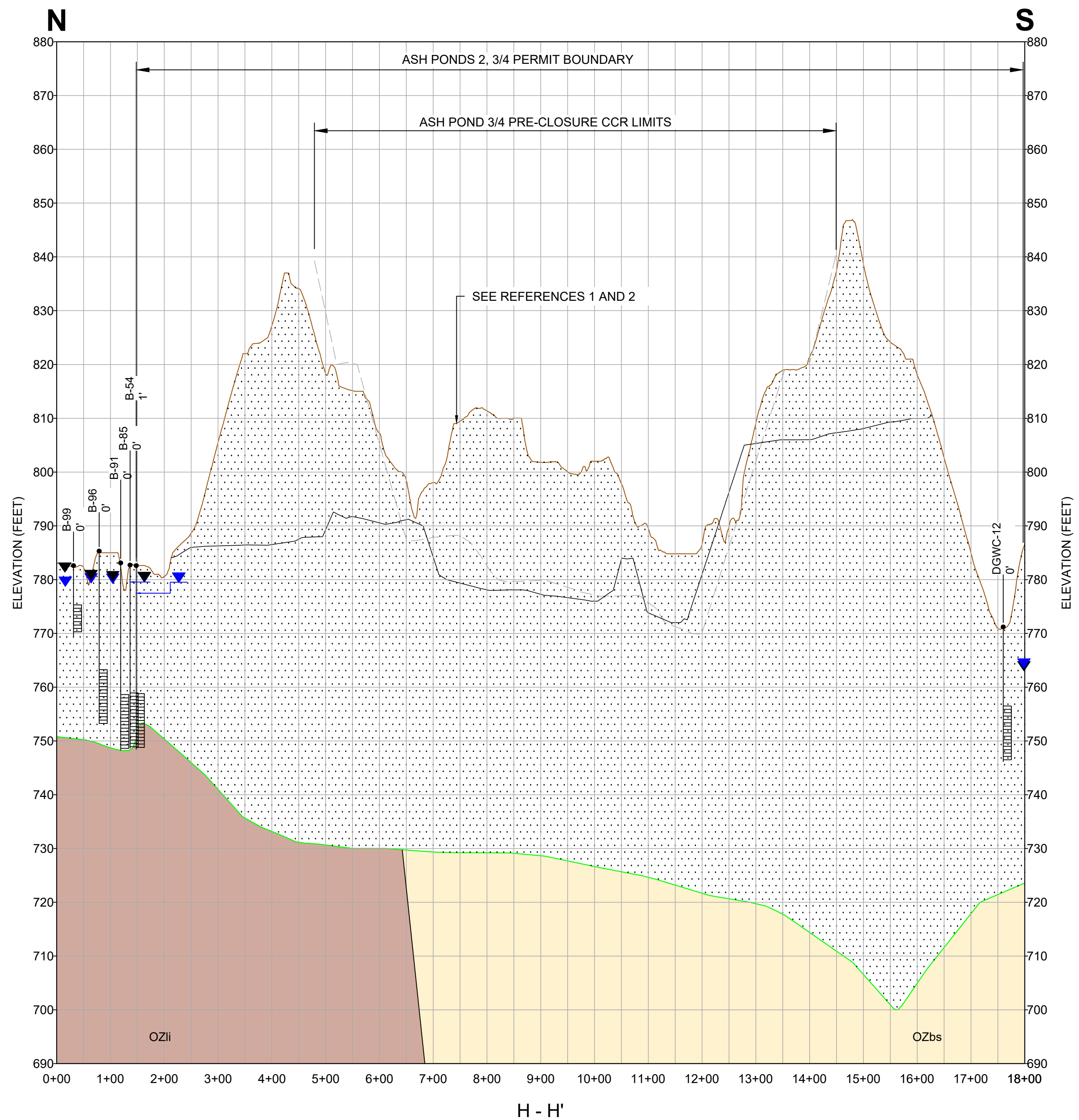
CLIENT
GEORGIA POWER COMPANY

PROJECT
PLANT MCDONOUGH AP-2, AP 3/4
ASSESSMENT OF CORRECTIVE MEASURES

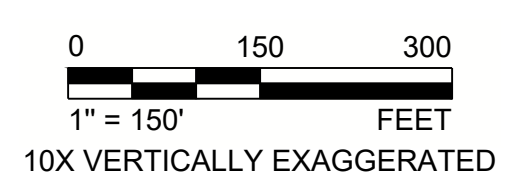
TITLE
GEOLOGIC CROSS-SECTION G - G'

CONSULTANT	DATE	REVISION	APPROVED BY
	YYYY-MM-DD	2020/10/26	
	DESIGNED	DLP	
	PREPARED	AVR	
	CHECKED	LS	
	REVIEWED / APPROVED	TIR	

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D 11



KEY MAP



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)
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- BORING ID
- DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
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- SCREEN INTERNAL

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△	2020/10/26	ISSUED FOR REV 0	DLP	AVR	LS	TIR
REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	R/W

CLIENT
GEORGIA POWER COMPANY

PROJECT
**PLANT MCDONOUGH AP-2, AP 3/4
 ASSESSMENT OF CORRECTIVE MEASURES**

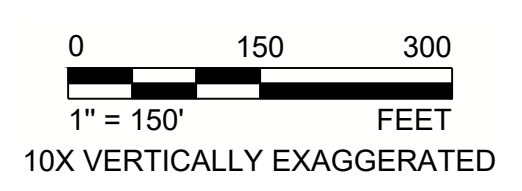
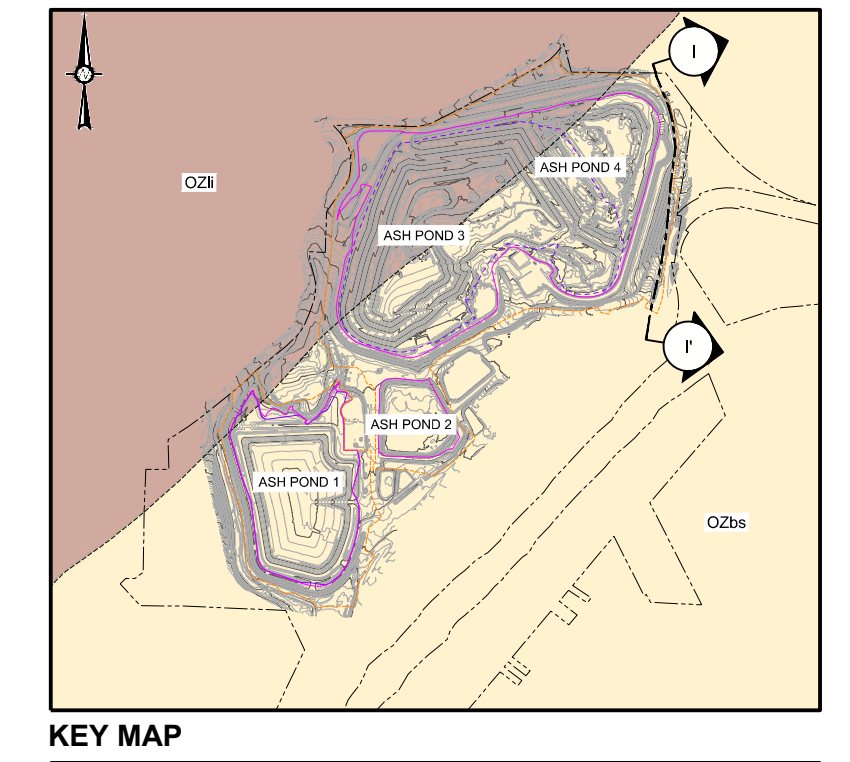
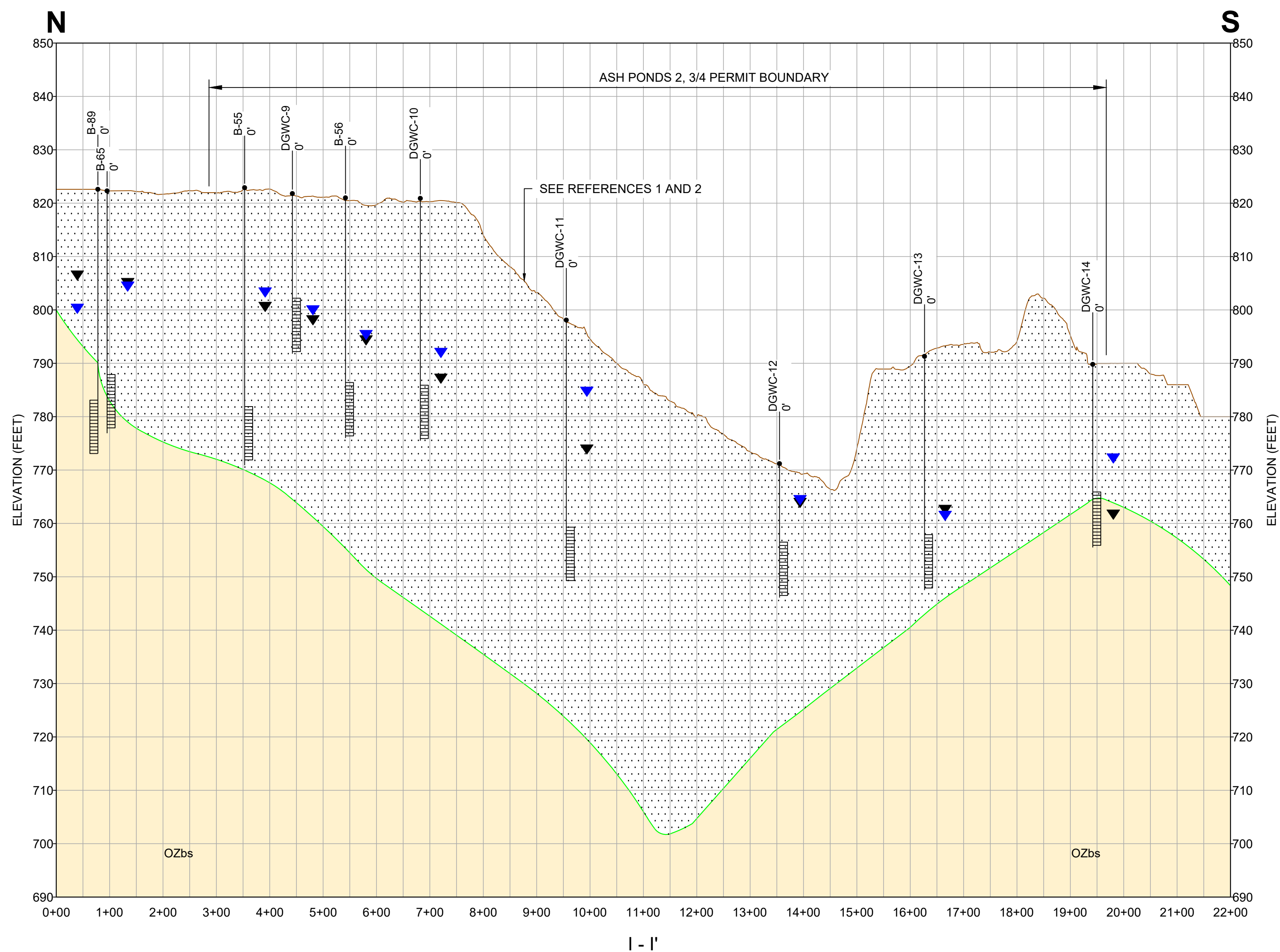
TITLE
GEOLOGIC CROSS-SECTION H - H'

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

PROJECT NO. 166849618 REV. 0 FIGURE 8

Path: \\valiant\cadd\external\company\166849618\plant\mcdonough\work\plan\for\design\and\sp\sp\sp\production\1\file\name\geologic\cross-sections\DE-F-G-H-I.dwg

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



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

- REFERENCES**
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△	2020/10/26	ISSUED FOR REV 0	DLP	AVR	LS	TIR
REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RWV

CLIENT
GEORGIA POWER COMPANY

PROJECT
**PLANT MCDONOUGH AP-2, AP 3/4
 ASSESSMENT OF CORRECTIVE MEASURES**

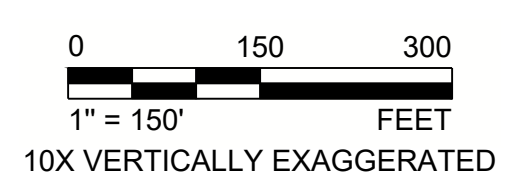
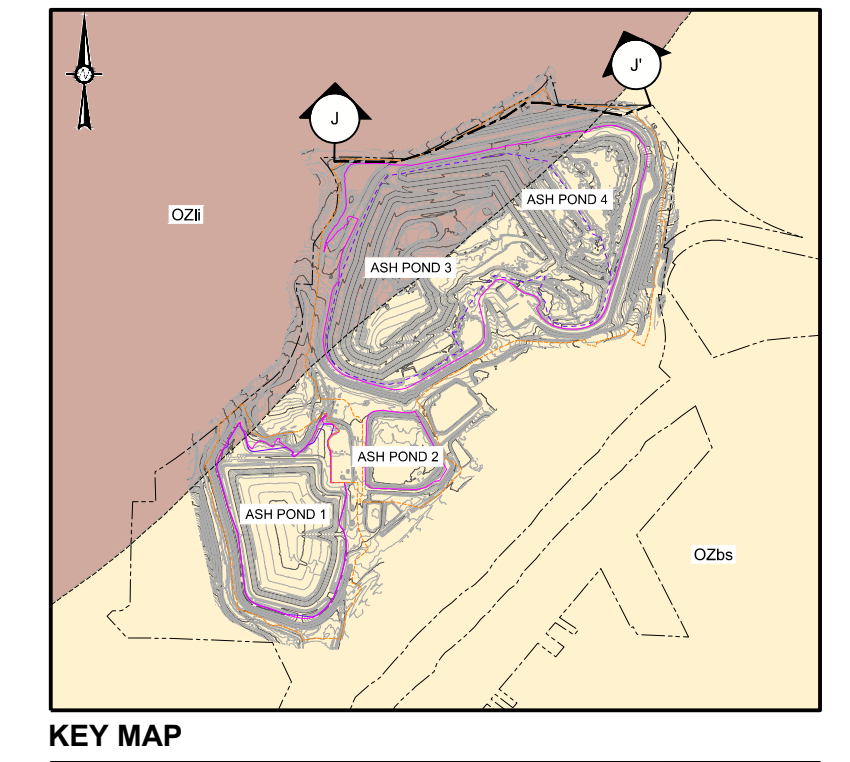
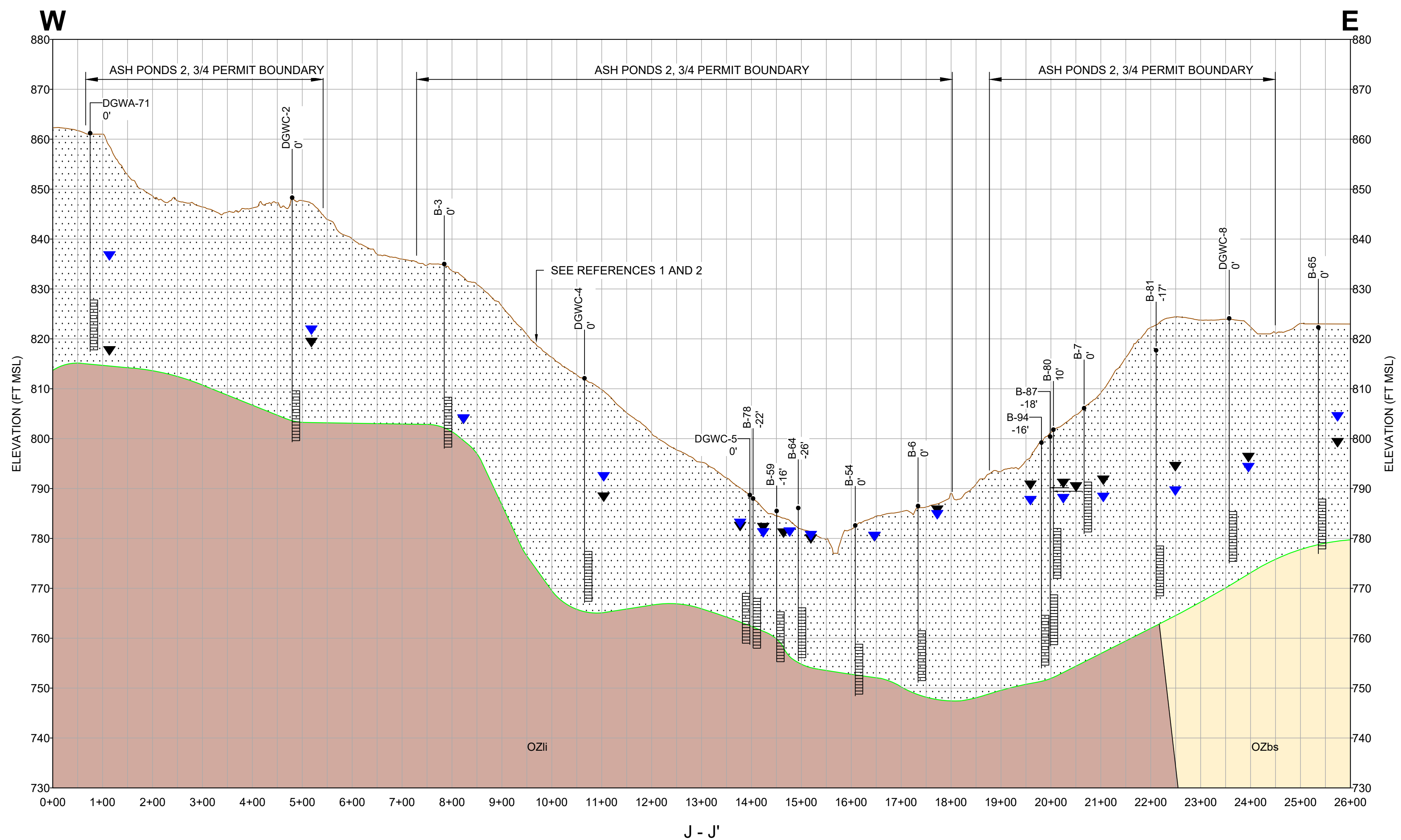
TITLE
GEOLOGIC CROSS-SECTION I - I'

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

PROJECT NO. 166849618 REV. 0 FIGURE 9

Path: \\atlantafacilities\external\company\166849618\plant\mcdonough\work\plan_for\design\2_and\sp\sp\sp\production\1 File Name: Geologic Cross Sections D-E-F-G-H-I.dwg

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



- LEGEND**
- EXISTING GRADE (SEE REFERENCE 1 AND 2)
 - ESTIMATED TOP OF ROCK SURFACE
 - ESTIMATED GROUNDWATER SURFACE (8-10-20)
 - PREDICTED POST-CLOSURE GROUNDWATER SURFACE
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 - BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
- BORING ID**
 - DISTANCE FROM CROSS-SECTION (FEET)
 (- REPRESENTS LEFT OF ALIGNMENT)
- GROUND SURFACE ELEVATION**
- SCREEN INTERNAL**

- REFERENCES**
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REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RWV

CLIENT
GEORGIA POWER COMPANY

PROJECT
**PLANT MCDONOUGH AP-2, AP 3/4
 ASSESSMENT OF CORRECTIVE MEASURES**

TITLE
Geologic cross-section J - J'

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

PROJECT NO. 166849618 REV. 0 FIGURE 10

Path: \\valiant\asdfsouthern\Company\166849618\Plant McDonough\Work\Plan for ACHMAP2 and ACP3-AP4\Production\1 File Name: Geologic Cross Section: D-E-F-G-H-I.dwg

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



LEGEND

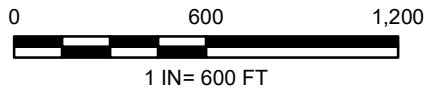
- PIEZOMETER
- AP-1 MONITORING WELL
- AP-2,3/4 MONITORING WELL
- UPGRADIENT WELL
- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (FT-NAVD)

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. GROUNDWATER ELEVATION MEASUREMENTS 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.



CLIENT
SOUTHERN COMPANY SERVICES, INC. PLANT
MCDONOUGH



PROJECT
PLANT MCDONOUGH AP-2 AND 3/4
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
**SITE POTENTIOMETRIC MAP
JANUARY 14, 2020**

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

PROJECT No.
166849618

Rev.
0

FIGURE
11



LEGEND

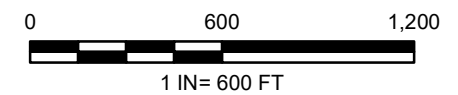
- ⊕ PIEZOMETER
- ⊕ AP-1 MONITORING WELL
- ⊕ AP-2,3/4 MONITORING WELL
- ⊕ UPGRADIENT WELL
- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- ➔ APPROXIMATE GROUNDWATER FLOW DIRECTION
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (FT-NAVD)

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. GROUNDWATER ELEVATION MEASUREMENTS 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.



CLIENT
**SOUTHERN COMPANY SERVICES, INC. PLANT
 MCDONOUGH**



PROJECT
**AP-2 AND 3/4 PLANT MCDONOUGH
 ASSESSMENT OF CORRECTIVE MEASURES**

TITLE
**SITE POTENTIOMETRIC MAP
 SEPTEMBER 21, 2020**

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

PROJECT No.
 166849618

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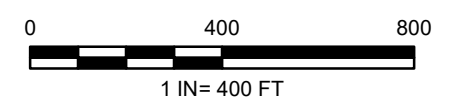
LEGEND

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

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

Analyte	Units	GWPS
Arsenic	mg/L	0.01

- REFERENCE**
1. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AERGRID, 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



CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH



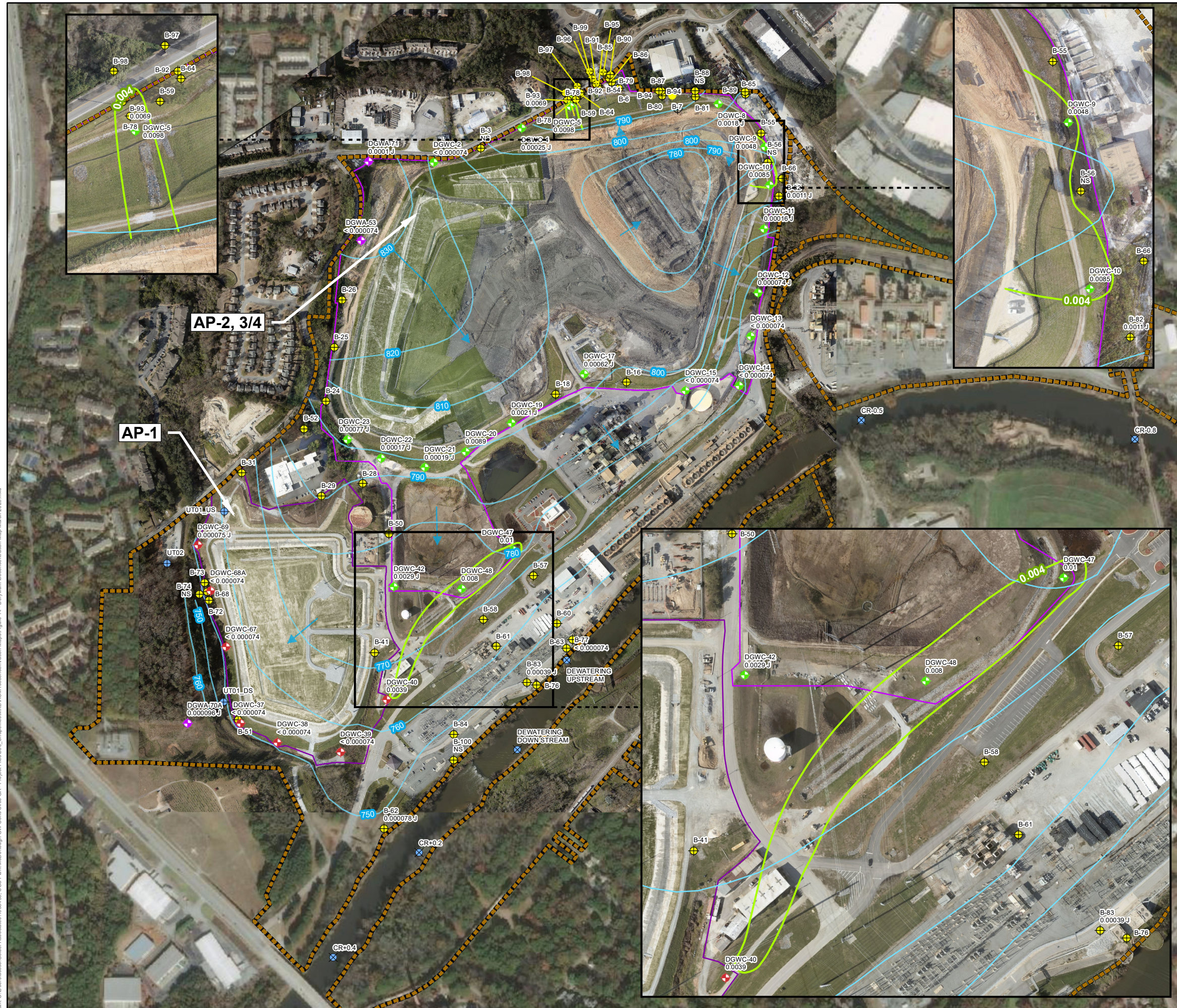
PROJECT
PLANT MCDONOUGH AP-2,3/4
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
**ARSENIC ISOCONCENTRATION CONTOUR MAP
MARCH 2020**

CONSULTANT	YYYY-MM-DD	2020-10-15
	PREPARED	BAS
	DESIGN	BAS
	REVIEW	DLP
	APPROVED	TIR

Path: C:\Users\dsona\Golder Associates\1668496_1668496_SCS Plant McDonough GW Cont Svcs GA - Project Files\1668496_1668496_SCS Plant McDonough GW Cont Svcs GA - Arsenic Isoconcentration Map\Figure 13 - Arsenic Isoconcentration Map\March 2020.mxd

THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN. THE SHEET HAS BEEN MODIFIED FROM ANS/B



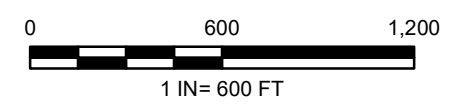
LEGEND

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

- NOTES**
- ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE
 - GROUNDWATER CONCENTRATIONS IN MILLIGRAMS PER LITER (MG/L). GWPS = GROUNDWATER PROTECTION STANDARD.
 - DATA SHOWN REPRESENT THE MARCH SEMI-ANNUAL MONITORING EVENT RESULTS AS WELL AS APPLICABLE DELINEATION WELL DATA.

Analyte	Units	GWPS
Beryllium	mg/L	0.004

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



CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH



PROJECT
PLANT MCDONOUGH AP-2,3/4
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
**BERYLLIUM ISOCONCENTRATION CONTOUR MAP
MARCH 2020**

CONSULTANT	YYYY-MM-DD	2020-06-17
	PREPARED	BAS
	DESIGN	BAS
	REVIEW	DLP
	APPROVED	TIR

Path: C:\Users\jdoles\OneDrive\Documents\166849618_SCS Plant McDonough GW Conts Svcs GA - Project Files\166849618_SCS Plant McDonough GW Conts Svcs GA - Project Files\MXD\ACM Isoconcentration Map\Figure 14 - Beryllium Isoconcentration Map March 2020.mxd

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



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

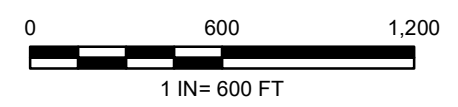
NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE
2. GROUNDWATER 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, AERGRID, 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



CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH



PROJECT
PLANT MCDONOUGH AP-2,3/4
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
**COBALT ISOCONCENTRATION CONTOUR MAP
MARCH 2020**

CONSULTANT	YYYY-MM-DD	2020-06-17
	PREPARED	BAS
	DESIGN	BAS
	REVIEW	DLP
	APPROVED	TIR

PROJECT No.
166849618

Rev.
1

FIGURE
15

Path: C:\Users\jdoles\Documents\166849618_SCS Plant McDonough GW Cont Svcs GA - Project Files\166849618_SCS Plant McDonough GW Cont Svcs GA - Project Files\MXD\ACM Isoconcentration Map\Figure 15 - Cobalt Isoconcentration Map March 2020.mxd

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



LEGEND

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

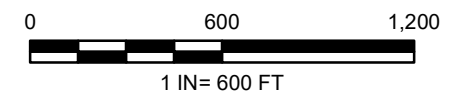
NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE
2. GROUNDWATER CONCENTRATIONS IN MILLIGRAMS PER LITER (MG/L). GWPS = GROUNDWATER PROTECTION STANDARD.
3. DATA SHOWN REPRESENT THE MARCH SEMI-ANNUAL MONITORING EVENT RESULTS AS WELL AS APPLICABLE DELINEATION WELL DATA.
4. WHEN CONSIDERING THE REGIONAL SCREENING LEVEL (RSL), (0.04 MG/L) FOR LITHIUM FOLLOWING FEDERAL RULES, LITHIUM CONCENTRATIONS AT DGWC-2 WOULD NOT RESULT IN AN SSL.

Analyte	Units	FED GWPS	STATE GWPS
Lithium	mg/L	0.04	0.03

REFERENCE

1. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AERGRID, 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



CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH



PROJECT
PLANT MCDONOUGH AP-2,3/4
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
**LITHIUM ISOCONCENTRATION CONTOUR MAP
MARCH 2020**

CONSULTANT	YYYY-MM-DD	2020-06-17
	PREPARED	BAS
	DESIGN	BAS
	REVIEW	DLP
	APPROVED	TIR

PROJECT No.
166849618

Rev.
1

FIGURE
16

Path: C:\Users\jdoon\Documents\166849618_SCS Plant McDonough GW Cont Svcs GA - Project Files\166849618 - Lithium Isoconcentration Map\Figure 16 - Lithium Isoconcentration Map March 2020.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANSIS 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
- 0.01 ARSENIC GWPS ISOCONTOUR (INFERRED)
- PROPERTY BOUNDARY
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (SEPT 20)
- PERMIT BOUNDARY

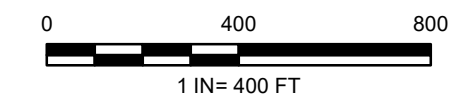
NOTES

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

Analyte	Units	GWPS
Arsenic	mg/L	0.01

REFERENCE

1. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, 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



CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH



PROJECT
PLANT MCDONOUGH AP-2,3/4
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
**ARSENIC ISOCONCENTRATION CONTOUR MAP
SEPTEMBER 2020**

CONSULTANT	YYYY-MM-DD	2020-10-15
	PREPARED	BAS
	DESIGN	BAS
	REVIEW	DLP
	APPROVED	TIR

PROJECT No.
166849618

Rev.
1

FIGURE
17

Path: C:\Users\jdoles\Golder Associates\166849618_SCS Plant McDonough GW Cont Svcs GA - Project Files\8100_SignetFiles\MXD\ACM Isoconcentration Map\Figure 17 - Arsenic Isoconcentration Map September 2020.mxd

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

Path: C:\Users\jdoles\Golder Associates\1668496_SCS Plant McDonough GW Cont Svcs GA - Project Files\1668496_SCS Plant McDonough GW Cont Svcs GA - Beryllium Isoconcentration Map\Figure 18 - Beryllium 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
- 0.004 BERYLLIUM GWPS ISOCONTOUR (INFERRED)
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (SEPT 20)
- PROPERTY BOUNDARY
- PERMIT BOUNDARY

- NOTES**
1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE
 2. GROUNDWATER CONCENTRATIONS IN MILLIGRAMS PER LITER (MG/L). GWPS = GROUNDWATER PROTECTION STANDARD.
 3. DATA SHOWN REPRESENT THE SEPTEMBER SEMI-ANNUAL MONITORING EVENT RESULTS AS WELL AS APPLICABLE DELINEATION WELL DATA.

Analyte	Units	GWPS
Beryllium	mg/L	0.004

- REFERENCE**
1. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, 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-2,3/4
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
**BERYLLIUM ISOCONCENTRATION CONTOUR MAP
SEPTEMBER 2020**

CONSULTANT
GOLDER

YYYY-MM-DD	2020-06-17
PREPARED	BAS
DESIGN	BAS
REVIEW	DLP
APPROVED	TIR

PROJECT No.
166849618

Rev.
1

FIGURE
18

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



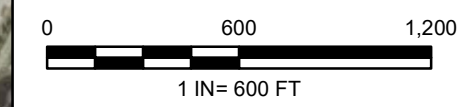
LEGEND

- 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)
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (SEPT 20)
- PROPERTY BOUNDARY
- PERMIT BOUNDARY

- NOTES**
- ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE
 - GROUNDWATER CONCENTRATIONS IN MILLIGRAMS PER LITER (MG/L). GWPS = GROUNDWATER PROTECTION STANDARD. RSL = (FEDERAL REGIONAL SCREENING LEVEL)
 - DATA SHOWN REPRESENT THE SEPTEMBER SEMI-ANNUAL MONITORING EVENT RESULTS AS WELL AS APPLICABLE DELINEATION WELL DATA.
 - 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**
- SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AERGRID, IGN, AND THE GIS USER COMMUNITY
 - COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).
 - MONITORING WELL/PIEZOMETER LOCATIONS SURVEYED BY METRO ENGINEERING



CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH



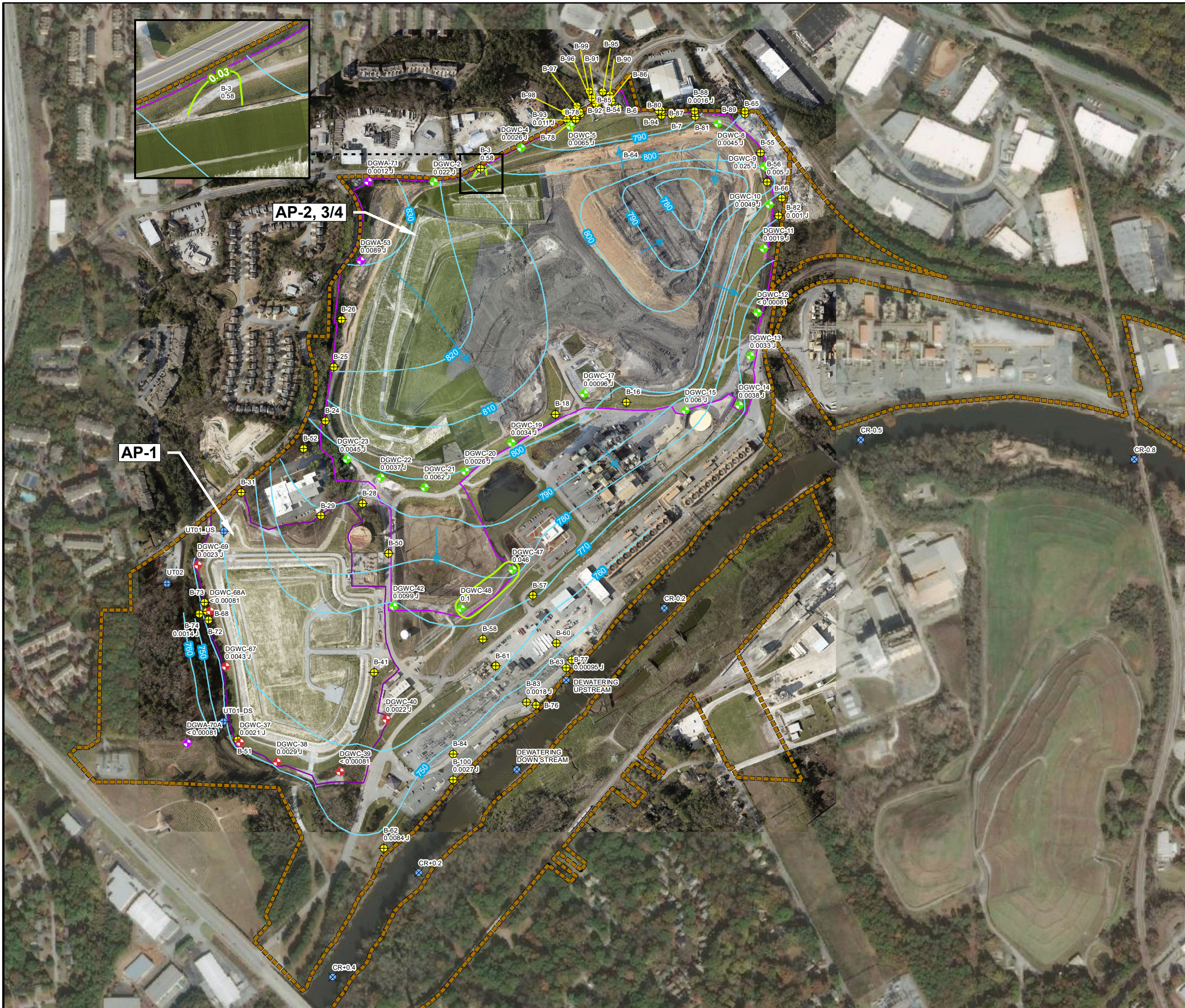
PROJECT
PLANT MCDONOUGH AP-2,3/4
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
**COBALT ISOCONCENTRATION CONTOUR MAP
SEPTEMBER 2020**

CONSULTANT	YYYY-MM-DD	2020-06-17
	PREPARED	BAS
	DESIGN	BAS
	REVIEW	DLP
	APPROVED	TIR

Path: C:\Users\jdoles\Golder Associates\166849618_SCS Plant McDonough GW Cont Svcs GA - Project Files\166849618_SCS Plant McDonough GW Cont Svcs GA - Project Files\MXD\ACM Isoconcentration Map\Figure 19 - Cobalt Isoconcentration Map September 2020.mxd

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



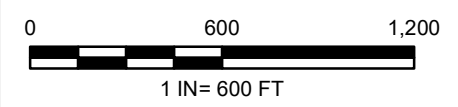
LEGEND

- PIEZOMETER
- AP-1 MONITORING WELL
- AP-2,3/4 MONITORING WELL
- UPGRADIENT WELL
- AP-1 SW
- AP-234 SW
- 0.03 LITHIUM GWPS ISOCONTOUR (INFERRED)
- PROPERTY BOUNDARY
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (SEPT 20)
- PERMIT BOUNDARY

- NOTES**
- ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE
 - GROUNDWATER CONCENTRATIONS IN MILLIGRAMS PER LITER (MG/L). GWPS = GROUNDWATER PROTECTION STANDARD.
 - DATA SHOWN REPRESENT THE SEPTEMBER SEMI-ANNUAL MONITORING EVENT RESULTS AS WELL AS APPLICABLE DELINEATION WELL DATA.
 - WHEN CONSIDERING THE REGIONAL SCREENING LEVEL (RSL), (0.04 MG/L) FOR LITHIUM FOLLOWING FEDERAL RULES, LITHIUM CONCENTRATIONS AT DGWC-2 WOULD NOT RESULT IN AN SSL.

Analyte	Units	FED GWPS	STATE GWPS
Lithium	mg/L	0.04	0.03

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



CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH

PROJECT
PLANT MCDONOUGH AP-2,3/4
ASSESSMENT OF CORRECTIVE MEASURES

TITLE
**LITHIUM ISOCONCENTRATION CONTOUR MAP
SEPTEMBER 2020**

CONSULTANT
GOLDER

YYYY-MM-DD	2020-06-17
PREPARED	BAS
DESIGN	BAS
REVIEW	DLP
APPROVED	TIR

Path: C:\Users\jdoz\Documents\166849618_SCS Plant McDonough GW Cont. Svcs GA - Project Files\MXD\ACM Isoconcentration Map\Figure 20 - Lithium Isoconcentration Map September 2020.mxd

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

APPENDIX A

Risk Evaluation Report



RISK EVALUATION REPORT

PLANT MCDONOUGH

ASH PONDS 2 AND 3/4

COBB COUNTY, GEORGIA

Prepared for

Georgia Power
241 Ralph McGill Boulevard
Atlanta, Georgia 30308

Prepared by

Wood Environment & Infrastructure Solutions, Inc.
1075 Big Shanty Road NW, #100
Kennesaw, Georgia 30144

Project Number 6123-20-1473

December 2020

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LIST OF ACRONYMS AND ABBREVIATIONS

AP	Ash Pond
Bgs	below ground surface
CCR	Coal Combustion Residual
CEM	Conceptual Exposure Model
CFR	Code of Federal Regulations
cm/s	centimeters per second
COI	Constituent of Interest
COPI	Constituent of Potential Interest
EPC	Exposure Point Concentration
EPD	[Georgia] Environmental Protection Division
ft	feet
ft/day	feet per day
GWPS	Groundwater Protection Standard
HSRA	Hazardous Site Response Act
IRIS	Integrated Risk Information System
mg/L	Milligrams per liter
msl	mean sea level
MDL	method detection limit
ProUCL	ProUCL software version 5.1
PWR	partially weathered rock
PZ	Piezometer
RME	Reasonable Maximum Exposure
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 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. Georgia Power is currently in the permitting process for AP-2 and AP-3/4. AP-2 was closed by removal and AP-3/4 is in the process of being closed in place by consolidation as a combined unit AP-3/4 with an engineered cover system, 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 Impoundments¹ and the State CCR Rule, Georgia Environmental Protection Division (EPD) Coal Combustion Residuals Rule 391-3-4-.10. Post closure care including semiannual groundwater monitoring and reporting is required for at least 30 years following closure in place.

This report focuses on AP-2, AP-3, and AP-4 (collectively referred to as AP-2 and AP-3/4) and presents the results of a human health risk evaluation for CCR constituents² that exhibit statistically significant levels (SSLs) in groundwater at the site and the supporting human health and ecological risk evaluation for the adjacent downgradient surface water body, 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-2 and AP-3/4 according to the Federal and State CCR Rules, arsenic, beryllium, cobalt, and lithium were previously identified as both federal and state SSL constituents (Golder, 2020a). The risk evaluation relies on recent (2016 through March 2020) groundwater data collected by Georgia Power in compliance with the Federal and State CCR Rules.

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.

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-2 and AP-3/4.
2. Initial groundwater risk screening: Comparison of groundwater concentrations for SSL-related constituents (arsenic, beryllium, cobalt, and lithium) 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 retained 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, SSL-related constituents (arsenic, beryllium, cobalt, and lithium) are not expected to pose a risk to human health or the environment. Therefore, no further risk evaluation of groundwater and surface water is warranted. Compliance monitoring for AP-2 and AP-3/4 under the Federal and State CCR Rules will continue with 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-2 and AP-3/4, located at Georgia Power Plant McDonough in Cobb County, Georgia (**Figure 1**). Georgia Power is currently in the permitting process for AP-2 and AP-3/4 in accordance with the Federal CCR Rule (USEPA, 2020a) and the State CCR Rule (EPD, 2018a). Georgia Power submitted one permit application for the closures of AP-2 and AP-3/4 on November 20, 2018 as a combined multi-unit application. CCR removal from AP-2 was substantially completed in 2016 and the remaining CCR removal from AP-2 was completed in 2019. AP-3 and the adjacent AP-4 are in the process of being consolidated and closed in place as a combined unit AP-3/4 with an engineered cover system.

This risk evaluation provides additional technical review of the human health and environmental protectiveness associated with the closure of AP-2 and AP-3/4 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 the identified SSL-related constituents for the former AP-2 and AP-3/4 above GWPS. Arsenic, beryllium, cobalt, and lithium were previously identified as both state and federal SSL-related constituents³ in certain wells (**Figure 2**) using the GWPS established for AP-2 and AP-3/4 according to the Federal and State CCR Rules (Golder, 2020a). 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:

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 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.
- ***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 body.
- ***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-2 and AP-3/4 documents, including the *2020 Annual Groundwater Monitoring and Corrective Action Report* (Golder, 2020a) and the *Geological and Hydrogeological Report-REV 01 – Plant McDonough-Atkinson CCR Unit AP-1, CCR Unit AP-2, Combined CCR Unit AP-3/4* (Golder, 2020b). 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 7 miles northwest of Atlanta in southeast Cobb County. The site occupies approximately 390 acres and is bounded on the southeast by 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. The units included in this report are described below (Golder, 2018a; Golder, 2020b):

- AP-2 was closed by removal with CCR removal being substantially completed in 2016 and the remainder removed in 2019.
- AP-3/4 are in the process of being closed by a combination of removal and consolidation in place, combining AP-3 and AP-4 into one unit with an engineered final cover system in compliance with the Federal CCR Rule.

Semi-annual groundwater monitoring and reporting for AP-2 and AP-3/4 is performed in accordance with the monitoring program requirements of the Federal CCR Rule and Georgia EPD Solid Waste Management Program. In accordance with 40 CFR §257.91, a groundwater monitoring network was installed at AP-2 and AP-3/4 in the uppermost aquifer to monitor groundwater quality both upgradient and downgradient of AP-2 and AP-3/4. The AP-2 and AP-3/4 certified monitoring well network consists of 3 upgradient monitoring wells and 20 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 site slopes gently south towards the Chattahoochee River (Golder, 2020b).

AP-2 and AP-3/4 are located within the Proctor Creek-Chattahoochee River Watershed (HUC-12-031300020101). The watershed encompasses 15,229 acres and is part of the larger Middle Chattahoochee – Lake Harding Watershed (HUC 12 – 0313002). The drainage area for AP-2 totals 8.3 acres, whereas the combined drainage area for AP-3/4 is 83.6 acres (Golder, 2018b). The Chattahoochee River abuts the site to the southeast.

AP-2 is located east of AP-1 and south of AP-3 in the center of the eastern half of the site. The additional over excavation of CCR material at AP-2 into the underlying soils created a topographic low point and low hydraulic gradient. AP-3/4 is on a topographic high, creating radial flow around the ponds, with the exception of the one upland high upgradient of AP-3/4 to the northwest. Dewatering at AP-4 is creating an upgradient area northeast of AP-3/4.

A small creek flows south under Plant Atkinson Road into a corrugated metal pipe slip lined with a fiberglass reinforced plastic stream diversion culvert, which inlets north of AP-3/4 and outlets southeast of AP-3/4.

Topography near the site ranges from less than 750 feet (ft) above mean sea level (msl) near the tributaries and river to greater than 840 ft above msl near the center of the site (Golder, 2020b).

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, 2020a):

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 August 2019 are presented in **Figure 3a**. Groundwater generally flows south/southeast across the site; however, the topographic high in the northwest portion of AP-3/4 creates localized radial flow. In addition, there is a large groundwater sink present north of AP-3/4 which captures groundwater in the northern portion of AP-3/4. The sink is associated with the small

unnamed creek which inlets north of AP-3/4, flows south under Plant Atkinson Road, and outlets southeast of AP-3/4 into an intermittent stream (**Figure 3a**). The unnamed intermittent stream flows into the Chattahoochee River to the southeast of AP-3/4; the river flows to the south/southwest. The depression in the northeast portion of AP-3/4 is due to pumping. The area captured by pumping appears to change somewhat seasonally. Groundwater in the vicinity of well DGWC-9, located along the east side of the groundwater depression, flows southward toward the Chattahoochee River. The potentiometric surface elevations for January 2020 are presented on **Figure 3b**. Groundwater flow in **Figure 3b** is similar to that of **Figure 3a**, as previously discussed. The notable exception is in the vicinity of well DGWC-9, which appears to be captured in the cone of depression created by pumping.

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**.

The Chattahoochee River abuts the site to the southeast and the river flows in a south/southwest direction (**Figure 2**). A conservative assumption for this assessment was made that all the groundwater from the site flows to the downgradient surface water bodies, as described in Section 2.1.2. In further support of this assumption, the Chattahoochee River is assumed to represent a regional hydraulic discharge boundary for groundwater flow in the upper aquifer from the nearby region for the purposes of this evaluation.

2.3 Potential Exposure Pathways and Receptors

The exposure pathways for groundwater assumed to be complete based on site-specific information 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. A well survey of potential groundwater wells within a three-mile radius of AP-2 and AP-3/4 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). Results of the survey are presented on **Figure 5**. The well survey is included as **Appendix A**. 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 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 on-site to concentrations not exceeding health-protective screening criteria or background or were not detected above health-protective screening criteria in the adjacent downgradient surface water body (i.e., 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-2 and AP-3/4. 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.
- 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 should be 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 constituent 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 an 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 overestimate 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 identified to have SSL-related constituents under the Federal and State CCR Rules are listed below:

Appendix IV Parameter	AP-2 and AP-3/4 Monitoring Well
Arsenic	DGWC-9
Beryllium	DGWC-5, DGWC-9, DGWC-10, DGWC-47, DGWC-48
Cobalt	DGWC-8, DGWC-9, DGWC-10, DGWC-19, DGWC-20, DGWC-47, DGWC-48
Lithium	DGWC-2, DGWC-47, DGWC-48

Data for these SSL-related constituents from the wells listed above were screened against relevant health-protective screening criteria.

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 (PE)-certified Statistical Analysis Method Certification (Rev 01, amended January 2020) (Golder, 2020c) and the Unified Guidance (USEPA, 2009) for AP-2 and AP-3/4; 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 in the *2020 Annual Groundwater Monitoring & Corrective Action Report* (Golder, 2020a), 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 if 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 off-site 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 is 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 (i.e., arsenic and beryllium).

The Type 1 RRS was used for arsenic, which is the Georgia drinking water criterion presented in Appendix III, Table 1 of the HSRA rule (EPD, 2018b).

The Type 2 RRS was used for beryllium, which is the lower of the calculated carcinogenic and non-carcinogenic values derived using the default exposure factors for residential receptors and the methodology found in Appendix III of the HSRA rule (EPD, 2018b). Toxicity values for beryllium used for the Type 2 RRS calculations were identified in the Integrated Risk Information System (IRIS) (USEPA, 2020c). The risk-based Type 2 RRS were calculated using USEPA’s RSL calculator (USEPA, 2020b) assuming a target cancer risk of 1×10^{-5} and a target hazard quotient of 1, consistent with Georgia EPD

guidance (EPD, 2018b). The calculations of the Type 2 RRS values for the SSL-related constituents are presented in **Appendix C**.

- A site-specific screening level was used for lithium. Site-specific screening levels are calculated for those chemical constituents like lithium that do not have RRS under HSRA using residential exposure assumptions consistent with the HSRA rules (EPD, 2018b) and are equivalent to the USEPA tapwater RSLs. The screening level for lithium 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).
- 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). As noted in **Table 1**, arsenic, cobalt, and lithium were detected at concentrations that exceeded their respective screening levels, were identified as COPIs, and were retained for further evaluation in the refined risk evaluation. Concentrations of beryllium did not exceed its screening level, and therefore, evaluation of beryllium in the refined risk evaluation was not necessary.

4 REFINED RISK EVALUATION

A refined risk evaluation was conducted for the groundwater COPIs (i.e., arsenic, cobalt, and lithium) 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. Those constituents identified as groundwater COIs (i.e. cobalt and lithium) in the refined groundwater risk evaluation were then evaluated for surface water in the nearest downgradient surface water body (i.e., Chattahoochee River).

4.1 Refined Groundwater Risk Evaluation

Potential risk associated with exposure to arsenic, cobalt, and lithium 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 monitoring wells/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 wells and piezometers downgradient of the wells exhibiting SSLs:

DGWC-2 (SSL)	DGWC-47 (SSL)	B-76
DGWC-4	DGWC-48 (SSL)	B-77
DGWC-5 (SSL)	B-54	B-78
DGWC-8 (SSL)	B-60	B-79
DGWC-9 (SSL)	B-61	B-81
DGWC-10 (SSL)	B-63	B-82
DGWC-19 (SSL)	B-64	B-83
DGWC-20 (SSL)	B-66	B-88

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 (arsenic, cobalt, and lithium) 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(s) 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 arsenic, cobalt, and lithium. 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 arsenic, cobalt, and lithium. 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 arsenic, cobalt, and lithium 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:

- There is no trend in arsenic concentrations over time at DGWC-9, cobalt concentrations at DGWC-8, DGWC-10, and DGWC-20, or lithium concentrations at DGWC-47;
- Statistically significant decreasing trends in cobalt in DGWC-19, DGWC-47, and DGWC-48;
- A statistically significant increasing trend in cobalt in DGWC-9; and
- Statistically significant decreasing trends for lithium in DGWC-2 and DGWC-48.

Mann Kendall trend analysis requires four data points with at least three detections. Trends may be evaluated at the farthest downgradient piezometers from the wells with SSL-related constituents, if necessary, after two additional consecutive sampling events are conducted at the following downgradient locations:

B-54	B-66	B-78
B-63	B-76	B-79

B-64

B-77

B-82

B-88

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 Arsenic

Arsenic was detected in 10 out of 11 groundwater samples in well DGWC-9 at concentrations that exceeded the groundwater screening level for residential receptors. For the refined risk evaluation, the following EPCs were calculated for arsenic using the monitoring wells shown in **Appendices D-1** and **D-2**:

- Data from DGWC-9 were used to determine if the UCL complied with the screening level (EPC Step 1 in **Appendix D-1**).
- Data from DGWC-9 and the downgradient piezometers B-66 and B-82 were combined to represent groundwater exposure in the same hydraulically downgradient direction (EPC Step 2 in **Appendix D-1**).
- Data from B-66 and B-82 were combined to represent groundwater exposure using the wells that are the farthest hydraulically downgradient of well DGWC-9 (EPC Step 3 in **Appendix D-1**).

Both the UCL for DGWC-9 of 0.027 milligram per liter (mg/L) and the UCL for the combined dataset from DGWC-9, B-66, and B-82 of 0.020 mg/L exceeded the screening level of 0.01 mg/L. However, the UCL for the combined dataset from B-66 and B-82 was non-detect at a detection limit of 0.005 mg/L, which is less than the groundwater screening level of 0.01 mg/L. The distance from DGWC-9 to the nearest property boundary within the potential groundwater flow direction is approximately 200 feet.

Table 3 presents the results of the refined screening comparing the farthest hydraulically downgradient EPC to the screening criterion. Arsenic 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 Cobalt

Groundwater flow exposure units were identified for use in the calculation of cobalt EPCs in the refined risk evaluation due to groundwater flow away from AP-2 and AP-3/4. EPCs were calculated for these exposure units separately, north, east, and south. For the refined risk evaluation, the following EPCs were calculated for cobalt using the monitoring wells/piezometers shown in **Appendices D-1** and **D-2**:

North Exposure Unit

- Data from DGWC-8 were used to determine if the UCL complied with the screening level (EPC Step 1 in **Appendix D-1**).
- Data from DGWC-8 and the downgradient piezometers B-81 and B-88 were combined to represent groundwater exposure in the same hydraulically downgradient direction (EPC Step 2 in **Appendix D-1**).
- Data from B-88 were used to represent groundwater exposure using the well that is the farthest hydraulically downgradient of well DGWC-8 (EPC Step 3 in **Appendix D-1**).

Cobalt was detected in 11 out of 11 groundwater samples in well DGWC-8 at concentrations that exceeded the groundwater background value. Both the UCL for DGWC-8 of 0.093 mg/L and the UCL for the combined dataset from DGWC-8, B-81, and B-88 of 0.081 mg/L exceeded the background value of 0.032 mg/L. However, the EPC of 0.018 J mg/L based on the result from B-88 is below the background value of 0.032 mg/L. The distance from DGWC-8 to the nearest property boundary within the potential groundwater flow direction is approximately 160 feet.

East Exposure Unit

- Data from DGWC-9 and DGWC-10 were combined to determine if the UCL complied with the screening level (EPC Step 1 in **Appendix D-1**).
- Data from DGWC-9, DGWC-10, and the downgradient piezometers B-66 and B-82 were combined to represent groundwater exposure in the same hydraulically downgradient direction (EPC Step 2 in **Appendix D-1**).

- Data from B-66 and B-82 were combined to represent groundwater exposure using the wells that are the farthest hydraulically downgradient of well DGWC-9 and DGWC-10 (EPC Step 3 in **Appendix D-1**).

Cobalt was detected in all 22 groundwater samples collected from wells DGWC-9 and DGWC-10 at concentrations that exceeded the groundwater background value. Both the UCL for DGWC-9 and DGWC-10 of 0.19 mg/L and the UCL for the combined dataset from DGWC-9, DGWC-10, B-66, and B-82 of 0.20 mg/L exceeded the background value of 0.032 mg/L. However, the UCL for the dataset from B-66 and B-82 was 0.0088 mg/L, which is less than the background value of 0.032 mg/L. Of the two monitoring wells with SSL exceedances for cobalt in the east exposure unit, DGWC-10 is the closest to the property boundary. The distance from DGWC-10 to the nearest property boundary within the potential groundwater flow direction is approximately 100 feet.

South Exposure Unit

- Data from DGWC-19, DGWC-20, DGWC-47, and DGWC-48 were combined to determine if the UCL complied with the screening level (EPC Step 1 in **Appendix D-1**).
- Data from DGWC-19, DGWC-20, DGWC-47, and DGWC-48, and the downgradient piezometers B-60, B-61, B-63, B-76, B-77, and B-83 were combined to represent groundwater exposure in the same hydraulically downgradient direction (EPC Step 2 in **Appendix D-1**).
- Data from DGWC-19, B-63, B-76, and B-77 were combined to represent groundwater exposure using the wells that are the farthest hydraulically downgradient of well DGWC-19, DGWC-20, DGWC-47, and DGWC-48 (EPC Step 3 in **Appendix D-1**). No well was identified as hydraulically downgradient of DGWC-19.

Cobalt was detected in all 44 groundwater samples collected from wells DGWC-19, DGWC-20, DGWC-47, and DGWC-48 at concentrations that exceeded the groundwater background value. The UCL for the comparison (DGWC-19, DGWC-20, DGWC-47, and DGWC-48) of 0.50 mg/L, the UCL for the combined dataset (DGWC-19, DGWC-20, DGWC-47, DGWC-48, B-60, B-61, B-63, B-76, B-77, and B-83) of 0.44 mg/L, and the UCL from the farthest downgradient dataset (DGWC-19, B-63, B-76, and B-77) of 0.22 mg/L exceeded the background value of 0.032 mg/L. Of the four monitoring wells with cobalt SSL exceedances in the south exposure unit, DGWC-47 is closest to the property

boundary. The distance from DGWC-47 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 for each groundwater flow exposure unit to the screening level of 0.032 mg/L. Cobalt was not identified as a groundwater COI for hypothetical off-site residential receptors to the north or east, but was identified as a groundwater COI for hypothetical off-site residential receptors to the south; therefore, cobalt is further evaluated in the surface water risk evaluation below (**Section 4.2**).

4.1.3.3 Lithium

Groundwater flow exposure units were identified for use in the calculation of lithium EPCs in the refined risk evaluation due to groundwater flow away from AP-2 and AP-3/4. EPCs were calculated for these exposure units separately, north and south. For the refined risk evaluation, the following EPCs were calculated for lithium using the monitoring wells/piezometers shown in **Appendices D-1** and **D-2**:

North Exposure Unit

- Data from DGWC-2 were used to determine if the UCL complied with the screening level (EPC Step 1 in **Appendix D-1**).
- Data from DGWC-2 and the downgradient wells/piezometers DGWC-4, DGWC-5, B-54, B-64, B-78, and B-79 were combined to represent groundwater exposure in the same hydraulically downgradient direction (EPC Step 2 in **Appendix D-1**).
- Data from B-54, B-64, B-78, and B-79 were used to represent groundwater exposure using the well that is the farthest hydraulically downgradient of well DGWC-2 (EPC Step 3 in **Appendix D-1**).

Lithium was detected in 6 out of 11 groundwater samples in well DGWC-2 at concentrations that exceeded the site-specific screening level. The UCL for DGWC-2 of 0.076 mg/L exceeded the site-specific screening level of 0.04 mg/L. The UCL for the combined dataset from DGWC-2, DGWC-4, DGWC-5, B-54, B-64, B-78, and B-79 of 0.039 mg/L and the UCL for the dataset from B-54, B-64, B-78, and B-79 of 0.011 mg/L were less than the site-specific screening level of 0.04 mg/L. The distance from DGWC-2 to the nearest property boundary within the potential groundwater flow direction is approximately 1,000 feet.

South Exposure Unit

- Data from DGWC-47 and DGWC-48 were combined to determine if the UCL complied with the screening level (EPC Step 1 in **Appendix D-1**).
- Data from DGWC-47 and DGWC-48, and the downgradient piezometers B-60, B-61, B-63, B-76, B-77, and B-83 were combined to represent groundwater exposure in the same hydraulically downgradient direction (EPC Step 2 in **Appendix D-1**).
- Data from B-63, B-76, B-77 were combined to represent groundwater exposure using the wells that are the farthest hydraulically downgradient of well DGWC-47 and DGWC-48 (EPC Step 3 in **Appendix D-1**).

Lithium was detected in all 22 groundwater samples collected from wells DGWC-47 and DGWC-48 at concentrations that exceeded the site-specific screening level. The UCL for the comparison (DGWC-47 and DGWC-48) of 0.11 mg/L, the UCL for the combined dataset (DGWC-47, DGWC-48, B-60, B-61, B-63, B-76, B-77, and B-83) of 0.081 mg/L, and the UCL from the farthest downgradient dataset (B-63, B-76, and B-77) of 0.045 mg/L exceeded the site-specific screening level of 0.04 mg/L. Of the two monitoring wells with lithium SSL exceedances in the south exposure unit, DGWC-47 is closest to the property boundary. The distance from DGWC-47 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 for each groundwater flow exposure unit to the screening level of 0.04 mg/L. Lithium was not identified as a groundwater COI for hypothetical off-site residential receptors to the north. Lithium was identified as a groundwater COI for hypothetical off-site residential receptors to the south, and therefore, lithium 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 Chattahoochee River for the groundwater COIs (cobalt and lithium) 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 those constituents identified as groundwater COIs. The surface water screening process for the COIs identified in groundwater (cobalt and lithium) is discussed below and presented in **Figure 8**.

4.2.1 Surface Water Data

Surface water data were compiled for the COIs identified in the refined groundwater risk evaluation (cobalt and lithium). Surface water data for cobalt and lithium include two sampling events for Plant McDonough (one in 2019 and one in 2020) at two locations in the Chattahoochee River. In addition, data from 2016 to 2019 are available from the Water Quality Portal (2020) for cobalt at a downstream location (Bankhead Highway) and an upstream location (Chattahoochee River – Atlanta Water Intake). The upstream location was used as the background surface water location. 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 COIs were selected from the following order of hierarchy:

- Georgia ISWQC for human health (EPD, 2015), when available.
- National ambient water quality criteria (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 (2015a) states that EPA has issued an 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 3.2.2 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 cobalt and lithium, 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 national ambient water quality criteria (USEPA, 2015b). The Type 2 RRS was used as a screening value for cobalt, and the site-specific Type 2 RRS calculated by the EPA RSL calculator was used for lithium. The use of drinking water screening levels for surface water exposure is a conservative approach likely to overestimate risk as use of 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 for cobalt and lithium in surface water, as shown in **Table 4**. Cobalt and lithium were detected in surface water at concentrations below the screening criteria. Therefore, cobalt and lithium were not retained as human health COPIs in surface water for further evaluation and are not expected to pose a risk to human health.

4.2.3 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).
- Maximum detected upstream (i.e., background) concentration if the maximum upstream surface water concentration is greater than the surface water screening value.

Because neither cobalt nor lithium have chronic freshwater Georgia ISWQC for ecological receptors (EPD, 2015), USEPA Region 4 chronic freshwater screening levels for total concentrations (USEPA, 2018) were used in the surface water ecological screening for aquatic ecological receptors.

The ecological surface water screening levels were compared to the maximum detected concentrations of cobalt and lithium in surface water, as shown in **Table 5**. Cobalt and

lithium were detected in surface water at concentrations lower than the ecological screening criteria. Therefore, cobalt and lithium were not retained as COPIs in surface water for further evaluation and are not expected to pose a risk to ecological receptors.

4.2.4 Refined Groundwater and Surface Water Risk Evaluation Summary and Conclusions

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

- Arsenic was not identified as a groundwater COI for hypothetical off-site residential receptors and is not expected to pose a risk to human health.
- Cobalt and lithium were not identified as groundwater COIs for hypothetical off-site residential receptors to the north and are not expected to pose a risk to human health.
- Cobalt was not identified as a groundwater COI for hypothetical off-site residential receptors to the east and is not expected to pose a risk to human health.
- Cobalt and lithium were identified as groundwater COIs for hypothetical off-site residential receptors to the south and were evaluated further in the nearest downgradient surface water body (Chattahoochee River) for potential exposure of 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.
- Chattahoochee River surface water concentrations of cobalt and lithium were below health-protective surface water screening criteria for human and ecological receptors. Therefore, cobalt and lithium were not retained as COPIs in surface water for further evaluation and are 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. Downgradient piezometers B-66 and B-82 (for arsenic and cobalt), B-63, B-76, B-77 (for cobalt and lithium), B-54, B-64, B-78, B-79 (for lithium), and B-88 (for cobalt) should also continue

to be monitored to confirm concentrations remain below screening levels for two consecutive sampling events.

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-2 and AP-3/4. 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.
- Screening criteria based on RRSs, including arsenic, beryllium, and lithium, represent the reasonable maximum exposure (RME). The RME is defined as "the highest exposure that is reasonably expected to occur at a site but that is still within the range of possible exposures" (USEPA, 1989). USEPA (1989) states that the “intent of the RME is to estimate a conservative exposure case (i.e., well above the average case) that is still within the range of possible exposures.” Potential receptors will likely have lower exposures than those presented in this risk evaluation (i.e., a majority of the site concentrations will be less than the UCL), and therefore, potential exposures are likely overestimated.
- In the surface water screening, the higher of the residential groundwater screening levels was used for cobalt and lithium because of the lack of human health surface water screening levels within the Georgia ISWQC for human health (EPD, 2015) and national ambient water quality criteria (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 Chattahoochee River surface water as a source of potable drinking water is an incomplete exposure pathway.

Exposure Uncertainties:

- The maximum detected concentrations of AP-2 and AP-3/4 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-2 and AP-3/4. 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 change the conclusions of the risk evaluation because concentrations of SSL-related constituents have been delineated on-site to concentrations not exceeding health-protective screening criteria or background or were not detected above

health-protective screening criteria in the adjacent downgradient surface water body (i.e., 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 the site, along with a surface water risk evaluation for the downgradient Chattahoochee River, was conducted using methods consistent with Georgia EPD and USEPA guidance and included multiple conservative assumptions. Based on this evaluation, constituents evaluated from AP-2 and AP-3/4 (arsenic, beryllium, cobalt, and lithium) 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-2 and AP-3/4 under the Federal and State CCR Rules will continue with additional recommended piezometer sampling for two consecutive events. 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-2, 3/4 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	Arsenic	7440-38-2	10 / 11	10 / 11	0.04	0.010	Type 1 RRS	0.005	Y	ASL
	Beryllium	7440-41-7	55 / 55	0 / 55	0.0165	0.025	Type 2 RRS ^[4]	0.003	N	BSL
	Cobalt	7440-48-4	77 / 77	[/ 77	0.84	0.0322	Background ^[5]	0.032	Y	ASL
	Lithium	7439-93-2	33 / 33	28 / 33	0.144	0.040	Site-Specific ^[4]	0.03	Y	ASL

Notes:

[1] Evaluation includes 2016 - March 2020 groundwater analytical data from wells DGWC-9 for arsenic; DGWC-5, DGWC-9, DGWC-10, DGWC-47, and DGWC-48 for beryllium; DGWC-8, DGWC-9, DGWC-10, DGWC-19, DGWC-20, DGWC-47, and DGWC-48 for cobalt; DGWC-2, DGWC-47, and DGWC-48 for lithium.

[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 = Below respective screening level

[4] The Type 2 RRS and Site-Specific values were calculated by the EPA RSL calculator using residential exposure factor inputs from HSRA Appendix III, Table 3.

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

Definitions:

CAS = Chemical Abstract Service

CCR = Coal Combustion Residuals

COPI = Constituent of Potential Interest

RRS = Risk Reduction Standard

mg/L = milligrams per Liter

Prepared by/Date: RRP 09/14/2020

Checked by/Date: RMB 9/17/2020

Table 2
Groundwater Exposure Point Concentration Summary
McDonough AP-2, 3/4 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-2,3/4	Appendix IV	Arsenic (East)	7440-38-2	0 / 7	ND (0.005)	NA ^[2]	NA	ND (0.005)
		Cobalt (North)	7440-48-4	1 / 1	0.018 J	NA	NA	0.018 J
		Cobalt (East)	7440-48-4	4 / 5	0.0089	0.0088	95% KM (t) UCL	0.0088
		Cobalt (South)	7440-48-4	18 / 18	0.47	0.22	95% Chebyshev (Mean, Sd) UCL	0.22
		Lithium (North)	7439-93-2	8 / 9	0.012 J	0.011	95% KM (t) UCL	0.011
		Lithium (South)	7439-93-2	6 / 7	0.045	0.053	95% KM (Chebyshev) UCL	0.045

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

J = Estimated value less than the practical quantitation limit but greater than the method detection limit

Prepared by/Date: RRP 09/14/2020

Checked by/Date: RMB 09/17/2020

Table 3
Downgradient Groundwater Refined Screening
McDonough AP-2, 3/4 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-2,3/4	Appendix IV	Arsenic (East)	7440-38-2	0 / 7	0 / 7	ND (0.005)	0.010	Type 1 RRS	0.005	N	ND/BSL
		Cobalt (North)	7440-48-4	1 / 1	0 / 1	0.018 J	0.032	Background ^[4]	0.032	N	BSL
		Cobalt (East)	7440-48-4	4 / 5	0 / 5	0.0088	0.032	Background	0.032	N	BSL
		Cobalt (South)	7440-48-4	18 / 18	16 / 18	0.22	0.032	Background	0.032	Y	ASL
		Lithium (North)	7439-93-2	8 / 9	0 / 9	0.011	0.040	Site-Specific ^[5]	0.03	N	BSL
		Lithium (South)	7439-93-2	6 / 7	2 / 7	0.045	0.040	Site-Specific	0.03	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

ND = Not detected (maximum practical quantitation limit [PQL])

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

[5] Site-Specific values were 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

mg/L = milligrams per liter

EPC = Exposure Point Concentration

J = Estimated value less than the practical quantitation limit but greater than the method detection limit

Prepared by/Date: RRP 09/14/2020

Checked by/Date: RMB 09/17/2020

Table 4
Human Health Surface Water Screening - Chattahoochee River^[1]
McDonough AP-2, 3/4 Risk Evaluation Report
Plant McDonough, Cobb County, GA

CCR Rule Designation	Constituents (Total Recoverable Fractions)	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	Cobalt	7440-48-4	2 / 17	0 / 17	0.00091 J	0.006	Type 2 RRS	ND (0.002) ^[6]	N	BSL
	Lithium	7439-93-2	2 / 4	0 / 4	0.0012 J	0.04	Site-Specific	--	N	BSL

Notes:

[1] Evaluation includes offsite 2016-2019 Chattahoochee River surface water data from GA DNR EPD surface water monitoring location Chattahoochee River at Bankhead Highway located approximately 2.2 miles downstream of the site boundary; and 2019 and 2020 upstream and downstream dewatering data. Upstream or background locations represented by data from 2016-2019 for Chattahoochee River - Atlanta Water Intake.

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

[4] These residential groundwater screening levels were used because no human health surface water screening levels were available. The use of drinking water screening levels for surface water exposure is a conservative approach as domestic use of Chattahoochee surface water 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

[6] Background location was non-detect (ND) for cobalt and is represented by the MDL of 0.002 mg/L as obtained from Table 4 of the analytical method 200.7.

Definitions:

-- = Not applicable, no data available

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

NRWQC = National Recommended Water Quality Criteria

RRS = Risk Reduction Standard

mg/L = milligrams per Liter

J = Estimated value less than the practical quantitation limit but greater than the method detection limit

Prepared by/Date: RMB 10/16/2020

Checked by/Date: SBM 10/16/2020

Table 5
Ecological Health Surface Water Screening^[1]
McDonough AP-2, 3/4 Risk Evaluation Report
Plant McDonough, Cobb County, GA

CCR Rule Designation	Constituents (Total Recoverable Fractions)	CAS No.	Detection Frequency	Exceedance Frequency ^[2]	Maximum Concentration (mg/L)	Screening Value (mg/L) (Total)	Hardness Dependent? (Y/N)	Source ^[3]	Site-Specific Background (mg/L)	COPI (Y/N)	Rationale ^[4]
Appendix IV	Cobalt	7440-48-4	2 / 17	0 / 17	0.00091 J	0.019	N	EPA Reg. 4	ND (0.002) ^[5]	N	BSL
	Lithium	7439-93-2	2 / 4	0 / 4	0.0012 J	0.44	N	EPA Reg. 4	--	N	BSL

Notes:

[1] Evaluation includes offsite 2016-2019 Chattahoochee River surface water data from GA DNR EPD surface water monitoring location Chattahoochee River at Bankhead Highway located approximately 2.2 miles downstream of the site boundary; and 2019 and 2020 upstream and downstream dewatering data. Upstream or background locations represented by data from 2016-2019 for Chattahoochee

[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 values from GA ISWQC were not available from GA Administrative Code 391-3-6-.0 (5)(e)(iii); values 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

[5] Background location was non-detect (ND) for cobalt and is represented by the MDL of 0.002 mg/L as obtained from Table 4 of the analytical method 200.7.

Definitions:

-- = Not applicable, no data available

CAS = Chemical Abstract Service

CCR = Coal Combustion Residuals

COPI = Constituent of Potential Interest

EPA = United States Environmental Protection Agency

GA DNR EPD = Georgia Department of Natural Resources Environmental Protection Division

GA ISWQC = Georgia Instream Water Quality Criteria

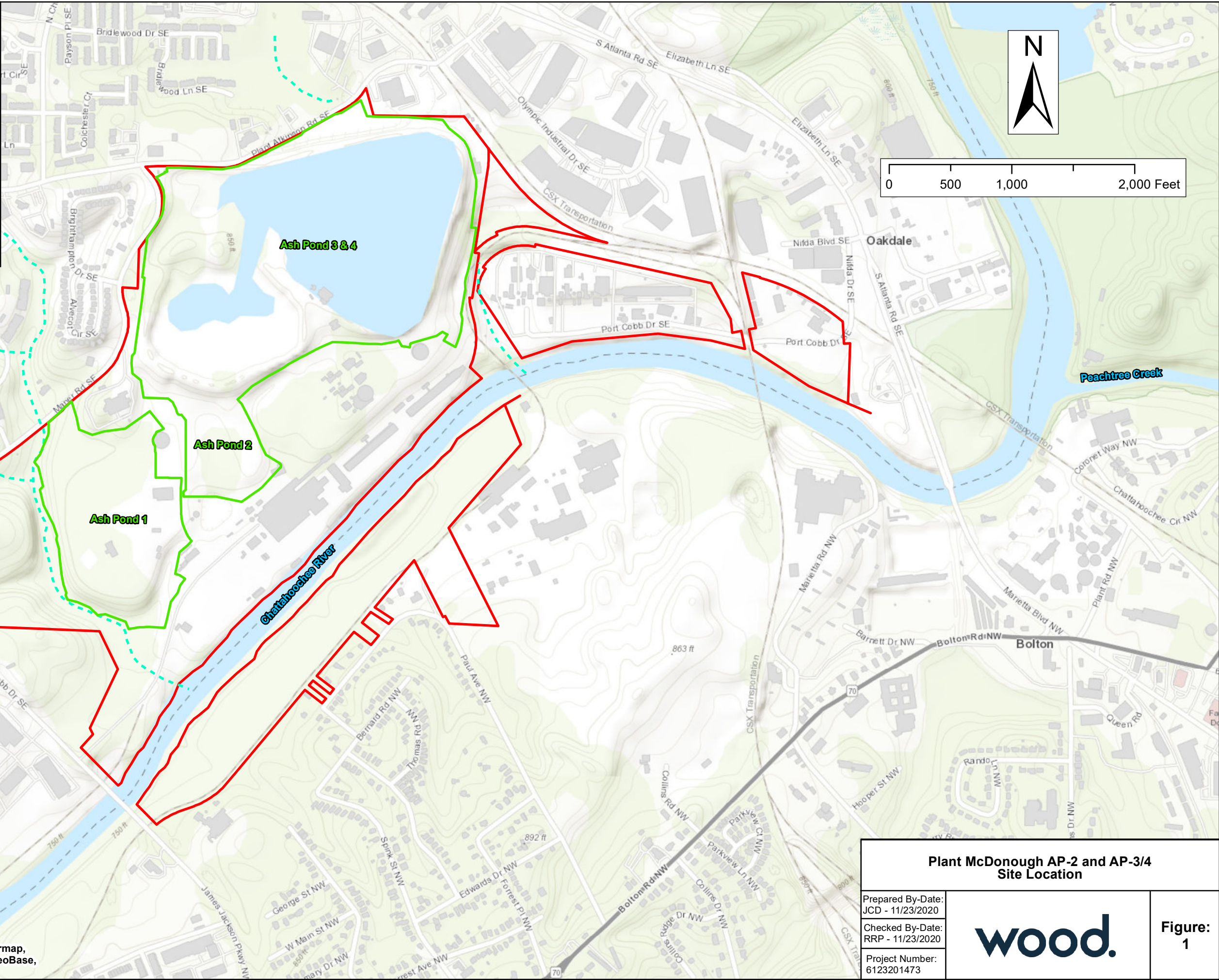
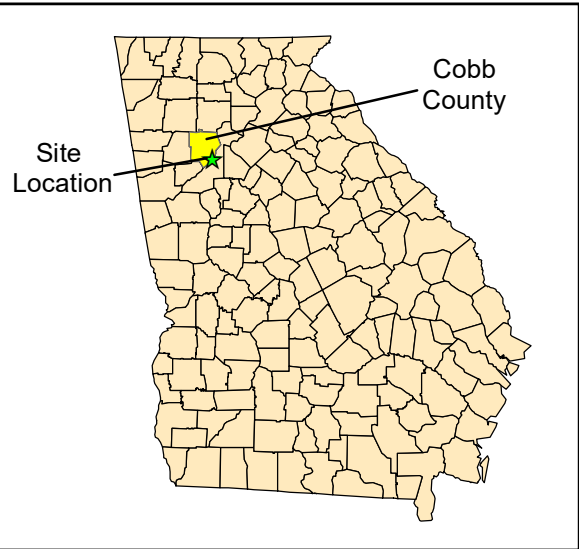
mg/L = milligrams per Liter




J = Estimated value less than the practical quantitation limit but greater than the method detection limit

Prepared by/Date: RMB 10/16/2020

Checked by/Date: SBM 10/16/2020


FIGURES

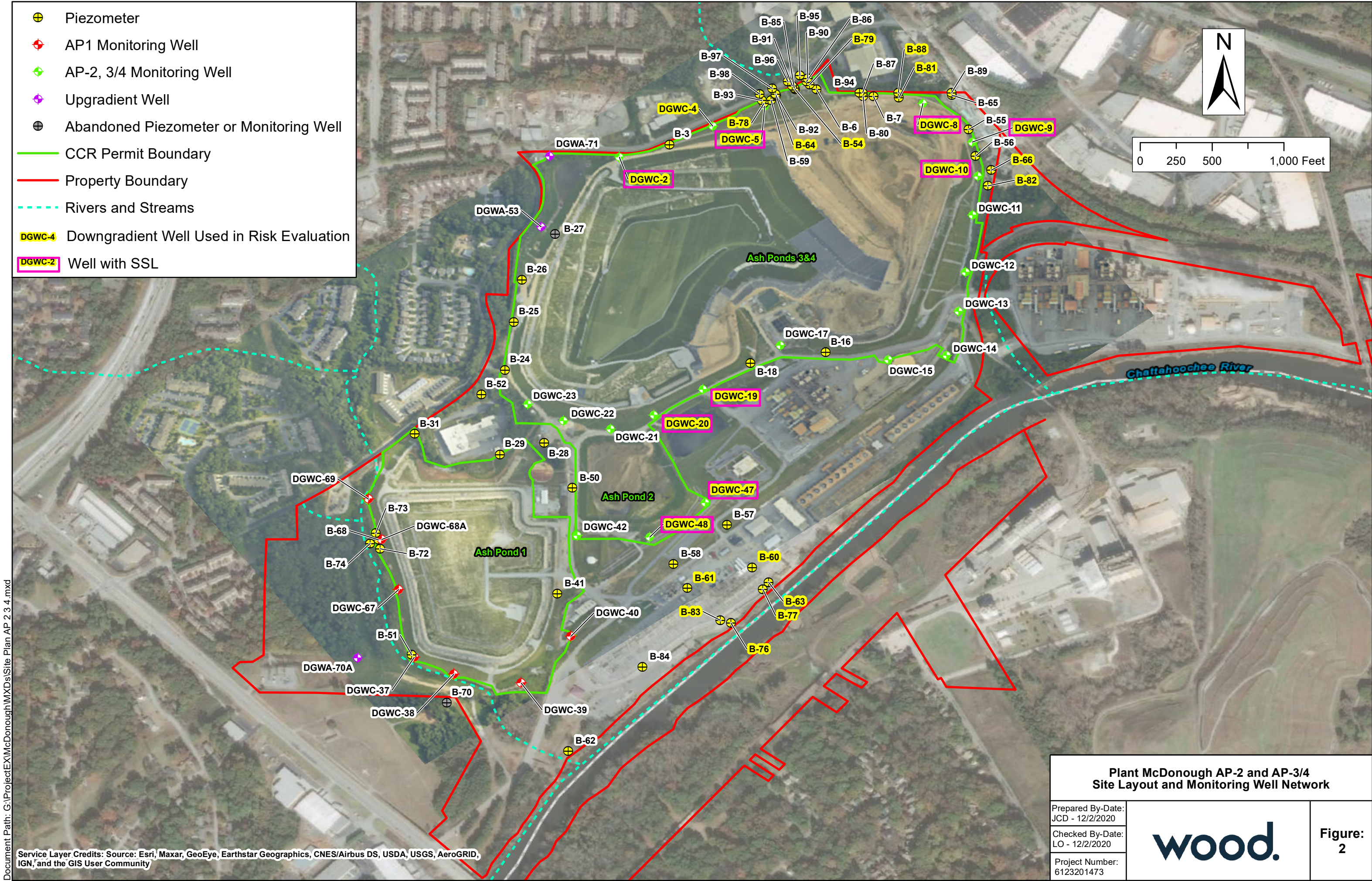


-  Rivers and Streams
-  Property Boundary
-  CCR Permit Boundary

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

**Plant McDonough AP-2 and AP-3/4
Site Location**











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

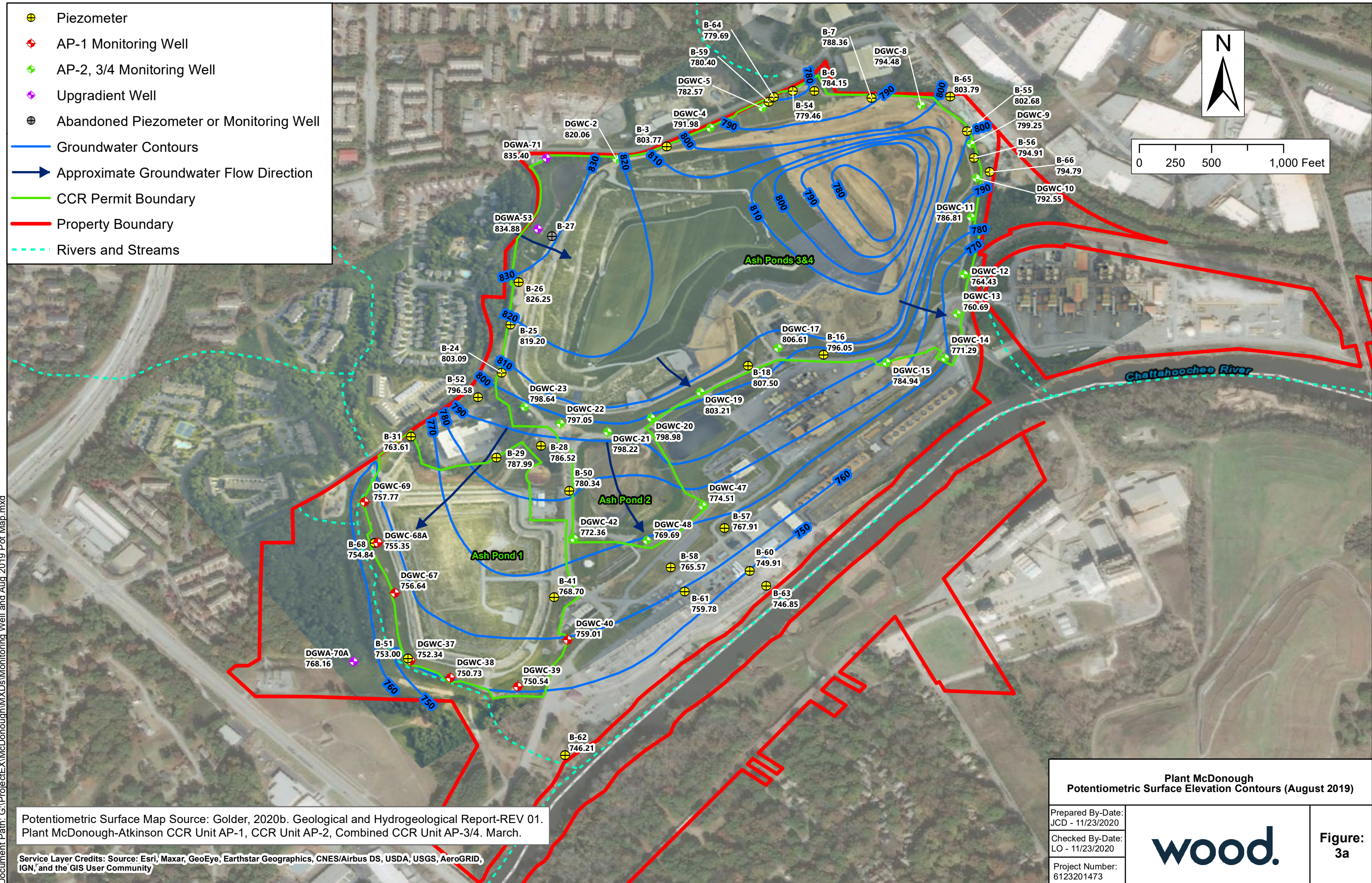


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Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Plant McDonough AP-2 and AP-3/4 Site Layout and Monitoring Well Network		
Prepared By-Date: JCD - 12/2/2020		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
-  Property Boundary
-  Rivers and Streams

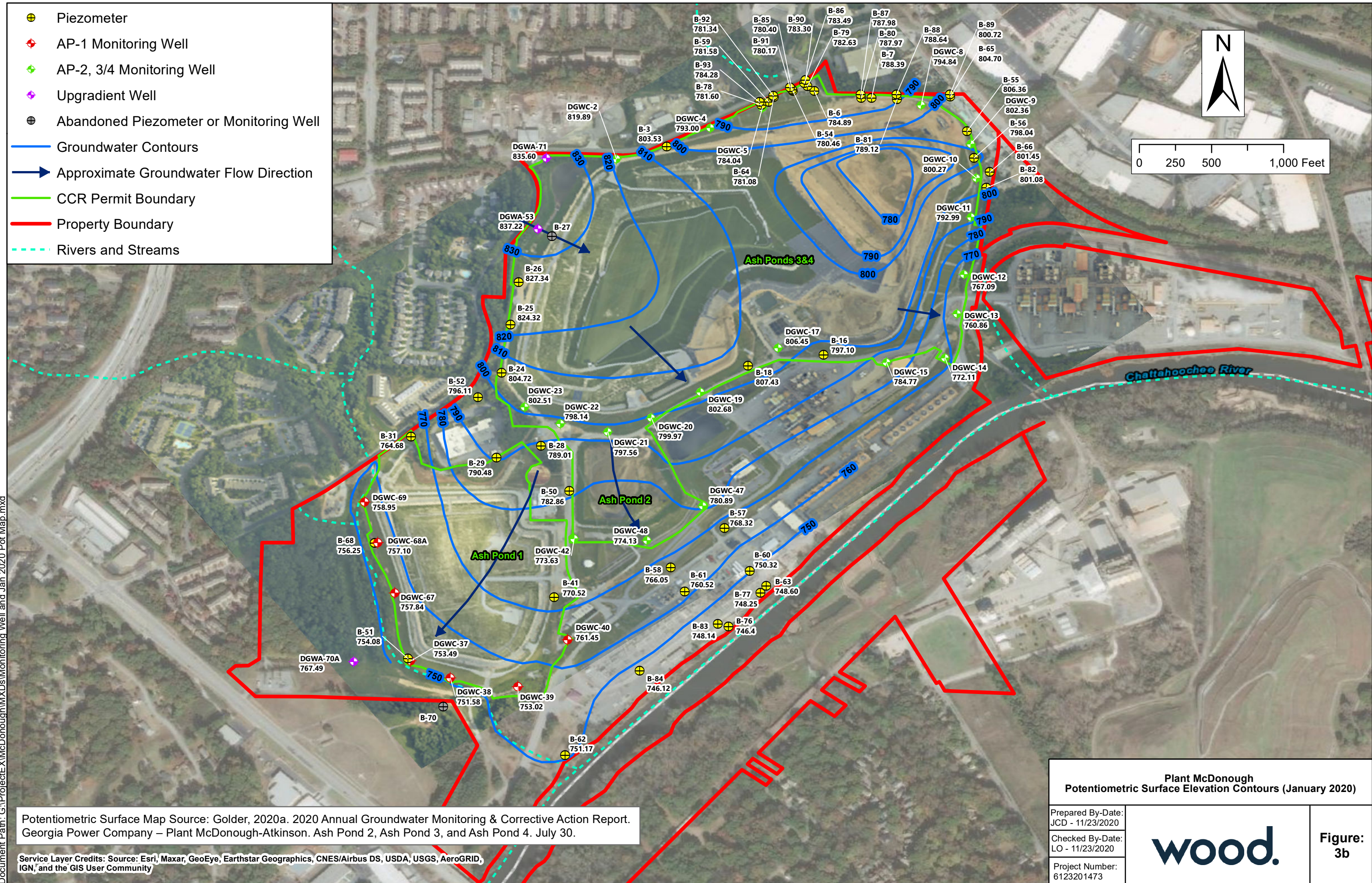


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Potentiometric Surface Map Source: Golder, 2020b. Geological and Hydrogeological Report-REV 01. Plant McDonough-Atkinson CCR Unit AP-1, CCR Unit AP-2, Combined CCR Unit AP-3/4. March.

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

Plant McDonough Potentiometric Surface Elevation Contours (August 2019)		
Prepared By-Date: JCD - 11/23/2020		Figure: 3a
Checked By-Date: LO - 11/23/2020		
Project Number: 6123201473		

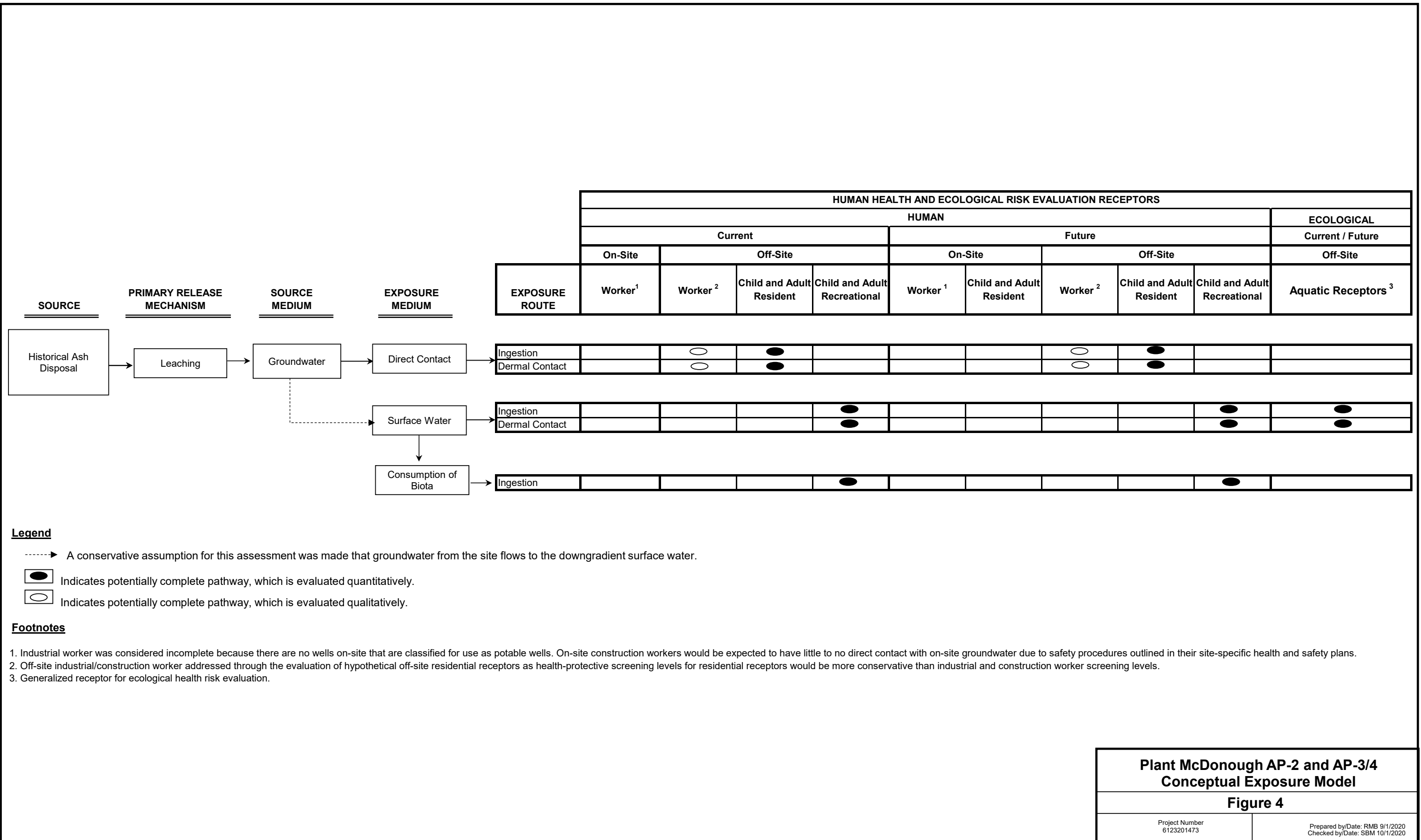


Document Path: G:\Project\EX\McDonough\Monitoring Well and Jan 2020 Pot Map.mxd

Potentiometric Surface Map Source: Golder, 2020a. 2020 Annual Groundwater Monitoring & Corrective Action Report. Georgia Power Company – Plant McDonough-Atkinson. Ash Pond 2, Ash Pond 3, and Ash Pond 4. July 30.

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

Plant McDonough Potentiometric Surface Elevation Contours (January 2020)		
Prepared By-Date: JCD - 11/23/2020		Figure: 3b
Checked By-Date: LO - 11/23/2020		
Project Number: 6123201473		



HUMAN HEALTH AND ECOLOGICAL RISK EVALUATION RECEPTORS										
EXPOSURE ROUTE	HUMAN									ECOLOGICAL
	Current				Future					Current / Future
	On-Site	Off-Site			On-Site	Off-Site			Off-Site	
	Worker ¹	Worker ²	Child and Adult Resident	Child and Adult Recreational	Worker ¹	Child and Adult Resident	Worker ²	Child and Adult Resident	Child and Adult Recreational	Aquatic Receptors ³
Ingestion		○	●				○	●		
Dermal Contact		○	●				○	●		
Ingestion				●					●	●
Dermal Contact				●					●	●
Ingestion				●					●	

Legend

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

● Indicates potentially complete pathway, which is evaluated quantitatively.

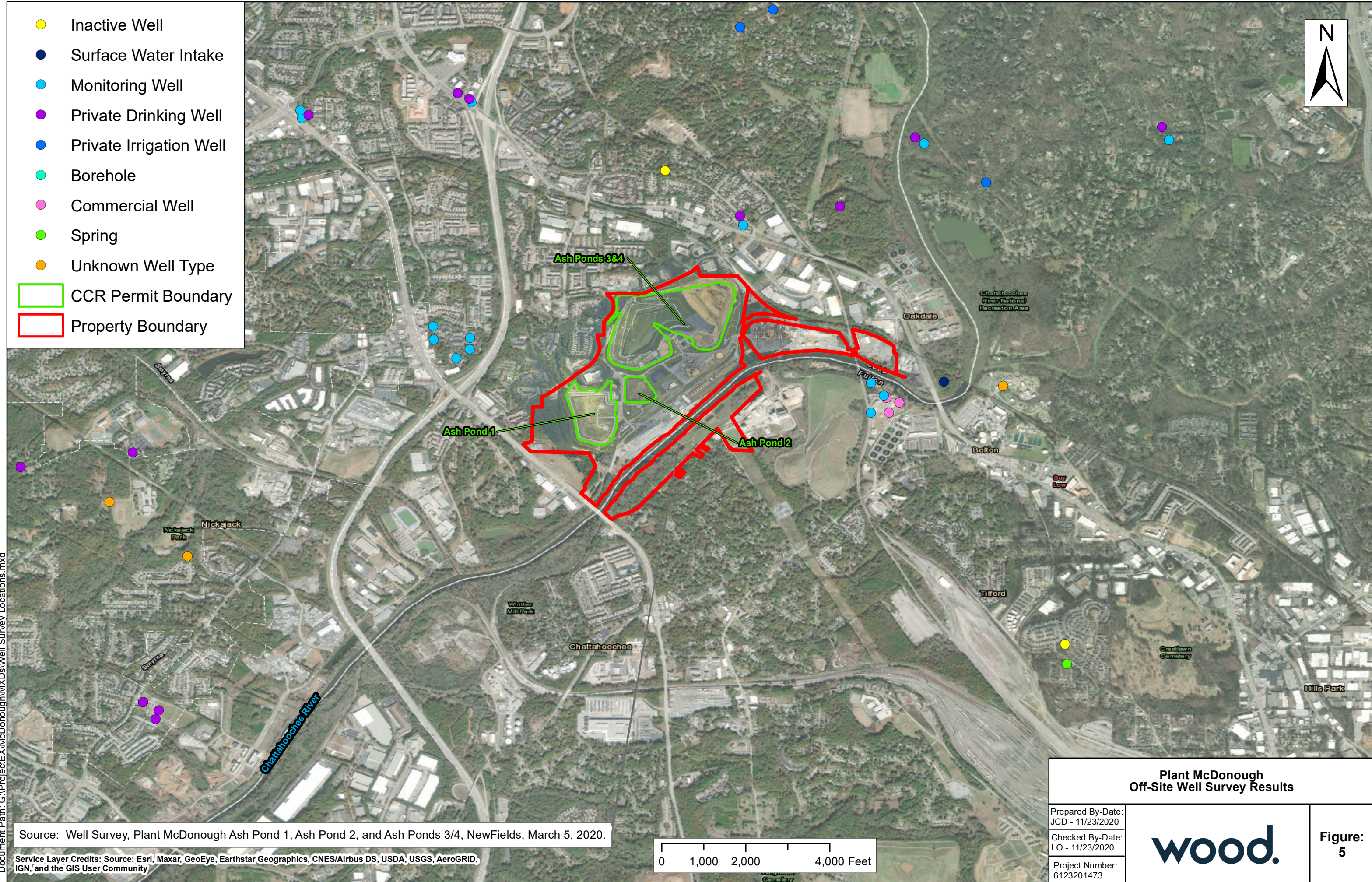
○ Indicates potentially complete pathway, which is evaluated qualitatively.

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.

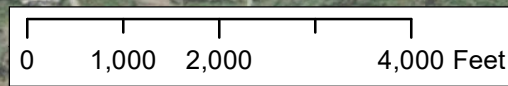
Plant McDonough AP-2 and AP-3/4 Conceptual Exposure Model	
Figure 4	
Project Number 6123201473	Prepared by/Date: RMB 9/1/2020 Checked by/Date: SBM 10/1/2020

- 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



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

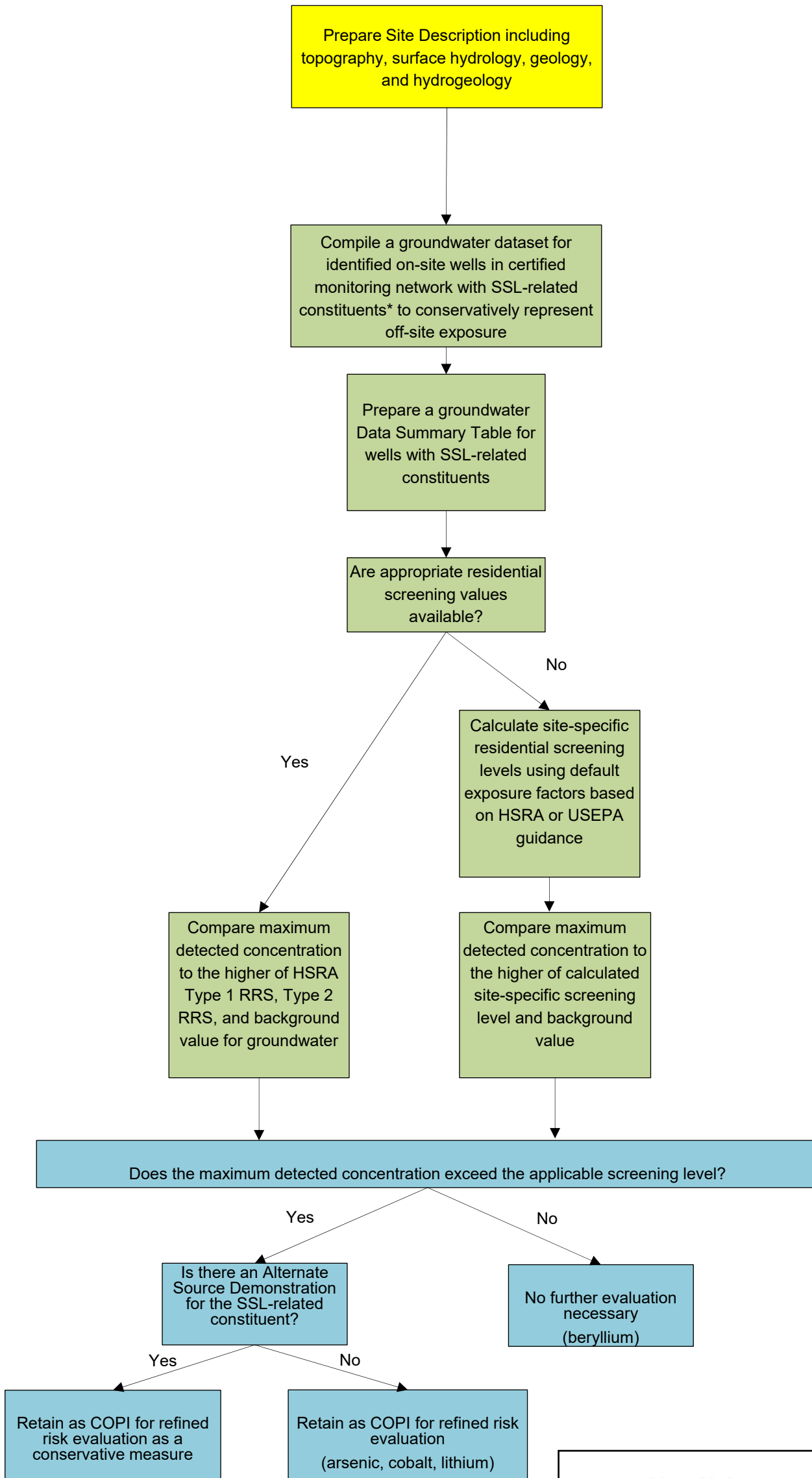
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Plant McDonough Off-Site Well Survey Results		
Prepared By-Date: JCD - 11/23/2020 Checked By-Date: LO - 11/23/2020 Project Number: 6123201473		Figure: 5

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

Risk Screening Approach (Groundwater) for AP-2 and AP-3/4



Notes:

- Initial screen evaluates wells at AP-2 and AP-3/4 with SSLs: arsenic (DGWC-9); beryllium (DGWC-5, DGWC-9, DGWC-10, DGWC-47, and DGWC-48); cobalt (DGWC-8, DGWC-9, DGWC-10, DGWC-19, DGWC-20, DGWC-47, and DGWC-48); and lithium (DGWC-2, DGWC-47 and DGWC-48).

SSL = Statistically Significant Level

COPI = Constituent of Potential Interest

HSRA = Hazardous Site Response Act

RRS = Risk Reduction Standard

USEPA = United States Environmental Protection Agency

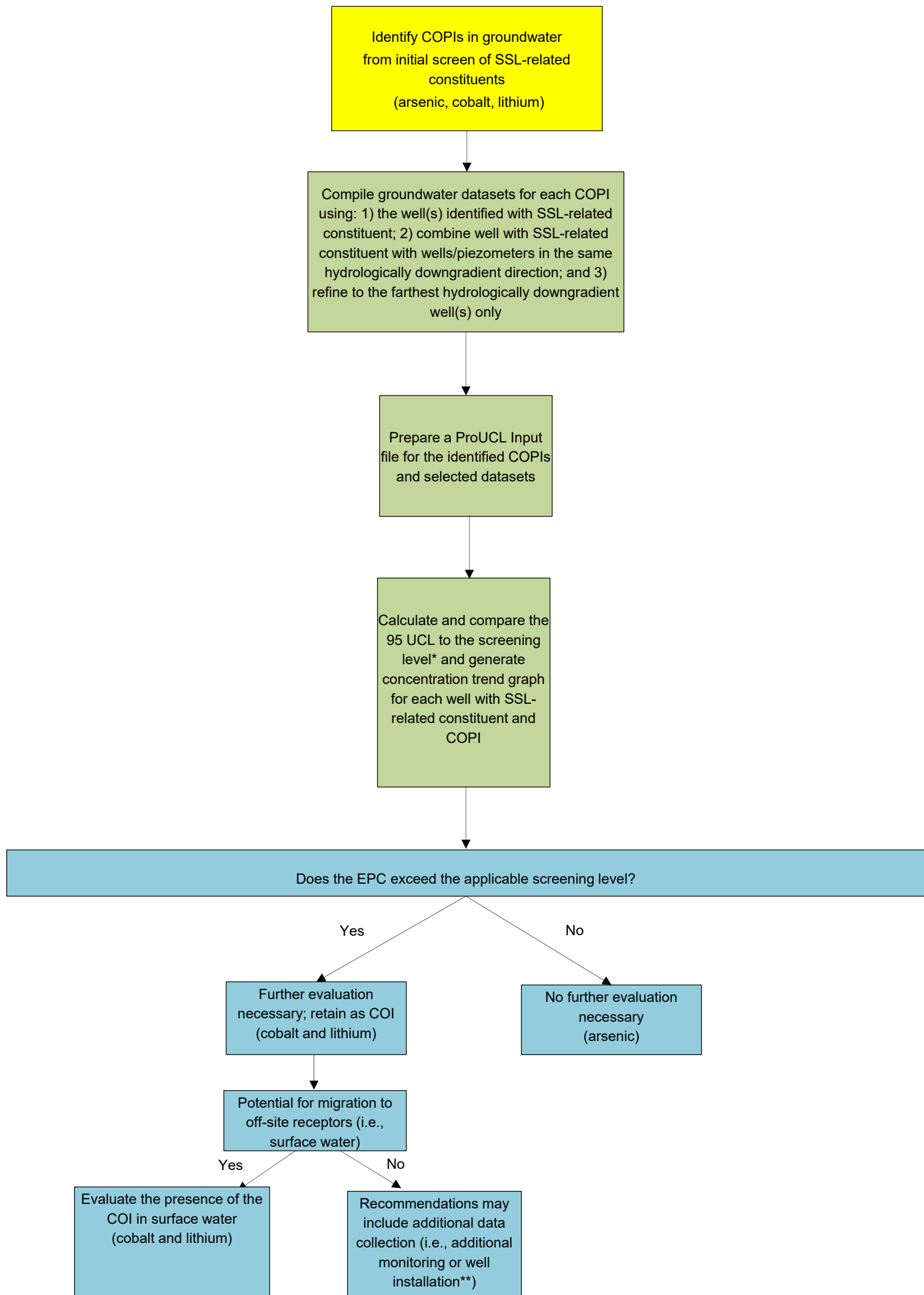
Plant McDonough AP-2 and AP-3/4 Groundwater Risk Screening Approach

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-2 and AP-3/4



Notes:

*If the 95 UCL exceeds the maximum concentration, use the maximum as the EPC.

**This step is not necessary for McDonough AP-2 and AP-3/4.

SSL = Statistically Significant Level

COPI = Constituent of Potential Interest

EPC = Exposure Point Concentration

UCL = Upper Confidence Limit

COI = Constituent of Interest

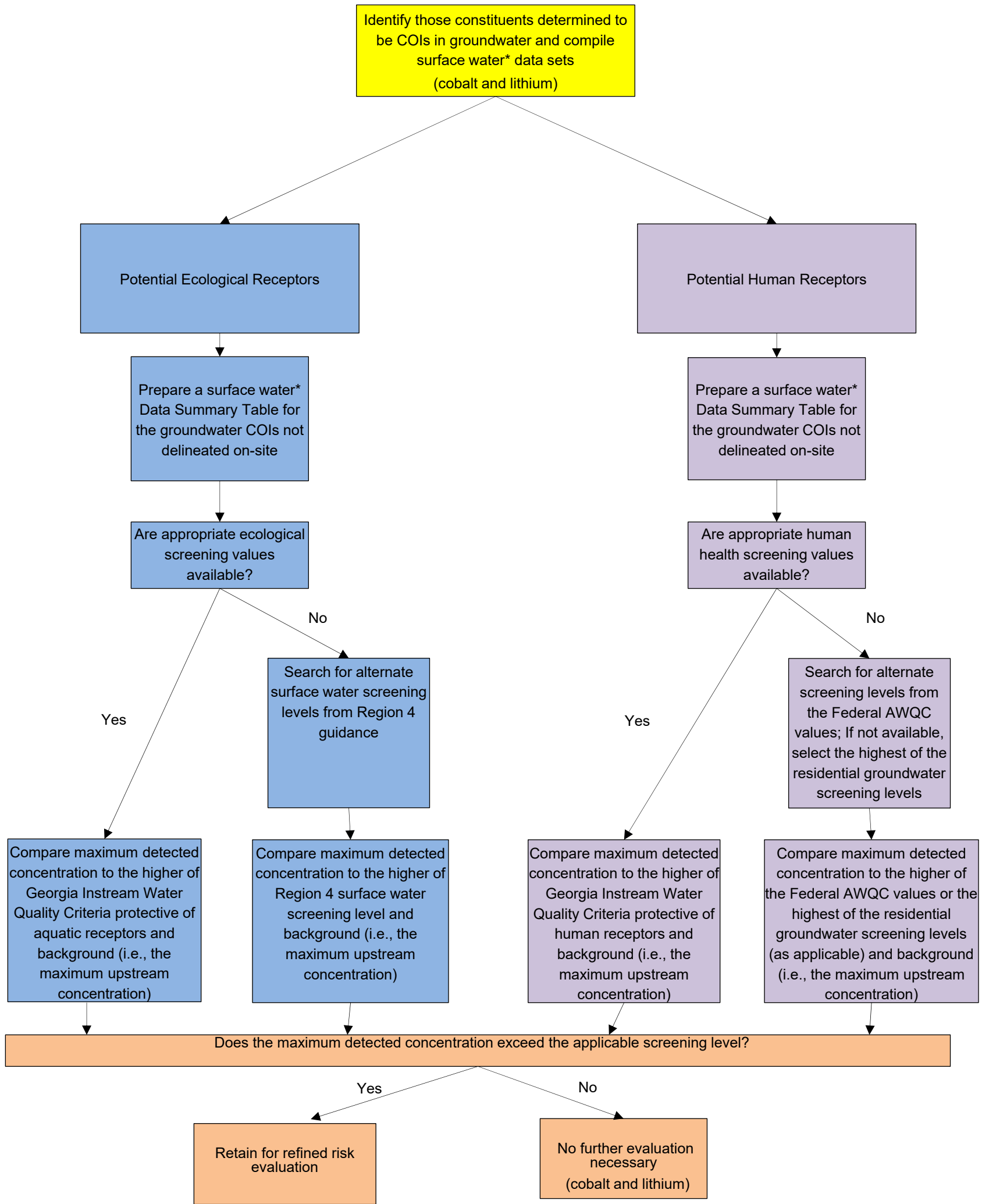
**Plant McDonough AP-2 and AP-3/4
Approach for Refined Groundwater Risk
Evaluation**

Figure 7

Project Number
6123201473

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

Risk Screening Approach (Surface Water) for AP-2 and AP-3/4



*Surface water data collected from the Chattahoochee River and includes two site-related locations, an upstream background location, and a downstream location.

SSL = Statistically Significant Level
 AWQC = Ambient Water Quality Criteria
 COI = Constituent of Interest
 COPI = Constituent of Potential Interest

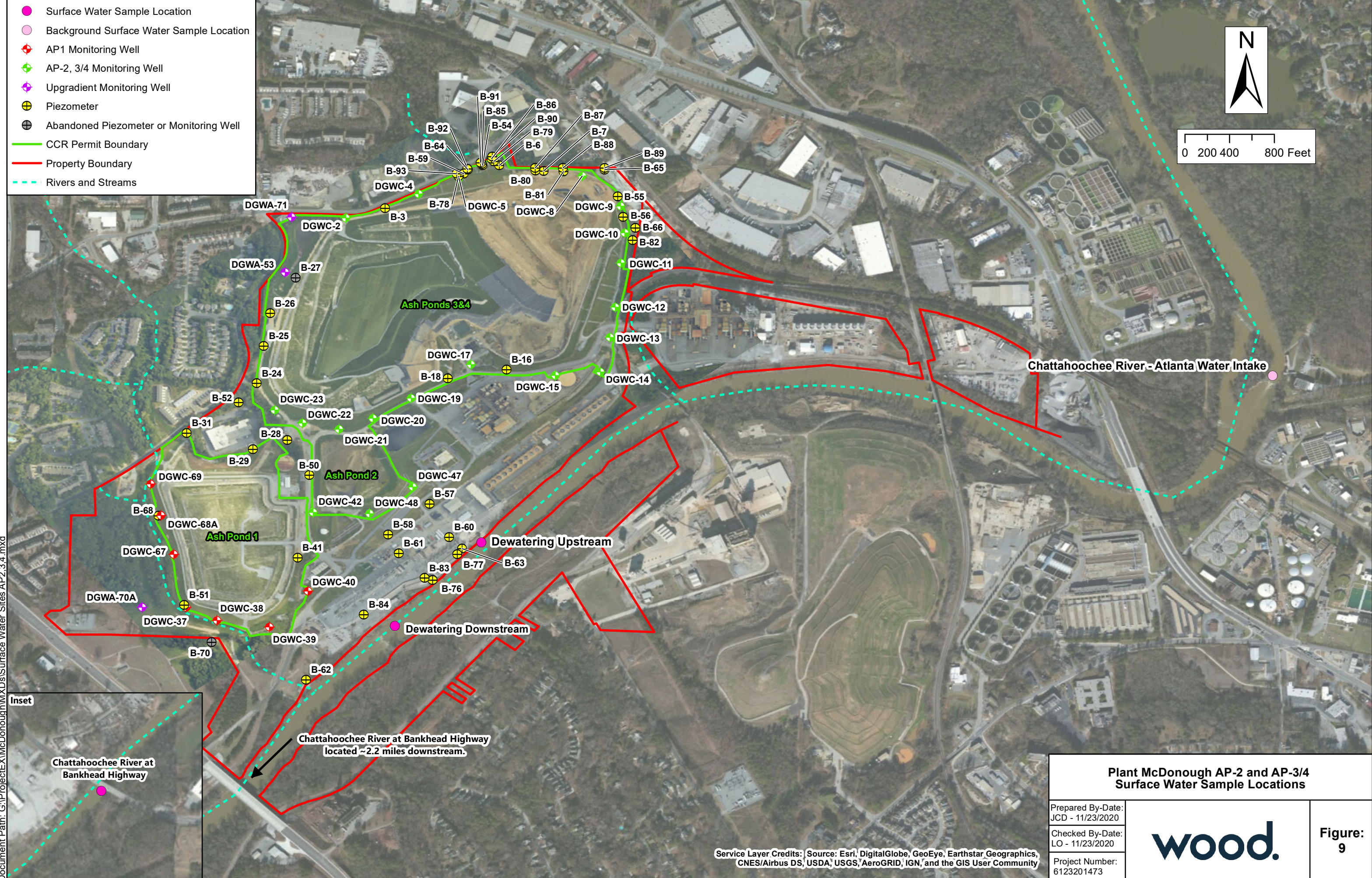
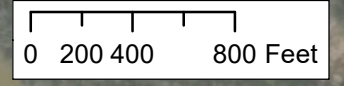
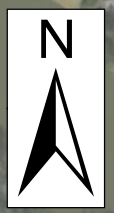
Plant McDonough AP-2 and AP-3/4 Surface Water Risk Screening Approach

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
- ◆ AP1 Monitoring Well
- ◆ AP-2, 3/4 Monitoring Well
- ◆ Upgradient Monitoring Well
- ⊕ Piezometer
- ⊕ Abandoned Piezometer or Monitoring Well
- CCR Permit Boundary
- Property Boundary
- - - Rivers and Streams



Document Path: G:\Project\EX\McDonough\MXDs\Surface Water Sites AP2,3,4.mxd

Plant McDonough AP-2 and AP-3/4 Surface Water Sample Locations			Figure: 9
Prepared By-Date:	JCD - 11/23/2020		
Checked By-Date:	LO - 11/23/2020		
Project Number:	6123201473		

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

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/>



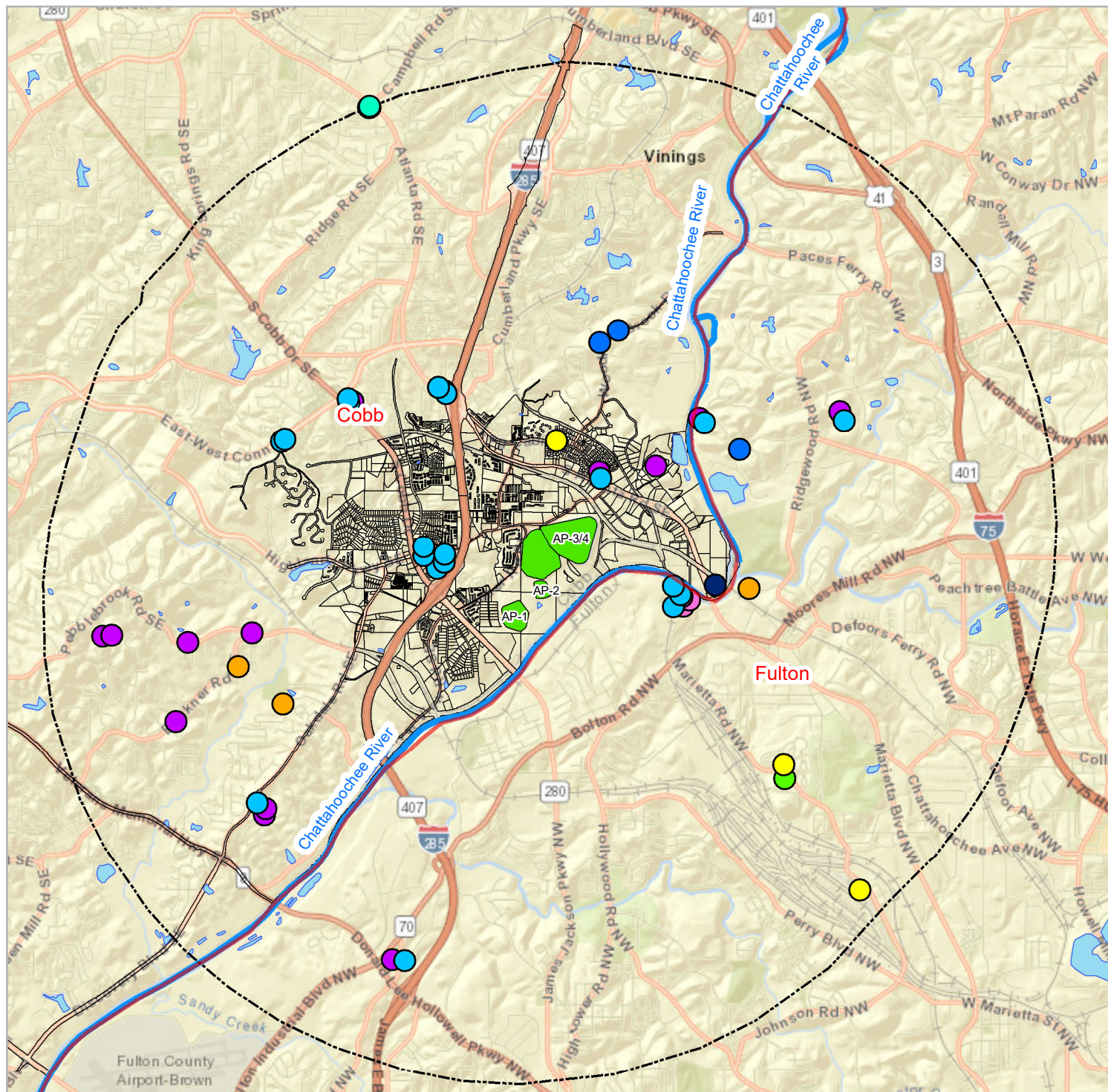
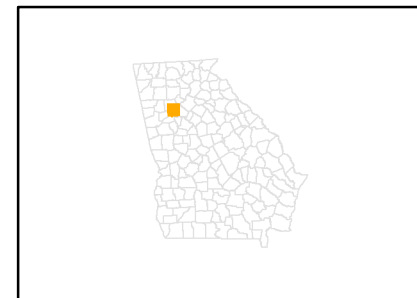
greenhouse. NewFields personnel were unable to locate most of the USGS monitoring wells at the locations listed in the database. NewFields also visited the location of the USGS-identified surface water intake, which is the drinking water treatment plant for the City of Atlanta. Identified wells and the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

Summary

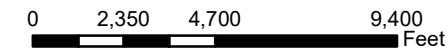
Municipal water is available throughout the surveyed area. The surface water intake for the City of Atlanta is located upstream and across the Chattahoochee River, 0.85 miles to the east of Plant McDonough.

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



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

APPENDIX B
Data Used in Risk Evaluation

Appendix B-1
Site Groundwater Data (2016-2020) for Evaluation of SSLs¹
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Well	Date	CAS	Constituent	Units	Obs	Flags	MDL	PQL
DGWC-47	07/12/18	7440-48-4	Cobalt	mg/L	0.36		0.00052	0.01
DGWC-47	11/07/18	7440-48-4	Cobalt	mg/L	0.35		0.00052	0.01
DGWC-47	08/29/19	7440-48-4	Cobalt	mg/L	0.28		0.0003	0.005
DGWC-47	10/17/19	7440-48-4	Cobalt	mg/L	0.26		0.0003	0.005
DGWC-47	03/04/20	7440-48-4	Cobalt	mg/L	0.28		0.0003	0.005
DGWC-48	09/01/16	7440-48-4	Cobalt	mg/L	0.539		0.0005	0.01
DGWC-48	12/08/16	7440-48-4	Cobalt	mg/L	0.575		0.0005	0.01
DGWC-48	03/30/17	7440-48-4	Cobalt	mg/L	0.573		0.0005	0.01
DGWC-48	07/13/17	7440-48-4	Cobalt	mg/L	0.531		0.0003	0.01
DGWC-48	10/26/17	7440-48-4	Cobalt	mg/L	0.482		0.0003	0.01
DGWC-48	03/02/18	7440-48-4	Cobalt	mg/L	0.49		0.00052	0.01
DGWC-48	07/12/18	7440-48-4	Cobalt	mg/L	0.46		0.00052	0.01
DGWC-48	11/07/18	7440-48-4	Cobalt	mg/L	0.48		0.00052	0.01
DGWC-48	08/29/19	7440-48-4	Cobalt	mg/L	0.42		0.0003	0.005
DGWC-48	10/18/19	7440-48-4	Cobalt	mg/L	0.41		0.0003	0.005
DGWC-48	03/04/20	7440-48-4	Cobalt	mg/L	0.42		0.0003	0.005
B-60	09/11/19	7440-48-4	Cobalt	mg/L	0.31		0.0003	0.005
B-60	10/21/19	7440-48-4	Cobalt	mg/L	0.29		0.0003	0.005
B-61	01/28/19	7440-48-4	Cobalt	mg/L	0.078		0.00052	0.01
B-61	09/11/19	7440-48-4	Cobalt	mg/L	0.066		0.0003	0.005
B-61	10/22/19	7440-48-4	Cobalt	mg/L	0.073		0.0003	0.005
B-63	01/28/19	7440-48-4	Cobalt	mg/L	0.053		0.00052	0.01
B-63	09/11/19	7440-48-4	Cobalt	mg/L	0.043		0.0003	0.005
B-63	10/22/19	7440-48-4	Cobalt	mg/L	0.046		0.0003	0.005
B-66	01/30/19	7440-48-4	Cobalt	mg/L		ND	0.00052	0.01
B-66	09/12/19	7440-48-4	Cobalt	mg/L	0.006		0.0003	0.005
B-66	10/21/19	7440-48-4	Cobalt	mg/L	0.0074		0.0003	0.005
B-76	09/18/19	7440-48-4	Cobalt	mg/L	0.39		0.0003	0.005
B-76	10/22/19	7440-48-4	Cobalt	mg/L	0.47		0.0003	0.005
B-77	09/18/19	7440-48-4	Cobalt	mg/L	0.0031	J	0.0003	0.005
B-77	10/24/19	7440-48-4	Cobalt	mg/L	0.0021	J	0.0003	0.005
B-81	09/21/19	7440-48-4	Cobalt	mg/L	0.032		0.0003	0.005
B-81	09/25/19	7440-48-4	Cobalt	mg/L	0.034		0.0003	0.005
B-81	10/22/19	7440-48-4	Cobalt	mg/L	0.074		0.0003	0.005
B-82	09/23/19	7440-48-4	Cobalt	mg/L	0.0038	J	0.0003	0.005
B-82	10/21/19	7440-48-4	Cobalt	mg/L	0.0089		0.0003	0.005
B-83	10/21/19	7440-48-4	Cobalt	mg/L	0.018		0.0003	0.005
B-88	11/22/19	7440-48-4	Cobalt	mg/L	0.018	J	0.0015	0.025
DGWC-2	03/30/17	7439-93-2	Lithium	mg/L	0.0807		0.0011	0.05
DGWC-2	05/11/17	7439-93-2	Lithium	mg/L	0.085		0.0011	0.05
DGWC-2	06/15/17	7439-93-2	Lithium	mg/L	0.0781		0.0015	0.05
DGWC-2	07/11/17	7439-93-2	Lithium	mg/L	0.0731		0.0015	0.05
DGWC-2	10/24/17	7439-93-2	Lithium	mg/L	0.0995		0.0015	0.05
DGWC-2	02/27/18	7439-93-2	Lithium	mg/L	0.088		0.00097	0.05
DGWC-2	07/11/18	7439-93-2	Lithium	mg/L	0.033	J	0.00097	0.05
DGWC-2	11/06/18	7439-93-2	Lithium	mg/L	0.037	J	0.00097	0.05
DGWC-2	08/27/19	7439-93-2	Lithium	mg/L	0.032		0.00078	0.03
DGWC-2	10/17/19	7439-93-2	Lithium	mg/L	0.029	J	0.00078	0.03
DGWC-2	03/03/20	7439-93-2	Lithium	mg/L	0.026	J	0.00078	0.03
DGWC-47	09/01/16	7439-93-2	Lithium	mg/L	0.0854		0.0021	0.05
DGWC-47	12/08/16	7439-93-2	Lithium	mg/L	0.0667		0.0021	0.05
DGWC-47	03/31/17	7439-93-2	Lithium	mg/L	0.0767		0.0011	0.05
DGWC-47	07/13/17	7439-93-2	Lithium	mg/L	0.0743		0.0075	0.05
DGWC-47	10/26/17	7439-93-2	Lithium	mg/L	0.071		0.0015	0.05
DGWC-47	03/01/18	7439-93-2	Lithium	mg/L	0.0772		0.00097	0.05
DGWC-47	07/12/18	7439-93-2	Lithium	mg/L	0.073		0.00097	0.05
DGWC-47	11/07/18	7439-93-2	Lithium	mg/L	0.082		0.00097	0.05
DGWC-47	08/29/19	7439-93-2	Lithium	mg/L	0.056		0.00078	0.03
DGWC-47	10/17/19	7439-93-2	Lithium	mg/L	0.066		0.00078	0.03
DGWC-47	03/04/20	7439-93-2	Lithium	mg/L	0.063		0.00078	0.03
DGWC-48	09/01/16	7439-93-2	Lithium	mg/L	0.125		0.0021	0.05
DGWC-48	12/08/16	7439-93-2	Lithium	mg/L	0.122		0.0021	0.05
DGWC-48	03/30/17	7439-93-2	Lithium	mg/L	0.144		0.0011	0.05
DGWC-48	07/13/17	7439-93-2	Lithium	mg/L	0.143		0.0075	0.05
DGWC-48	10/26/17	7439-93-2	Lithium	mg/L	0.115		0.0015	0.05
DGWC-48	03/02/18	7439-93-2	Lithium	mg/L	0.129		0.00097	0.05
DGWC-48	07/12/18	7439-93-2	Lithium	mg/L	0.12		0.00097	0.05

Appendix B-1
Site Groundwater Data (2016-2020) for Evaluation of SSLs¹
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Well	Date	CAS	Constituent	Units	Obs	Flags	MDL	PQL
DGWC-48	11/07/18	7439-93-2	Lithium	mg/L	0.12		0.00097	0.05
DGWC-48	08/29/19	7439-93-2	Lithium	mg/L	0.11		0.00078	0.03
DGWC-48	10/18/19	7439-93-2	Lithium	mg/L	0.11		0.00078	0.03
DGWC-48	03/04/20	7439-93-2	Lithium	mg/L	0.12		0.00078	0.03
DGWC-4	03/28/17	7439-93-2	Lithium	mg/L	0.0031	J	0.0011	0.05
DGWC-4	05/12/17	7439-93-2	Lithium	mg/L	0.0027	J	0.0011	0.05
DGWC-4	06/15/17	7439-93-2	Lithium	mg/L	0.0025	J	0.0015	0.05
DGWC-4	07/11/17	7439-93-2	Lithium	mg/L	0.0022	J	0.0015	0.05
DGWC-4	10/24/17	7439-93-2	Lithium	mg/L	0.0024	J	0.0015	0.05
DGWC-4	02/27/18	7439-93-2	Lithium	mg/L	0.0027	J	0.00097	0.05
DGWC-4	07/10/18	7439-93-2	Lithium	mg/L	0.003	J	0.00097	0.05
DGWC-4	11/06/18	7439-93-2	Lithium	mg/L	0.0029	J	0.00097	0.05
DGWC-4	08/27/19	7439-93-2	Lithium	mg/L	0.0033	J	0.00078	0.03
DGWC-4	10/15/19	7439-93-2	Lithium	mg/L	0.0029	J	0.00078	0.03
DGWC-4	03/02/20	7439-93-2	Lithium	mg/L	0.0035	J	0.00078	0.03
DGWC-5	08/31/16	7439-93-2	Lithium	mg/L	0.0026	J	0.0021	0.05
DGWC-5	12/06/16	7439-93-2	Lithium	mg/L	0.0046	J	0.0021	0.05
DGWC-5	03/28/17	7439-93-2	Lithium	mg/L	0.0028	J	0.0011	0.05
DGWC-5	07/11/17	7439-93-2	Lithium	mg/L	0.0031	J	0.0015	0.05
DGWC-5	10/25/17	7439-93-2	Lithium	mg/L	0.0055	J	0.0015	0.05
DGWC-5	02/27/18	7439-93-2	Lithium	mg/L	0.0066	J	0.00097	0.05
DGWC-5	07/10/18	7439-93-2	Lithium	mg/L	0.0034	J	0.00097	0.05
DGWC-5	11/06/18	7439-93-2	Lithium	mg/L	0.0082	J	0.00097	0.05
DGWC-5	08/27/19	7439-93-2	Lithium	mg/L	0.008	J	0.00078	0.03
DGWC-5	10/16/19	7439-93-2	Lithium	mg/L	0.006	J	0.00078	0.03
DGWC-5	03/02/20	7439-93-2	Lithium	mg/L	0.0079	J	0.00078	0.03
B-54	09/17/19	7439-93-2	Lithium	mg/L	0.0062	J	0.00078	0.03
B-54	10/22/19	7439-93-2	Lithium	mg/L	0.0063	J	0.00078	0.03
B-60	09/11/19	7439-93-2	Lithium	mg/L	0.03	J	0.00078	0.03
B-60	10/21/19	7439-93-2	Lithium	mg/L	0.028	J	0.00078	0.03
B-61	01/28/19	7439-93-2	Lithium	mg/L		ND	0.00097	0.05
B-61	09/11/19	7439-93-2	Lithium	mg/L	0.0014	J	0.00078	0.03
B-61	10/22/19	7439-93-2	Lithium	mg/L	0.0015	J	0.00078	0.03
B-63	01/28/19	7439-93-2	Lithium	mg/L		ND	0.00097	0.05
B-63	09/11/19	7439-93-2	Lithium	mg/L	0.0064	J	0.00078	0.03
B-63	10/22/19	7439-93-2	Lithium	mg/L	0.0062	J	0.00078	0.03
B-64	01/28/19	7439-93-2	Lithium	mg/L		ND	0.00097	0.05
B-64	09/12/19	7439-93-2	Lithium	mg/L	0.012	J	0.00078	0.03
B-64	10/21/19	7439-93-2	Lithium	mg/L	0.011	J	0.00078	0.03
B-76	09/18/19	7439-93-2	Lithium	mg/L	0.041		0.00078	0.03
B-76	10/22/19	7439-93-2	Lithium	mg/L	0.045		0.00078	0.03
B-77	09/18/19	7439-93-2	Lithium	mg/L	0.0047	J	0.00078	0.03
B-77	10/24/19	7439-93-2	Lithium	mg/L	0.0036	J	0.00078	0.03
B-78	09/23/19	7439-93-2	Lithium	mg/L	0.012	J	0.00078	0.03
B-78	10/22/19	7439-93-2	Lithium	mg/L	0.0071	J	0.00078	0.03
B-79	09/22/19	7439-93-2	Lithium	mg/L	0.0099	J	0.00078	0.03
B-79	10/22/19	7439-93-2	Lithium	mg/L	0.0046	J	0.00078	0.03
B-83	10/21/19	7439-93-2	Lithium	mg/L	0.003	J	0.00078	0.03

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 09/30/20

Checked by/Date: SBM 10/02/20

Appendix B-2
Surface Water Data (2016-2019)
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Location	Sample Designation	Date	CAS	Constituent	Units	Obs	Flags	MDL ¹	PQL
Chattahoochee River at Bankhead Highway	Downgradient	03/01/16	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River at Bankhead Highway	Downgradient	06/20/16	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River at Bankhead Highway	Downgradient	09/22/16	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River at Bankhead Highway	Downgradient	12/05/16	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River at Bankhead Highway	Downgradient	03/09/17	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River at Bankhead Highway	Downgradient	06/19/17	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River at Bankhead Highway	Downgradient	09/13/17	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River at Bankhead Highway	Downgradient	12/07/17	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River at Bankhead Highway	Downgradient	03/05/18	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River at Bankhead Highway	Downgradient	06/21/18	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River at Bankhead Highway	Downgradient	09/04/18	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River at Bankhead Highway	Downgradient	12/04/18	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River at Bankhead Highway	Downgradient	12/09/19	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Downstream	Downgradient	09/12/19	7440-48-4	Cobalt	mg/L		ND	0.0003	0.01
Downstream	Downgradient	09/22/20	7440-48-4	Cobalt	mg/L	0.00086	J	0.00038	0.005
Upstream	Downgradient	09/12/19	7440-48-4	Cobalt	mg/L		ND	0.0003	0.01
Upstream	Downgradient	09/22/20	7440-48-4	Cobalt	mg/L	0.00091	J	0.00038	0.005
Chattahoochee River - Atlanta Water Intake	Background	03/07/16	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River - Atlanta Water Intake	Background	06/27/16	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River - Atlanta Water Intake	Background	09/28/16	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River - Atlanta Water Intake	Background	12/08/16	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River - Atlanta Water Intake	Background	04/20/17	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River - Atlanta Water Intake	Background	06/21/17	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River - Atlanta Water Intake	Background	09/18/17	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River - Atlanta Water Intake	Background	12/07/17	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River - Atlanta Water Intake	Background	03/05/18	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River - Atlanta Water Intake	Background	06/21/18	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River - Atlanta Water Intake	Background	09/04/18	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River - Atlanta Water Intake	Background	12/04/18	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Chattahoochee River - Atlanta Water Intake	Background	12/11/19	7440-48-4	Cobalt	mg/L		ND	0.002	0.01
Downstream	Downgradient	09/12/19	7439-93-2	Lithium	mg/L		ND	0.00078	0.05
Downstream	Downgradient	09/22/20	7439-93-2	Lithium	mg/L	0.0011	J	0.00081	0.03
Upstream	Downgradient	09/12/19	7439-93-2	Lithium	mg/L		ND	0.00078	0.05
Upstream	Downgradient	09/22/20	7439-93-2	Lithium	mg/L	0.0012	J	0.00081	0.03

Notes:

1) MDLs not available for cobalt data from the Chattahoochee River at Bankhead Highway and the Atlanta Water Intake locations. The MDL of 0.002 mg/L from Table 4 of the referenced analytical method 200.7 is presented.

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 10/07/20

Checked by/Date: RMB 10/08/20

APPENDIX C

USEPA RSL Calculator Generated Residential Screening Levels

McDonough AP-2, 3/4 Risk Evaluation Report

McDonough AP-2, 3/4

Plant McDonough, Cobb County, GA

Appendix C-1

McDonough AP-2 and AP-3/4

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-c} (exposure duration - child) years	6
ED _{res-a} (exposure duration - adult) years	20
ED ₀₋₂ (mutagenic exposure duration first phase) years	2
ED ₂₋₆ (mutagenic exposure duration second phase) years	4
ED ₆₋₁₆ (mutagenic exposure duration third phase) years	10
ED ₁₆₋₂₆ (mutagenic exposure duration fourth phase) years	10
EF _{res} (exposure frequency) days/year	350
EF _{res-c} (exposure frequency - child) days/year	350
EF _{res-a} (exposure frequency - adult) days/year	350
EF ₀₋₂ (mutagenic exposure frequency first phase) days/year	350
EF ₂₋₆ (mutagenic exposure frequency second phase) days/year	350
EF ₆₋₁₆ (mutagenic exposure frequency third phase) days/year	350
EF ₁₆₋₂₆ (mutagenic exposure frequency fourth phase) days/year	350
ET _{event-res-adj} (age-adjusted exposure time) hours/event	0.67077
ET _{event-res-madj} (mutagenic age-adjusted exposure time) hours/event	0.67077
ET _{res} (exposure time) hours/day	24
ET _{res-c} (dermal exposure time - child) hours/event	0.54
ET _{res-a} (dermal exposure time - adult) hours/event	0.71
ET _{res-c} (inhalation exposure time - child) hours/day	24
ET _{res-a} (inhalation exposure time - adult) hours/day	24
Appendix D-3	24
Scherer AP-1	24
Plant Scherer, Juliette, GA	24
ET ₁₆₋₂₆ (mutagenic inhalation exposure time fourth phase) hours/day	24
ET ₀₋₂ (mutagenic dermal exposure time first phase) hours/event	0.54
ET ₂₋₆ (mutagenic dermal exposure time second phase) hours/event	0.54
ET ₆₋₁₆ (mutagenic dermal exposure time third phase) hours/event	0.71
ET ₁₆₋₂₆ (mutagenic dermal exposure time fourth phase) hours/event	0.71
BW _{res-a} (body weight - adult) kg	80

McDonough AP-2, 3/4 Risk Evaluation Report

McDonough AP-2, 3/4

Plant McDonough, Cobb County, GA

**Appendix C-1
McDonough AP-2 and AP-3/4
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

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Appendix C-2
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

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-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
Beryllium and compounds	7440-41-7	No	No	Inorganics	-	-	2.40E-03	I	2.00E-03	I	2.00E-05	I	7.00E-03
Cobalt	7440-48-4	No	No	Inorganics	-	-	9.00E-03	P	3.00E-04	P	6.00E-06	P	1.00E+00
Lithium	7439-93-2	No	No	Inorganics	-	-	-	-	2.00E-03	P	-	-	1.00E+00

Output generated 06AUG2020:16:09:05

Appendix C-2
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

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)}
Beryllium and compounds	7440-41-7	No	No	Inorganics	1.00E-03	9.01E+00	1.15E-03	2.83E-01	1.18E-01	1.00E+00	Yes	-	3.44E-05
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
Lithium	7439-93-2	No	No	Inorganics	1.00E-03	6.94E+00	1.01E-03	2.76E-01	1.15E-01	1.00E+00	Yes	-	4.92E-03

Output generated 06AUG2020:16:09:05

Appendix C-2
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

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)
Beryllium and compounds	7440-41-7	No	No	Inorganics	5.94E-05	4.00E+00	-	-	-	-
Cobalt	7440-48-4	No	No	Inorganics	1.27E-03	-	-	-	-	-
Lithium	7439-93-2	No	No	Inorganics	8.49E-03	-	-	-	-	-

Output generated 06AUG2020:16:09:05

Appendix C-2
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

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)
Beryllium and compounds	7440-41-7	No	No	Inorganics	4.01E+01	6.37E+01	-	2.46E+01	6.67E+01
Cobalt	7440-48-4	No	No	Inorganics	6.02E+00	3.41E+03	-	6.01E+00	1.00E+01
Lithium	7439-93-2	No	No	Inorganics	4.01E+01	9.10E+03	-	3.99E+01	6.67E+01

Output generated 06AUG2020:16:09:05

Appendix C-2
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

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)
Beryllium and compounds	7440-41-7	No	No	Inorganics	8.37E+01	-	3.71E+01	2.46E+01 nc
Cobalt	7440-48-4	No	No	Inorganics	4.48E+03	-	9.99E+00	6.01E+00 nc
Lithium	7439-93-2	No	No	Inorganics	1.20E+04	-	6.64E+01	3.99E+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 Concentration Calculation Results¹
McDonough AP-2,3/4 Risk Evaluation Report
Plant McDonough, Cobb County, GA**

CCR Rule Designation	Constituent	Well IDs Included	Maximum Concentration (mg/L)	Detection Frequency	Exceedance Frequency	EPC Step 1	EPC Step 2	EPC Step 3
						Individual Target Well(s) 2016-2020 (mg/L)	Target Well(s) + Flowpath Well(s) 2016-2020 (mg/L)	Farthest Downgradient Well(s) 2016-2020 (mg/L)
Appendix IV	Arsenic - East	DGWC-9	0.04	10 / 11	10 / 11	0.027		
		DGWC-9 B-66 B-82	0.04	10 / 18	10 / 18		0.020	
		B-66 B-82	ND (0.005)	0 / 7	0 / 7			ND (0.005)
Appendix IV	Cobalt - North	DGWC-8	0.13	11 / 11	11 / 11	0.093		
		DGWC-8 B-81 B-88	0.13	15 / 15	13 / 15		0.081	
		B-88	0.018 J	1 / 1	0 / 1			0.018 J
Appendix IV	Cobalt - East	DGWC-9 DGWC-10	0.24	22 / 22	22 / 22	0.19		
		DGWC-9 DGWC-10 B-66 B-82	0.24	26 / 27	22 / 27		0.20	
		B-66 B-82	0.0089	4 / 5	0 / 5			0.0088
	Cobalt - South	DGWC-19 DGWC-20 DGWC-47 DGWC-48	0.84	44 / 44	44 / 44	0.50		
		DGWC-19 DGWC-20 DGWC-47 DGWC-48 B-60 B-61 B-63 B-76 B-77 B-83	0.84	57 / 57	54 / 57		0.44	
		DWGC-19 B-63 B-76 B-77	0.47	18 / 18	16 / 18			0.22
Appendix IV	Lithium - North	DGWC-2	0.0995	11 / 11	6 / 11	0.076		
		B-54 B-64 B-78 B-79	0.0995	41 / 42	6 / 42		0.039	
		DGWC-2 DGWC-4 DGWC-5						
	B-54 B-64 B-78 B-79	0.012 J	8 / 9	0 / 9			0.011	
	Lithium - South	DGWC-47 DGWC-48	0.144	22 / 22	22 / 22	0.11		
		DGWC-47 DGWC-48 B-60 B-61 B-63 B-76 B-77 B-83	0.144	33 / 35	24 / 35		0.081	
B-63 B-76 B-77		0.045	6 / 7	2 / 7			0.045	

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:

EPC = Exposure Point Concentration

mg/L = milligrams per liter

J = Estimated value less than the reporting limit but greater than the method detection limit

Prepared by/Date: LO 09/16/2020

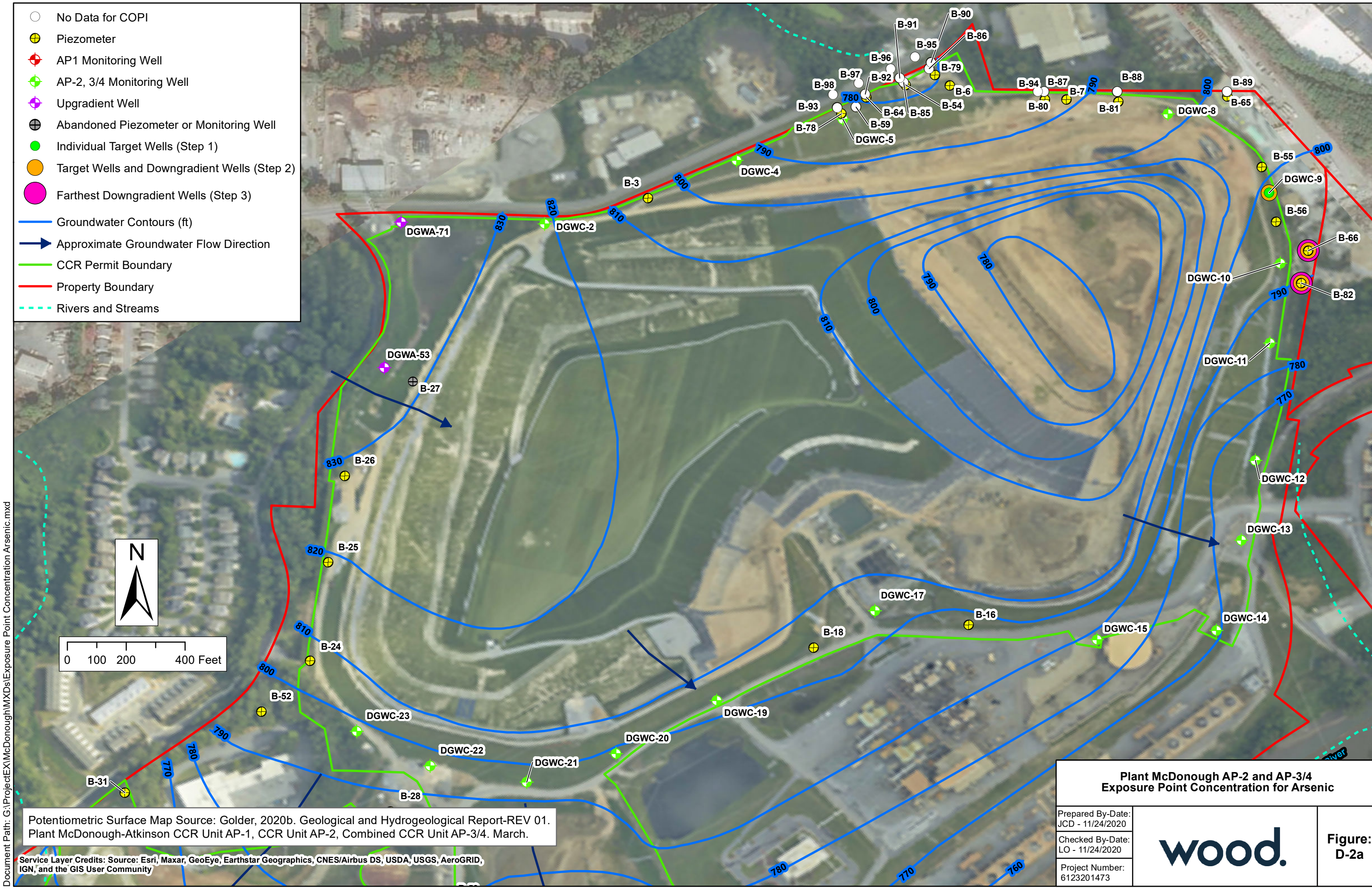
Checked by/Date: RMB 09/17/2020

Appendix D-2

Exposure Point Concentration Figures

- 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

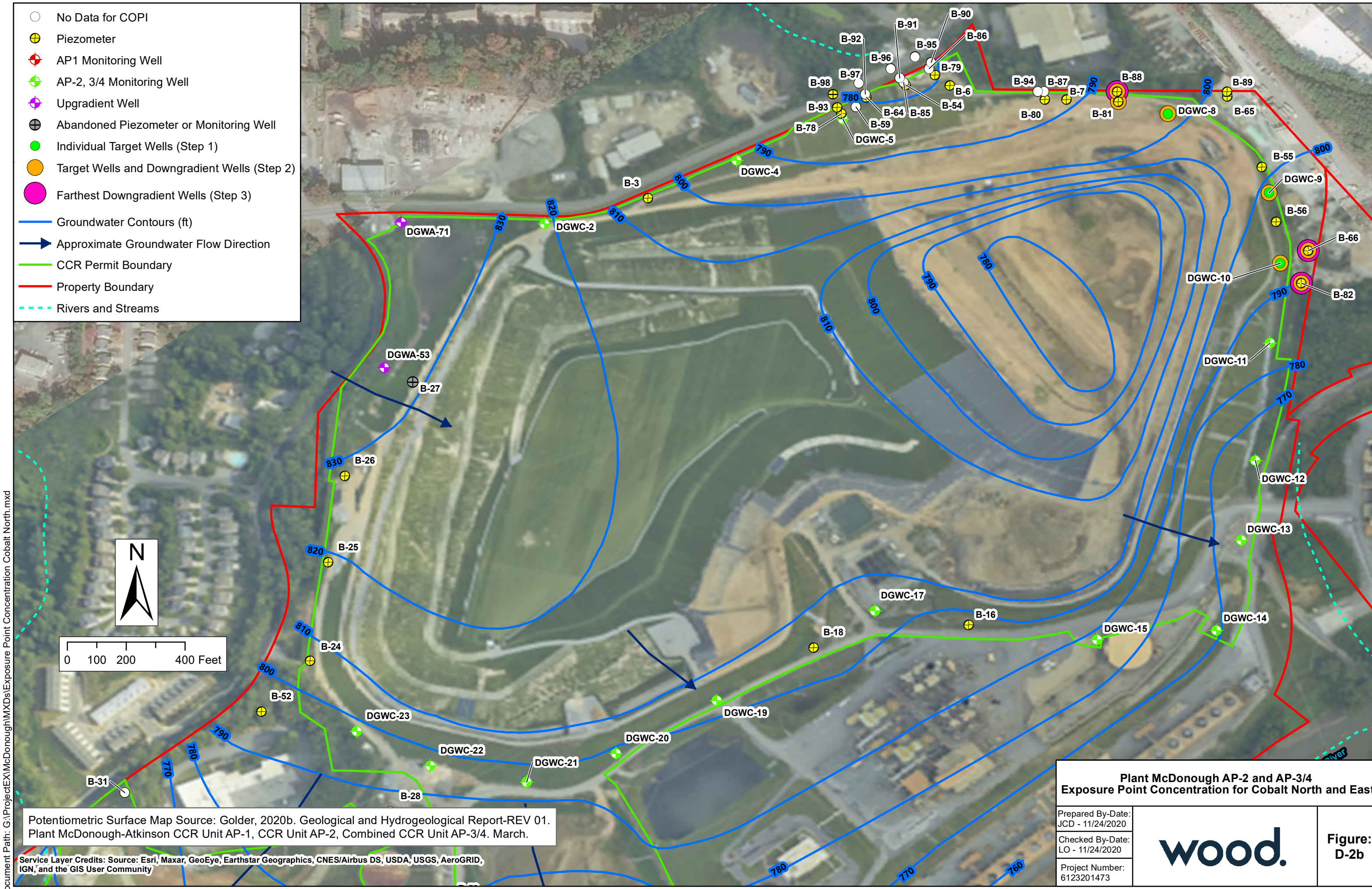
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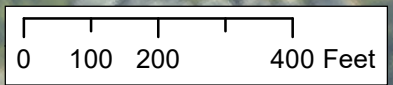
Potentiometric Surface Map Source: Golder, 2020b. Geological and Hydrogeological Report-REV 01. Plant McDonough-Atkinson CCR Unit AP-1, CCR Unit AP-2, Combined CCR Unit AP-3/4. March.

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

Plant McDonough AP-2 and AP-3/4 Exposure Point Concentration for Arsenic		
Prepared By-Date: JCD - 11/24/2020		Figure: D-2a
Checked By-Date: LO - 11/24/2020		
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



Potentiometric Surface Map Source: Golder, 2020b. Geological and Hydrogeological Report-REV 01. Plant McDonough-Atkinson CCR Unit AP-1, CCR Unit AP-2, Combined CCR Unit AP-3/4. March.

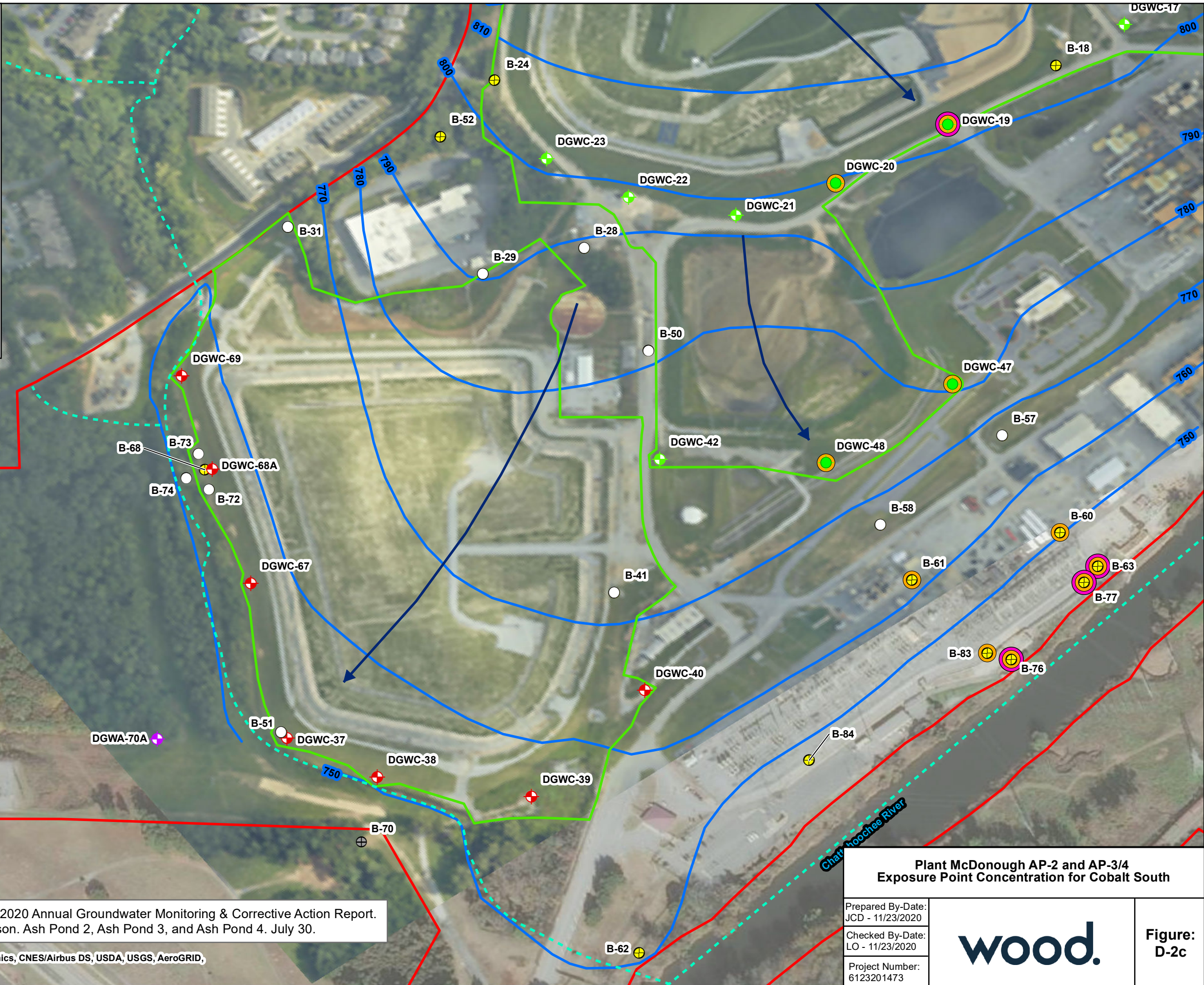
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Plant McDonough AP-2 and AP-3/4 Exposure Point Concentration for Cobalt North and East		
Prepared By-Date: JCD - 11/24/2020		Figure: D-2b
Checked By-Date: LO - 11/24/2020		
Project Number: 6123201473		

Document Path: G:\Project\EX\McDonough\MXDs\Exposure Point Concentration Cobalt North.mxd

Document Path: G:\Project\EX\McDonough\MXDs\Exposure Point Concentration Cobalt South.mxd

- 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



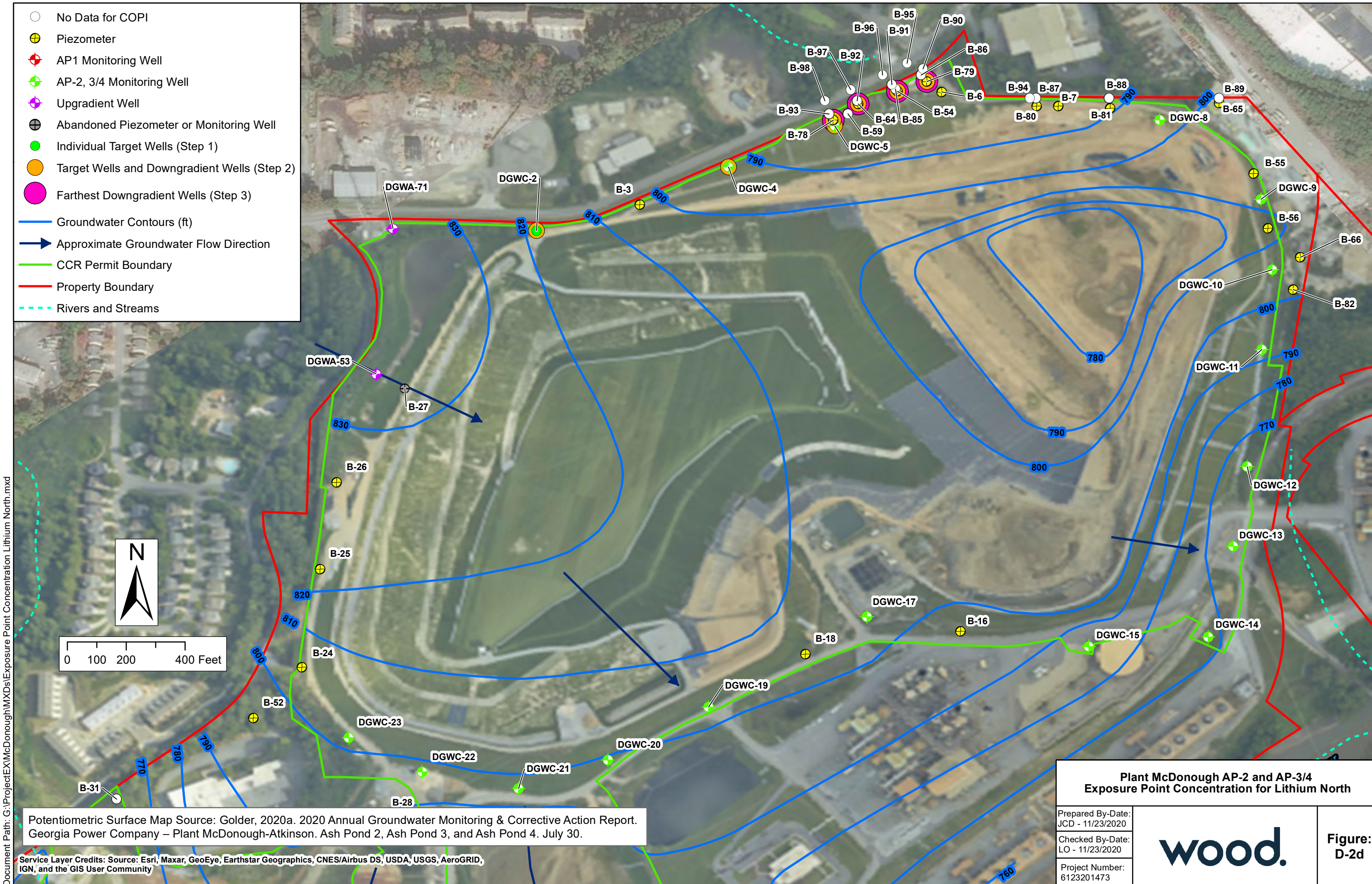
Potentiometric Surface Map Source: Golder, 2020a. 2020 Annual Groundwater Monitoring & Corrective Action Report. Georgia Power Company – Plant McDonough-Atkinson. Ash Pond 2, Ash Pond 3, and Ash Pond 4. July 30.

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

Plant McDonough AP-2 and AP-3/4 Exposure Point Concentration for Cobalt South			Figure: D-2c
Prepared By-Date:	JCD - 11/23/2020		
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

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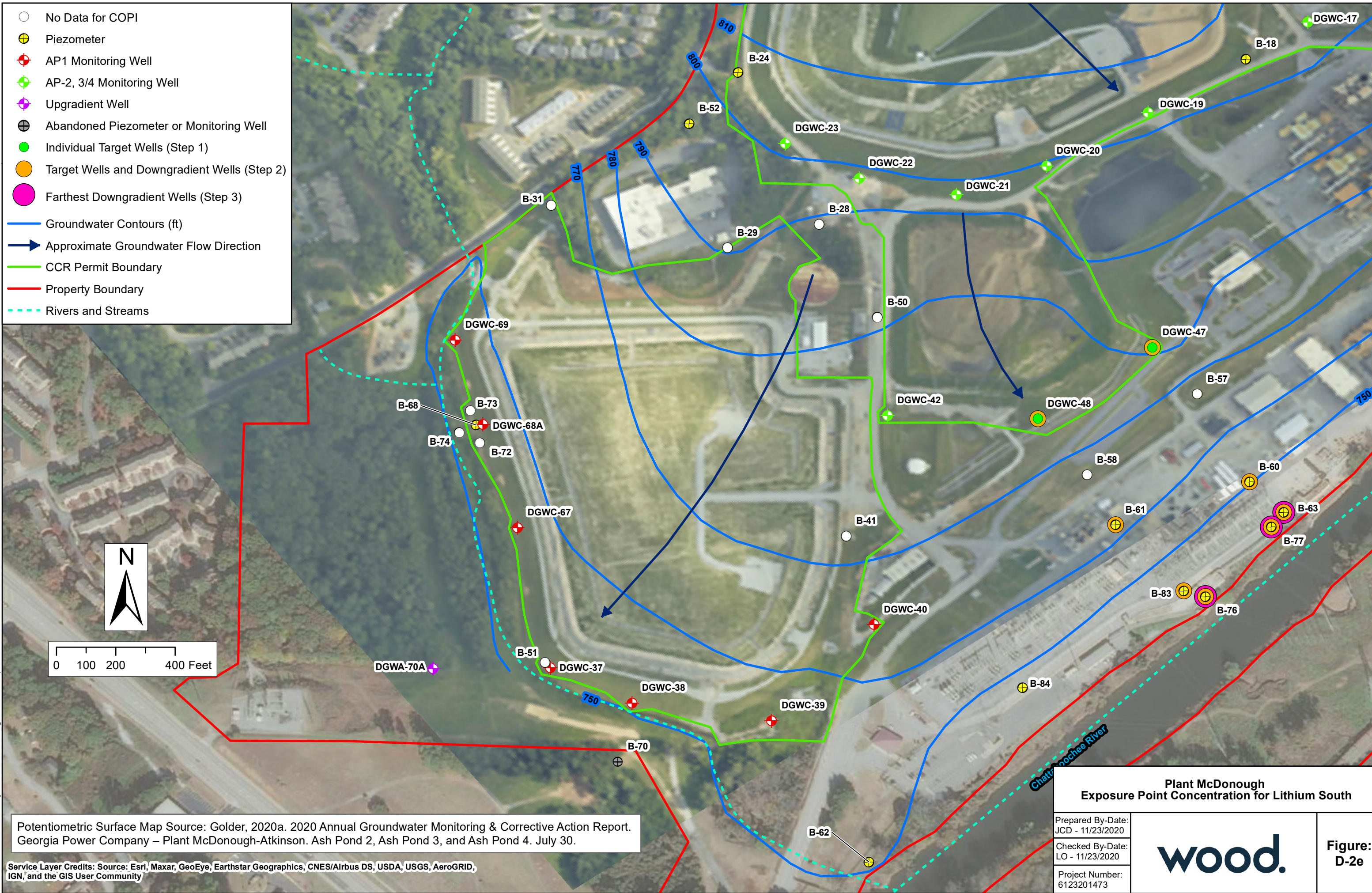


Potentiometric Surface Map Source: Golder, 2020a. 2020 Annual Groundwater Monitoring & Corrective Action Report. Georgia Power Company – Plant McDonough-Atkinson. Ash Pond 2, Ash Pond 3, and Ash Pond 4. July 30.

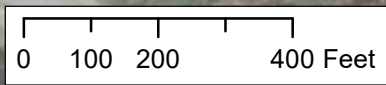
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Plant McDonough AP-2 and AP-3/4 Exposure Point Concentration for Lithium North		
Prepared By-Date: JCD - 11/23/2020		Figure: D-2d
Checked By-Date: LO - 11/23/2020		
Project Number: 6123201473		

Document Path: G:\Project\EX\McDonough\MXDs\Exposure Point Concentration Lithium South.mxd



- 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



Potentiometric Surface Map Source: Golder, 2020a. 2020 Annual Groundwater Monitoring & Corrective Action Report. Georgia Power Company – Plant McDonough-Atkinson. Ash Pond 2, Ash Pond 3, and Ash Pond 4. July 30.

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

Plant McDonough Exposure Point Concentration for Lithium South		
Prepared By-Date: JCD - 11/23/2020		Figure: D-2e
Checked By-Date: LO - 11/23/2020		
Project Number: 6123201473		

Appendix D-3

ProUCL Input/Output Files

Appendix D-3a
Groundwater ProUCL Input - Arsenic - East
McDonough AP-2,3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Step 1				Step 2				Step 3			
Well(1)	Date(1)	AsE1	D_AsE1	Well(2)	Date(2)	AsE2	D_AsE2	Well(3)	Date(3)	AsE3	D_AsE3
DGWC-9	03/03/20	0.015	1	B-66	10/21/19	0.005	0	B-66	10/21/19	0.005	0
DGWC-9	10/17/19	0.033	1	B-66	09/12/19	0.005	0	B-66	09/12/19	0.005	0
DGWC-9	08/27/19	0.021	1	B-66	01/30/19	0.005	0	B-66	01/30/19	0.005	0
DGWC-9	11/06/18	0.017	1	B-66	02/19/18	0.005	0	B-66	02/19/18	0.005	0
DGWC-9	07/11/18	0.016	1	B-66	11/22/16	0.005	0	B-66	11/22/16	0.005	0
DGWC-9	02/27/18	0.04	1	B-82	10/21/19	0.005	0	B-82	10/21/19	0.005	0
DGWC-9	10/24/17	0.0249	1	B-82	09/23/19	0.005	0	B-82	09/23/19	0.005	0
DGWC-9	07/11/17	0.0194	1	DGWC-9	03/03/20	0.015	1				
DGWC-9	03/28/17	0.0243	1	DGWC-9	10/17/19	0.033	1				
DGWC-9	12/06/16	0.005	0	DGWC-9	08/27/19	0.021	1				
DGWC-9	08/30/16	0.0241	1	DGWC-9	11/06/18	0.017	1				
				DGWC-9	07/11/18	0.016	1				
				DGWC-9	02/27/18	0.04	1				
				DGWC-9	10/24/17	0.0249	1				
				DGWC-9	07/11/17	0.0194	1				
				DGWC-9	03/28/17	0.0243	1				
				DGWC-9	12/06/16	0.005	0				
				DGWC-9	08/30/16	0.0241	1				

Notes:

1) Concentrations in units of mg/L.

Prepared by/Date: LO 09/11/20
Checked by/Date: RMB 09/18/20

**Appendix D-3b
Groundwater ProUCL Input - Cobalt
McDonough AP-2,3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA**

North

Step 1			
Well(1)	Date(1)	CoN1	D_CoN1
DGWC-8	03/03/20	0.044	1
DGWC-8	10/16/19	0.054	1
DGWC-8	08/28/19	0.051	1
DGWC-8	11/06/18	0.077	1
DGWC-8	07/10/18	0.072	1
DGWC-8	02/27/18	0.13	1
DGWC-8	10/24/17	0.123	1
DGWC-8	07/11/17	0.0601	1
DGWC-8	03/29/17	0.0902	1
DGWC-8	12/06/16	0.0873	1
DGWC-8	08/30/16	0.0568	1

Step 2			
Well(2)	Date(2)	CoN2	D_CoN2
B-81	10/22/19	0.074	1
B-81	09/25/19	0.034	1
B-81	09/21/19	0.032	1
B-88	11/22/19	0.018	1
DGWC-8	03/03/20	0.044	1
DGWC-8	10/16/19	0.054	1
DGWC-8	08/28/19	0.051	1
DGWC-8	11/06/18	0.077	1
DGWC-8	07/10/18	0.072	1
DGWC-8	02/27/18	0.13	1
DGWC-8	10/24/17	0.123	1
DGWC-8	07/11/17	0.0601	1
DGWC-8	03/29/17	0.0902	1
DGWC-8	12/06/16	0.0873	1
DGWC-8	08/30/16	0.0568	1

Step 3			
Well(3)	Date(3)	CoN3	D_CoN3
B-88	11/22/19	0.018	1

East

Step 1			
Well(1)	Date(1)	CoE1	D_CoE1
DGWC-10	03/03/20	0.18	1
DGWC-10	10/15/19	0.17	1
DGWC-10	08/27/19	0.13	1
DGWC-10	11/06/18	0.2	1
DGWC-10	07/10/18	0.2	1
DGWC-10	02/27/18	0.2	1
DGWC-10	10/24/17	0.175	1
DGWC-10	07/12/17	0.177	1
DGWC-10	03/29/17	0.184	1
DGWC-10	12/06/16	0.2	1
DGWC-10	08/31/16	0.193	1
DGWC-9	03/03/20	0.2	1
DGWC-9	10/17/19	0.21	1
DGWC-9	08/27/19	0.24	1
DGWC-9	11/06/18	0.2	1
DGWC-9	07/11/18	0.18	1
DGWC-9	02/27/18	0.16	1
DGWC-9	10/24/17	0.151	1
DGWC-9	07/11/17	0.136	1
DGWC-9	03/28/17	0.124	1
DGWC-9	12/06/16	0.122	1
DGWC-9	08/30/16	0.0896	1

Step 2			
Well(2)	Date(2)	CoE2	D_CoE2
B-66	10/21/19	0.0074	1
B-66	09/12/19	0.006	1
B-66	01/30/19	0.01	0
B-82	10/21/19	0.0089	1
B-82	09/23/19	0.0038	1
DGWC-10	03/03/20	0.18	1
DGWC-10	10/15/19	0.17	1
DGWC-10	08/27/19	0.13	1
DGWC-10	11/06/18	0.2	1
DGWC-10	07/10/18	0.2	1
DGWC-10	02/27/18	0.2	1
DGWC-10	10/24/17	0.175	1
DGWC-10	07/12/17	0.177	1
DGWC-10	03/29/17	0.184	1
DGWC-10	12/06/16	0.2	1
DGWC-10	08/31/16	0.193	1
DGWC-9	03/03/20	0.2	1
DGWC-9	10/17/19	0.21	1
DGWC-9	08/27/19	0.24	1
DGWC-9	11/06/18	0.2	1
DGWC-9	07/11/18	0.18	1
DGWC-9	02/27/18	0.16	1
DGWC-9	10/24/17	0.151	1
DGWC-9	07/11/17	0.136	1
DGWC-9	03/28/17	0.124	1
DGWC-9	12/06/16	0.122	1
DGWC-9	08/30/16	0.0896	1

Step 3			
Well(3)	Date(3)	CoE3	D_CoE3
B-66	10/21/19	0.0074	1
B-66	09/12/19	0.006	1
B-66	01/30/19	0.01	0
B-82	10/21/19	0.0089	1
B-82	09/23/19	0.0038	1

Appendix D-3c
Groundwater ProUCL Input - Lithium
McDonough AP-2,3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

North**Step 1**

Well(1)	Date(1)	LiN1	D_LiN1
DGWC-2	03/03/20	0.026	1
DGWC-2	10/17/19	0.029	1
DGWC-2	08/27/19	0.032	1
DGWC-2	11/06/18	0.037	1
DGWC-2	07/11/18	0.033	1
DGWC-2	02/27/18	0.088	1
DGWC-2	10/24/17	0.0995	1
DGWC-2	07/11/17	0.0731	1
DGWC-2	06/15/17	0.0781	1
DGWC-2	05/11/17	0.085	1
DGWC-2	03/30/17	0.0807	1

Step 2

Well(2)	Date(2)	LiN2	D_LiN2
B-54	10/22/19	0.0063	1
B-54	09/17/19	0.0062	1
B-64	10/21/19	0.011	1
B-64	09/12/19	0.012	1
B-64	01/28/19	0.05	0
B-78	10/22/19	0.0071	1
B-78	09/23/19	0.012	1
B-79	10/22/19	0.0046	1
B-79	09/22/19	0.0099	1
DGWC-2	03/03/20	0.026	1
DGWC-2	10/17/19	0.029	1
DGWC-2	08/27/19	0.032	1
DGWC-2	11/06/18	0.037	1
DGWC-2	07/11/18	0.033	1
DGWC-2	02/27/18	0.088	1
DGWC-2	10/24/17	0.0995	1
DGWC-2	07/11/17	0.0731	1
DGWC-2	42901	0.0781	1
DGWC-2	42866	0.085	1
DGWC-2	42824	0.0807	1
DGWC-4	10/15/19	0.0029	1
DGWC-4	08/27/19	0.0033	1
DGWC-4	10/15/19	0.0029	1
DGWC-4	07/10/18	0.003	1
DGWC-4	02/27/18	0.0027	1
DGWC-4	10/24/17	0.0024	1
DGWC-4	07/11/17	0.0022	1
DGWC-4	06/15/17	0.0025	1
DGWC-4	02/27/18	0.0027	1
DGWC-4	03/28/17	0.0031	1
DGWC-5	10/16/19	0.006	1
DGWC-5	08/27/19	0.008	1
DGWC-5	11/06/18	0.0082	1
DGWC-5	07/10/18	0.0034	1
DGWC-5	02/27/18	0.0066	1
DGWC-5	10/25/17	0.0055	1
DGWC-5	07/11/17	0.0031	1
DGWC-5	03/28/17	0.0028	1
DGWC-5	12/06/16	0.0046	1
DGWC-5	08/31/16	0.0026	1

Step 3

Well(3)	Date(3)	LiN3	D_LiN3
B-54	10/22/19	0.0063	1
B-54	09/17/19	0.0062	1
B-64	10/21/19	0.011	1
B-64	09/12/19	0.012	1
B-64	01/28/19	0.05	0
B-78	10/22/19	0.0071	1
B-78	09/23/19	0.012	1
B-79	10/22/19	0.0046	1
B-79	09/22/19	0.0099	1

Appendix D-3c
Groundwater ProUCL Input - Lithium
McDonough AP-2,3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

South**Step 1**

Well(1)	Date(1)	LiS1	D_LiS1
DGWC-47	03/04/20	0.063	1
DGWC-47	10/17/19	0.066	1
DGWC-47	08/29/19	0.056	1
DGWC-47	11/07/18	0.082	1
DGWC-47	07/12/18	0.073	1
DGWC-47	03/01/18	0.0772	1
DGWC-47	10/26/17	0.071	1
DGWC-47	07/13/17	0.0743	1
DGWC-47	03/31/17	0.0767	1
DGWC-47	12/08/16	0.0667	1
DGWC-47	09/01/16	0.0854	1
DGWC-48	03/04/20	0.12	1
DGWC-48	10/18/19	0.11	1
DGWC-48	08/29/19	0.11	1
DGWC-48	11/07/18	0.12	1
DGWC-48	07/12/18	0.12	1
DGWC-48	03/02/18	0.129	1
DGWC-48	10/26/17	0.115	1
DGWC-48	07/13/17	0.143	1
DGWC-48	03/30/17	0.144	1
DGWC-48	12/08/16	0.122	1
DGWC-48	09/01/16	0.125	1

Step 2

Well(2)	Date(2)	LiS2	D_LiS2
B-61	10/22/19	0.0015	1
B-61	09/11/19	0.0014	1
B-61	01/28/19	0.05	0
B-63	10/22/19	0.0062	1
B-60	10/21/19	0.028	1
B-83	10/21/19	0.003	1
B-63	09/11/19	0.0064	1
B-63	01/28/19	0.05	0
B-76	10/22/19	0.045	1
B-76	09/18/19	0.041	1
B-60	09/11/19	0.03	1
B-77	10/24/19	0.0036	1
B-77	09/18/19	0.0047	1
DGWC-47	03/04/20	0.063	1
DGWC-47	10/17/19	0.066	1
DGWC-47	08/29/19	0.056	1
DGWC-47	11/07/18	0.082	1
DGWC-47	07/12/18	0.073	1
DGWC-47	03/01/18	0.0772	1
DGWC-47	10/26/17	0.071	1
DGWC-47	07/13/17	0.0743	1
DGWC-47	03/31/17	0.0767	1
DGWC-47	12/08/16	0.0667	1
DGWC-47	09/01/16	0.0854	1
DGWC-48	03/04/20	0.12	1
DGWC-48	10/18/19	0.11	1
DGWC-48	08/29/19	0.11	1
DGWC-48	11/07/18	0.12	1
DGWC-48	07/12/18	0.12	1
DGWC-48	03/02/18	0.129	1
DGWC-48	10/26/17	0.115	1
DGWC-48	07/13/17	0.143	1
DGWC-48	03/30/17	0.144	1
DGWC-48	12/08/16	0.122	1
DGWC-48	09/01/16	0.125	1

Step 3

Well(3)	Date(3)	LiS3	D_LiS3
B-63	10/22/19	0.0062	1
B-63	09/11/19	0.0064	1
B-63	01/28/19	0.05	0
B-76	10/22/19	0.045	1
B-76	09/18/19	0.041	1
B-77	10/24/19	0.0036	1
B-77	09/18/19	0.0047	1

Notes:

1) Concentrations in units of mg/L.

Prepared by/Date: LO 09/11/20
Checked by/Date: RMB 09/18/20

Appendix D-3d
Groundwater ProUCL Output - Arsenic
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
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 3:41:49 PM
From File 20200914-ProUCL_input.xls
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

AsE1

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
Number of Detects	10	Number of Non-Detects	1
Number of Distinct Detects	10	Number of Distinct Non-Detects	1
Minimum Detect	0.015	Minimum Non-Detect	0.005
Maximum Detect	0.04	Maximum Non-Detect	0.005
Variance Detects	6.2140E-5	Percent Non-Detects	9.091%
Mean Detects	0.0235	SD Detects	0.00788
Median Detects	0.0226	CV Detects	0.336
Skewness Detects	1.136	Kurtosis Detects	0.931
Mean of Logged Detects	-3.798	SD of Logged Detects	0.313

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.894	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.228	Lilliefors GOF Test
5% Lilliefors Critical Value	0.262	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

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

KM Mean	0.0218	KM Standard Error of Mean	0.00283
KM SD	0.00889	95% KM (BCA) UCL	0.026
95% KM (t) UCL	0.0269	95% KM (Percentile Bootstrap) UCL	0.0264
95% KM (z) UCL	0.0264	95% KM Bootstrap t UCL	0.0272
90% KM Chebyshev UCL	0.0303	95% KM Chebyshev UCL	0.0341
97.5% KM Chebyshev UCL	0.0394	99% KM Chebyshev UCL	0.0499

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.319	Anderson-Darling GOF Test
5% A-D Critical Value	0.725	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.183	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.267	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Appendix D-3d
Groundwater ProUCL Output - Arsenic
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Gamma Statistics on Detected Data Only

k hat (MLE)	11.02	k star (bias corrected MLE)	7.78
Theta hat (MLE)	0.00213	Theta star (bias corrected MLE)	0.00302
nu hat (MLE)	220.4	nu star (bias corrected)	155.6
Mean (detects)	0.0235		

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	0.01	Mean	0.0222
Maximum	0.04	Median	0.021
SD	0.00851	CV	0.383
k hat (MLE)	7.756	k star (bias corrected MLE)	5.701
Theta hat (MLE)	0.00287	Theta star (bias corrected MLE)	0.0039
nu hat (MLE)	170.6	nu star (bias corrected)	125.4
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (125.43, α)	100.6	Adjusted Chi Square Value (125.43, β)	96.94
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0277	95% Gamma Adjusted UCL (use when $n < 50$)	0.0288

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0218	SD (KM)	0.00889
Variance (KM)	7.9035E-5	SE of Mean (KM)	0.00283
k hat (KM)	6.008	k star (KM)	4.43
nu hat (KM)	132.2	nu star (KM)	97.46
theta hat (KM)	0.00363	theta star (KM)	0.00492
80% gamma percentile (KM)	0.0297	90% gamma percentile (KM)	0.0357
95% gamma percentile (KM)	0.0411	99% gamma percentile (KM)	0.0527

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (97.46, α)	75.69	Adjusted Chi Square Value (97.46, β)	72.57
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0281	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0293

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.949	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.169	Lilliefors GOF Test
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0223	Mean in Log Scale	-3.868
SD in Original Scale	0.00846	SD in Log Scale	0.378
95% t UCL (assumes normality of ROS data)	0.0269	95% Percentile Bootstrap UCL	0.0264
95% BCA Bootstrap UCL	0.0269	95% Bootstrap t UCL	0.0283
95% H-UCL (Log ROS)	0.0286		

Appendix D-3d
Groundwater ProUCL Output - Arsenic
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.934	KM Geo Mean	0.0196
KM SD (logged)	0.516	95% Critical H Value (KM-Log)	2.197
KM Standard Error of Mean (logged)	0.164	95% H-UCL (KM -Log)	0.032
KM SD (logged)	0.516	95% Critical H Value (KM-Log)	2.197
KM Standard Error of Mean (logged)	0.164		

DL/2 Statistics

DL/2 Normal

Mean in Original Scale	0.0216
SD in Original Scale	0.00979
95% t UCL (Assumes normality)	0.0269

DL/2 Log-Transformed

Mean in Log Scale	-3.997
SD in Log Scale	0.725
95% H-Stat UCL	0.0424

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

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.0269
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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.

AsE2

General Statistics

Total Number of Observations	18	Number of Distinct Observations	11
Number of Detects	10	Number of Non-Detects	8
Number of Distinct Detects	10	Number of Distinct Non-Detects	1
Minimum Detect	0.015	Minimum Non-Detect	0.005
Maximum Detect	0.04	Maximum Non-Detect	0.005
Variance Detects	6.2140E-5	Percent Non-Detects	44.44%
Mean Detects	0.0235	SD Detects	0.00788
Median Detects	0.0226	CV Detects	0.336
Skewness Detects	1.136	Kurtosis Detects	0.931
Mean of Logged Detects	-3.798	SD of Logged Detects	0.313

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.894	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.228	Lilliefors GOF Test
5% Lilliefors Critical Value	0.262	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Appendix D-3d
Groundwater ProUCL Output - Arsenic
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

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

KM Mean	0.0153	KM Standard Error of Mean	0.00267
KM SD	0.0107	95% KM (BCA) UCL	0.0194
95% KM (t) UCL	0.0199	95% KM (Percentile Bootstrap) UCL	0.0197
95% KM (z) UCL	0.0196	95% KM Bootstrap t UCL	0.0203
90% KM Chebyshev UCL	0.0233	95% KM Chebyshev UCL	0.0269
97.5% KM Chebyshev UCL	0.0319	99% KM Chebyshev UCL	0.0418

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.319	Anderson-Darling GOF Test
5% A-D Critical Value	0.725	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.183	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.267	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	11.02	k star (bias corrected MLE)	7.78
Theta hat (MLE)	0.00213	Theta star (bias corrected MLE)	0.00302
nu hat (MLE)	220.4	nu star (bias corrected)	155.6
Mean (detects)	0.0235		

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	0.01	Mean	0.0175
Maximum	0.04	Median	0.0155
SD	0.00892	CV	0.509
k hat (MLE)	4.78	k star (bias corrected MLE)	4.02
Theta hat (MLE)	0.00367	Theta star (bias corrected MLE)	0.00436
nu hat (MLE)	172.1	nu star (bias corrected)	144.7
Adjusted Level of Significance (β)	0.0357		
Approximate Chi Square Value (144.73, α)	117.9	Adjusted Chi Square Value (144.73, β)	115.6
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0215	95% Gamma Adjusted UCL (use when $n < 50$)	0.022

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0153	SD (KM)	0.0107
Variance (KM)	1.1530E-4	SE of Mean (KM)	0.00267
k hat (KM)	2.02	k star (KM)	1.72
nu hat (KM)	72.72	nu star (KM)	61.93
theta hat (KM)	0.00756	theta star (KM)	0.00887
80% gamma percentile (KM)	0.0233	90% gamma percentile (KM)	0.0308
95% gamma percentile (KM)	0.038	99% gamma percentile (KM)	0.0542

Appendix D-3d
Groundwater ProUCL Output - Arsenic
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (61.93, α)	44.83	Adjusted Chi Square Value (61.93, β)	43.43
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0211	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0218

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.949	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.169	Lilliefors GOF Test
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0173	Mean in Log Scale	-4.19
SD in Original Scale	0.00926	SD in Log Scale	0.535
95% t UCL (assumes normality of ROS data)	0.0211	95% Percentile Bootstrap UCL	0.021
95% BCA Bootstrap UCL	0.0213	95% Bootstrap t UCL	0.0221
95% H-UCL (Log ROS)	0.0228		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.465	KM Geo Mean	0.0115
KM SD (logged)	0.778	95% Critical H Value (KM-Log)	2.334
KM Standard Error of Mean (logged)	0.193	95% H-UCL (KM -Log)	0.0242
KM SD (logged)	0.778	95% Critical H Value (KM-Log)	2.334
KM Standard Error of Mean (logged)	0.193		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0142	Mean in Log Scale	-4.773
SD in Original Scale	0.0122	SD in Log Scale	1.144
95% t UCL (Assumes normality)	0.0191	95% H-Stat UCL	0.0359

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

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 0.0199

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-3d
Groundwater ProUCL Output - Arsenic
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

AsE3

General Statistics			
Total Number of Observations	7	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	7
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable AsE3 was not processed!

Appendix D-3e
Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
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 3:42:10 PM
 From File 20200914-ProUCL_input.xls
 Full Precision OFF
 Confidence Coefficient 95%
 Number of Bootstrap Operations 2000

CoN1

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	0.044	Mean	0.0769
Maximum	0.13	Median	0.072
SD	0.0287	Std. Error of Mean	0.00864
Coefficient of Variation	0.373	Skewness	0.904

Normal GOF Test

Shapiro Wilk Test Statistic 0.895
 5% Shapiro Wilk Critical Value 0.85
 Lilliefors Test Statistic 0.175
 5% Lilliefors Critical Value 0.251

Shapiro Wilk GOF Test

Data appear Normal at 5% Significance Level

Lilliefors GOF Test

Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL

95% Student's-t UCL 0.0925

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995) 0.0936
 95% Modified-t UCL (Johnson-1978) 0.0929

Gamma GOF Test

A-D Test Statistic 0.338
 5% A-D Critical Value 0.73
 K-S Test Statistic 0.173
 5% K-S Critical Value 0.256

Anderson-Darling Gamma GOF Test

Detected data appear Gamma Distributed at 5% Significance Level

Kolmogorov-Smirnov Gamma GOF Test

Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	8.639	k star (bias corrected MLE)	6.343
Theta hat (MLE)	0.0089	Theta star (bias corrected MLE)	0.0121
nu hat (MLE)	190	nu star (bias corrected)	139.6
MLE Mean (bias corrected)	0.0769	MLE Sd (bias corrected)	0.0305
		Approximate Chi Square Value (0.05)	113.3
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	109.4

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)) 0.0947 95% Adjusted Gamma UCL (use when n<50) 0.098

Appendix D-3e
Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

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	0.155	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	-3.124	Mean of logged Data	-2.625
Maximum of Logged Data	-2.04	SD of logged Data	0.355

Assuming Lognormal Distribution

95% H-UCL	0.0967	90% Chebyshev (MVUE) UCL	0.102
95% Chebyshev (MVUE) UCL	0.113	97.5% Chebyshev (MVUE) UCL	0.129
99% Chebyshev (MVUE) UCL	0.159		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0911	95% Jackknife UCL	0.0925
95% Standard Bootstrap UCL	0.0903	95% Bootstrap-t UCL	0.0987
95% Hall's Bootstrap UCL	0.101	95% Percentile Bootstrap UCL	0.0909
95% BCA Bootstrap UCL	0.0923		
90% Chebyshev(Mean, Sd) UCL	0.103	95% Chebyshev(Mean, Sd) UCL	0.115
97.5% Chebyshev(Mean, Sd) UCL	0.131	99% Chebyshev(Mean, Sd) UCL	0.163

Suggested UCL to Use

95% Student's-t UCL	0.0925
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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.

CoN2

General Statistics

Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	0
Minimum	0.018	Mean	0.0669
Maximum	0.13	Median	0.0601
SD	0.0317	Std. Error of Mean	0.00818
Coefficient of Variation	0.474	Skewness	0.612

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Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Normal GOF Test

Shapiro Wilk Test Statistic	0.955	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.881	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.118	Lilliefors GOF Test
5% Lilliefors Critical Value	0.22	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	0.0813	95% Adjusted-CLT UCL (Chen-1995)	0.0817
		95% Modified-t UCL (Johnson-1978)	0.0815

Gamma GOF Test

A-D Test Statistic	0.154	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.739	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0903	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.222	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	4.451	k star (bias corrected MLE)	3.605
Theta hat (MLE)	0.015	Theta star (bias corrected MLE)	0.0186
nu hat (MLE)	133.5	nu star (bias corrected)	108.2
MLE Mean (bias corrected)	0.0669	MLE Sd (bias corrected)	0.0352
		Approximate Chi Square Value (0.05)	85.15
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	82.64

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.085	95% Adjusted Gamma UCL (use when n<50)	0.0875
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.964	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk Critical Value	0.881	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.117	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.22	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-4.017	Mean of logged Data	-2.821
Maximum of Logged Data	-2.04	SD of logged Data	0.525

Assuming Lognormal Distribution

95% H-UCL	0.0917	90% Chebyshev (MVUE) UCL	0.0961
95% Chebyshev (MVUE) UCL	0.109	97.5% Chebyshev (MVUE) UCL	0.127
99% Chebyshev (MVUE) UCL	0.162		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Appendix D-3e
Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0803	95% Jackknife UCL	0.0813
95% Standard Bootstrap UCL	0.0799	95% Bootstrap-t UCL	0.0841
95% Hall's Bootstrap UCL	0.0851	95% Percentile Bootstrap UCL	0.0798
95% BCA Bootstrap UCL	0.0812		
90% Chebyshev(Mean, Sd) UCL	0.0914	95% Chebyshev(Mean, Sd) UCL	0.103
97.5% Chebyshev(Mean, Sd) UCL	0.118	99% Chebyshev(Mean, Sd) UCL	0.148

Suggested UCL to Use

95% Student's-t UCL	0.0813
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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.

CoN3

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	0.018	Mean	0.018
Maximum	0.018	Median	0.018

Warning: This data set only has 1 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable CoN3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CoE1

General Statistics

Total Number of Observations	22	Number of Distinct Observations	16
		Number of Missing Observations	0
Minimum	0.0896	Mean	0.174
Maximum	0.24	Median	0.18
SD	0.0357	Std. Error of Mean	0.0076
Coefficient of Variation	0.205	Skewness	-0.636

Normal GOF Test

Shapiro Wilk Test Statistic	0.938	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.911	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.151	Lilliefors GOF Test
5% Lilliefors Critical Value	0.184	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

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Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.187	95% Adjusted-CLT UCL (Chen-1995)	0.185
		95% Modified-t UCL (Johnson-1978)	0.187

Gamma GOF Test

A-D Test Statistic	0.889
5% A-D Critical Value	0.74
K-S Test Statistic	0.179
5% K-S Critical Value	0.185

Anderson-Darling Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Kolmogorov-Smirnov Gamma GOF Test

Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics

k hat (MLE)	21.64	k star (bias corrected MLE)	18.72
Theta hat (MLE)	0.00803	Theta star (bias corrected MLE)	0.00928
nu hat (MLE)	952.3	nu star (bias corrected)	823.7
MLE Mean (bias corrected)	0.174	MLE Sd (bias corrected)	0.0401
		Approximate Chi Square Value (0.05)	758.1
Adjusted Level of Significance	0.0386	Adjusted Chi Square Value	753.4

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.189	95% Adjusted Gamma UCL (use when n<50)	0.19
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.889
5% Shapiro Wilk Critical Value	0.911
Lilliefors Test Statistic	0.189
5% Lilliefors Critical Value	0.184

Shapiro Wilk Lognormal GOF Test

Data Not Lognormal at 5% Significance Level

Lilliefors Lognormal GOF Test

Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.412	Mean of logged Data	-1.774
Maximum of Logged Data	-1.427	SD of logged Data	0.23

Assuming Lognormal Distribution

95% H-UCL	0.191	90% Chebyshev (MVUE) UCL	0.2
95% Chebyshev (MVUE) UCL	0.212	97.5% Chebyshev (MVUE) UCL	0.228
99% Chebyshev (MVUE) UCL	0.26		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.186	95% Jackknife UCL	0.187
95% Standard Bootstrap UCL	0.186	95% Bootstrap-t UCL	0.185
95% Hall's Bootstrap UCL	0.185	95% Percentile Bootstrap UCL	0.186
95% BCA Bootstrap UCL	0.185		
90% Chebyshev(Mean, Sd) UCL	0.197	95% Chebyshev(Mean, Sd) UCL	0.207
97.5% Chebyshev(Mean, Sd) UCL	0.221	99% Chebyshev(Mean, Sd) UCL	0.249

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Groundwater ProUCL Output - Cobalt
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McDonough AP-2, 3/4
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Suggested UCL to Use

95% Student's-t UCL 0.187

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 positively skewed data sets.

CoE2

General Statistics

Total Number of Observations	27	Number of Distinct Observations	21
Number of Detects	26	Number of Non-Detects	1
Number of Distinct Detects	20	Number of Distinct Non-Detects	1
Minimum Detect	0.0038	Minimum Non-Detect	0.01
Maximum Detect	0.24	Maximum Non-Detect	0.01
Variance Detects	0.00485	Percent Non-Detects	3.704%
Mean Detects	0.148	SD Detects	0.0697
Median Detects	0.176	CV Detects	0.471
Skewness Detects	-1.211	Kurtosis Detects	0.397
Mean of Logged Detects	-2.282	SD of Logged Detects	1.241

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.816	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.92	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.201	Lilliefors GOF Test
5% Lilliefors Critical Value	0.17	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	0.143	KM Standard Error of Mean	0.0142
KM SD	0.0722	95% KM (BCA) UCL	0.164
95% KM (t) UCL	0.167	95% KM (Percentile Bootstrap) UCL	0.165
95% KM (z) UCL	0.166	95% KM Bootstrap t UCL	0.163
90% KM Chebyshev UCL	0.185	95% KM Chebyshev UCL	0.204
97.5% KM Chebyshev UCL	0.231	99% KM Chebyshev UCL	0.284

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.13	Anderson-Darling GOF Test
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.328	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.174	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)	1.49	k star (bias corrected MLE)	1.344
Theta hat (MLE)	0.0993	Theta star (bias corrected MLE)	0.11
nu hat (MLE)	77.5	nu star (bias corrected)	69.89
Mean (detects)	0.148		

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Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
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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	0.0038	Mean	0.146
Maximum	0.24	Median	0.175
SD	0.0694	CV	0.476
k hat (MLE)	1.525	k star (bias corrected MLE)	1.38
Theta hat (MLE)	0.0955	Theta star (bias corrected MLE)	0.106
nu hat (MLE)	82.34	nu star (bias corrected)	74.52
Adjusted Level of Significance (β)	0.0401		
Approximate Chi Square Value (74.52, α)	55.64	Adjusted Chi Square Value (74.52, β)	54.6
95% Gamma Approximate UCL (use when $n \geq 50$)	0.195	95% Gamma Adjusted UCL (use when $n < 50$)	0.199

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.143	SD (KM)	0.0722
Variance (KM)	0.00521	SE of Mean (KM)	0.0142
k hat (KM)	3.913	k star (KM)	3.503
nu hat (KM)	211.3	nu star (KM)	189.2
theta hat (KM)	0.0365	theta star (KM)	0.0407
80% gamma percentile (KM)	0.2	90% gamma percentile (KM)	0.245
95% gamma percentile (KM)	0.287	99% gamma percentile (KM)	0.377

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (189.18, α)	158.4	Adjusted Chi Square Value (189.18, β)	156.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.171	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.172

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.598	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.92	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.365	Lilliefors GOF Test
5% Lilliefors Critical Value	0.17	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	0.143	Mean in Log Scale	-2.337
SD in Original Scale	0.0724	SD in Log Scale	1.25
95% t UCL (assumes normality of ROS data)	0.167	95% Percentile Bootstrap UCL	0.165
95% BCA Bootstrap UCL	0.163	95% Bootstrap t UCL	0.163
95% H-UCL (Log ROS)	0.426		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-2.386	KM Geo Mean	0.092
KM SD (logged)	1.307	95% Critical H Value (KM-Log)	2.947
KM Standard Error of Mean (logged)	0.257	95% H-UCL (KM -Log)	0.46
KM SD (logged)	1.307	95% Critical H Value (KM-Log)	2.947
KM Standard Error of Mean (logged)	0.257		

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Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

DL/2 Statistics		DL/2 Log-Transformed	
DL/2 Normal			
Mean in Original Scale	0.143	Mean in Log Scale	-2.394
SD in Original Scale	0.0736	SD in Log Scale	1.348
95% t UCL (Assumes normality)	0.167	95% H-Stat UCL	0.502

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 (Chebyshev) UCL	0.204

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.

CoE3

General Statistics			
Total Number of Observations	5	Number of Distinct Observations	5
Number of Detects	4	Number of Non-Detects	1
Number of Distinct Detects	4	Number of Distinct Non-Detects	1
Minimum Detect	0.0038	Minimum Non-Detect	0.01
Maximum Detect	0.0089	Maximum Non-Detect	0.01
Variance Detects	4.7025E-6	Percent Non-Detects	20%
Mean Detects	0.00653	SD Detects	0.00217
Median Detects	0.0067	CV Detects	0.332
Skewness Detects	-0.413	Kurtosis Detects	-0.293
Mean of Logged Detects	-5.079	SD of Logged Detects	0.366

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		Shapiro Wilk GOF Test	
Shapiro Wilk Test Statistic	0.991	Detected Data appear Normal at 5% Significance Level	
5% Shapiro Wilk Critical Value	0.748		
Lilliefors Test Statistic	0.157	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.00653	KM Standard Error of Mean	0.00108
KM SD	0.00188	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.00884	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.00831	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.00978	95% KM Chebyshev UCL	0.0113
97.5% KM Chebyshev UCL	0.0133	99% KM Chebyshev UCL	0.0173

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Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.242	Anderson-Darling GOF Test
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.199	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.395	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	10.79	k star (bias corrected MLE)	2.863
Theta hat (MLE)	6.0490E-4	Theta star (bias corrected MLE)	0.00228
nu hat (MLE)	86.3	nu star (bias corrected)	22.91
Mean (detects)	0.00653		

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	0.0038	Mean	0.00722
Maximum	0.01	Median	0.0074
SD	0.00244	CV	0.338
k hat (MLE)	9.513	k star (bias corrected MLE)	3.939
Theta hat (MLE)	7.5896E-4	Theta star (bias corrected MLE)	0.00183
nu hat (MLE)	95.13	nu star (bias corrected)	39.39
Adjusted Level of Significance (β)	0.0086		
Approximate Chi Square Value (39.39, α)	26.01	Adjusted Chi Square Value (39.39, β)	21.38
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0109	95% Gamma Adjusted UCL (use when $n < 50$)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.00653	SD (KM)	0.00188
Variance (KM)	3.5269E-6	SE of Mean (KM)	0.00108
k hat (KM)	12.07	k star (KM)	4.962
nu hat (KM)	120.7	nu star (KM)	49.62
theta hat (KM)	5.4052E-4	theta star (KM)	0.00131
80% gamma percentile (KM)	0.00878	90% gamma percentile (KM)	0.0104
95% gamma percentile (KM)	0.012	99% gamma percentile (KM)	0.0152

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (49.62, α)	34.45	Adjusted Chi Square Value (49.62, β)	29.03
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0094	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0112

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.955	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.21	Lilliefors GOF Test
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

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Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
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Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00646	Mean in Log Scale	-5.079
SD in Original Scale	0.00188	SD in Log Scale	0.317
95% t UCL (assumes normality of ROS data)	0.00826	95% Percentile Bootstrap UCL	0.00774
95% BCA Bootstrap UCL	0.00758	95% Bootstrap t UCL	0.0083
95% H-UCL (Log ROS)	0.00964		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-5.079	KM Geo Mean	0.00622
KM SD (logged)	0.317	95% Critical H Value (KM-Log)	2.442
KM Standard Error of Mean (logged)	0.183	95% H-UCL (KM -Log)	0.00964
KM SD (logged)	0.317	95% Critical H Value (KM-Log)	2.442
KM Standard Error of Mean (logged)	0.183		

DL/2 Statistics

DL/2 Normal

Mean in Original Scale	0.00622
SD in Original Scale	0.002
95% t UCL (Assumes normality)	0.00812

DL/2 Log-Transformed

Mean in Log Scale	-5.123
SD in Log Scale	0.332
95% H-Stat UCL	0.0095

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

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.00884
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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.

CoS1

General Statistics

Total Number of Observations	44	Number of Distinct Observations	38
		Number of Missing Observations	0
Minimum	0.046	Mean	0.361
Maximum	0.84	Median	0.415
SD	0.207	Std. Error of Mean	0.0312
Coefficient of Variation	0.574	Skewness	-0.306

Normal GOF Test

Shapiro Wilk Test Statistic	0.888
5% Shapiro Wilk Critical Value	0.944
Lilliefors Test Statistic	0.179
5% Lilliefors Critical Value	0.132

Shapiro Wilk GOF Test

Data Not Normal at 5% Significance Level

Lilliefors GOF Test

Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

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Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
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Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.413	95% Adjusted-CLT UCL (Chen-1995)	0.41
		95% Modified-t UCL (Johnson-1978)	0.413

Gamma GOF Test

A-D Test Statistic	4.345
5% A-D Critical Value	0.765
K-S Test Statistic	0.269
5% K-S Critical Value	0.135

Anderson-Darling Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Kolmogorov-Smirnov Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.699	k star (bias corrected MLE)	1.598
Theta hat (MLE)	0.212	Theta star (bias corrected MLE)	0.226
nu hat (MLE)	149.5	nu star (bias corrected)	140.6
MLE Mean (bias corrected)	0.361	MLE Sd (bias corrected)	0.285
		Approximate Chi Square Value (0.05)	114.2
Adjusted Level of Significance	0.0445	Adjusted Chi Square Value	113.4

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.444	95% Adjusted Gamma UCL (use when n<50)	0.447
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.726
5% Shapiro Wilk Critical Value	0.944
Lilliefors Test Statistic	0.299
5% Lilliefors Critical Value	0.132

Shapiro Wilk Lognormal GOF Test

Data Not Lognormal at 5% Significance Level

Lilliefors Lognormal GOF Test

Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-3.079	Mean of logged Data	-1.342
Maximum of Logged Data	-0.174	SD of logged Data	0.977

Assuming Lognormal Distribution

95% H-UCL	0.597	90% Chebyshev (MVUE) UCL	0.628
95% Chebyshev (MVUE) UCL	0.725	97.5% Chebyshev (MVUE) UCL	0.859
99% Chebyshev (MVUE) UCL	1.123		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	0.412	95% Jackknife UCL	0.413
95% Standard Bootstrap UCL	0.413	95% Bootstrap-t UCL	0.409
95% Hall's Bootstrap UCL	0.411	95% Percentile Bootstrap UCL	0.41
95% BCA Bootstrap UCL	0.411		
90% Chebyshev(Mean, Sd) UCL	0.454	95% Chebyshev(Mean, Sd) UCL	0.497
97.5% Chebyshev(Mean, Sd) UCL	0.556	99% Chebyshev(Mean, Sd) UCL	0.671

Appendix D-3e
Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 0.497

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 positively skewed data sets.

CoS2

General Statistics

Total Number of Observations	57	Number of Distinct Observations	49
		Number of Missing Observations	0
Minimum	0.0021	Mean	0.311
Maximum	0.84	Median	0.381
SD	0.217	Std. Error of Mean	0.0288
Coefficient of Variation	0.699	Skewness	-0.00808

Normal GOF Test

Shapiro Wilk Test Statistic	0.886
5% Shapiro Wilk P Value	1.1593E-5
Lilliefors Test Statistic	0.209
5% Lilliefors Critical Value	0.117

Shapiro Wilk GOF Test

Data Not Normal at 5% Significance Level

Lilliefors GOF Test

Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL

95% Student's-t UCL 0.359

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995) 0.358

95% Modified-t UCL (Johnson-1978) 0.359

Gamma GOF Test

A-D Test Statistic	3.98
5% A-D Critical Value	0.777
K-S Test Statistic	0.234
5% K-S Critical Value	0.121

Anderson-Darling Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Kolmogorov-Smirnov Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.101	k star (bias corrected MLE)	1.055
Theta hat (MLE)	0.282	Theta star (bias corrected MLE)	0.294
nu hat (MLE)	125.6	nu star (bias corrected)	120.3
MLE Mean (bias corrected)	0.311	MLE Sd (bias corrected)	0.302
		Approximate Chi Square Value (0.05)	95.96
Adjusted Level of Significance	0.0458	Adjusted Chi Square Value	95.39

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.389	95% Adjusted Gamma UCL (use when n<50)	0.392
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Appendix D-3e
Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Lognormal GOF Test

Shapiro Wilk Test Statistic 0.792
 5% Shapiro Wilk P Value 1.697E-10
 Lilliefors Test Statistic 0.254
 5% Lilliefors Critical Value 0.117

Shapiro Wilk Lognormal GOF Test

Data Not Lognormal at 5% Significance Level

Lilliefors Lognormal GOF Test

Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-6.166	Mean of logged Data	-1.687
Maximum of Logged Data	-0.174	SD of logged Data	1.328

Assuming Lognormal Distribution

95% H-UCL	0.744	90% Chebyshev (MVUE) UCL	0.729
95% Chebyshev (MVUE) UCL	0.863	97.5% Chebyshev (MVUE) UCL	1.048
99% Chebyshev (MVUE) UCL	1.412		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	0.358	95% Jackknife UCL	0.359
95% Standard Bootstrap UCL	0.357	95% Bootstrap-t UCL	0.358
95% Hall's Bootstrap UCL	0.357	95% Percentile Bootstrap UCL	0.357
95% BCA Bootstrap UCL	0.355		
90% Chebyshev(Mean, Sd) UCL	0.397	95% Chebyshev(Mean, Sd) UCL	0.436
97.5% Chebyshev(Mean, Sd) UCL	0.49	99% Chebyshev(Mean, Sd) UCL	0.597

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 0.436

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 positively skewed data sets.

CoS3

General Statistics

Total Number of Observations	18	Number of Distinct Observations	15
		Number of Missing Observations	0
Minimum	0.0021	Mean	0.0872
Maximum	0.47	Median	0.051
SD	0.126	Std. Error of Mean	0.0298
Coefficient of Variation	1.449	Skewness	2.682

Appendix D-3e
Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Normal GOF Test

Shapiro Wilk Test Statistic	0.483	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.486	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.202	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.139	95% Adjusted-CLT UCL (Chen-1995)	0.156
		95% Modified-t UCL (Johnson-1978)	0.142

Gamma GOF Test

A-D Test Statistic	2.866	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.771	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.4	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.21	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.905	k star (bias corrected MLE)	0.792
Theta hat (MLE)	0.0963	Theta star (bias corrected MLE)	0.11
nu hat (MLE)	32.6	nu star (bias corrected)	28.5
MLE Mean (bias corrected)	0.0872	MLE Sd (bias corrected)	0.0981
		Approximate Chi Square Value (0.05)	17.32
Adjusted Level of Significance	0.0357	Adjusted Chi Square Value	16.48

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.144	95% Adjusted Gamma UCL (use when n<50)	0.151
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.709	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.897	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.369	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.202	Data Not Lognormal at 5% Significance Level	

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-6.166	Mean of logged Data	-3.084
Maximum of Logged Data	-0.755	SD of logged Data	1.259

Assuming Lognormal Distribution

95% H-UCL	0.256	90% Chebyshev (MVUE) UCL	0.19
95% Chebyshev (MVUE) UCL	0.234	97.5% Chebyshev (MVUE) UCL	0.295
99% Chebyshev (MVUE) UCL	0.414		

Appendix D-3e
Groundwater ProUCL Output - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs			
95% CLT UCL	0.136	95% Jackknife UCL	0.139
95% Standard Bootstrap UCL	0.136	95% Bootstrap-t UCL	0.435
95% Hall's Bootstrap UCL	0.688	95% Percentile Bootstrap UCL	0.143
95% BCA Bootstrap UCL	0.156		
90% Chebyshev(Mean, Sd) UCL	0.177	95% Chebyshev(Mean, Sd) UCL	0.217
97.5% Chebyshev(Mean, Sd) UCL	0.273	99% Chebyshev(Mean, Sd) UCL	0.384

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	0.217
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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-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
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 3:42:24 PM
 From File 20200914-ProUCL_input.xls
 Full Precision OFF
 Confidence Coefficient 95%
 Number of Bootstrap Operations 2000

LIN1

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	0.026	Mean	0.0601
Maximum	0.0995	Median	0.0731
SD	0.0284	Std. Error of Mean	0.00856
Coefficient of Variation	0.472	Skewness	-0.0519

Normal GOF Test

Shapiro Wilk Test Statistic 0.842
 5% Shapiro Wilk Critical Value 0.85
 Lilliefors Test Statistic 0.247
 5% Lilliefors Critical Value 0.251

Shapiro Wilk GOF Test

Data Not Normal at 5% Significance Level

Lilliefors GOF Test

Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL

95% Student's-t UCL 0.0756

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995) 0.0741
 95% Modified-t UCL (Johnson-1978) 0.0756

Gamma GOF Test

A-D Test Statistic 0.945
 5% A-D Critical Value 0.732
 K-S Test Statistic 0.265
 5% K-S Critical Value 0.256

Anderson-Darling Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Kolmogorov-Smirnov Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	4.385	k star (bias corrected MLE)	3.249
Theta hat (MLE)	0.0137	Theta star (bias corrected MLE)	0.0185
nu hat (MLE)	96.46	nu star (bias corrected)	71.49
MLE Mean (bias corrected)	0.0601	MLE Sd (bias corrected)	0.0334
		Approximate Chi Square Value (0.05)	53.02
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	50.43

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)) 0.0811 95% Adjusted Gamma UCL (use when n<50) 0.0852

Appendix D-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.83	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk Critical Value	0.85	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.269	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.251	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-3.65	Mean of logged Data	-2.93
Maximum of Logged Data	-2.308	SD of logged Data	0.528

Assuming Lognormal Distribution

95% H-UCL	0.0888	90% Chebyshev (MVUE) UCL	0.0901
95% Chebyshev (MVUE) UCL	0.104	97.5% Chebyshev (MVUE) UCL	0.122
99% Chebyshev (MVUE) UCL	0.159		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0742	95% Jackknife UCL	0.0756
95% Standard Bootstrap UCL	0.0733	95% Bootstrap-t UCL	0.0749
95% Hall's Bootstrap UCL	0.0718	95% Percentile Bootstrap UCL	0.0731
95% BCA Bootstrap UCL	0.0728		
90% Chebyshev(Mean, Sd) UCL	0.0858	95% Chebyshev(Mean, Sd) UCL	0.0974
97.5% Chebyshev(Mean, Sd) UCL	0.114	99% Chebyshev(Mean, Sd) UCL	0.145

Suggested UCL to Use

95% Student's-t UCL	0.0756
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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.

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 positively skewed data sets.

Appendix D-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

LIN2

General Statistics

Total Number of Observations	42	Number of Distinct Observations	37
Number of Detects	41	Number of Non-Detects	1
Number of Distinct Detects	36	Number of Distinct Non-Detects	1
Minimum Detect	0.0022	Minimum Non-Detect	0.05
Maximum Detect	0.0995	Maximum Non-Detect	0.05
Variance Detects	8.1288E-4	Percent Non-Detects	2.381%
Mean Detects	0.02	SD Detects	0.0285
Median Detects	0.0063	CV Detects	1.425
Skewness Detects	1.773	Kurtosis Detects	1.768
Mean of Logged Detects	-4.726	SD of Logged Detects	1.222

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.642	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.941	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.342	Lilliefors GOF Test
5% Lilliefors Critical Value	0.137	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	0.0197	KM Standard Error of Mean	0.00437
KM SD	0.0279	95% KM (BCA) UCL	0.0265
95% KM (t) UCL	0.0271	95% KM (Percentile Bootstrap) UCL	0.0271
95% KM (z) UCL	0.0269	95% KM Bootstrap t UCL	0.0291
90% KM Chebyshev UCL	0.0328	95% KM Chebyshev UCL	0.0388
97.5% KM Chebyshev UCL	0.047	99% KM Chebyshev UCL	0.0632

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.285	Anderson-Darling GOF Test
5% A-D Critical Value	0.791	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.235	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.143	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)	0.737	k star (bias corrected MLE)	0.699
Theta hat (MLE)	0.0272	Theta star (bias corrected MLE)	0.0286
nu hat (MLE)	60.4	nu star (bias corrected)	57.32
Mean (detects)	0.02		

Appendix D-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

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	0.0022	Mean	0.0198
Maximum	0.0995	Median	0.00645
SD	0.0282	CV	1.426
k hat (MLE)	0.749	k star (bias corrected MLE)	0.711
Theta hat (MLE)	0.0264	Theta star (bias corrected MLE)	0.0278
nu hat (MLE)	62.89	nu star (bias corrected)	59.73
Adjusted Level of Significance (β)	0.0443		
Approximate Chi Square Value (59.73, α)	42.96	Adjusted Chi Square Value (59.73, β)	42.45
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0275	95% Gamma Adjusted UCL (use when $n < 50$)	0.0278

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0197	SD (KM)	0.0279
Variance (KM)	7.7918E-4	SE of Mean (KM)	0.00437
k hat (KM)	0.501	k star (KM)	0.481
nu hat (KM)	42.04	nu star (KM)	40.37
theta hat (KM)	0.0395	theta star (KM)	0.0411
80% gamma percentile (KM)	0.0324	90% gamma percentile (KM)	0.0539
95% gamma percentile (KM)	0.0769	99% gamma percentile (KM)	0.134

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (40.37, α)	26.81	Adjusted Chi Square Value (40.37, β)	26.42
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0297	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0302

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.855	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.941	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.159	Lilliefors GOF Test
5% Lilliefors Critical Value	0.137	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	0.0197	Mean in Log Scale	-4.732
SD in Original Scale	0.0282	SD in Log Scale	1.207
95% t UCL (assumes normality of ROS data)	0.027	95% Percentile Bootstrap UCL	0.0274
95% BCA Bootstrap UCL	0.0279	95% Bootstrap t UCL	0.0286
95% H-UCL (Log ROS)	0.0298		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.735	KM Geo Mean	0.00878
KM SD (logged)	1.201	95% Critical H Value (KM-Log)	2.588
KM Standard Error of Mean (logged)	0.189	95% H-UCL (KM -Log)	0.0293
KM SD (logged)	1.201	95% Critical H Value (KM-Log)	2.588
KM Standard Error of Mean (logged)	0.189		

Appendix D-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0201	Mean in Log Scale	-4.701
SD in Original Scale	0.0282	SD in Log Scale	1.217
95% t UCL (Assumes normality)	0.0274	95% H-Stat UCL	0.0313

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 (Chebyshev) UCL 0.0388

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.

LIN3

General Statistics			
Total Number of Observations	9	Number of Distinct Observations	8
Number of Detects	8	Number of Non-Detects	1
Number of Distinct Detects	7	Number of Distinct Non-Detects	1
Minimum Detect	0.0046	Minimum Non-Detect	0.05
Maximum Detect	0.012	Maximum Non-Detect	0.05
Variance Detects	8.5513E-6	Percent Non-Detects	11.11%
Mean Detects	0.00864	SD Detects	0.00292
Median Detects	0.0085	CV Detects	0.339
Skewness Detects	-0.0417	Kurtosis Detects	-1.966
Mean of Logged Detects	-4.806	SD of Logged Detects	0.361

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

Shapiro Wilk Test Statistic	0.888	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.2	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.283	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

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

KM Mean	0.00864	KM Standard Error of Mean	0.00103
KM SD	0.00274	95% KM (BCA) UCL	0.0102
95% KM (t) UCL	0.0106	95% KM (Percentile Bootstrap) UCL	0.0103
95% KM (z) UCL	0.0103	95% KM Bootstrap t UCL	0.0105
90% KM Chebyshev UCL	0.0117	95% KM Chebyshev UCL	0.0131
97.5% KM Chebyshev UCL	0.0151	99% KM Chebyshev UCL	0.0189

Appendix D-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.458	Anderson-Darling GOF Test
5% A-D Critical Value	0.716	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.203	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.294	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	9.308	k star (bias corrected MLE)	5.901
Theta hat (MLE)	9.2794E-4	Theta star (bias corrected MLE)	0.00146
nu hat (MLE)	148.9	nu star (bias corrected)	94.42
Mean (detects)	0.00864		

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	0.0046	Mean	0.00879
Maximum	0.012	Median	0.0099
SD	0.00277	CV	0.315
k hat (MLE)	10.22	k star (bias corrected MLE)	6.89
Theta hat (MLE)	8.5965E-4	Theta star (bias corrected MLE)	0.00128
nu hat (MLE)	184	nu star (bias corrected)	124
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (124.02, α)	99.3	Adjusted Chi Square Value (124.02, β)	94.64
95% Gamma Approximate UCL (use when $n \geq 50$)	0.011	95% Gamma Adjusted UCL (use when $n < 50$)	0.0115

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.00864	SD (KM)	0.00274
Variance (KM)	7.4823E-6	SE of Mean (KM)	0.00103
k hat (KM)	9.971	k star (KM)	6.721
nu hat (KM)	179.5	nu star (KM)	121
theta hat (KM)	8.6626E-4	theta star (KM)	0.00129
80% gamma percentile (KM)	0.0112	90% gamma percentile (KM)	0.0131
95% gamma percentile (KM)	0.0147	99% gamma percentile (KM)	0.0182

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (120.99, α)	96.59	Adjusted Chi Square Value (120.99, β)	91.99
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0108	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0114

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.896	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.202	Lilliefors GOF Test
5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Appendix D-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00859	Mean in Log Scale	-4.806
SD in Original Scale	0.00274	SD in Log Scale	0.338
95% t UCL (assumes normality of ROS data)	0.0103	95% Percentile Bootstrap UCL	0.00997
95% BCA Bootstrap UCL	0.0101	95% Bootstrap t UCL	0.0103
95% H-UCL (Log ROS)	0.0111		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.806	KM Geo Mean	0.00818
KM SD (logged)	0.338	95% Critical H Value (KM-Log)	2.055
KM Standard Error of Mean (logged)	0.128	95% H-UCL (KM -Log)	0.0111
KM SD (logged)	0.338	95% Critical H Value (KM-Log)	2.055
KM Standard Error of Mean (logged)	0.128		

DL/2 Statistics

DL/2 Normal

Mean in Original Scale	0.0105
SD in Original Scale	0.0061
95% t UCL (Assumes normality)	0.0142

DL/2 Log-Transformed

Mean in Log Scale	-4.682
SD in Log Scale	0.503
95% H-Stat UCL	0.0156

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

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.0106
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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.

LIS1

General Statistics

Total Number of Observations	22	Number of Distinct Observations	19
		Number of Missing Observations	0
Minimum	0.056	Mean	0.0977
Maximum	0.144	Median	0.0977
SD	0.0282	Std. Error of Mean	0.006
Coefficient of Variation	0.288	Skewness	0.126

Normal GOF Test

Shapiro Wilk Test Statistic	0.906
5% Shapiro Wilk Critical Value	0.911
Lilliefors Test Statistic	0.176
5% Lilliefors Critical Value	0.184

Shapiro Wilk GOF Test

Data Not Normal at 5% Significance Level

Lilliefors GOF Test

Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Appendix D-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.108	95% Adjusted-CLT UCL (Chen-1995)	0.108
		95% Modified-t UCL (Johnson-1978)	0.108

Gamma GOF Test

A-D Test Statistic	0.948
5% A-D Critical Value	0.743
K-S Test Statistic	0.198
5% K-S Critical Value	0.185

Anderson-Darling Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Kolmogorov-Smirnov Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	12.28	k star (bias corrected MLE)	10.64
Theta hat (MLE)	0.00795	Theta star (bias corrected MLE)	0.00918
nu hat (MLE)	540.5	nu star (bias corrected)	468.1
MLE Mean (bias corrected)	0.0977	MLE Sd (bias corrected)	0.03
		Approximate Chi Square Value (0.05)	418.9
Adjusted Level of Significance	0.0386	Adjusted Chi Square Value	415.5

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.109	95% Adjusted Gamma UCL (use when n<50)	0.11
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.91
5% Shapiro Wilk Critical Value	0.911
Lilliefors Test Statistic	0.205
5% Lilliefors Critical Value	0.184

Shapiro Wilk Lognormal GOF Test

Data Not Lognormal at 5% Significance Level

Lilliefors Lognormal GOF Test

Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.882	Mean of logged Data	-2.367
Maximum of Logged Data	-1.938	SD of logged Data	0.297

Assuming Lognormal Distribution

95% H-UCL	0.11	90% Chebyshev (MVUE) UCL	0.117
95% Chebyshev (MVUE) UCL	0.125	97.5% Chebyshev (MVUE) UCL	0.137
99% Chebyshev (MVUE) UCL	0.16		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.108	95% Jackknife UCL	0.108
95% Standard Bootstrap UCL	0.108	95% Bootstrap-t UCL	0.108
95% Hall's Bootstrap UCL	0.107	95% Percentile Bootstrap UCL	0.107
95% BCA Bootstrap UCL	0.108		
90% Chebyshev(Mean, Sd) UCL	0.116	95% Chebyshev(Mean, Sd) UCL	0.124
97.5% Chebyshev(Mean, Sd) UCL	0.135	99% Chebyshev(Mean, Sd) UCL	0.157

Appendix D-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Suggested UCL to Use

95% Student's-t UCL 0.108

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.

LIS2

General Statistics

Total Number of Observations	35	Number of Distinct Observations	31
Number of Detects	33	Number of Non-Detects	2
Number of Distinct Detects	30	Number of Distinct Non-Detects	1
Minimum Detect	0.0014	Minimum Non-Detect	0.05
Maximum Detect	0.144	Maximum Non-Detect	0.05
Variance Detects	0.00216	Percent Non-Detects	5.714%
Mean Detects	0.0703	SD Detects	0.0464
Median Detects	0.073	CV Detects	0.661
Skewness Detects	-0.123	Kurtosis Detects	-1.22
Mean of Logged Detects	-3.196	SD of Logged Detects	1.414

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.915	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.931	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.137	Lilliefors GOF Test
5% Lilliefors Critical Value	0.152	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

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

KM Mean	0.0672	KM Standard Error of Mean	0.00799
KM SD	0.0464	95% KM (BCA) UCL	0.0802
95% KM (t) UCL	0.0807	95% KM (Percentile Bootstrap) UCL	0.0794
95% KM (z) UCL	0.0803	95% KM Bootstrap t UCL	0.0814
90% KM Chebyshev UCL	0.0911	95% KM Chebyshev UCL	0.102
97.5% KM Chebyshev UCL	0.117	99% KM Chebyshev UCL	0.147

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.177	Anderson-Darling GOF Test
5% A-D Critical Value	0.774	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.223	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.158	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)	1.06	k star (bias corrected MLE)	0.984
Theta hat (MLE)	0.0663	Theta star (bias corrected MLE)	0.0715
nu hat (MLE)	69.97	nu star (bias corrected)	64.94
Mean (detects)	0.0703		

Appendix D-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

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	0.0014	Mean	0.0681
Maximum	0.144	Median	0.071
SD	0.046	CV	0.675
k hat (MLE)	1.091	k star (bias corrected MLE)	1.016
Theta hat (MLE)	0.0624	Theta star (bias corrected MLE)	0.067
nu hat (MLE)	76.36	nu star (bias corrected)	71.15
Adjusted Level of Significance (β)	0.0425		
Approximate Chi Square Value (71.15, α)	52.73	Adjusted Chi Square Value (71.15, β)	51.98
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0919	95% Gamma Adjusted UCL (use when $n < 50$)	0.0932

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0672	SD (KM)	0.0464
Variance (KM)	0.00215	SE of Mean (KM)	0.00799
k hat (KM)	2.1	k star (KM)	1.939
nu hat (KM)	147	nu star (KM)	135.8
theta hat (KM)	0.032	theta star (KM)	0.0346
80% gamma percentile (KM)	0.101	90% gamma percentile (KM)	0.132
95% gamma percentile (KM)	0.161	99% gamma percentile (KM)	0.226

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (135.75, α)	109.8	Adjusted Chi Square Value (135.75, β)	108.7
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.083	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0839

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.767	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.931	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.256	Lilliefors GOF Test
5% Lilliefors Critical Value	0.152	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	0.0669	Mean in Log Scale	-3.272
SD in Original Scale	0.0472	SD in Log Scale	1.409
95% t UCL (assumes normality of ROS data)	0.0804	95% Percentile Bootstrap UCL	0.0795
95% BCA Bootstrap UCL	0.0806	95% Bootstrap t UCL	0.0799
95% H-UCL (Log ROS)	0.212		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.29	KM Geo Mean	0.0372
KM SD (logged)	1.436	95% Critical H Value (KM-Log)	3.04
KM Standard Error of Mean (logged)	0.253	95% H-UCL (KM -Log)	0.221
KM SD (logged)	1.436	95% Critical H Value (KM-Log)	3.04
KM Standard Error of Mean (logged)	0.253		

Appendix D-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0677	Mean in Log Scale	-3.224
SD in Original Scale	0.0463	SD in Log Scale	1.377
95% t UCL (Assumes normality)	0.081	95% H-Stat UCL	0.206

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

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 0.0807

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.

LIS3

General Statistics			
Total Number of Observations	7	Number of Distinct Observations	7
Number of Detects	6	Number of Non-Detects	1
Number of Distinct Detects	6	Number of Distinct Non-Detects	1
Minimum Detect	0.0036	Minimum Non-Detect	0.05
Maximum Detect	0.045	Maximum Non-Detect	0.05
Variance Detects	3.8317E-4	Percent Non-Detects	14.29%
Mean Detects	0.0178	SD Detects	0.0196
Median Detects	0.0063	CV Detects	1.099
Skewness Detects	0.974	Kurtosis Detects	-1.766
Mean of Logged Detects	-4.569	SD of Logged Detects	1.121

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

Shapiro Wilk Test Statistic	0.708		
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.387		
5% Lilliefors Critical Value	0.325	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Appendix D-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

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

KM Mean	0.0178	KM Standard Error of Mean	0.00799
KM SD	0.0179	95% KM (BCA) UCL	0.0303
95% KM (t) UCL	0.0333	95% KM (Percentile Bootstrap) UCL	0.0305
95% KM (z) UCL	0.031	95% KM Bootstrap t UCL	0.223
90% KM Chebyshev UCL	0.0418	95% KM Chebyshev UCL	0.0527
97.5% KM Chebyshev UCL	0.0677	99% KM Chebyshev UCL	0.0973

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.834	Anderson-Darling GOF Test
5% A-D Critical Value	0.714	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.377	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.34	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)	1.058	k star (bias corrected MLE)	0.64
Theta hat (MLE)	0.0168	Theta star (bias corrected MLE)	0.0278
nu hat (MLE)	12.7	nu star (bias corrected)	7.683
Mean (detects)	0.0178		

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	0.0036	Mean	0.0172
Maximum	0.045	Median	0.0064
SD	0.0179	CV	1.041
k hat (MLE)	1.207	k star (bias corrected MLE)	0.785
Theta hat (MLE)	0.0143	Theta star (bias corrected MLE)	0.022
nu hat (MLE)	16.9	nu star (bias corrected)	10.99
Adjusted Level of Significance (β)	0.0158		
Approximate Chi Square Value (10.99, α)	4.569	Adjusted Chi Square Value (10.99, β)	3.405
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0415	95% Gamma Adjusted UCL (use when $n < 50$)	0.0556

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0178	SD (KM)	0.0179
Variance (KM)	3.1931E-4	SE of Mean (KM)	0.00799
k hat (KM)	0.994	k star (KM)	0.663
nu hat (KM)	13.92	nu star (KM)	9.286
theta hat (KM)	0.0179	theta star (KM)	0.0269
80% gamma percentile (KM)	0.0293	90% gamma percentile (KM)	0.0453
95% gamma percentile (KM)	0.0618	99% gamma percentile (KM)	0.102

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (9.29, α)	3.501	Adjusted Chi Square Value (9.29, β)	2.517
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0473	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0657

Appendix D-3f
Groundwater ProUCL Output - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.794	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.333	Lilliefors GOF Test
5% Lilliefors Critical Value	0.325	Detected Data Not Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0168	Mean in Log Scale	-4.569
SD in Original Scale	0.0181	SD in Log Scale	1.024
95% t UCL (assumes normality of ROS data)	0.03	95% Percentile Bootstrap UCL	0.0276
95% BCA Bootstrap UCL	0.0296	95% Bootstrap t UCL	0.102
95% H-UCL (Log ROS)	0.0844		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.569	KM Geo Mean	0.0104
KM SD (logged)	1.024	95% Critical H Value (KM-Log)	3.765
KM Standard Error of Mean (logged)	0.458	95% H-UCL (KM -Log)	0.0844
KM SD (logged)	1.024	95% Critical H Value (KM-Log)	3.765
KM Standard Error of Mean (logged)	0.458		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0188	Mean in Log Scale	-4.444
SD in Original Scale	0.0181	SD in Log Scale	1.076
95% t UCL (Assumes normality)	0.0321	95% H-Stat UCL	0.117

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

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 0.0527

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.

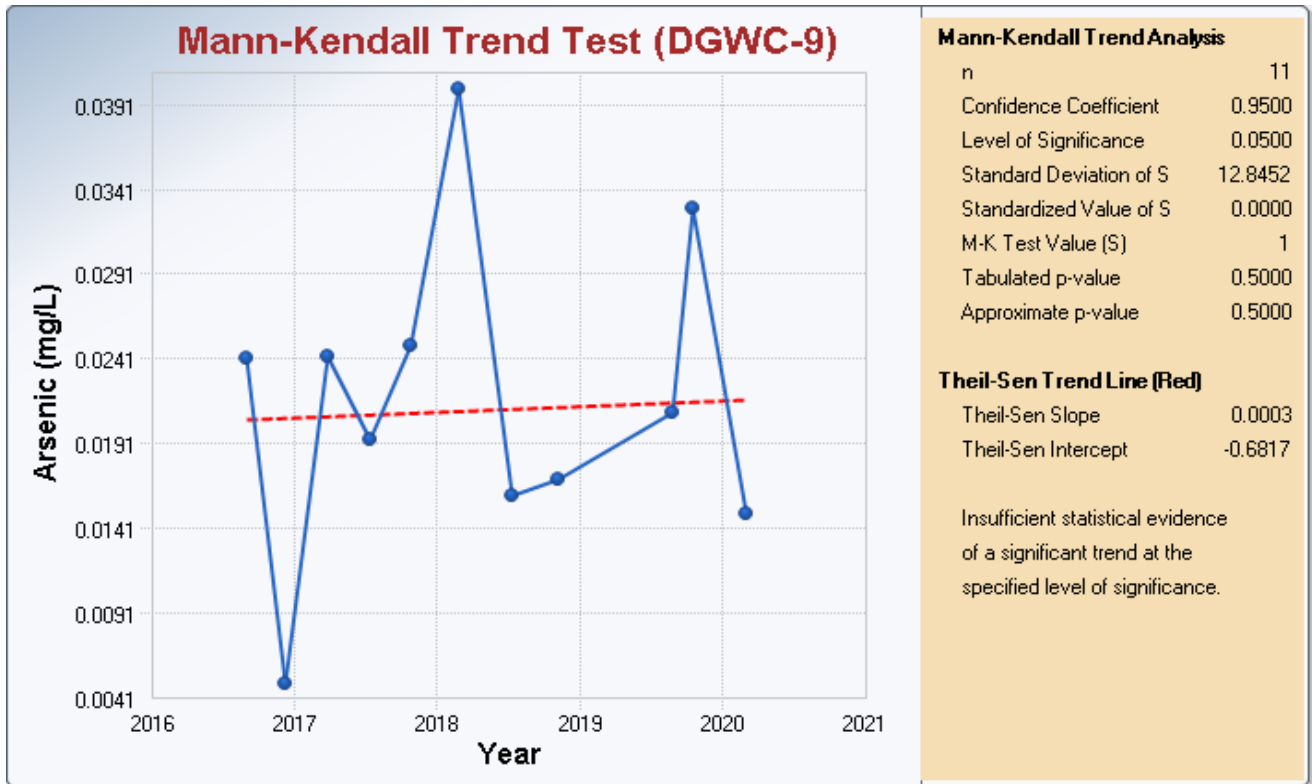
Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

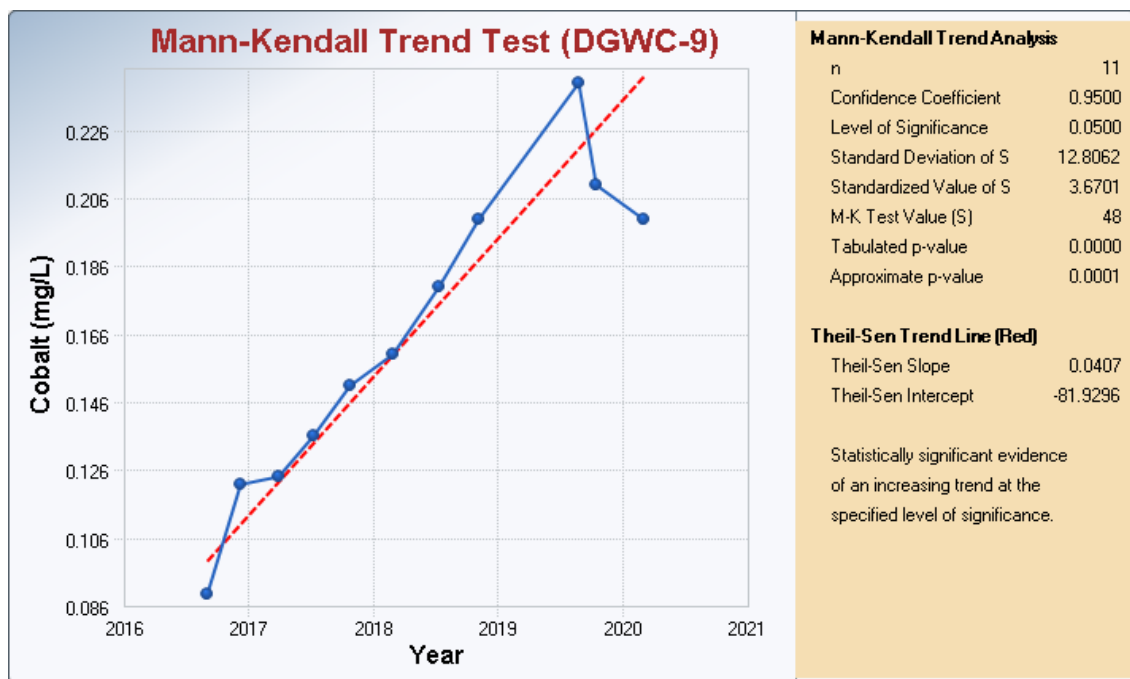
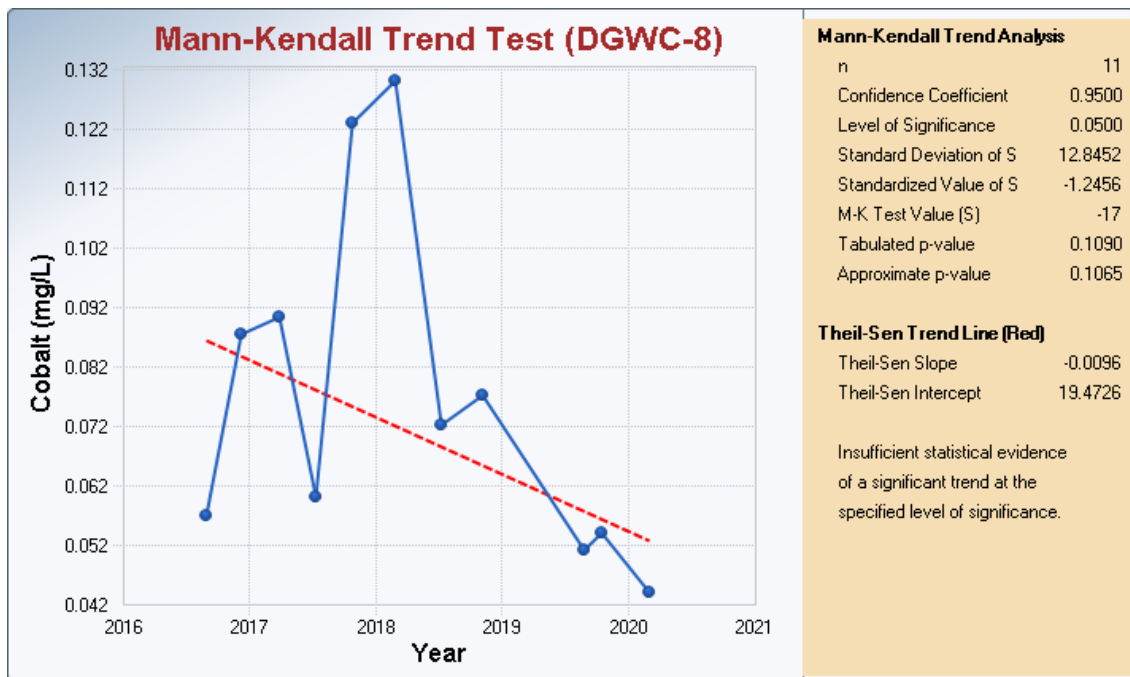
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Appendix D-4
Groundwater Trend Graphs

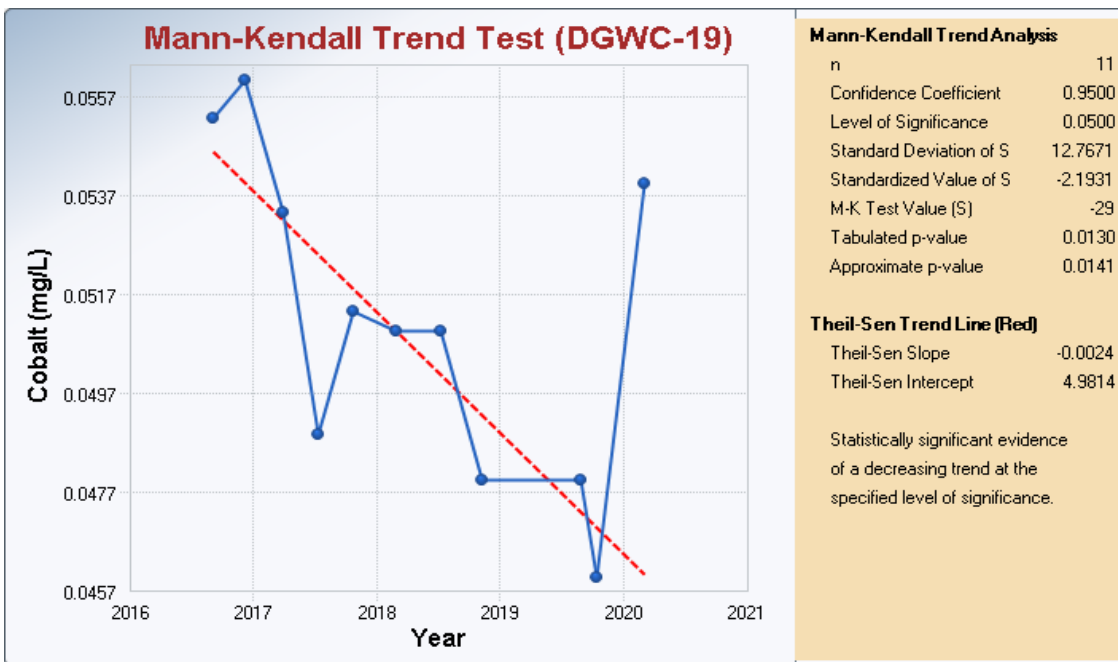
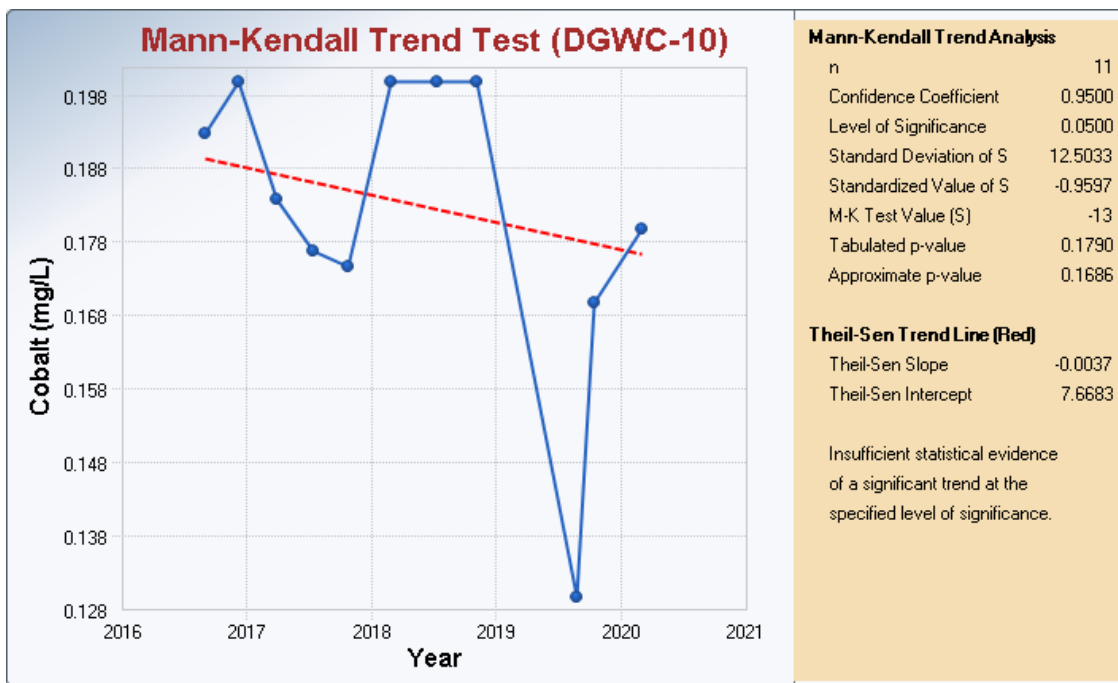
Appendix D-4
Groundwater Mann-Kendall Trend Graphs - Arsenic
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA



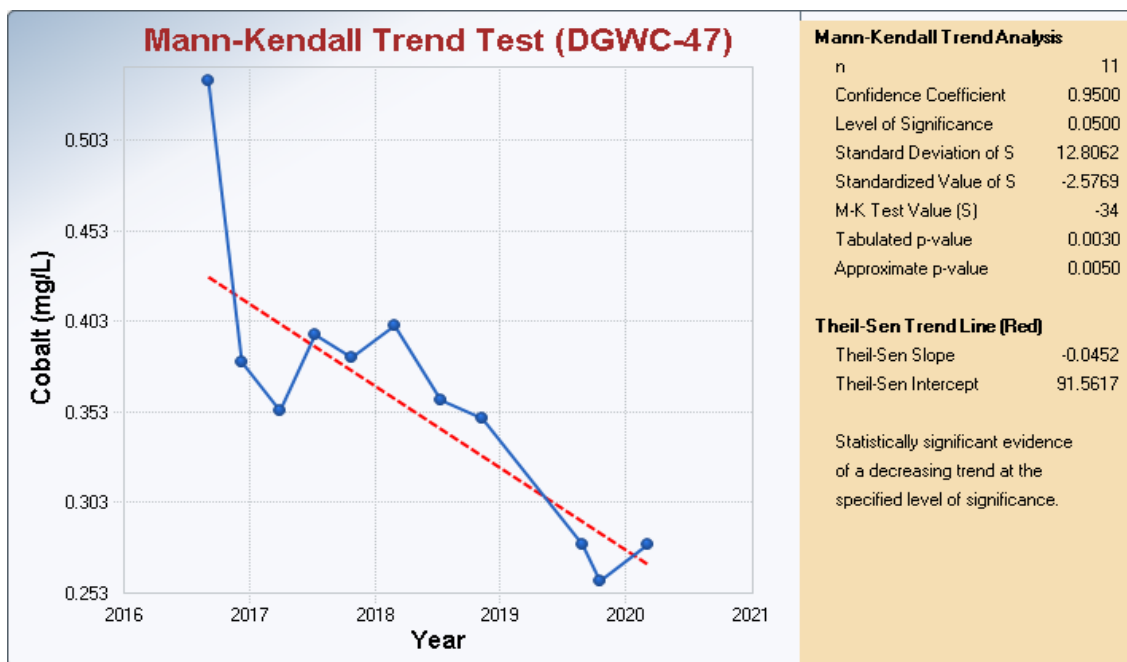
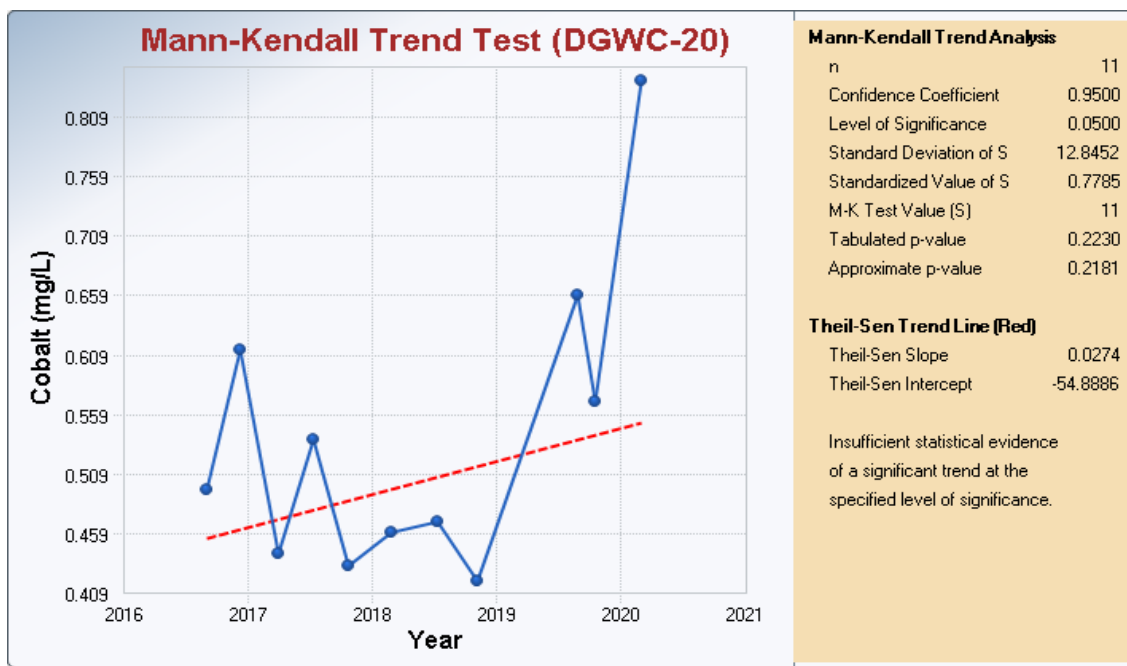
Appendix D-4
 Groundwater Mann-Kendall Trend Graphs - Cobalt
 McDonough AP-2, 3/4 Risk Evaluation Report
 McDonough AP-2, 3/4
 Plant McDonough, Cobb County, GA



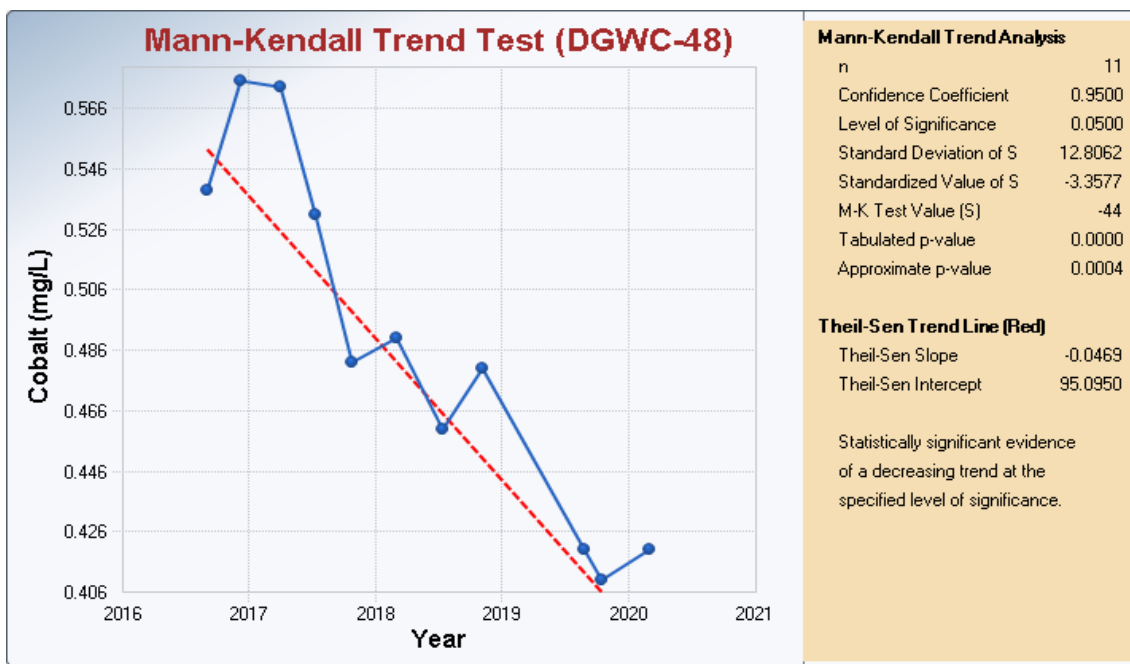
Appendix D-4
Groundwater Mann-Kendall Trend Graphs - Cobalt
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA



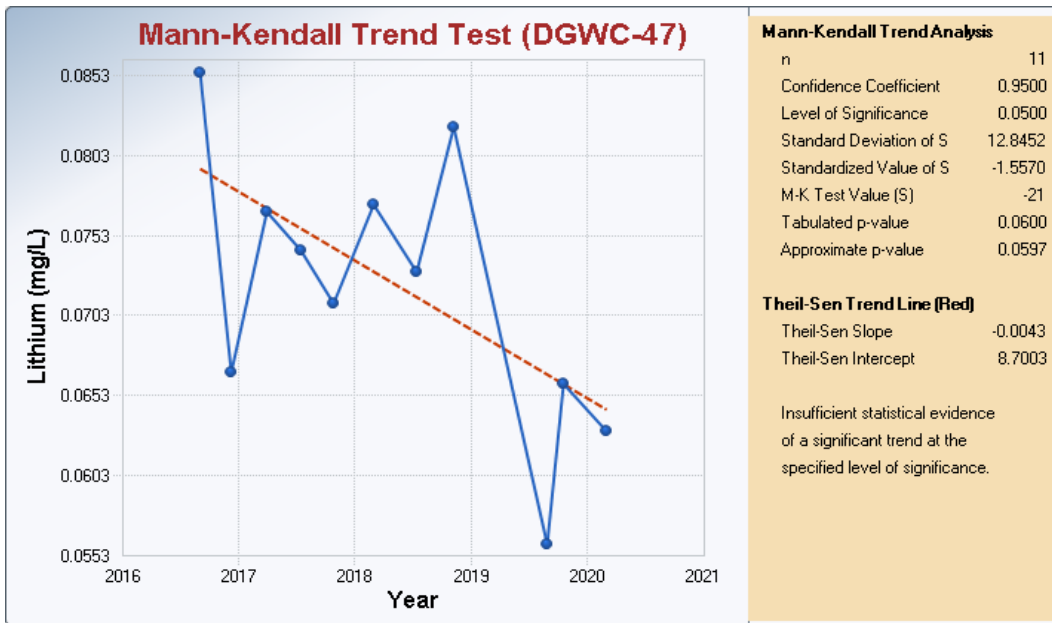
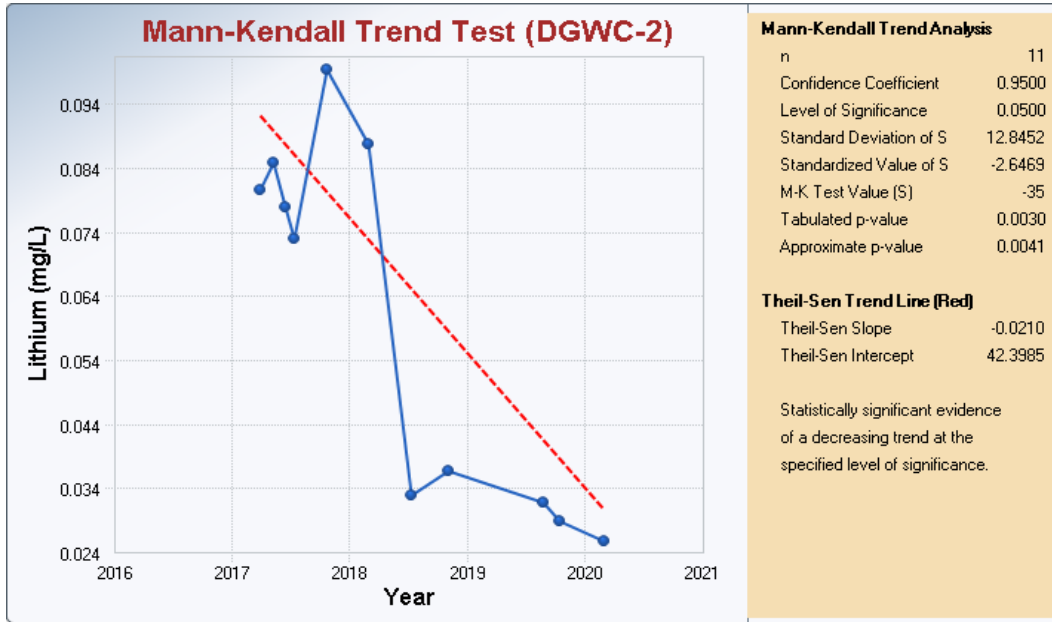
Appendix D-4
 Groundwater Mann-Kendall Trend Graphs - Cobalt
 McDonough AP-2, 3/4 Risk Evaluation Report
 McDonough AP-2, 3/4
 Plant McDonough, Cobb County, GA



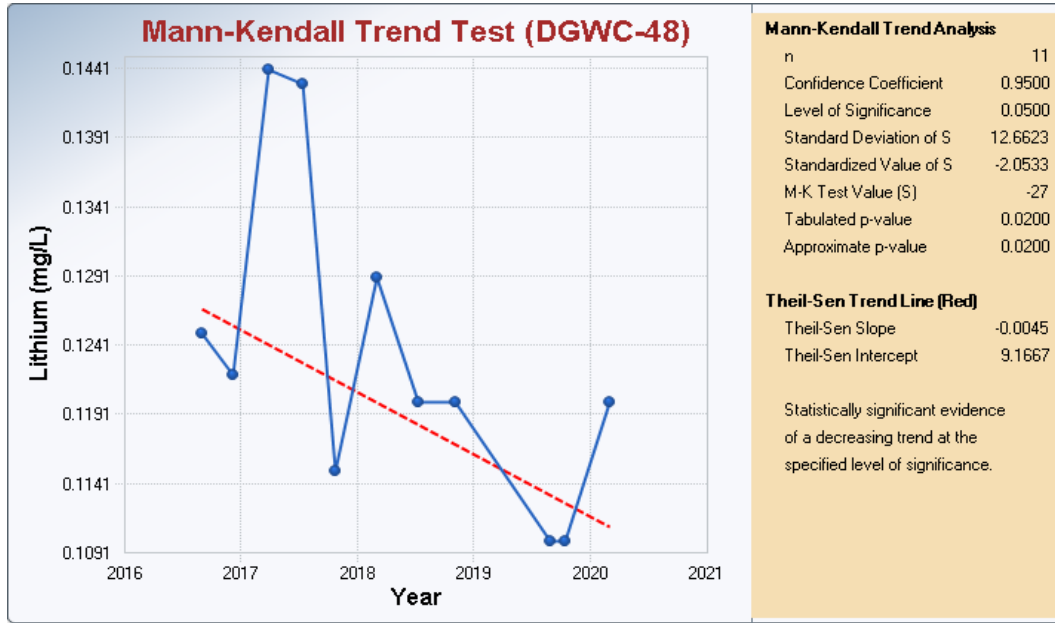
Appendix D-4
 Groundwater Mann-Kendall Trend Graphs - Cobalt
 McDonough AP-2, 3/4 Risk Evaluation Report
 McDonough AP-2, 3/4
 Plant McDonough, Cobb County, GA



Appendix D-4
Groundwater Mann-Kendall Trend Graphs - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA



Appendix D-4
Groundwater Mann-Kendall Trend Graphs - Lithium
McDonough AP-2, 3/4 Risk Evaluation Report
McDonough AP-2, 3/4
Plant McDonough, Cobb County, GA



APPENDIX B

Laboratory Analytical Results

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



REPORT OF LABORATORY ANALYSIS

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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 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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	2973381		2973382		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
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	

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

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH BACKGROUND

Pace Project No.: 92490488

Parameter	Units	2973381		2973382		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result								
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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH BACKGROUND
Pace Project No.: 92490488

QC Batch: 560739 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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	2974808		2974809		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Antimony	mg/L	ND	0.1	0.11	0.11	114	109	75-125	5	20	
Arsenic	mg/L	ND	0.1	0.10	0.099	100	99	75-125	2	20	
Barium	mg/L	0.088	0.1	0.22	0.21	131	119	75-125	6	20 M1	
Beryllium	mg/L	ND	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

Parameter	Units	2974808		2974809		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92490942006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
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 Analysis Method: EPA 7470A
QC Batch 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	2971192		2971193		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Mercury	mg/L	ND	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	Analysis Method: EPA 7470A
QC Batch 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	2974338		2974339		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
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 Analysis Method: EPA 300.0 Rev 2.1 1993
 QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
 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		2970274		2970275		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Fluoride	mg/L	ND	ND	2.5	2.5	2.7	2.6	106	104	90-110	2	10

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2970276 2970277

Parameter	Units	92490503008		2970276		2970277		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Fluoride	mg/L	ND	ND	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 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
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		MS		MSD		% Rec		Max		Qual	
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD		RPD
Fluoride	mg/L	0.82	2.5	2.5	2.5	3.3	3.3	100	101	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2974094 2974095

Parameter	Units	92490867001		MS		MSD		% Rec		Max		Qual	
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD		RPD
Fluoride	mg/L	0.37	2.5	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

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
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:						
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	Analysis Method:	EPA 9320
QC Batch Method:	EPA 9320	Analysis Description:	9320 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 92490488004

METHOD BLANK:	1990338	Matrix:	Water
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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

Analysis Method: EPA 9320

QC Batch 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	Analysis Method:	EPA 9315
QC Batch 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	Analysis Method:	EPA 9315
QC Batch 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 (%)

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.

REPORT OF LABORATORY ANALYSIS

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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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Sample Condition Upon Rec

WO#: 92490488

Client Name: G A Power



92490488

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Tracking #: _____

Proj. Due Date: _____
Proj. Name: _____

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

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 233 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 1.8 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 8/12/2002

Comments:

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

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

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



Document Name:
Bottle Identification Form (BIF)
Document No.:
F-CAR-CS-043-Rev.00

Document Issued: March 14, 2019
Page 1 of 1
Issuing Authority:
Pace Carolinas Quality Office

Project #

WO# : 92490488

PM: KLH1

Due Date: 08/26/20

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) (C-)	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) (C-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic Zn Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (C-)	WGFW-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (C-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (C-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(C-)	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)	VS9U-20 mL Scientitation 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 Office. 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.

Section A

Required Client Information:

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

Section B

Required Project Information:

Report To: Joju Abraham
 Copy To: Golder
 Purchase Order #:
 Project Name: Plant McDonough Background
 Project #: 166849618

Section C

Invoice Information:

Attention: scanvokes@southernco.com
 Company Name:
 Address:
 Pace Quote:
 Pace Project Manager: Kevin Hemmg
 Pace Profile #:

Page: 1 Of 1

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9, /, -) Sample IDs must be unique	MATRIX	CODE	DATE	TIME	SAMPLE TYPE (ID-GRAB, C-COMP)	MATRIX SOURCE (1=44+1000, 2=1000)	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	PRESERVATIVES							ANALYSIS TEST	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)						
										Unpreserved	Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	H2S2O3				Methanol	Other	App IV Metals*	Fluoride	Radium 226/228	
1	DGWA-70A	DW	DW	8/11/2020	1137	G	WT		3	1		2						X	X	X					pH 5.86
2	DGWA-71	DW	DW	8/11/2020	1455	G	WT		3	1		2						X	X	X					pH 5.96
3	EB-1	DW	DW	8/11/2020	1250	G	WT		3	1		2						X	X	X					

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, Ti	[Signature]	8/12	857	[Signature] @ Pace	8/12	857	
	[Signature]	8/12	1436	[Signature] Charles Harts @ Pace	8/12/2014	1436	1.8 Y N Y

SAMPLER NAME AND SIGNATURE

SAMPLER NAME: Kevin Micken

SAMPLER SIGNATURE: [Signature]

DATE Signed: 8/12/20

TEMP in C: _____

Received on (Y/N): _____

Custody Sealed (Y/N): _____

Cooler (Y/N): _____

Samples intact (Y/N): _____



Quality Control Sample Performance Assessment

Analyst Must Manually Enter All Fields Highlighted in Yellow.

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

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	LCS/D (Y or N)?	
	LCS55663	LCS/D55663
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.:	LCS/D55663	
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:

Handwritten signature: JJY 8/24/2020

Handwritten initials: JJY 8-24-20



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)?	N
		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:

Handwritten signature: JJY 8/24/2020

Handwritten initials: JJY 8-24-20



Quality Control Sample Performance Assessment

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
		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 sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.:	92490503020DUP	
Sample Result (pCi/L, g, F):	0.717	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.321	
Sample Duplicate Result (pCi/L, g, F):	0.626	
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:

van 9/1/2020

Analytical



Quality Control Sample Performance Assessment

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)?	
	LCS55836	LCS55836
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%

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.:	LCS55836	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.:	LCS55836	
Sample Result (pCi/L, g, F):	4.493	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.750	
Sample Duplicate Result (pCi/L, g, F):	5.168	
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%	

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

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

Comments:

uam 9/1/2020

uam



Quality Control Sample Performance Assessment

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

Analyst Must Manually Enter All Fields Highlighted in Yellow.

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)?	
	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 re-prepped due to LCS failure.

LCS NPI 23 JJJ 8-28-2020

JJJ 8-28-20

DU 8/28/20



Quality Control Sample Performance Assessment

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)?	
	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:

Handwritten signature/initials

September 10, 2020

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

RE: Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

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



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

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 #: 191
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-2, 3/4

Pace Project No.: 92490503

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92490503001	DGWC-2	Water	08/11/20 13:20	08/12/20 08:57
92490503002	DGWC-9	Water	08/11/20 16:05	08/12/20 08:57
92490503003	DGWC-10	Water	08/11/20 16:30	08/12/20 08:57
92490503004	DGWC-11	Water	08/11/20 12:15	08/12/20 08:57
92490503005	DGWC-12	Water	08/11/20 14:50	08/12/20 08:57
92490503006	DGWC-14	Water	08/11/20 11:32	08/12/20 08:57
92490503007	DGWC-19	Water	08/11/20 13:00	08/12/20 08:57
92490503008	FB-1	Water	08/11/20 11:55	08/12/20 08:57
92490503009	FD-1	Water	08/11/20 00:00	08/12/20 08:57
92490503010	DGWC-4	Water	08/12/20 11:46	08/13/20 10:15
92490503011	DGWC-5	Water	08/12/20 10:45	08/13/20 10:15
92490503012	DGWC-8	Water	08/12/20 10:15	08/13/20 10:15
92490503013	DGWC-13	Water	08/12/20 11:40	08/13/20 10:15
92490503014	DGWC-47	Water	08/12/20 10:25	08/13/20 10:15
92490503015	FD-2	Water	08/12/20 00:00	08/13/20 10:15
92490503016	DGWC-15	Water	08/13/20 10:40	08/14/20 14:30
92490503017	DGWC-20	Water	08/13/20 13:15	08/14/20 14:30
92490503018	DGWC-23	Water	08/13/20 13:10	08/14/20 14:30
92490503019	DGWC-42	Water	08/13/20 15:12	08/14/20 14:30
92490503020	DGWC-48	Water	08/13/20 09:46	08/14/20 14:30
92490503021	FB-2	Water	08/13/20 09:40	08/14/20 14:30
92490503022	DGWC-17	Water	08/14/20 10:15	08/14/20 14:30
92490503023	DGWC-21	Water	08/14/20 10:55	08/14/20 14:30
92490503024	DGWC-22	Water	08/14/20 11:53	08/14/20 14:30
92490503025	FB-3	Water	08/14/20 10:40	08/14/20 14:30
92490503026	EB-3	Water	08/14/20 12:45	08/14/20 14:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92490503001	DGWC-2	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
92490503002	DGWC-9	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
92490503003	DGWC-10	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
92490503004	DGWC-11	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
92490503005	DGWC-12	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
92490503006	DGWC-14	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
92490503007	DGWC-19	EPA 6020B	CW1	12	PASI-GA

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92490503008	FB-1	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
		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
92490503009	FD-1	EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
		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
		EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	JJY	1	PASI-PA
92490503010	DGWC-4	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
		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	BRJ	1	PASI-A
		EPA 6020B	CW1	12	PASI-GA
92490503011	DGWC-5	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	BRJ	1	PASI-A
		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
92490503012	DGWC-8	EPA 300.0 Rev 2.1 1993	BRJ	1	PASI-A
		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	BRJ	1	PASI-A
		EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	JJY	1	PASI-PA
92490503013	DGWC-13	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	BRJ	1	PASI-A
		EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory		
92490503014	DGWC-47	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	BRJ	1	PASI-A		
		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	BRJ	1	PASI-A		
92490503015	FD-2	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	BRJ	1	PASI-A		
		92490503016	DGWC-15	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		
92490503017	DGWC-20			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		
		92490503018	DGWC-23	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		
92490503019	DGWC-42			EPA 6020B	CW1	12	PASI-GA
				EPA 7470A	VB	1	PASI-GA
				EPA 9315	LAL	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92490503020	DGWC-48	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
		EPA 6020B	CW1	12	PASI-GA
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
92490503021	FB-2	Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
		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
92490503022	DGWC-17	EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
		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
92490503023	DGWC-21	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
		92490503024	DGWC-22	EPA 6020B	CW1
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
92490503025	FB-3			EPA 6020B	CW1
		EPA 7470A	VB	1	PASI-GA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92490503026	EB-3	Total Radium Calculation	CMC	1	PASI-PA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
		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-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-2		Lab ID: 92490503001		Collected: 08/11/20 13:20		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	6.04	Std. Units			1		08/20/20 17:21		
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	08/13/20 10:10	08/17/20 19:19	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/13/20 10:10	08/17/20 19:19	7440-38-2	
Barium	0.022	mg/L	0.010	0.00071	1	08/13/20 10:10	08/17/20 19:19	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	08/13/20 10:10	08/17/20 19:19	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/13/20 10:10	08/17/20 19:19	7440-43-9	
Chromium	0.00067J	mg/L	0.010	0.00055	1	08/13/20 10:10	08/17/20 19:19	7440-47-3	B
Cobalt	0.0064	mg/L	0.0050	0.00038	1	08/13/20 10:10	08/17/20 19:19	7440-48-4	
Lead	0.00064J	mg/L	0.0050	0.000036	1	08/13/20 10:10	08/17/20 19:19	7439-92-1	
Lithium	0.028J	mg/L	0.030	0.00081	1	08/13/20 10:10	08/17/20 19:19	7439-93-2	
Molybdenum	0.0020J	mg/L	0.010	0.00069	1	08/13/20 10:10	08/17/20 19:19	7439-98-7	
Selenium	0.0053J	mg/L	0.010	0.0016	1	08/13/20 10:10	08/17/20 19:19	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/13/20 10:10	08/17/20 19:19	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 13:33	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 01:36	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-9		Lab ID: 92490503002		Collected: 08/11/20 16:05		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	4.00	Std. Units			1		08/20/20 17:21		
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	08/13/20 10:10	08/17/20 19:25	7440-36-0	
Arsenic	0.022	mg/L	0.0050	0.00078	1	08/13/20 10:10	08/17/20 19:25	7440-38-2	
Barium	0.016	mg/L	0.010	0.00071	1	08/13/20 10:10	08/17/20 19:25	7440-39-3	
Beryllium	0.0062	mg/L	0.0030	0.000046	1	08/13/20 10:10	08/17/20 19:25	7440-41-7	
Cadmium	0.00059J	mg/L	0.0025	0.00012	1	08/13/20 10:10	08/17/20 19:25	7440-43-9	
Chromium	0.00061J	mg/L	0.010	0.00055	1	08/13/20 10:10	08/17/20 19:25	7440-47-3	B
Cobalt	0.22	mg/L	0.0050	0.00038	1	08/13/20 10:10	08/17/20 19:25	7440-48-4	
Lead	ND	mg/L	0.025	0.00018	5	08/13/20 10:10	08/18/20 16:02	7439-92-1	D3
Lithium	0.032	mg/L	0.030	0.00081	1	08/13/20 10:10	08/17/20 19:25	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/13/20 10:10	08/17/20 19:25	7439-98-7	
Selenium	0.11	mg/L	0.010	0.0016	1	08/13/20 10:10	08/17/20 19:25	7782-49-2	
Thallium	ND	mg/L	0.0050	0.00072	5	08/13/20 10:10	08/18/20 16:02	7440-28-0	D3
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	08/14/20 08:10	08/14/20 13:36	7439-97-6	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Fluoride	1.3	mg/L	0.10	0.050	1		08/14/20 01:50	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-10		Lab ID: 92490503003		Collected: 08/11/20 16:30		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	4.92	Std. Units			1		08/20/20 17:21		
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	08/13/20 10:10	08/17/20 19:31	7440-36-0	
Arsenic	0.0028J	mg/L	0.0050	0.00078	1	08/13/20 10:10	08/17/20 19:31	7440-38-2	
Barium	0.024	mg/L	0.010	0.00071	1	08/13/20 10:10	08/17/20 19:31	7440-39-3	
Beryllium	0.0066	mg/L	0.0030	0.000046	1	08/13/20 10:10	08/17/20 19:31	7440-41-7	
Cadmium	0.00071J	mg/L	0.0025	0.00012	1	08/13/20 10:10	08/17/20 19:31	7440-43-9	
Chromium	0.00097J	mg/L	0.010	0.00055	1	08/13/20 10:10	08/17/20 19:31	7440-47-3	B
Cobalt	0.11	mg/L	0.0050	0.00038	1	08/13/20 10:10	08/17/20 19:31	7440-48-4	
Lead	0.000070J	mg/L	0.0050	0.000036	1	08/13/20 10:10	08/17/20 19:31	7439-92-1	
Lithium	0.0033J	mg/L	0.030	0.00081	1	08/13/20 10:10	08/17/20 19:31	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/13/20 10:10	08/17/20 19:31	7439-98-7	
Selenium	0.023	mg/L	0.010	0.0016	1	08/13/20 10:10	08/17/20 19:31	7782-49-2	
Thallium	0.00037J	mg/L	0.0010	0.00014	1	08/13/20 10:10	08/17/20 19:31	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	08/14/20 08:10	08/14/20 13:38	7439-97-6	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Fluoride	1.4	mg/L	0.10	0.050	1		08/14/20 02:04	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-11		Lab ID: 92490503004		Collected: 08/11/20 12:15		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	5.68	Std. Units			1		08/20/20 17:21		
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	08/13/20 10:10	08/17/20 19:36	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/13/20 10:10	08/17/20 19:36	7440-38-2	
Barium	0.064	mg/L	0.010	0.00071	1	08/13/20 10:10	08/17/20 19:36	7440-39-3	
Beryllium	0.00011J	mg/L	0.0030	0.000046	1	08/13/20 10:10	08/17/20 19:36	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/13/20 10:10	08/17/20 19:36	7440-43-9	
Chromium	0.00061J	mg/L	0.010	0.00055	1	08/13/20 10:10	08/17/20 19:36	7440-47-3	B
Cobalt	0.00055J	mg/L	0.0050	0.00038	1	08/13/20 10:10	08/17/20 19:36	7440-48-4	
Lead	0.000053J	mg/L	0.0050	0.000036	1	08/13/20 10:10	08/17/20 19:36	7439-92-1	
Lithium	0.0028J	mg/L	0.030	0.00081	1	08/13/20 10:10	08/17/20 19:36	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/13/20 10:10	08/17/20 19:36	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/13/20 10:10	08/17/20 19:36	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/13/20 10:10	08/17/20 19:36	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 13:45	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 02:18	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-12		Lab ID: 92490503005		Collected: 08/11/20 14:50		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	5.69	Std. Units			1		08/20/20 17:21		
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	08/13/20 10:10	08/17/20 19:42	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/13/20 10:10	08/17/20 19:42	7440-38-2	
Barium	0.028	mg/L	0.010	0.00071	1	08/13/20 10:10	08/17/20 19:42	7440-39-3	
Beryllium	0.00024J	mg/L	0.0030	0.000046	1	08/13/20 10:10	08/17/20 19:42	7440-41-7	
Cadmium	0.00038J	mg/L	0.0025	0.00012	1	08/13/20 10:10	08/17/20 19:42	7440-43-9	
Chromium	0.00094J	mg/L	0.010	0.00055	1	08/13/20 10:10	08/17/20 19:42	7440-47-3	B
Cobalt	0.0060	mg/L	0.0050	0.00038	1	08/13/20 10:10	08/17/20 19:42	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/13/20 10:10	08/17/20 19:42	7439-92-1	
Lithium	0.0011J	mg/L	0.030	0.00081	1	08/13/20 10:10	08/17/20 19:42	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/13/20 10:10	08/17/20 19:42	7439-98-7	
Selenium	0.0019J	mg/L	0.010	0.0016	1	08/13/20 10:10	08/17/20 19:42	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/13/20 10:10	08/17/20 19:42	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 13:48	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 02:32	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-14		Lab ID: 92490503006		Collected: 08/11/20 11:32	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	5.73	Std. Units			1		08/20/20 17:21		
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	08/13/20 10:10	08/17/20 19:48	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/13/20 10:10	08/17/20 19:48	7440-38-2	
Barium	0.061	mg/L	0.010	0.00071	1	08/13/20 10:10	08/17/20 19:48	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	08/13/20 10:10	08/17/20 19:48	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/13/20 10:10	08/17/20 19:48	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/13/20 10:10	08/17/20 19:48	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	08/13/20 10:10	08/17/20 19:48	7440-48-4	
Lead	0.000096J	mg/L	0.0050	0.000036	1	08/13/20 10:10	08/17/20 19:48	7439-92-1	
Lithium	0.0035J	mg/L	0.030	0.00081	1	08/13/20 10:10	08/17/20 19:48	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/13/20 10:10	08/17/20 19:48	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/13/20 10:10	08/17/20 19:48	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/13/20 10:10	08/17/20 19:48	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470A Preparation Method: EPA 7470A									
Pace Analytical Services - Peachtree Corners, GA									
Mercury	ND	mg/L	0.00020	0.000078	1	08/14/20 08:10	08/14/20 13:50	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 02:46	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-19		Lab ID: 92490503007		Collected: 08/11/20 13:00		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	4.90	Std. Units			1		08/20/20 17:21		
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	08/13/20 10:10	08/17/20 19:54	7440-36-0	
Arsenic	0.0014J	mg/L	0.0050	0.00078	1	08/13/20 10:10	08/17/20 19:54	7440-38-2	
Barium	0.027	mg/L	0.010	0.00071	1	08/13/20 10:10	08/17/20 19:54	7440-39-3	
Beryllium	0.0020J	mg/L	0.0030	0.000046	1	08/13/20 10:10	08/17/20 19:54	7440-41-7	
Cadmium	0.00030J	mg/L	0.0025	0.00012	1	08/13/20 10:10	08/17/20 19:54	7440-43-9	
Chromium	0.0024J	mg/L	0.010	0.00055	1	08/13/20 10:10	08/17/20 19:54	7440-47-3	B
Cobalt	0.049	mg/L	0.0050	0.00038	1	08/13/20 10:10	08/17/20 19:54	7440-48-4	
Lead	0.000053J	mg/L	0.0050	0.000036	1	08/13/20 10:10	08/17/20 19:54	7439-92-1	
Lithium	0.0031J	mg/L	0.030	0.00081	1	08/13/20 10:10	08/17/20 19:54	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/13/20 10:10	08/17/20 19:54	7439-98-7	
Selenium	0.0096J	mg/L	0.010	0.0016	1	08/13/20 10:10	08/17/20 19:54	7782-49-2	
Thallium	0.00059J	mg/L	0.0010	0.00014	1	08/13/20 10:10	08/17/20 19:54	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470A Preparation Method: EPA 7470A									
Pace Analytical Services - Peachtree Corners, GA									
Mercury	ND	mg/L	0.00020	0.000078	1	08/14/20 08:10	08/14/20 13:52	7439-97-6	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Fluoride	0.20	mg/L	0.10	0.050	1		08/14/20 03:00	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: FB-1		Lab ID: 92490503008		Collected: 08/11/20 11:55	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	ND	mg/L	0.0030	0.00028	1	08/13/20 10:10	08/17/20 19:59	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00078	1	08/13/20 10:10	08/17/20 19:59	7440-38-2		
Barium	ND	mg/L	0.010	0.00071	1	08/13/20 10:10	08/17/20 19:59	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000046	1	08/13/20 10:10	08/17/20 19:59	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00012	1	08/13/20 10:10	08/17/20 19:59	7440-43-9		
Chromium	ND	mg/L	0.010	0.00055	1	08/13/20 10:10	08/17/20 19:59	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00038	1	08/13/20 10:10	08/17/20 19:59	7440-48-4		
Lead	ND	mg/L	0.0050	0.000036	1	08/13/20 10:10	08/17/20 19:59	7439-92-1		
Lithium	ND	mg/L	0.030	0.00081	1	08/13/20 10:10	08/17/20 19:59	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00069	1	08/13/20 10:10	08/17/20 19:59	7439-98-7		
Selenium	ND	mg/L	0.010	0.0016	1	08/13/20 10:10	08/17/20 19:59	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	08/13/20 10:10	08/17/20 19:59	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 13:55	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		08/14/20 03:42	16984-48-8		

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: FD-1 Lab ID: 92490503009 Collected: 08/11/20 00:00 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	ND	mg/L	0.0030	0.00028	1	08/13/20 10:10	08/17/20 20:05	7440-36-0		
Arsenic	0.0027J	mg/L	0.0050	0.00078	1	08/13/20 10:10	08/17/20 20:05	7440-38-2		
Barium	0.024	mg/L	0.010	0.00071	1	08/13/20 10:10	08/17/20 20:05	7440-39-3		
Beryllium	0.0065	mg/L	0.0030	0.000046	1	08/13/20 10:10	08/17/20 20:05	7440-41-7		
Cadmium	0.00086J	mg/L	0.0025	0.00012	1	08/13/20 10:10	08/17/20 20:05	7440-43-9		
Chromium	0.0010J	mg/L	0.010	0.00055	1	08/13/20 10:10	08/17/20 20:05	7440-47-3	B	
Cobalt	0.11	mg/L	0.0050	0.00038	1	08/13/20 10:10	08/17/20 20:05	7440-48-4		
Lead	0.000067J	mg/L	0.0050	0.000036	1	08/13/20 10:10	08/17/20 20:05	7439-92-1		
Lithium	0.0034J	mg/L	0.030	0.00081	1	08/13/20 10:10	08/17/20 20:05	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00069	1	08/13/20 10:10	08/17/20 20:05	7439-98-7		
Selenium	0.025	mg/L	0.010	0.0016	1	08/13/20 10:10	08/17/20 20:05	7782-49-2		
Thallium	0.00038J	mg/L	0.0010	0.00014	1	08/13/20 10:10	08/17/20 20:05	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 13:57	7439-97-6		
300.0 IC Anions 28 Days										
Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville										
Fluoride	1.5	mg/L	0.10	0.050	1		08/14/20 04:24	16984-48-8		

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-4		Lab ID: 92490503010		Collected: 08/12/20 11:46		Received: 08/13/20 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
Analytical Method: Pace Analytical Services - Charlotte									
pH	5.93	Std. Units			1		08/20/20 17:21		
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 18:57	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/17/20 16:46	08/20/20 18:57	7440-38-2	
Barium	0.036	mg/L	0.010	0.00071	1	08/17/20 16:46	08/20/20 18:57	7440-39-3	
Beryllium	0.00024J	mg/L	0.0030	0.000046	1	08/17/20 16:46	08/20/20 18:57	7440-41-7	
Cadmium	0.00080J	mg/L	0.0025	0.00012	1	08/17/20 16:46	08/20/20 18:57	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/17/20 16:46	08/20/20 18:57	7440-47-3	
Cobalt	0.0018J	mg/L	0.0050	0.00038	1	08/17/20 16:46	08/20/20 18:57	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/17/20 16:46	08/20/20 18:57	7439-92-1	
Lithium	0.0031J	mg/L	0.030	0.00081	1	08/17/20 16:46	08/20/20 18:57	7439-93-2	
Molybdenum	0.0057J	mg/L	0.010	0.00069	1	08/17/20 16:46	08/20/20 18:57	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/17/20 16:46	08/20/20 18:57	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/17/20 16:46	08/20/20 18:57	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 13:59	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		08/15/20 21:48	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-5 **Lab ID: 92490503011** Collected: 08/12/20 10:45 Received: 08/13/20 10:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
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Field Data

Analytical Method:
Pace Analytical Services - Charlotte

pH	4.84	Std. Units			1		08/20/20 17:21		
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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 19:32	7440-36-0	
Arsenic	0.0020J	mg/L	0.0050	0.00078	1	08/17/20 16:46	08/20/20 19:32	7440-38-2	
Barium	0.017	mg/L	0.010	0.00071	1	08/17/20 16:46	08/20/20 19:32	7440-39-3	
Beryllium	0.0081	mg/L	0.0030	0.000046	1	08/17/20 16:46	08/20/20 19:32	7440-41-7	
Cadmium	0.00079J	mg/L	0.0025	0.00012	1	08/17/20 16:46	08/20/20 19:32	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/17/20 16:46	08/20/20 19:32	7440-47-3	
Cobalt	0.021	mg/L	0.0050	0.00038	1	08/17/20 16:46	08/20/20 19:32	7440-48-4	
Lead	0.000063J	mg/L	0.0050	0.000036	1	08/17/20 16:46	08/20/20 19:32	7439-92-1	
Lithium	0.0067J	mg/L	0.030	0.00081	1	08/17/20 16:46	08/20/20 19:32	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/17/20 16:46	08/20/20 19:32	7439-98-7	
Selenium	0.011	mg/L	0.010	0.0016	1	08/17/20 16:46	08/20/20 19:32	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/17/20 16:46	08/20/20 19:32	7440-28-0	

7470 Mercury

Analytical Method: EPA 7470A Preparation Method: EPA 7470A
Pace Analytical Services - Peachtree Corners, GA

Mercury	0.00017J	mg/L	0.00020	0.000078	1	08/14/20 08:10	08/14/20 14:02	7439-97-6	
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300.0 IC Anions 28 Days

Analytical Method: EPA 300.0 Rev 2.1 1993
Pace Analytical Services - Asheville

Fluoride	0.13	mg/L	0.10	0.050	1		08/15/20 22:02	16984-48-8	
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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-8		Lab ID: 92490503012		Collected: 08/12/20 10:15		Received: 08/13/20 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
Analytical Method: Pace Analytical Services - Charlotte									
pH	5.36	Std. Units			1		08/20/20 17:21		
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 19:37	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/17/20 16:46	08/20/20 19:37	7440-38-2	
Barium	0.034	mg/L	0.010	0.00071	1	08/17/20 16:46	08/20/20 19:37	7440-39-3	
Beryllium	0.0018J	mg/L	0.0030	0.000046	1	08/17/20 16:46	08/20/20 19:37	7440-41-7	
Cadmium	0.0021J	mg/L	0.0025	0.00012	1	08/17/20 16:46	08/20/20 19:37	7440-43-9	
Chromium	0.0028J	mg/L	0.010	0.00055	1	08/17/20 16:46	08/20/20 19:37	7440-47-3	
Cobalt	0.053	mg/L	0.0050	0.00038	1	08/17/20 16:46	08/20/20 19:37	7440-48-4	
Lead	0.00070J	mg/L	0.0050	0.000036	1	08/17/20 16:46	08/20/20 19:37	7439-92-1	
Lithium	0.0058J	mg/L	0.030	0.00081	1	08/17/20 16:46	08/20/20 19:37	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/17/20 16:46	08/20/20 19:37	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/17/20 16:46	08/20/20 19:37	7782-49-2	
Thallium	0.00023J	mg/L	0.0010	0.00014	1	08/17/20 16:46	08/20/20 19:37	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470A Preparation Method: EPA 7470A									
Pace Analytical Services - Peachtree Corners, GA									
Mercury	0.000079J	mg/L	0.00020	0.000078	1	08/14/20 08:10	08/14/20 14:14	7439-97-6	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Fluoride	0.056J	mg/L	0.10	0.050	1		08/15/20 22:16	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-13		Lab ID: 92490503013		Collected: 08/12/20 11:40		Received: 08/13/20 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
Analytical Method: Pace Analytical Services - Charlotte									
pH	5.68	Std. Units			1		08/20/20 17:21		
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 19:43	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/17/20 16:46	08/20/20 19:43	7440-38-2	
Barium	0.032	mg/L	0.010	0.00071	1	08/17/20 16:46	08/20/20 19:43	7440-39-3	
Beryllium	0.000078J	mg/L	0.0030	0.000046	1	08/17/20 16:46	08/20/20 19:43	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/17/20 16:46	08/20/20 19:43	7440-43-9	
Chromium	0.00074J	mg/L	0.010	0.00055	1	08/17/20 16:46	08/20/20 19:43	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	08/17/20 16:46	08/20/20 19:43	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/17/20 16:46	08/20/20 19:43	7439-92-1	
Lithium	0.0034J	mg/L	0.030	0.00081	1	08/17/20 16:46	08/20/20 19:43	7439-93-2	
Molybdenum	0.012	mg/L	0.010	0.00069	1	08/17/20 16:46	08/20/20 19:43	7439-98-7	
Selenium	0.0038J	mg/L	0.010	0.0016	1	08/17/20 16:46	08/20/20 19:43	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/17/20 16:46	08/20/20 19:43	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 14:23	7439-97-6	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Fluoride	0.051J	mg/L	0.10	0.050	1		08/15/20 22:30	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-47		Lab ID: 92490503014		Collected: 08/12/20 10:25		Received: 08/13/20 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
Analytical Method: Pace Analytical Services - Charlotte									
pH	4.43	Std. Units			1		08/20/20 17:21		
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 19:49	7440-36-0	
Arsenic	0.00081J	mg/L	0.0050	0.00078	1	08/17/20 16:46	08/20/20 19:49	7440-38-2	
Barium	0.016	mg/L	0.010	0.00071	1	08/17/20 16:46	08/20/20 19:49	7440-39-3	
Beryllium	0.0068	mg/L	0.0030	0.000046	1	08/17/20 16:46	08/20/20 19:49	7440-41-7	
Cadmium	0.0010J	mg/L	0.0025	0.00012	1	08/17/20 16:46	08/20/20 19:49	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/17/20 16:46	08/20/20 19:49	7440-47-3	
Cobalt	0.21	mg/L	0.0050	0.00038	1	08/17/20 16:46	08/20/20 19:49	7440-48-4	
Lead	0.00040J	mg/L	0.0050	0.000036	1	08/17/20 16:46	08/20/20 19:49	7439-92-1	
Lithium	0.054	mg/L	0.030	0.00081	1	08/17/20 16:46	08/20/20 19:49	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/17/20 16:46	08/20/20 19:49	7439-98-7	
Selenium	0.0020J	mg/L	0.010	0.0016	1	08/17/20 16:46	08/20/20 19:49	7782-49-2	
Thallium	0.00018J	mg/L	0.0010	0.00014	1	08/17/20 16:46	08/20/20 19:49	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 14:26	7439-97-6	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Fluoride	0.22	mg/L	0.10	0.050	1		08/15/20 22:45	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: FD-2		Lab ID: 92490503015		Collected: 08/12/20 00:00	Received: 08/13/20 10:15	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	08/17/20 16:46	08/20/20 19:55	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00078	1	08/17/20 16:46	08/20/20 19:55	7440-38-2		
Barium	0.034	mg/L	0.010	0.00071	1	08/17/20 16:46	08/20/20 19:55	7440-39-3		
Beryllium	0.0019J	mg/L	0.0030	0.000046	1	08/17/20 16:46	08/20/20 19:55	7440-41-7		
Cadmium	0.0023J	mg/L	0.0025	0.00012	1	08/17/20 16:46	08/20/20 19:55	7440-43-9		
Chromium	0.0025J	mg/L	0.010	0.00055	1	08/17/20 16:46	08/20/20 19:55	7440-47-3		
Cobalt	0.055	mg/L	0.0050	0.00038	1	08/17/20 16:46	08/20/20 19:55	7440-48-4		
Lead	0.00049J	mg/L	0.0050	0.000036	1	08/17/20 16:46	08/20/20 19:55	7439-92-1		
Lithium	0.0057J	mg/L	0.030	0.00081	1	08/17/20 16:46	08/20/20 19:55	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00069	1	08/17/20 16:46	08/20/20 19:55	7439-98-7		
Selenium	ND	mg/L	0.010	0.0016	1	08/17/20 16:46	08/20/20 19:55	7782-49-2		
Thallium	0.00022J	mg/L	0.0010	0.00014	1	08/17/20 16:46	08/20/20 19:55	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00020	0.000078	1	08/14/20 08:10	08/14/20 14:28	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Fluoride	0.075J	mg/L	0.10	0.050	1		08/15/20 22:59	16984-48-8		

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-15		Lab ID: 92490503016		Collected: 08/13/20 10:40		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	6.58	Std. Units			1		08/20/20 17:21		
6020 MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3005A									
Pace Analytical Services - Peachtree Corners, GA									
Antimony	0.00073J	mg/L	0.0030	0.00028	1	08/18/20 18:30	08/19/20 18:42	7440-36-0	
Arsenic	0.0013J	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 18:42	7440-38-2	
Barium	0.060	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 18:42	7440-39-3	
Beryllium	0.00022J	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 18:42	7440-41-7	
Cadmium	0.00013J	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 18:42	7440-43-9	
Chromium	0.0048J	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 18:42	7440-47-3	
Cobalt	0.0024J	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 18:42	7440-48-4	
Lead	0.0012J	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 18:42	7439-92-1	
Lithium	0.0089J	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 18:42	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 18:42	7439-98-7	
Selenium	0.0018J	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 18:42	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 18:42	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 11:58	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 01:00	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-20		Lab ID: 92490503017		Collected: 08/13/20 13:15		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	4.36	Std. Units			1		08/20/20 17:21		
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 19:00	7440-36-0	
Arsenic	0.014	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 19:00	7440-38-2	
Barium	0.019	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 19:00	7440-39-3	
Beryllium	0.0063	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 19:00	7440-41-7	
Cadmium	0.0021J	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 19:00	7440-43-9	
Chromium	0.0023J	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 19:00	7440-47-3	
Cobalt	0.73	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 19:00	7440-48-4	
Lead	0.00044J	mg/L	0.025	0.00018	5	08/18/20 18:30	08/20/20 16:26	7439-92-1	D3
Lithium	0.012J	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 19:00	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 19:00	7439-98-7	
Selenium	0.091	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 19:00	7782-49-2	
Thallium	0.0016J	mg/L	0.0050	0.00072	5	08/18/20 18:30	08/20/20 16:26	7440-28-0	D3
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 12:00	7439-97-6	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Fluoride	0.90	mg/L	0.10	0.050	1		08/20/20 01:15	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-23		Lab ID: 92490503018		Collected: 08/13/20 13:10	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	6.00	Std. Units			1		08/20/20 17:21		
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 19:05	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 19:05	7440-38-2	
Barium	0.027	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 19:05	7440-39-3	
Beryllium	0.00041J	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 19:05	7440-41-7	
Cadmium	0.00027J	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 19:05	7440-43-9	
Chromium	0.00085J	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 19:05	7440-47-3	
Cobalt	0.00048J	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 19:05	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 19:05	7439-92-1	
Lithium	0.0052J	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 19:05	7439-93-2	
Molybdenum	0.013	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 19:05	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 19:05	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 19:05	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 12:03	7439-97-6	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Fluoride	0.10	mg/L	0.10	0.050	1		08/20/20 01:29	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-42		Lab ID: 92490503019		Collected: 08/13/20 15:12		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	5.34	Std. Units			1		08/20/20 17:21		
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 19:11	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 19:11	7440-38-2	
Barium	0.027	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 19:11	7440-39-3	
Beryllium	0.0026J	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 19:11	7440-41-7	
Cadmium	0.0013J	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 19:11	7440-43-9	
Chromium	0.0021J	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 19:11	7440-47-3	
Cobalt	0.025	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 19:11	7440-48-4	
Lead	0.0016J	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 19:11	7439-92-1	
Lithium	0.011J	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 19:11	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 19:11	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 19:11	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 19:11	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 12:05	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 01:44	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-48		Lab ID: 92490503020		Collected: 08/13/20 09:46		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	4.26	Std. Units			1		08/20/20 17:21		
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 19:17	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 19:17	7440-38-2	
Barium	0.013	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 19:17	7440-39-3	
Beryllium	0.0071	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 19:17	7440-41-7	
Cadmium	0.0028	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 19:17	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 19:17	7440-47-3	
Cobalt	0.35	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 19:17	7440-48-4	
Lead	0.00092J	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 19:17	7439-92-1	
Lithium	0.098	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 19:17	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 19:17	7439-98-7	
Selenium	0.0029J	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 19:17	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 19:17	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 12:07	7439-97-6	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Fluoride	0.47	mg/L	0.10	0.050	1		08/20/20 01:59	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: FB-2		Lab ID: 92490503021		Collected: 08/13/20 09:40		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 19:23	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 19:23	7440-38-2	
Barium	ND	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 19:23	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 19:23	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 19:23	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 19:23	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 19:23	7440-48-4	
Lead	0.00017J	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 19:23	7439-92-1	
Lithium	ND	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 19:23	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 19:23	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 19:23	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 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	0.00020	0.000078	1	08/18/20 12:00	08/19/20 12:14	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 02:14	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-17		Lab ID: 92490503022		Collected: 08/14/20 10:15		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	5.01	Std. Units			1		08/20/20 17:21		
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 19:28	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 19:28	7440-38-2	
Barium	0.046	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 19:28	7440-39-3	
Beryllium	0.00064J	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 19:28	7440-41-7	
Cadmium	0.00029J	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 19:28	7440-43-9	
Chromium	0.0033J	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 19:28	7440-47-3	
Cobalt	0.026	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 19:28	7440-48-4	
Lead	0.00017J	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 19:28	7439-92-1	
Lithium	0.0015J	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 19:28	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 19:28	7439-98-7	
Selenium	0.0084J	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 19:28	7782-49-2	
Thallium	0.00019J	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 19:28	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470A Preparation Method: EPA 7470A									
Pace Analytical Services - Peachtree Corners, GA									
Mercury	0.000098J	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 12:17	7439-97-6	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Fluoride	0.069J	mg/L	0.10	0.050	1		08/20/20 02:29	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-21		Lab ID: 92490503023		Collected: 08/14/20 10:55		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	5.66	Std. Units			1		08/20/20 17:21		
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 19:34	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 19:34	7440-38-2	
Barium	0.027	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 19:34	7440-39-3	
Beryllium	0.00020J	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 19:34	7440-41-7	
Cadmium	0.00054J	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 19:34	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 19:34	7440-47-3	
Cobalt	0.0098	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 19:34	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 19:34	7439-92-1	
Lithium	0.0058J	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 19:34	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 19:34	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 19:34	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 19:34	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 12:19	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 03:14	16984-48-8	

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: DGWC-22		Lab ID: 92490503024		Collected: 08/14/20 11:53		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	5.76	Std. Units			1		08/20/20 17:21		
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 19:40	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 19:40	7440-38-2	
Barium	0.035	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 19:40	7440-39-3	
Beryllium	0.00016J	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 19:40	7440-41-7	
Cadmium	0.00057J	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 19:40	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 19:40	7440-47-3	
Cobalt	0.0087	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 19:40	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 19:40	7439-92-1	
Lithium	0.0039J	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 19:40	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 19:40	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 19:40	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 19:40	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 12:22	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 03:29	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: FB-3 Lab ID: 92490503025 Collected: 08/14/20 10:40 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 19:45	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 19:45	7440-38-2		
Barium	0.00087J	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 19:45	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 19:45	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 19:45	7440-43-9		
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 19:45	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 19:45	7440-48-4		
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 19:45	7439-92-1		
Lithium	ND	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 19:45	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 19:45	7439-98-7		
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 19:45	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 19:45	7440-28-0		
7470 Mercury										
Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA										
Mercury	ND	mg/L	0.00020	0.000078	1	08/18/20 12:00	08/19/20 12:24	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 05:52	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Sample: EB-3 Lab ID: 92490503026 Collected: 08/14/20 12:45 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 19:51	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00078	1	08/18/20 18:30	08/19/20 19:51	7440-38-2		
Barium	ND	mg/L	0.010	0.00071	1	08/18/20 18:30	08/19/20 19:51	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000046	1	08/18/20 18:30	08/19/20 19:51	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00012	1	08/18/20 18:30	08/19/20 19:51	7440-43-9		
Chromium	ND	mg/L	0.010	0.00055	1	08/18/20 18:30	08/19/20 19:51	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00038	1	08/18/20 18:30	08/19/20 19:51	7440-48-4		
Lead	ND	mg/L	0.0050	0.000036	1	08/18/20 18:30	08/19/20 19:51	7439-92-1		
Lithium	ND	mg/L	0.030	0.00081	1	08/18/20 18:30	08/19/20 19:51	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00069	1	08/18/20 18:30	08/19/20 19:51	7439-98-7		
Selenium	ND	mg/L	0.010	0.0016	1	08/18/20 18:30	08/19/20 19:51	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	08/18/20 18:30	08/19/20 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	0.00020	0.000078	1	08/18/20 12:00	08/19/20 12:26	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		08/20/20 06:06	16984-48-8		

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

QC Batch: 559731 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490503001, 92490503002, 92490503003, 92490503004, 92490503005, 92490503006, 92490503007, 92490503008, 92490503009

METHOD BLANK: 2969713 Matrix: Water
Associated Lab Samples: 92490503001, 92490503002, 92490503003, 92490503004, 92490503005, 92490503006, 92490503007, 92490503008, 92490503009

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

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Parameter	Units	2973381		2973382		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92490488001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Beryllium	mg/L	0.00013J	0.1	0.1	0.11	0.10	105	103	75-125	2	20		
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 AP-2, 3/4
Pace Project No.: 92490503

QC Batch: 560481 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490503010, 92490503011, 92490503012, 92490503013, 92490503014, 92490503015

METHOD BLANK: 2973740 Matrix: Water
Associated Lab Samples: 92490503010, 92490503011, 92490503012, 92490503013, 92490503014, 92490503015

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	2973742		2973743		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Antimony	mg/L	ND	0.1	0.11	0.10	108	103	75-125	5	20	
Arsenic	mg/L	ND	0.1	0.10	0.098	102	97	75-125	5	20	
Barium	mg/L	0.036	0.1	0.14	0.13	107	91	75-125	12	20	
Beryllium	mg/L	0.00024J	0.1	0.090	0.086	90	86	75-125	4	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Parameter	Units	2973742		2973743		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		92490503010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
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-2, 3/4

Pace Project No.: 92490503

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

Associated Lab Samples: 92490503016, 92490503017, 92490503018, 92490503019, 92490503020, 92490503021, 92490503022, 92490503023, 92490503024, 92490503025, 92490503026

METHOD BLANK: 2974806

Matrix: Water

Associated Lab Samples: 92490503016, 92490503017, 92490503018, 92490503019, 92490503020, 92490503021, 92490503022, 92490503023, 92490503024, 92490503025, 92490503026

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	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2974808	2974809	Spike Conc.	Spike Conc.								
Antimony	mg/L	ND	0.1	0.1	0.1	0.11	0.11	114	109	75-125	5	20	
Arsenic	mg/L	ND	0.1	0.1	0.1	0.10	0.099	100	99	75-125	2	20	
Barium	mg/L	0.088	0.1	0.1	0.1	0.22	0.21	131	119	75-125	6	20	M1

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Parameter	Units	2974808		2974809		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		92490942006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Beryllium	mg/L	ND	0.1	0.1	0.099	0.096	99	96	75-125	3	20		
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 AP-2, 3/4

Pace Project No.: 92490503

QC Batch: 559929

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Laboratory: Pace Analytical Services - Peachtree Corners, GA

Associated Lab Samples: 92490503001, 92490503002, 92490503003, 92490503004, 92490503005, 92490503006, 92490503007, 92490503008, 92490503009, 92490503010, 92490503011

METHOD BLANK: 2971190

Matrix: Water

Associated Lab Samples: 92490503001, 92490503002, 92490503003, 92490503004, 92490503005, 92490503006, 92490503007, 92490503008, 92490503009, 92490503010, 92490503011

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

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

QC Batch: 559932 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92490503012, 92490503013, 92490503014, 92490503015

METHOD BLANK: 2971194 Matrix: Water
Associated Lab Samples: 92490503012, 92490503013, 92490503014, 92490503015

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00020	0.000078	08/14/20 14:09	

LABORATORY CONTROL SAMPLE: 2971195

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0024	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2971196 2971197

Parameter	Units	2971196		2971197		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Mercury	mg/L	0.000079J	0.0025	0.0026	0.0026	102	100	75-125	2	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

QC Batch:	560631	Analysis Method:	EPA 7470A
QC Batch Method:	EPA 7470A	Analysis Description:	7470 Mercury
		Laboratory:	Pace Analytical Services - Peachtree Corners, GA

Associated Lab Samples: 92490503016, 92490503017, 92490503018, 92490503019, 92490503020, 92490503021, 92490503022, 92490503023, 92490503024, 92490503025, 92490503026

METHOD BLANK: 2974348 Matrix: Water

Associated Lab Samples: 92490503016, 92490503017, 92490503018, 92490503019, 92490503020, 92490503021, 92490503022, 92490503023, 92490503024, 92490503025, 92490503026

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00020	0.000078	08/19/20 11:20	

LABORATORY CONTROL SAMPLE: 2974349

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: 2974350 2974351

Parameter	Units	92490831003 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	96	75-125	0	20	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

QC Batch: 559792 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92490503001, 92490503002, 92490503003, 92490503004, 92490503005, 92490503006, 92490503007, 92490503008, 92490503009

METHOD BLANK: 2970272 Matrix: Water
Associated Lab Samples: 92490503001, 92490503002, 92490503003, 92490503004, 92490503005, 92490503006, 92490503007, 92490503008, 92490503009

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 AP-2, 3/4
Pace Project No.: 92490503

QC Batch: 560228 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92490503010, 92490503011, 92490503012, 92490503013, 92490503014, 92490503015

METHOD BLANK: 2972550 Matrix: Water
Associated Lab Samples: 92490503010, 92490503011, 92490503012, 92490503013, 92490503014, 92490503015

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	08/15/20 19:39	

LABORATORY CONTROL SAMPLE: 2972551

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: 2972552 2972553

Parameter	Units	92490788002		2972552		2972553		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Fluoride	mg/L	0.52	0.52	2.5	2.5	3.0	3.2	100	105	90-110	5	10

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2972554 2972555

Parameter	Units	92490596012		2972554		2972555		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Fluoride	mg/L	0.084J	0.084J	2.5	2.5	2.2	2.4	85	91	90-110	6	10 M1

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

QC Batch: 560825 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92490503016, 92490503017, 92490503018, 92490503019, 92490503020, 92490503021, 92490503022, 92490503023, 92490503024

METHOD BLANK: 2975208 Matrix: Water
Associated Lab Samples: 92490503016, 92490503017, 92490503018, 92490503019, 92490503020, 92490503021, 92490503022, 92490503023, 92490503024

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	08/19/20 19:46	

LABORATORY CONTROL SAMPLE: 2975209

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2975210 2975211

Parameter	Units	92490043008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.88	2.5	2.5	3.5	3.6	106	108	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2975212 2975213

Parameter	Units	92490043018 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	107	107	90-110	0	10	

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

QC Batch: 561129 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92490503025, 92490503026

METHOD BLANK: 2976672 Matrix: Water
Associated Lab Samples: 92490503025, 92490503026

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	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
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	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Fluoride	mg/L	0.28	2.5	2.5	2.8	2.8	99	99	90-110	0	10	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-2 **Lab ID: 92490503001** Collected: 08/11/20 13:20 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	0.613 ± 0.269 (0.316) C:81% T:NA	pCi/L	08/24/20 07:55	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.755 ± 0.427 (0.776) C:68% T:85%	pCi/L	08/27/20 11:50	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.37 ± 0.696 (1.09)	pCi/L	09/04/20 08:28	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-9 **Lab ID: 92490503002** Collected: 08/11/20 16:05 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	0.349 ± 0.203 (0.300) C:89% T:NA	pCi/L	08/24/20 07:55	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.470 ± 0.406 (0.822) C:66% T:90%	pCi/L	08/27/20 11:50	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.819 ± 0.609 (1.12)	pCi/L	09/04/20 08:28	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-10 **Lab ID: 92490503003** Collected: 08/11/20 16:30 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	0.412 ± 0.223 (0.307) C:86% T:NA	pCi/L	08/24/20 07:55	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.04 ± 0.453 (0.734) C:67% T:85%	pCi/L	08/27/20 11:50	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.45 ± 0.676 (1.04)	pCi/L	09/04/20 08:28	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-11 **Lab ID: 92490503004** Collected: 08/11/20 12:15 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	0.104 ± 0.123 (0.243) C:98% T:NA	pCi/L	08/24/20 07:55	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.915 ± 0.417 (0.679) C:68% T:87%	pCi/L	08/27/20 11:51	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.02 ± 0.540 (0.922)	pCi/L	09/04/20 08:28	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-12 **Lab ID: 92490503005** Collected: 08/11/20 14:50 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	0.234 ± 0.189 (0.334) C:78% T:NA	pCi/L	08/24/20 07:55	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.536 ± 0.398 (0.785) C:69% T:92%	pCi/L	08/27/20 11:51	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.770 ± 0.587 (1.12)	pCi/L	09/04/20 08:28	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: DGWC-14 Lab ID: 92490503006 Collected: 08/11/20 11:32 Received: 08/12/20 08:57 Matrix: Water PWS: Site ID: Sample Type:						
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	0.298 ± 0.218 (0.388) C:84% T:NA	pCi/L	08/24/20 07:55	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.875 ± 0.449 (0.800) C:72% T:85%	pCi/L	08/27/20 11:51	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.17 ± 0.667 (1.19)	pCi/L	09/04/20 08:28	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-19 **Lab ID: 92490503007** Collected: 08/11/20 13:00 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	0.265 ± 0.175 (0.275) C:97% T:NA	pCi/L	08/24/20 07:55	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.458 ± 0.406 (0.826) C:67% T:87%	pCi/L	08/27/20 11:51	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.723 ± 0.581 (1.10)	pCi/L	09/04/20 08:28	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: FB-1 **Lab ID: 92490503008** Collected: 08/11/20 11:55 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	0.124 ± 0.131 (0.248) C:95% T:NA	pCi/L	08/24/20 07:55	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.129 ± 0.420 (0.944) C:64% T:85%	pCi/L	08/27/20 11:52	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.253 ± 0.551 (1.19)	pCi/L	09/04/20 08:28	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: FD-1 Lab ID: 92490503009 Collected: 08/11/20 00:00 Received: 08/12/20 08:57 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 9315	0.508 ± 0.244 (0.312) C:87% T:NA	pCi/L	08/24/20 07:55	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.781 ± 0.473 (0.890) C:65% T:87%	pCi/L	08/27/20 11:52	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.29 ± 0.717 (1.20)	pCi/L	09/04/20 08:28	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-4 **Lab ID: 92490503010** Collected: 08/12/20 11:46 Received: 08/13/20 10:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	0.708 ± 0.281 (0.321) C:93% T:NA	pCi/L	08/24/20 06:25	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.24 ± 0.531 (0.875) C:62% T:91%	pCi/L	08/27/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.95 ± 0.812 (1.20)	pCi/L	09/04/20 08:38	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-5 **Lab ID: 92490503011** Collected: 08/12/20 10:45 Received: 08/13/20 10:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	0.362 ± 0.199 (0.272) C:92% T:NA	pCi/L	08/24/20 06:26	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.772 ± 0.451 (0.837) C:64% T:91%	pCi/L	08/27/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.13 ± 0.650 (1.11)	pCi/L	09/04/20 08:38	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-8 **Lab ID: 92490503012** Collected: 08/12/20 10:15 Received: 08/13/20 10:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	0.247 ± 0.233 (0.458) C:78% T:NA	pCi/L	08/24/20 06:27	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.474 ± 0.410 (0.827) C:66% T:86%	pCi/L	08/27/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.721 ± 0.643 (1.29)	pCi/L	09/04/20 08:38	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: DGWC-13 Lab ID: 92490503013 Collected: 08/12/20 11:40 Received: 08/13/20 10:15 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 9315	0.703 ± 0.290 (0.308) C:86% T:NA	pCi/L	08/24/20 06:27	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.926 ± 0.530 (0.990) C:63% T:88%	pCi/L	08/27/20 11:53	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.63 ± 0.820 (1.30)	pCi/L	09/04/20 08:38	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-47 **Lab ID: 92490503014** Collected: 08/12/20 10:25 Received: 08/13/20 10:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	0.870 ± 0.304 (0.227) C:95% T:NA	pCi/L	08/24/20 06:27	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.69 ± 0.594 (0.865) C:65% T:88%	pCi/L	08/27/20 11:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	2.56 ± 0.898 (1.09)	pCi/L	09/04/20 08:38	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: FD-2 Lab ID: 92490503015 Collected: 08/12/20 00:00 Received: 08/13/20 10:15 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 9315	0.228 ± 0.176 (0.279) C:77% T:NA	pCi/L	08/24/20 06:35	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.398 ± 0.390 (0.802) C:62% T:89%	pCi/L	08/27/20 11:53	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.626 ± 0.566 (1.08)	pCi/L	09/04/20 08:38	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-15 **Lab ID: 92490503016** Collected: 08/13/20 10:40 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	1.97 ± 0.631 (0.506) C:73% T:NA	pCi/L	09/01/20 07:56	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.61 ± 0.793 (1.38) C:64% T:54%	pCi/L	09/08/20 11:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	3.58 ± 1.42 (1.89)	pCi/L	09/09/20 14:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-20 **Lab ID: 92490503017** Collected: 08/13/20 13:15 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	0.379 ± 0.282 (0.470) C:83% T:NA	pCi/L	09/01/20 07:56	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.39 ± 0.561 (0.893) C:67% T:82%	pCi/L	09/08/20 11:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.77 ± 0.843 (1.36)	pCi/L	09/09/20 14:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-23 **Lab ID: 92490503018** Collected: 08/13/20 13:10 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	0.504 ± 0.320 (0.472) C:75% T:NA	pCi/L	09/01/20 07:56	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.971 ± 0.580 (1.09) C:63% T:75%	pCi/L	09/08/20 11:54	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.48 ± 0.900 (1.56)	pCi/L	09/09/20 14:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-42 **Lab ID: 92490503019** Collected: 08/13/20 15:12 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	0.248 ± 0.238 (0.434) C:82% T:NA	pCi/L	09/01/20 07:56	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.977 ± 0.485 (0.836) C:64% T:82%	pCi/L	09/08/20 11:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.23 ± 0.723 (1.27)	pCi/L	09/09/20 14:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-48 **Lab ID: 92490503020** Collected: 08/13/20 09:46 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	0.717 ± 0.337 (0.368) C:88% T:NA	pCi/L	09/01/20 07:56	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.02 ± 0.512 (0.893) C:65% T:80%	pCi/L	09/08/20 11:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.74 ± 0.849 (1.26)	pCi/L	09/09/20 14:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: FB-2 **Lab ID: 92490503021** Collected: 08/13/20 09:40 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	-0.0253 ± 0.128 (0.401) C:90% T:NA	pCi/L	09/01/20 07:56	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.691 ± 0.511 (1.01) C:64% T:81%	pCi/L	09/08/20 11:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.691 ± 0.639 (1.41)	pCi/L	09/09/20 14:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-17 **Lab ID: 92490503022** Collected: 08/14/20 10:15 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	-0.0503 ± 0.236 (0.663) C:78% T:NA	pCi/L	09/01/20 07:56	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.804 ± 0.508 (0.960) C:66% T:76%	pCi/L	09/08/20 11:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.804 ± 0.744 (1.62)	pCi/L	09/09/20 14:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-21 **Lab ID: 92490503023** Collected: 08/14/20 10:55 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	0.118 ± 0.238 (0.553) C:74% T:NA	pCi/L	09/01/20 07:56	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.484 ± 0.393 (0.781) C:65% T:84%	pCi/L	09/08/20 11:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.602 ± 0.631 (1.33)	pCi/L	09/09/20 14:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: DGWC-22 **Lab ID: 92490503024** Collected: 08/14/20 11:53 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	0.200 ± 0.224 (0.437) C:82% T:NA	pCi/L	09/01/20 07:56	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.63 ± 0.583 (0.812) C:61% T:81%	pCi/L	09/08/20 11:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.83 ± 0.807 (1.25)	pCi/L	09/09/20 14:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: FB-3 **Lab ID: 92490503025** Collected: 08/14/20 10:40 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	0.201 ± 0.279 (0.601) C:83% T:NA	pCi/L	09/02/20 07:31	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.05 ± 0.750 (1.49) C:59% T:64%	pCi/L	09/08/20 11:06	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.25 ± 1.03 (2.09)	pCi/L	09/09/20 14:53	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Sample: EB-3 **Lab ID: 92490503026** Collected: 08/14/20 12:45 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	0.00266 ± 0.205 (0.567) C:78% T:NA	pCi/L	09/02/20 07:31	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.0837 ± 0.431 (0.975) C:63% T:82%	pCi/L	09/08/20 11:06	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.0864 ± 0.636 (1.54)	pCi/L	09/09/20 14:53	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

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

Associated Lab Samples: 92490503016, 92490503017, 92490503018, 92490503019, 92490503020, 92490503021, 92490503022, 92490503023, 92490503024, 92490503025, 92490503026

METHOD BLANK: 1990338 Matrix: Water

Associated Lab Samples: 92490503016, 92490503017, 92490503018, 92490503019, 92490503020, 92490503021, 92490503022, 92490503023, 92490503024, 92490503025, 92490503026

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-2, 3/4

Pace Project No.: 92490503

QC Batch: 410124

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 92490503001, 92490503002, 92490503003, 92490503004, 92490503005, 92490503006, 92490503007, 92490503008, 92490503009, 92490503010, 92490503011, 92490503012, 92490503013, 92490503014, 92490503015

METHOD BLANK: 1984702

Matrix: Water

Associated Lab Samples: 92490503001, 92490503002, 92490503003, 92490503004, 92490503005, 92490503006, 92490503007, 92490503008, 92490503009, 92490503010, 92490503011, 92490503012, 92490503013, 92490503014, 92490503015

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 AP-2, 3/4

Pace Project No.: 92490503

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: 92490503025, 92490503026

METHOD BLANK: 1989993

Matrix: Water

Associated Lab Samples: 92490503025, 92490503026

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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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

QC Batch: 410046

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 92490503001, 92490503002, 92490503003, 92490503004, 92490503005, 92490503006, 92490503007, 92490503008, 92490503009, 92490503010, 92490503011, 92490503012, 92490503013, 92490503014, 92490503015

METHOD BLANK: 1984358

Matrix: Water

Associated Lab Samples: 92490503001, 92490503002, 92490503003, 92490503004, 92490503005, 92490503006, 92490503007, 92490503008, 92490503009, 92490503010, 92490503011, 92490503012, 92490503013, 92490503014, 92490503015

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 AP-2, 3/4

Pace Project No.: 92490503

QC Batch: 411372

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 92490503016, 92490503017, 92490503018, 92490503019, 92490503020, 92490503021, 92490503022, 92490503023, 92490503024

METHOD BLANK: 1989991

Matrix: Water

Associated Lab Samples: 92490503016, 92490503017, 92490503018, 92490503019, 92490503020, 92490503021, 92490503022, 92490503023, 92490503024

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-2, 3/4

Pace Project No.: 92490503

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.

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

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-2, 3/4

Pace Project No.: 92490503

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92490503001	DGWC-2				
92490503002	DGWC-9				
92490503003	DGWC-10				
92490503004	DGWC-11				
92490503005	DGWC-12				
92490503006	DGWC-14				
92490503007	DGWC-19				
92490503010	DGWC-4				
92490503011	DGWC-5				
92490503012	DGWC-8				
92490503013	DGWC-13				
92490503014	DGWC-47				
92490503016	DGWC-15				
92490503017	DGWC-20				
92490503018	DGWC-23				
92490503019	DGWC-42				
92490503020	DGWC-48				
92490503022	DGWC-17				
92490503023	DGWC-21				
92490503024	DGWC-22				
92490503001	DGWC-2	EPA 3005A	559731	EPA 6020B	559753
92490503002	DGWC-9	EPA 3005A	559731	EPA 6020B	559753
92490503003	DGWC-10	EPA 3005A	559731	EPA 6020B	559753
92490503004	DGWC-11	EPA 3005A	559731	EPA 6020B	559753
92490503005	DGWC-12	EPA 3005A	559731	EPA 6020B	559753
92490503006	DGWC-14	EPA 3005A	559731	EPA 6020B	559753
92490503007	DGWC-19	EPA 3005A	559731	EPA 6020B	559753
92490503008	FB-1	EPA 3005A	559731	EPA 6020B	559753
92490503009	FD-1	EPA 3005A	559731	EPA 6020B	559753
92490503010	DGWC-4	EPA 3005A	560481	EPA 6020B	560487
92490503011	DGWC-5	EPA 3005A	560481	EPA 6020B	560487
92490503012	DGWC-8	EPA 3005A	560481	EPA 6020B	560487
92490503013	DGWC-13	EPA 3005A	560481	EPA 6020B	560487
92490503014	DGWC-47	EPA 3005A	560481	EPA 6020B	560487
92490503015	FD-2	EPA 3005A	560481	EPA 6020B	560487
92490503016	DGWC-15	EPA 3005A	560739	EPA 6020B	560802
92490503017	DGWC-20	EPA 3005A	560739	EPA 6020B	560802
92490503018	DGWC-23	EPA 3005A	560739	EPA 6020B	560802
92490503019	DGWC-42	EPA 3005A	560739	EPA 6020B	560802
92490503020	DGWC-48	EPA 3005A	560739	EPA 6020B	560802
92490503021	FB-2	EPA 3005A	560739	EPA 6020B	560802
92490503022	DGWC-17	EPA 3005A	560739	EPA 6020B	560802
92490503023	DGWC-21	EPA 3005A	560739	EPA 6020B	560802
92490503024	DGWC-22	EPA 3005A	560739	EPA 6020B	560802
92490503025	FB-3	EPA 3005A	560739	EPA 6020B	560802
92490503026	EB-3	EPA 3005A	560739	EPA 6020B	560802
92490503001	DGWC-2	EPA 7470A	559929	EPA 7470A	559986

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT MCDONOUGH AP-2, 3/4
Pace Project No.: 92490503

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92490503002	DGWC-9	EPA 7470A	559929	EPA 7470A	559986
92490503003	DGWC-10	EPA 7470A	559929	EPA 7470A	559986
92490503004	DGWC-11	EPA 7470A	559929	EPA 7470A	559986
92490503005	DGWC-12	EPA 7470A	559929	EPA 7470A	559986
92490503006	DGWC-14	EPA 7470A	559929	EPA 7470A	559986
92490503007	DGWC-19	EPA 7470A	559929	EPA 7470A	559986
92490503008	FB-1	EPA 7470A	559929	EPA 7470A	559986
92490503009	FD-1	EPA 7470A	559929	EPA 7470A	559986
92490503010	DGWC-4	EPA 7470A	559929	EPA 7470A	559986
92490503011	DGWC-5	EPA 7470A	559929	EPA 7470A	559986
92490503012	DGWC-8	EPA 7470A	559932	EPA 7470A	559990
92490503013	DGWC-13	EPA 7470A	559932	EPA 7470A	559990
92490503014	DGWC-47	EPA 7470A	559932	EPA 7470A	559990
92490503015	FD-2	EPA 7470A	559932	EPA 7470A	559990
92490503016	DGWC-15	EPA 7470A	560631	EPA 7470A	560771
92490503017	DGWC-20	EPA 7470A	560631	EPA 7470A	560771
92490503018	DGWC-23	EPA 7470A	560631	EPA 7470A	560771
92490503019	DGWC-42	EPA 7470A	560631	EPA 7470A	560771
92490503020	DGWC-48	EPA 7470A	560631	EPA 7470A	560771
92490503021	FB-2	EPA 7470A	560631	EPA 7470A	560771
92490503022	DGWC-17	EPA 7470A	560631	EPA 7470A	560771
92490503023	DGWC-21	EPA 7470A	560631	EPA 7470A	560771
92490503024	DGWC-22	EPA 7470A	560631	EPA 7470A	560771
92490503025	FB-3	EPA 7470A	560631	EPA 7470A	560771
92490503026	EB-3	EPA 7470A	560631	EPA 7470A	560771
92490503001	DGWC-2	EPA 9315	410046		
92490503002	DGWC-9	EPA 9315	410046		
92490503003	DGWC-10	EPA 9315	410046		
92490503004	DGWC-11	EPA 9315	410046		
92490503005	DGWC-12	EPA 9315	410046		
92490503006	DGWC-14	EPA 9315	410046		
92490503007	DGWC-19	EPA 9315	410046		
92490503008	FB-1	EPA 9315	410046		
92490503009	FD-1	EPA 9315	410046		
92490503010	DGWC-4	EPA 9315	410046		
92490503011	DGWC-5	EPA 9315	410046		
92490503012	DGWC-8	EPA 9315	410046		
92490503013	DGWC-13	EPA 9315	410046		
92490503014	DGWC-47	EPA 9315	410046		
92490503015	FD-2	EPA 9315	410046		
92490503016	DGWC-15	EPA 9315	411372		
92490503017	DGWC-20	EPA 9315	411372		
92490503018	DGWC-23	EPA 9315	411372		
92490503019	DGWC-42	EPA 9315	411372		
92490503020	DGWC-48	EPA 9315	411372		
92490503021	FB-2	EPA 9315	411372		
92490503022	DGWC-17	EPA 9315	411372		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92490503023	DGWC-21	EPA 9315	411372		
92490503024	DGWC-22	EPA 9315	411372		
92490503025	FB-3	EPA 9315	411373		
92490503026	EB-3	EPA 9315	411373		
92490503001	DGWC-2	EPA 9320	410124		
92490503002	DGWC-9	EPA 9320	410124		
92490503003	DGWC-10	EPA 9320	410124		
92490503004	DGWC-11	EPA 9320	410124		
92490503005	DGWC-12	EPA 9320	410124		
92490503006	DGWC-14	EPA 9320	410124		
92490503007	DGWC-19	EPA 9320	410124		
92490503008	FB-1	EPA 9320	410124		
92490503009	FD-1	EPA 9320	410124		
92490503010	DGWC-4	EPA 9320	410124		
92490503011	DGWC-5	EPA 9320	410124		
92490503012	DGWC-8	EPA 9320	410124		
92490503013	DGWC-13	EPA 9320	410124		
92490503014	DGWC-47	EPA 9320	410124		
92490503015	FD-2	EPA 9320	410124		
92490503016	DGWC-15	EPA 9320	411433		
92490503017	DGWC-20	EPA 9320	411433		
92490503018	DGWC-23	EPA 9320	411433		
92490503019	DGWC-42	EPA 9320	411433		
92490503020	DGWC-48	EPA 9320	411433		
92490503021	FB-2	EPA 9320	411433		
92490503022	DGWC-17	EPA 9320	411433		
92490503023	DGWC-21	EPA 9320	411433		
92490503024	DGWC-22	EPA 9320	411433		
92490503025	FB-3	EPA 9320	411433		
92490503026	EB-3	EPA 9320	411433		
92490503001	DGWC-2	Total Radium Calculation	412557		
92490503002	DGWC-9	Total Radium Calculation	412557		
92490503003	DGWC-10	Total Radium Calculation	412557		
92490503004	DGWC-11	Total Radium Calculation	412557		
92490503005	DGWC-12	Total Radium Calculation	412557		
92490503006	DGWC-14	Total Radium Calculation	412557		
92490503007	DGWC-19	Total Radium Calculation	412557		
92490503008	FB-1	Total Radium Calculation	412557		
92490503009	FD-1	Total Radium Calculation	412557		
92490503010	DGWC-4	Total Radium Calculation	412558		
92490503011	DGWC-5	Total Radium Calculation	412558		
92490503012	DGWC-8	Total Radium Calculation	412558		
92490503013	DGWC-13	Total Radium Calculation	412558		
92490503014	DGWC-47	Total Radium Calculation	412558		
92490503015	FD-2	Total Radium Calculation	412558		
92490503016	DGWC-15	Total Radium Calculation	413154		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT MCDONOUGH AP-2, 3/4

Pace Project No.: 92490503

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92490503017	DGWC-20	Total Radium Calculation	413154		
92490503018	DGWC-23	Total Radium Calculation	413154		
92490503019	DGWC-42	Total Radium Calculation	413154		
92490503020	DGWC-48	Total Radium Calculation	413154		
92490503021	FB-2	Total Radium Calculation	413154		
92490503022	DGWC-17	Total Radium Calculation	413154		
92490503023	DGWC-21	Total Radium Calculation	413154		
92490503024	DGWC-22	Total Radium Calculation	413154		
92490503025	FB-3	Total Radium Calculation	413154		
92490503026	EB-3	Total Radium Calculation	413154		
92490503001	DGWC-2	EPA 300.0 Rev 2.1 1993	559792		
92490503002	DGWC-9	EPA 300.0 Rev 2.1 1993	559792		
92490503003	DGWC-10	EPA 300.0 Rev 2.1 1993	559792		
92490503004	DGWC-11	EPA 300.0 Rev 2.1 1993	559792		
92490503005	DGWC-12	EPA 300.0 Rev 2.1 1993	559792		
92490503006	DGWC-14	EPA 300.0 Rev 2.1 1993	559792		
92490503007	DGWC-19	EPA 300.0 Rev 2.1 1993	559792		
92490503008	FB-1	EPA 300.0 Rev 2.1 1993	559792		
92490503009	FD-1	EPA 300.0 Rev 2.1 1993	559792		
92490503010	DGWC-4	EPA 300.0 Rev 2.1 1993	560228		
92490503011	DGWC-5	EPA 300.0 Rev 2.1 1993	560228		
92490503012	DGWC-8	EPA 300.0 Rev 2.1 1993	560228		
92490503013	DGWC-13	EPA 300.0 Rev 2.1 1993	560228		
92490503014	DGWC-47	EPA 300.0 Rev 2.1 1993	560228		
92490503015	FD-2	EPA 300.0 Rev 2.1 1993	560228		
92490503016	DGWC-15	EPA 300.0 Rev 2.1 1993	560825		
92490503017	DGWC-20	EPA 300.0 Rev 2.1 1993	560825		
92490503018	DGWC-23	EPA 300.0 Rev 2.1 1993	560825		
92490503019	DGWC-42	EPA 300.0 Rev 2.1 1993	560825		
92490503020	DGWC-48	EPA 300.0 Rev 2.1 1993	560825		
92490503021	FB-2	EPA 300.0 Rev 2.1 1993	560825		
92490503022	DGWC-17	EPA 300.0 Rev 2.1 1993	560825		
92490503023	DGWC-21	EPA 300.0 Rev 2.1 1993	560825		
92490503024	DGWC-22	EPA 300.0 Rev 2.1 1993	560825		
92490503025	FB-3	EPA 300.0 Rev 2.1 1993	561129		
92490503026	EB-3	EPA 300.0 Rev 2.1 1993	561129		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

Client Name: C. A. Lower

WO#: **92490503**

Courier: Fed Ex UPS USPS Client Commercial Pac
Tracking #: _____



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

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 1.8

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 8/12/07

Temp should be above freezing to 6°C

Comments:

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

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



CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A

Section B

Section C

Required Client Information			Required Project Information:			Invoice Information:		
Company: Georgia Power - Coal Combustion Residuals			Report To: Joju Abraham			Attention: scsinvoices@southemco.com		
Address: 2480 Maner Road Atlanta, GA 30339			Copy To: Golder			Company Name:		
Email: j Abraham@southemco.com			Purchase Order #:			Address:		
Phone: (404) 506-7239 Fax			Project Name: Plant McDonough AP-2, 3/4			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 yield codes to left)	SAMPLE TYPE (G=GRAB, C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives											Analysis Test Y/N	Requested Analysis Filtered (Y/N)				Residual Chlorine (Y/N)				
	UN	DR	WA	PR							W	P	SO	SL	OL	WP	AR	OT	TS	UNPRESERVED - ICE	H2SO4		HNO3	HCl	NaOH + Zn Acetate	Na2S2O3		Methanol	Other	App IV Metals*	Fluoride
1	OGWC	-	2		WT	G	8/11/2020	1320		3	1	2										X	X	X							pH: 6.04
2	OGWC	-	9		WT	G	8/11/2020	1605		3	1	2										X	X	X							pH: 4.00
3	OGWC	-	10		WT	G	8/11/2020	1630		3	1	2										X	X	X							pH: 4.92
4	OGWC	-	11		WT	G	8/11/2020	1215		3	1	2										X	X	X							pH: 5.68
5	OGWC	-	12		WT	G	8/11/2020	1450		3	1	2										X	X	X							pH: 5.69
6	OGWC	-	14		WT	G	8/11/2020	1132		3	1	2										X	X	X							pH: 5.73
7	OGWC	-	19		WT	G	8/11/2020	1300		3	1	2										X	X	X							pH: 4.90
8		FB	-	1	WT	G	8/11/2020	1155		3	1	2										X	X	X							
9		FD	-	1	WT	G	8/11/2020	-		3	1	2										X	X	X							
10																															
11																															
12																															

9240503

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	<i>[Signature]</i>	8/12/20	856	<i>[Signature]</i> Pace	8/12/20	857			
	<i>[Signature]</i> Pace	9/12	1436	<i>[Signature]</i> Pace	8/10/20	1445	1.8	X	X

SAMPLER NAME AND SIGNATURE		TEMP in C	Received on Ice (Y/N)	Closely Sealed (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)
SAMPLER NAME						
SAMPLER SIGNATURE	DATE Signed: 8/12-20					



CHAIN-OF-CUSTODY / Analytical Request Document
 The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		Page: 1 Of 1
Company: Georgia Power - Coal Combustion Residuals		Report To: Jose Abraham		Attention: scs@vicki.com@themo.com		Regulatory Agency
Address: 2480 Manor Road Atlanta, GA 30339		Copy To: Golder		Company Name		
Email: j.abraham@southemco.com		Purchase Order #:		Address:		State / Location
Phone: (404) 506-7239 Fax:		Project Name: Plant McDonough AP-2 3/4		Pace Quote:		
Requested Due Date:		Project #: 16684961h		Pace Project Manager: Kevin Heming		GA
				Pace Profile #:		

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9, /, -) Sample IDs must be unique	MATRIX CODE Drinking Water DW Water WW Waste Water WWT Product P Soil/Soil SL Oil OL Wipe WP Air AR Other OT Tissue TS	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Analysis Test Y/N	Requested Analysis Filtered (Y/N)				Residual Chlorine (Y/N)				
							Unpreserved - Ice								Asp IV Metals	Fluoride	Radium 226/228						
							H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2SO3	Methanol	Other									N	N
1	DGWC-4	WT	8/12/2020	1146	4	1	3							X	X	X					pH: 5.93	010	
2	DGWC-5	WT	8/12/2020	1045	4	1	3							X	X	X						pH: 4.84	011
3	DGWC-8	WT	8/12/2020	1015	4	1	3							X	X	X						pH: 5.36	012
4	DGWC-13	WT	8/12/2020	1140	4	1	3							X	X	X						pH: 5.68	013
5	DGWC-47	WT	8/12/2020	1025	6	1	5							X	X	X						pH 4.43, Extra Radium	014
6	FD-2	WT	8/12/2020	-	4	1	3							X	X	X							015

ADDITIONAL COMMENTS	REINBURSED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Asp IV metals = Sb, As, Ba, Be, Bi, Cd, Cr, Cu, Pb, U, Hg, Mo, Se, Tl	<i>[Signature]</i>	8-13-20	145	<i>[Signature]</i> Pace	8-13-20	1015	
	<i>[Signature]</i> Pace	8-13-20	1449	<i>[Signature]</i>	8/13/20	1449	2-1 Y Y Y

SAMPLER NAME AND SIGNATURE		TEMP In C	Received on Ice (Y/N)	Tampered (Y/N)	Sealed (Y/N)	Cooled (Y/N)	Samples intact (Y/N)
SAMPLER NAME <i>[Signature]</i>	SAMPLER SIGNATURE <i>[Signature]</i>						
DATE Signed: 8/13-20							

WO#: 92490503

PM: KLH1 Due Date: 08/26/20 CLIENT: GA-GA Power

Page 87 of 87



CHAIN-OF-CUSTODY / Analytical Request Document

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

Form with three sections: Section A Required Client Information, Section B Required Project Information, and Section C Invoice Information. Includes fields for company, address, email, phone, project name, and date.

Main table with columns for Item #, Sample ID, Matrix Code, Date, Time, Sample Temp, # of Containers, Preservatives, Analyzed Test, Requested Analysis Filtered (Y/N), and Residual Chlorine (Y/N). Contains rows 1-12 with handwritten sample IDs and pH values.

Bottom section for Sampler Name and Signature, Date Signed, and checkboxes for 'Received on Ice', 'Custody Sealed Cooler', and 'Samples intact'.

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



REPORT OF LABORATORY ANALYSIS

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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 #: 191
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

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
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

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		
92490963008	B-100	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		
		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		
92490963009	B-56	EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A		
		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
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PASI-GA = Pace Analytical Services - Peachtree Corners, GA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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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	

REPORT OF LABORATORY ANALYSIS

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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			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
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		

REPORT OF LABORATORY ANALYSIS

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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
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Field Data

Analytical Method:
Pace Analytical Services - Charlotte

pH	5.59	Std. Units			1		08/20/20 17:22		
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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	
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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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REPORT OF LABORATORY ANALYSIS

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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	0.00088J	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			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
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 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		92490942006 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
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	

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

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT

Pace Project No.: 92490963

Parameter	Units	2974808		2974809		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92490942006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch: 560791 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		92490963007 Result	Conc.	Conc.	Result							Result
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

Parameter	Units	2975069		2975070		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		92490963007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
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 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		92491455013	Result	Conc.	Conc.							Result
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

Parameter	Units	2980654		2980655		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		92491455013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
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	2974356		2974357		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Mercury	mg/L	ND	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	2975792		2975793		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
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

Analysis Method: EPA 7470A

QC Batch 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	2980090		2980091		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Mercury	mg/L	92491616002 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 Analysis Method: EPA 300.0 Rev 2.1 1993
 QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
 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	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
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	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
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 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
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		92490963010		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
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		92490847003		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
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 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
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		2977018		2977019		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Fluoride	mg/L	ND	ND	2.5	2.5	2.5	2.5	98	99	90-110	1	10

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2977020 2977021

Parameter	Units	92490037060		2977020		2977021		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Fluoride	mg/L	ND	ND	2.5	2.5	2.5	2.5	97	100	90-110	3	10

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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	

REPORT OF LABORATORY ANALYSIS

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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	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH ASSESSMENT
Pace Project No.: 92490963

QC Batch:	411435	Analysis Method:	EPA 9320
QC Batch 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	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT 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	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PLANT 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.

REPORT OF LABORATORY ANALYSIS

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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		

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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.

W0# : 92490963

 92490963

Section A		Section B		Section C	
Required Client Information:		Report To: Jolou Abraham		Invoice Information:	
Company: Georgia Power - Coal Combustion Residuals		Copy To: Godder		Attention: scsimvices@southernco.com	
Address: 2480 Warner Road		Purchase Order #:		Company Name:	
Atlanta, GA 30339		Project Name: Plant McDonough Assessment		Address:	
Email: jabraham@southernco.com		Requested Due Date:		State / Location	
Phone: (404) 506-7239		Project #: 166949618		GA	
Fax:		Requested Analysis Filtered (Y/N)		Regulatory Agency	

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9, -) Sample IDs must be unique	MATRIX Drinking Water Waste Water Industrial Water Process Water Surface Other	CODE DW WW IW PW S OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G GRAB C-COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	PH			
										Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other				App IV Metals*	Fluoride	Radium 226/228
1	B-62			WT	G	8/13/2020	1706		4	1	3												PH: 6.40
2	B-77			WT	G	8/13/2020	1655		4	1	3												PH: 6.14
3	B-74					8/14/20	1134		4	1	3												PH: 6.19
4	B-89					1007			6	1	5												PH: 5.83
5	FD-3								4	1	3												PH: 5.59
6	B-83						1300		4	1	3												
7																							
8																							
9																							
10																							

ADDITIONAL COMMENTS				RELINQUISHED BY / AFFILIATION				ACCEPTED BY / AFFILIATION				SAMPLE CONDITIONS			
App IV metals - Sr, As, Ba, Be, Cd, Cr, Cu, Pb, Li, Hg, Mo, Se, Ti				JW/sample				Jude Magness/PAK				TEMP in C			
				DATE: 08/14/20				DATE: 08/14/20				Received on Ice (Y/N)			
				TIME: 4:30				TIME: 9:14:30				Sealed Cooler (Y/N)			
												Samples Intact (Y/N)			

Handwritten notes: 42150615, PH: 5.83, extra rods



Sample Condition Upon Receipt

Client Name: GA Power

WO#: 92490963

PM: KLH1 Due Date: 08/28/20

Courier: Fed Ex UPS USPS Client Commercial Pace C

CLIENT: GA-GA Power

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: Blue None Samples on ice, cooling process has begun

Cooler Temperature 3.8 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: KAW 8/18/20

Temp should be above freezing to 6°C

Comments:

Table with 16 rows of checklist items (Chain of Custody Present, Chain of Custody Filled Out, etc.) and checkboxes for Yes, No, N/A.

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)



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: Jaji Abraham		Attention: aca.invoices@southernco.com	
Address: 2480 Mener Road		Copy To: Golder		Company Name:	
Atlanta, GA 30339		Purchase Order #:		Pace Quote:	
Email: jabraham@southernco.com		Project Name: Plant McDonough Assessment		Pace Project Manager: Kevin Herring	
Phone: (404) 506-7239		Project # 166849618		Pace Profile #:	
Requested Due Date:				Regulatory Agency:	
				State / Location: GA	

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9, -,) Sample IDs must be unique	MATRIX Drinking Water Water Waste Water Process SemiSolid Oil Wipe Air Other Tissue	COOL DW WT WW P SL OL WP AR OT TS	MATRIX CODE (see vial coding to left)	SAMPLE TYPE (G-CRAB C-COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved - Ice	Preservatives										Y/N	Requested Analysis Filtered (Y/N)										Residual Chlorine (Y/N)
											H2SO4	HNO3	HC	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	App IV Metals*	Fluoride	Radium 226/228												
1	B-88	WT	G	8/17/2020	10:45	4	1	3									X	X	X											pH=5.76	007	
2	B-100	WT	G	8/17/2020	10:49	4	1	3									X	X	X											pH=5.02	008	
3	B-56	WT	G	8/17/2020	12:00	4	1	3									X	X	X											pH=4.82	009	
4	B-3	WT	G	8/17/2020	13:08	4	1	3									X	X	X											pH=5.51	010	
5	B-82	WT	G	8/17/2020	14:25	4	1	3									X	X	X											pH= 5.48	old	
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, Mg, Mo, Se, Tl	JW/SAMPLER	08/18/20	10:54	R. W. WAGUESPACK	8/18/20	10:54	3.8 Y N Y

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	JW...	
DATE Signed:		08/18/20



CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A**Required Client Information:**

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

Section B**Required Project Information:**

Report To: Joju Abraham
 Copy To: Golder
 Purchase Order #:
 Project Name: Plant McDorrough Assessment
 Project #: 168849618

Section C**Invoice Information:**

Attention: sscserv@cs@southemco.com
 Company Name: GOLDER.COM
 Address:
 Quote:
 Project Manager: Kevin Hering
 Profile #:

Page: 1 Of 1

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 Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Other Tissue	CODE DW WF WW P SL OL WV AW OT TS	MATRIX CODE (see table codes to left)	SAMPLE TYPE (G-G-RAB C-COMPF)	DATE	TIME	SAMPLE TEMP AT COLLECTION	PRESERVATIVES								ANALYSES TEST Y/N	Residual Chlorine (Y/N)									
									# OF CONTAINERS	Unpreserved - Ice	H2SO4	HNO3	HCl	HClO4 + Zn Acetate	Na2S2O3	Methanol			Other	App IV Metals Y/N	Fluoride N	Radium 226/228 N					
1	B-93		WT	G	G	8/19/2020	12:29		4	1	3							X	X	X					92450963	pH = 4.78 SLZ	
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 = Pb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl	JW/SAMPLER	08/19/20	1355	R. W. Wagvespack	08/19/20	1355	AD Y Y Y

SAMPLER NAME AND SIGNATURE		TEMP IN C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SAMPLER NAME	JOE WAGVESPACK				
SAMPLER SIGNATURE	[Signature]				
DATE Signed:		08/19/20			



Quality Control Sample Performance Assessment

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

Handwritten signature/initials

LAM 9/2/2020



Quality Control Sample Performance Assessment

Test: Ra-228
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	N
	LCS55837	LCS55837
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
Duplicate Sample I.D.:	LCS55837
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
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	21.13%
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:

01/11/2020

LAM 9/2/2020



Quality Control Sample Performance Assessment

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		Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Sample I.D.:	LCS55851	
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	MS/MSD 1	MS/MSD 2
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.

Handwritten signature/initials: *VAL 9-10-20*

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



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

Pace Analytical Services Charlotte

9800 Kinsey 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: 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

REPORT OF LABORATORY ANALYSIS

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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

REPORT OF LABORATORY ANALYSIS

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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	

REPORT OF LABORATORY ANALYSIS

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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			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
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		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MCDONOUGH UPGRADIENT

Pace Project No.: 92496940

QC Batch: 568748	Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A	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	3013300		3013301		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92495894022 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Calcium	mg/L	75.3	1	1	79.7	76.2	438	83	75-125	5	20 M1

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QUALITY CONTROL DATA

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

QC Batch: 569382 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
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	

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QUALITY CONTROL DATA

Project: MCDONOUGH UPGRADIENT

Pace Project No.: 92496940

Parameter	Units	3016875		3016876		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92495870024 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
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 Analysis Method: EPA 7470A
QC Batch 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	3016187		3016188		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
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	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: 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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MCDONOUGH UPGRADIENT
Pace Project No.: 92496940

QC Batch: 569206 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
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	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92496941006	Result	Spike Conc.	Spike Conc.								
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	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92496940001	Result	Spike Conc.	Spike Conc.								
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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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.

REPORT OF LABORATORY ANALYSIS

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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		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt



Client Name: GA Power - Coal

WO#: **92496940**



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

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

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 Date and Initials of person examining contents: CO
 Temp should be above freezing to 6°C Comments: _____

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

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)



Document Name:
Bottle Identification Form (BIF)
Document No.:
F-CAR-CS-043-Rev.00

Document Issued: March 14, 2019
Page 1 of 1
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) (C-)	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) (C-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP3M-250 mL Plastic ZN Acetate & NaOH (>9)	BP4Z-125 mL Plastic NaOH (pH > 12) (C-)	BP4C-125 mL Plastic NaOH (pH > 12) (C-)	WIGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (C-)	AG1H-1 liter Amber HCl (pH < 2)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (C-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(C-)	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)-YPH/Gas kit (N/A)	V/GK (3 vials per kit)-YPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP9A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG6U-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																															

BP1N

XXXX

pH Adjustment Log for Preserved Samples

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

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



CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: Georgia Power - Coal Combustion Residuels		Report To: Joju Abraham		Attention: scsinvoices@southemco.com	
Address: 2480 Maner Road Atlanta, GA 30339		Copy To: Golder		Company Name:	
Email: jabraham@southemco.com		Purchase Order #:		Address:	
Phone: (404) 506-7239 Fax		Project Name: Plant McDonough Upgradient		Pace Quote:	
Requested Due Date: 10 Day TAT		Project #: 168849518		Pace Project Manager: Kevin Herring	
				Regulatory Agency	
				State / Location: GA	

ITEM #	SAMPLE ID One Character per box. [A-Z, 0-9 / , -] Sample Ids must be unique	MATRIX CODE	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives											Analytes Test	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)				
							Unpreserved - lbs	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	N	N	N				N	N	N	
1	DGWA-53	WT	9/22/2020	12:40		5	2									X	X	X	X	X			pH= 6.44	
2	DGWA-70A	WT	9/22/2020	10:20		5	2									X	X	X	X	X			pH= 6.01	
3	DGWA-71	WT	9/22/2020	11:45		5	2									X	X	X	X	X			pH= 6.06	
4	EB-1	WT	9/22/2020	10:40		5	2									X	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, Ba, Be, Ca, Cd, Cr, Co, Pb, U, Hg, Mo, Se, Th	C. Tronwell/Golder	9/23/20	09:05	M. BAA	9/23/20	09:09	
	M. BAA	9-23-20	9:35	K. Wellington/Rice	9/23/20	09:35	3.5 Y Y Y

Sampled by: Chris Tronwell
[Signature]

DATE Signed: 9/23/20

TEMP IN C: _____

Received on: _____ (Y/N)

Custody Sealed: _____ (Y/N)

Cooler: _____ (Y/N)

Samples Intact: _____ (Y/N)

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



REPORT OF LABORATORY ANALYSIS

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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

REPORT OF LABORATORY ANALYSIS

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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

REPORT OF LABORATORY ANALYSIS

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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

REPORT OF LABORATORY ANALYSIS

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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

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
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:						
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	

REPORT OF LABORATORY ANALYSIS

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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	

REPORT OF LABORATORY ANALYSIS

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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	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH UPGRADIENT RADS

Pace Project No.: 92496907

QC Batch: 415887

Analysis Method: EPA 9320

QC Batch 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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH UPGRADIENT RADS

Pace Project No.: 92496907

QC Batch:	415889	Analysis Method:	EPA 9315
QC Batch 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.

REPORT OF LABORATORY ANALYSIS

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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		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

Client Name: GA Power - Coal Com

WO#: 92496907



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

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

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 Date and Initials of person examining contents: CO

Temp should be above freezing to 6°C Comments: _____

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

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



Document Name:
Bottle Identification Form (BIF)

Document No.:
F-CAR-CS-043-Rev.00

Document issued: March 14, 2019

Page 1 of 1

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/BO15 (water) DOC, LLHg

Bottom half of box is to list number of bottle

Matrix	Item#	BP4U-125 mL Plastic Unpreserved (N/A) (C-)	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) (C-)	BP3M-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic Zn Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (C-)	WGFU-Whole-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (C-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (C-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(C-)	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																											
	3																											
	4																											
	5																											
	6																											
	7																											
	8																											
	9																											
	10																											
	11																											
	12																											

pH Adjustment Log for Preserved Samples

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

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



Quality Control Sample Performance Assessment

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	LCSD (Y or N)?	N
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	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	MS/MSD 1	MS/MSD 2
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

LAL
10/8/2020



Quality Control Sample Performance Assessment

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:

*ONE
10/8/2020*

LAM 10/8/2020



Quality Control Sample Performance Assessment

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:

10-15-20

On 10.13.20

October 16, 2020

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

RE: Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory between September 23, 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



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: MCDONOUGH AP-234

Pace Project No.: 92496941

Pace Analytical Services Charlotte

9800 Kinsey 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: MCDONOUGH AP-234

Pace Project No.: 92496941

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92496941001	DGWC-4	Water	09/22/20 09:50	09/23/20 09:35
92496941002	DGWC-5	Water	09/22/20 11:10	09/23/20 09:35
92496941003	DGWC-9	Water	09/22/20 10:00	09/23/20 09:35
92496941004	DGWC-11	Water	09/22/20 11:00	09/23/20 09:35
92496941005	DGWC-12	Water	09/22/20 15:40	09/23/20 09:35
92496941006	DGWC-14	Water	09/22/20 14:25	09/23/20 09:35
92496941007	DGWC-19	Water	09/22/20 16:10	09/23/20 09:35
92496941008	DGWC-20	Water	09/22/20 12:35	09/23/20 09:35
92496941009	DGWC-42	Water	09/22/20 16:25	09/23/20 09:35
92496941010	FB-1	Water	09/22/20 09:50	09/23/20 09:35
92496941011	FD-1	Water	09/22/20 00:00	09/23/20 09:35
92496941012	DGWC-2	Water	09/23/20 12:35	09/24/20 09:25
92496941013	DGWC-8	Water	09/23/20 16:00	09/24/20 09:25
92496941014	DGWC-13	Water	09/23/20 10:30	09/24/20 09:25
92496941015	DGWC-15	Water	09/23/20 13:55	09/24/20 09:25
92496941016	DGWC-47	Water	09/23/20 12:37	09/24/20 09:25
92496941017	DGWC-48	Water	09/23/20 09:55	09/24/20 09:25
92496941018	EB-2	Water	09/23/20 14:25	09/24/20 09:25
92496941019	FB-2	Water	09/23/20 10:22	09/24/20 09:25
92496941020	DGWC-10	Water	09/24/20 09:55	09/25/20 13:30
92496941021	DGWC-17	Water	09/24/20 14:05	09/25/20 13:30
92496941022	DGWC-21	Water	09/24/20 12:30	09/25/20 13:30
92496941023	DGWC-22	Water	09/24/20 12:20	09/25/20 13:30
92496941024	DGWC-23	Water	09/24/20 13:02	09/25/20 13:30
92496941025	FD-3	Water	09/24/20 00:00	09/25/20 13:30
92496941026	EB-3	Water	09/24/20 12:25	09/25/20 13:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Lab ID	Sample ID	Method	Analysts	Analytes Reported
92496941001	DGWC-4	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
92496941002	DGWC-5	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
92496941003	DGWC-9	EPA 6010D	KH	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92496941004	DGWC-11	EPA 6010D	KH	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92496941005	DGWC-12	EPA 6010D	KH	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92496941006	DGWC-14	EPA 6010D	KH	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92496941007	DGWC-19	EPA 6010D	KH	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92496941008	DGWC-20	EPA 6010D	KH	1
		EPA 6020B	CW1	13

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Lab ID	Sample ID	Method	Analysts	Analytes Reported
92496941009	DGWC-42	EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
		EPA 6010D	KH	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
92496941010	FB-1	SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
		EPA 6010D	KH	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
92496941011	FD-1	EPA 300.0 Rev 2.1 1993	BRJ	3
		EPA 6010D	KH	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
92496941012	DGWC-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
		EPA 6010D	DRB	1
92496941013	DGWC-8	EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
		EPA 6010D	DRB	1
		EPA 6020B	CW1	13
92496941014	DGWC-13	EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
		EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
92496941015	DGWC-15	SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
		EPA 6010D	DRB	1
		EPA 6020B	KH	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Lab ID	Sample ID	Method	Analysts	Analytes Reported
92496941016	DGWC-47	EPA 300.0 Rev 2.1 1993	BRJ	3
		EPA 6010D	DRB	1
		EPA 6020B	KH	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
92496941017	DGWC-48	EPA 300.0 Rev 2.1 1993	BRJ	3
		EPA 6010D	DRB	1
		EPA 6020B	KH	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
92496941018	EB-2	EPA 300.0 Rev 2.1 1993	BRJ	3
		EPA 6010D	DRB	1
		EPA 6020B	KH	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
92496941019	FB-2	EPA 300.0 Rev 2.1 1993	BRJ	3
		EPA 6010D	DRB	1
		EPA 6020B	KH	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
92496941020	DGWC-10	EPA 300.0 Rev 2.1 1993	BRJ	3
		EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
92496941021	DGWC-17	EPA 300.0 Rev 2.1 1993	CDC	3
		EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
92496941022	DGWC-21	EPA 300.0 Rev 2.1 1993	CDC	3
		EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
92496941023	DGWC-22	EPA 300.0 Rev 2.1 1993	CDC	3
		EPA 6010D	DRB	1

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Lab ID	Sample ID	Method	Analysts	Analytes Reported
92496941024	DGWC-23	EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	CDC	3
		EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
92496941025	FD-3	SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
		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
92496941026	EB-3	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3

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

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-4		Lab ID: 92496941001		Collected: 09/22/20 09:50		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	5.88	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Peachtree Corners, GA									
Calcium	263	mg/L	1.0	0.070	1	09/24/20 14:20	09/25/20 22:46	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 14:13	09/30/20 19:49	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 14:13	09/30/20 19:49	7440-38-2	
Barium	0.030	mg/L	0.010	0.00071	1	09/29/20 14:13	09/30/20 19:49	7440-39-3	
Beryllium	0.00019J	mg/L	0.0030	0.000046	1	09/29/20 14:13	09/30/20 19:49	7440-41-7	
Boron	4.3	mg/L	0.10	0.0052	1	09/29/20 14:13	09/30/20 19:49	7440-42-8	
Cadmium	0.00065J	mg/L	0.0025	0.00012	1	09/29/20 14:13	09/30/20 19:49	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/29/20 14:13	09/30/20 19:49	7440-47-3	
Cobalt	0.0014J	mg/L	0.0050	0.00038	1	09/29/20 14:13	09/30/20 19:49	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	09/29/20 14:13	09/30/20 19:49	7439-92-1	
Lithium	0.0026J	mg/L	0.030	0.00081	1	09/29/20 14:13	09/30/20 19:49	7439-93-2	
Molybdenum	0.0028J	mg/L	0.010	0.00069	1	09/29/20 14:13	09/30/20 19:49	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/29/20 14:13	09/30/20 19:49	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 14:13	09/30/20 19:49	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 11:50	09/29/20 12:04	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011									
Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	1400	mg/L	50.0	50.0	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	17.0	mg/L	1.0	0.60	1		09/27/20 04:31	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/27/20 04:31	16984-48-8	
Sulfate	800	mg/L	11.0	5.5	11		09/27/20 10:47	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-5		Lab ID: 92496941002		Collected: 09/22/20 11:10		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	4.83	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Peachtree Corners, GA									
Calcium	99.2	mg/L	1.0	0.070	1	09/24/20 14:20	09/25/20 22:50	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	09/29/20 14:13	09/30/20 19:55	7440-36-0	
Arsenic	0.0062	mg/L	0.0050	0.00078	1	09/29/20 14:13	09/30/20 19:55	7440-38-2	
Barium	0.017	mg/L	0.010	0.00071	1	09/29/20 14:13	09/30/20 19:55	7440-39-3	
Beryllium	0.0081	mg/L	0.0030	0.000046	1	09/29/20 14:13	09/30/20 19:55	7440-41-7	
Boron	4.6	mg/L	0.10	0.0052	1	09/29/20 14:13	09/30/20 19:55	7440-42-8	
Cadmium	0.00072J	mg/L	0.0025	0.00012	1	09/29/20 14:13	09/30/20 19:55	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/29/20 14:13	09/30/20 19:55	7440-47-3	
Cobalt	0.020	mg/L	0.0050	0.00038	1	09/29/20 14:13	09/30/20 19:55	7440-48-4	
Lead	0.000048J	mg/L	0.0050	0.000036	1	09/29/20 14:13	09/30/20 19:55	7439-92-1	
Lithium	0.0065J	mg/L	0.030	0.00081	1	09/29/20 14:13	09/30/20 19:55	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 14:13	09/30/20 19:55	7439-98-7	
Selenium	0.040	mg/L	0.010	0.0016	1	09/29/20 14:13	09/30/20 19:55	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 14:13	09/30/20 19:55	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470A Preparation Method: EPA 7470A									
Pace Analytical Services - Peachtree Corners, GA									
Mercury	0.00020J	mg/L	0.00050	0.000078	1	09/28/20 11:50	09/29/20 12:14	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011									
Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	716	mg/L	20.0	20.0	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	10.5	mg/L	1.0	0.60	1		09/27/20 04:46	16887-00-6	
Fluoride	0.12	mg/L	0.10	0.050	1		09/27/20 04:46	16984-48-8	
Sulfate	423	mg/L	6.0	3.0	6		09/27/20 11:01	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-9		Lab ID: 92496941003		Collected: 09/22/20 10:00		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	4.00	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Peachtree Corners, GA									
Calcium	54.7	mg/L	1.0	0.070	1	09/25/20 15:02	09/28/20 19:50	7440-70-2	M1
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 14:13	09/30/20 20:00	7440-36-0	
Arsenic	0.040	mg/L	0.0050	0.00078	1	09/29/20 14:13	09/30/20 20:00	7440-38-2	
Barium	0.015	mg/L	0.010	0.00071	1	09/29/20 14:13	09/30/20 20:00	7440-39-3	
Beryllium	0.0049	mg/L	0.0030	0.000046	1	09/29/20 14:13	09/30/20 20:00	7440-41-7	
Boron	0.78	mg/L	0.10	0.0052	1	09/29/20 14:13	09/30/20 20:00	7440-42-8	
Cadmium	0.00059J	mg/L	0.0025	0.00012	1	09/29/20 14:13	09/30/20 20:00	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/29/20 14:13	09/30/20 20:00	7440-47-3	
Cobalt	0.16	mg/L	0.0050	0.00038	1	09/29/20 14:13	09/30/20 20:00	7440-48-4	
Lead	0.00015J	mg/L	0.0050	0.000036	1	09/29/20 14:13	09/30/20 20:00	7439-92-1	
Lithium	0.025J	mg/L	0.030	0.00081	1	09/29/20 14:13	09/30/20 20:00	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 14:13	09/30/20 20:00	7439-98-7	
Selenium	0.23	mg/L	0.010	0.0016	1	09/29/20 14:13	09/30/20 20:00	7782-49-2	
Thallium	0.00043J	mg/L	0.0010	0.00014	1	09/29/20 14:13	09/30/20 20:00	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470A Preparation Method: EPA 7470A									
Pace Analytical Services - Peachtree Corners, GA									
Mercury	0.00013J	mg/L	0.00050	0.000078	1	09/28/20 11:50	09/29/20 12:16	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011									
Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	461	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	8.0	mg/L	1.0	0.60	1		09/27/20 05:00	16887-00-6	
Fluoride	0.99	mg/L	0.10	0.050	1		09/27/20 05:00	16984-48-8	
Sulfate	282	mg/L	4.0	2.0	4		09/27/20 11:59	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-11		Lab ID: 92496941004		Collected: 09/22/20 11:00		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	5.54	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Peachtree Corners, GA									
Calcium	72.7	mg/L	1.0	0.070	1	09/25/20 15:02	09/28/20 20:16	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 14:13	09/30/20 20:06	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 14:13	09/30/20 20:06	7440-38-2	
Barium	0.058	mg/L	0.010	0.00071	1	09/29/20 14:13	09/30/20 20:06	7440-39-3	
Beryllium	0.00015J	mg/L	0.0030	0.000046	1	09/29/20 14:13	09/30/20 20:06	7440-41-7	
Boron	1.3	mg/L	0.10	0.0052	1	09/29/20 14:13	09/30/20 20:06	7440-42-8	
Cadmium	0.00016J	mg/L	0.0025	0.00012	1	09/29/20 14:13	09/30/20 20:06	7440-43-9	
Chromium	0.00058J	mg/L	0.010	0.00055	1	09/29/20 14:13	09/30/20 20:06	7440-47-3	
Cobalt	0.00098J	mg/L	0.0050	0.00038	1	09/29/20 14:13	09/30/20 20:06	7440-48-4	
Lead	0.00010J	mg/L	0.0050	0.000036	1	09/29/20 14:13	09/30/20 20:06	7439-92-1	
Lithium	0.0019J	mg/L	0.030	0.00081	1	09/29/20 14:13	09/30/20 20:06	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 14:13	09/30/20 20:06	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/29/20 14:13	09/30/20 20:06	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 14:13	09/30/20 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	0.00050	0.000078	1	09/28/20 11:50	09/29/20 12:19	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011									
Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	481	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	16.0	mg/L	1.0	0.60	1		09/27/20 05:15	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/27/20 05:15	16984-48-8	
Sulfate	267	mg/L	4.0	2.0	4		09/27/20 12:13	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-12		Lab ID: 92496941005		Collected: 09/22/20 15:40		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	6.00	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Peachtree Corners, GA									
Calcium	55.4	mg/L	1.0	0.070	1	09/25/20 15:02	09/28/20 20:20	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 18:28	09/30/20 17:47	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:28	09/30/20 17:47	7440-38-2	
Barium	0.036	mg/L	0.010	0.00071	1	09/29/20 18:28	09/30/20 17:47	7440-39-3	
Beryllium	0.00017J	mg/L	0.0030	0.000046	1	09/29/20 18:28	09/30/20 17:47	7440-41-7	
Boron	4.2	mg/L	0.10	0.0052	1	09/29/20 18:28	09/30/20 17:47	7440-42-8	
Cadmium	0.00017J	mg/L	0.0025	0.00012	1	09/29/20 18:28	09/30/20 17:47	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/29/20 18:28	09/30/20 17:47	7440-47-3	
Cobalt	0.013	mg/L	0.0050	0.00038	1	09/29/20 18:28	09/30/20 17:47	7440-48-4	
Lead	0.00011J	mg/L	0.0050	0.000036	1	09/29/20 18:28	09/30/20 17:47	7439-92-1	
Lithium	ND	mg/L	0.030	0.00081	1	09/29/20 18:28	09/30/20 17:47	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 18:28	09/30/20 17:47	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/29/20 18:28	09/30/20 17:47	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:28	09/30/20 17:47	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 11:50	09/29/20 12:26	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011									
Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	338	mg/L	10.0	10.0	1		09/25/20 21:58		
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		09/27/20 05:58	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/27/20 05:58	16984-48-8	
Sulfate	183	mg/L	3.0	1.5	3		09/27/20 12:27	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-14		Lab ID: 92496941006		Collected: 09/22/20 14:25		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	5.70	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Peachtree Corners, GA									
Calcium	11.6	mg/L	1.0	0.070	1	09/25/20 15:02	09/28/20 20:24	7440-70-2	
6020 MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3005A									
Pace Analytical Services - Peachtree Corners, GA									
Antimony	0.0011J	mg/L	0.0030	0.00028	1	09/29/20 18:28	09/30/20 18:10	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:28	09/30/20 18:10	7440-38-2	
Barium	0.060	mg/L	0.010	0.00071	1	09/29/20 18:28	09/30/20 18:10	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	09/29/20 18:28	09/30/20 18:10	7440-41-7	
Boron	0.086J	mg/L	0.10	0.0052	1	09/29/20 18:28	09/30/20 18:10	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00012	1	09/29/20 18:28	09/30/20 18:10	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/29/20 18:28	09/30/20 18:10	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	09/29/20 18:28	09/30/20 18:10	7440-48-4	
Lead	0.000044J	mg/L	0.0050	0.000036	1	09/29/20 18:28	09/30/20 18:10	7439-92-1	
Lithium	0.0038J	mg/L	0.030	0.00081	1	09/29/20 18:28	09/30/20 18:10	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 18:28	09/30/20 18:10	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/29/20 18:28	09/30/20 18:10	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:28	09/30/20 18:10	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 11:50	09/29/20 12:28	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011									
Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	105	mg/L	10.0	10.0	1		09/25/20 21:58		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Chloride	3.2	mg/L	1.0	0.60	1		09/27/20 06:12	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/27/20 06:12	16984-48-8	
Sulfate	40.2	mg/L	1.0	0.50	1		09/27/20 06:12	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-19		Lab ID: 92496941007		Collected: 09/22/20 16:10	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	4.91	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA									
Calcium	103	mg/L	1.0	0.070	1	09/25/20 15:02	09/28/20 20:29	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	09/29/20 18:28	09/30/20 18:16	7440-36-0	
Arsenic	0.0017J	mg/L	0.0050	0.00078	1	09/29/20 18:28	09/30/20 18:16	7440-38-2	
Barium	0.026	mg/L	0.010	0.00071	1	09/29/20 18:28	09/30/20 18:16	7440-39-3	
Beryllium	0.0020J	mg/L	0.0030	0.000046	1	09/29/20 18:28	09/30/20 18:16	7440-41-7	
Boron	2.6	mg/L	0.10	0.0052	1	09/29/20 18:28	09/30/20 18:16	7440-42-8	
Cadmium	0.00036J	mg/L	0.0025	0.00012	1	09/29/20 18:28	09/30/20 18:16	7440-43-9	
Chromium	0.0030J	mg/L	0.010	0.00055	1	09/29/20 18:28	09/30/20 18:16	7440-47-3	
Cobalt	0.051	mg/L	0.0050	0.00038	1	09/29/20 18:28	09/30/20 18:16	7440-48-4	
Lead	0.00016J	mg/L	0.0050	0.000036	1	09/29/20 18:28	09/30/20 18:16	7439-92-1	
Lithium	0.0034J	mg/L	0.030	0.00081	1	09/29/20 18:28	09/30/20 18:16	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 18:28	09/30/20 18:16	7439-98-7	
Selenium	0.0052J	mg/L	0.010	0.0016	1	09/29/20 18:28	09/30/20 18:16	7782-49-2	
Thallium	0.00050J	mg/L	0.0010	0.00014	1	09/29/20 18:28	09/30/20 18:16	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 11:50	09/29/20 12:31	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	513	mg/L	10.0	10.0	1		09/25/20 21:58		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville									
Chloride	27.6	mg/L	1.0	0.60	1		09/27/20 06:56	16887-00-6	
Fluoride	0.084J	mg/L	0.10	0.050	1		09/27/20 06:56	16984-48-8	
Sulfate	310	mg/L	4.0	2.0	4		09/27/20 12:41	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-20		Lab ID: 92496941008		Collected: 09/22/20 12:35		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	4.66	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Peachtree Corners, GA									
Calcium	79.2	mg/L	1.0	0.070	1	09/25/20 15:02	09/28/20 20:33	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	09/29/20 18:28	09/30/20 18:21	7440-36-0	
Arsenic	0.0063	mg/L	0.0050	0.00078	1	09/29/20 18:28	09/30/20 18:21	7440-38-2	
Barium	0.011	mg/L	0.010	0.00071	1	09/29/20 18:28	09/30/20 18:21	7440-39-3	
Beryllium	0.0027J	mg/L	0.0030	0.000046	1	09/29/20 18:28	09/30/20 18:21	7440-41-7	
Boron	4.9	mg/L	0.10	0.0052	1	09/29/20 18:28	09/30/20 18:21	7440-42-8	
Cadmium	0.0014J	mg/L	0.0025	0.00012	1	09/29/20 18:28	09/30/20 18:21	7440-43-9	
Chromium	0.0013J	mg/L	0.010	0.00055	1	09/29/20 18:28	09/30/20 18:21	7440-47-3	
Cobalt	0.47	mg/L	0.0050	0.00038	1	09/29/20 18:28	09/30/20 18:21	7440-48-4	
Lead	0.00013J	mg/L	0.0050	0.000036	1	09/29/20 18:28	09/30/20 18:21	7439-92-1	
Lithium	0.0026J	mg/L	0.030	0.00081	1	09/29/20 18:28	09/30/20 18:21	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 18:28	09/30/20 18:21	7439-98-7	
Selenium	0.023	mg/L	0.010	0.0016	1	09/29/20 18:28	09/30/20 18:21	7782-49-2	
Thallium	0.00055J	mg/L	0.0010	0.00014	1	09/29/20 18:28	09/30/20 18:21	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 11:50	09/29/20 12:33	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		09/25/20 21:58		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Chloride	25.8	mg/L	1.0	0.60	1		09/27/20 07:11	16887-00-6	
Fluoride	0.15	mg/L	0.10	0.050	1		09/27/20 07:11	16984-48-8	
Sulfate	408	mg/L	6.0	3.0	6		09/27/20 12:55	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-42		Lab ID: 92496941009		Collected: 09/22/20 16:25		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	5.76	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Peachtree Corners, GA									
Calcium	43.8	mg/L	1.0	0.070	1	09/25/20 15:02	09/28/20 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	09/29/20 18:28	09/30/20 18:27	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:28	09/30/20 18:27	7440-38-2	
Barium	0.016	mg/L	0.010	0.00071	1	09/29/20 18:28	09/30/20 18:27	7440-39-3	
Beryllium	0.0013J	mg/L	0.0030	0.000046	1	09/29/20 18:28	09/30/20 18:27	7440-41-7	
Boron	0.88	mg/L	0.10	0.0052	1	09/29/20 18:28	09/30/20 18:27	7440-42-8	
Cadmium	0.00070J	mg/L	0.0025	0.00012	1	09/29/20 18:28	09/30/20 18:27	7440-43-9	
Chromium	0.0010J	mg/L	0.010	0.00055	1	09/29/20 18:28	09/30/20 18:27	7440-47-3	
Cobalt	0.014	mg/L	0.0050	0.00038	1	09/29/20 18:28	09/30/20 18:27	7440-48-4	
Lead	0.00074J	mg/L	0.0050	0.000036	1	09/29/20 18:28	09/30/20 18:27	7439-92-1	
Lithium	0.0099J	mg/L	0.030	0.00081	1	09/29/20 18:28	09/30/20 18:27	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 18:28	09/30/20 18:27	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/29/20 18:28	09/30/20 18:27	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:28	09/30/20 18:27	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 11:50	09/29/20 13:06	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011									
Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	547	mg/L	10.0	10.0	1		09/25/20 21:58		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Chloride	22.1	mg/L	1.0	0.60	1		09/27/20 07:25	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/27/20 07:25	16984-48-8	
Sulfate	320	mg/L	5.0	2.5	5		09/27/20 13:09	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: FB-1		Lab ID: 92496941010		Collected: 09/22/20 09:50	Received: 09/23/20 09:35	Matrix: Water				
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
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	09/25/20 15:02	09/28/20 20:42	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	09/29/20 18:28	09/30/20 18:44	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:28	09/30/20 18:44	7440-38-2		
Barium	ND	mg/L	0.010	0.00071	1	09/29/20 18:28	09/30/20 18:44	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000046	1	09/29/20 18:28	09/30/20 18:44	7440-41-7		
Boron	ND	mg/L	0.10	0.0052	1	09/29/20 18:28	09/30/20 18:44	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00012	1	09/29/20 18:28	09/30/20 18:44	7440-43-9		
Chromium	ND	mg/L	0.010	0.00055	1	09/29/20 18:28	09/30/20 18:44	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00038	1	09/29/20 18:28	09/30/20 18:44	7440-48-4		
Lead	ND	mg/L	0.0050	0.000036	1	09/29/20 18:28	09/30/20 18:44	7439-92-1		
Lithium	ND	mg/L	0.030	0.00081	1	09/29/20 18:28	09/30/20 18:44	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 18:28	09/30/20 18:44	7439-98-7		
Selenium	ND	mg/L	0.010	0.0016	1	09/29/20 18:28	09/30/20 18:44	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:28	09/30/20 18:44	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 11:50	09/29/20 12:35	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		09/25/20 21:58			
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 07:40	16887-00-6		
Fluoride	ND	mg/L	0.10	0.050	1		09/27/20 07:40	16984-48-8		
Sulfate	ND	mg/L	1.0	0.50	1		09/27/20 07:40	14808-79-8		

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: FD-1		Lab ID: 92496941011		Collected: 09/22/20 00:00	Received: 09/23/20 09:35	Matrix: Water				
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6010D ATL ICP		Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	11.9	mg/L	1.0	0.070	1	09/25/20 15:02	09/28/20 20:46	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 18:28	09/30/20 18:50	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:28	09/30/20 18:50	7440-38-2		
Barium	0.060	mg/L	0.010	0.00071	1	09/29/20 18:28	09/30/20 18:50	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000046	1	09/29/20 18:28	09/30/20 18:50	7440-41-7		
Boron	0.066J	mg/L	0.10	0.0052	1	09/29/20 18:28	09/30/20 18:50	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00012	1	09/29/20 18:28	09/30/20 18:50	7440-43-9		
Chromium	ND	mg/L	0.010	0.00055	1	09/29/20 18:28	09/30/20 18:50	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00038	1	09/29/20 18:28	09/30/20 18:50	7440-48-4		
Lead	ND	mg/L	0.0050	0.000036	1	09/29/20 18:28	09/30/20 18:50	7439-92-1		
Lithium	0.0039J	mg/L	0.030	0.00081	1	09/29/20 18:28	09/30/20 18:50	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 18:28	09/30/20 18:50	7439-98-7		
Selenium	ND	mg/L	0.010	0.0016	1	09/29/20 18:28	09/30/20 18:50	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:28	09/30/20 18:50	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 11:50	09/29/20 12:38	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	96.0	mg/L	10.0	10.0	1		09/25/20 21:58			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	3.2	mg/L	1.0	0.60	1		09/27/20 07:54	16887-00-6		
Fluoride	ND	mg/L	0.10	0.050	1		09/27/20 07:54	16984-48-8		
Sulfate	40.7	mg/L	1.0	0.50	1		09/27/20 07:54	14808-79-8		

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-2		Lab ID: 92496941012		Collected: 09/23/20 12:35		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	5.99	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA									
Calcium	44.4	mg/L	1.0	0.070	1	09/29/20 14:17	09/29/20 21:31	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 12:34	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:39	10/01/20 12:34	7440-38-2	
Barium	0.023	mg/L	0.010	0.00071	1	09/29/20 18:39	10/01/20 12:34	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000046	1	09/29/20 18:39	10/01/20 12:34	7440-41-7	
Boron	0.57	mg/L	0.10	0.0052	1	09/29/20 18:39	10/01/20 12:34	7440-42-8	
Cadmium	0.00013J	mg/L	0.0025	0.00012	1	09/29/20 18:39	10/01/20 12:34	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/29/20 18:39	10/01/20 12:34	7440-47-3	
Cobalt	0.0062	mg/L	0.0050	0.00038	1	09/29/20 18:39	10/01/20 12:34	7440-48-4	
Lead	0.000094J	mg/L	0.0050	0.000036	1	09/29/20 18:39	10/01/20 12:34	7439-92-1	
Lithium	0.022J	mg/L	0.030	0.00081	1	09/29/20 18:39	10/01/20 12:34	7439-93-2	
Molybdenum	0.0022J	mg/L	0.010	0.00069	1	09/29/20 18:39	10/01/20 12:34	7439-98-7	
Selenium	0.0046J	mg/L	0.010	0.0016	1	09/29/20 18:39	10/01/20 12:34	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:39	10/01/20 12:34	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 11:50	09/29/20 12:40	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	267	mg/L	10.0	10.0	1		09/28/20 11:53		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville									
Chloride	2.1	mg/L	1.0	0.60	1		09/29/20 14:35	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/29/20 14:35	16984-48-8	
Sulfate	122	mg/L	3.0	1.5	3		09/29/20 21:35	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-8		Lab ID: 92496941013		Collected: 09/23/20 16:00		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	5.21	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA									
Calcium	39.3	mg/L	1.0	0.070	1	09/29/20 14:17	09/29/20 21:35	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 12:39	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:39	10/01/20 12:39	7440-38-2	
Barium	0.025	mg/L	0.010	0.00071	1	09/29/20 18:39	10/01/20 12:39	7440-39-3	
Beryllium	0.0015J	mg/L	0.0030	0.000046	1	09/29/20 18:39	10/01/20 12:39	7440-41-7	
Boron	1.0	mg/L	0.10	0.0052	1	09/29/20 18:39	10/01/20 12:39	7440-42-8	
Cadmium	0.0018J	mg/L	0.0025	0.00012	1	09/29/20 18:39	10/01/20 12:39	7440-43-9	
Chromium	0.00086J	mg/L	0.010	0.00055	1	09/29/20 18:39	10/01/20 12:39	7440-47-3	
Cobalt	0.040	mg/L	0.0050	0.00038	1	09/29/20 18:39	10/01/20 12:39	7440-48-4	
Lead	0.00011J	mg/L	0.0050	0.000036	1	09/29/20 18:39	10/01/20 12:39	7439-92-1	
Lithium	0.0045J	mg/L	0.030	0.00081	1	09/29/20 18:39	10/01/20 12:39	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/29/20 18:39	10/01/20 12:39	7439-98-7	
Selenium	0.0028J	mg/L	0.010	0.0016	1	09/29/20 18:39	10/01/20 12:39	7782-49-2	
Thallium	0.00020J	mg/L	0.0010	0.00014	1	09/29/20 18:39	10/01/20 12:39	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 11:50	09/29/20 12:42	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	333	mg/L	10.0	10.0	1		09/28/20 11:53		
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 14:49	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/29/20 14:49	16984-48-8	
Sulfate	178	mg/L	4.0	2.0	4		09/29/20 21:49	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234

Pace Project No.: 92496941

Sample: DGWC-13		Lab ID: 92496941014		Collected: 09/23/20 10:30		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	5.72	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Peachtree Corners, GA									
Calcium	39.0	mg/L	1.0	0.070	1	09/29/20 14:17	09/29/20 21:48	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 12:45	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/29/20 18:39	10/01/20 12:45	7440-38-2	
Barium	0.030	mg/L	0.010	0.00071	1	09/29/20 18:39	10/01/20 12:45	7440-39-3	
Beryllium	0.000068J	mg/L	0.0030	0.000046	1	09/29/20 18:39	10/01/20 12:45	7440-41-7	
Boron	0.57	mg/L	0.10	0.0052	1	09/29/20 18:39	10/01/20 12:45	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00012	1	09/29/20 18:39	10/01/20 12:45	7440-43-9	
Chromium	0.00059J	mg/L	0.010	0.00055	1	09/29/20 18:39	10/01/20 12:45	7440-47-3	
Cobalt	0.00038J	mg/L	0.0050	0.00038	1	09/29/20 18:39	10/01/20 12:45	7440-48-4	
Lead	0.000098J	mg/L	0.0050	0.000036	1	09/29/20 18:39	10/01/20 12:45	7439-92-1	
Lithium	0.0033J	mg/L	0.030	0.00081	1	09/29/20 18:39	10/01/20 12:45	7439-93-2	
Molybdenum	0.012	mg/L	0.010	0.00069	1	09/29/20 18:39	10/01/20 12:45	7439-98-7	
Selenium	0.0053J	mg/L	0.010	0.0016	1	09/29/20 18:39	10/01/20 12:45	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/29/20 18:39	10/01/20 12:45	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470A Preparation Method: EPA 7470A									
Pace Analytical Services - Peachtree Corners, GA									
Mercury	ND	mg/L	0.00050	0.000078	1	09/28/20 11:50	09/29/20 12:45	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011									
Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	278	mg/L	10.0	10.0	1		09/28/20 11:54		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Chloride	12.6	mg/L	1.0	0.60	1		09/29/20 15:04	16887-00-6	
Fluoride	0.058J	mg/L	0.10	0.050	1		09/29/20 15:04	16984-48-8	
Sulfate	134	mg/L	3.0	1.5	3		09/29/20 22:04	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-15		Lab ID: 92496941015		Collected: 09/23/20 13:55		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	5.85	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Peachtree Corners, GA									
Calcium	35.6	mg/L	1.0	0.070	1	09/29/20 14:17	09/29/20 21:52	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 14:00	10/01/20 14:32	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 14:00	10/01/20 14:32	7440-38-2	
Barium	0.043	mg/L	0.010	0.00071	1	09/30/20 14:00	10/01/20 14:32	7440-39-3	
Beryllium	0.000058J	mg/L	0.0030	0.000046	1	09/30/20 14:00	10/01/20 14:32	7440-41-7	
Boron	1.6	mg/L	0.10	0.0052	1	09/30/20 14:00	10/01/20 14:32	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00012	1	09/30/20 14:00	10/01/20 14:32	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 14:00	10/01/20 14:32	7440-47-3	
Cobalt	0.0018J	mg/L	0.0050	0.00038	1	09/30/20 14:00	10/01/20 14:32	7440-48-4	
Lead	0.000082J	mg/L	0.0050	0.000036	1	09/30/20 14:00	10/01/20 14:32	7439-92-1	
Lithium	0.0060J	mg/L	0.030	0.00081	1	09/30/20 14:00	10/01/20 14:32	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 14:00	10/01/20 14:32	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 14:00	10/01/20 14:32	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 14:00	10/01/20 14:32	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 11:50	09/29/20 12:52	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011									
Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	317	mg/L	10.0	10.0	1		09/28/20 11:54		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Chloride	22.4	mg/L	1.0	0.60	1		09/29/20 15:18	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/29/20 15:18	16984-48-8	
Sulfate	146	mg/L	3.0	1.5	3		09/29/20 22:18	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-47		Lab ID: 92496941016		Collected: 09/23/20 12:37	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	4.40	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Peachtree Corners, GA									
Calcium	22.3	mg/L	1.0	0.070	1	09/29/20 14:17	09/29/20 21:57	7440-70-2	
6020 MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3005A									
Pace Analytical Services - Peachtree Corners, GA									
Antimony	0.0012J	mg/L	0.0030	0.00028	1	09/30/20 14:00	10/01/20 14:55	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 14:00	10/01/20 14:55	7440-38-2	
Barium	0.014	mg/L	0.010	0.00071	1	09/30/20 14:00	10/01/20 14:55	7440-39-3	
Beryllium	0.0069	mg/L	0.0030	0.000046	1	09/30/20 14:00	10/01/20 14:55	7440-41-7	
Boron	0.21	mg/L	0.10	0.0052	1	09/30/20 14:00	10/01/20 14:55	7440-42-8	
Cadmium	0.0013J	mg/L	0.0025	0.00012	1	09/30/20 14:00	10/01/20 14:55	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 14:00	10/01/20 14:55	7440-47-3	
Cobalt	0.17	mg/L	0.0050	0.00038	1	09/30/20 14:00	10/01/20 14:55	7440-48-4	
Lead	0.00053J	mg/L	0.0050	0.000036	1	09/30/20 14:00	10/01/20 14:55	7439-92-1	
Lithium	0.046	mg/L	0.030	0.00081	1	09/30/20 14:00	10/01/20 14:55	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 14:00	10/01/20 14:55	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 14:00	10/01/20 14:55	7782-49-2	
Thallium	0.00026J	mg/L	0.0010	0.00014	1	09/30/20 14:00	10/01/20 14:55	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 11:50	09/29/20 12:54	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011									
Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	229	mg/L	10.0	10.0	1		09/28/20 11:54		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993									
Pace Analytical Services - Asheville									
Chloride	3.3	mg/L	1.0	0.60	1		09/29/20 15:33	16887-00-6	
Fluoride	0.11	mg/L	0.10	0.050	1		09/29/20 15:33	16984-48-8	
Sulfate	111	mg/L	3.0	1.5	3		09/29/20 23:02	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-48		Lab ID: 92496941017		Collected: 09/23/20 09:55		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	4.64	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA									
Calcium	72.2	mg/L	1.0	0.070	1	09/29/20 14:17	09/29/20 22:01	7440-70-2	
6020 MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA									
Antimony	0.00039J	mg/L	0.0030	0.00028	1	09/30/20 14:00	10/01/20 15:01	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 14:00	10/01/20 15:01	7440-38-2	
Barium	0.013	mg/L	0.010	0.00071	1	09/30/20 14:00	10/01/20 15:01	7440-39-3	
Beryllium	0.0072	mg/L	0.0030	0.000046	1	09/30/20 14:00	10/01/20 15:01	7440-41-7	
Boron	0.65	mg/L	0.10	0.0052	1	09/30/20 14:00	10/01/20 15:01	7440-42-8	
Cadmium	0.0025	mg/L	0.0025	0.00012	1	09/30/20 14:00	10/01/20 15:01	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 14:00	10/01/20 15:01	7440-47-3	
Cobalt	0.37	mg/L	0.0050	0.00038	1	09/30/20 14:00	10/01/20 15:01	7440-48-4	
Lead	0.0010J	mg/L	0.0050	0.000036	1	09/30/20 14:00	10/01/20 15:01	7439-92-1	
Lithium	0.10	mg/L	0.030	0.00081	1	09/30/20 14:00	10/01/20 15:01	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 14:00	10/01/20 15:01	7439-98-7	
Selenium	0.0016J	mg/L	0.010	0.0016	1	09/30/20 14:00	10/01/20 15:01	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 14:00	10/01/20 15:01	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 11:50	09/29/20 12:57	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	575	mg/L	10.0	10.0	1		09/28/20 11:54		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville									
Chloride	8.0	mg/L	1.0	0.60	1		09/29/20 15:47	16887-00-6	
Fluoride	0.32	mg/L	0.10	0.050	1		09/29/20 15:47	16984-48-8	
Sulfate	313	mg/L	7.0	3.5	7		09/29/20 23:16	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: EB-2		Lab ID: 92496941018		Collected: 09/23/20 14:25	Received: 09/24/20 09:25	Matrix: Water				
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
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	09/29/20 14:17	09/29/20 22:10	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	09/30/20 14:00	10/01/20 15:07	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 14:00	10/01/20 15:07	7440-38-2		
Barium	ND	mg/L	0.010	0.00071	1	09/30/20 14:00	10/01/20 15:07	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000046	1	09/30/20 14:00	10/01/20 15:07	7440-41-7		
Boron	0.0055J	mg/L	0.10	0.0052	1	09/30/20 14:00	10/01/20 15:07	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00012	1	09/30/20 14:00	10/01/20 15:07	7440-43-9		
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 14:00	10/01/20 15:07	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00038	1	09/30/20 14:00	10/01/20 15:07	7440-48-4		
Lead	ND	mg/L	0.0050	0.000036	1	09/30/20 14:00	10/01/20 15:07	7439-92-1		
Lithium	ND	mg/L	0.030	0.00081	1	09/30/20 14:00	10/01/20 15:07	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 14:00	10/01/20 15:07	7439-98-7		
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 14:00	10/01/20 15:07	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 14:00	10/01/20 15:07	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 11:50	09/29/20 12:59	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		09/28/20 11:54			
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		09/29/20 16:01	16887-00-6		
Fluoride	ND	mg/L	0.10	0.050	1		09/29/20 16:01	16984-48-8		
Sulfate	ND	mg/L	1.0	0.50	1		09/29/20 16:01	14808-79-8		

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: FB-2		Lab ID: 92496941019		Collected: 09/23/20 10:22	Received: 09/24/20 09:25	Matrix: Water				
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
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	09/29/20 18:42	09/30/20 16:23	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	09/30/20 14:00	10/01/20 15:12	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 14:00	10/01/20 15:12	7440-38-2		
Barium	ND	mg/L	0.010	0.00071	1	09/30/20 14:00	10/01/20 15:12	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000046	1	09/30/20 14:00	10/01/20 15:12	7440-41-7		
Boron	ND	mg/L	0.10	0.0052	1	09/30/20 14:00	10/01/20 15:12	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00012	1	09/30/20 14:00	10/01/20 15:12	7440-43-9		
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 14:00	10/01/20 15:12	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00038	1	09/30/20 14:00	10/01/20 15:12	7440-48-4		
Lead	ND	mg/L	0.0050	0.000036	1	09/30/20 14:00	10/01/20 15:12	7439-92-1		
Lithium	ND	mg/L	0.030	0.00081	1	09/30/20 14:00	10/01/20 15:12	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 14:00	10/01/20 15:12	7439-98-7		
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 14:00	10/01/20 15:12	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 14:00	10/01/20 15:12	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 11:50	09/29/20 13:02	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		09/28/20 14:27			
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		09/29/20 17:14	16887-00-6		
Fluoride	ND	mg/L	0.10	0.050	1		09/29/20 17:14	16984-48-8		
Sulfate	ND	mg/L	1.0	0.50	1		09/29/20 17:14	14808-79-8		

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-10 Lab ID: 92496941020 Collected: 09/24/20 09:55 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		10/08/20 08:16		
pH	4.89	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA									
Calcium	53.1	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 19:32	7440-70-2	M1
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 17:45	10/01/20 23:27	7440-36-0	
Arsenic	0.0078	mg/L	0.0050	0.00078	1	09/30/20 17:45	10/01/20 23:27	7440-38-2	
Barium	0.021	mg/L	0.010	0.00071	1	09/30/20 17:45	10/01/20 23:27	7440-39-3	
Beryllium	0.0077	mg/L	0.0030	0.000046	1	09/30/20 17:45	10/01/20 23:27	7440-41-7	
Boron	0.45	mg/L	0.10	0.0052	1	09/30/20 17:45	10/06/20 12:52	7440-42-8	
Cadmium	0.00055J	mg/L	0.0025	0.00012	1	09/30/20 17:45	10/01/20 23:27	7440-43-9	
Chromium	0.0010J	mg/L	0.010	0.00055	1	09/30/20 17:45	10/01/20 23:27	7440-47-3	
Cobalt	0.086	mg/L	0.0050	0.00038	1	09/30/20 17:45	10/01/20 23:27	7440-48-4	
Lead	0.00013J	mg/L	0.0050	0.000036	1	09/30/20 17:45	10/01/20 23:27	7439-92-1	
Lithium	0.0049J	mg/L	0.030	0.00081	1	09/30/20 17:45	10/01/20 23:27	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:45	10/01/20 23:27	7439-98-7	
Selenium	0.074	mg/L	0.010	0.0016	1	09/30/20 17:45	10/01/20 23:27	7782-49-2	
Thallium	0.00034J	mg/L	0.0010	0.00014	1	09/30/20 17:45	10/01/20 23:27	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA									
Mercury	0.000081J	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 13:11	7439-97-6	B
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	283	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	5.9	mg/L	1.0	0.60	1		09/30/20 01:11	16887-00-6	
Fluoride	0.97	mg/L	0.10	0.050	1		09/30/20 01:11	16984-48-8	
Sulfate	204	mg/L	4.0	2.0	4		09/30/20 08:08	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-17 Lab ID: 92496941021 Collected: 09/24/20 14:05 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		10/08/20 08:16		
pH	5.10	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA									
Calcium	12.7	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 19:50	7440-70-2	
6020 MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA									
Antimony	0.00045J	mg/L	0.0030	0.00028	1	09/30/20 17:45	10/01/20 23:33	7440-36-0	
Arsenic	0.0011J	mg/L	0.0050	0.00078	1	09/30/20 17:45	10/01/20 23:33	7440-38-2	
Barium	0.033	mg/L	0.010	0.00071	1	09/30/20 17:45	10/01/20 23:33	7440-39-3	
Beryllium	0.00060J	mg/L	0.0030	0.000046	1	09/30/20 17:45	10/01/20 23:33	7440-41-7	
Boron	0.88	mg/L	0.50	0.026	5	09/30/20 17:45	10/03/20 13:45	7440-42-8	
Cadmium	0.00024J	mg/L	0.0025	0.00012	1	09/30/20 17:45	10/01/20 23:33	7440-43-9	
Chromium	0.0029J	mg/L	0.010	0.00055	1	09/30/20 17:45	10/01/20 23:33	7440-47-3	
Cobalt	0.028	mg/L	0.0050	0.00038	1	09/30/20 17:45	10/01/20 23:33	7440-48-4	
Lead	0.000079J	mg/L	0.0050	0.000036	1	09/30/20 17:45	10/01/20 23:33	7439-92-1	
Lithium	0.00096J	mg/L	0.030	0.00081	1	09/30/20 17:45	10/01/20 23:33	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:45	10/01/20 23:33	7439-98-7	
Selenium	0.015	mg/L	0.010	0.0016	1	09/30/20 17:45	10/01/20 23:33	7782-49-2	
Thallium	0.00018J	mg/L	0.0010	0.00014	1	09/30/20 17:45	10/01/20 23:33	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA									
Mercury	0.000082J	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 13:20	7439-97-6	B
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	411	mg/L	10.0	10.0	1		09/29/20 18:56		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville									
Chloride	22.7	mg/L	1.0	0.60	1		09/30/20 01:54	16887-00-6	
Fluoride	0.056J	mg/L	0.10	0.050	1		09/30/20 01:54	16984-48-8	
Sulfate	259	mg/L	5.0	2.5	5		09/30/20 08:29	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-21 Lab ID: 92496941022 Collected: 09/24/20 12:30 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		10/08/20 08:16		
pH	5.64	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA									
Calcium	80.0	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 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	09/30/20 17:45	10/01/20 23:39	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 17:45	10/01/20 23:39	7440-38-2	
Barium	0.024	mg/L	0.010	0.00071	1	09/30/20 17:45	10/01/20 23:39	7440-39-3	
Beryllium	0.00018J	mg/L	0.0030	0.000046	1	09/30/20 17:45	10/01/20 23:39	7440-41-7	
Boron	6.1	mg/L	0.50	0.026	5	09/30/20 17:45	10/03/20 13:51	7440-42-8	
Cadmium	0.00073J	mg/L	0.0025	0.00012	1	09/30/20 17:45	10/01/20 23:39	7440-43-9	
Chromium	0.00096J	mg/L	0.010	0.00055	1	09/30/20 17:45	10/01/20 23:39	7440-47-3	
Cobalt	0.010	mg/L	0.0050	0.00038	1	09/30/20 17:45	10/01/20 23:39	7440-48-4	
Lead	0.00014J	mg/L	0.0050	0.000036	1	09/30/20 17:45	10/01/20 23:39	7439-92-1	
Lithium	0.0062J	mg/L	0.030	0.00081	1	09/30/20 17:45	10/01/20 23:39	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:45	10/01/20 23:39	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 17:45	10/01/20 23:39	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:45	10/01/20 23:39	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA									
Mercury	0.00012J	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 13:23	7439-97-6	B
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	494	mg/L	10.0	10.0	1		09/29/20 19:04		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville									
Chloride	20.0	mg/L	1.0	0.60	1		09/30/20 02:09	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/30/20 02:09	16984-48-8	
Sulfate	269	mg/L	6.0	3.0	6		09/30/20 09:18	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-22 Lab ID: 92496941023 Collected: 09/24/20 12:20 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		10/08/20 08:16		
pH	5.69	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA									
Calcium	62.6	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 20:07	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 17:45	10/01/20 23:45	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 17:45	10/01/20 23:45	7440-38-2	
Barium	0.031	mg/L	0.010	0.00071	1	09/30/20 17:45	10/01/20 23:45	7440-39-3	
Beryllium	0.00017J	mg/L	0.0030	0.000046	1	09/30/20 17:45	10/01/20 23:45	7440-41-7	
Boron	4.1	mg/L	0.50	0.026	5	09/30/20 17:45	10/03/20 13:57	7440-42-8	
Cadmium	0.00058J	mg/L	0.0025	0.00012	1	09/30/20 17:45	10/01/20 23:45	7440-43-9	
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 17:45	10/01/20 23:45	7440-47-3	
Cobalt	0.010	mg/L	0.0050	0.00038	1	09/30/20 17:45	10/01/20 23:45	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	09/30/20 17:45	10/01/20 23:45	7439-92-1	
Lithium	0.0037J	mg/L	0.030	0.00081	1	09/30/20 17:45	10/01/20 23:45	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:45	10/01/20 23:45	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 17:45	10/01/20 23:45	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:45	10/01/20 23:45	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA									
Mercury	ND	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 13:25	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	455	mg/L	10.0	10.0	1		09/29/20 19:04		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville									
Chloride	21.5	mg/L	1.0	0.60	1		09/30/20 02:23	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		09/30/20 02:23	16984-48-8	
Sulfate	262	mg/L	5.0	2.5	5		09/30/20 09:38	14808-79-8	

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: DGWC-23	Lab ID: 92496941024	Collected: 09/24/20 13:02	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		10/08/20 08:16		
pH	6.19	Std. Units			1		10/08/20 08:16		
6010D ATL ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA									
Calcium	73.7	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 20:11	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 17:45	10/01/20 23:50	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 17:45	10/01/20 23:50	7440-38-2	
Barium	0.020	mg/L	0.010	0.00071	1	09/30/20 17:45	10/01/20 23:50	7440-39-3	
Beryllium	0.00045J	mg/L	0.0030	0.000046	1	09/30/20 17:45	10/01/20 23:50	7440-41-7	
Boron	4.6	mg/L	0.50	0.026	5	09/30/20 17:45	10/03/20 14:03	7440-42-8	
Cadmium	0.00018J	mg/L	0.0025	0.00012	1	09/30/20 17:45	10/01/20 23:50	7440-43-9	
Chromium	0.00084J	mg/L	0.010	0.00055	1	09/30/20 17:45	10/01/20 23:50	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00038	1	09/30/20 17:45	10/01/20 23:50	7440-48-4	
Lead	ND	mg/L	0.0050	0.000036	1	09/30/20 17:45	10/01/20 23:50	7439-92-1	
Lithium	0.0045J	mg/L	0.030	0.00081	1	09/30/20 17:45	10/01/20 23:50	7439-93-2	
Molybdenum	0.0088J	mg/L	0.010	0.00069	1	09/30/20 17:45	10/01/20 23:50	7439-98-7	
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 17:45	10/01/20 23:50	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:45	10/01/20 23:50	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA									
Mercury	0.00020J	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 13:28	7439-97-6	B
2540C Total Dissolved Solids									
Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA									
Total Dissolved Solids	456	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	13.7	mg/L	1.0	0.60	1		09/30/20 16:54	16887-00-6	
Fluoride	0.075J	mg/L	0.10	0.050	1		09/30/20 16:54	16984-48-8	
Sulfate	215	mg/L	5.0	2.5	5		09/30/20 19:52	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: FD-3		Lab ID: 92496941025		Collected: 09/24/20 00:00	Received: 09/25/20 13:30	Matrix: Water				
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6010D ATL ICP		Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	12.7	mg/L	1.0	0.070	1	09/30/20 14:57	10/01/20 20:15	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 17:51	7440-36-0		
Arsenic	0.00088J	mg/L	0.0050	0.00078	1	09/30/20 17:48	10/03/20 17:51	7440-38-2		
Barium	0.032	mg/L	0.010	0.00071	1	09/30/20 17:48	10/03/20 17:51	7440-39-3		
Beryllium	0.00070J	mg/L	0.0030	0.000046	1	09/30/20 17:48	10/03/20 17:51	7440-41-7		
Boron	0.84	mg/L	0.10	0.0052	1	09/30/20 17:48	10/03/20 17:51	7440-42-8		
Cadmium	0.00028J	mg/L	0.0025	0.00012	1	09/30/20 17:48	10/03/20 17:51	7440-43-9		
Chromium	0.0028J	mg/L	0.010	0.00055	1	09/30/20 17:48	10/03/20 17:51	7440-47-3		
Cobalt	0.027	mg/L	0.0050	0.00038	1	09/30/20 17:48	10/03/20 17:51	7440-48-4		
Lead	0.00022J	mg/L	0.0050	0.000036	1	09/30/20 17:48	10/03/20 17:51	7439-92-1		
Lithium	0.0012J	mg/L	0.030	0.00081	1	09/30/20 17:48	10/03/20 17:51	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:48	10/03/20 17:51	7439-98-7		
Selenium	0.012	mg/L	0.010	0.0016	1	09/30/20 17:48	10/03/20 17:51	7782-49-2		
Thallium	0.00034J	mg/L	0.0010	0.00014	1	09/30/20 17:48	10/03/20 17:51	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 13:35	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	422	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	22.8	mg/L	1.0	0.60	1		09/30/20 17:08	16887-00-6		
Fluoride	0.076J	mg/L	0.10	0.050	1		09/30/20 17:08	16984-48-8		
Sulfate	251	mg/L	5.0	2.5	5		09/30/20 20:06	14808-79-8		

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ANALYTICAL RESULTS

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Sample: EB-3		Lab ID: 92496941026		Collected: 09/24/20 12:25	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 20:19	7440-70-2		
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	0.0015J	mg/L	0.0030	0.00028	1	09/30/20 17:48	10/03/20 18:14	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00078	1	09/30/20 17:48	10/03/20 18:14	7440-38-2		
Barium	ND	mg/L	0.010	0.00071	1	09/30/20 17:48	10/03/20 18:14	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000046	1	09/30/20 17:48	10/03/20 18:14	7440-41-7		
Boron	0.010J	mg/L	0.10	0.0052	1	09/30/20 17:48	10/03/20 18:14	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00012	1	09/30/20 17:48	10/03/20 18:14	7440-43-9		
Chromium	ND	mg/L	0.010	0.00055	1	09/30/20 17:48	10/03/20 18:14	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00038	1	09/30/20 17:48	10/03/20 18:14	7440-48-4		
Lead	ND	mg/L	0.0050	0.000036	1	09/30/20 17:48	10/03/20 18:14	7439-92-1		
Lithium	ND	mg/L	0.030	0.00081	1	09/30/20 17:48	10/03/20 18:14	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00069	1	09/30/20 17:48	10/03/20 18:14	7439-98-7		
Selenium	ND	mg/L	0.010	0.0016	1	09/30/20 17:48	10/03/20 18:14	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	09/30/20 17:48	10/03/20 18:14	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.000078	1	09/29/20 13:30	09/30/20 13:37	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	19.0	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	ND	mg/L	1.0	0.60	1		09/30/20 17:23	16887-00-6		
Fluoride	ND	mg/L	0.10	0.050	1		09/30/20 17:23	16984-48-8		
Sulfate	ND	mg/L	1.0	0.50	1		09/30/20 17:23	14808-79-8		

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

QC Batch: 568748 Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A Analysis Description: 6010D ATL
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92496941001, 92496941002

METHOD BLANK: 3013298 Matrix: Water
Associated Lab Samples: 92496941001, 92496941002

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	3013300		3013301		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92495894022 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Calcium	mg/L	75.3	1	1	79.7	76.2	438	83	75-125	5	20 M1

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

QC Batch:	569036	Analysis Method:	EPA 6010D
QC Batch Method:	EPA 3010A	Analysis Description:	6010D ATL
		Laboratory:	Pace Analytical Services - Peachtree Corners, GA

Associated Lab Samples: 92496941003, 92496941004, 92496941005, 92496941006, 92496941007, 92496941008, 92496941009, 92496941010, 92496941011

METHOD BLANK: 3014892 Matrix: Water
Associated Lab Samples: 92496941003, 92496941004, 92496941005, 92496941006, 92496941007, 92496941008, 92496941009, 92496941010, 92496941011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.070	09/28/20 19:33	

LABORATORY CONTROL SAMPLE: 3014893

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	1.0	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3014894 3014895

Parameter	Units	92496941003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	54.7	1	1	57.3	56.8	256	203	75-125	1	20	M1

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

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: 92496941012, 92496941013, 92496941014, 92496941015, 92496941016, 92496941017, 92496941018

METHOD BLANK: 3017857 Matrix: Water
Associated Lab Samples: 92496941012, 92496941013, 92496941014, 92496941015, 92496941016, 92496941017, 92496941018

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	3017859		3017860		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
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 AP-234
Pace Project No.: 92496941

QC Batch: 569776	Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A	Analysis Description: 6010D ATL
	Laboratory: Pace Analytical Services - Peachtree Corners, GA

Associated Lab Samples: 92496941019

METHOD BLANK: 3018383 Matrix: Water
Associated Lab Samples: 92496941019

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.070	09/30/20 16:15	

LABORATORY CONTROL SAMPLE: 3018384

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	1.0	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018385 3018386

Parameter	Units	3018385		3018386		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92497532001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Calcium	mg/L	45.2	1	1	47.0	47.9	181	276	75-125	2	20 M1

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

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: 92496941020, 92496941021, 92496941022, 92496941023, 92496941024, 92496941025, 92496941026

METHOD BLANK: 3019452 Matrix: Water
Associated Lab Samples: 92496941020, 92496941021, 92496941022, 92496941023, 92496941024, 92496941025, 92496941026

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	3019454		3019455		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92496941020 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
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-234
Pace Project No.: 92496941

QC Batch: 569670 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92496941001, 92496941002, 92496941003, 92496941004

METHOD BLANK: 3017842 Matrix: Water
Associated Lab Samples: 92496941001, 92496941002, 92496941003, 92496941004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	09/30/20 17:26	
Arsenic	mg/L	ND	0.0050	0.00078	09/30/20 17:26	
Barium	mg/L	ND	0.010	0.00071	09/30/20 17:26	
Beryllium	mg/L	ND	0.0030	0.000046	09/30/20 17:26	
Boron	mg/L	ND	0.10	0.0052	09/30/20 17:26	
Cadmium	mg/L	ND	0.0025	0.00012	09/30/20 17:26	
Chromium	mg/L	ND	0.010	0.00055	09/30/20 17:26	
Cobalt	mg/L	ND	0.0050	0.00038	09/30/20 17:26	
Lead	mg/L	ND	0.0050	0.000036	09/30/20 17:26	
Lithium	mg/L	ND	0.030	0.00081	09/30/20 17:26	
Molybdenum	mg/L	ND	0.010	0.00069	09/30/20 17:26	
Selenium	mg/L	ND	0.010	0.0016	09/30/20 17:26	
Thallium	mg/L	ND	0.0010	0.00014	09/30/20 17:26	

LABORATORY CONTROL SAMPLE: 3017843

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	0.099	99	80-120	
Beryllium	mg/L	0.1	0.097	97	80-120	
Boron	mg/L	1	0.98	98	80-120	
Cadmium	mg/L	0.1	0.096	96	80-120	
Chromium	mg/L	0.1	0.099	99	80-120	
Cobalt	mg/L	0.1	0.095	95	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	0.093	93	80-120	
Thallium	mg/L	0.1	0.098	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017844 3017845

Parameter	Units	92495894020 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Antimony	mg/L	0.00029J	0.1	0.1	0.099	0.10	99	102	75-125	3	20	
Arsenic	mg/L	0.39	0.1	0.1	0.48	0.48	88	90	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234

Pace Project No.: 92496941

Parameter	Units	3017844		3017845		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92495894020 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Barium	mg/L	0.052	0.1	0.1	0.15	0.15	98	101	75-125	2	20		
Beryllium	mg/L	0.00011J	0.1	0.1	0.087	0.090	87	90	75-125	4	20		
Boron	mg/L	1.6	1	1	2.4	2.5	79	89	75-125	4	20		
Cadmium	mg/L	ND	0.1	0.1	0.094	0.094	94	94	75-125	0	20		
Chromium	mg/L	0.00056J	0.1	0.1	0.093	0.094	93	93	75-125	1	20		
Cobalt	mg/L	0.0032J	0.1	0.1	0.094	0.096	91	92	75-125	2	20		
Lead	mg/L	0.00015J	0.1	0.1	0.093	0.093	93	92	75-125	0	20		
Lithium	mg/L	0.028J	0.1	0.1	0.12	0.12	87	89	75-125	2	20		
Molybdenum	mg/L	0.032	0.1	0.1	0.13	0.13	95	99	75-125	3	20		
Selenium	mg/L	0.0016J	0.1	0.1	0.094	0.10	92	98	75-125	6	20		
Thallium	mg/L	0.00036J	0.1	0.1	0.095	0.096	94	95	75-125	1	20		

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

QC Batch: 569772 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92496941005, 92496941006, 92496941007, 92496941008, 92496941009, 92496941010, 92496941011

METHOD BLANK: 3018362 Matrix: Water
Associated Lab Samples: 92496941005, 92496941006, 92496941007, 92496941008, 92496941009, 92496941010, 92496941011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	09/30/20 17:36	
Arsenic	mg/L	ND	0.0050	0.00078	09/30/20 17:36	
Barium	mg/L	ND	0.010	0.00071	09/30/20 17:36	
Beryllium	mg/L	ND	0.0030	0.000046	09/30/20 17:36	
Boron	mg/L	ND	0.10	0.0052	09/30/20 17:36	
Cadmium	mg/L	ND	0.0025	0.00012	09/30/20 17:36	
Chromium	mg/L	ND	0.010	0.00055	09/30/20 17:36	
Cobalt	mg/L	ND	0.0050	0.00038	09/30/20 17:36	
Lead	mg/L	ND	0.0050	0.000036	09/30/20 17:36	
Lithium	mg/L	ND	0.030	0.00081	09/30/20 17:36	
Molybdenum	mg/L	ND	0.010	0.00069	09/30/20 17:36	
Selenium	mg/L	ND	0.010	0.0016	09/30/20 17:36	
Thallium	mg/L	ND	0.0010	0.00014	09/30/20 17:36	

LABORATORY CONTROL SAMPLE: 3018363

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.095	95	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.095	95	80-120	
Beryllium	mg/L	0.1	0.10	104	80-120	
Boron	mg/L	1	1.1	106	80-120	
Cadmium	mg/L	0.1	0.097	97	80-120	
Chromium	mg/L	0.1	0.10	100	80-120	
Cobalt	mg/L	0.1	0.095	95	80-120	
Lead	mg/L	0.1	0.098	98	80-120	
Lithium	mg/L	0.1	0.11	106	80-120	
Molybdenum	mg/L	0.1	0.097	97	80-120	
Selenium	mg/L	0.1	0.097	97	80-120	
Thallium	mg/L	0.1	0.096	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018364 3018365

Parameter	Units	92496941005 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Antimony	mg/L	ND	0.1	0.1	0.096	0.099	96	99	75-125	3	20	
Arsenic	mg/L	ND	0.1	0.1	0.098	0.099	98	99	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234

Pace Project No.: 92496941

Parameter	Units	3018364		3018365		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		92496941005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Barium	mg/L	0.036	0.1	0.1	0.13	0.14	93	99	75-125	5	20	
Beryllium	mg/L	0.00017J	0.1	0.1	0.093	0.094	93	94	75-125	1	20	
Boron	mg/L	4.2	1	1	5.1	5.2	93	101	75-125	2	20	
Cadmium	mg/L	0.00017J	0.1	0.1	0.098	0.097	97	97	75-125	0	20	
Chromium	mg/L	ND	0.1	0.1	0.097	0.10	97	101	75-125	5	20	
Cobalt	mg/L	0.013	0.1	0.1	0.11	0.11	92	98	75-125	5	20	
Lead	mg/L	0.00011J	0.1	0.1	0.096	0.097	95	97	75-125	2	20	
Lithium	mg/L	ND	0.1	0.1	0.095	0.095	94	95	75-125	0	20	
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	0	20	
Selenium	mg/L	ND	0.1	0.1	0.096	0.097	95	96	75-125	1	20	
Thallium	mg/L	ND	0.1	0.1	0.095	0.097	95	97	75-125	2	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

QC Batch: 569774 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92496941012, 92496941013, 92496941014

METHOD BLANK: 3018372 Matrix: Water
Associated Lab Samples: 92496941012, 92496941013, 92496941014

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	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92497149004	Result	Spike Conc.	Spike Conc.								
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-234

Pace Project No.: 92496941

Parameter	Units	3018374		3018375		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92497149004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
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-234
Pace Project No.: 92496941

QC Batch: 570000 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92496941015, 92496941016, 92496941017, 92496941018, 92496941019

METHOD BLANK: 3019421 Matrix: Water
Associated Lab Samples: 92496941015, 92496941016, 92496941017, 92496941018, 92496941019

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	10/01/20 14:21	
Arsenic	mg/L	ND	0.0050	0.00078	10/01/20 14:21	
Barium	mg/L	ND	0.010	0.00071	10/01/20 14:21	
Beryllium	mg/L	ND	0.0030	0.000046	10/01/20 14:21	
Boron	mg/L	ND	0.10	0.0052	10/01/20 14:21	
Cadmium	mg/L	ND	0.0025	0.00012	10/01/20 14:21	
Chromium	mg/L	ND	0.010	0.00055	10/01/20 14:21	
Cobalt	mg/L	ND	0.0050	0.00038	10/01/20 14:21	
Lead	mg/L	ND	0.0050	0.000036	10/01/20 14:21	
Lithium	mg/L	ND	0.030	0.00081	10/01/20 14:21	
Molybdenum	mg/L	ND	0.010	0.00069	10/01/20 14:21	
Selenium	mg/L	ND	0.010	0.0016	10/01/20 14:21	
Thallium	mg/L	ND	0.0010	0.00014	10/01/20 14:21	

LABORATORY CONTROL SAMPLE: 3019422

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	101	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.10	100	80-120	
Beryllium	mg/L	0.1	0.098	98	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	0.10	102	80-120	
Cobalt	mg/L	0.1	0.099	99	80-120	
Lead	mg/L	0.1	0.098	98	80-120	
Lithium	mg/L	0.1	0.10	103	80-120	
Molybdenum	mg/L	0.1	0.10	102	80-120	
Selenium	mg/L	0.1	0.099	99	80-120	
Thallium	mg/L	0.1	0.097	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3019423 3019424

Parameter	Units	92496941015 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	101	101	75-125	0	20	
Arsenic	mg/L	ND	0.1	0.1	0.098	0.10	98	99	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234

Pace Project No.: 92496941

Parameter	Units	3019423		3019424		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result								
Barium	mg/L	0.043	0.1	0.1	0.15	0.15	102	102	75-125	0	20		
Beryllium	mg/L	0.000058J	0.1	0.1	0.098	0.099	98	99	75-125	1	20		
Boron	mg/L	1.6	1	1	2.6	2.7	98	111	75-125	5	20		
Cadmium	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	1	20		
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	102	102	75-125	1	20		
Cobalt	mg/L	0.0018J	0.1	0.1	0.10	0.10	99	101	75-125	2	20		
Lead	mg/L	0.000082J	0.1	0.1	0.097	0.10	97	100	75-125	3	20		
Lithium	mg/L	0.0060J	0.1	0.1	0.11	0.11	101	101	75-125	1	20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	101	101	75-125	0	20		
Selenium	mg/L	ND	0.1	0.1	0.096	0.098	96	98	75-125	2	20		
Thallium	mg/L	ND	0.1	0.1	0.095	0.097	95	97	75-125	2	20		

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

QC Batch: 570088 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92496941020, 92496941021, 92496941022, 92496941023, 92496941024

METHOD BLANK: 3020035 Matrix: Water
Associated Lab Samples: 92496941020, 92496941021, 92496941022, 92496941023, 92496941024

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00028	10/01/20 21:10	
Arsenic	mg/L	ND	0.0050	0.00078	10/01/20 21:10	
Barium	mg/L	ND	0.010	0.00071	10/01/20 21:10	
Beryllium	mg/L	ND	0.0030	0.000046	10/01/20 21:10	
Boron	mg/L	ND	0.10	0.0052	10/01/20 21:10	
Cadmium	mg/L	ND	0.0025	0.00012	10/01/20 21:10	
Chromium	mg/L	ND	0.010	0.00055	10/01/20 21:10	
Cobalt	mg/L	ND	0.0050	0.00038	10/01/20 21:10	
Lead	mg/L	ND	0.0050	0.000036	10/01/20 21:10	
Lithium	mg/L	ND	0.030	0.00081	10/01/20 21:10	
Molybdenum	mg/L	ND	0.010	0.00069	10/01/20 21:10	
Selenium	mg/L	ND	0.010	0.0016	10/01/20 21:10	
Thallium	mg/L	ND	0.0010	0.00014	10/01/20 21:10	

LABORATORY CONTROL SAMPLE: 3020036

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	105	80-120	
Arsenic	mg/L	0.1	0.099	99	80-120	
Barium	mg/L	0.1	0.10	104	80-120	
Beryllium	mg/L	0.1	0.099	99	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	0.098	98	80-120	
Lead	mg/L	0.1	0.10	104	80-120	
Lithium	mg/L	0.1	0.097	97	80-120	
Molybdenum	mg/L	0.1	0.098	98	80-120	
Selenium	mg/L	0.1	0.10	104	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020037 3020038

Parameter	Units	92496524010 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Antimony	mg/L	ND	0.1	0.1	0.098	0.10	98	102	75-125	4	20	
Arsenic	mg/L	ND	0.1	0.1	0.098	0.099	97	99	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234

Pace Project No.: 92496941

Parameter	Units	3020037		3020038		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Barium	mg/L	0.036	0.1	0.1	0.14	0.14	102	104	75-125	2	20	
Beryllium	mg/L	0.00088J	0.1	0.1	0.093	0.094	93	94	75-125	1	20	
Boron	mg/L	2.2	1	1	3.3	3.3	108	107	75-125	0	20	
Cadmium	mg/L	0.00076J	0.1	0.1	0.094	0.096	93	95	75-125	2	20	
Chromium	mg/L	0.00081J	0.1	0.1	0.096	0.099	96	98	75-125	3	20	
Cobalt	mg/L	0.0019J	0.1	0.1	0.096	0.099	94	97	75-125	3	20	
Lead	mg/L	0.00028J	0.1	0.1	0.095	0.098	95	97	75-125	2	20	
Lithium	mg/L	0.0017J	0.1	0.1	0.093	0.095	92	93	75-125	2	20	
Molybdenum	mg/L	ND	0.1	0.1	0.094	0.097	94	96	75-125	3	20	
Selenium	mg/L	ND	0.1	0.1	0.096	0.10	95	102	75-125	7	20	
Thallium	mg/L	ND	0.1	0.1	0.099	0.10	98	100	75-125	1	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

QC Batch: 570089 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA

Associated Lab Samples: 92496941025, 92496941026

METHOD BLANK: 3020046 Matrix: Water
Associated Lab Samples: 92496941025, 92496941026

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		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Antimony	mg/L	ND	0.1	0.1	0.095	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-234

Pace Project No.: 92496941

Parameter	Units	3020048		3020049		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		92496941025 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

QC Batch:	569306	Analysis Method:	EPA 7470A
QC Batch Method:	EPA 7470A	Analysis Description:	7470 Mercury
		Laboratory:	Pace Analytical Services - Peachtree Corners, GA

Associated Lab Samples: 92496941001, 92496941002, 92496941003, 92496941004, 92496941005, 92496941006, 92496941007, 92496941008, 92496941009, 92496941010, 92496941011, 92496941012, 92496941013, 92496941014, 92496941015, 92496941016, 92496941017, 92496941018, 92496941019

METHOD BLANK: 3016285 Matrix: Water

Associated Lab Samples: 92496941001, 92496941002, 92496941003, 92496941004, 92496941005, 92496941006, 92496941007, 92496941008, 92496941009, 92496941010, 92496941011, 92496941012, 92496941013, 92496941014, 92496941015, 92496941016, 92496941017, 92496941018, 92496941019

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.000078	09/29/20 12:00	

LABORATORY CONTROL SAMPLE: 3016286

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0026	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3016287 3016288

Parameter	Units	3016287		3016288		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0025	100	99	75-125	1	20

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234

Pace Project No.: 92496941

QC Batch:	569684	Analysis Method:	EPA 7470A
QC Batch Method:	EPA 7470A	Analysis Description:	7470 Mercury
		Laboratory:	Pace Analytical Services - Peachtree Corners, GA

Associated Lab Samples: 92496941020, 92496941021, 92496941022, 92496941023, 92496941024, 92496941025, 92496941026

METHOD BLANK: 3017929 Matrix: Water

Associated Lab Samples: 92496941020, 92496941021, 92496941022, 92496941023, 92496941024, 92496941025, 92496941026

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	0.000087J	0.00050	0.000078	09/30/20 13:06	

LABORATORY CONTROL SAMPLE: 3017930

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: 3017931 3017932

Parameter	Units	3017931		3017932		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Mercury	mg/L	0.000081J	0.0025	0.0025	0.0026	99	99	75-125	0	20	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234

Pace Project No.: 92496941

QC Batch: 568649

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: 92496941001, 92496941002, 92496941003, 92496941004

METHOD BLANK: 3012742

Matrix: Water

Associated Lab Samples: 92496941001, 92496941002, 92496941003, 92496941004

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 AP-234
Pace Project No.: 92496941

QC Batch: 569144 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: 92496941005, 92496941006, 92496941007, 92496941008, 92496941009, 92496941010, 92496941011

METHOD BLANK: 3015749 Matrix: Water
Associated Lab Samples: 92496941005, 92496941006, 92496941007, 92496941008, 92496941009, 92496941010, 92496941011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10.0	09/25/20 21:57	

LABORATORY CONTROL SAMPLE: 3015750

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	404	101	84-108	

SAMPLE DUPLICATE: 3015751

Parameter	Units	92496941005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	338	338	0	10	

SAMPLE DUPLICATE: 3015752

Parameter	Units	92497141005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	ND	ND		10	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234

Pace Project No.: 92496941

QC Batch: 569350 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: 92496941012, 92496941013, 92496941014, 92496941015, 92496941016, 92496941017, 92496941018

METHOD BLANK: 3016719 Matrix: Water
 Associated Lab Samples: 92496941012, 92496941013, 92496941014, 92496941015, 92496941016, 92496941017, 92496941018

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10.0	09/28/20 11:53	

LABORATORY CONTROL SAMPLE: 3016720

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	427	107	84-108	

SAMPLE DUPLICATE: 3016721

Parameter	Units	92496925001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	215	218	1	10	

SAMPLE DUPLICATE: 3016722

Parameter	Units	92495900024 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	894	864	3	10	

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

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: 92496941019

METHOD BLANK: 3016890 Matrix: Water

Associated Lab Samples: 92496941019

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-234
Pace Project No.: 92496941

QC Batch: 569806 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: 92496941021, 92496941022, 92496941023, 92496941024, 92496941025, 92496941026

METHOD BLANK: 3018686 Matrix: Water
Associated Lab Samples: 92496941021, 92496941022, 92496941023, 92496941024, 92496941025, 92496941026

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-234
Pace Project No.: 92496941

QC Batch: 569874	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: 92496941020

METHOD BLANK: 3018862 Matrix: Water
Associated Lab Samples: 92496941020

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 AP-234
Pace Project No.: 92496941

QC Batch:	569206	Analysis Method:	EPA 300.0 Rev 2.1 1993
QC Batch Method:	EPA 300.0 Rev 2.1 1993	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92496941001, 92496941002, 92496941003, 92496941004, 92496941005, 92496941006, 92496941007, 92496941008, 92496941009, 92496941010, 92496941011

METHOD BLANK: 3015927 Matrix: Water
Associated Lab Samples: 92496941001, 92496941002, 92496941003, 92496941004, 92496941005, 92496941006, 92496941007, 92496941008, 92496941009, 92496941010, 92496941011

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		3015932		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
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		3015974		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
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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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

QC Batch:	569514	Analysis Method:	EPA 300.0 Rev 2.1 1993
QC Batch Method:	EPA 300.0 Rev 2.1 1993	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92496941012, 92496941013, 92496941014, 92496941015, 92496941016, 92496941017, 92496941018, 92496941019

METHOD BLANK: 3017398 Matrix: Water
Associated Lab Samples: 92496941012, 92496941013, 92496941014, 92496941015, 92496941016, 92496941017, 92496941018, 92496941019

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		3017401		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
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		3017403		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
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-234
Pace Project No.: 92496941

QC Batch: 569577 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92496941020, 92496941021, 92496941022, 92496941023

METHOD BLANK: 3017567 Matrix: Water
Associated Lab Samples: 92496941020, 92496941021, 92496941022, 92496941023

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	09/29/20 17:37	
Fluoride	mg/L	ND	0.10	0.050	09/29/20 17:37	
Sulfate	mg/L	ND	1.0	0.50	09/29/20 17:37	

LABORATORY CONTROL SAMPLE: 3017568

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	50.9	102	90-110	
Fluoride	mg/L	2.5	2.7	109	90-110	
Sulfate	mg/L	50	50.7	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017569 3017570

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92496524012	Result	Spike Conc.	Spike Conc.								
Chloride	mg/L	8.9	50	50	59.8	60.2	102	103	90-110	1	10		
Fluoride	mg/L	ND	2.5	2.5	2.2	2.5	89	99	90-110	10	10	M1	
Sulfate	mg/L	298	50	50	347	351	98	106	90-110	1	10		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017571 3017572

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92497532021	Result	Spike Conc.	Spike Conc.								
Chloride	mg/L	449	50	50	491	491	85	84	90-110	0	10	M6	
Fluoride	mg/L	0.097J	2.5	2.5	2.6	2.6	100	101	90-110	2	10		
Sulfate	mg/L	393	50	50	441	441	97	98	90-110	0	10		

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QUALITY CONTROL DATA

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

QC Batch: 569831 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92496941024, 92496941025, 92496941026

METHOD BLANK: 3018763 Matrix: Water
Associated Lab Samples: 92496941024, 92496941025, 92496941026

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	09/30/20 10:50	
Fluoride	mg/L	ND	0.10	0.050	09/30/20 10:50	
Sulfate	mg/L	ND	1.0	0.50	09/30/20 10:50	

LABORATORY CONTROL SAMPLE: 3018764

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	53.8	108	90-110	
Fluoride	mg/L	2.5	2.7	110	90-110	
Sulfate	mg/L	50	53.1	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018765 3018766

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92496574018	Result	Spike Conc.	Spike Conc.								
Chloride	mg/L	ND	50	50	50	52.4	52.1	105	104	90-110	0	10	
Fluoride	mg/L	ND	2.5	2.5	2.5	2.6	2.6	105	104	90-110	1	10	
Sulfate	mg/L	ND	50	50	50	52.1	51.8	104	104	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018767 3018768

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92496941026	Result	Spike Conc.	Spike Conc.								
Chloride	mg/L	ND	50	50	50	52.0	51.8	104	104	90-110	0	10	
Fluoride	mg/L	ND	2.5	2.5	2.5	2.6	2.6	104	104	90-110	0	10	
Sulfate	mg/L	ND	50	50	50	51.7	51.4	103	103	90-110	0	10	

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QUALIFIERS

Project: MCDONOUGH AP-234

Pace Project No.: 92496941

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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92496941001	DGWC-4				
92496941002	DGWC-5				
92496941003	DGWC-9				
92496941004	DGWC-11				
92496941005	DGWC-12				
92496941006	DGWC-14				
92496941007	DGWC-19				
92496941008	DGWC-20				
92496941009	DGWC-42				
92496941012	DGWC-2				
92496941013	DGWC-8				
92496941014	DGWC-13				
92496941015	DGWC-15				
92496941016	DGWC-47				
92496941017	DGWC-48				
92496941020	DGWC-10				
92496941021	DGWC-17				
92496941022	DGWC-21				
92496941023	DGWC-22				
92496941024	DGWC-23				
92496941001	DGWC-4	EPA 3010A	568748	EPA 6010D	568812
92496941002	DGWC-5	EPA 3010A	568748	EPA 6010D	568812
92496941003	DGWC-9	EPA 3010A	569036	EPA 6010D	569131
92496941004	DGWC-11	EPA 3010A	569036	EPA 6010D	569131
92496941005	DGWC-12	EPA 3010A	569036	EPA 6010D	569131
92496941006	DGWC-14	EPA 3010A	569036	EPA 6010D	569131
92496941007	DGWC-19	EPA 3010A	569036	EPA 6010D	569131
92496941008	DGWC-20	EPA 3010A	569036	EPA 6010D	569131
92496941009	DGWC-42	EPA 3010A	569036	EPA 6010D	569131
92496941010	FB-1	EPA 3010A	569036	EPA 6010D	569131
92496941011	FD-1	EPA 3010A	569036	EPA 6010D	569131
92496941012	DGWC-2	EPA 3010A	569672	EPA 6010D	569722
92496941013	DGWC-8	EPA 3010A	569672	EPA 6010D	569722
92496941014	DGWC-13	EPA 3010A	569672	EPA 6010D	569722
92496941015	DGWC-15	EPA 3010A	569672	EPA 6010D	569722
92496941016	DGWC-47	EPA 3010A	569672	EPA 6010D	569722
92496941017	DGWC-48	EPA 3010A	569672	EPA 6010D	569722
92496941018	EB-2	EPA 3010A	569672	EPA 6010D	569722
92496941019	FB-2	EPA 3010A	569776	EPA 6010D	569815
92496941020	DGWC-10	EPA 3010A	570008	EPA 6010D	570053
92496941021	DGWC-17	EPA 3010A	570008	EPA 6010D	570053
92496941022	DGWC-21	EPA 3010A	570008	EPA 6010D	570053
92496941023	DGWC-22	EPA 3010A	570008	EPA 6010D	570053
92496941024	DGWC-23	EPA 3010A	570008	EPA 6010D	570053
92496941025	FD-3	EPA 3010A	570008	EPA 6010D	570053
92496941026	EB-3	EPA 3010A	570008	EPA 6010D	570053

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92496941001	DGWC-4	EPA 3005A	569670	EPA 6020B	569718
92496941002	DGWC-5	EPA 3005A	569670	EPA 6020B	569718
92496941003	DGWC-9	EPA 3005A	569670	EPA 6020B	569718
92496941004	DGWC-11	EPA 3005A	569670	EPA 6020B	569718
92496941005	DGWC-12	EPA 3005A	569772	EPA 6020B	569809
92496941006	DGWC-14	EPA 3005A	569772	EPA 6020B	569809
92496941007	DGWC-19	EPA 3005A	569772	EPA 6020B	569809
92496941008	DGWC-20	EPA 3005A	569772	EPA 6020B	569809
92496941009	DGWC-42	EPA 3005A	569772	EPA 6020B	569809
92496941010	FB-1	EPA 3005A	569772	EPA 6020B	569809
92496941011	FD-1	EPA 3005A	569772	EPA 6020B	569809
92496941012	DGWC-2	EPA 3005A	569774	EPA 6020B	569814
92496941013	DGWC-8	EPA 3005A	569774	EPA 6020B	569814
92496941014	DGWC-13	EPA 3005A	569774	EPA 6020B	569814
92496941015	DGWC-15	EPA 3005A	570000	EPA 6020B	570049
92496941016	DGWC-47	EPA 3005A	570000	EPA 6020B	570049
92496941017	DGWC-48	EPA 3005A	570000	EPA 6020B	570049
92496941018	EB-2	EPA 3005A	570000	EPA 6020B	570049
92496941019	FB-2	EPA 3005A	570000	EPA 6020B	570049
92496941020	DGWC-10	EPA 3005A	570088	EPA 6020B	570109
92496941021	DGWC-17	EPA 3005A	570088	EPA 6020B	570109
92496941022	DGWC-21	EPA 3005A	570088	EPA 6020B	570109
92496941023	DGWC-22	EPA 3005A	570088	EPA 6020B	570109
92496941024	DGWC-23	EPA 3005A	570088	EPA 6020B	570109
92496941025	FD-3	EPA 3005A	570089	EPA 6020B	570110
92496941026	EB-3	EPA 3005A	570089	EPA 6020B	570110
92496941001	DGWC-4	EPA 7470A	569306	EPA 7470A	569459
92496941002	DGWC-5	EPA 7470A	569306	EPA 7470A	569459
92496941003	DGWC-9	EPA 7470A	569306	EPA 7470A	569459
92496941004	DGWC-11	EPA 7470A	569306	EPA 7470A	569459
92496941005	DGWC-12	EPA 7470A	569306	EPA 7470A	569459
92496941006	DGWC-14	EPA 7470A	569306	EPA 7470A	569459
92496941007	DGWC-19	EPA 7470A	569306	EPA 7470A	569459
92496941008	DGWC-20	EPA 7470A	569306	EPA 7470A	569459
92496941009	DGWC-42	EPA 7470A	569306	EPA 7470A	569459
92496941010	FB-1	EPA 7470A	569306	EPA 7470A	569459
92496941011	FD-1	EPA 7470A	569306	EPA 7470A	569459
92496941012	DGWC-2	EPA 7470A	569306	EPA 7470A	569459
92496941013	DGWC-8	EPA 7470A	569306	EPA 7470A	569459
92496941014	DGWC-13	EPA 7470A	569306	EPA 7470A	569459
92496941015	DGWC-15	EPA 7470A	569306	EPA 7470A	569459
92496941016	DGWC-47	EPA 7470A	569306	EPA 7470A	569459
92496941017	DGWC-48	EPA 7470A	569306	EPA 7470A	569459
92496941018	EB-2	EPA 7470A	569306	EPA 7470A	569459
92496941019	FB-2	EPA 7470A	569306	EPA 7470A	569459

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92496941020	DGWC-10	EPA 7470A	569684	EPA 7470A	569888
92496941021	DGWC-17	EPA 7470A	569684	EPA 7470A	569888
92496941022	DGWC-21	EPA 7470A	569684	EPA 7470A	569888
92496941023	DGWC-22	EPA 7470A	569684	EPA 7470A	569888
92496941024	DGWC-23	EPA 7470A	569684	EPA 7470A	569888
92496941025	FD-3	EPA 7470A	569684	EPA 7470A	569888
92496941026	EB-3	EPA 7470A	569684	EPA 7470A	569888
92496941001	DGWC-4	SM 2450C-2011	568649		
92496941002	DGWC-5	SM 2450C-2011	568649		
92496941003	DGWC-9	SM 2450C-2011	568649		
92496941004	DGWC-11	SM 2450C-2011	568649		
92496941005	DGWC-12	SM 2450C-2011	569144		
92496941006	DGWC-14	SM 2450C-2011	569144		
92496941007	DGWC-19	SM 2450C-2011	569144		
92496941008	DGWC-20	SM 2450C-2011	569144		
92496941009	DGWC-42	SM 2450C-2011	569144		
92496941010	FB-1	SM 2450C-2011	569144		
92496941011	FD-1	SM 2450C-2011	569144		
92496941012	DGWC-2	SM 2450C-2011	569350		
92496941013	DGWC-8	SM 2450C-2011	569350		
92496941014	DGWC-13	SM 2450C-2011	569350		
92496941015	DGWC-15	SM 2450C-2011	569350		
92496941016	DGWC-47	SM 2450C-2011	569350		
92496941017	DGWC-48	SM 2450C-2011	569350		
92496941018	EB-2	SM 2450C-2011	569350		
92496941019	FB-2	SM 2450C-2011	569386		
92496941020	DGWC-10	SM 2450C-2011	569874		
92496941021	DGWC-17	SM 2450C-2011	569806		
92496941022	DGWC-21	SM 2450C-2011	569806		
92496941023	DGWC-22	SM 2450C-2011	569806		
92496941024	DGWC-23	SM 2450C-2011	569806		
92496941025	FD-3	SM 2450C-2011	569806		
92496941026	EB-3	SM 2450C-2011	569806		
92496941001	DGWC-4	EPA 300.0 Rev 2.1 1993	569206		
92496941002	DGWC-5	EPA 300.0 Rev 2.1 1993	569206		
92496941003	DGWC-9	EPA 300.0 Rev 2.1 1993	569206		
92496941004	DGWC-11	EPA 300.0 Rev 2.1 1993	569206		
92496941005	DGWC-12	EPA 300.0 Rev 2.1 1993	569206		
92496941006	DGWC-14	EPA 300.0 Rev 2.1 1993	569206		
92496941007	DGWC-19	EPA 300.0 Rev 2.1 1993	569206		
92496941008	DGWC-20	EPA 300.0 Rev 2.1 1993	569206		
92496941009	DGWC-42	EPA 300.0 Rev 2.1 1993	569206		
92496941010	FB-1	EPA 300.0 Rev 2.1 1993	569206		
92496941011	FD-1	EPA 300.0 Rev 2.1 1993	569206		
92496941012	DGWC-2	EPA 300.0 Rev 2.1 1993	569514		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH AP-234
Pace Project No.: 92496941

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92496941013	DGWC-8	EPA 300.0 Rev 2.1 1993	569514		
92496941014	DGWC-13	EPA 300.0 Rev 2.1 1993	569514		
92496941015	DGWC-15	EPA 300.0 Rev 2.1 1993	569514		
92496941016	DGWC-47	EPA 300.0 Rev 2.1 1993	569514		
92496941017	DGWC-48	EPA 300.0 Rev 2.1 1993	569514		
92496941018	EB-2	EPA 300.0 Rev 2.1 1993	569514		
92496941019	FB-2	EPA 300.0 Rev 2.1 1993	569514		
92496941020	DGWC-10	EPA 300.0 Rev 2.1 1993	569577		
92496941021	DGWC-17	EPA 300.0 Rev 2.1 1993	569577		
92496941022	DGWC-21	EPA 300.0 Rev 2.1 1993	569577		
92496941023	DGWC-22	EPA 300.0 Rev 2.1 1993	569577		
92496941024	DGWC-23	EPA 300.0 Rev 2.1 1993	569831		
92496941025	FD-3	EPA 300.0 Rev 2.1 1993	569831		
92496941026	EB-3	EPA 300.0 Rev 2.1 1993	569831		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

Client Name: GA Power-Coal Comb

WO#: 92496941



92496941

Proj. Name: _____

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

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

Packing Material: Bubble Wrap Bubble Bags None Other 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

Comments:

Date and Initials of person examining contents: CO

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

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



Document Name:
Bottle Identification Form (BIF)

Document No.:
F-CAR-CS-043-Rev.00

Document Issued: March 14, 2019
Page 1 of 1

Issuing Authority:
Pace Carolinas Quality Office

Project #

WO#: 92496941

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#	Description	1	2	3	4	5	6	7	8	9	10	11	12
	BP4U-125 mL Plastic Unpreserved (N/A) (C-)													
	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) (C-)													
	BP3N-250 mL plastic HNO3 (pH < 2)													
	BP42-125 mL Plastic 2N Acetate & NaOH (>9)													
	BP4C-125 mL Plastic NaOH (pH > 12) (C-)													
	WGFU-Wide-mouthed Glass Jar Unpreserved													
	AG1U-1 liter Amber Unpreserved (N/A) (C-)													
	AG1H-1 liter Amber HCl (pH < 2)													
	AG3U-250 mL Amber Unpreserved (N/A) (C-)													
	AG1S-1 liter Amber H2SO4 (pH < 2)													
	AG3S-250 mL Amber H2SO4 (pH < 2)													
	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(C-)													
	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)													
	AG6U-100 mL Amber Unpreserved vials (N/A)													
	VG6U-20 mL Scintillation vials (N/A)													

pH Adjustment Log for Preserved Samples

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

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

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section B Required Project Information:		Section C Invoice Information:	
Report To: Jaju Abraham Copy To: Golder		Attention: scainvoices@southernco.com Company Name:	
Purchase Order #:		Address:	
Project Name: Plant McDonough AP-234		Pace Quote:	
Project #: 166849518		Pace Project Manager: Kevin Herring	
Date: 10 Day TAT		Pace Profile #:	
3ecopie Power - Coal Combustion Residuals 480 Maner Road Atlanta, GA 30339 arm@southernco.com 404) 506-7239		Regulatory Agency State / Location GA	

SAMPLE ID One Character per box. (A-Z, 0-9 /, -). Sample IDs must be unique	MATRIX CODE Drinking Water - DW Water - WT Waste Water - WW Product - P SulfSolid - SL Oil - OL Wipe - WP Air - AR Other - OT These	CODE C=COILP	DATE	TIME	SAMPLE TEMP AT COLLECTION	Requested Analysis Filtered (Y/N)											Residual Choice (Y/N)						
						PRESERVATIVES						ANALYSES TEST	N					N	N	N			
						# OF CONTAINERS	Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate		Na2S2O3	Methanol	Other	Metals App III and App IV Total					CL F, SO4	Radium 226/228	TDS
DGWC-4	WT	G	9/22/2020	9:50		5	2	3									X	X	X	X			pH= 5.88
DGWC-5	WT	G	9/22/2020	11:10		5	2	3									X	X	X	X			pH= 4.83
DGWC-9	WT	G	9/22/2020	10:00		5	2	3									X	X	X	X			pH=4.00
DGWC-11	WT	G	9/22/2020	11:00		5	2	3									X	X	X	X			pH= 5.54
DGWC-12	WT	G	9/22/2020	15:40		7	2	3									X	X	X	X			Extra Radium: pH= 6.00
DGWC-14	WT	G	9/22/2020	14:25		5	2	3									X	X	X	X			pH=5.70
DGWC-19	WT	G	9/22/2020	16:10		5	2	3									X	X	X	X			pH= 4.91
DGWC-20	WT	G	9/22/2020	12:35		5	2	3									X	X	X	X			pH= 4.68
DGWC-42	WT	G	9/22/2020	16:25		5	2	3									X	X	X	X			pH=5.76
FB-1	WT	G	9/22/2020	9:50		5	2	3									X	X	X	X			
FD-1	WT	G	9/22/2020	-		5	2	3									X	X	X	X			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	C. Howell / Golder	9/23/20	09:05	M. BATH	9/23/20	9:05	
	M. BATH	9-23-20	9:35	K. Williams / Pace	9/23/20	09:35	35 Y Y Y

Sampled by: Chris J. Howell
 DATE Signed: 9/23/20

TEMP in C	Received on	Custody	Samples
	Icon (Y/N)	Sealed/Cooled (Y/N)	Intact (Y/N)

October 20, 2020

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

RE: Project: MCDONOUGH AP-234 RADS
Pace Project No.: 92496904

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory between September 23, 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



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: MCDONOUGH AP-234 RADS
Pace Project No.: 92496904

Pace Analytical Services Pennsylvania

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

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

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92496904001	DGWC-4	Water	09/22/20 09:50	09/23/20 09:35
92496904002	DGWC-5	Water	09/22/20 11:10	09/23/20 09:35
92496904003	DGWC-9	Water	09/22/20 10:00	09/23/20 09:35
92496904004	DGWC-11	Water	09/22/20 11:00	09/23/20 09:35
92496904005	DGWC-12	Water	09/22/20 15:40	09/23/20 09:35
92496904006	DGWC-14	Water	09/22/20 14:25	09/23/20 09:35
92496904007	DGWC-19	Water	09/22/20 16:10	09/23/20 09:35
92496904008	DGWC-20	Water	09/22/20 12:35	09/23/20 09:35
92496904009	DGWC-42	Water	09/22/20 16:25	09/23/20 09:35
92496904010	FB-1	Water	09/22/20 09:50	09/23/20 09:35
92496904011	FD-1	Water	09/22/20 00:00	09/23/20 09:35
92496904012	DGWC-2	Water	09/23/20 12:35	09/24/20 09:25
92496904013	DGWC-8	Water	09/23/20 16:00	09/24/20 09:25
92496904014	DGWC-13	Water	09/23/20 10:30	09/24/20 09:25
92496904015	DGWC-15	Water	09/23/20 13:55	09/24/20 09:25
92496904016	DGWC-47	Water	09/23/20 12:37	09/24/20 09:25
92496904017	DGWC-48	Water	09/23/20 09:55	09/24/20 09:25
92496904018	EB-2	Water	09/23/20 14:25	09/24/20 09:25
92496904019	FB-2	Water	09/23/20 10:22	09/24/20 09:25
92496904020	DGWC-10	Water	09/24/20 09:55	09/25/20 13:30
92496904021	DGWC-17	Water	09/24/20 14:05	09/25/20 13:30
92496904022	DGWC-21	Water	09/24/20 12:30	09/25/20 13:30
92496904023	DGWC-22	Water	09/24/20 12:20	09/25/20 13:30
92496904024	DGWC-23	Water	09/24/20 13:02	09/25/20 13:30
92496904025	FD-3	Water	09/24/20 00:00	09/25/20 13:30
92496904026	EB-3	Water	09/24/20 12:25	09/25/20 13:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92496904001	DGWC-4	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92496904002	DGWC-5	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92496904003	DGWC-9	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92496904004	DGWC-11	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92496904005	DGWC-12	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92496904006	DGWC-14	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92496904007	DGWC-19	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92496904008	DGWC-20	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
92496904009	DGWC-42	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92496904010	FB-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92496904011	FD-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92496904012	DGWC-2	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92496904013	DGWC-8	EPA 9315	LAL	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92496904014	DGWC-13	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
92496904015	DGWC-15	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
92496904016	DGWC-47	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
92496904017	DGWC-48	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
92496904018	EB-2	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
92496904019	FB-2	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
92496904020	DGWC-10	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
92496904021	DGWC-17	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
92496904022	DGWC-21	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
92496904023	DGWC-22	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
92496904024	DGWC-23	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
92496904025	FD-3	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92496904026	EB-3	Total Radium Calculation	JAL	1	PASI-PA
		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 AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-4 **Lab ID: 92496904001** Collected: 09/22/20 09:50 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	0.536 ± 0.304 (0.431) C:89% T:NA	pCi/L	10/08/20 07:22	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.890 ± 0.747 (1.51) C:63% T:73%	pCi/L	10/12/20 14:46	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.43 ± 1.05 (1.94)	pCi/L	10/14/20 09:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-5 **Lab ID: 92496904002** Collected: 09/22/20 11:10 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	0.561 ± 0.350 (0.575) C:82% T:NA	pCi/L	10/08/20 07:22	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.841 ± 0.689 (1.38) C:63% T:81%	pCi/L	10/12/20 14:46	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.40 ± 1.04 (1.96)	pCi/L	10/14/20 09:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-9 **Lab ID: 92496904003** Collected: 09/22/20 10:00 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	0.326 ± 0.287 (0.526) C:77% T:NA	pCi/L	10/08/20 07:22	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.823 ± 0.490 (0.898) C:62% T:79%	pCi/L	10/12/20 11:46	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.15 ± 0.777 (1.42)	pCi/L	10/14/20 09:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-11 **Lab ID: 92496904004** Collected: 09/22/20 11:00 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	0.145 ± 0.221 (0.480) C:72% T:NA	pCi/L	10/08/20 07:22	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.357 ± 0.547 (1.18) C:59% T:66%	pCi/L	10/12/20 12:48	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.502 ± 0.768 (1.66)	pCi/L	10/14/20 09:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-12 **Lab ID: 92496904005** Collected: 09/22/20 15:40 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	-0.0641 ± 0.191 (0.586) C:68% T:NA	pCi/L	10/08/20 07:22	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.515 ± 0.558 (1.16) C:61% T:57%	pCi/L	10/12/20 11:47	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.515 ± 0.749 (1.75)	pCi/L	10/14/20 09:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-14 **Lab ID: 92496904006** Collected: 09/22/20 14:25 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	0.283 ± 0.249 (0.445) C:79% T:NA	pCi/L	10/08/20 07:29	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.914 ± 0.525 (0.948) C:58% T:77%	pCi/L	10/12/20 11:47	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.20 ± 0.774 (1.39)	pCi/L	10/14/20 09:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-19 **Lab ID: 92496904007** Collected: 09/22/20 16:10 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	0.480 ± 0.284 (0.410) C:88% T:NA	pCi/L	10/08/20 08:56	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.480 ± 0.496 (1.02) C:56% T:72%	pCi/L	10/12/20 11:47	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.960 ± 0.780 (1.43)	pCi/L	10/14/20 09:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-20 **Lab ID: 92496904008** Collected: 09/22/20 12:35 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	0.600 ± 0.334 (0.461) C:78% T:NA	pCi/L	10/08/20 08:56	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.01 ± 0.689 (1.33) C:51% T:74%	pCi/L	10/12/20 11:47	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.61 ± 1.02 (1.79)	pCi/L	10/14/20 09:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-42 **Lab ID: 92496904009** Collected: 09/22/20 16:25 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	0.268 ± 0.234 (0.422) C:95% T:NA	pCi/L	10/08/20 08:56	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.758 ± 0.626 (1.27) C:64% T:77%	pCi/L	10/12/20 11:40	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.03 ± 0.860 (1.69)	pCi/L	10/15/20 13:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: FB-1 **Lab ID: 92496904010** Collected: 09/22/20 09:50 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	0.0986 ± 0.190 (0.436) C:80% T:NA	pCi/L	10/08/20 08:56	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.191 ± 0.514 (1.14) C:61% T:86%	pCi/L	10/12/20 11:40	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.290 ± 0.704 (1.58)	pCi/L	10/15/20 13:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: FD-1 **Lab ID: 92496904011** Collected: 09/22/20 00:00 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	0.179 ± 0.214 (0.436) C:84% T:NA	pCi/L	10/08/20 08:56	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.654 ± 0.570 (1.17) C:63% T:84%	pCi/L	10/12/20 11:40	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.833 ± 0.784 (1.61)	pCi/L	10/15/20 13:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-2 **Lab ID: 92496904012** Collected: 09/23/20 12:35 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	0.971 ± 0.451 (0.564) C:77% T:NA	pCi/L	10/09/20 08:17	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.988 ± 0.733 (1.43) C:69% T:77%	pCi/L	10/12/20 18:58	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.96 ± 1.18 (1.99)	pCi/L	10/15/20 13:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-8 **Lab ID: 92496904013** Collected: 09/23/20 16:00 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	0.335 ± 0.253 (0.408) C:87% T:NA	pCi/L	10/09/20 08:17	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.465 ± 0.755 (1.64) C:68% T:72%	pCi/L	10/12/20 18:59	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.800 ± 1.01 (2.05)	pCi/L	10/15/20 13:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-13 **Lab ID: 92496904014** Collected: 09/23/20 10:30 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	0.207 ± 0.289 (0.630) C:95% T:NA	pCi/L	10/09/20 08:17	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.728 ± 0.904 (1.92) C:65% T:64%	pCi/L	10/12/20 18:59	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.935 ± 1.19 (2.55)	pCi/L	10/15/20 13:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-15 **Lab ID: 92496904015** Collected: 09/23/20 13:55 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	0.408 ± 0.307 (0.497) C:74% T:NA	pCi/L	10/09/20 08:20	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.28 ± 0.781 (1.47) C:69% T:75%	pCi/L	10/12/20 18:14	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.69 ± 1.09 (1.97)	pCi/L	10/15/20 13:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-47 **Lab ID: 92496904016** Collected: 09/23/20 12:37 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	0.961 ± 0.448 (0.593) C:78% T:NA	pCi/L	10/09/20 08:21	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.34 ± 0.988 (1.93) C:64% T:63%	pCi/L	10/12/20 19:07	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	2.30 ± 1.44 (2.52)	pCi/L	10/15/20 13:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-48 **Lab ID: 92496904017** Collected: 09/23/20 09:55 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	0.337 ± 0.275 (0.475) C:83% T:NA	pCi/L	10/09/20 08:21	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.17 ± 0.815 (1.57) C:61% T:83%	pCi/L	10/12/20 19:07	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.51 ± 1.09 (2.05)	pCi/L	10/16/20 12:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: EB-2 **Lab ID: 92496904018** Collected: 09/23/20 14:25 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	0.0454 ± 0.157 (0.403) C:92% T:NA	pCi/L	10/09/20 08:21	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.707 ± 0.751 (1.56) C:66% T:70%	pCi/L	10/12/20 19:07	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.752 ± 0.908 (1.96)	pCi/L	10/16/20 12:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: FB-2 **Lab ID: 92496904019** Collected: 09/23/20 10:22 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	0.137 ± 0.192 (0.405) C:92% T:NA	pCi/L	10/09/20 09:55	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.820 ± 0.738 (1.48) C:58% T:77%	pCi/L	10/12/20 19:08	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.957 ± 0.930 (1.89)	pCi/L	10/16/20 12:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-10 **Lab ID: 92496904020** Collected: 09/24/20 09:55 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	0.317 ± 0.245 (0.398) C:83% T:NA	pCi/L	10/14/20 06:41	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.07 ± 0.547 (0.963) C:81% T:67%	pCi/L	10/15/20 11:05	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.39 ± 0.792 (1.36)	pCi/L	10/20/20 08:55	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-17 **Lab ID: 92496904021** Collected: 09/24/20 14:05 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	0.155 ± 0.278 (0.634) C:88% T:NA	pCi/L	10/14/20 06:41	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.214 ± 0.412 (0.905) C:78% T:72%	pCi/L	10/15/20 11:05	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.369 ± 0.690 (1.54)	pCi/L	10/20/20 08:55	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-21 **Lab ID: 92496904022** Collected: 09/24/20 12:30 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	0.264 ± 0.244 (0.444) C:86% T:NA	pCi/L	10/14/20 06:42	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.132 ± 0.396 (0.888) C:81% T:76%	pCi/L	10/15/20 11:05	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.396 ± 0.640 (1.33)	pCi/L	10/20/20 08:55	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: DGWC-22		Lab ID: 92496904023		Collected: 09/24/20 12:20	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	0.311 ± 0.259 (0.453) C:84% T:NA		pCi/L	10/14/20 06:42	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 9320	0.709 ± 0.447 (0.841) C:78% T:72%		pCi/L	10/15/20 11:06	15262-20-1	
Pace Analytical Services - Greensburg							
Total Radium	Total Radium Calculation	1.02 ± 0.706 (1.29)		pCi/L	10/20/20 08:55	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: **DGWC-23** Lab ID: **92496904024** Collected: 09/24/20 13:02 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	0.324 ± 0.251 (0.407) C:85% T:NA	pCi/L	10/14/20 06:42	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	1.17 ± 0.556 (0.972) C:71% T:83%	pCi/L	10/15/20 11:05	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.49 ± 0.807 (1.38)	pCi/L	10/20/20 08:55	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Sample: FD-3 **Lab ID: 92496904025** Collected: 09/24/20 00:00 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	0.0450 ± 0.159 (0.404) C:85% T:NA	pCi/L	10/14/20 07:50	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	0.334 ± 0.437 (0.931) C:72% T:76%	pCi/L	10/15/20 11:06	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.379 ± 0.596 (1.34)	pCi/L	10/20/20 08:55	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 9315	-0.00480 ± 0.0871 (0.286) C:90% T:NA	pCi/L	10/14/20 06:28	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 9320	0.635 ± 0.508 (1.02) C:79% T:71%	pCi/L	10/15/20 11:06	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.635 ± 0.595 (1.31)	pCi/L	10/20/20 08:55	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

QC Batch: 415890

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 92496904012, 92496904013, 92496904014, 92496904015, 92496904016, 92496904017, 92496904018, 92496904019

METHOD BLANK: 2010987

Matrix: Water

Associated Lab Samples: 92496904012, 92496904013, 92496904014, 92496904015, 92496904016, 92496904017, 92496904018, 92496904019

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-234 RADS

Pace Project No.: 92496904

QC Batch: 417134

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 92496904020, 92496904021, 92496904022, 92496904023, 92496904024, 92496904025, 92496904026

METHOD BLANK: 2016817

Matrix: Water

Associated Lab Samples: 92496904020, 92496904021, 92496904022, 92496904023, 92496904024, 92496904025, 92496904026

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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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS
Pace Project No.: 92496904

QC Batch:	415887	Analysis Method:	EPA 9320
QC Batch Method:	EPA 9320	Analysis Description:	9320 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 92496904001, 92496904002, 92496904003, 92496904004, 92496904005, 92496904006, 92496904007, 92496904008, 92496904009, 92496904010, 92496904011

METHOD BLANK:	2010984	Matrix:	Water
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Associated Lab Samples: 92496904001, 92496904002, 92496904003, 92496904004, 92496904005, 92496904006, 92496904007, 92496904008, 92496904009, 92496904010, 92496904011

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	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

QC Batch: 415889

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 92496904001, 92496904002, 92496904003, 92496904004, 92496904005, 92496904006, 92496904007, 92496904008, 92496904009, 92496904010, 92496904011

METHOD BLANK: 2010986

Matrix: Water

Associated Lab Samples: 92496904001, 92496904002, 92496904003, 92496904004, 92496904005, 92496904006, 92496904007, 92496904008, 92496904009, 92496904010, 92496904011

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.

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QUALIFIERS

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

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-234 RADS

Pace Project No.: 92496904

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92496904001	DGWC-4	EPA 9315	415889		
92496904002	DGWC-5	EPA 9315	415889		
92496904003	DGWC-9	EPA 9315	415889		
92496904004	DGWC-11	EPA 9315	415889		
92496904005	DGWC-12	EPA 9315	415889		
92496904006	DGWC-14	EPA 9315	415889		
92496904007	DGWC-19	EPA 9315	415889		
92496904008	DGWC-20	EPA 9315	415889		
92496904009	DGWC-42	EPA 9315	415889		
92496904010	FB-1	EPA 9315	415889		
92496904011	FD-1	EPA 9315	415889		
92496904012	DGWC-2	EPA 9315	415890		
92496904013	DGWC-8	EPA 9315	415890		
92496904014	DGWC-13	EPA 9315	415890		
92496904015	DGWC-15	EPA 9315	415890		
92496904016	DGWC-47	EPA 9315	415890		
92496904017	DGWC-48	EPA 9315	415890		
92496904018	EB-2	EPA 9315	415890		
92496904019	FB-2	EPA 9315	415890		
92496904020	DGWC-10	EPA 9315	417134		
92496904021	DGWC-17	EPA 9315	417134		
92496904022	DGWC-21	EPA 9315	417134		
92496904023	DGWC-22	EPA 9315	417134		
92496904024	DGWC-23	EPA 9315	417134		
92496904025	FD-3	EPA 9315	417134		
92496904026	EB-3	EPA 9315	417134		
92496904001	DGWC-4	EPA 9320	415887		
92496904002	DGWC-5	EPA 9320	415887		
92496904003	DGWC-9	EPA 9320	415887		
92496904004	DGWC-11	EPA 9320	415887		
92496904005	DGWC-12	EPA 9320	415887		
92496904006	DGWC-14	EPA 9320	415887		
92496904007	DGWC-19	EPA 9320	415887		
92496904008	DGWC-20	EPA 9320	415887		
92496904009	DGWC-42	EPA 9320	415887		
92496904010	FB-1	EPA 9320	415887		
92496904011	FD-1	EPA 9320	415887		
92496904012	DGWC-2	EPA 9320	415888		
92496904013	DGWC-8	EPA 9320	415888		
92496904014	DGWC-13	EPA 9320	415888		
92496904015	DGWC-15	EPA 9320	415888		
92496904016	DGWC-47	EPA 9320	415888		
92496904017	DGWC-48	EPA 9320	415888		
92496904018	EB-2	EPA 9320	415888		
92496904019	FB-2	EPA 9320	415888		
92496904020	DGWC-10	EPA 9320	417135		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MCDONOUGH AP-234 RADS

Pace Project No.: 92496904

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92496904021	DGWC-17	EPA 9320	417135		
92496904022	DGWC-21	EPA 9320	417135		
92496904023	DGWC-22	EPA 9320	417135		
92496904024	DGWC-23	EPA 9320	417135		
92496904025	FD-3	EPA 9320	417135		
92496904026	EB-3	EPA 9320	417135		
92496904001	DGWC-4	Total Radium Calculation	418331		
92496904002	DGWC-5	Total Radium Calculation	418331		
92496904003	DGWC-9	Total Radium Calculation	418331		
92496904004	DGWC-11	Total Radium Calculation	418331		
92496904005	DGWC-12	Total Radium Calculation	418331		
92496904006	DGWC-14	Total Radium Calculation	418331		
92496904007	DGWC-19	Total Radium Calculation	418331		
92496904008	DGWC-20	Total Radium Calculation	418331		
92496904009	DGWC-42	Total Radium Calculation	418746		
92496904010	FB-1	Total Radium Calculation	418746		
92496904011	FD-1	Total Radium Calculation	418746		
92496904012	DGWC-2	Total Radium Calculation	418746		
92496904013	DGWC-8	Total Radium Calculation	418746		
92496904014	DGWC-13	Total Radium Calculation	418746		
92496904015	DGWC-15	Total Radium Calculation	418746		
92496904016	DGWC-47	Total Radium Calculation	418746		
92496904017	DGWC-48	Total Radium Calculation	418910		
92496904018	EB-2	Total Radium Calculation	418910		
92496904019	FB-2	Total Radium Calculation	418910		
92496904020	DGWC-10	Total Radium Calculation	419262		
92496904021	DGWC-17	Total Radium Calculation	419262		
92496904022	DGWC-21	Total Radium Calculation	419262		
92496904023	DGWC-22	Total Radium Calculation	419262		
92496904024	DGWC-23	Total Radium Calculation	419262		
92496904025	FD-3	Total Radium Calculation	419262		
92496904026	EB-3	Total Radium Calculation	419262		

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.



Sample Condition Upon Receipt

Client Name: GA Power - Coal Co WO#: 92496904



Courier: Fed Ex UPS USPS Client Commercial Pace Or 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 Comments: _____ Date and Initials of person examining contents: CO

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

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

Project Manager Review: _____ Date: _____

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



Document Name:
Bottle Identification Form (BIF)
Document No.:
F-CAR-CS-043-Rev.00

Document Issued: March 14, 2019
Page 1 of 1
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.

Project #

WO#: 92496904

PM: KLH1

Due Date: 10/14/20

CLIENT: GA-GA Power

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) (C-)	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) (C-)	BP3H-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic Zn Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (C-)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (C-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (C-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG8A(DG3A)-250 mL Amber NH4Cl (N/A)(C-)	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	BP8A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG8U-100 mL Amber Unpreserved vials (N/A)	VG8U-20 mL Screw-tight 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.



Quality Control Sample Performance Assessment

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	LCSD (Y or N)?	N
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	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	MS/MSD 1	MS/MSD 2
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

LAM 10/8/2020



Quality Control Sample Performance Assessment

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test: Ra-226
Analyst: LAL
Date: 10/7/2020
Worklist: 56441
Matrix: DW

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:

CAL
10/8/2020

LAM 10/8/2020



Quality Control Sample Performance Assessment

Test: Ra-228
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	LCS/D (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

AM
10/9/2020



Quality Control Sample Performance Assessment

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)?	Y
	LCSD56442	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
LCSD/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.:	LCSD56442	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:

LAL 10/9/2020

Handwritten signature/initials



Quality Control Sample Performance Assessment

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)?	
	LCSD56591	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	LCSD (Y or N)?	Y
Sample I.D.:	LCSD56591	Enter Duplicate sample IDs if other than LCSD/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	MS/MSD 1	MS/MSD 2
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:

am 10/14/2020

am 10/14/2020



Quality Control Sample Performance Assessment

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)?	
	LCSS56591	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%	

Duplicate Sample Assessment		
Sample I.D.:	92496904020	Enter Duplicate
Duplicate Sample I.D.:	92496904020DUP	sample IDs if
Sample Result (pCi/L, g, F):	0.317	other than
Sample Result Counting Uncertainty (pCi/L, g, F):	0.241	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	0.374	the space below.
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%	

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

Comments:

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:		

Quinn 10/14/2020

LAL 10/14/2020



Quality Control Sample Performance Assessment

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:

10-15-20

On 10.13.20



Quality Control Sample Performance Assessment

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)?	
	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

10-13-20



Quality Control Sample Performance Assessment

Test: Ra-228
Analyst: VAL
Date: 10/16/2020
Worklist: 56592
Matrix: WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

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)?	
	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:

10/16/2020

10-20-20



Quality Control Sample Performance Assessment

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)?	
	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.

10/16/20

10/13/2020

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



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

Pace Analytical Services Charlotte

9800 Kinsey 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: 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

REPORT OF LABORATORY ANALYSIS

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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
92497125009	B-56	EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	CDC	3
		EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
92497125010	B-82	SM 2450C-2011	AW1	1
		EPA 300.0 Rev 2.1 1993	BRJ	3
		EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	AW1	1
92497125011	B-93	EPA 300.0 Rev 2.1 1993	BRJ	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	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	

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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	

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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			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
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	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MCDONOUGH ASSESSMENT

Pace Project No.: 92497125

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: B-88									
Lab ID: 92497125007 Collected: 09/25/20 10:15 Received: 09/25/20 13:30 Matrix: Water									
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	

REPORT OF LABORATORY ANALYSIS

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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			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
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
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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	
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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	
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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		
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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	

REPORT OF LABORATORY ANALYSIS

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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	

REPORT OF LABORATORY ANALYSIS

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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	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT

Pace Project No.: 92497125

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: 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		3017859		3017860		% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec				
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.

REPORT OF LABORATORY ANALYSIS

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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		3019455		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
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 Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A 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	3020966		3020967		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Calcium	mg/L	38.6	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 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92497149004	Result	Spike Conc.	Spike Conc.								
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

Parameter	Units	3018374		3018375		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92497149004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
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 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
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

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020048		3020049		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		92496941025 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
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 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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		MSD		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
			Conc.	Spike Conc.	Result	Result						
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

Parameter	Units	3020984		3020985		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92497149015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
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 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Antimony	mg/L	ND	0.1	0.1	0.10	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	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual		
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD			
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	Dup	RPD	Max	Qualifiers
		Result	Result		RPD	
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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT

Pace Project No.: 92497125

QC Batch: 569295

Analysis Method: EPA 7470A

QC Batch 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	3016175		3016176		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Mercury	mg/L	ND	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	3017917		3017918		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Result	MS Result	MSD Result						
Mercury	mg/L	92497141011 ND	MS Spike Conc. 0.0025	MSD Spike Conc. 0.0025	MS Result 0.0025	MSD Result 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

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: 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 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: 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 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: 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 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
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		MS Spike Conc.		MSD Spike Conc.		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Conc.	Conc.										
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		MS Spike Conc.		MSD Spike Conc.		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Conc.	Conc.										
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 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
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		3018771		3018772		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
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		3018773		3018774		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
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		

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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 569922 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
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	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92497713005 Result	Spike Conc.	Spike Conc.	Result								
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	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92497146005 Result	Spike Conc.	Spike Conc.	Result								
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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QUALITY CONTROL DATA

Project: MCDONOUGH ASSESSMENT
Pace Project No.: 92497125

QC Batch: 570137 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
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	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92495894028 Result	Spike Conc.	Spike Conc.	Result								
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	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92496914018 Result	Spike Conc.	Spike Conc.	Result								
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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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.

REPORT OF LABORATORY ANALYSIS

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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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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		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt



Client Name: GA Power

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

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: _____

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

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



REPORT OF LABORATORY ANALYSIS

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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

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS

Pace Project No.: 92497117

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
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:						
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	

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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	

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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

Analysis Method: EPA 9315

QC Batch 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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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS

Pace Project No.: 92497117

QC Batch: 417134

Analysis Method: EPA 9315

QC Batch 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	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS

Pace Project No.: 92497117

QC Batch: 417132

Analysis Method: EPA 9315

QC Batch 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	

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 ASSESSMENT RADS

Pace Project No.: 92497117

QC Batch: 417135

Analysis Method: EPA 9320

QC Batch 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	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MCDONOUGH ASSESSMENT RADS

Pace Project No.: 92497117

QC Batch: 415888

Analysis Method: EPA 9320

QC Batch 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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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.

REPORT OF LABORATORY ANALYSIS

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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		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 92497117

Client Name: GA Power



92497117

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Tracking #: _____

Proj. Due Date: _____
Proj. Name: _____

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

Packing Material: Bubble Wrap Bubble Bags None Other ZIPLOC

Thermometer Used THR214 Type of Ice: Blue None Samples on ice, cooling process has begun

Cooler Temperature 1.0 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: KRW

Comments:

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

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: _____

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



Document Name:
Bottle Identification Form (BIF)
 Document No.:
F-CAR-CS-043-Rev.00

Document issued: March 14, 2019
 Page 1 of 1
 Issuing Authority:

WO#: 92497117

Project #

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

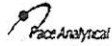
Matrix	Item#	BP4U-125 mL Pipette Unpreserved (N/A) (Cl-)	BP9U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL 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)-S03S 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																											
	3																											
	4																											
	5																											
	6																											
	7																											
	8																											
	9																											
	10																											
	11																											
	12																											

BRIN - 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 Office. 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: Jcju Abraham		Attention: jscainvoices@southemco.com	
Address: 2480 Maner Road Atlanta, GA 30339		Copy To: Golder		Company Name:	
Email: jbraham@southemco.com		Purchase Order #:		Address:	
Phone: (404) 506-7239		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 #	MATRIX	CODE	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Analysis Test	Y/N	Requested Analysis Filtered (Y/N)				Residual Chlorine (Y/N)
							Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol			Other	Metals App III and App IV Total	Cl, F, SO4	Radium 226/228	
1	B-62	WT	9/24/2020	10:18		5	2	3							X	X	X	X		pH= 6.55
2	B-77	WT	9/24/2020	14:19		5	2	3							X	X	X	X		pH=6.46
3	FB-3	WT	9/24/2020	11:00		5	2	3							X	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
App III / IV Metals - As, Sb, B, Be, Ba, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Th	<i>[Signature]</i>	9/25/20	1330	<i>[Signature]</i>	9/25/20	1330	

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

Sample by: Chris T...
 DATE Signed: 9-25-20



Quality Control Sample Performance Assessment

Test: Ra-228
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	LCS/D (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	MS/MSD 1	MS/MSD 2
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

AM
10/9/2020



Quality Control Sample Performance Assessment

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)?	Y
	LCSD56442	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
LCSD/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.:	LCSD56442	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:

LAL 10/9/2020

OK
10/9/2020



Quality Control Sample Performance Assessment

Test: Ra-228
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

On 10-15-20



Quality Control Sample Performance Assessment

Test: Ra-228
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
	LCSD56589	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%	

Duplicate Sample Assessment		
Sample I.D.:	92497118006	Enter Duplicate
Duplicate Sample I.D.:	92497118006DUP	sample IDs if
Sample Result (pCi/L, g, F):	0.280	other than
Sample Result Counting Uncertainty (pCi/L, g, F):	0.271	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	0.399	the space below.
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%	

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 UAM 10/14/2020

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	MS/MSD 1	MS/MSD 2
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:		

UAM 10/14/2020

On 10.15.20



Quality Control Sample Performance Assessment

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)?	
	LCSD56591	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	LCSD (Y or N)?	Y
Sample I.D.:	LCSD56591	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	MS/MSD 1	MS/MSD 2
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:

am 10/14/2020

am 10/14/2020



Quality Control Sample Performance Assessment

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)?	
	LCSS56591	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%	

Duplicate Sample Assessment		
Sample I.D.:	92496904020	Enter Duplicate
Duplicate Sample I.D.:	92496904020DUP	sample IDs if
Sample Result (pCi/L, g, F):	0.317	other than
Sample Result Counting Uncertainty (pCi/L, g, F):	0.241	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	0.374	the space below.
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%	

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

Comments:

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:		

Quinn 10/14/2020

LAL 10/14/2020



Quality Control Sample Performance Assessment

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)?	
	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

10-13-20



Quality Control Sample Performance Assessment

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	2018815	
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	LCS/D (Y or N)?	N
	LCS56590	LCS/D56590
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:	71.56%	
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:

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Handwritten date: Oct 10/16/2020



Quality Control Sample Performance Assessment

Test: Ra-228
Analyst: VAL
Date: 10/16/2020
Worklist: 56592
Matrix: WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

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)?	
	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:

10/16/2020

10-20-20



Quality Control Sample Performance Assessment

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)?	
	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.

Handwritten initials/signature

10/13/2020

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



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

Pace Analytical Services Charlotte

9800 Kinsey 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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SAMPLE ANALYTE COUNT

Project: Plant McDonough CCR-Ash Pond

Pace Project No.: 92505233

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
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PASI-GA = Pace Analytical Services - Peachtree Corners, GA

REPORT OF LABORATORY ANALYSIS

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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 (CaCO ₃)	17.3	mg/L	5.0	1		11/12/20 17:22		
Alkalinity, Total as CaCO ₃	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	

REPORT OF LABORATORY ANALYSIS

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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 (CaCO ₃)	20.2	mg/L	5.0	1		11/12/20 17:43		
Alkalinity, Total as CaCO ₃	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 (CaCO ₃)	20.3	mg/L	5.0	1		11/12/20 17:49		
Alkalinity, Total as CaCO ₃	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 (CaCO ₃)	17.7	mg/L	5.0	1		11/12/20 17:54		
Alkalinity, Total as CaCO ₃	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 (CaCO ₃)	20.7	mg/L	5.0	1		11/12/20 18:00		
Alkalinity, Total as CaCO ₃	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	

REPORT OF LABORATORY ANALYSIS

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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 (CaCO ₃)	20.2	mg/L	5.0	1		11/12/20 18:06		
Alkalinity, Total as CaCO ₃	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	

REPORT OF LABORATORY ANALYSIS

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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 (CaCO ₃)	20.0	mg/L	5.0	1		11/12/20 18:22		
Alkalinity, Total as CaCO ₃	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	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

QC Batch: 579547 Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A 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	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92505233001 Result	Spike Conc.	Spike Conc.	Result						
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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

QC Batch: 579551 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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	92505233001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	684	670	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond
Pace Project No.: 92505233

QC Batch: 580018 Analysis Method: SM 2320B-2011
QC Batch 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 CaCO ₃	mg/L	ND	5.0	11/12/20 16:26	
Alkalinity, Bicarbonate (CaCO ₃)	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 CaCO ₃	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 CaCO ₃	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 CaCO ₃	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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QUALITY CONTROL DATA

Project: Plant McDonough CCR-Ash Pond

Pace Project No.: 92505233

QC Batch:	579993	Analysis Method:	EPA 300.0 Rev 2.1 1993
QC Batch Method:	EPA 300.0 Rev 2.1 1993	Analysis Description:	300.0 IC Anions
		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	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92505233001	Result	Spike Conc.	Spike Conc.								
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	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92505059003	Result	Spike Conc.	Spike Conc.								
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.

REPORT OF LABORATORY ANALYSIS

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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		

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information: Company: ARCADIS - Atlanta Address: 2839 Paces Ferry Rd Atlanta, GA 30339 Email: warren.johnson@arcadis.com Phone: (770)384-6584 Fax Requested Due Date: 7-Day TAT	Section B Required Project Information: Report To: Warren Johnson Copy To: Joju Abraham and Ben Hodges Purchase Order #: SCS10382775 Project Name: Plant McDonough/CCR Ash-Pond Closure Project #:	Section C Invoice Information: Attention: Company Name: GPC Address: Pace Quote: Pace Project Manager: mariya.parks@pacelabs.com, Pace Profile #: 12896	Page : Of
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W0#: 92505233

92505233

ITEM #	SAMPLE ID <small>One Character per box. (A-Z, 0-9 /, -,) Sample Ids must be unique</small>	MATRIX CODE <small>Drinking Water DW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Other OT Tissue TS</small>	CODE <small>DW WT WW P SL OL WP AR OT TS</small>	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Analyses Test	Alkalinity (Total/Bicarb), Cl	TDS	App IV Metals, Be & Co Only	Residual Chlorine (Y/N)				
				START		END				Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other											
				DATE	TIME	DATE	TIME																					
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 - 7.76 G.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	CR0.8 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
	<i>Chad Tomlinson</i>	11.10.2020	17:57	<i>CT Pace</i>	11/10/20	1757	

SAMPLER NAME AND SIGNATURE			TEMP in C
PRINT Name of SAMPLER: <i>Chad Tomlinson</i>			
SIGNATURE of SAMPLER: <i>Chad Tomlinson</i>		DATE Signed: <i>11-10-20</i>	Received on Ice (Y/N)
			Custody Sealed (Y/N)
			Cooler (Y/N)
			Samples intact (Y/N)



Document Name:
Sample Condition Upon Receipt(SCUR)
 Document No.:
F-CAR-CS-033-Rev.07

Document Revised: October 28, 2020
 Page 1 of 2
 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**

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

PM: MP Due Date: 11/13/20
 CLIENT: GA-ArcadAtI

Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Contents: *11/11/20 [Signature]*

Packing Material: Bubble Wrap Bubble Bags None Other

Biological Tissue Frozen?
 Yes No N/A

Thermometer: IR Gun ID: *2114* 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?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		1.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		2.
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		3.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		4.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		5.
Correct Containers Used?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		6.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		7.
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		8.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		9.
-Includes Date/Time/ID/Analysis Matrix:	<i>W</i>		
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		10.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		11.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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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