REPORT

DRAFT Remedy Selection Report

Plant McDonough-Atkinson Ash Pond 1

Submitted to:

Georgia Power Company

Submitted by:

WSP USA Inc.

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August 31, 2023

Certification

This *Remedy Selection Report, Georgia Power Company - Plant McDonough-Atkinson Ash Pond 1* has been prepared in to meet the requirements of the United States Environmental Protection Agency coal combustion residual rule [40 Code of Federal Regulations (CFR) 257 Subpart D] and the Georgia Environmental Protection Division Rules for Solid Waste Management 391-3-4-.10(6)(a-c).

I, Todd H Rees, am a professional engineer and licensed in the State of Georgia. I hereby certify that this *Remedy Selection Report* was prepared by, or under direct supervision of, a Qualified Groundwater Scientist, in accordance with the Georgia Environmental Protection Division Rules of Solid Waste Management. According to 391-3-4-.01, a Qualified Groundwater Scientist is “a professional engineer or geologist registered to practice in Georgia who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields that enable that individual to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action.” By affixing my professional seal and signature, I hereby acknowledge that this report has been prepared in conformance with the United States Environmental Protection Agency coal combustion residual rule [40 Code of Federal Regulations (CFR) 257 Subpart D] and the Georgia Environmental Protection Division Rules for Solid Waste Management 391-3-4-.10.

WSP USA Inc.

No. PE047845
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8/31/23

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Georgia Registered Professional Engineer No. PE047845

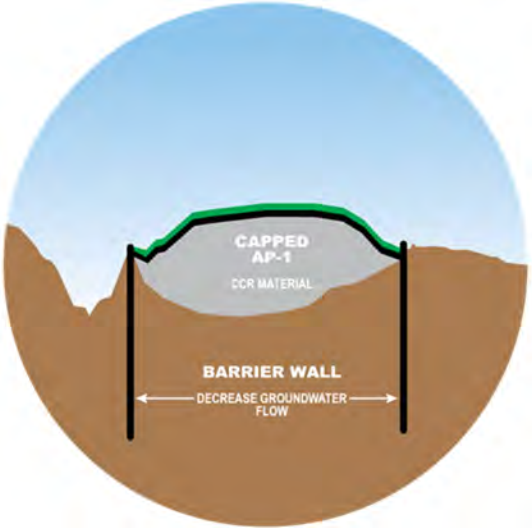
Executive Summary

Plant McDonough-Atkinson (Plant McDonough, the Site) located in Atlanta, Georgia, was formerly a coal-fire powered generating facility. It was converted to a natural gas combined-cycle power generating facility in 2011. Coal combustion residuals (CCR), commonly referred to as "coal ash", are non-hazardous materials generated from burning coal to generate electricity that were stored at the Site in Ash Pond 1 (AP-1). The ash pond was designed, installed, and operated to function as a treatment system for power plant wastewaters, and has effectively served in this capacity for decades in compliance with the National Pollutant Discharge Elimination System ("NPDES") permits under which it was regulated. Georgia Power has undertaken actions to close the AP-1 in accordance with federal and state regulations. Ash pond consolidation and closure activities began in 2015 and are expected to conclude in 2024. As part of a comprehensive approach to managing CCR, Georgia Power completed a detailed evaluation of corrective measures to remove arsenic and cobalt in groundwater above the Groundwater Protection Standard (GWPS) at Plant McDonough AP-1.

CLOSURE OF THE CCR UNITS

Source control by closure of the CCR unit provides considerable benefits to groundwater and is an important step in managing impacts to groundwater. Source control benefits are being achieved at Plant McDonough through several steps in accordance with the performance standards applicable to CCR unit closures:

- **Capping:** AP-1 being closed in place by capping with a final cover system.
- **Installation of a Barrier Wall:** The barrier wall around the AP-1 impoundment will decrease the groundwater flow through CCR material closed in place.



GROUNDWATER MONITORING AND ASSESSMENT

Georgia Power has performed routine CCR groundwater monitoring at AP-1 since background groundwater conditions were established between 2016 and 2018. Over the period of Georgia Power's monitoring, concentrations of arsenic and cobalt were identified above GWPS requiring corrective action. Extended groundwater monitoring indicates the constituents above the GWPS are horizontally and vertically delineated.

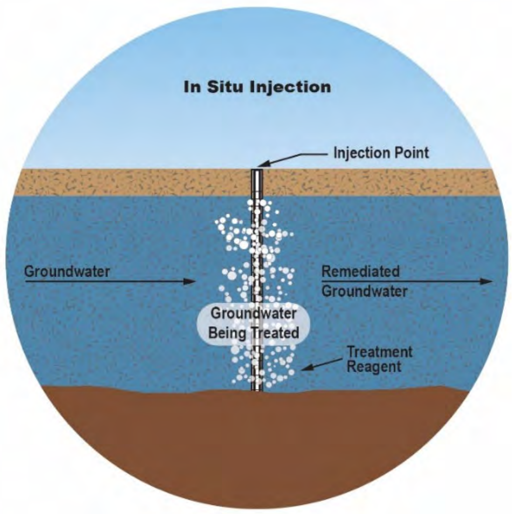
Executive Summary

RISK EVALUATION FOR HUMAN HEALTH AND ENVIRONMENT

Georgia Power completed a risk evaluation on arsenic and cobalt in groundwater at the Site. As documented in the Risk Evaluation Report, these constituents in groundwater at the Site are not expected to pose a risk to human health or the environment.

PROPOSED CORRECTIVE ACTION FOR GROUNDWATER: IN SITU INJECTION

Georgia Power submitted an assessment of corrective measures (ACM) report for AP-1 in July 2020. Georgia Power has worked with GA EPD to adhere to regulations and select a comprehensive and technically sound approach for implementing corrective measures to address arsenic and cobalt in groundwater. In-Situ Injection was selected as the proposed remedial approach for arsenic and cobalt at the Site. In-Situ Injection is anticipated to create conditions in the subsurface to effectively remove arsenic and cobalt from groundwater. Results of laboratory testing with site soil and groundwater demonstrated removal of arsenic and cobalt from groundwater with this approach.



ADAPTIVE SITE MANAGEMENT

The remedy performance will be monitored, evaluated, and, if needed, the remedy will be adjusted or augmented to meet remedial objectives.

LONG-TERM GROUNDWATER MONITORING

Georgia Power will continue to perform groundwater monitoring and reporting at AP-1 for at least 30 years after the units are closed.

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1.0 INTRODUCTION

On behalf of Georgia Power Company (Georgia Power), WSP USA Inc. (WSP) prepared this *Remedy Selection Report* (RSR) for Plant McDonough-Atkinson Ash Pond 1 (AP-1). As documented here, Georgia Power has completed a detailed evaluation of corrective measures to address constituents in groundwater at statistically significant levels (SSLs) above the Groundwater Protection Standards (GWPS). The evaluation was completed in accordance with the United States Environmental Protection Agency's (USEPA's) Coal Combustion Residuals (CCR) Rule, 40 Code of Federal Regulations (CFR) Parts 257 effective October 19, 2015 (CCR Rule) including subsequent revisions and Georgia Environmental Protection Division's (GA EPD's) Rule for Solid Waste Management Rule 391-3-4-.10 for CCR.

This *RSR* includes an overview of geologic and hydrogeologic investigations activities completed to refine the conceptual Site model (CSM), identifies Appendix IV constituents detected in groundwater SSLs above the GWPS, discusses the nature and extent of these inorganic constituents in groundwater, evaluates potential corrective measures to address SSLs in groundwater, presents a geochemical approach (i.e., in-situ injections) as the proposed groundwater remedy to address arsenic and cobalt in groundwater, and presents this proposed groundwater remedy for preliminary review by GA EPD. At GA EPD's request, following their preliminary review, a public meeting will be held to discuss the assessment of corrective measures, after which a remedy will be selected, and the Final RSR will then be submitted to GA EPD. Once the selected remedy is approved by GA EPD and implemented, corrective action monitoring will be conducted routinely. The selected remedy is subject to potential modification based on corrective action monitoring and adaptive management strategies, as appropriate.

2.0 BACKGROUND

2.1 REMEDY SELECTION PROCESS

The remedy selection process involves assessment of potentially applicable groundwater remediation alternatives. Following initiation of the *Assessment of Corrective Measures* (ACM, Golder 2020a), an evaluation of groundwater corrective action alternatives has been performed and results of this on-going assessment has been documented as required by 40 CFR § 257.96 in the *Semiannual Remedy Selection and Design Progress Report*s (Golder 2021a, 2021b, 2022a, 2022b; WSP, 2023a, 2023b).

The remedy selected for the unit must meet the following required criteria:

§ 257.97 Selection of Remedy [Required Criteria]

(b) Remedies must:

- *(1) Be protective of human health and the environment;*
- *(2) Attain the groundwater protection standard as specified pursuant to § 257.95(h);*
- *(3) Control the source(s) of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of constituents in Appendix IV to this part into the environment;*
- *(4) Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems;*

(5) Comply with standards for management of wastes as specified in § 257.98(d).

Technologies that meet the required criteria are then evaluated using the following comparative criteria:

§ *257.97 Selection of remedy [Comparative Criteria]*

(c) In selecting a remedy that meets the standards of paragraph (b) of this section, the owner or operator of the CCR unit shall consider the following evaluation factors:

(1) The long- and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful based on consideration of the following:

(i) magnitude of reduction of existing risks;

(ii) magnitude of residual risks in terms of likelihood of further releases due to CCR remaining following implementation of a remedy;

(iii) the type and degree of long-term management required, including monitoring, operation, and maintenance;

(iv) short-term risks that might be posed to the community or the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and re-disposal of contaminant;

(v) time until full protection is achieved;

(vi) potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, re-disposal, or containment;

(vii) long-term reliability of the engineering and institutional controls; and

(viii) potential need for replacement of the remedy.

(2) The effectiveness of the remedy in controlling the source to reduce further releases based on consideration of the following factors:

(i) the extent to which containment practices will reduce further releases; and

(ii) the extent to which treatment technologies may be used.

(3) The ease or difficulty of implementing a potential remedy(s) based on consideration of the following types of factors:

(i) degree of difficulty associated with constructing the technology;

(ii) expected operational reliability of the technologies;

(iii) need to coordinate with and obtain necessary approvals and permits from other agencies;

(iv) availability of necessary equipment and specialists; and

(v) available capacity and location of needed treatment, storage, and disposal services.

(4) The degree to which community concerns are addressed by a potential remedy(s).

Using the above criteria, this document evaluates the potential remedies identified in the ACM (Golder, 2020a) and subsequent updates to identify an appropriate groundwater remedy for the unit. Selection of an appropriate groundwater remedy is significantly influenced by CCR constituent chemistry and characteristics of Appendix IV parameters, which are inorganic trace elements – metals and metalloids – that have attenuation and remediation characteristics markedly different than organic constituents. Common chemical mechanisms of attenuation for CCR constituents include adsorption to, or coprecipitation with, oxides and hydrous oxides (oxyhydroxides) of iron and manganese; coprecipitation with, and adsorption to, iron sulfides such as pyrite (FeS_2); and precipitation as carbonates, sulfides, sulfates, and/or phosphates (USEPA, 2007; EPRI, 2018). The attenuation capacity can be evaluated through Site-specific field and lab testing and geochemical modeling. Processes such as precipitation/co-precipitation and adsorption and other methods such as groundwater extraction and treatment and engineered plant uptake (phytoremediation) are also evaluated for the remediation of Appendix IV constituents. A remedy, meeting the criteria of 257.97(b), is proposed based on an evaluation of factors specified in 257.97(c)(1) – (3).

An evaluation of the degree to which community concerns are addressed by a potential remedy, as specified in 257.97(c)(4), is not included in this *RSR*. A discussion of this criterion will be substantially informed by a forthcoming public meeting following GA EPD preliminary review and comment on this *RSR*. Following GA EPD's review of the *RSR* and preliminary corrective action design information, Georgia Power anticipates GA EPD will provide written concurrence with the plan prior to the public meeting. Following the public meeting, the final RSR will be prepared for submission to GA EPD and will include a discussion of the “degree to which community concerns are addressed by a potential remedy.”

2.2 UNIT LOCATION AND DESCRIPTION

Plant McDonough is a power generating facility owned and operated by Georgia Power. The plant is located approximately 7 miles northwest of Atlanta, GA in southeast Cobb County (5551 South Cobb Dr SE, Smyrna, GA 30080). 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.

Plant McDonough historically operated as a coal fired facility, and four on-Site CCR surface impoundments were utilized for CCR material over the duration of Plant McDonough’s coal fired operations: Ash Pond 1 (AP-1), Ash Pond 2 (AP-2), Ash Pond 3 (AP-3) and Ash Pond 4 (AP-4). Construction of AP-1 and AP-2 was completed in 1964 and 1968, respectively. Construction of AP-3 and AP-4 was completed in 1969 and 1974, respectively, and the units operated concurrently. In 2011, Plant McDonough ceased coal-fired electric generating activities, and subsequently ceased placing CCR in the units. Each of these units is in the process of being closed in accordance with federal and state regulations.

AP-1, the subject unit of this *RSR*, was commissioned in 1964 for use in sluicing operations for CCR and was in service until 1968 when Georgia Power ceased placing CCR in AP-1 for capacity reasons. AP-1 was closed in place and is undergoing final closure permitting and certification.

2.3 UNIT CLOSURE

Closure activities in accordance with Federal Regulation 40 CFR 257.100 were initiated in January 2016 for AP-1, before Georgia promulgated its state CCR program. Installation of the final cover system for AP-1, consisting of a

ClosureTurf® cover system, has been substantially completed and closure construction activities are ongoing in accordance with 40 CFR 257.102(d). The final cover system is designed to exceed the requirements for CCR capping as described in 40 CFR § 257.102(d)(3) and will effectively eliminate infiltration[1]into the CCR unit and control releases to the maximum extent feasible. AP-1 was originally subject to the Federal CCR Rule timelines for Sites with early closures, which were described in 81 Fed. Reg. 51802 (Aug. 5, 2016). Unit closure through closure in place provides effective source control.

To further enhance the in-place closure of AP-1, a fully encompassing subsurface perimeter barrier wall (i.e., slurry wall) will be constructed as an advanced engineering method (AEM). As presented in the Three-Dimensional Groundwater Model Summary Addendum (Golder, 2020b; Golder, 2021), groundwater modeling predicts up to an 84% reduction in flow across the downgradient (western and southern) sides of the unit using the AEM. GPC is currently working with EPD to finalize the AEM design. Final closure activities, including the subsurface perimeter barrier wall, will be completed in accordance with the Closure Plan (Georgia Power, 2019).

Following closure completion, a minimum post-closure care period of thirty (30) years will apply. Post-closure care is detailed in the Permit Application, Part A, Section 8.

2.4 GROUNDWATER MONITORING

The current groundwater monitoring network for the CCR unit includes the background/upgradient and downgradient monitoring wells, as summarized in Table 1 and shown on Figure 2.

The July through December 2022 assessment monitoring groundwater data show SSLs at concentrations that exceed the state and/or federal GWPS as presented in the table below. Details are provided in the *2022 Semi-Annual Groundwater Monitoring and Corrective Action Report* (WSP, 2023a). The following Appendix IV SSL parameters and monitoring wells are the subject of this report:

AP-1 Appendix IV Statistically Significant Level Exceedance Summary

Constituent	Well ID
Arsenic	DGWC-69
Cobalt	DGWC-40
Molybdenum	DGWC-68A

Note: An Appendix IV SSL Constituent is determined by comparing the calculated confidence intervals to either the constituent's maximum contaminant level (MCL), if available; the USEPA Regional Screening Level (RSL); or the calculated background inter-well tolerance limit in cases where background concentrations are higher than the MCL (or the RSL if no MCL is available).

The SSL of molybdenum at DGWC-68A is not addressed by this *RSR* because an Alternate Source Demonstration (ASD) for molybdenum has been documented and approved by GA EPD to address the SSL at DGWC-68A (Golder, 2022c, 2022d, WSP 2023d). The evidence for a natural source of molybdenum to groundwater includes:

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[1] The permeability of the designed AP-1 cap is in the order of 10^{-13} cm/sec, several orders of magnitude less than the permeability of, for example, a hazardous waste landfill cap (i.e., 10^{-7} cm/sec).

- Molybdenite crystals identified in gneissic/pegmatitic bedrock immediately below screened interval of DGWC-68A.
- Molybdenum concentrations observed in bedrock samples are substantially higher (>800 times) than average values for various rock types (i.e., crustal, felsic, or mafic).
- Molybdenum is known to be present in regional aquifer materials based on previous studies (Golder, 2022c, 2022d, WSP 2023d).

Based on information presented in the ASD, the molybdenum concentrations at DGWC-68A are attributed to a natural source, i.e., the molybdenum-rich bedrock just below the screened interval of DGWC-68A, and not due to a release from the Ash Pond. The ASD for molybdenum at DGWC-68A was approved by GA EPD on March 3, 2023.

Potential trends in SSL constituent concentrations were further evaluated by Groundwater Stats Consulting (GSC) using the Sen's Slope/Mann Kendall trend test. The full report generated from the analyses is provided in the *2022 Semi-Annual Groundwater Monitoring and Corrective Action Report* (WSP, 2023a). No statistically significant trends were noted in the three wells exhibiting SSLs. The lack of increasing trends confirms the chemical stability of the groundwater, and the plume appears to be stable.

Additional details regarding the statistical analyses are provided in the annual and semiannual Groundwater and Corrective Action Monitoring Reports submitted to GA EPD and posted on Georgia Power's Website.

3.0 GROUNDWATER CONCEPTUAL SITE MODEL

A CSM is a dynamic tool that contextualizes available geological, hydrogeological, and geochemical information at a Site to convey how groundwater and constituents (Appendix III and IV parameters) travel in a geologic setting. A CSM is not static and may evolve as data are collected and more is known about the setting. A CSM was initially developed for the Site, and as data were gathered during the ACM process, the CSM was refined and used to pre-screen corrective measure technologies, retaining technologies that were suitable for consideration as corrective measure alternatives for groundwater or adaptive management based on Site-specific conditions. Since the ACM (Golder, 2020a), additional investigation activities of Site soils and groundwater have further refined the CSM for use in this *RSR*.

3.1 SITE GEOLOGY

Geologic conditions for this Site are described in detail in the *Hydrogeological Assessment Report* (HAR) prepared by WSP (WSP, 2023b). Key elements of the HAR are summarized herein. The Piedmont/Blue Ridge geologic province 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.

Geologic cross-sections, in the direction of groundwater flow, near the areas of interest are presented on Figures 3 and 4. A layer of sand and silt with trace organic material approximately 1 foot to 10 feet thick overlies a thick layer of saprolite. The saprolite extends to typical depths of 20 to 40 feet below ground surface and was formed in place by the physical and chemical weathering of the underlying metamorphic rocks. The saprolite typically consists of clay- and silt-rich soils that grade to sandier soils with depth. Given its mineralogical composition, weathering has produced horizontal layering with differing hydraulic conductivity. A zone of variable thickness (approximately 5 to 20 feet) of transitionally weathered rock (TWR) typically exists between the saprolite and competent bedrock. The lithology of the transition zone is highly variable and ranges from medium to coarse unconsolidated material to highly fractured and weathered rock fragments. Localized alluvial soils consisting of generally coarser material (silty sand, clayey silt, and silty clay with well-rounded gravel and cobbles) that have been observed in saprolite may be related to historical river channel migration.

Bedrock types present at the Site include granitic and migmatitic gneiss, biotite gneiss, and amphibolite, all of which have highly variable mineralogy and texture. Detailed geologic mapping of the Site indicates the Site is bisected by the Brevard fault zone (WSP, 2023b). Bedrock beneath the overburden north of the faulted intrusive contact is primarily characterized by Ordovician-age felsic sphene-epidote-biotite-quartz-feldspar gneiss with well-developed foliation and an augen texture reflecting historical movement/deformation near fault and shear zones of the inactive Brevard fault zone. Bedrock beneath the overburden south of the faulted intrusive contact is primarily characterized by interlayered Ordovician-age phyllonite, button schist with well-developed shear foliation, fine-grained mylonite with poorly developed foliation, and very fine-grained mylonitic biotite gneiss with well-developed shear foliation. The contact has had substantial movement as indicated by porphyroclastic-feldspars with sigmoidal-tails.

3.2 SITE HYDROGEOLOGY

An unconfined aquifer (also known as a phreatic or surficial aquifer) is present at the Site within the soil, saprolite, TWR, and/or shallow bedrock, depending on location. This unconfined, surficial aquifer system is recharged primarily through precipitation and subsequent infiltration. Groundwater flow is generally controlled by topography and surface water drainage and occurs mainly horizontally through intergranular pore spaces. Effective porosity generally ranges from about 20 to 30% and hydraulic conductivity ranges from 1 to 10-feet per day (ft/day). Groundwater is stored in pore spaces in the saprolite and does percolate downward to the weathered zone between soil and bedrock and into interconnected bedrock discontinuities, but to a much lesser degree compared to horizontal flow through the weathered layering.

Bedrock groundwater occurs in a fracture network that is largely dependent on rock type, degree of differential weathering, topography, and area of catchment. Groundwater flow in the underlying bedrock occurs primarily along discontinuities such as compositional layering, foliation, joints, and fractures. Bedrock fracture porosity is minimal compared to the regolith, and thus, groundwater flow is determined by how well the fractures are inter-connected. The bedrock fractures are not well connected and the predominant groundwater flow at the Site occurs in the overburden and upper bedrock. Based on Site-specific examples and supporting data, as presented in the HAR, fractures within the bedrock are limited and decrease in number and groundwater production with depth. Groundwater monitoring wells were screened across available fractures and did not produce sufficient water for proper development or sampling. Site geophysical logs and groundwater monitoring data at B-123D confirm that the deeper fractures produce less than 0.025 milliliters per minute using a heat pulse flow meter.

At the Site, the surficial aquifer and the upper bedrock aquifer together constitute an unconfined system. Available groundwater level data indicate a high of 836 feet referenced to North American Vertical Datum (NAVD) near the northern area and about 732 feet NAVD near the Chattahoochee River. Groundwater flows toward the on-site streams and the Chattahoochee River. Figure 5 presents the potentiometric surface contours depicting groundwater flow across the Site based on water levels from January 31, 2023.

3.3 UPPERMOST AQUIFER AND GROUNDWATER FLOW

The uppermost aquifer occurs within the overburden and upper bedrock at the Site. Groundwater is typically encountered slightly above the saprolite/weathered rock interface. Groundwater flow in the saprolite zone is through interconnected pores and relict textures and fractures. As the rock becomes increasingly competent with depth, groundwater flow occurs mainly through joints and fractures (i.e., secondary porosity). Recharge to the water-bearing zones in fractured bedrock takes place by seepage through the overlying saprolite or by direct entrance through openings in outcrops and varies with topography. The water table occurs in the saprolite and in the transitionally weathered zone, at least several feet above the top of rock.

Based on available boring logs for wells screened in the upper bedrock, the upper 30 feet of bedrock are fractured and appear to conduct groundwater horizontally on the same order of magnitude as the overburden. The upper bedrock appears to be connected hydraulically with the overburden. Groundwater elevations in these wells reflect topographic and weathering effects (e.g., depth to bedrock variations), and groundwater flow that is predominately lateral rather than vertically through the aquifer. The vertical hydraulic gradient is dependent on topographic location (e.g., a downward vertical gradient is generally observed in topographically high areas).

Site borings completed deeper in the bedrock aquifer (i.e., greater than 30 feet into the bedrock unit) exhibit minimal and likely isolated fractures. Data from several borings drilled into deeper bedrock during delineation activities at AP-2 and 3/4 confirm that fractures within the bedrock are limited, decrease in number, and that groundwater production with depth as is typical of Piedmont hydrogeologic settings. Therefore, it is anticipated that there is minimal connectivity between the overburden and the deeper bedrock hydrogeologic unit.

Groundwater monitoring wells were screened across available fractures and do not produce sufficient water for proper development or sampling. Site geophysical logs and groundwater monitoring data at B-123D confirm that the deeper fractures produce less than 0.025 milliliters per minute. This flow rate does not constitute groundwater in an “aquifer” but rather limited groundwater movement within the deeper bedrock unit.

Based on review of the potentiometric contours (Figure 5), 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. Hydraulic gradient is calculated as the difference in groundwater elevation (in feet) divided by the distance between two piezometers or wells (in feet).

January 2023 groundwater elevation data from six piezometer and/or monitoring well pairings located along the groundwater flow path and perpendicular to the potentiometric contours were used to calculate horizontal hydraulic gradients for AP-1. Groundwater flow was calculated using wells B-29/DGWC-68A (0.036 ft/ft), B-28/DWGC-37 (0.020 ft/ft), and B-50 / DWGC-39 (0.025 ft/ft) for AP-1. Overall average hydraulic gradient for AP-1 is 0.029 ft/ft.

Field hydraulic conductivity tests (i.e., slug tests) performed in a variety of geologic materials indicate an average hydraulic conductivity for the uppermost aquifer of 3.45×10^{-4} centimeters per second (cm/s); 4.9×10^{-4} cm/s in the overburden and 2.0×10^{-4} cm/s in the upper bedrock, respectively (average Site conductivity of 7.7×10^{-4} cm/sec). Groundwater flow velocities were calculated for AP-1 using January 2023 groundwater elevation data.

Calculated (horizontal) flow velocity in the overburden was approximately 79 to 145 feet per year (ft/yr) in January 2023. These estimated flow velocities are consistent with past results and are also generally consistent with other published velocities for regolith-upper bedrock aquifers of the Piedmont (Heath, R.C., 1984).

3.4 GEOCHEMICAL CSM

Arsenic and cobalt are present in groundwater at SSLs above the GWPS at AP-1 at DGWC-69 (arsenic) and DGWC-40 (cobalt). As detailed in the *Geochemical Conceptual Site Model Report for Plant McDonough Ash Pond 1* (Appendix A), historical literature and Site-specific data indicate arsenic, and cobalt is naturally occurring in the geologic formations at the Site. Data presented in the *Geochemical Conceptual Site Model* (GCSM) were used in Geochemical Modeling (Appendix B) and provided the basis for evaluating remedy alternatives.

The concentrations of cobalt in groundwater are related to groundwater pH, and localized decreases in pH are likely the primary driver for cobalt mobilization from the aquifer matrix to groundwater. Several mechanisms may explain the localized acidity observed in the vicinity of DGWC-40. Geochemical data support oxidative dissolution of pyrite and sulfide minerals, which have been identified in background and downgradient soils, as a likely natural source of localized acidity. Other mechanisms that may contribute to acidity include microbially mediated dissolution of sulfides or cation exchange. Based on currently available geochemical data, the concentration of arsenic in groundwater at DGWC-69 may be influenced by an influx of soluble arsenite from AP-1, and localized natural sources.

As presented in the Geochemical CSM, based on the identified geochemical process described for the Site, WSP, in collaboration with Terra Systems Inc (TSI), conducted laboratory testing to evaluate the potential for using in-situ corrective measure technologies at the Site. The treatability study indicates that in-situ pH and redox adjustments have potential applicability as treatment options for AP-1 groundwater.

3.5 NATURE AND EXTENT OF GROUNDWATER ABOVE THE GWPS

To characterize the nature and extent of arsenic and cobalt, multiple wells have been installed and sampled at the Site. The table below (from the ACM, Golder, 2020a) lists the SSL constituent and associated delineation wells. In addition, surface water has been sampled at multiple locations to demonstrate horizontal delineation where proximity to surface water prevented installation of additional wells. Concentrations of arsenic and cobalt in surface water samples are below reporting limits. Figures 6 and 7 present isoconcentration contour maps for arsenic and cobalt, respectively.

Constituent of Concern	Detection Monitoring Well with SSL	Vertical Delineation Well	Horizontal Delineation Well/ Surface Water Monitoring Location
Arsenic	DGWC-69	B-112D	UT02
Molybdenum[1]	DGWC-68A	NA	NA
Cobalt	DGWC-40	B-105D	B-62

Notes:

[1] An Alternate Source Demonstration (ASD) for molybdenum (Golder, 2022c, 2022d, WSP, 2023d) was approved by GA EPD on March 3, 2023, and therefore has been removed from the ACM.

NA – not applicable

Horizontal delineation of the SSL constituents is complete based on review of the analytical results, statistical analyses, and the isoconcentration contours. Vertical delineation of arsenic and cobalt are complete based on data collected to date indicating that arsenic in B-112D is below the GWPS, and cobalt in B-105D is below background. Details regarding the specific well pairs used for delineation are described in detail in the *2022 Semi-Annual Groundwater Monitoring and Corrective Action Report* (WSP, 2023a).

4.0 ASSESSMENT OF CORRECTIVE MEASURES SUMMARY

An ACM Report was completed in December 2020 (Golder, 2020a) in accordance with 40 CFR § 257.96 and identified the following corrective measures as potentially applicable to remediate groundwater at the Site:

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

Georgia Power also plans to proactively utilize adaptive Site management to support the remedial strategy and address potential changes in Site conditions as appropriate. Under an adaptive Site management strategy, a remedial approach will be selected whereby: (1) a remedy will be installed or implemented to address current conditions; (2) the performance of the remedy will be monitored, evaluated, and reported semiannually; (3) the CSM will be updated as more data are collected; and (4) adjustments and augmentations will be made to the remedy, as warranted, to achieve Site objectives. Table 2 presents a summary of the corrective measures and the screening that has occurred since December 2020 when the ACM was published.

Further evaluation and refinement of corrective measures since completion of the ACM has been presented in Semiannual and Annual Remedy Selection Progress Reports submitted in 2021, 2022, and 2023 (Golder, 2021a, 2021b, 2022a, 2022b; WSP 2023a). The corrective measures identified for the AP-1 CCR unit in the ACM were further evaluated using the criteria outlined in 40 CFR § 257.96 and GA EPD Rule 391-3-4.10(6)(a). Throughout the assessment process, phytoremediation and permeable reactive barriers were screened out due to limits on implementability, performance, and effectiveness in the Site-specific hydrogeology. In-situ stabilization/solidification is impractical to implement at the scale of the Site and was also screened out. Hydraulic containment was screened out because it would provide little incremental reduction of the current extent of arsenic and cobalt above GWPS, particularly since delineation for SSLs is completed on Site. However, pump and treat may be considered during adaptive management over the course of remedy implementation.

The two retained corrective measure alternatives (MNA and ISI) are discussed in further detail below for evaluation against the remedy selection criteria specified in 40 CFR § 257.97(b, c).

Alternative 1 – MNA: Alternative 1 relies on stabilizing arsenic and cobalt using the aquifer's own natural ability/capacity to attenuate (i.e., reduce concentrations of) arsenic and cobalt and achieve the GWPS at the waste boundary within a time frame that is reasonable compared to that offered by other more active methods. At AP-1, natural attenuation processes, including sorption, dilution, and dispersion, are sufficient to reduce concentrations of arsenic and cobalt to below the GWPS at the compliance boundary. However, without enhancements, it would take approximately 50 years to achieve concentrations below the GWPS. This natural capacity to attenuate arsenic and cobalt was demonstrated in the geochemical CSM and Site-specific demonstration of natural attenuation (Appendix A). The conceptual remedy design for Alternative 1 is shown on Figure 8.

Alternative 2 – ISI: Alternative 2 relies on stabilizing arsenic and cobalt by altering geochemical conditions in groundwater using in-situ injections. In-situ immobilization of arsenic and cobalt could be achieved through the addition of various in-situ reagents. For evaluating ISI against the remedy selection criteria, a conceptual design was considered using injections of sodium or potassium bicarbonate with iron sulfide or iron oxide to immobilize arsenic and cobalt through reduction and adsorption with injection screened intervals located within saprolite and partially weathered rock units. The conceptual remedy design for Alternative 2 is shown on Figure 9. Because this layout is considered conceptual, the configuration of the implemented remedy may be adjusted during the detailed design process.

5.0 CORRECTIVE MEASURES EVALUATION

The purpose of this section is to evaluate the corrective measures alternatives using the required criteria described in 40 CFR § 257.97(b) and the comparative criteria described in 40 CFR § 257.97(c).

5.1 REQUIRED CRITERIA (§ 257.97(b))

As described in 40 CFR § 257.97(b), for a groundwater corrective measure to be selected it must meet the following criteria:

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

The corrective measures alternatives are evaluated against the required criteria in the following subsections. As shown below, both alternatives evaluated meet or exceed the required criteria.

5.1.1 Protective of Human Health and the Environment (§ 257.97(b)(1))

CCR is classified as a non-hazardous RCRA solid waste, a determination confirmed in 40 CFR § 257 Preamble part III.A. Nevertheless, Georgia Power conducted a risk evaluation for the Site and potential receptors. A Risk Evaluation Report (Wood, 2020) was prepared for Plant McDonough and was submitted with the ACM (Golder, 2020a). An updated Risk Evaluation Report (WSP, 2023b; Appendix C) provided an evaluation of the current SSLs at AP-1. The evaluation was factored into the remedy selection process. The risk evaluation for the SSL-related constituents in groundwater at Plant McDonough was conducted using methods consistent with GA EPD and USEPA guidance and included multiple conservative assumptions. A conceptual exposure model was developed, initial groundwater risk screening was conducted, and a refined risk evaluation was performed for retained constituents of potential interest for hypothetical off-Site receptors. Arsenic and cobalt have been delineated to concentrations not exceeding health-protective screening criteria on Site. Based on the evaluation, arsenic and cobalt observed in groundwater at the Site are not expected to pose a risk to human health or the environment.

Accordingly, no further risk evaluation of groundwater or surface water is warranted in connection with the remedy selection process. Because no adverse human health or environmental risk currently exists, human health and the environment will be protected through closure and implementation of either of the remedies being evaluated. Consequently, each of the remedies being evaluated would meet this criterion.

5.1.2 Attain the Groundwater Protection Standards (§ 257.97(b)(2))

Both proposed remedies can attain the GWPS at the compliance boundary (waste boundary) and throughout the area of SSL exceedances. For each of the remedies retained, attainment of the GWPS is expected based on constituent transport evaluations included in Appendix B.

Alternative 1- MNA was evaluated for ability to reach groundwater protection standards following USEPA-issued MNA technical guidance specific to inorganic constituents (USEPA, 2007) that contained four “tiers,” which were later described as “phases” (USEPA, 2015). Under this guidance, each successive phase of the MNA evaluation is designed to progressively consider existing and long-term attenuation characteristics of the aquifer and incrementally reduce uncertainty at each decision-making screening step.

Alternative 2- ISI would also support the attainment of GWPS. Site-specific laboratory testing confirms that arsenic and cobalt can be removed from groundwater using bicarbonates, iron sulfide, and iron oxides; and geochemical modeling supports these findings.

The groundwater flow and constituent transport evaluations, and associated input parameters described in detail in Appendices A and B show that the GWPS can be met, however the predicted time to achieve the GWPS is currently greater than 50 years for MNA alone. Consequently, the use of ISI will be to reduce the time to achieve the GWPS to less than 5 years following completion of source control, including installation of the AEM (i.e., subsurface vertical barrier wall). In summary, each of the remedies being evaluated would meet this criterion, with ISI only needing to be applied in the SSL areas to decrease the time to final attainment at these locations.

5.1.3 Control the Source of Release (§ 257.97(b)(3))

In connection with a remedy, the source of the contamination must be controlled to reduce or eliminate, to the maximum extent feasible, further releases by identifying and locating the cause of the release. The following section describes how the source control required criterion is met in connection with each evaluated alternative.

Georgia Power is closing AP-1 in-place in a manner that follows applicable federal and state regulations and is protective of public health and the environment. Closure is complete at AP-1. In connection with the closure, an AEM, consisting of fully encompassing subsurface perimeter barrier wall, will provide enhanced source control benefits. Closure of the AP-1 CCR unit will contribute to a reduction in concentrations of Appendix IV constituents in downgradient groundwater and overall attenuation of groundwater concentrations, as is already being demonstrated by Site groundwater concentration trends.

AP-1 closure provides effective source control, as described in section 2.3 above. The control provided by the closure ensures that, for the purpose of remedy selection, the control requirement is met for any of the corrective measure alternatives being evaluated. Neither of the alternatives (MNA or ISI) will interfere with the control provided by the closure. Consequently, each of the remedies being evaluated would meet this criterion.

5.1.4 Removal of Contaminated Material from the Environment (§ 257.97(b)(4))

The corrective measure alternatives retained for further consideration would be effective at removing arsenic and cobalt constituents from groundwater, either through processes of immobilization or chemical attenuation in groundwater. The remedies considered herein remove contaminated material from the environment as follows:

Alternative 1: MNA – The natural attenuation processes that are at work in such a remedial approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. Sorption and redox reactions are the dominant mechanisms responsible for the reduction of mobility, toxicity, or bioavailability of inorganic contaminants by reducing their presence in groundwater.

Alternative 2: ISI – Arsenic and cobalt can be immobilized under different combinations of redox and pH conditions. ISI would create an in-situ reactive zone in the groundwater plume, creating conditions for reduction-oxidation reactions and/or chemical precipitation resulting in the chemical attenuation of constituents in groundwater.

Each of the corrective measures being evaluated would meet this criterion.

5.1.5 Comply with Waste Management Standards (§ 257.97(b)(5))

In accordance with 40 CFR § 257.98(d), any waste generated during the implementation of any of the remedies under consideration would be managed in a manner that complies with applicable requirements of the Resource Conservation and Recovery Act and the Georgia Comprehensive Solid Waste Management Act. Consequently, each of the remedies being evaluated would meet this criterion.

Summary of Required Criteria

Required Criteria	Alternative 1 (MNA)	Alternative 2 (ISI)
Be protective human health and the environment	✓	✓
Attain the groundwater protection standards	✓	✓
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 a is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems	✓	✓
Management of waste to comply with all applicable RCRA requirements	✓	✓

5.2 COMPARATIVE CRITERIA (§ 257.97(c))

This section compares the alternatives using the comparative criteria listed in 40 CFR § 257.97(c). Each of the comparative criteria consist of several sub-criteria listed in the CCR Rule that are considered below. The goal of this analysis is to further evaluate the alternatives that meet the required criteria to support remedy selection. Consistent with 40 CFR § 257.98(b), the selected and implemented remedy will be continually evaluated and, if warranted, modified consistent with adaptive management practices.

A graphic is provided within each subsection to provide a visual depiction of the favorability of each alternative, where dark green represents that the “option’s performance under this criterion is highly favorable,” medium green represents that the “option performs favorably under this criterion,” and light green represents that the “option performs less favorably under this criterion.”

Color Legend:

🟩	Option’s performance under this criterion is *highly favorable*
🟩	Option performs *favorably* under this criterion
🟩	Option performs *less favorably* under this criterion

5.2.1 Category 1: Long- and Short-Term Effectiveness and Protectiveness

This comparative criterion takes into consideration the following sub-criteria relative to the long-term and short-term effectiveness of each corrective measure alternative. Long-term effectiveness and protectiveness mean that the remedy will protect human health and the environment after the remedial objectives have been met.

The short-term effectiveness of a potential remedy is related to the protectiveness of human health and the environment during construction and implementation. The degree of protection and the time to achieve remedial action objectives are also considered.

Sub Criterion 1: Magnitude of Reduction of Existing Risks

As indicated by the nature and extent evaluation, the most recent groundwater sampling results, and the Risk Evaluation Report (Appendix C), Appendix IV constituents in groundwater from AP-1 are not expected to pose a risk to human health or the environment. Therefore, this criterion is considered favorable for both corrective measure alternatives. In addition, each groundwater remedy retained for this comparative analysis will be effective at reducing concentrations to levels below the GWPS, as described in section 2.5 above.

Sub Criterion 2: Magnitude of Residual Risks in Terms of Likelihood of Further Releases Due to CCR Remaining Following Implementation of a Remedy

Unit closure through closure in place provides effective source control, as described in section 2.3 above. As noted in the groundwater modeling report (Appendix B), each of the groundwater remedies retained for comparison will be effective at reducing the concentration of Appendix IV constituents in groundwater beyond the unit boundary to levels below the GWPS. Consequently, each of the remedies being evaluated performs similarly and favorably for purposes of this criterion.

Sub Criterion 3: The Type and Degree of Long-Term Management Required, Including Monitoring, Operations, and Maintenance

In accordance with 40 CFR § 257.97(c)(1)(iii), this sub-criterion considers the long-term management of each corrective measure alternative.

Both Alternative 1 - MNA and Alternative 2 - ISI will require monitoring during the corrective action period and during subsequent longer-term performance monitoring to confirm that GWPS are met. MNA is a relatively low operations, maintenance, and monitoring (OMM) corrective action and is considered favorable for OMM. However, the duration of groundwater monitoring is anticipated to be shorter for Alternative 2 (Appendix B) and is therefore considered favorable in reducing OMM. Beyond monitoring required to verify performance of the groundwater remedy, per CCR rule requirements, post-closure care monitoring, including groundwater sampling and reporting, will continue for no less than 30 years following closure.

Sub Criterion 4: Short-term risks that might be posed to the community or the environment during implementation of such a remedy

In accordance with 40 CFR § 257.97(c)(1)(iv), this sub-criterion relates to the potential for threats to human health (including without limitation worker safety and the community) and the environment associated with remedy implementation.

Community impacts include general impacts, such as potentially increased truck traffic on public roads during construction of the remedies, as well as increased vehicle emissions, resource consumption, and noise. Although Alternative 2 (ISI) will require active injection implementation beyond what is anticipated for Alternative 1 (MNA), the impact to the community will be minimal for both alternatives. For both alternatives, corrective measure activities will take place on Georgia Power property. Based on these considerations, both alternatives are rated favorable for this criterion.

Sub Criterion 5: Time until full protection is achieved

Timeframes to achieve GWPS at AP-1 were evaluated using a predictive 1-D reactive transport model (Appendix B). Each of the SSL constituents are predicted to meet GWPS. Without ISI, MNA is predicted to achieve the GWPS in greater than 50 years following completion of source control and is therefore considered less favorable. With implementation of ISI, the time to achievement of GWPS would be significantly less (less than 10 years), due to the in-situ treatment aspects, and is therefore considered favorable.

Sub Criterion 6: Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, re-disposal, or containment

In accordance with 40 CFR § 257.97(c)(1)(vi), this sub-criterion considers elements such as the generation and handling of wastes or potentially impacted media encountered during construction and operation of the remedy. Alternative 1 (MNA) and Alternative 2 (ISI) are considered favorable since potential exposure through contact with CCR or groundwater is minimal.

Sub Criterion 7: Long-term reliability of the engineering and institutional controls

The following describes the overall long-term reliability for each of the proposed groundwater remedial alternatives for purposes of comparison. Of note, the reliability of both alternatives is bolstered by the long-term reliability of the closure method and its expected positive effect on groundwater conditions.

Alternative 1 (MNA) is expected to have high long-term reliability and is considered favorable with respect to this criterion. Alternative 2 (ISI), when needed, is also considered favorable because it reduces the long-term OMM and the need for institutional controls.

Sub Criterion 8: Potential need for replacement of the remedy

Any need to replace a remedy would be based on a systematic Site review during the remedy implementation process if warranted to improve remedy protectiveness, effectiveness, or facilitate progress toward meeting Site goals. In accordance with 40 CFR § 257.98(b), adaptive Site management practices will be used to modify or replace the remedy if the requirements of 40 CFR § 257.97(b) are not being achieved.

Alternative 1 (MNA) is considered the corrective measure with the lowest likelihood of requiring replacement because natural processes will reduce the concentration of Appendix IV constituents in groundwater over time and therefore is a favorable technology. Alternative 2, which relies on ISI to address arsenic and cobalt SSLs is considered favorable since the treatment efficacy is relatively certain. However, ISI is dependent upon the uniform distribution of in-situ reagents within targeted area of interest and additional applications may be required to avoid geochemical conditions that promote the mobilization or remobilization of Appendix IV constituents.

Category 1 Summary: Long- and Short-Term Effectiveness

Overall, Alternative 1 - MNA is less favorable relative to Alternative 2 - ISI which is considered favorable with respect to long- and short- term effectiveness and protectiveness. While Alternative 2 - ISI is projected to reach GWPS at the waste boundary more quickly than Alternative 1 - MNA, both achieve GWPS. Alternative 2 - ISI requires post-application monitoring data to evaluate short and long-term effectiveness and reliability and could result in a greater degree of long-term management if re-injections are required. ISI is considered favorable because it rapidly reduces constituent concentrations.

Category 1 – Long and Short-Term Effectiveness, Protectiveness, and Certainty of Success Summary	**Alternative 1: MNA**	**Alternative 2: ISI**
Sub-criterion 1 Magnitude of reduction of existing risks	Favorable	Favorable
Sub-criterion 2 Magnitude of residual risk in terms of likelihood of further release	Favorable	Favorable
Sub-criterion 3 Type and degree of long-term management required	Favorable	Favorable
Sub-criterion 4 Short-term risk to community or environment during implementation	Favorable	Favorable
Sub-criterion 5 Time until full protection is achieved	Less Favorable	Favorable
Sub-criterion 6 Potential for exposure of humans and environmental receptors to remaining wastes	Favorable	Favorable
Sub-criterion 7 Long-term reliability of engineering and institutional controls	Favorable	Favorable
Sub-criterion 8 Potential need for replacement of the remedy	Favorable	Favorable
Category 1 Summary:	Less Favorable	Favorable

Note: Refer to Section 5.2 for Color Legend

5.2.2 Category 2: Source Control Effectiveness

As described in Section 5.1.3 above, the required source control criterion is satisfied in connection with both corrective measure alternatives being evaluated. Specifically, in connection with closure, CCR material will be controlled through closure and the installation of a low-permeability fully encompassing subsurface perimeter barrier wall around AP-1 as an AEM.

The final cover system is designed to exceed the requirements described in 40 CFR § 257.102(d)(3) and will effectively eliminate infiltration into the CCR unit and control releases to the maximum extent feasible. A Georgia-registered professional engineer certified that the closure design meets the requirements of the CCR Rule.

This comparative criterion takes into consideration the ability of the remedy to control a future release and the extensiveness of treatment technologies that will be required. Neither of the corrective measures under consideration would interfere with or diminish the anticipated benefits of the closure method.

Sub-Criterion 1: The extent to which containment practices will reduce further releases

Unit closure through closure in place provides effective source control, as described in Section 2.3, and the potential for releases from AP-1 is substantially reduced. Appendix IV constituents that are present in groundwater at or currently beyond the unit boundary will be remediated by the selected corrective measure. Therefore, both groundwater remedy alternatives are considered favorable for this sub-criterion.

Sub-Criterion 2: The extent to which treatment technologies may be used

This section evaluates 40 CFR § 257.97(c)(2)(ii) regarding the extent to which treatment technologies may be used. Alternatives that include more limited treatment approaches may be considered less favorable. Alternatives that rely on more extensive treatment approaches may be considered more favorable.

Alternative 2 - ISI relies on in-situ treatment with active injections to reduce concentrations of arsenic and cobalt to GWPS at the unit boundary and prevent further releases downgradient of the unit boundary. Alternative 1 - MNA, relies on natural attenuation as the treatment mechanism and, while predicted to be effective at reducing arsenic and cobalt concentrations at the waste boundary, would be considered less favorable with respect to this criterion. Because Alternative 2 adds a treatment technology, it is considered more favorable than Alternative 1.

Source control effectiveness summary

Given that source control measures will be used and are the main mechanism to control additional releases overall, both alternatives are favorable for the category of source control. However, Alternative 1 is less favorable because it does not include an active treatment technology.

Category 2 – Source Control Effectiveness Summary	**Alternative 1: MNA**	**Alternative 2: ISI**
Sub-criterion 1 Extend to which containment practices will reduce further releases	Favorable	Favorable
Sub-criterion 2 Extent to which treatment technologies may be used	Less Favorable	Favorable
Category 2 Summary:	Less Favorable	Favorable

Note: Refer to Section 5.2 for Color Legend

5.2.3 Category 3: Ease of Implementation

This comparative criterion takes into consideration technical and logistical challenges required to implement a remedy, including practical considerations such as equipment availability and disposal facility capacity.

Sub-Criterion 1: Degree of difficulty associated with constructing the technology

This sub-criterion considers the relative technical difficulty between implementing each of the remedies.

Alternative 1 (MNA) is considered favorable since implementation of a long-term monitoring program to confirm attenuation is straightforward. Alternative 2 (ISI) is considered less favorable as there is a construction component. However, ISI technology is well established and relatively easy to implement.

Sub-Criterion 2: Expected operational reliability of the technologies

This section compares the operational reliability of each of the proposed remedies in accordance with 40 CFR § 257.97(c)(3)(ii). Typically, simple remedies that do not require the installation of significant infrastructure are generally more reliable and do not require significant OMM; however, more complex remedies that rely on groundwater flow or geochemical manipulation or mechanical systems would be considered less favorable.

Alternative 1 (MNA) is considered favorable from an operational perspective because MNA has a proven track record and only requires long-term monitoring following implementation. Alternative 2 (ISI) will include the short-term OMM of an in-situ treatment system and is, therefore, considered less favorable.

Sub-Criterion 3: Need to coordinate with and obtain necessary approvals and permits from other agencies

Section 40 CFR § 257.97(c)(3)(iii) requires consideration be given and compared between remedies regarding the various agencies and type of permits that would be required for implementation of the groundwater remedy. A remedial alternative that could require several permits (for example, a pump and treat system) would be considered less favorable when compared to a remedial alternative that would require fewer permits (for example, MNA).

Alternative 1 (MNA) is considered favorable since the implementation of the MNA remedy for groundwater requires minimal startup and infrastructure is already in place with existing monitoring wells. Alternative 2 (ISI) requires additional permitting (e.g., permit for pilot testing; and full-scale underground injection (UIC) permit), and is therefore considered less favorable than MNA which does not.

Sub-Criterion 4: Availability of necessary equipment and specialists

Remedies that could be implemented by local contractors and without specialty contractors or experts may be considered more favorable. Consideration should be given to specialty contractor/consultant proximity to the CCR Unit, contractor or equipment availability, and the effectiveness of the proposed remedy on similar sites.

Alternative 1 (MNA) and Alternative 2 (ISI) are both considered favorable since the equipment, supplies, technical specialists, contractors, etc. for conducting either corrective measure are common in the remediation industry.

Sub-Criterion 5: Available capacity and location of needed treatment, storage, and disposal services

This sub criterion (40 CFR § 257.97(c)(3)(v)) considers disposal options for materials generated by the groundwater remedy and land area that is available for implementation of the remedy. Alternative 1 (MNA) is expected to be performed with existing wells and would not produce waste necessitating treatment-storage-disposal (TSD) services and is considered favorable. Alternative 2 (ISI) would potentially produce relatively small quantities of soil cuttings and ancillary wastes/debris from well installation and chemical injection activities for disposal. Quantities are expected to be negligible compared to locally available TSD services and is therefore also considered favorable.

Ease of implementation summary

The various sub-criteria were evaluated, and relative comparisons were made between the corrective measure alternatives to determine which remedy or remedies would be expected to be the most and least favorable regarding the certainty of success. The results of this comparison are included in the following table for the Comparison Criteria.

Category 3 – Ease of Implementation Summary	**Alternative 1: MNA**	**Alternative 2: ISI**
Sub-criterion 1 Degree of difficulty associated with constructing the technology	Favorable	Less Favorable
Sub-criterion 2 Expected operational reliability of the technologies	Favorable	Less Favorable
Sub-criterion 3 Need to coordinate with and obtain necessary approvals and permits from other agencies	Favorable	Less Favorable
Sub-criterion 4 Availability of necessary equipment and specialists	Favorable	Favorable
Sub-criterion 5 Available capacity and location of needed treatment, storage, and disposal services	Favorable	Favorable
Category 3 Summary:	Favorable	Less Favorable

Note: Refer to Section 5.2 for Color Legend

5.2.4 Evaluation of Comparison Criteria

The various sub-criteria were evaluated, and relative comparisons were made between the remedial alternatives to identify which remedy or remedies would be expected to be the most and least favorable regarding the certainty of success. The results of this comparison are summarized in the table below.

Summary of Comparison Criteria	**Alternative 1: MNA**	**Alternative 2: ISI**
Category 1 Long- and Short-Term Effectiveness, Protectiveness, and Certainty of Success	Less Favorable	Favorable
Category 2 Effectiveness in Controlling the Source to Reduce Further Releases	Less Favorable	Favorable
Category 3 Ease of Implementation	Favorable	Less Favorable

Note: Refer to Section 5.2 for Color Legend

5.3 PUBLIC MEETING AND COMMUNITY ENGAGEMENT

As noted in Section 2.1, this criterion will be addressed in the final *RSR* submitted to GA EPD after a public meeting.

6.0 PROPOSED REMEDY SELECTION

This section provides a summary of the proposed groundwater remedy and provides a schedule for remedy implementation in accordance with 40 CFR § 257.97(d). Georgia Power also plans to proactively utilize adaptive Site management to support the remedial strategy and address potential changes in Site conditions as appropriate. Under an adaptive Site management strategy, a remedial approach will be selected whereby: (1) a corrective measure will be installed or implemented to address current conditions; (2) the performance of the corrective measure will be monitored, evaluated, and reported semiannually; (3) the CSM will be updated as more data are collected; and (4) adjustments and augmentations will be made to the corrective measure(s), as needed, to assure that performance criteria and Site remedial objectives are met.

6.1 Summary of Proposed Remedy

Based on current Site groundwater conditions, the evaluations performed in support of this report (geochemical modeling, lab testing) and the assessments made in Section 5.0, for the areas of SSL exceedance (DGWC-69 and DGWD-40), Alternative 2 (ISI) is the proposed remedy for cobalt and arsenic in groundwater above the GWPS (Figure 9). ISI is proposed due to the favorable results of bench scale testing, minimal requirements for Site preparation, ease of implementation, and higher overall relative performance on the long- and short-term effectiveness, protectiveness, and likelihood of success criteria.

Prior to full-scale implementation, an in-situ pilot test is needed to develop Site-specific design parameters such as injection radius of influence and reagent type and concentration. Depending on the final design, reagent delivery would be completed either via injection wells or through direct-push injection technology. A preliminary conceptual layout for injection points is provided in Figure 9. The configuration of the implemented remedy may differ based on final design parameters.

ISI may be completed through multiple rounds of injection, and following injection application, groundwater monitoring at downgradient points would be completed to track performance of the injection remedy.

6.2 SCHEDULE

In accordance with 40 CFR § 257.97(d), the following factors were considered when developing the schedule:

- <u>Extent and nature of contamination</u>: The horizontal and vertical extent of Appendix IV constituents present in groundwater have been adequately delineated, as described in Section 3.5 of this report. Additional characterization and refinement of the SSL areas is needed for design and implementation of the remedy near DGWC-49 and DGWC-40. The selected remedy will address the impacts to groundwater, and adaptive Site management practices will be utilized to evaluate whether to modify the remedial approach.

- <u>Reasonable probabilities of remedial technologies in achieving compliance with the GWPS and other remedial objectives</u>: The selected remedy is expected to achieve compliance with the GWPS in less than 5 years following AEM implementation. As considered in Section 5 of this report, the selected remedy is expected to address Appendix IV constituents in groundwater. In the event that adequate progress is not made towards addressing groundwater and achieving the GWPS, Georgia Power will follow adaptive management strategies to modify the remedial approach, in accordance with 40 CFR § 257.98(b). Site and remedy-specific performance metrics will be developed and included in the Corrective Action Groundwater Monitoring Plan.

- <u>Availability of treatment or disposal capacity for CCR managed during remedy implementation</u>: Georgia Power has already completed closure of AP-1, and the AEM is being designed. No additional CCR material is anticipated to require management during remedy implementation.

- <u>Potential risks to human health and the environment from exposure to contamination prior to completion of the remedy:</u> As described in Section 3 of this report, the risk evaluation for the arsenic, and cobalt concentrations in groundwater at AP-1 was conducted using methods consistent with GA EPD and USEPA guidance, included multiple conservative assumptions, and concluded that groundwater conditions at the Site are not expected to pose a risk to human health or the environment. Consequently, this factor should not have a material impact on the project schedule. Additional risks that may be present during remedy implementation were considered in Section 5 of this report, as required under 40 CFR § 257.97(c)(1).

- Resource value of the aquifer: As summarized in Section 5 of this report and detailed in the Risk Evaluation (Appendix C), no complete pathways for downgradient drinking water receptors were identified. As AP-1 is not expected to pose a risk to human health or the environment, this factor does not have a material impact on the project schedule.

The schedule for implementing and completing the groundwater corrective measure activities is described below. The general approach and implementation schedule will be modified based on new groundwater quality data obtained during the corrective measure implementation process, following adaptive Site management practices and in accordance with 40 CFR § 257.98(b).

6.2.1 Planning and Design

Subject to the timeline associated with any needed GA EPD approvals, approximately 36 months will be required to design the proposed remedy and develop a corrective action groundwater monitoring plan. Significant planning and design of Alternative 2 (ISI) may include the following:

- Pre-design investigation (PDI): A field PDI will be conducted to further characterize and refine treatment areas. This investigation will provide data for the design of geochemical injections. During the PDI, plume extents will be further refined by collecting groundwater samples, possibly using temporary monitoring wells, which will be assessed for arsenic and cobalt, at their respective locations. Permanent wells may be installed for further aquifer characterization, and any such permanent wells may be utilized during pilot testing as injection points or performance monitoring wells. The field component of the PDI will take approximately 2-4 months to complete.
- Pilot Study: To expedite remedy design and implementation, Georgia Power requests written concurrence from GA EPD to initiate pilot studies following receipt of the *Remedy Selection Report*. Following receipt of GA EPD concurrence to proceed, a pilot study workplan will be developed and implemented for the cobalt and arsenic plumes to evaluate appropriate injection point spacing and to evaluate performance of injectates in situ. It is anticipated that the pilot study will target areas of highest arsenic and cobalt concentrations; however, alternate pilot locations may be selected based on the results of the PDI. Injection composition (and sequencing, as needed) and spacing for the final design may be adjusted based on pilot study performance. Prior to injection, a UIC permit application will be prepared and submitted to GA EPD for review and approval. This planning and permitting phase are anticipated to take 6 months total following GA EPD concurrence. Pilot study injections are expected to occur over a period of approximately 1 to 4 months with an additional 8 months of performance monitoring and assessment. The pilot study will be conducted consistent with adaptive Site management practices. As such, a second phase pilot study may be implemented prior to completion of the anticipated 8 months of performance monitoring and prior to finalizing the injection design.
- Finalize Design and Corrective Action Plan: A groundwater corrective action plan, including detailed remedy design will be developed and submitted to GA EPD as an attachment to the *Corrective Action Groundwater Monitoring Plan (CAMP)*. While design activities will be concurrent with the previously listed activities, the corrective action plan will not be finalized until after the successful completion of the pilot study. Pursuant to

40 CFR § 257.98, a CAMP and monitoring program will be established within 90 days of selection of the groundwater remedy and approval by GA EPD. Following the requirements of the Rule, the Corrective Action Program (CAP; 40 CFR § 257.98(1) must do the following:

1) At minimum, meet the requirements of an Assessment Monitoring Program under § 257.95.

2) Document the effectiveness of the Corrective Action Remedy; and

3) Demonstrate Compliance with the Groundwater Protection Standards

The CAMP will outline steps to ensure that these key objectives are met. Specifically, the plan will define how the monitoring well data, Site conditions, and statistical analysis will be routinely evaluated. Should these data call the efficacy of the selected remedy (ISI) into question, Georgia Power will reassess alternative technologies.

6.2.2 Construction and Implementation

Injection points are needed to implement ISI. Following the planning and design phase, multiple injection points are likely to be identified. Following GA EPD concurrence with the proposed remedy, it is expected that up to 6 months may be needed for scheduling and installation of the injection points.

The infrastructure of the groundwater MNA remedy is largely in place with the existing monitoring network. In accordance with 40 CFR § 257.98(a), the CAMP and program will be established within 90 days of selection of the groundwater remedy; however, if new monitoring well locations are needed in the approval process of the monitoring plan, additional time for installation may be required.

6.2.3 Operation

While the estimated timeframe will be refined during the design process, it is anticipated that the selected alternative will achieve concentrations of arsenic and cobalt less than the GWPS at the detection monitoring location within 5 years of implementation. The groundwater remedy will be considered complete when the GWPS is achieved for a minimum of 3 years. In accordance with adaptive Site management practices and 40 CFR § 257.98(b), the groundwater remedy will be modified if it is determined that the Site goals are not being met or will not be met.

6.3 REPORTING

In accordance with 40 CFR § 257.105(h) and § 257.107(h), Georgia Power will place the *Final RSR* into the Site operating record and posted to Georgia Power's publicly accessible internet Site. Thereafter, Georgia Power will develop corrective action groundwater monitoring program and implement and report on the proposed remedy in accordance with applicable regulatory requirements.

7.0 REFERENCES

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Golder, 2022c. *Alternate Source Demonstration for Molybdenum*, Plant McDonough-Atkinson Ash Pond 1, Golder Associates USA Inc., July 29, 2022.

Golder, 2022d. *Alternate Source Demonstration for Combined Radium*, Plant McDonough-Atkinson Ash Pond 2 and 3/4, Golder Associates USA Inc., Revision 1: July 26, 2022

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WSP. 2023c. Hydrogeologic Assessment Report Georgia Power Company, Plant McDonough Ash Pond 1, WSP USA Inc., May 2023.

WSP, 2023d. Supplemental ASD for Combined Radium, Plant McDonough Ash Pond 1 and Ash Pond 2 and 3/4, May 22, 2023.

Tables

TABLE 1
SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA
Georgia Power Company - Plant McDonough
Atlanta, Georgia

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation
ASH POND 1 (AP-1) DETECTION MONITORING WELL NETWORK											
DGWA-53	Upgradient	Upper Bedrock	1393472.8	2201668.8	844.26	841.3	28.9	823.7	813.7	10	9/24/2016
DGWA-70A	Upgradient	Overburden	1390481.4	2200591.6	808.52	805.8	59.3	756.9	746.9	10	5/10/2017
DGWA-71	Upgradient	Overburden	1393963.3	2201714.8	863.84	861.2	43.8	827.8	817.8	10	2/28/2017
DGWC-37	Downgradient	Overburden	1390482.2	2200919.8	766.21	763.7	39.7	734.4	724.4	10	11/28/2012
DGWC-38	Downgradient	Overburden	1390362.7	2201148.6	757.43	754.7	25.0	740.0	730.0	10	11/29/2012
DGWC-39	Downgradient	Overburden	1390303.6	2201540.1	759.89	757.0	21.2	746.2	736.2	10	11/6/2012
DGWC-40	Downgradient	Overburden	1390625.7	2201825.9	779.06	776.2	34.9	751.7	741.7	10	11/5/2012
DGWC-67	Downgradient	Overburden	1390953.8	2200830.7	766.70	767.0	56.3	720.7	710.7	10	3/14/2017
DGWC-68A	Downgradient	Overburden	1391301.2	2200734.9	765.33	765.4	29.8	746.0	736.0	10	4/20/2017
DGWC-69	Downgradient	Overburden	1391585.0	2200657.1	763.75	764.0	24.3	749.7	739.7	10	3/16/2017
DGWC-121	Downgradient	Overburden	1390739.7	2200849.4	764.16	764.5	50.0	724.8	714.8	10	3/22/2022
ASH POND 1 (AP-1) ASSESSMENT MONITORING WELL NETWORK											
B-62	Downgradient	Upper Bedrock	1389828.1	2201811.2	760.08	760.4	39.9	730.7	720.7	10	10/4/2016
B-100	Downgradient	Overburden	1390254.8	2202242.1	777.95	775.3	44.8	740.5	730.5	10	7/8/2020
B-105D	Downgradient	Upper Bedrock	1390634.5	2201831.9	779.01	776.0	70.0	716.0	706.0	10	10/19/2020
B-112D	Downgradient	Upper Bedrock	1391564.2	2200664.1	765.58	766.1	55.0	721.4	711.4	10	3/22/2021
B-113D	Downgradient	Upper Bedrock	1391264.6	2200719.2	758.22	758.8	85.0	684.4	674.4	10	3/30/2021

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ASH POND 2 and ASH PONDS 3/4 (AP-2, 3/4) DETECTION 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

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ASH POND 2 and ASH PONDS 3/4 (AP-2, 3/4) ASSESSMENT MONITORING WELL NETWORK											
B-56	Downgradient	Overburden	1393957.9	2204187.8	823.59	821.0	45.0	786.4	776.4	10	10/3/2016
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
B-66	Downgradient	Overburden	1393858.2	2204277.5	815.90	813.3	55.3	768.3	758.3	10	11/16/2016
B-77	Downgradient	Overburden	1390948.7	2202942.0	776.86	777.1	42.0	745.1	735.1	10	9/17/2019
B-82	Downgradient	Overburden	1393750.0	2204258.1	810.07	807.5	45.0	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-88	Downgradient	Overburden	1394401.1	2203738.3	820.07	817.0	72.0	755.0	745.0	10	11/15/2019
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-97	Downgradient	Overburden/Upper Bedrock	1394430.0	2203008.3	786.29	786.6	31.0	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-100	Downgradient	Overburden	1390254.8	2202242.1	777.95	775.3	44.8	740.5	730.5	10	7/8/2020
B-101D	Downgradient	Overburden/Upper Bedrock	1394063.6	2204168.2	824.29	821.2	75.0	756.3	746.3	10	11/12/2020
B-102D	Downgradient	Upper Bedrock	1393828.4	2204200.4	823.42	820.6	85.0	746.2	736.2	10	11/10/2020
B-104D	Downgradient	Upper Bedrock	1391318.3	2202298.5	787.90	785.3	60.0	735.3	725.3	10	10/20/2020
B-106D	Downgradient	Upper Bedrock	1394327.1	2203869.2	826.21	823.5	80.0	754.1	744.1	10	11/13/2020
B-107D	Downgradient	Upper Bedrock	1392334.5	2202596.4	823.38	820.6	85.8	745.5	735.5	10	10/28/2020
B-108D	Downgradient	Upper Bedrock	1392156.1	2202312.5	821.13	818.4	80.0	749.4	739.4	10	10/27/2020
B-109D	Downgradient	Upper Bedrock	1393957.5	2202127.0	850.73	847.8	100.0	758.4	748.4	10	10/31/2020
B-111D	Downgradient	Upper Bedrock	1394303.4	2202956.4	791.87	789.1	85.0	714.9	704.9	10	11/3/2020
B-120D	Downgradient	Upper Bedrock	1394047.2	2202436.4	836.42	834.0	70.0	775.0	765.0	10	3/6/2021
B-122D	Downgradient	Bedrock	1390992.8	2202975.4	777.03	777.3	85.0	707.5	697.5	10	3/24/2022
B-125D	Downgradient	Bedrock	1394111.1	2202580.9	821.70	819.1	145.1	684.0	674.0	10	3/31/2023

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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-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-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-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

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PIEZOMETERS											
B-68	Downgradient	Overburden	1391298.2	2200714.2	758.68	759.0	18.0	751.0	741.0	10	3/16/2017
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-76	Downgradient	Overburden	1390716.9	2202756.0	760.31	760.54	38.5	732.0	722.0	10	9/18/2019
B-78	Downgradient	Overburden/Upper Bedrock	1394328.2	2202958.2	790.75	788.0	30.0	768.0	758.5	10	9/22/2019
B-79	Downgradient	Overburden	1394458.6	2203223.0	788.66	785.9	34.9	761.0	751.5	10	9/21/2019
B-80	Downgradient	Overburden	1394372.6	2203533.9	804.47	801.8	30.0	782.0	772.5	10	9/20/2019
B-81	Downgradient	Overburden	1394364.9	2203741.1	820.56	817.7	50.0	778.5	768.5	10	9/22/2019
B-84	Downgradient	Overburden	1390411.9	2202241.9	776.24	776.3	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	42.0	768.7	758.7	10	11/17/2019
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-94	Downgradient	Overburden	1394402.0	2203513.7	801.74	799.2	45.2	764.6	754.6	10	1/23/2020
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-99	Downgradient	Overburden	1394524.2	2203084.5	782.39	782.6	12.3	775.3	770.3	5	7/7/2020

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PIEZOMETERS											
B-103D	Downgradient	Upper Bedrock	1391543.5	2202614.4	795.96	793.8	70.0	733.8	723.8	10	10/15/2020
B-110D	Downgradient	Upper Bedrock	1391294.4	2200736.0	764.61	764.7	65.0	711.7	701.7	10	11/17/2020
B-115D	Downgradient	Upper Bedrock	1391265.3	2202580.7	789.17	786.4	80.0	717.2	707.2	10	3/20/2021
B-116D	Upgradient	Upper Bedrock	1390483.7	2200611.0	807.82	805.3	90.0	726.1	716.1	10	3/8/2021
B-117D	Upgradient	Upper Bedrock	1393963.8	2201727.3	863.82	861.2	75.0	796.5	786.5	10	3/17/2021
B-118	Upgradient	Upper Bedrock	1391219.3	2200449.7	807.70	805.0	75.0	740.2	730.2	10	3/9/2021
B-119D	Upgradient	Upper Bedrock	1391236.4	2200446.6	807.15	804.5	105	709.8	699.8	10	3/16/2021
B-123D	Downgradient	Bedrock	1391234.4	2202608.4	781.80	778.9	160.0	668.9	618.9	50	4/4/2022

Notes:

1. Coordinate System: NAD 1983 State Plane Georgia West (U.S. feet)
2. bgs - Below Ground Surface; NAD - North American Datum; NAVD - North American Vertical Datum

TABLE 2

Summary of Corrective Measures Screening

Georgia Power Company – Plant McDonough-Atkinson Ash Pond 1
Atlanta, 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 arsenic (As) and cobalt (Co). Under anaerobic conditions, As and Co would be attenuated within sparingly soluble sulfide minerals. Under aerobic conditions, soluble iron or manganese and oxygen (either via air sparging or through a chemical oxidant) would be injected to promote the formation of iron or manganese (oxy-) hydroxides for subsequent sorption of As and Co onto these mineral phases. If sufficient iron is present in groundwater, the use of air sparging alone may be considered to precipitate iron (oxy-) hydroxides for sorption. In-situ chemical oxidation (ISCO) or in-situ chemical reduction (ISCR) can be used to chemically alter the redox environment in the subsurface to affect the mobility of certain inorganic compounds, including As and Co.	The effective immobilization of As and Co has been shown under aerobic and anaerobic conditions; however, the anaerobic approach (involving the injection of an electron donor together with iron or manganese and sulfur) requires careful study and testing. While aerobic approaches are somewhat less complex, additional aquifer characterization is needed to further evaluate these options.	Reliability dependent on permeability of the subsurface and the amount and distribution of secondary iron or manganese (oxy-) hydroxides (for aerobic approach), or electron donors and soluble iron or manganese and sulfur that can be consistently distributed (for anaerobic approach). Reliable technology if injected materials can be distributed throughout the impacted aquifer. Bench- and/or pilot-scale treatability testing programs are needed to understand the biogeochemical processes that would effectively reduce migration of As and Co.
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 and Co.	Pump and treat (P&T) is effective at providing hydraulic control, but it is unclear whether full groundwater remediation can be achieved without further understanding attenuation mechanisms at the Site. At AP-1, implementation of the corrective measure is contingent on completing additional assessment activities (i.e., high-resolution site characterization, additional pump tests, flow modeling, and capture zone analysis). This is needed to refine the constituent distribution in the subsurface to target specific zones for pumping for improved mass recovery efficiency/ effectiveness and to further evaluate the potential remedy performance.	Generally reliable for hydraulic containment, but uncertainty exists whether groundwater remediation goals can be achieved within a reasonable time frame without further understanding attenuation mechanisms.

TABLE 2
Summary of Corrective Measures Screening
Georgia Power Company – Plant McDonough-Atkinson Ash Pond 1
Atlanta, Georgia

Corrective Measure	REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)		
	Description	**Performance**	**Reliability**
Monitored Natural Attenuation (MNA)	MNA relies on natural attenuation processes to achieve site-specific remediation objectives within a reasonable time frame relative to more active methods. Under certain conditions (e.g., through sorption, mineral precipitation or oxidation-reduction reactions), MNA effectively reduces the dissolved concentrations of inorganic constituents in groundwater. Attenuation mechanisms for inorganic constituents at CCR sites, including As and Co at AP-1, are either physical (e.g., dilution, dispersion, flushing, and related processes) or chemical (sorption or oxidation reduction reactions). Chemical attenuation processes include precipitation, and sorption reactions such as adsorption on the surfaces of soil minerals, absorption into the matrix of soil minerals, or partitioning into organic matter. Further, oxidation-reduction (redox) reactions, via abiotic or biotic processes, can transform the valence states of some inorganic constituents to less soluble and thus less mobile forms. For As and Co, the main attenuation processes include sorption to iron and manganese oxides (As and Co), and formation of sparingly soluble sulfide minerals (As and Co).	Physical and chemical MNA mechanisms for As and Co, including dilution, dispersion, sorption, and oxidation reduction reactions can be effective at achieving groundwater protection standards (GWPS) within a reasonable time frame. Attenuation processes for As and Co 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 and Co at AP-1 will further enhance ongoing MNA.	Reliable as long as 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 and/or Co or in combination with a second technology.
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.	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 constituents of concern (COCs) in downgradient groundwater to decline to below applicable standards. Performance outside of the waste boundary may not be as effective at treating As and Co in groundwater.	In-situ stabilization can be a reliable corrective measure for As and Co in groundwater. Reliability is dependent on the permeability of the subsurface and mechanics of injection. ISS is typically utilized to stabilize a waste material (i.e., within the CCR unit). Reliability outside of the waste boundary may not be as effective in treating As and Co in groundwater.
Permeable Reactive Barrier (PRB)	Permeable reactive barrier (PRB) technology typically involves the installation of a permeable subsurface wall constructed with reactive media for the removal of constituents as groundwater passes through. Either ZVI-Carbon matrix or solid carbon (bio-barrier) are likely viable for the concurrent removal of As and Co. The carbon could be composed of peat moss, mulch or another carbon source. Exact placement of the PRB would be contingent on finalization of the nature and extent characterization. PRBs can be constructed as “funnel and gate” systems, where a barrier wall directs groundwater to a smaller “treatment gate” filled with reactive media.	PRBs have been shown to effectively address As and Co in groundwater. The approach is expected to achieve GWPS for both constituents as impacted groundwater passes through the reactive barrier.	Reliable groundwater corrective measure technology, but loss of reactivity over time may require re-installation depending on the duration of the remedy. Additional data collection, including conducting a bench and/or pilot study, is needed to better characterize current attenuation mechanisms and/or select the appropriate reactive media mix for a PRB wall.

TABLE 2
Summary of Corrective Measures Screening
Georgia Power Company – Plant McDonough-Atkinson Ash Pond 1
Atlanta, Georgia

Corrective Measure	REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)		
	Description	**Performance**	**Reliability**
Phyto Remediation (TreeWell®)	Phytoremediation uses trees and other plants to degrade or immobilize constituents or achieve hydraulic control without the need for an above-ground water treatment system and infrastructure. Within the context of AP-1, this corrective measure would likely use an engineered (proprietary) TreeWell® phytoremediation system along the point of compliance or downgradient edge of the impacted groundwater for hydraulic control. The system promotes root development to the targeted groundwater zone (depth), allowing for hydraulic control of impacted groundwater. In addition, immobilization of As and Co within the root zone as well as incidental uptake of dissolved As and Co 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 and Co concentrations through immobilization and/or uptake and sequestration in the tree biomass; however, the main purpose is to provide hydraulic control. Given the likely construction of a SVBW for groundwater control at AP-1, phytoremediation is not practicable. Further the potential impacts to the planned SVBW from root development makes this option infeasible.	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 Walls	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.	Barrier walls are a proven technology for groundwater cutoff at impoundments. Slurry walls are limited by the depth of installation, which is approximately 90 ft below ground surface. However, site-specific geologic and technology-specific considerations may limit this depth to shallower installations. Within the context of AP-1, a barrier wall might be used in conjunction with a “funnel and gate” system for a PRB rather than a stand-alone technology. As such, groundwater with As and Co above GWPS could either be directed to “treatment gates” for passive treatment (in a PRB) or migration of impacted groundwater could be minimized via barrier wall installation. Additional subsurface investigations, aquifer testing, and compatibility testing with site-specific groundwater will be needed.	Generally reliable as a barrier to groundwater flow; however, treatment of downgradient groundwater is incidental and not the primary objective.

TABLE 2
Summary of Corrective Measures Screening
Georgia Power Company – Plant McDonough-Atkinson Ash Pond 1
Atlanta, Georgia

Corrective Measure	**REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)**		
	Ease of Implementation	**Potential Impacts**	**Time Requirement to Begin/Complete**
Geochemical Approaches (in situ injection)	Moderate. Installation of injection well network or other injection infrastructure would be required. Alternative installation approaches may be considered, such as along the downgradient edge of impacted groundwater, which would function similar to a PRB application. Potential for clogging of aquifer matrix and/or injection well infrastructure. Chemical distribution during injections (i.e., radius of influence) needs to be evaluated.	Minimal impacts are expected if remedy works as designed, based on a thorough pre-design investigation, geochemical modeling, and bench/pilot study results. Redox-altering processes have the potential to mobilize naturally-occurring constituents as an unintended consequence if not properly studied and implemented.	Installation of the injection network can be accomplished relatively quickly (1 to 2 months). However, a thorough pre-design investigation, geochemical modeling, and/or bench- and/or pilot-testing will be required to obtain design parameters prior to design and construction of the corrective measure, which may take up to 24 months. Once installed, the time required to achieve GWPS within the treatment area may be relatively quick but depends on the attenuation process kinetics of each targeted constituent. The time for complete distribution of the injected materials throughout the treatment area is also variable.
Hydraulic Containment (pump-and-treat)	Moderate. Proven approach, and supplemental installation of extraction wells/trenches is fairly straightforward. The extracted groundwater may potentially require an above-ground treatment system. A variety of sorption and precipitation approaches exist for ex-situ treatment of Co and As. 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 and Co .
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.	Potential impacts of the remedy will be negligible.	In-situ stabilization of AP-1 is predicted to take a number of years to complete, depending on the availability of specialized contractors and equipment.
Monitored Natural Attenuation (MNA)	Reasonably implementable with respect to infrastructure, but moderate to complex with respect to documentation. Proven approach, but additional data are needed to show that the existing attenuation capacity is sufficient to meet site objectives within a reasonable timeframe. A monitoring well network already exists to implement future groundwater monitoring efforts.	None. MNA relies on the natural processes active in the aquifer matrix to reduce constituent concentrations without disturbing the surface or the subsurface.	The infrastructure to initiate MNA is already in place. Demonstrating attenuation mechanisms and capacity can be time-consuming and can take up to 24 months. MNA is expected to be successful within a reasonable time frame following pond closure. Engineering measures will be implemented during closure of the CCR unit to minimize potential impacts to the subsurface during closure activities and routine groundwater monitoring will be used to verify that groundwater impacts remain stable or decrease over time.

TABLE 2
Summary of Corrective Measures Screening
Georgia Power Company – Plant McDonough-Atkinson Ash Pond 1
Atlanta, 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 (TreeWell®)	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. Installation methods and materials are readily available.	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.	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 2
Summary of Corrective Measures Screening
Georgia Power Company – Plant McDonough-Atkinson Ash Pond 1
Atlanta, Georgia

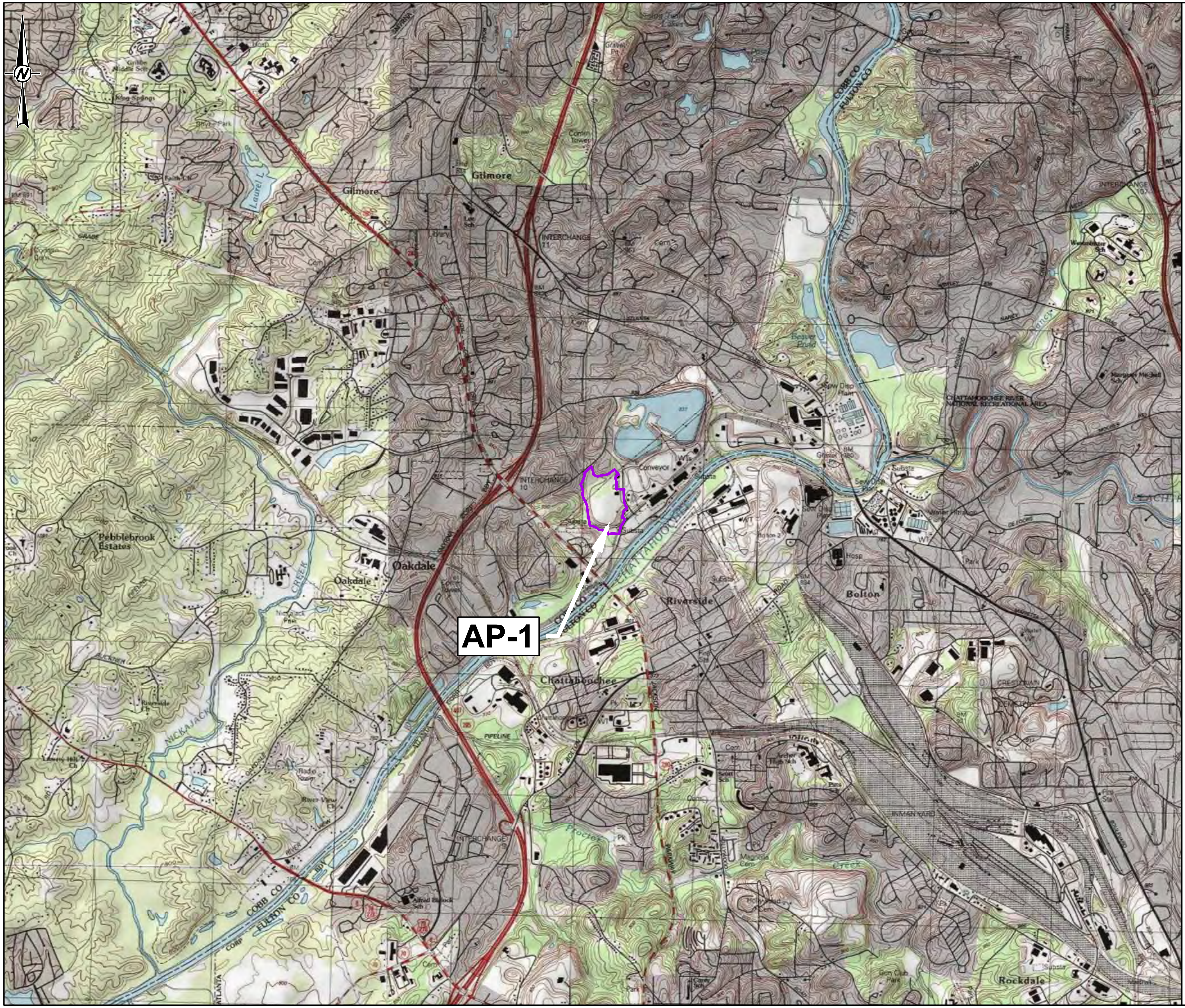
Corrective Measure	REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)			Screening Evaluation
	Institutional Requirements	Other Env. Or Public Health Requirements	Relative Costs	
Geochemical Approaches (in situ injection)	Deed restrictions may be necessary until in-situ treatment has achieved GWPS. 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)	Retained for further analysis; can be applied to As, and Co as a sparingly-soluble mineral, or could be applied to raise the groundwater pH to promote immobilization through sorption mechanisms.
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)	Not retained for further analysis. Hydraulic containment was screened out because it would provide little incremental reduction of the current extent of arsenic and cobalt above GWPS, particularly since delineation for SSLs is completed on Site. However, pump and treat may be considered during adaptive management over the course of remedy implementation.
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	Not retained for further analysis; the application of ISS is either redundant or incompatible with the current closure in-place plan.
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	Retained for further analysis; may be used as a stand-alone corrective measure or in conjunction with other potential groundwater corrective measures.
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	Not retained for further analysis; a PRB cannot treat groundwater downgradient of the constructable alignment; there is minimal space available downgradient of the impacted wells; potential for increased maintenance due to potential biofouling and mineral precipitation.

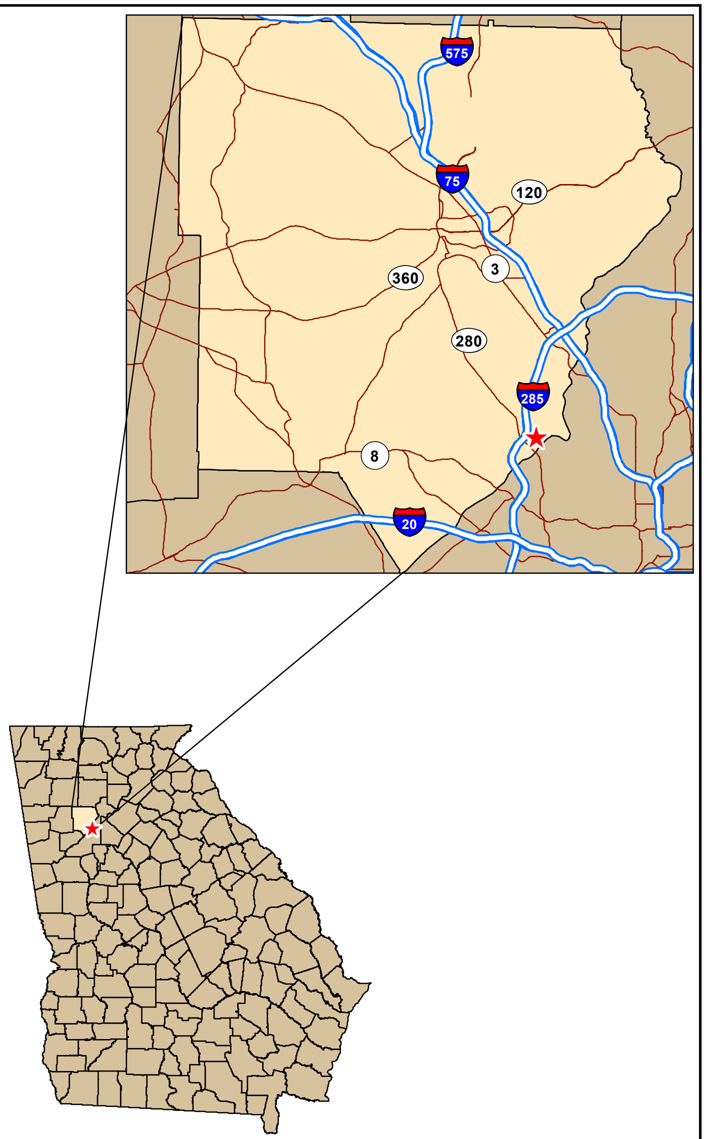
TABLE 2
Summary of Corrective Measures Screening

Georgia Power Company – Plant McDonough-Atkinson Ash Pond 1
Atlanta, Georgia

Corrective Measure	**REGULATORY CITATION FOR CRITERIA: 40 CFR 257.96(C)(1)**			**Screening Evaluation**
	Institutional Requirements	**Other Env. Or Public Health Requirements**	**Relative Costs**	
Phyto Remediation (TreeWell®)	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	Not retained for further analysis, minimal space available downgradient of the impacted wells for tree plantings. TreeWell® root system would likely impact the SVBW.
Subsurface Vertical Barrier Walls	Deed restrictions may be necessary for groundwater areas downgradient of the barrier wall until remedial goals are met. No other institutional requirements are expected at this time.	If groundwater extraction associated with barrier walls is necessary, above-ground treatment components may need to be present for an extended period of time, generating residuals requiring management and disposal. Groundwater extraction is not planned as part of the AEM.	Medium to high (depending on length and depth of wall)	Not retained for further evaluation. This methodology is currently undergoing permitting as part of closure methodology and therefore a second SVBW is not being considered for groundwater corrective action.

Figures





REFERENCE

SERVICE LAYER CREDITS: COPYRIGHT:© 2013 NATIONAL GEOGRAPHIC SOCIETY, I-CUBED

0 0.5 1

1 INCH=0.5 MILES

CLIENT

GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT

DRAFT REMEDY SELECTION REPORT
PLANT MCDONOUGH-ATKINSON ASH POND 1

TITLE

SITE LOCATION MAP

CONSULTANT

wsp

YYYY-MM-DD	2019-1-31
PREPARED	SEB
DESIGN	SEB
CHECKED	DP
REVIEWED/APPROVED	RNQ

PROJECT No.	Rev.	FIGURE
166849622	0	1

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

LEGEND

880	EXISTING CONTOURS (SEE REFERENCE 2)
— · · —	PROPERTY BOUNDARY (SEE REFERENCE 1)
— · —	APPROXIMATE PRE-CLOSURE CCR LIMITS
– – –	POST-CLOSURE CCR LIMITS
- - - -	FINAL COVER SYSTEM LIMITS
········	PERMIT BOUNDARY
——	FUTURE BARRIER WALL OPTION A
– – –	FUTURE BARRIER WALL OPTION B
— · —	CROSS-SECTION LINES
◆	UPGRADIENT WELL
◆	AP-1 MONITORING WELL
◆	AP-2, 3/4 MONITORING WELL
▲	ASSESSMENT WELLS
◆	PIEZOMETERS
⊕	ABANDONED PIEZOMETER OR MONITORING WELL
◆	SURFACE WATER MONITORING

NOTE

1. DATA PRESENTED FOR CCR UNIT AP-2 AND AP-3/4 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNIT AP-1.

REFERENCES

1. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY SERVICES (2017).
2. THE EXISTING TOPOGRAPHY, CONTOUR ELEVATIONS AND PHOTOGRAPHY FOR THE ASH PONDS 1 THROUGH 4 AREAS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, ON THE AP- 1 THROUGH 4, IS JANUARY 2023 - DATE OF PHOTOGRAPHY JANUARY 2023. THE TOPOGRAPHIC CONTOUR INTERVALS IS 1 FOOT. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS FOR THE SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4 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, AT THE SURROUNDING AREAS, 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 FOR SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4.
3. SCS PLANT MCDONOUGH HYDROGEOLOGICAL INVESTIGATION (2012 TO 2020).
4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020-2021.
5. COORDINATES SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET); ELEVATIONS DISPLAY IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (FEET NAVD88).

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia
Power

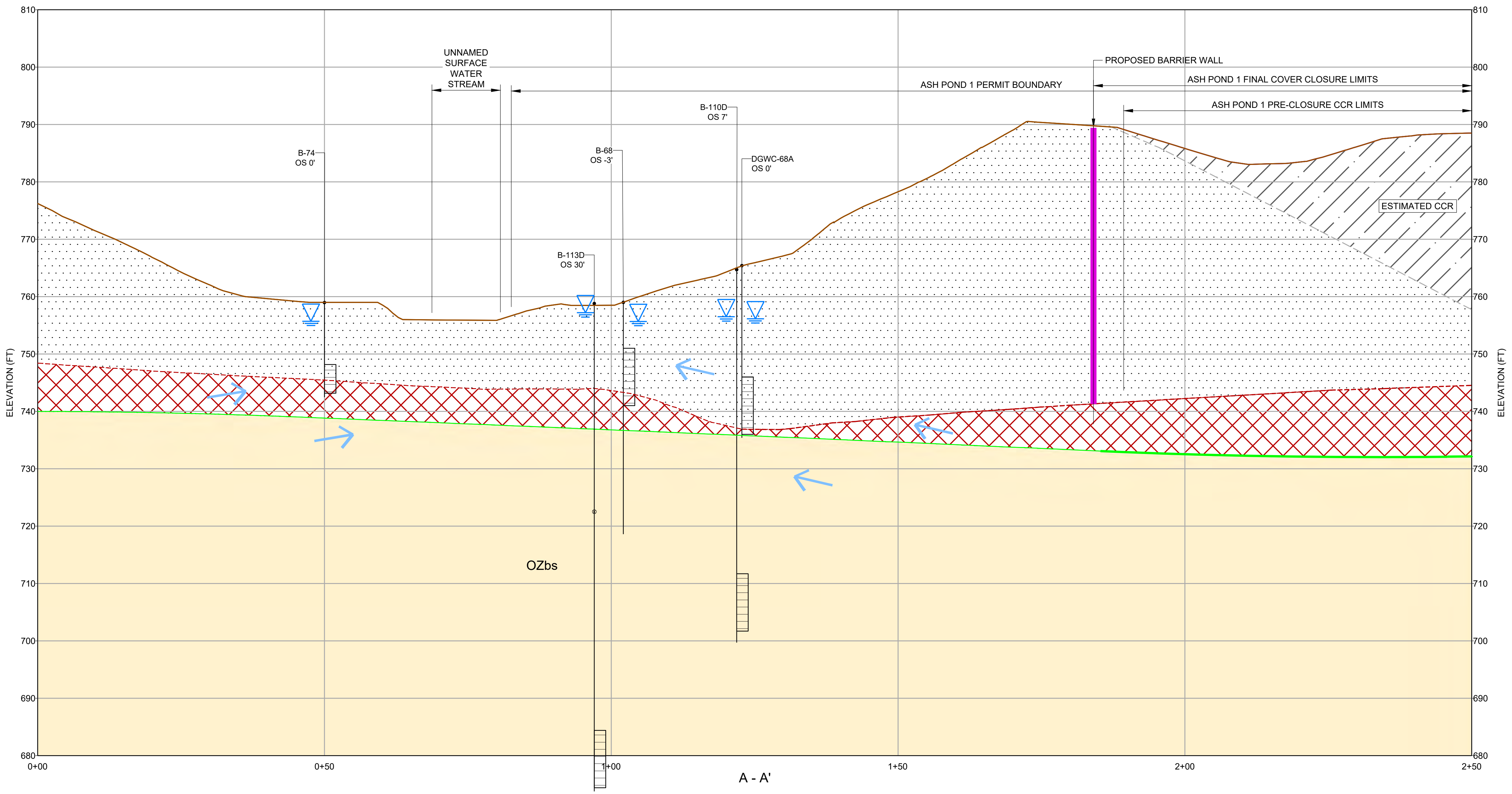
PROJECT
DRAFT REMEDY SELECTION REPORT
PLANT MCDONOUGH-ATKINSON ASH POND 1

TITLE
SITE PLAN, MONITORING WELL, ASSESSMENT WELL, PIEZOMETER, AND SURFACE WATER LOCATION MAP

CONSULTANT
wsp

YYYY-MM-DD	2023-08-04
DESIGNED	DLP
PREPARED	CRP
CHECKED	DLP
REVIEWED / APPROVED	RNQ

PROJECT NO.	REV.	FIGURE
166849622	-	2



A - A'

0 10 20
1" = 10' FEET
NO VERTICAL EXAGGERATION

LEGEND

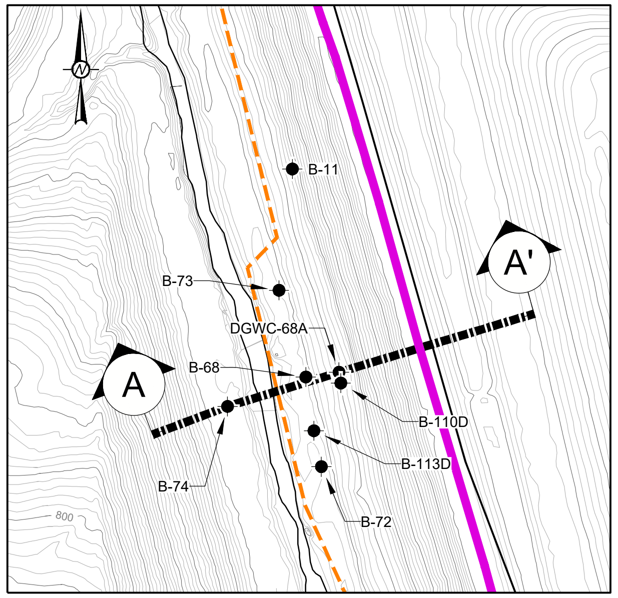
——	EXISTING GRADE (SEE REFERENCE 1)
- - - -	ESTIMATED TOP OF PARTIALLY WEATHERED ROCK
——	ESTIMATED TOP OF ROCK SURFACE
— — —	ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
——	FINAL COVER SYSTEM
━━	PROPOSED BARRIER WALL
▽	ESTIMATED GROUNDWATER SURFACE (1/31/2023)
▨	ESTIMATED CCR TO REMAIN IN PLACE
░	OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
▩	PARTIALLY WEATHERED ROCK (PWR)
▭	PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
↗	DIRECTION OF GROUNDWATER FLOW
B-29	BORING ID
-144'	DISTANCE FROM CROSS-SECTION (FEET) (- REPRESENTS LEFT OF ALIGNMENT)
●	GROUND SURFACE ELEVATION
▤	SCREEN INTERNAL

REFERENCES

1. THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS JULY 2021. GEORGIA STATE PLANE WEST SURVEY FEET.
2. GEOLOGIC UNITS TAKEN FROM PETROLOGIC SOLUTIONS GEOLOGIC MAPPING, OCTOBER 2016.
3. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.

NOTE

1. THE PWR AND ROCK SURFACES ARE INTERPOLATED FROM AVAILABLE BORINGS.
2. THE ELEVATION OF THE UPPER SURFACE OF PWR AND ROCK IS LIKELY TO VARY SIGNIFICANTLY OVER SHORT HORIZONTAL DISTANCES.



KEY MAP

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

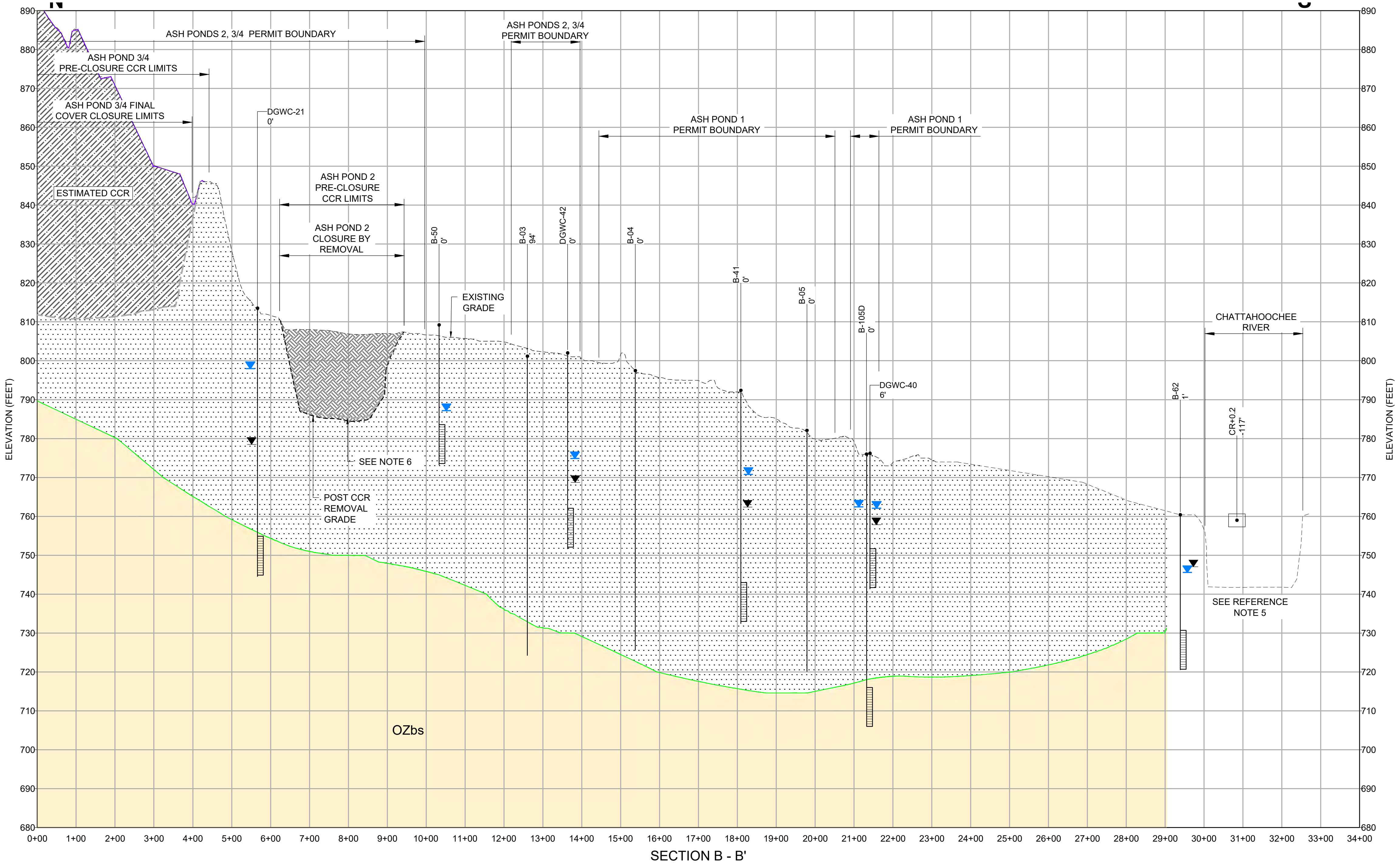
PROJECT
DRAFT REMEDY SELECTION REPORT
PLANT MCDONOUGH-ATKINSON ASH POND 1

TITLE
GEOLOGIC CROSS SECTION SCHEMATIC A - A'

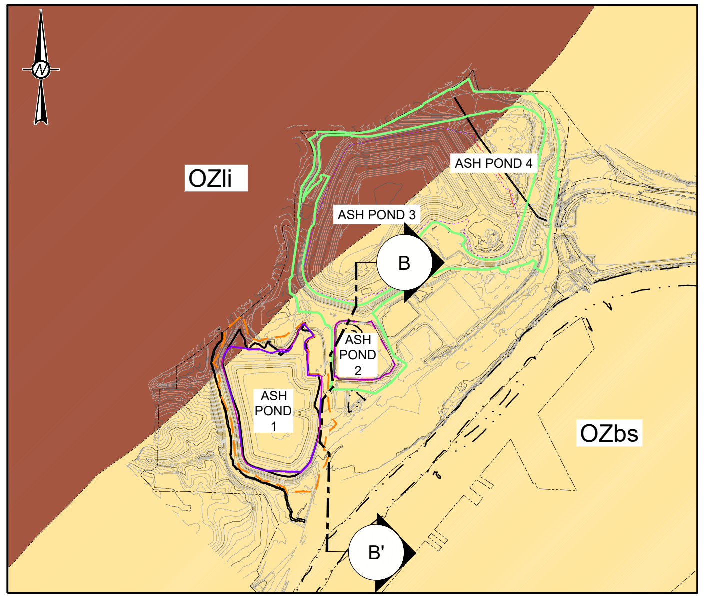
CONSULTANT

YYYY-MM-DD	2023-08-04
DESIGNED	DLP
PREPARED	CRP
CHECKED	DLP
REVIEWED / APPROVED	RNQ

PROJECT NO. 166849622
REV. -
FIGURE 3



SECTION B - B'



KEY MAP

NOTES

1. B-122D IS COMPLETED OUTSIDE THE FIGURE VIEW. B-122D IS COMPLETED IN BIOTITE GNEISS WITH A SCREEN ELEVATION OF 707.52 - 697.52 FEET BGS.

REFERENCES

1.THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS AUGUST 31, 2022. GEORGIA STATE PLANE WEST SURVEY FEET.

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

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

4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.

5. NO AVAILABLE SUBSURFACE GEOLOGIC DATA.

6. ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS FOR AP-2 GENERALLY FOLLOW 1 OR MORE FEET ABOVE POST REMOVAL GRADES.

LEGEND

╌╌╌ EXISTING GRADE (SEE REFERENCE 1)
─── ESTIMATED TOP OF ROCK SURFACE
─── PROPOSED FINAL GRADE
— — — ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
─── FINAL COVER SYSTEM
▨ ESTIMATED CCR TO REMAIN IN PLACE
░ OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
🟨 PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
🟫 BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZlI)
▼ ESTIMATED GROUNDWATER SURFACE (1/31/2023)
▼ PREDICTED POST-CLOSURE GROUNDWATER SURFACE
⊡ SURFACE WATER MONITORING

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

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

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
DRAFT REMEDY SELECTION REPORT
PLANT MCDONOUGH-ATKINSON ASH POND 1

TITLE
GEOLOGIC CROSS SECTION SCHEMATIC B - B'

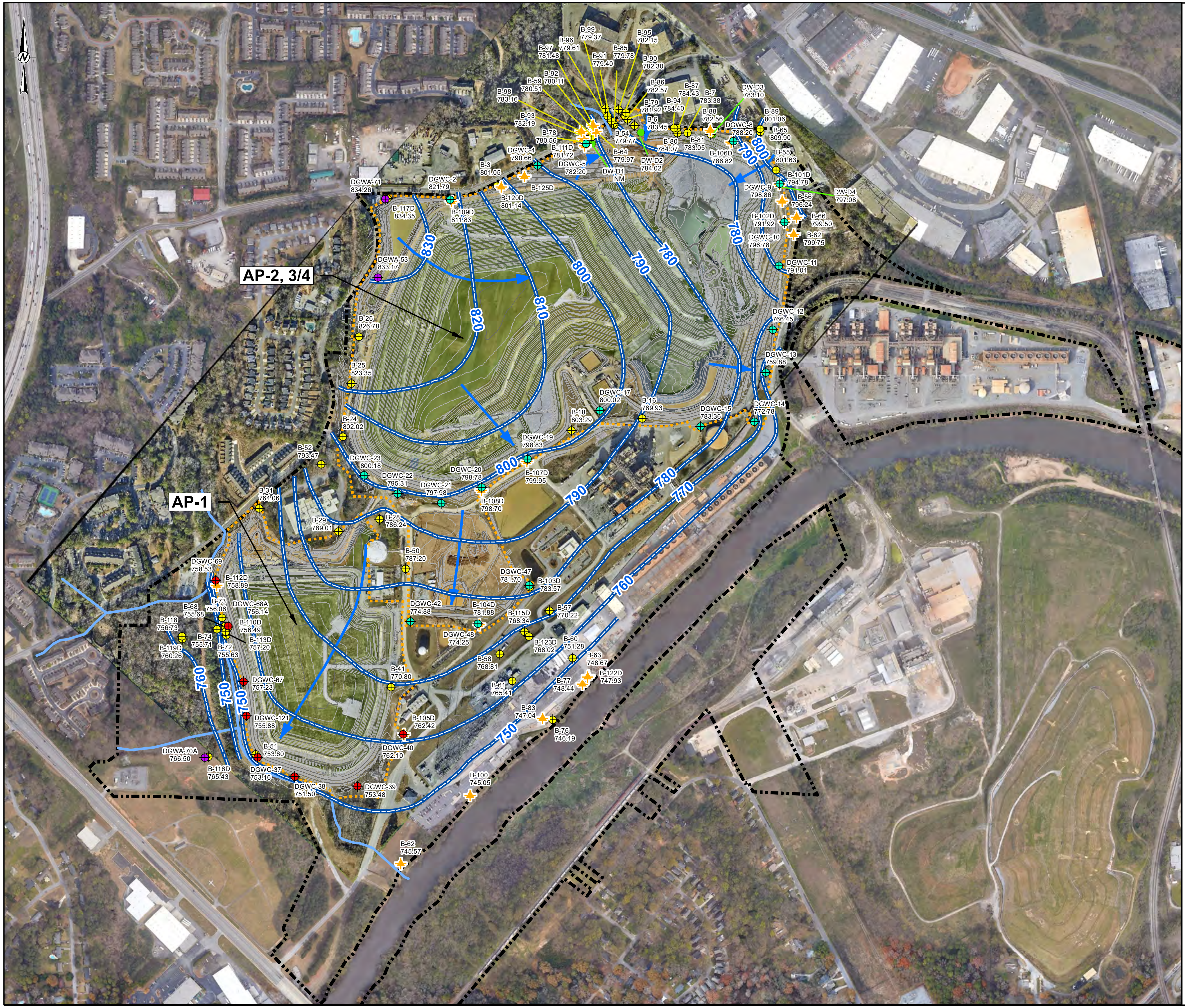
CONSULTANT

wsp

YYYY-MM-DD	2023-08-04
DESIGNED	DLP
PREPARED	CRP
CHECKED	DLP
REVIEWED / APPROVED	RNQ

PROJECT NO.	REV.	FIGURE
166849622	-	4

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



LEGEND

- ● AP-1 MONITORING WELL
- ● AP-2,3/4 MONITORING WELL
- ● UPGRADIENT WELL
- ✦ ASSESSMENT MONITORING WELLS
- ● PIEZOMETER
- ● TEMPORARY AEM WEL
- ═ GROUNDWATER SURFACE CONTOUR (FT-NAVD88)
- → APPROXIMATE GROUNDWATER FLOW DIRECTION
- — SURFACE WATER STREAM
- ┅ PERMIT BOUNDARY
- ─·─ PROPERTY BOUNDARY
- — EXISTING TOPOGRAPHY 10-FOOT
- — EXISTING TOPOGRAPHY 2-FOOT

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. GROUNDWATER ELEVATION MEAUSREMENTS OBTAINED JANUARY 31, 2023 BY WSP.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM (FT NAVD88).
4. WELLS AND PIEZOMETERS THAT CONTAIN A "D" DESIGNATION FOLLOWING THE NUMBER ARE DEEP WELLS AND ELEVATIONS ARE NOT USED FOR CONTOURING.
5. NM = NOT MEASURED.

REFERENCE

1. AERIAL IMAGE DATED NOVEMBER 2019 FROM GOOGLE EARTH AND JANUARY 2023 PROVIDED BY GPC.
2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).
3. MONITORING WELL/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY METRO ENGINEERING AND SURVEYING COMPANY IN AUGUST 2020 WITH ADDITIONAL SURVEY PROVIDED IN JANUARY 2021, MAY 2021, AND MAY 2023.

0 600 1,200

1 IN= 600 FT

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
DRAFT REMEDY SELECTION REPORT
PLANT MCDONOUGH-ATKINSON ASH POND 1

TITLE
SITE POTENTIOMETRIC MAP – JANUARY 31, 2023

CONSULTANT

YYYY-MM-DD	2023-07-06
PREPARED	SEB
DESIGN	SEB
CHECKED	DLP
REVIEWED/APPROVED	RNQ

PROJECT No. 166849622

Rev. 0

FIGURE **5**

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

LEGEND

- ● AP-1 MONITORING WELL
- ● AP-2,3/4 MONITORING WELL
- ● UPGRADIENT WELL
- ✦ ASSESSMENT MONITORING WELLS
- ● PIEZOMETER
- ● SURFACE WATER MONITORING LOCATION
- 0.01 ARSENIC GWPS ISOCONCENTRATION CONTOUR
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (JAN 2023)
- ▬ 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 JANUARY 2023 SEMI-ANNUAL MONITORING EVENT RESULTS AS WELL AS APPLICABLE DELINEATION WELL DATA.
4. GWPS IS EQUAL TO THE MCL.
5. DEEP WELL DATA IS NOT USED FOR ISOCONCENTRATION CONTOURING.
6. POTENTIOMETRIC SURFACE DETERMINED USING JANUARY 2023 WATER LEVELS.

Analyte	Units	GWPS
Arsenic	mg/L	0.01

REFERENCE

1. AERIAL IMAGE DATED NOVEMBER 2019 FROM GOOGLE EARTH AND JANUARY 2023 PROVIDED BY GPC.
2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).
3. MONITORING WELL/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY METRO ENGINEERING AND SURVEYING COMPANY IN AUGUST 2020 WITH ADDITIONAL SURVEY PROVIDED IN JANUARY 2021 AND MAY 2021.

0 200 400

1 IN= 200 FT

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
DRAFT REMEDY SELECTION REPORT
PLANT MCDONOUGH-ATKINSON ASH POND 1

TITLE
ARSENIC ISOCONCENTRATION CONTOUR MAP - JANUARY 2023

CONSULTANT

wsp

YYYY-MM-DD	2023-08-03
PREPARED	SEB
DESIGN	DLP
CHECKED	RPK
REVIEWED/APPROVED	RNQ

PROJECT No. 166849622

Rev. 0

FIGURE 6

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

LEGEND

- ● AP-1 MONITORING WELL
- ● AP-2,3/4 MONITORING WELL
- ● UPGRADIENT WELL
- ✦ ASSESSMENT MONITORING WELLS
- ● PIEZOMETER
- ● SURFACE WATER MONITORING LOCATION
- 0.0322 COBALT GWPS ISOCONCENTRATION CONTOUR
- - - COBALT GWPS ISOCONCENTRATION CONTOUR (INFERRED)
- — INFERRED POTENTIOMETRIC SURFACE CONTOUR (JAN 2023)
- ▪▪▪▪ 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. RSL = (FEDERAL REGIONAL SCREENING LEVEL)
3. DATA SHOWN REPRESENT THE JANUARY 2023 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 CONCENTRATION.
5. DEEP WELL ANALYTICAL RESULTS NOT USED FOR ISOCONCENTRATION CONTOURING.
6. POTENTIOMETRIC SURFACE DETERMINED USING JANUARY 2023 WATER LEVELS.

Analyte	Units	GWPS
Cobalt	mg/L	0.0322

REFERENCE

1. AERIAL IMAGE DATED NOVEMBER 2019 FROM GOOGLE EARTH AND JANUARY 2023 PROVIDED BY GPC.
2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).
3. MONITORING WELL/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY METRO ENGINEERING AND SURVEYING COMPANY IN AUGUST 2020 WITH ADDITIONAL SURVEY PROVIDED IN JANUARY 2021 AND MAY 2021.

0 300 600

1 IN= 300 FT

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
DRAFT REMEDY SELECTION REPORT
PLANT MCDONOUGH-ATKINSON ASH POND 1

TITLE
COBALT ISOCONCENTRATION CONTOUR MAP - JANUARY 2023

CONSULTANT

YYYY-MM-DD	2023-08-03
PREPARED	SEB
DESIGN	DLP
CHECKED	DLP
REVIEWED/APPROVED	RNQ

PROJECT No. 166849622
Rev. 0
FIGURE 7

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

1 in

LEGEND

- ● AP-1 MONITORING WELL
- ● AP-2,3/4 MONITORING WELL
- ● UPGRADIENT WELL
- ✦ ASSESSMENT MONITORING WELLS
- ● PIEZOMETER
- ● SURFACE WATER MONITORING LOCATION
- 0.0322 COBALT GWPS ISOCONCENTRATION CONTOUR
- 0.01 ARSENIC GWPS ISOCONCENTRATION CONTOUR
- INFERRED POTENTIOMETRIC SURFACE CONTOUR (JAN 2023)
- 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 JANUARY 2023 SEMI-ANNUAL MONITORING EVENT RESULTS AS WELL AS APPLICABLE DELINEATION WELL DATA.
4. GWPS IS EQUAL TO THE MCL.
5. DEEP WELL DATA IS NOT USED FOR ISOCONCENTRATION CONTOURING.
6. POTENTIOMETRIC SURFACE DETERMINED USING JANUARY 2023 WATER LEVELS.

Analyte	Units	GWPS
Arsenic	mg/L	0.01

Analyte	Units	GWPS
Cobalt	mg/L	0.0322

REFERENCE

1. AERIAL IMAGE DATED NOVEMBER 2019 FROM GOOGLE EARTH AND JANUARY 2023 PROVIDED BY GPC.
2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).
3. MONITORING WELL/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY METRO ENGINEERING AND SURVEYING COMPANY IN AUGUST 2020 WITH ADDITIONAL SURVEY PROVIDED IN JANUARY 2021 AND MAY 2021.

0 200 400

1 IN= 200 FT

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
DRAFT REMEDY SELECTION REPORT
PLANT MCDONOUGH-ATKINSON ASH POND 1

TITLE
CORRECTIVE MEASURE ALTERNATIVE 1: MNA

CONSULTANT

wsp

YYYY-MM-DD	2023-08-03
PREPARED	SEB
DESIGN	DLP
CHECKED	DLP
REVIEWED/APPROVED	RNQ

PROJECT No.
166849622

Rev.
0

FIGURE
8

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

1 in

0

LEGEND

⊕	AP-1 MONITORING WELL
⊕	AP-2,3/4 MONITORING WELL
⊕	UPGRADIENT WELL
✦	ASSESSMENT MONITORING WELLS
⊕	PIEZOMETER
▲	DEWATERING WELL
⊕	SURFACE WATER MONITORING LOCATION
◎	STAFF GUAGE
▬▬	PROPERTY BOUNDARY
—	PERMIT BOUNDARY
▬	IN-SITU INJECTION TRANSECT (INJECTION POINTS 25-FOOT SPACING OVER 200 FEET)

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

REFERENCE

1. AERIAL IMAGE DATED NOVEMBER 2019 FROM GOOGLE EARTH AND JANUARY 2023 PROVIDED BY GPC.

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

3. MONITORING WELL/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY METRO ENGINEERING AND SURVEYING COMPANY IN AUGUST 2020 WITH ADDITIONAL SURVEY PROVIDED IN JANUARY 2021 AND MAY 2021.

0 600 1,200

1 IN= 600 FT

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT
DRAFT REMEDY SELECTION REPORT
PLANT MCDONOUGH-ATKINSON ASH POND 1

TITLE
CORRECTIVE MEASURE ALTERNATIVE 2: ISI

CONSULTANT

wsp

YYYY-MM-DD	2023-04-04
PREPARED	DJC
DESIGN	DLP
CHECKED	DLP
REVIEWED/APPROVED	RNQ

PROJECT No.	Rev.	FIGURE
166849622	0	9

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

APPENDIX A

Geochemical Conceptual Site Model

REPORT

Geochemical Conceptual Site Model

Plant McDonough-Atkinson Ash Pond 1 (AP-1)

Submitted to:

Georgia Power

241 Ralph McGill Boulevard
Atlanta, Georgia 30341

Submitted by:

WSP USA Inc.

5170 Peachtree Road Building 100 Suite 300, Atlanta, Georgia, USA 30341
+1 770 496-1893

August 31, 2023

Signature Page

WSP USA Inc.

PJ Nolan

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Todd H. R

Todd Rees, Ph.D., PE (GA, NJ)
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Rens Verburg, Ph.D.
Technical Fellow, Principal Geochemist

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Figures

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Appendices

1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (USEPA) coal combustion residuals (CCR) Rule [40 Code of Federal Regulations (CFR) 257 Subpart D] and the Georgia Environmental Protection Division (GA EPD) Rules for Solid Waste Management 391-3-4-.10, this *Geochemical Conceptual Site Model* (CSM) was prepared to document groundwater quality at Georgia Power Company (Georgia Power)'s Plant McDonough-Atkinson Ash Pond 1 (AP-1). Data summarized in this report are intended to support remedy selection and fate and transport modelling for AP-1. The geochemical data evaluated as part of this effort were collected and analyzed as part of the Assessment of Corrective Measures (ACM) for AP-1.

The assessment presented in this report includes:

- An evaluation of general conditions (aquifer matrix composition, pH and redox conditions, major ion chemistry, general mineralogy, and major groundwater constituent trends); and
- Geochemical evaluation of arsenic and cobalt (speciation, specific mineralogy, advanced geochemical interpretation, and sorption).

The data presented in this report were collected from 2016 to August 2022. Activities completed at Plant McDonough's Ash Ponds 2, and 3/4 are reported under separate cover. Because of the proximity of AP-2 and 3/4 to AP-1, some of the data and interpretations are reported in both reports to provide a sitewide narrative of groundwater flow and constituent transport.

2.0 BACKGROUND INFORMATION

Plant McDonough-Atkinson (Plant McDonough, Site), 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, Smyrna, GA 30339), the property comprises approximately 390 acres and is bounded on the southeast by the Chattahoochee River.

2.1 Site Description

Four CCR surface impoundments have received CCR at Plant McDonough: Ash Pond 1 (AP-1), Ash Pond 2 (AP-2), Ash Pond 3 (AP-3) and Ash Pond 4 (AP-4). A notification of intent to close AP-1 was certified on December 7, 2015. AP-2 has been certified closed by removal as of March 30, 2020. CCR from AP-2 has been placed within the AP-3 footprint. AP-3 and AP-4 have historically operated together and are being closed as a Combined Unit (AP-3/4). AP-4 has been consolidated within the AP-3 footprint and closed in place. Georgia Power estimates that closure activities for Combined Unit AP-3/4 will be completed by 2023. As of May 2023, ongoing closure activities for Combined Unit AP-3/4 include CCR moving, dewatering activities, final cover system installation, and stormwater management system construction.

2.2 Geologic and Hydrogeologic Setting

Geologic conditions for this Site are described in detail in the *Hydrogeological Assessment Report* (HAR) (WSP 2023a). Key elements of the HAR are summarized on cross sections presented as transects through the SSL well locations. Figures 1 and 2 present site plans showing well and piezometer locations along with the transect profile line. Figure 3 presents a subsurface geologic cross section through monitoring well DGWC-40.

Based on review of site data, 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. Saprolitic soils and/or saprolitic rock range in thickness across the site but are generally encountered at or near ground surface. Saprolitic rock is also considered to be transitionally weathered rock (TWR) or partially weathered rock (PWR). Material overlying the top of rock surface, including residual soils, saprolite, and TWR or PWR, is collectively referred to as overburden.

Bedrock beneath the overburden north of the faulted intrusive contact is primarily characterized by Ordovician-age felsic sphene-epidote-biotite-quartz-feldspar gneiss (OZli) with well-developed foliation and an augen texture reflecting historical movement/deformation near fault and shear zones of the inactive Brevard fault zone. Bedrock beneath the overburden south of the faulted intrusive contact is primarily characterized by interlayered Ordovician age phyllonite, button schist with well-developed shear foliation, fine-grained mylonite with poorly developed foliation, and very fine-grained mylonitic biotite gneiss with well-developed shear foliation (OZbs). The contact has had substantial movement as indicated by porphyroclastic-feldspars with sigmoidal-tails.

A regional, unconfined aquifer system is present at the site, consisting of regolith, TWR, and shallow bedrock. Preferential groundwater flow is anticipated along lineaments and discontinuities. This unconfined, surficial aquifer system is recharged primarily through precipitation and subsequent infiltration, and flow is generally controlled by topography and surface water drainage and occurs mainly through intergranular pore spaces. The saturated soils in the regolith function as the principal storage reservoir for groundwater in the bedrock.

Groundwater occurs in a fracture network that is largely dependent on rock type, degree of differential weathering, topography, and area of catchment. Groundwater flow in the underlying bedrock occurs primarily along discontinuities such as compositional layering, foliation, joints, and fractures. Fracture porosity is minimum compared to the regolith, and thus, groundwater flow is determined by how well the fractures are inter-connected. Further, fractures within the bedrock at the site are not well connected and the predominant groundwater flow at the site occurs in the overburden and upper bedrock at the site. Based on site-specific examples and supporting data, as presented in the HAR, fractures within the bedrock are limited and decrease in number and groundwater production with depth.

2.3 Summary of SSLs

Analytical results from routine monitoring events have been statistically analyzed in accordance with the Site's certified statistical analysis method. Statistical analyses indicate statistically significant levels (SSLs) of Appendix IV constituents above the groundwater protection standards (GWPS) as summarized below.

Appendix IV SSL Summary

SSL[1] Constituent	Well ID
Arsenic	DGWC-69
Cobalt	DGWC-40
Molybdenum	DGWC-68A

Note:

[1] An SSL is determined by comparing the confidence interval to the GWPS. Under current GA EPD rules, the GWPS is: (i) the maximum contaminant level (MCL) or regional screening level RSL, or (iii) background levels for constituents where the background level is higher than the MCL or RSL.

The SSL of molybdenum at DGWC-68A is not addressed in this GCSM. Based on Site data, the molybdenum SSL at the Site originates from naturally occurring molybdenum in the bedrock and is not the result of a release from the AP-1. In accordance with 257.95(g)(3), an Alternate Source Demonstration (ASD) for molybdenum has been documented and approved by GA EPD to address the SSL at DGWC-68A (Golder 2022a, 2022b, WSP 2023b). The evidence for a natural source of molybdenum to groundwater includes:

- Molybdenite crystals identified in gneissic/pegmatitic bedrock immediately below the screened interval of DGWC-68A.
- Molybdenum concentrations observed in bedrock samples are substantially higher (>800 times) than average values for various rock types (i.e., crustal, felsic, or mafic).
- Molybdenum is known to be present in regional aquifer materials based on previous studies (Golder, 2022a, 2022b, WSP 2023b).

Based on information presented in the ASD, the molybdenum concentrations at DGWC-68A are thus attributed to a natural source, i.e., the molybdenum-rich bedrock just below the screened interval of DGWC-68A, and not due to a release from the Ash Pond. The ASD for molybdenum at DGWC-68A was approved by GA EPD on March 3, 2023.

3.0 GEOCHEMICAL CONCEPTUAL SITE MODEL

This section summarizes the results from groundwater, porewater, and aquifer solids sampling. In addition, the data evaluations conducted at the Site to develop the current geochemical CSM are described.

Groundwater quality data between 2016 and 2022 as well as porewater samples from AP-1 are evaluated as part of this CSM. In addition, solids samples were evaluated from across the Site. The following lithologies were included in the investigation:

- Saprolite/Overburden
- Partially Weathered Rock/Transitionally Weathered Rock (used interchangeably as PWR/TWR)
- Gneiss and Biotite Gneiss (collectively referred to as Bedrock), separated by an unnamed regional fault that is part of the Brevard Fault Zone.

Site groundwater quality data collected at the Site since 2016 are summarized in Appendix A. Analytical data reports have been submitted with Annual and Semi-Annual groundwater monitoring reports and are not included in this report. A summary of the overburden, PWR/TWR and bedrock samples subjected to various analytical techniques is presented on Figure 4. Analytical data reports for these analyses are included as Appendix B, Appendix C and Appendix D. Appendix E contains the results of treatability testing.

3.1 Groundwater Composition

3.1.1 pH and Redox

Since September 2016, the pH and redox of groundwater in monitoring well network at AP-1 have varied from 4.5 to 7.0 (as field pH in standard units [SU]; SSL and background wells shown in Figure 5) and -89.2 to +375mV [reported as field Oxidation Reduction Potential (ORP); SSL and background wells shown in Figure 6], respectively. Excluding DGWC-40, both upgradient and downgradient wells fall within a narrower pH range of approximately 5.5. to 7 SU.

For pH, monitoring well DGWC-40 is distinctive from all other monitoring wells at AP-1, with a pH that is much lower, ranging from approximately 4.5 to 4.8 since September 2016. The ORP at well DGWC-40 has been consistently moderately oxidizing, ranging from +48.0 to +252.1 mV since September 2016. Based on the recorded pH values and moderately oxidizing condition of groundwater at DGWC-40, this would place DGWC-40 in a stability field in a Pourbaix (or Eh-pH) diagram where iron would predominantly occur in dissolved and reduced form (Fe^{+2}; Figure 7).

The pH conditions at monitoring well DGWC-69 are different from those in well DGWC-40 in that groundwater in the latter is sufficiently alkaline to cause any iron present to precipitate in the form of ferrihydrite [$Fe(OH)_3$] (Figure 8). The pH and Eh at the other wells in the monitoring network at AP-1 are similar to those in DGWC-69, also indicating the likely formation of ferrihydrite based on an evaluation of saturation indices at these wells. This is in agreement with measured dissolved oxygen (DO) levels across the site, which indicate that shallow groundwater is mostly oxidizing (DO > 0.5 mg/L; Figure 9) at SSL and background wells.

In conclusion, groundwater at monitoring well DGWC-40 is geochemically different with respect to pH from groundwater in other monitoring wells in the AP-1 network.

3.1.2 Groundwater Major Ion Composition

Based on major ion abundance, groundwater in the monitoring well network at AP-1 can be generally characterized as being of the calcium bicarbonate type, with a few exceptions (Figure 10). Groundwater at monitoring well DGWC-40 is of the calcium sulfate type, while DGWC-38 is a mixed type between calcium bicarbonate and calcium sulfate. The groundwater composition at monitoring well DGWC-40 is different than at other wells at AP-1 due to its low pH and corresponding low alkalinity, and an increased relative abundance of sulfate. Thus, well samples DGWC-38 and 40 showing mixed-type water to calcium-sulfate water on the Piper plot are due to a lack of alkalinity rather than a sulfate CCR signature.

3.1.3 Groundwater Quality Trends

Generally, the overall major ion chemistry at monitoring wells DGWC-40 or DGWC-69 has remained stable since October 2019 when comprehensive major cations and anions were first analyzed. However, one notable trend is observed for the groundwater at DGWC-69, which has shown a modest decrease in the relative abundance of calcium and sulfate over time, (Figure 11). Trends in SSL parameters at these wells are discussed in Sections 3.3 and 3.4 for arsenic and cobalt, respectively.

The concentrations of non-SSL parameters in groundwater at the AP-1 monitoring well network have demonstrated a generally stable or decreasing trend. This includes sulfate, which has shown a generally stable or decreasing trend in concentrations at all wells in the AP-1 network, (Figure 12a and 12b). The temporal increase in sulfate level at DGWC-40 in 2019 (Figure 12b) is attributed to ash pond closure activities in the vicinity of that well.

Boron in groundwater at the AP-1 monitoring network has also been relatively stable since September 2016, with two generalized groupings across the well network present (Figure 13). During the most recent sampling in September 2022, boron in well DGWC-40 increased slightly, but without any corresponding increases in any other CCR indicator parameters such as sulfate or calcium and remained well below 1 mg/L (Figures 12 and 14, respectively). As addressed in Section 3.7, geochemical modeling indicates that calcium and sulfate minerals remain undersaturated in the majority of wells and, therefore, do not represent a major control on maintaining constant calcium and sulfate concentrations.

The Total Dissolved Solids (TDS) content of groundwater in the AP-1 monitoring network has been stable or decreasing in most wells. Background well DGWA-70A reports the lowest TDS concentrations (ranging from 25 to 88 mg/L since May 2017; Figure 15). The highest TDS level was recorded in upgradient well DGWA-53 on one occasion, which was likely affected by ash pond closure work immediately adjacent to that location in October 2017. Since that excursion, TDS at well DGWA-53 has remained below 200 mg/L as has been the case in the rest of the background wells and DGWC-69. The TDS concentration at DGWC-40, while remaining consistent, has been between 300 and 600 mg/L since 2016. Thus, the TDS values at wells in the monitoring network indicate no substantial changes due to new releases from the CCR unit.

3.2 Porewater Composition

Porewater at AP-1 was sampled in 2017 and 2019 at two piezometers, AP-1B-3, and AP-1B-7 (Figure 1). Average porewater results as compared to data from wells DGWC-40 and DGWC-69 are presented in Table 1 and raw porewater data are presented in Appendix B. The pH of porewater varied between 6.6 and 7.0. Based on the analytical results, boron concentrations ranged from 1.3 to 3.6 mg/L, calcium ranged from 60.4 to 78.8 mg/L, and sulfate ranged from 39 to 158 mg/L. These concentration ranges are comparable to concentrations noted in some of the downgradient wells; however, the sulfate concentrations are lower than in most downgradient wells.

Arsenic in porewater samples ranged from 1.1 to 3.1 mg/L, with approximately 90-95% present as As^{+3}, the reduced form of arsenic (i.e., arsenite in 2017, Appendix B). Cobalt in porewater samples ranged from 0.00033 to 0.0026 mg/L in October 2019. Arsenic concentrations in DGWC-69 are significantly (100 times) lower than arsenic in porewater, whereas cobalt concentrations in well DGWC-40 are approximately 10 times higher than the cobalt concentration in porewater. Thus, the wells showing SSLs for arsenic and cobalt in the downgradient areas of AP-1 reflect notably different concentrations with respect to porewater concentrations, suggesting different mechanisms for downgradient fate and transport of arsenic and cobalt. Variations in pH and redox conditions along the flow path from AP-1 to downgradient well locations DGWC-40 and DGWC-69 and the interaction of groundwater with aquifer solids are likely to affect the occurrence and distribution of arsenic and cobalt in Site groundwater.

3.3 Arsenic

In groundwater, arsenic is mostly present in two valence states, as the arsenite species with the valence state As^{+3}, and as arsenate complexes with the valence state of As^{+5} (Hem, 1985). The arsenite species, As^{+3}, has a lower affinity for sorption (attenuation) on metal (hydr)oxide surfaces than arsenate (As^{+5}) and is generally regarded to be more mobile in natural environments (Nordstrom et al., 2014; Smith and Huyck, 1999). Arsenic naturally occurs across the US in soils at average concentrations from 1.5 mg/kg to 4.6 mg/kg, but up to 10.6 mg/kg in shales or clays (Li 2000; Taylor and McLennan, 1985). Under oxidizing conditions, arsenic is ten times less mobile at a pH range 5 to 9 than at high (>9) or low (<5) pH due to desorption from metal surfaces because of changes in surface charge or sorbent dissolution (Strenge and Peterson, 1989). At low pH (<5), arsenic will desorb, becoming mobile in groundwater when sorbents such as ferrihydrite are dissolved (Nordstrom et al. 2014). The sorption of arsenic onto ferrihydrite under varying pH and redox conditions (Dzombak and Morel, 1990; Schwertmann ,1988) and gibbsite (Karamalidis and Dzombak, 2010) has been well studied, as well as arsenic adsorption onto clay minerals (Manning and Goldberg, 1996). Arsenic precipitation as a sulfide mineral is also a well-established attenuation mechanism but typically requires highly reducing conditions and the presence of sufficient sulfur (Nordstrom and Alpers, 1999; Nordstrom et al., 2014). Thus, arsenic geochemistry is controlled by the availability of a natural (or anthropogenic) source and the pH and redox conditions in the aquifer, with increased mobility at alkaline and acidic pH and reducing conditions, and increased attenuation at circum-neutral pH and variable (fluctuating) redox conditions.

Arsenic levels in groundwater at DGWC-69 have been variable since March 2017, ranging from 0.003 to 0.164 mg/L (Figure 16). The highest arsenic measured was during three sampling events starting October 2017, but levels decreased substantially back to near their baseline concentration by March 2018. This increase in arsenic corresponded to slight rises in calcium and boron concentrations (30.6 mg/L and 0.667 mg/L, respectively) but no other CCR indicator parameters. Since the isolated peak in 2017 followed by a return to baseline values, arsenic has generally increased at well DGWC-69 since July 2018. Arsenic was nearly all present as arsenite in 2017 at well DGWC-69 based on speciation testing, even though groundwater was primarily oxic. Arsenic concentrations have remained stable since 2020, near 0.3 mg/L, except for the excursion. Concentrations of the CCR indicators boron and sulfate have both decreased during the same timeframe, indicating possible localized geochemical controls on arsenic attenuation (Figures 12 through 16). Based on the pH and ORP of groundwater at well DGWC-69, arsenic should become oxidized when mixing with the groundwater at this location (Figure 17, in contrast with speciation testing results.)

3.4 Cobalt

Cobalt is typically present in groundwater in the divalent cation form Co^{2+} (Takeno, 2005). Naturally occurring cobalt in U.S. soils is present at an average concentration of 6.7 mg/kg (Shacklette and Boerngen, 1984). Cobalt may occur in mineral form as carbonates or hydroxides (Hem 1985; Nordstrom and Alpers 1999). During weathering of these minerals (i.e., dissolution and/or oxidation), any cobalt is typically released and redistributed to iron or manganese (hydr)oxides (Butt et al., 2000) or other sorbents (e.g., clays, organic matter; Uddin, 2017). The adsorption of cobalt to ferrihydrite, the direct incorporation of cobalt into precipitated iron hydroxides, and the adsorption of cobalt by gibbsite and manganese dioxides are well documented (e.g., Dzombak and Morel, 1990, Karamalidis and Dzombak, 2010; Smith, 1999; Tonkin et al., 2004). Cobalt attenuation is greater at a pH range of 5 to 9 than at lower or higher pH (Strenge and Peterson 1989). Cobalt in groundwater above background levels (0.0322 mg/L) is associated with low pH, where the dissolution of iron oxyhydroxides promotes the release of cobalt.

Cobalt has only been an SSL at one well at AP-1, DGWC-40. The cobalt concentration in groundwater at well DGWC-40 has ranged from 0.0318 to 0.055 mg/L since September 2016 (Figure 18). Cobalt in porewater at AP-1 is well below the concentration (10 times lower) measured at DGWC-40 (Section 3.2). Elevated cobalt in well DGWC-40 is closely correlated with the relatively low pH (4.6 to 4.85) in well DGWC-40 as compared to other wells at AP-1 (DGWC-40 well shown in orange as compared to other wells shown in blue; Figure 19). Cobalt concentrations at DGWA-53 (a background well) have also been intermittently elevated historically but return to baseline; these excursions appear related to ash pond closure activities and ash consolidation when high TDS levels were also intermittently measured.

Cobalt is present in groundwater predominately as the divalent cation Co^{+2} (Figure 20). The range of pH observed at well DGWC-40 is lower than that of background wells DGWA-53, DGWA-70A, and DGWA-71, with pH values between 5.4 and 6.7, respectively. The presence of sulfide minerals in bedrock Section 3.5 and overburden in contact with groundwater at the Site, the history of the adjacent ash pond closure activities influencing groundwater at the well and the fact that AP-1 porewater has a much higher pH (Section 3.2), indicate that the cobalt concentrations at DGWC-40 are likely due to adjacent ash pond closure activities, localized sulfide oxidation, or other naturally occurring processes.

3.5 Site Mineralogy

The mineralogical compositions of overburden, PWR/TWR, and bedrock samples from eight boreholes/wells located around AP-1 were assessed using quantitative X-ray diffraction (XRD) with Rietveld refinement. The results for the three lithologies are presented in Appendix C and summarized in Figures 21 and 22, respectively. Of the locations where current SSLs are present, sample material is only available from DGWC-69. Additional samples have been collected to better describe materials at DGWC-40 but are in the process of being analyzed. Cores from background boring DGWA-53, DGWA-70A, and DGWA-71 were also included in the mineralogical analysis. The purpose of this analysis was to identify and quantify the crystalline mineral phases in the aquifer solids.

The bedrock sample consists predominantly (~80%) of quartz and plagioclase minerals with some mica (biotite and muscovite) and clay minerals. There is a progressive increase in micas and clays from the bedrock to the PWR and overburden, as noted in the increased amounts of biotite, muscovite, kaolinite, etc., and increased amounts of iron oxide minerals in the overburden. Overall, the mineralogical compositions in the overburden and PWR reflect weathered biotite gneiss lithology in the bedrock. Pyrite occurs at relatively low concentrations (0.2 wt%) at two locations on the western side of AP-1. The pyrite near the screened interval of wells may represent a source of trace elements to groundwater since arsenic has a tendency for association with sulfur in sulfur-bearing minerals.

Overburden generally consists of quartz, albite, and clay minerals, including kaolinite and chlorite, reflecting weathering of underlying bedrock material, for example, as noted in DGWA-53. Clays have significant sorptive capacity for numerous trace metals and metalloids, including the constituents of interest (COI) at this Site (Uddin 2017). The micas muscovite and phlogopite were identified as well. Overburden samples from wells DGWC121 and B-113D also contain trace amounts of pyrite, up to 0.2% by weight.

Notably, multiple overburden samples also contained the serpentine mineral lizardite. Lizardite is a hydrous magnesium silicate which can contain varying amounts of iron, boron, cobalt, chromium, and other trace elements (Faust and Fahey, 1962; USGS Prof paper 384-A). It is commonly found associated with (ultra)mafic rocks, frequently near fault zones where hydrothermal fluids moved through planes of weakness from deeper zones (e.g., Ryan et al,. 2019). The Site geologic map shows well DGWC-69 located near a mylonitic fault and at the lithologic contact between the Long Island gneiss and biotite gneiss, both of which contain mafic components (Figures 2 and 3; WSP Golder, 2022.). Proximity to highly metamorphosed former sedimentary and igneous rocks and structural contacts favors the occurrence of trace elements, including arsenic, in groundwater at DGWC-69 (Butt et al., 2000). The total arsenic concentration in the screened interval of well DGWC-69 is approximately 17 mg/kg, which is considerably higher than the average crustal concentration of arsenic of 2 mg/kg (Smith, 1999). Thus, natural sources of arsenic exist within the screened interval of well DGWC-69.

3.6 Sequential Extraction

Chemical analysis of overburden and bedrock by sequential extraction analysis was conducted on six solid samples [1 upgradient borehole and 4 downgradient boreholes (two depths at one borehole)] surrounding AP-1.

Solid samples were selected to include overburden and bedrock, and lithological variability across the Site for data interpretation and modeling efforts. Solid samples from boring DWGC-40 were not available and, therefore, samples from DGWC-121 and B-113D were used to represent this portion of the site. Considering that cobalt geochemistry is mainly driven by groundwater pH, SEP data from other locations in the vicinity of DGWC-40 that have a more circumneutral pH are considered more representative for evaluation of the aquifer capacity for cobalt attenuation. Solids data from well DGWC-68A are also included due to its proximity to DGWC-69. The analytical results are summarized in Table 2 and presented in Appendix D. The sequential extraction procedure (SEP) consists of a seven-step metals extraction from solids to determine the potential environmental stability of those metals. The seven-step SEP is defined by specific extraction steps as follows (based on a modified Tessier et al. (1979) method):

SEQUENTIAL EXTRACTION PROCEDURE					
ENVIRONMENTALLY AVAILABLE	Increasing Availability	Step 1	Increasing Extraction Strength	Exchangeable Fraction:	This extraction includes trace elements that are electrostatically adsorbed to soil/rock minerals
		Step 2		Carbonate Fraction:	This extraction targets trace elements that are adsorbed or otherwise bound to carbonate minerals
		Step 3		Amorphous Metals:	This extraction targets trace elements that are complexed by amorphous minerals
		Step 4		Metal Hydroxide Fraction:	This extraction targets trace elements bound to hydroxides of iron, manganese, and/or aluminum
		Step 5		Organic Fraction:	This extraction targets trace elements strongly bound via chemisorption to organic material
ACID/SULFIDE AND RESIDUAL		Step 6		Acid/Sulfide Fraction:	The extraction is used to identify trace elements precipitated as sulfide minerals
		Step 7		Residual Fraction:	Trace elements remaining in the overburden after the previous extractions will be distributed between silicates, phosphates, and refractory oxide

Steps 1 through 7 represent an increasing amounts of target metals that can be removed into solution from the solid phase. For instance, metals bound in the carbonate fraction, or that are exchangeable, are much more likely to become mobile due to changes in groundwater chemistry than metals bound within a sulfide or residual fraction. The total concentration of a metal measured from all seven steps can be compared to the concentration determined from the total metal analysis for compositional accountability. Metals extracted in Steps 1 through 5 are considered environmentally available, whereas metals extracted in Steps 6 and 7 are present in acid/sulfide and residual fractions and are not expected to be released under conditions typically encountered in aquifers, except in the case of acidification or other excursions from typical groundwater conditions (Tessier et al. 1979).

The arsenic content of overburden (using a hydrofluoric digestion) from the SEP ranged from 0.54 to 28 mg/kg while the environmentally available fraction (steps 1 through 4) ranged from 0.54 mg/kg in DGWC-121 to 24.7 mg/kg at DGWC-69, representing from 87% to 100% of total arsenic (Figure 23). Arsenic that is strongly bound to the acid/sulfide and residual fractions represented less than 25% in all samples. Adjacent to well DGWC-69, one sample from DGWC-68A contained arsenic only in the acid/sulfide and residual fraction, likely representing the natural occurrence of arsenic in overburden. The vast majority of the arsenic that was present in the environmentally available fraction in the sample from DGWC-69 was associated with the amorphous metal and metal hydroxide fractions: 22.3 mg/kg. The larger environmentally available arsenic fraction indicates the likely attenuation of arsenic from groundwater.

Arsenic extracted from two bedrock samples, DGWA-53 and B-113D, ranged from 0.38 to 1.3 mg/kg (Figure 23). In contrast to the overburden samples, arsenic in bedrock predominantly (>75%) occurs in resistant fractions, Arsenic in these samples was associated predominantly with the sulfide/acid soluble or residual phases. This indicates a natural occurrence of arsenic in the bedrock.

Total cobalt in overburden varied between 3.7 and 18 mg/kg with the environmentally available fraction ranging from 1.35 mg/kg at DGWC-69 to 8.2 mg/kg in DGWC-121, representing from 15% to 47% of total cobalt (Figure 24) in the overburden samples. The majority of cobalt in overburden samples resided in the acid/sulfide and residual fraction of samples, ranging from, 2.0 to 7.6 mg/kg, indicating the presence of naturally occurring cobalt that can be released due to acidification or oxidation of those mineral phases. Cobalt in bedrock samples ranged from 1.8 to 15.1 mg/kg, with the majority of cobalt also present in the sulfide/acid soluble phase, up to 67% of total cobalt (Figure 24). As such, cobalt is predominantly present in the acid/sulfide and residual fractions (steps 6 & 7) in both the overburden and bedrock samples.

While not a COI, iron and its minerals commonly represent one of most abundant reservoirs for metal/metalloid attenuation in soils (Dzombak and Morel, 1990; Smith, 1999). Iron was present in all four overburden samples analyzed, ranging from approximately 14,000 to 42,000 mg/kg (Figure 25). The largest proportion of iron in overburden was present in the sulfide/acid soluble and residual fractions. Iron in bedrock samples ranged from approximately 10,000 to 35,000 mg/kg and was predominantly present in the sulfide/acid soluble fraction (~50%; Figure 25). In both overburden and bedrock, smaller proportions of iron also resided in the metal hydroxide and amorphous fractions. These phases, part of the labile fraction in steps 1 through 5, can generally be considered representative of the amount of iron in soil that may be available as a sorbing medium and can, therefore, be important for attenuation of arsenic or cobalt.

Like iron, manganese is important because of its potential ability to attenuate COIs. Total manganese in overburden ranged from approximately 350 to 1,300 mg/kg while the environmentally available fraction ranged from 124.4 mg/kg at DGWC-121 to 836.3 mg/kg in DGWC-68A, representing from 25% to 79% of total manganese (Figure 26). The majority of manganese in overburden samples was present in amorphous and metal hydroxide fractions, indicating the presence of a sorbent available for attenuating COIs. Manganese in bedrock samples ranged from approximately 190 to 1,200 mg/kg (Figure 26). In upgradient bedrock sample DGWA-53, manganese was predominately present in the acid/sulfide and residual fraction while in the downgradient sample B-113D, the majority of manganese occurred sorbed to the amorphous metal fraction (Figure 26). The availability of significant amounts of manganese hydroxides at several locations west at AP-1 suggest a high potential for attenuation of target constituents at the site.

Aluminum also has been well studied as a potential sorbing medium in soils (e.g., Karamalidis and Dzombak, 2010). Total aluminum in overburden ranged from approximately 38,000 to 68,000 mg/kg (Figure 27). Up to 89% of total aluminum resided in the residual or silicate fraction, consistent with the presence of aluminum silicate minerals. Total aluminum in bedrock was slightly lower, ranging from approximately 37,000 to 57,000 mg/kg but with a greater proportion of aluminum in the sulfide/acid soluble fraction in the bedrock sample from B-133D, 15,000 mg/kg (Figure 27). The occurrence of aluminum in the resistant fractions is consistent with the results from the mineralogical analysis.

Additional analysis of arsenic and cobalt in overburden, PWR/TWR, and bedrock in borings at the AP-1 was completed using a USEPA 3050B (near total) acid extraction method with analysis by USEPA method 6010/6020. The results are reported in Appendix B. These results cannot be directly compared to results of SEP testing because this method is not as rigorous and, therefore, does not result in complete digestion of the sample (including the silicates). Total arsenic by this method in upgradient (background) locations ranged from <0.39 mg/kg in the overburden to 1.2 mg/kg in the PWR/TWR zone. Likewise, cobalt concentrations increased from 5.1 mg/kg in the overburden to 20 mg/kg in the PWR/TWR at upgradient locations. Arsenic and cobalt concentrations in the bedrock were notably lower than in the PWR/TWR, based on the limited data reported. The highest reported concentrations of arsenic and cobalt corresponded to the zone with the highest potential for groundwater flow rates and redox variability (i.e., the PWR/TWR) as compared to the overlying porous overburden and less weathered underlying bedrock.

Additional CCR Rule Appendix IV metals other than arsenic and cobalt were analyzed in overburden and bedrock samples to facilitate evaluation of inter-element relationship and correlation analyses. The results are presented in Appendix B but are not discussed in detail in this report as they were not at SSLs in groundwater.

3.7 Mineral Stability

Groundwater data presented in the previous sections were used to calculate the mineral saturation indices and evaluate the stability of minerals under site pH and redox conditions for the dissolution or attenuation of target constituents, namely, arsenic and cobalt. Mineral saturation plays an important role in attenuation of metals, either directly by their removal through mineral precipitation, or indirectly by providing a sorptive surface. The geochemical computer code PHREEQC, developed by the United States Geological Survey (USGS), was used to calculate mineral saturation indices (Parkhurst and Appelo, 2013). PHREEQC version 3.7 is a general-purpose geochemical modeling code used to simulate reactions in water and between water and solid mineral phases (e.g., rocks and sediments). Reactions include aqueous equilibria, mineral dissolution and precipitation, ion exchange, surface complexation, solid solutions, gas-water equilibrium, and kinetic biogeochemical reactions. The widely accepted thermodynamic database Minteq.v4, 2017 edition, was used as a basis for the thermodynamic constants required for modeling.

The potential for mineral precipitation was assessed in PHREEQC using a saturation index (SI) calculated according to the following equation:

$$SI = \log (IAP/Ksp)$$

The saturation index is the ratio of the ion activity product (IAP) of a mineral to the solubility product (Ksp). An SI value greater than zero indicates that the solution is supersaturated with respect to a particular mineral phase and, therefore, precipitation of the mineral may occur. An evaluation of precipitation kinetics is then required to determine whether the supersaturated mineral will indeed form. An SI value less than zero indicates the solution is undersaturated with respect to a particular mineral phase and this mineral may dissolve. An SI value close to zero indicates equilibrium conditions exist between the mineral and the solution.

The results of speciation modeling of groundwater from background and AP-1 monitoring wells are provided in Table 3. The modeling results are summarized as follows:

- **Iron-bearing minerals:** Ferrihydrite was indicated to be at equilibrium or oversaturated in all downgradient detection monitoring wells at AP-1 (except at DGWC-40 where the groundwater pH was low (<5.0) and

DGWC-121 where groundwater was slightly reducing), indicating a strong potential for ongoing precipitation of solid phase iron hydroxides in the groundwater system. Thus, throughout most of the Ash Pond Area, the prevalence of iron hydroxides is assumed.

- **Other minerals:** Generally, groundwater in all downgradient AP-1 monitoring network wells was in equilibrium with respect to barite [$BaSO_4$] except DGWC-69. Calcite [$CaCO_3$] was in equilibrium with groundwater in bedrock well B-113D. Rhodochrosite [$MnCO_3$] was in equilibrium with groundwater in monitoring network well DGWC-39.

In summary, mineral stability calculations indicate the widespread occurrence of ferrihydrite in the aquifer, which can potentially attenuate the COIs through its ability to act as a substrate for adsorption and co-precipitation along the groundwater flow paths.

3.8 Cation Exchange Capacity

The Cation Exchange Capacity (CEC) represents the total number of negatively charged sites in a given amount of solid at which reversible cation adsorption and desorption can occur (Hem, 1985). Cation exchange also commonly refers to the replacement of one cation by another in a selective series or preferred adsorption, which increases with the ionic radius of major ions (Smith, 1999).

The CEC of overburden and bedrock was measured in select samples from the AP-1 monitoring network. The CEC of samples from AP-1 borings ranged from 5.06 meq/100g to 10.64 meq/100g in the overburden (Figure 28). At boring B-113D, the CEC of bedrock was measured at 5.18 meq/100g. Generally, the CEC measured at AP-1 would be considered low to moderate in the overburden and low in the underlying zones, indicating a limited potential for attenuation through cation exchange.

3.9 Total Organic Carbon

Organic Carbon is an important constituent of the geochemical redox cycle in the subsurface and may exert a significant control on metal mobility and metal stability. For example, reducing conditions generated by organic carbon will promote the dissolution of iron oxyhydroxide minerals such as ferrihydrite, thereby removing this important sorbent and mobilizing species sorbed onto its surface (Hem, 1985; Smith, 1999).

The Total Organic Carbon (TOC) content of overburden and bedrock was measured in select samples to better understand its potential effect on fate and transport of the SSL parameters, in particular their attenuation. In the two overburden samples and one bedrock sample from the AP-1 monitoring network in which organic carbon was measured, all TOC concentrations were below detection limits (<0.05%), indicating that organic carbon does not play a role of importance in terms of arsenic and cobalt mobility.

4.0 ARSENIC TRANSPORT AT AP-1

Groundwater monitoring indicates an SSL of arsenic in well DGWC-69, while the arsenic concentration trend is relatively stable for the previous three years (Figure 16). CCR indicator parameters such as boron and sulfate were present in relatively low concentrations (<0.25 mg/L and < 12 mg/L, respectively) during the last sampling event (September 2022). While arsenic concentrations lack any correlations with these CCR indicators (Appendix F), this may indicate differential and localized attenuation mechanisms specific to arsenic at DGWC-69. Groundwater pH has also been stable over the monitoring period and the DO levels indicate an oxidizing condition at the well.

Aquifer solids data suggest that total arsenic occurs at concentrations up to 28 mg/kg in the overburden at well DWGC-69. More than 85% of the total arsenic occurs as adsorbed to iron hydroxides, in the carbonate phase, or is exchangeable in the aquifer solids. In contrast, more than 75% of total arsenic in the underlying bedrock occurs in the resistant (sulfide and silicate) fractions at only trace levels (< 2 mg/kg).

Porewater data from AP-1 (November 2017) indicate an arsenic concentration of approximately 2 mg/L, with most of it occurring as arsenite (a more mobile species than arsenate) in AP-1. Arsenite is also the predominant species in well DGWC-69, although the total concentrations are significantly lower (0.28 mg/L) than in porewater and the redox of groundwater is oxidizing, in contrast to the reducing condition in the porewater. This is likely from the influx of reduced arsenic from AP-1 mixing with oxidized groundwater, leading to a disequilibrium condition.

Based on extensive data presented in this report, two hypotheses for the occurrence of arsenic in well DGWC-69 are presented here. The primary working hypothesis is that arsenic in well DGWC-69 is derived from AP-1 and the oxidizing condition favors attenuation through adsorption to the iron hydroxides in the aquifer solids. Iron hydroxides are modeled to be at or in near-equilibrium in groundwater at DGWC-69. A sustained oversaturation of iron hydroxides would favor increased adsorption to aquifer solids.

The alternate hypothesis (hypothesis 2) postulates the presence of a natural source of arsenic, i.e., the bedrock, from which arsenic is released into the partially weathered rocks and overburden due to natural weathering processes. Minerals such as the aforementioned lizardite identified in the overburden are a possible source of arsenic to groundwater. Since there is a potential source of arsenic in the aquifer solids, the occurrence of arsenic in well DGWC-69 may be related to a natural source.

5.0 COBALT TRANSPORT AT AP-1

Cobalt exceeds the GWPS in well DGWC-40. Cobalt concentrations show a slightly increasing trend that has ranged from 0.032 (in December 2016) to 0.055 (in March 2020) but has since declined to near 0.037 mg/L (in September 2022). Groundwater pH has remained relatively stable, ranging from approximately 4.9 to a low of 4.5 as of the most recent sampling (September 2022). The SEP data suggest a capacity for sequestration of cobalt in the overburden and bedrock materials for all soil/rock samples (Figures 25, 26, and 27). The attenuation of cobalt across all other locations of AP-1 monitoring network appears stable where the groundwater pH is not strongly acidic (Figure 24) based on the absence of cobalt in groundwater even when CCR indicator constituents are present. Geochemical modeling of saturation indices shows ferrihydrite is at equilibrium with groundwater. Based on both SEP data showing sufficient attenuation capacity of iron hydroxides and the increased oxic conditions downgradient of well DGWC-40, the precipitation of cobalt to ferrihydrite and other iron hydroxides is likely.

Cobalt is predominantly present in the resistant (sulfide and residual) fractions of the overburden soil and bedrock as shown by the SEP data. This indicates a natural source of cobalt in the aquifer solids, which can be mobilized when conditions become sufficiently acidic. Since cobalt concentrations are below the detection limit in AP-1 porewater, the cobalt concentrations in well DGWC-40 are postulated to be caused by the low pH conditions at DGWC-40, either due to acidic groundwater flowing from AP-1 or from further upgradient areas from AP-1. Although the low pH at DGWC-40 limits attenuation of cobalt at that location, cobalt is attenuated to below GWPS downgradient of DGWC-40 at all nature and extent wells (Figure 2).

Thus, based on the data collected to date, cobalt in groundwater at DGWC-40 is mobilized by low pH conditions. Corrective actions should focus on pH adjustment to promote the attenuation and removal of cobalt in site groundwater.

6.0 GCSM SUMMARY

Based on the evaluation of the AP-1 site presented in this document, the geochemical site conceptual models for the SSLs of arsenic and cobalt at AP-1 can be summarized as follows:

Arsenic

- SSLs of arsenic at DGWC-69 have exceeded the GWPS since October 2017. The current trend, though positive (Slope = +0.0019) is not statistically significant. The arsenic concentrations at DGWC-69 do not correlate with other CCR indicator parameters (Appendix F), although the presence of boron, a key CCR indicator is noted. The concentration of arsenic at DGWC-69 is 100 times lower than that of porewater, generally reflecting the likely attenuation of arsenic at this location, assuming the source of arsenic is AP-1. Alternatively, but considered less likely, the arsenic in DGWC-69 may be derived from naturally occurring arsenic present in the subsurface (Figure 23).
- Downgradient of DGWC-69, arsenic is attenuating, likely through sorption by a combination of iron, aluminum, and manganese oxides based on SEP data and other groundwater processes such as mixing, to below the GWPS at nature and extent locations.

Cobalt

- The cobalt SSL at DGWC-40 is the result of localized, low pH conditions leading to the mobilization/non-attenuation of cobalt from aquifer solids (Figure 18 and 19). Based on the consistently circumneutral porewater pH in AP-1, the lack of cobalt in AP-1 porewater, cobalt is likely due to acidification at the well.
- Downgradient of DGWC-40, cobalt is being attenuated, likely through adsorption on aluminum, iron, or manganese oxides based on SEP data and geochemical modeling.

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Tables

TABLE 1
AP-1 Porewater as Compared to DGWC-40 and DGWC-69
Plant McDonough-Atkinson Ash Pond 1
Smyrna, Georgia

Constituents	Units	AP-1 PW	DGWC-40	DGWC-69
Calcium	mg/L	61.43	43.50	14.53
Magnesium	mg/L	15.73	19.70	2.75
Potassium	mg/L	9.62	5.78	2.88
Sodium	mg/L	11.92	18.80	9.75
Alkalinity, Bicarbonate	mg/L	143.50	2.60	47.10
Chloride	mg/L	6.55	19.30	5.14
Sulfate	mg/L	108.18	230.94	14.27
pH [field]	S.U.	6.91	4.72	6.17
ORP	mV	--120.09	154.85	85.54
TDS	mg/L	322.5	375.00	127.80
Arsenic	mg/L	2.35	0.000902	0.034
Molybdenum	mg/L	0.15450	0.00131	0.0097
Cobalt	mg/L	0.00147	0.04177	0.000905

TABLE 2
SEQUENTIAL EXTRACTION RESULTS
Plant McDonough-Atkinson Ash Pond 1
Atlanta, Georgia

Analyte	Well	DGWA-53	DGWC-68A	DGWC-69	DGWC-121 (38-40')	DGWC-121 (49-50')	B-113D
	SEP Step	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Aluminum	SEP Step 1	< 6.5 U	< 8.4 U	< 7.6 U	< 7.8 U	< 6.4 U	< 6.5 U
Aluminum	SEP Step 2	8.2 J *	13 J *	11 J *	11 J	< 4.8 U	5.3 J
Aluminum	SEP Step 3	35	170	57	100	33	150
Aluminum	SEP Step 4	620	1400	1000	1500	570	1400
Aluminum	SEP Step 5	110 J *	390 *	250 *	110 J	91 J	160
Aluminum	SEP Step 6	1900	11000	5500	8400	7700	15000
Aluminum	SEP Step 7	48000	25000	57000	36000	36000	20000
Aluminum	SEP SUM	51000	38000	64000	46000	45000	37000
Aluminum	SEP TOTAL	56000	90000	85000	64000	50000	47000
Arsenic	SEP Step 1	< 0.52 U	< 0.68 U	0.77 J	< 0.63 U	< 0.52 U	< 0.53 U
Arsenic	SEP Step 2	< 0.39 * U	< 0.51 * U	1.6 J *	< 0.47 U	< 0.39 U	< 0.39 U
Arsenic	SEP Step 3	< 0.13 U	< 0.17 U	15	< 0.16 U	< 0.13 U	< 0.13 U
Arsenic	SEP Step 4	< 0.22 U	< 0.29 U	7.3	0.54 J B	0.56 B	0.38 J B
Arsenic	SEP Step 5	< 1.9 * U	< 2.5 * U	< 2.2 * U	< 2.3 U	< 1.9 U	< 1.9 U
Arsenic	SEP Step 6	0.66	1.2	2.8	< 0.18 U	< 0.15 L U	< 0.15 L U
Arsenic	SEP Step 7	0.28 J B	0.76 B	0.77 B	< 0.79 U	< 0.65 U	< 0.39 U
Arsenic	SEP SUM	0.94	2.0	28	0.54	0.56	0.38 J
Arsenic	SEP TOTAL	1.3	4.1	28	< 0.79 U	< 0.65 U	< 0.66 U
Cobalt	SEP Step 1	< 0.18 U	< 0.23 U	< 0.21 U	< 0.22 U	< 0.18 U	< 0.18 U
Cobalt	SEP Step 2	< 0.19 U	< 0.25 U	< 0.22 U	< 0.23 U	< 0.19 U	< 0.19 U
Cobalt	SEP Step 3	< 0.045 U	3.0 J	0.79 J	5.8	1.0 J	2.1 J
Cobalt	SEP Step 4	0.32 J	1.2 J	0.56 J	2.4 J	0.98 J	1.2 J
Cobalt	SEP Step 5	< 0.60 * U	< 0.78 * U	< 0.71 * U	< 0.73 U	< 0.60 U	< 0.61 U
Cobalt	SEP Step 6	1.1 J	6.0	2.0 J	6.9	7.6	10
Cobalt	SEP Step 7	0.47 J	3.9 J	0.33 J	2.4 J	4.0 J	1.8 J
Cobalt	SEP SUM	1.8 J	14	3.7	18	14	15
Cobalt	SEP TOTAL	1.4 J	18	3.9 J	18	12 J	16

TABLE 2
SEQUENTIAL EXTRACTION RESULTS
Plant McDonough-Atkinson Ash Pond 1
Atlanta, Georgia

Analyte	Well	DGWA-53	DGWC-68A	DGWC-69	DGWC-121 (38-40')	DGWC-121 (49-50')	B-113D
	SEP Step	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Iron	SEP Step 1	< 12 U	< 15 U	< 14 U	< 14 U	< 12 U	< 12 U
Iron	SEP Step 2	13 J *	< 11 * U	11 J *	< 11 U	< 8.7 U	< 8.8 U
Iron	SEP Step 3	130	290	200	240	62	260
Iron	SEP Step 4	1700	4700	1800	7400	3100	5900
Iron	SEP Step 5	< 44 * U	< 57 * U	< 52 * U	< 54 U	< 44 U	< 45 U
Iron	SEP Step 6	4400	12000	6400	21000	17000	19000
Iron	SEP Step 7	4200	14000	5500	14000	13000	9000
Iron	SEP Sum	10000	31000	14000	42000	33000	35000
Iron	SEP TOTAL	9900	39000	13000	50000	36000	37000
Manganese	SEP Step 1	0.52 J	3.7 J	30	3.7	0.84 J	5.1
Manganese	SEP Step 2	0.94 J	7.1	7.9	5.2	3.6	5.9
Manganese	SEP Step 3	1.1 B	600 B	52 B	440 B	78 B	700 B
Manganese	SEP Step 4	24	220	39	130	42	240
Manganese	SEP Step 5	< 1.9 * U	5.5 J *	< 2.2 * U	< 2.3 *1 U	< 1.9 *1 U	2.0 J *1
Manganese	SEP Step 6	85	82	130	52	83	100
Manganese	SEP Step 7	74	140	85	200	290	120
Manganese	SEP Sum	190	1100	340	830	490	1200
Manganese	SEP TOTAL	180	1300	350	610	470	970

NOTES:
U - Indicates the compound was analysed for, but not detected above the method detection limit (MDL).
J - Result is less than the reporting limit but greater than or equal to the MDL and the concentration is an approximate value.
* - LCS or LCSD is outside the acceptable limits; RPD of the LCS and LCSD exceeds the control limits
B - Compound was found in the blank and sample.

TABLE 3
SATURATION INDEX CALCULATION RESULTS
Plant McDonough-Atkinson Ash Pond 1
Atlanta, Georgia

MINERAL PHASES - Saturation Indices		**DGWA-53**	**DGWA-70A**	**DGWA-71**	**DGWC-37**	**DGWC-38**	**DGWC-39**	**DGWC-40**	**DGWC-67**	**DGWC-68A**	**DGWC-69**	**DGWC-121**	**B-105D**	**B-112D**	**B-113D**	**B-62**
Ferrihydrite	$Fe(OH)_3$	**1.15**	**0.27**	-0.65	**1.25**	**0.92**	**0.11**	-2.42	**0.37**	**1.47**	**0.67**	-3.34	--	--	--	**0.65**
Siderite	$FeCO_3$	-2.36	-3.62	-3.63	-2.39	-2.75	-1.33	-5.42	-2.48	-1.96	-2.95	-0.84	--	--	--	-1.26
Rhodochrosite	$MnCO_3$	-0.67	--	--	-2.12	-1.67	**0.38**	-3.79	-1.74	-1.73	-2.19	--	--	--	--	-1.66
Gypsum	$CaSO_4{:}2H_2O$	-2.82	-4.32	-3.52	-1.64	-1.26	-1.42	-1.52	-1.71	-2.06	-3.34	-1.80	-1.28	-2.62	-1.91	-2.04
Calcite	$CaCO_3$	-1.83	-3.63	-3.67	-1.30	-1.54	-0.74	-4.64	-1.64	-0.92	-2.81	-1.41	-1.49	-1.28	**-0.04**	-1.70
Barite	$BaSO_4$	**-0.28**	-1.55	-0.91	**0.50**	**0.28**	**0.56**	**0.11**	**0.53**	**0.12**	-0.66	**0.09**	**0.45**	--	-0.58	**-0.31**
Carbon Dioxide	$pCO_2^{(a)}$	-1.46	-1.02	-1.09	-1.18	-1.12	-1.14	-1.16	-1.21	-1.19	-1.37	-1.23	-2.00	-1.60	-2.60	-1.37

Notes:

"--" Not present

Saturation indices >-0.5 identified by bold type and grey shading

(a)pCO_2 - values presented at 10^value atm

Figures

LEGEND

880	EXISTING CONTOURS (SEE REFERENCE 2)
	PROPERTY BOUNDARY (SEE REFERENCE 1)
	APPROXIMATE PRE-CLOSURE CCR LIMITS
	FINAL CLOSURE CCR LIMITS
	FINAL COVER SYSTEM LIMITS
	PERMIT BOUNDARY
	FUTURE BARRIER WALL OPTION A
	FUTURE BARRIER WALL OPTION B
	CROSS-SECTION LINES
⌖	UPGRADIENT WELL (SEE REFERENCE 5)
⌖	AP-1 MONITORING WELL (SEE REFERENCE 5)
⌖	AP-2, 3/4 MONITORING WELL (SEE REFERENCE 5)
▲	ASSESSMENT WELLS (SEE REFERENCE 5 AND 7)
⌖	PIEZOMETERS (SEE REFERENCE 5 AND 7)
⌖	GOLDER BORINGS (SEE REFERENCE 6)
● P-1	P & W 1977 PIEZOMETERS (SEE REFERENCE 3)
● AP-1	AT&E 1981 BORINGS (SEE REFERENCE 4)
◆	SURFACE WATER MONITORING

REFERENCES

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

2. THE EXISTING TOPOGRAPHY, CONTOUR ELEVATIONS AND PHOTOGRAPHY FOR THE ASH PONDS 1 THROUGH 4 AREAS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS, ON THE AP- 1 THROUGH 4, IS AUGUST 31, 2022. - DATE OF PHOTOGRAPHY AUGUST 31, 2022. THE TOPOGRAPHIC CONTOUR INTERVALS IS 1 FOOT.
THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS FOR THE SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4 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, AT THE SURROUNDING AREAS, 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 FOR SURROUNDING AREAS OF ASH PONDS 1 THROUGH 4.

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

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

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

6. GOLDER ASSOCIATES, PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (2017-2021).

7. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020-2021.

8. COORDINATES SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET); ELEVATIONS DISPLAY IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (FEET NAVD88).

0 300 600
1" = 300' FEET

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH

Georgia Power

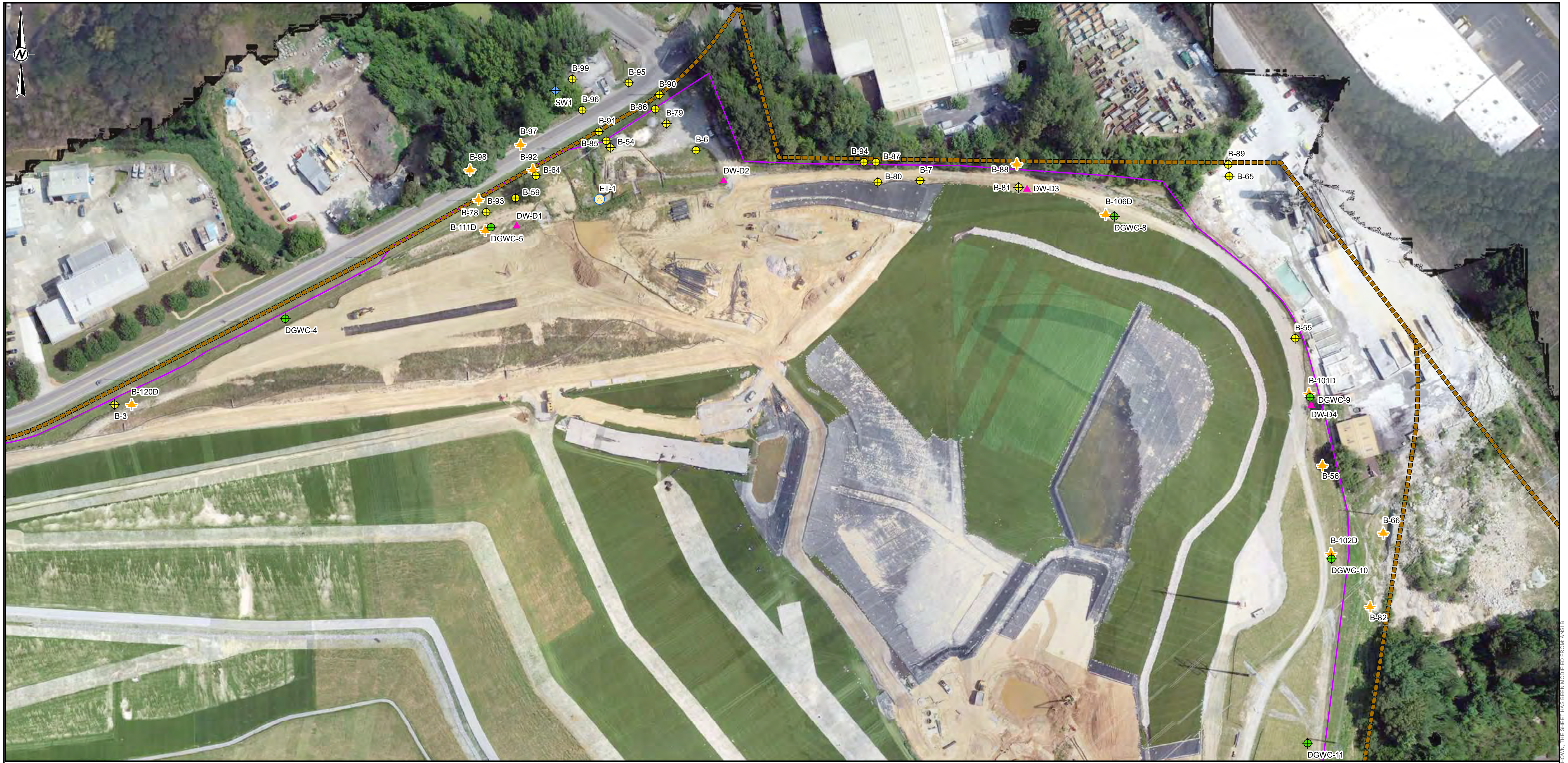
PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL
PLANT MCDONOUGH-ATKINSON ASH POND 1

TITLE
SOIL AND PORE WATER SAMPLING LOCATION MAP

CONSULTANT

YYYY-MM-DD	2023-05-05
DESIGNED	SEB
PREPARED	CRP
CHECKED	CAT
REVIEWED / APPROVED	GLH

PROJECT NO.	REV.	FIGURE
1668499622	-	1



LEGEND

⊕ AP-1 MONITORING WELL
⊕ AP-2,3/4 MONITORING WELL
⊕ UPGRADIENT WELL
✦ ASSESSMENT MONITORING WELLS
⊕ PIEZOMETER
▲ TEMPORARY AEM WELL
⊕ SURFACE WATER MONITORING LOCATION
△ STAFF GAUGE
▬ PROPERTY BOUNDARY
— PERMIT BOUNDARY

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

REFERENCE

1. AERIAL IMAGE DATED NOVEMBER 2019 FROM GOOGLE EARTH AND JUNE 23, 2022 FROM COOPER, BARNETTE & PAGE, INC. (CBP).

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

3. MONITORING WELL/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY METRO ENGINEERING AND SURVEYING COMPANY IN AUGUST 2020 WITH ADDITIONAL SURVEY PROVIDED IN JANUARY 2021 AND MAY 2021.

0 140 280
1"=140 FT FEET

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON
Georgia Power

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL
PLANT MCDONOUGH-ATKINSON ASH POND 1

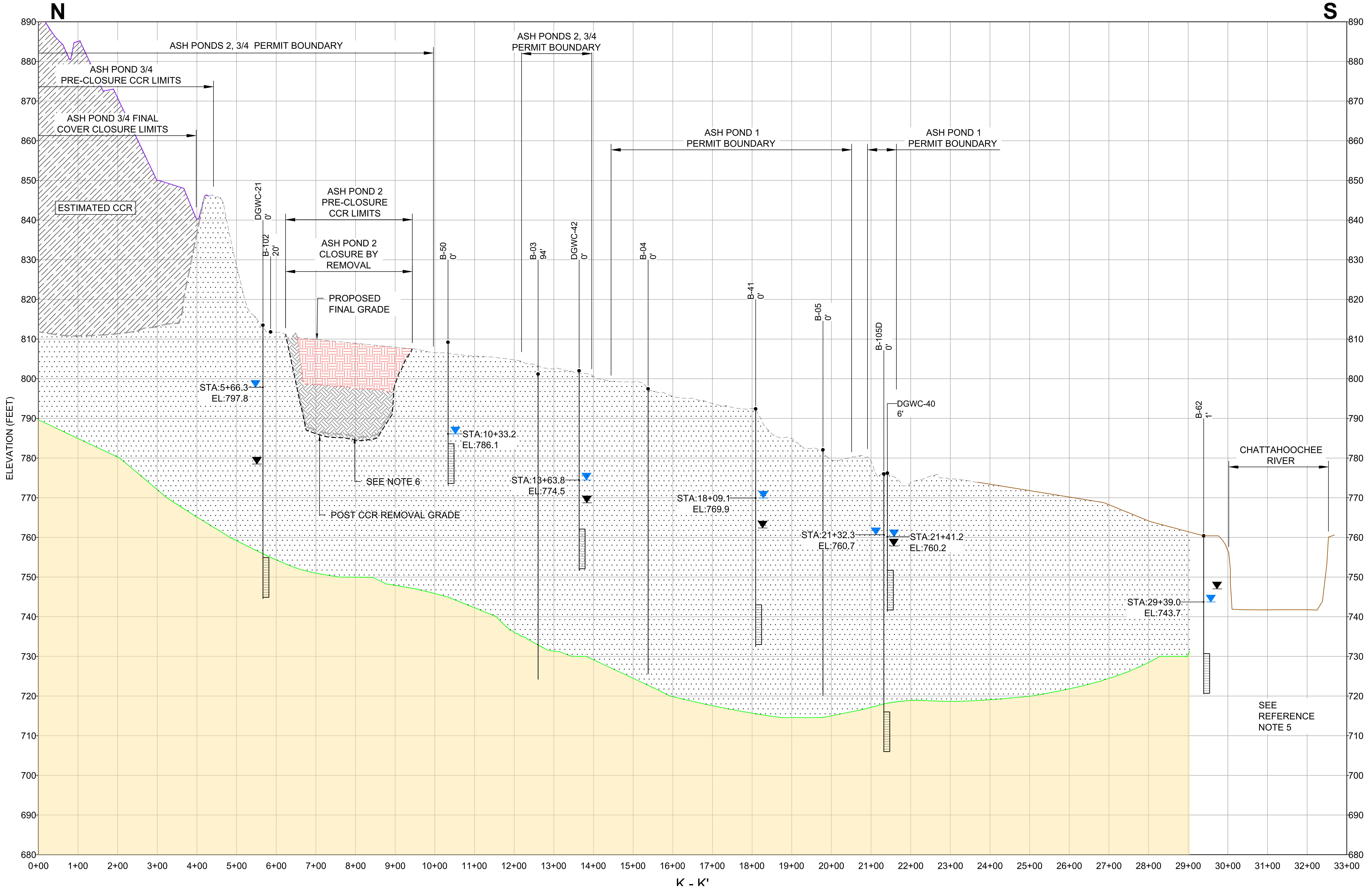
TITLE
(INSET) SOIL AND POREWATER SAMPLING LOCATION MAP

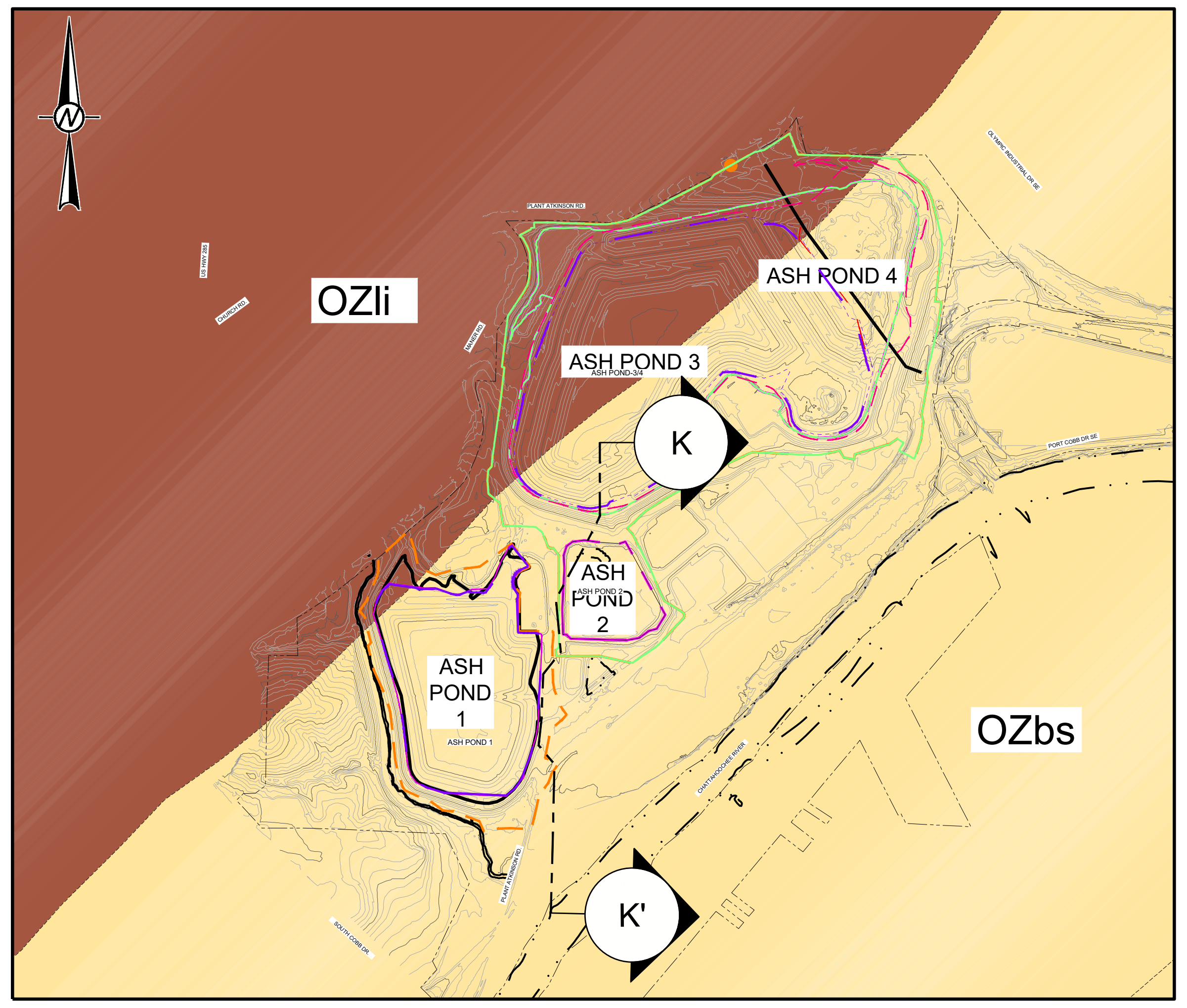
CONSULTANT
wsp

YYYY-MM-DD	7/18/2022
PREPARED	SEB
DESIGN	DAH
CHECKED	TR
REVIEW/APPROVED	RV

PROJECT NO.	CONTROL	REV.	FIGURE
166849622		A	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM: ANSI B
0 1 in





KEY MAP

NOTES

1. DATA PRESENTED FOR CCR UNIT AP-1 IS INCLUDED FOR REFERENCE ONLY. THIS DATA SHOULD NOT BE CONSIDERED FOR PERMITTING OF CCR UNITS AP-2 AND AP-3/4.

2. B-122D IS COMPLETED OUTSIDE THE FIGURE VIEW. B-122D IS COMPLETED IN BIOTITE GNEISS WITH A SCREEN ELEVATION OF 707.52 - 697.52 FEET BGS.

REFERENCES

1.THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS WERE PROVIDED BY GEORGIA POWER. THE DATE OF THE SURVEY PROVIDED AND SHOWN ON THIS SET OF PLANS IS JULY 2021. GEORGIA STATE PLANE WEST SURVEY FEET.

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

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

4. SELECT BORING/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED AND/OR RESURVEYED BY METRO ENGINEERING & SURVEYING CO., INC., 2020 / 2021.

5. NO AVAILABLE SUBSURFACE GEOLOGIC DATA.

6. ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS FOR AP-2 GENERALLY FOLLOW 1 OR MORE FEET ABOVE POST REMOVAL GRADES.

LEGEND

- - - EXISTING GRADE (SEE REFERENCE 1)
— ESTIMATED TOP OF ROCK SURFACE
— PROPOSED FINAL GRADE
— — ESTIMATED PRE-CLOSURE BOTTOM OF CCR LIMITS
— FINAL COVER SYSTEM
▨ ESTIMATED CCR TO REMAIN IN PLACE
░ OVERBURDEN (COMPRISED OF RESIDUAL SOILS, TRANSITIONALLY WEATHERED ROCK, AND FILL)
🟨 PHYLLONITE, BUTTON SCHIST, MYLONITE, AND MYLONITIC BIOTITE GNEISS (OZbs)
🟫 BIOTITE GNEISS, LONG ISLAND CREEK GNEISS (OZli)
▼ ESTIMATED GROUNDWATER SURFACE (9/06/2022)
▼ PREDICTED POST-CLOSURE GROUNDWATER SURFACE

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

FOR PERMITTING PURPOSES
NOT FOR CONSTRUCTION

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

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH

Georgia Power

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL
PLANT MCDONOUGH-ATKINSON ASH POND 1

TITLE
SUBSURFACE GEOLOGIC PROFILE K - K'

CONSULTANT

YYYY-MM-DD	2023-02-01
DESIGNED	DLP
PREPARED	CRP
CHECKED	PJN
REVIEWED / APPROVED	TR

PROJECT NO. 1668499622
REV. A
SHEET 3

Path: \\atlanta\cadd\Southern Company\1777449 Plant McDonough Permitting\HAR\Geochemical CSM\ | File Name: AP-1 Geochemical Conceptual Site Mide-Section K - K'_Section.dwg

0 1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

DGWC-71	
Analysis	Depth (ft)
Total Metals	37.5-39
XRD	

DGWC-53	
Analysis	Depth (ft)
Total Metals	25.7-26.9
SEP	
XRD	

DGWC-69	
Analysis	Depth (ft)
Total Metals	19-24
SEP	

DGWC-68A	
ANALISYS	DEPTH (FT)
TOTAL METALS	24-29
SEP	
XRD	

B-113D	
ANALISYS	DEPTH (FT)
XRD	36.1
SEP	
CEC	
TOC	

DGWC-121	
ANALISYS	DEPTH (FT)
SEP	38-40 49-50
XRD	
TOC	
CEC	

DGWC-70A	
ANALISYS	DEPTH (FT)
TOTAL METALS	36.1
XRD	

LEGEND

▬	PERMIT BOUNDARY
– · – · –	RIVER, STREAMS AND OTHER WATER AREAS
—·—·—	PROPERTY BOUNDARY
⊕	UPGRADIENT WELL (SEE REFERENCE 4)
⊕	AP-1 MONITORING WELL (SEE REFERENCE 4)
⊕	AP-2, 3/4 MONITORING WELL (SEE REFERENCE 4)
▲	ASSESSMENT WELLS (SEE REFERENCE 4 AND 5)
⊕	PIEZOMETERS (SEE REFERENCE 4 AND 5)
⊕	SURFACE WATER MONITORING

REFERENCES

1. IMAGE PROVIDED BY COOPER BARNETTE AND PAGE, DATED JUNE 23, 2022.
2. COORDINATE SYSTEM : NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET)
3. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY (2018)
3. LAW ENGINEERING GEOTECHNICAL INVESTIGATION REPORT (LAW, 1968).
4. GOLDER ASSOCIATES, PLANT MCDONOUGH SUPPLEMENTAL INVESTIGATION (2017-2021).
5. COORDINATES SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET); ELEVATIONS DISPLAY IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (FEET NAVD88).

0 200 400
1" = 200' FEET
10X VERTICALLY EXAGGERATED

REV			DES	CADD	CHK	RVW

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH

Georgia Power

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL
PLANT MCDONOUGH-ATKINSON ASH POND 1

TITLE
OVERBURDEN, PWR, TWR, AND BEDROCK SAMPLING AT AP-1

CONSULTANT

YYYY-MM-DD	2022/9/12
DESIGNED	DP
PREPARED	AVR
CHECKED	PJN
REVIEWED / APPROVED	TR

PROJECT NO.	REV.	FIGURE
1668499622	A	4

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

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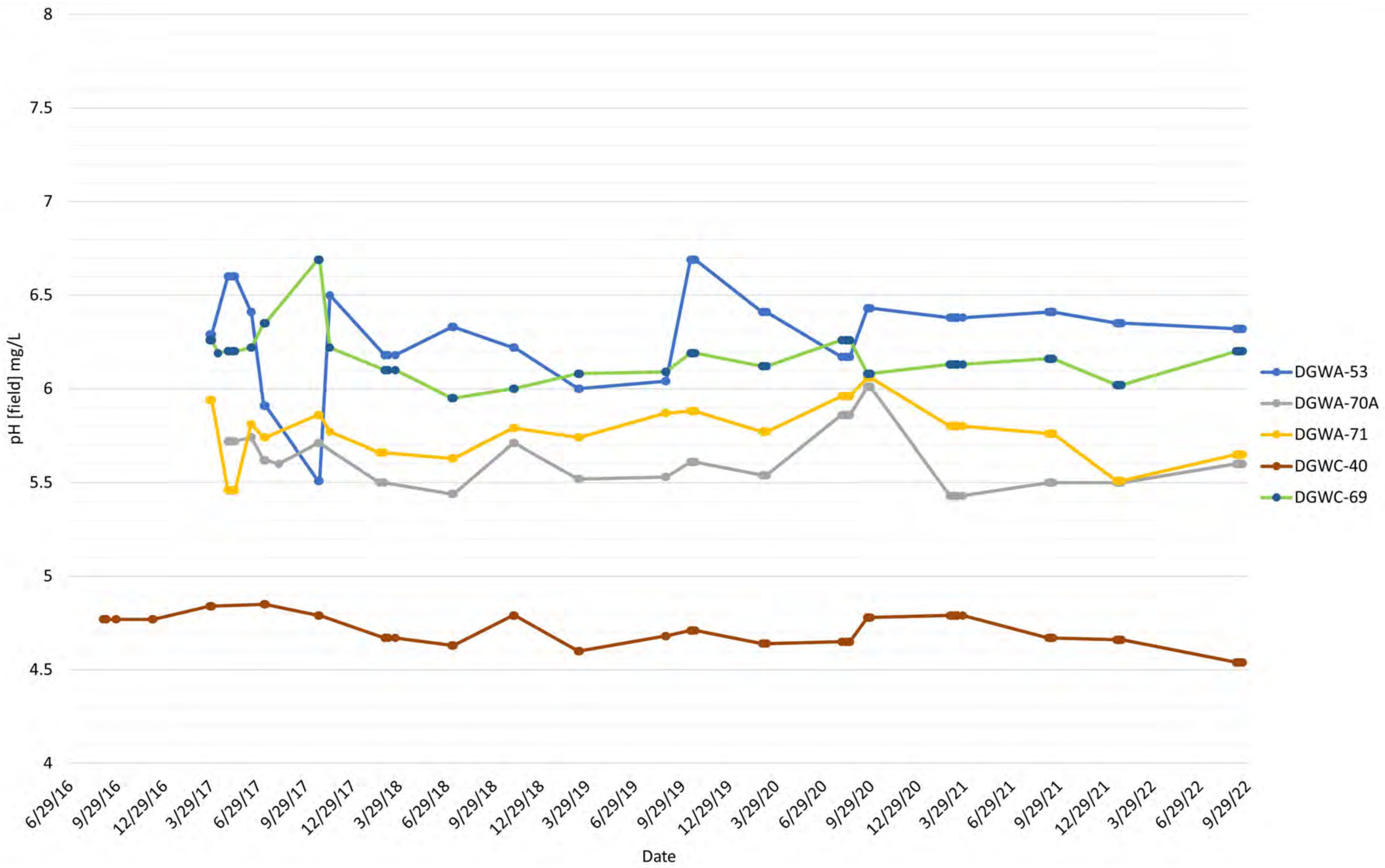


GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

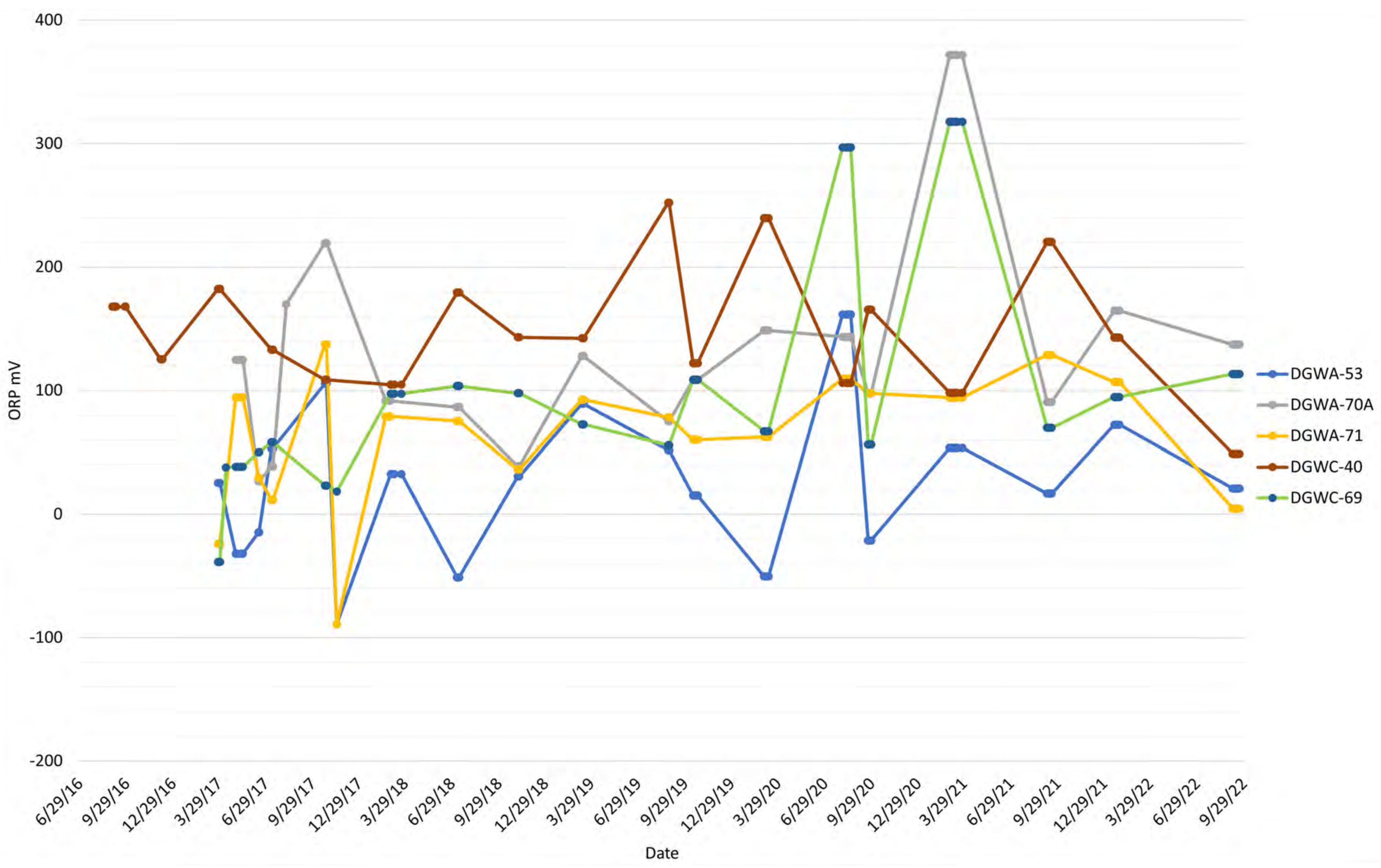
PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

YYYY-MM-DD	2022-09-18
DESIGNED	NP
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
pH OF GROUNDWATER AT AP-1 SSL AND BACKGROUND MONITORING WELLS

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	5



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

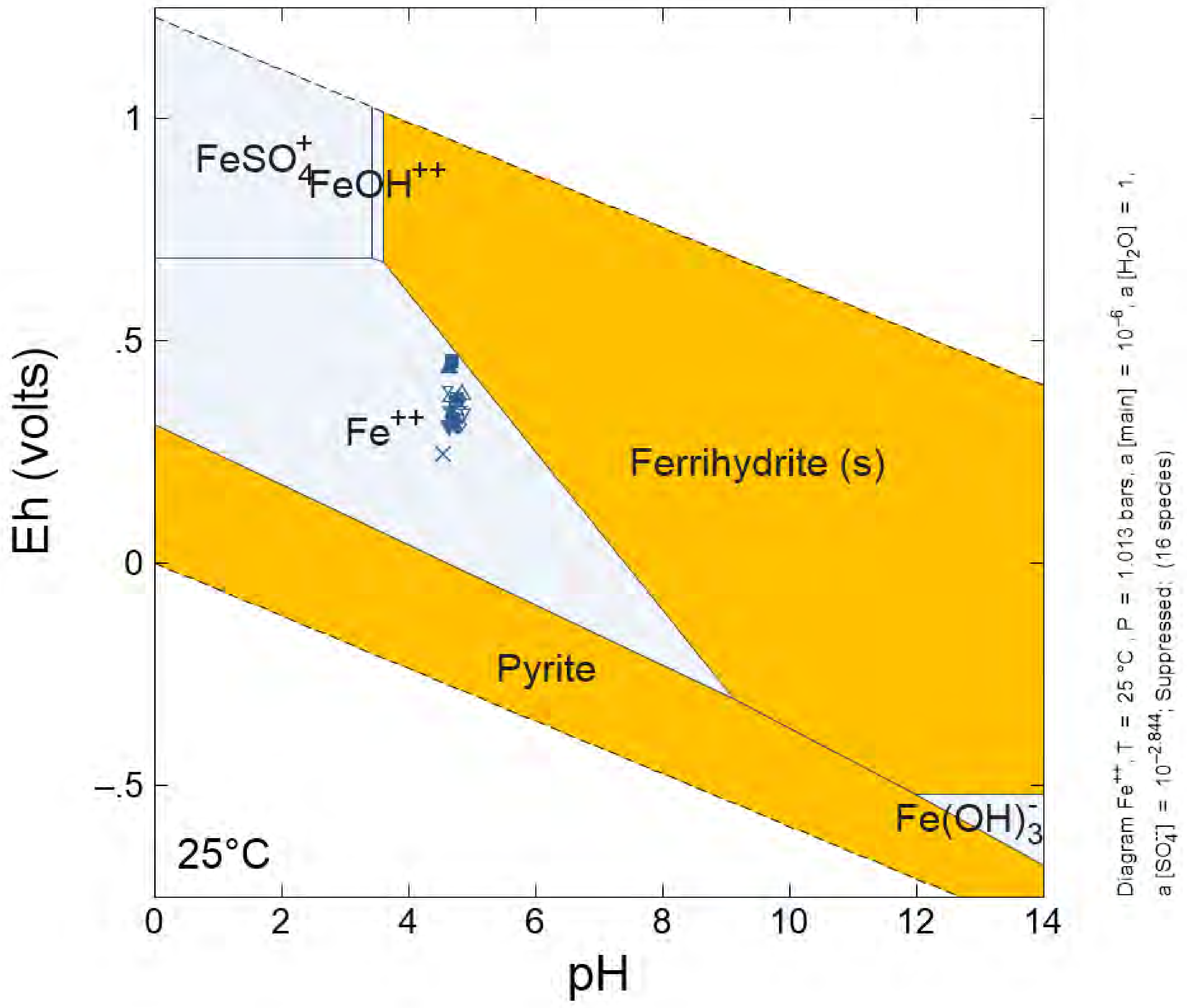
PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

YYYY-MM-DD	2022-09-18
DESIGNED	NP
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
ORP OF GROUNDWATER AT AP-1 SSL AND BACKGROUND MONITORING WELLS

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	6



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

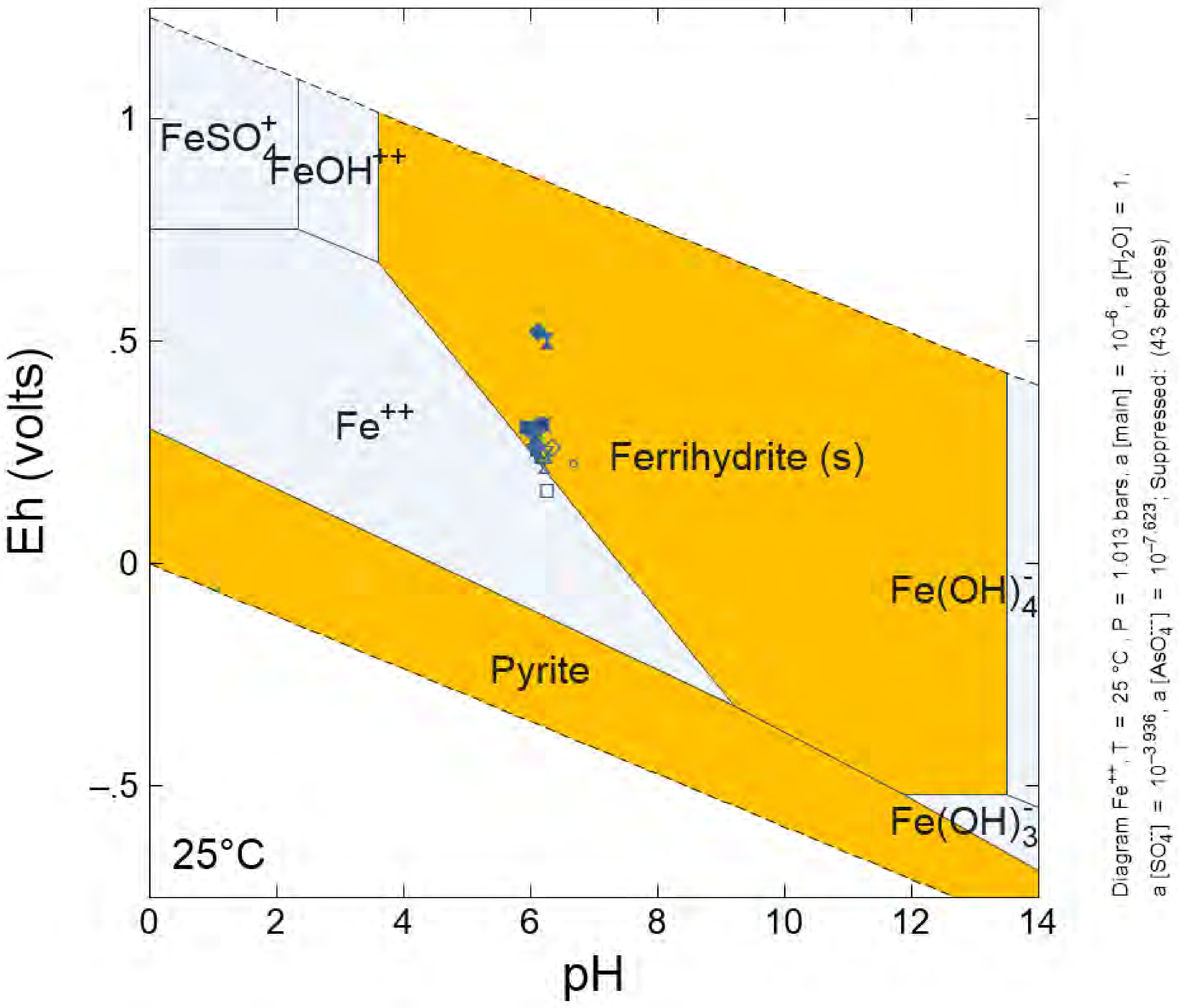
wsp

YYYY-MM-DD	2022-09-18
DESIGNED	NP
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
DGWC-40 IRON POURBAIX DIAGRAM 2016-2022

Note: ORP converted to SHE

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	7



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

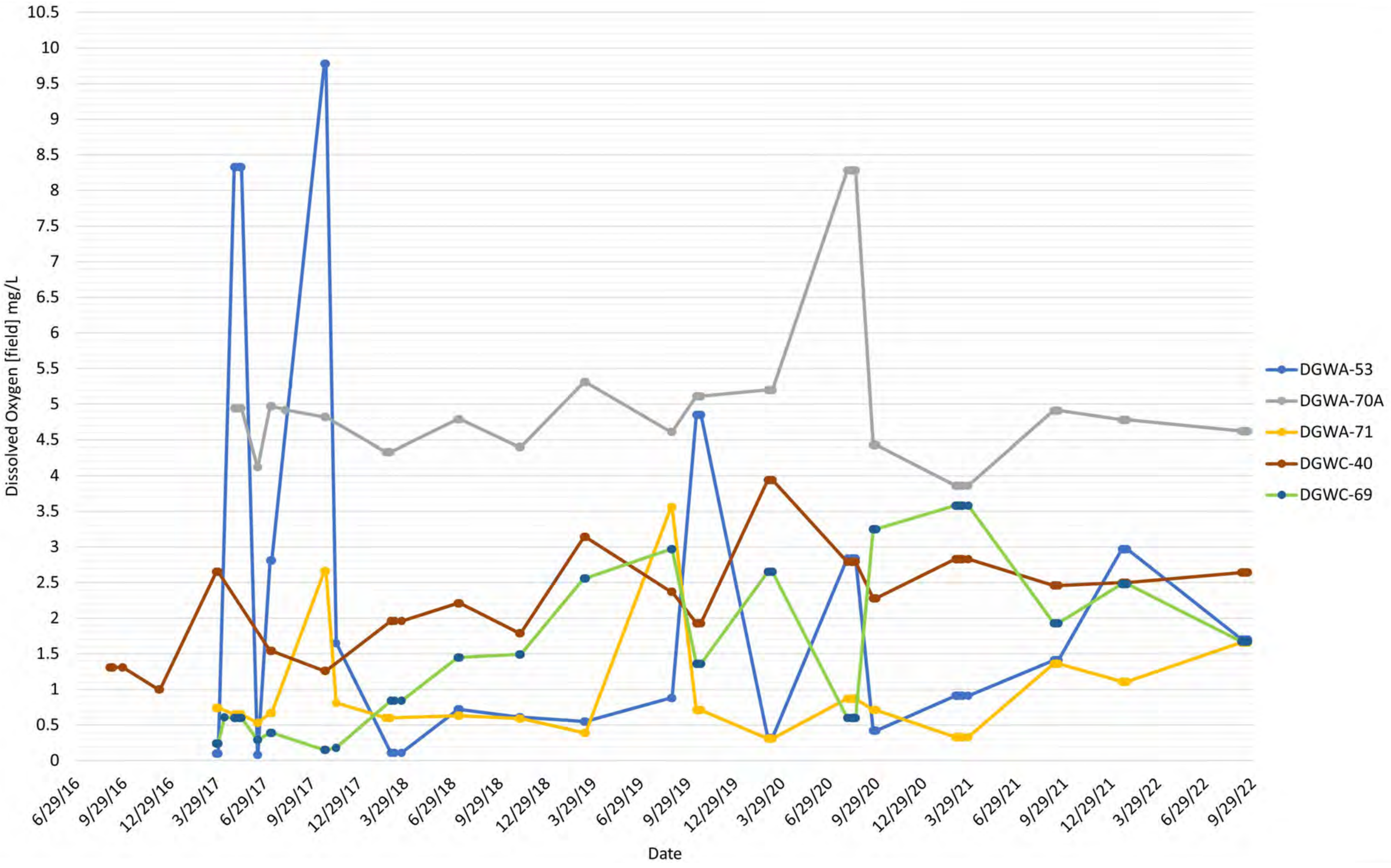
CONSULTANT

YYYY-MM-DD	2022-09-18
DESIGNED	NP
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
DGWC-69 IRON POURBAIX DIAGRAM 2016-2022

Note: ORP converted to SHE

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	8



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

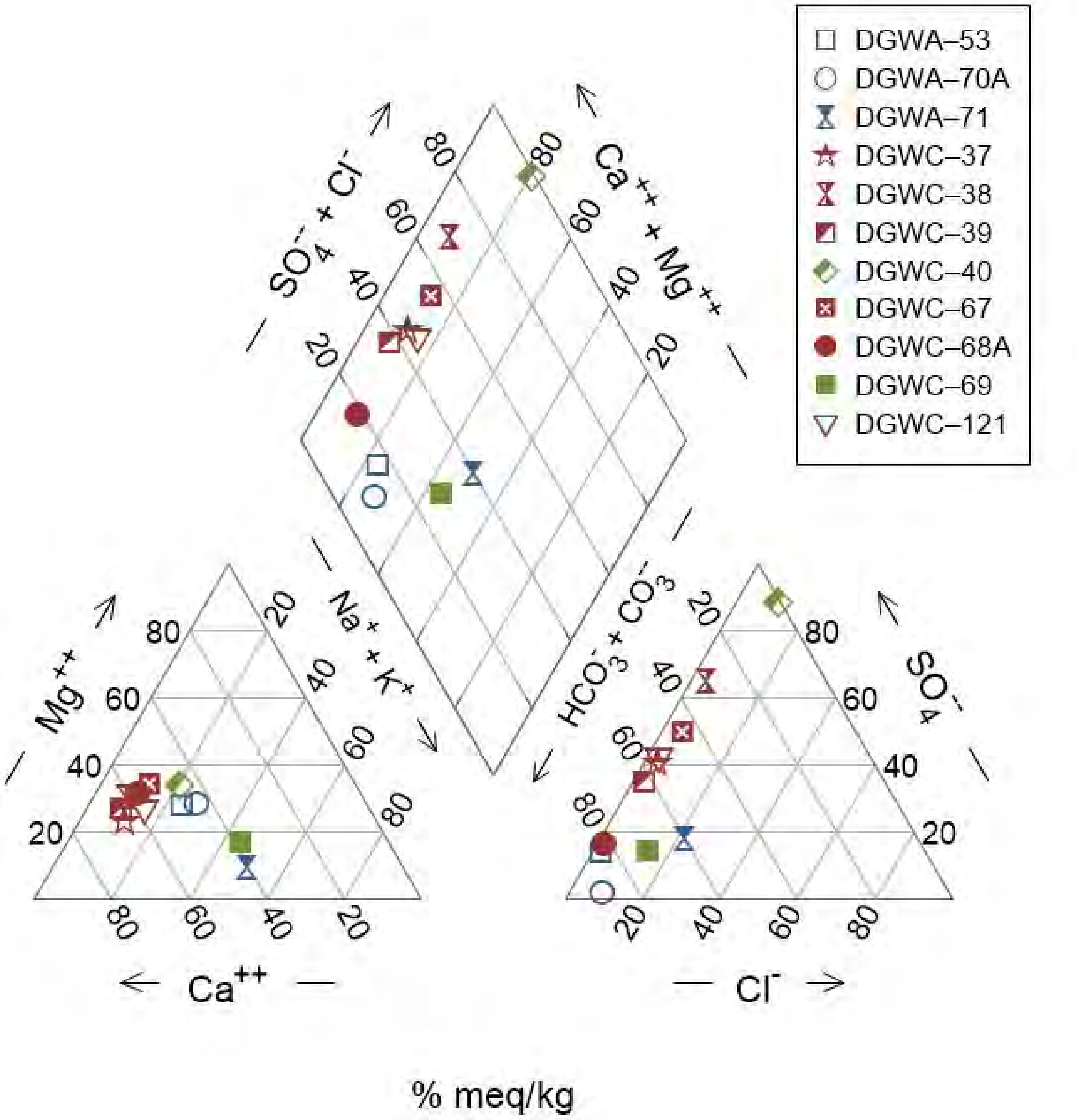
PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

YYYY-MM-DD	2022-09-18
DESIGNED	NP
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
DISSOLVED OXYGEN IN GROUNDWATER AT AP-1 MONITORING WELLS

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	9



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

YYYY-MM-DD	2022-09-18
DESIGNED	PJN
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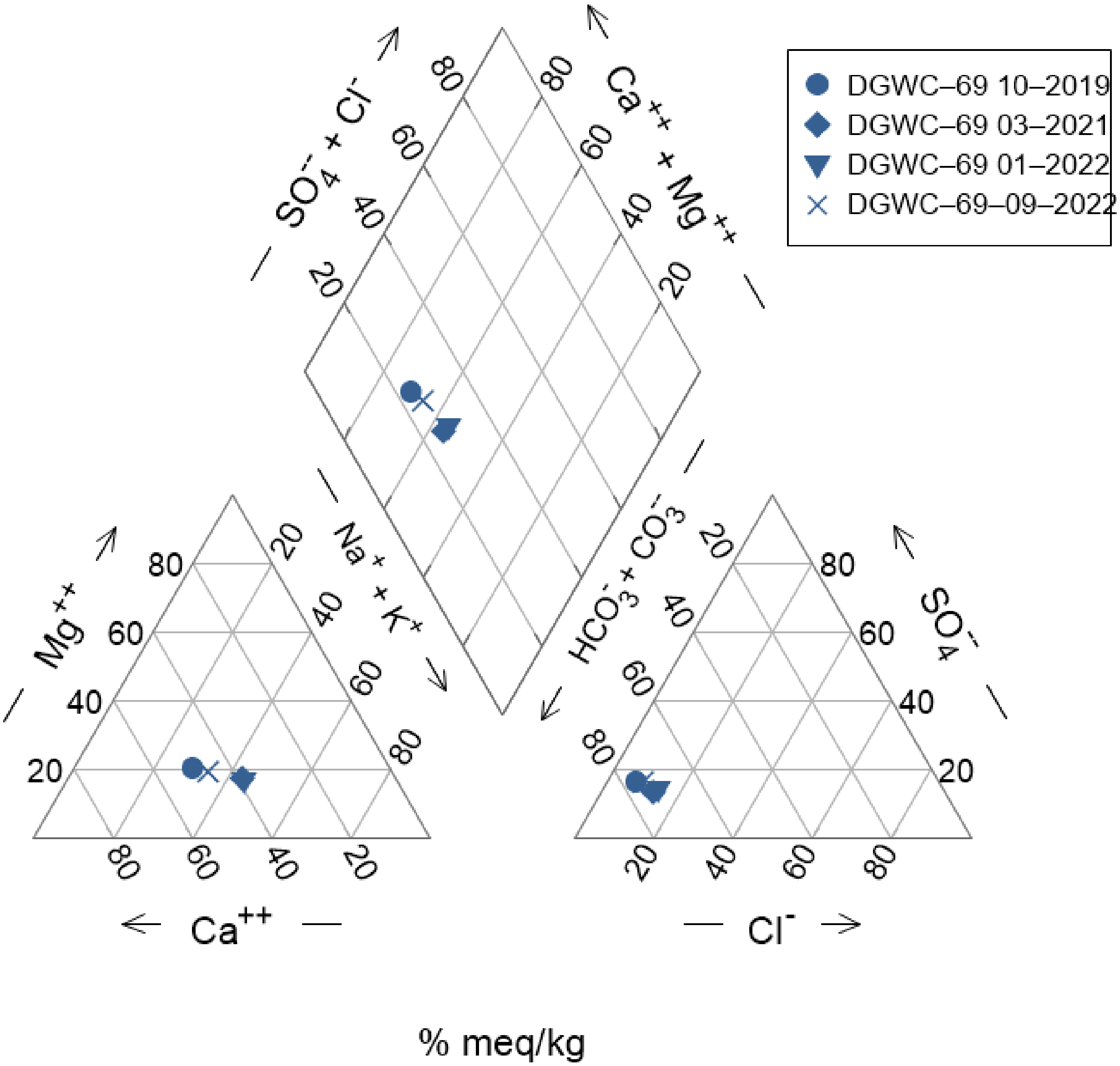
APPROVED	TR

TITLE
AP-1 MONITORING NETWORK PIPER DIAGRAM

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	10



CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

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YYYY-MM-DD	2022-09-18
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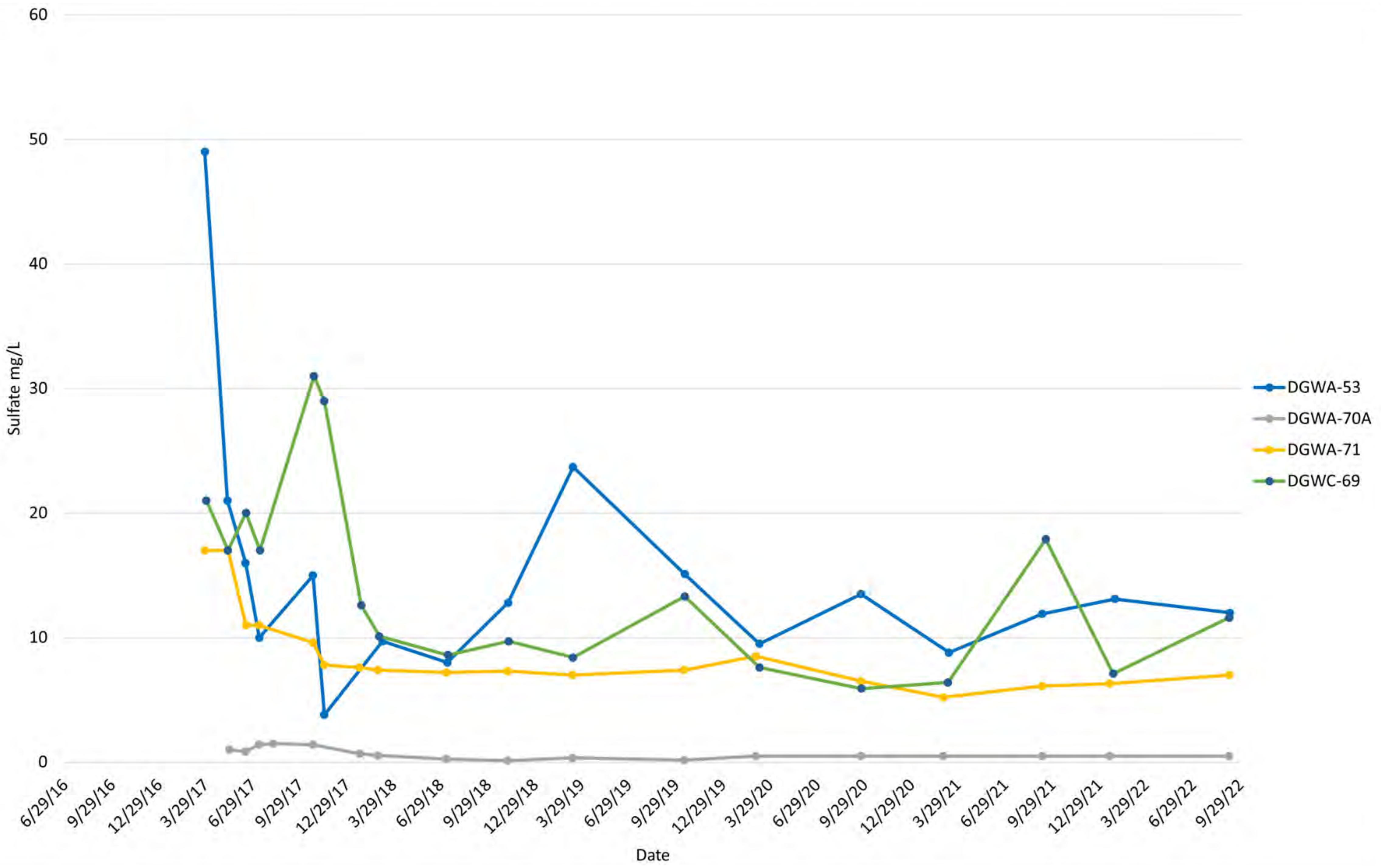
APPROVED	TR

TITLE
DGWC-69 PIPER DIAGRAM

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	11



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PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

wsp

YYYY-MM-DD	2022-09-18
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PREPARED	NP
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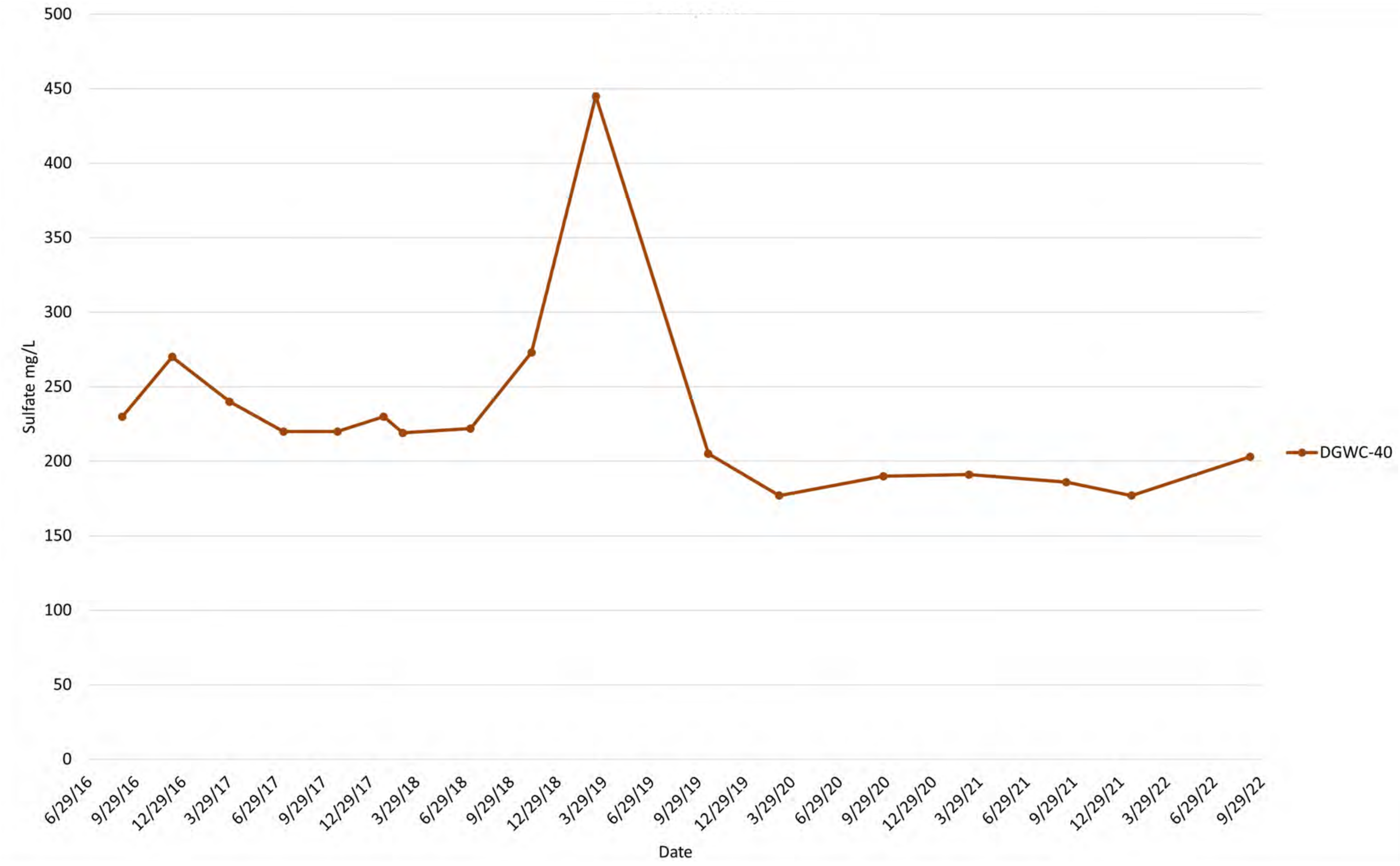
APPROVED	TR

TITLE
SULFATE IN GROUNDWATER AT AP-1 MONITORING WELLS

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	12a



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PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

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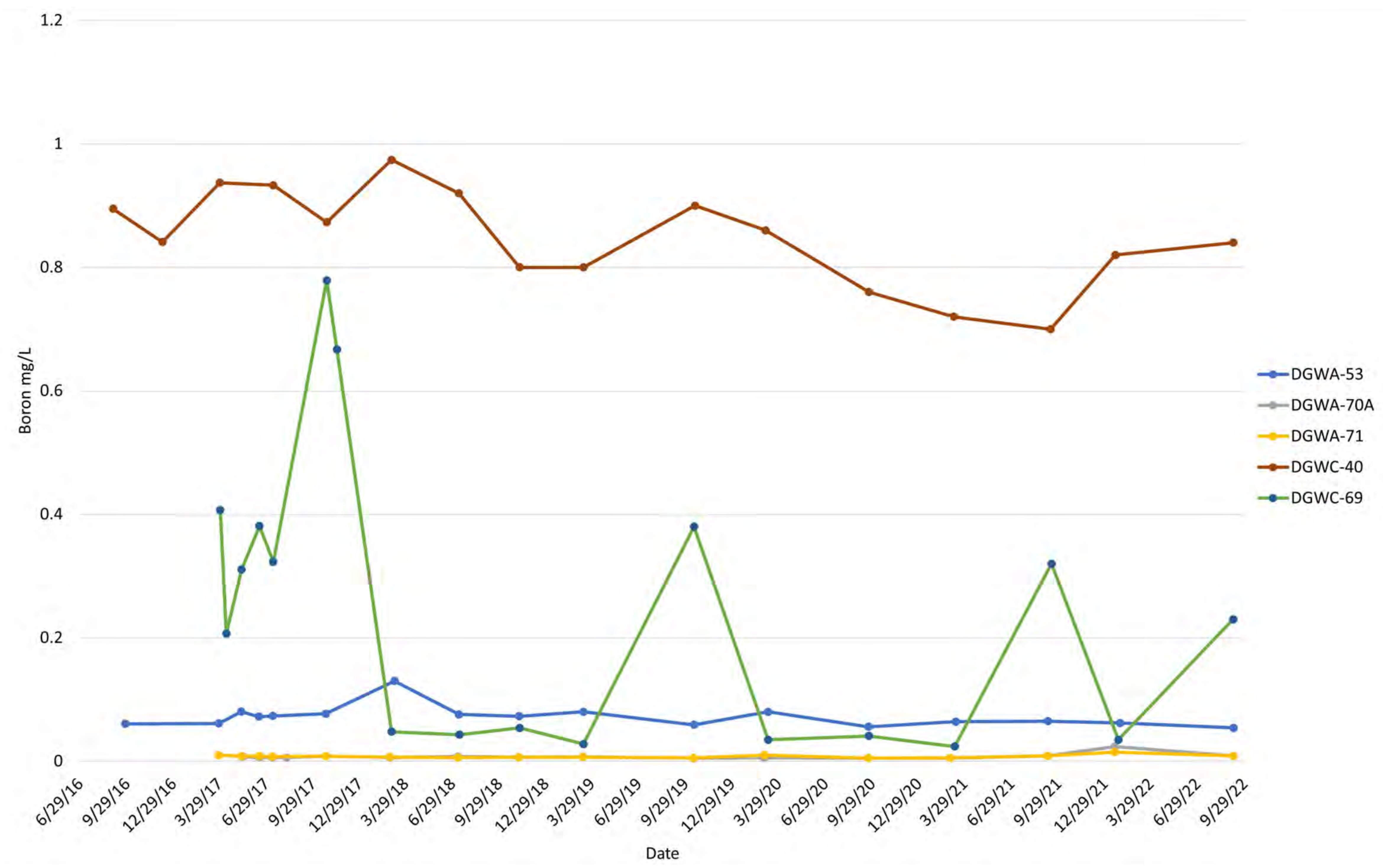
YYYY-MM-DD	2022-09-18
DESIGNED	NP
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
SULFATE IN GROUNDWATER AT DGWC-40

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	12b



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PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

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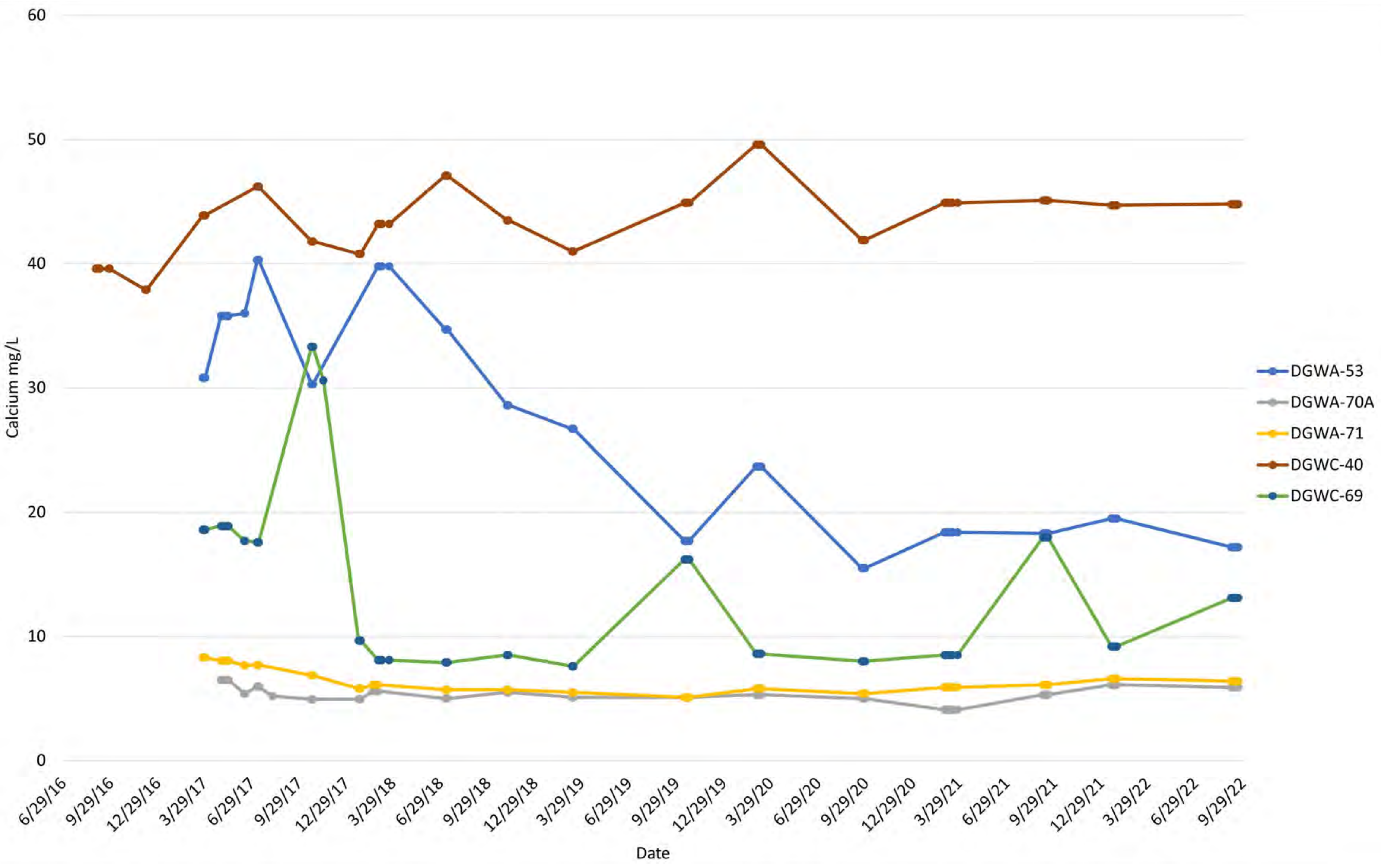
YYYY-MM-DD	2022-09-18
DESIGNED	NP
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
BORON IN GROUNDWATER AT AP-1 MONITORING WELLS

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	13



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PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

YYYY-MM-DD	2022-09-18
DESIGNED	NP
PREPARED	NP
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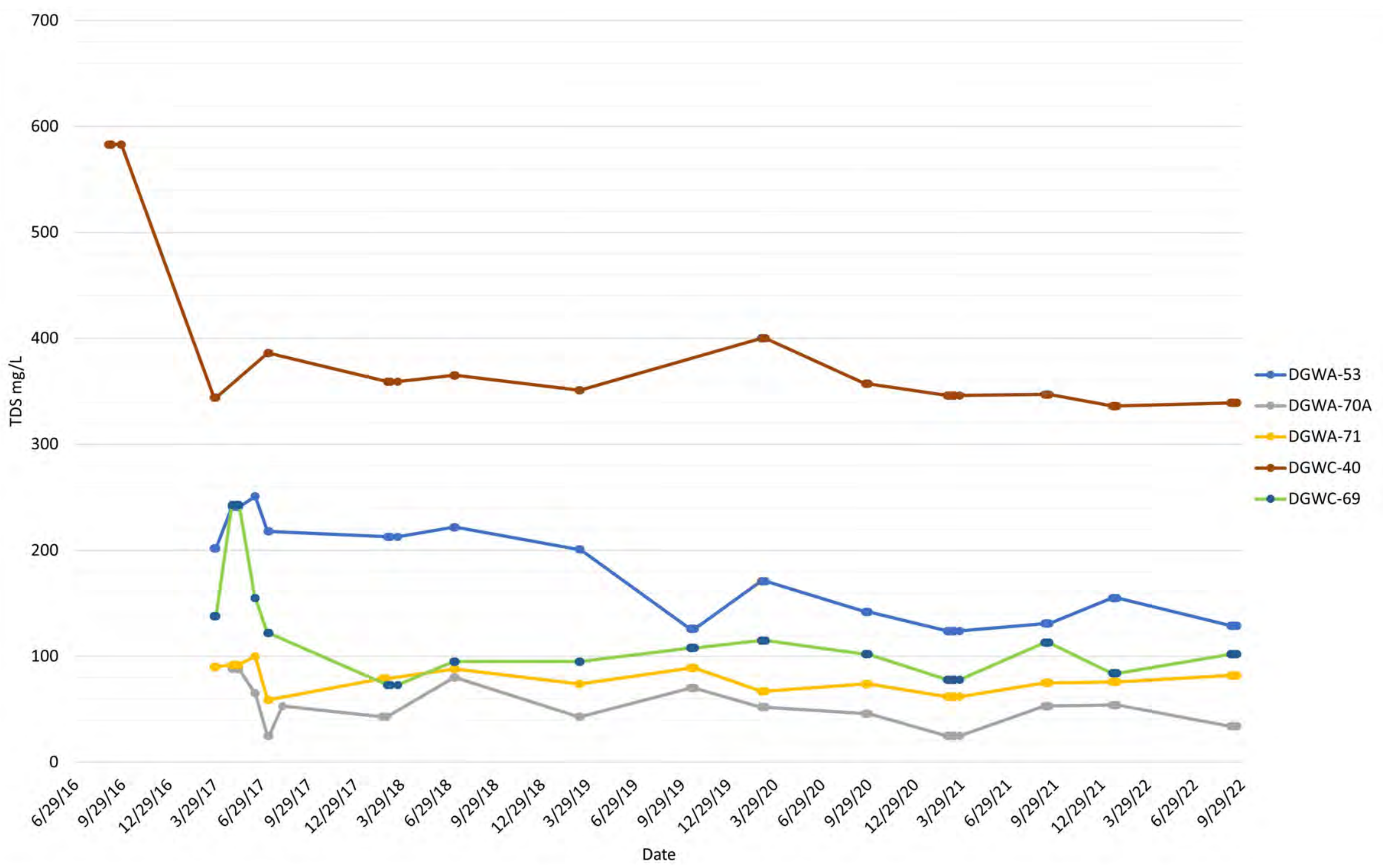
APPROVED	TR

TITLE
CALCIUM IN GROUNDWATER AT AP-1 MONITORING WELLS

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	14



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PLANT MCDONOUGH-ATKINSON

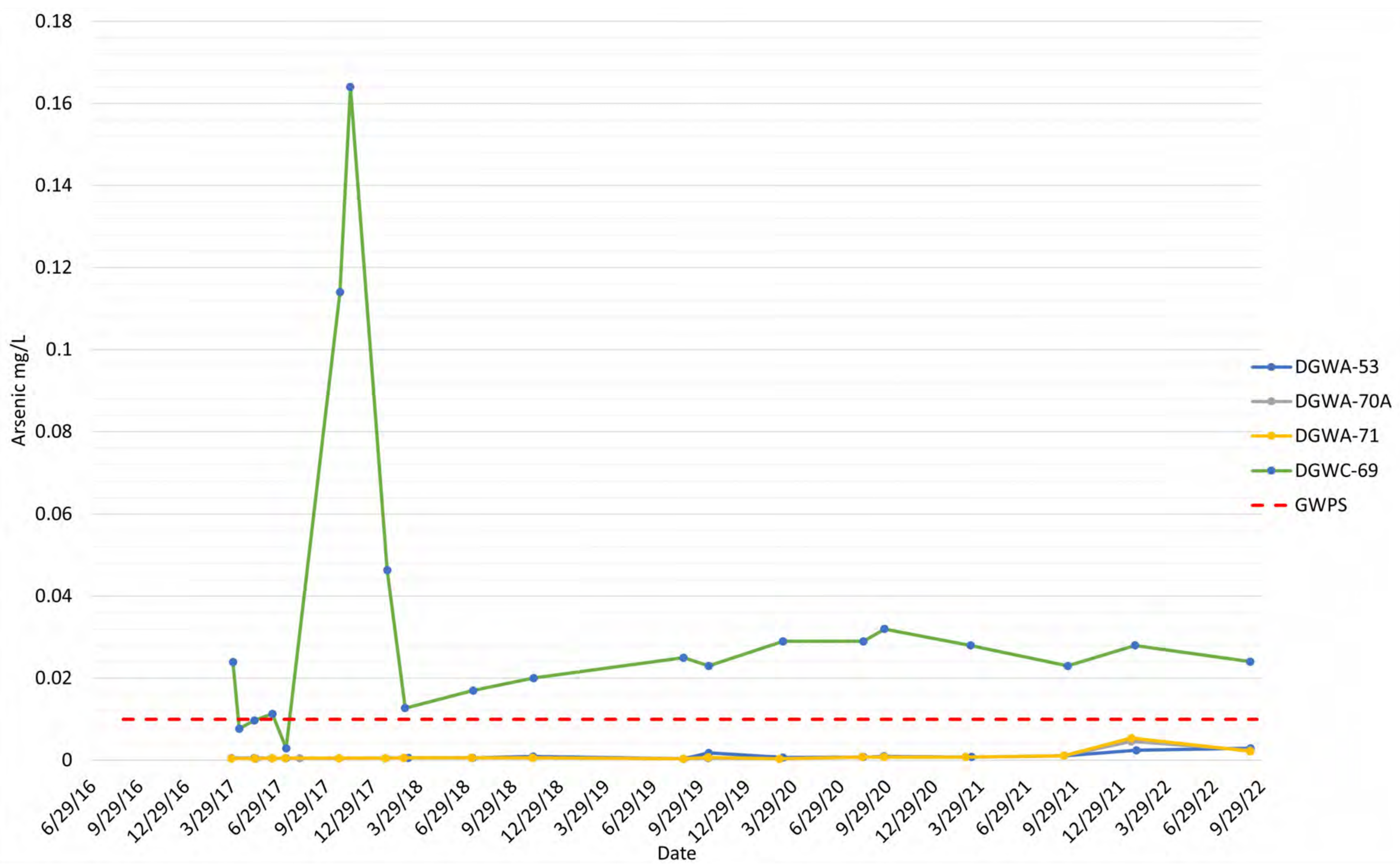
PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

YYYY-MM-DD	2022-09-18
DESIGNED	NP
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
TDS IN GROUNDWATER AT AP-1 MONITORING WELLS

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	15



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PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

wsp

YYYY-MM-DD	2022-09-18
DESIGNED	PJN
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
ARSENIC CONCENTRATION IN GROUNDWATER AT DGWC-69 AND BACKGROUND WELLS

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	16

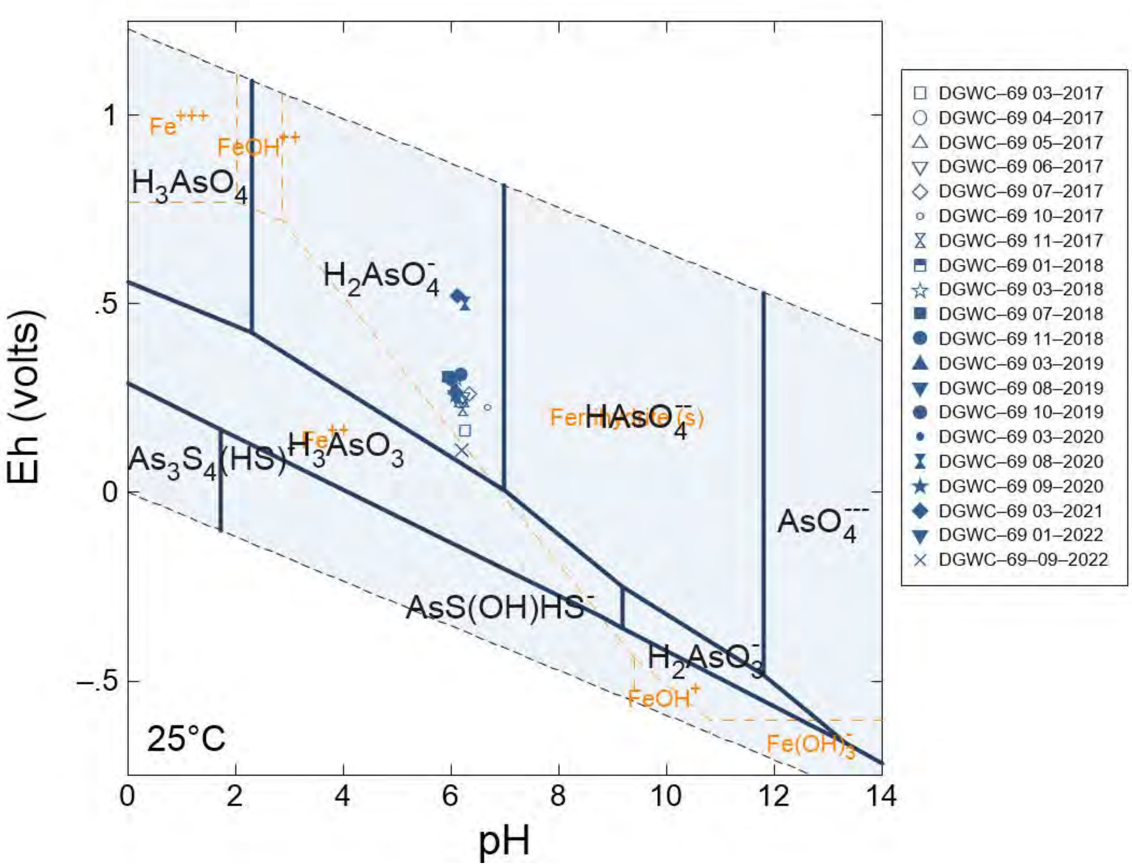

Diagram AsO_4^{---}, T = 25 °C , P = 1.013 bars, a [main] = $10^{-7.623}$, a [H_2O] = 1, a [Fe^{+++}] = $10^{-4.544}$ (speciates, a [SO_4^{--}] = $10^{-3.936}$; Suppressed: As_2S_3(am), $Fe(OH)_2$ (am), $Fe(OH)_2$ (c), $Fe_3(OH)_8$, Ferrihydrite (aged), Goethite, Hematite, Lepidocrocite, Maghemite, Magnetite, Orpiment

CLIENT
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PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

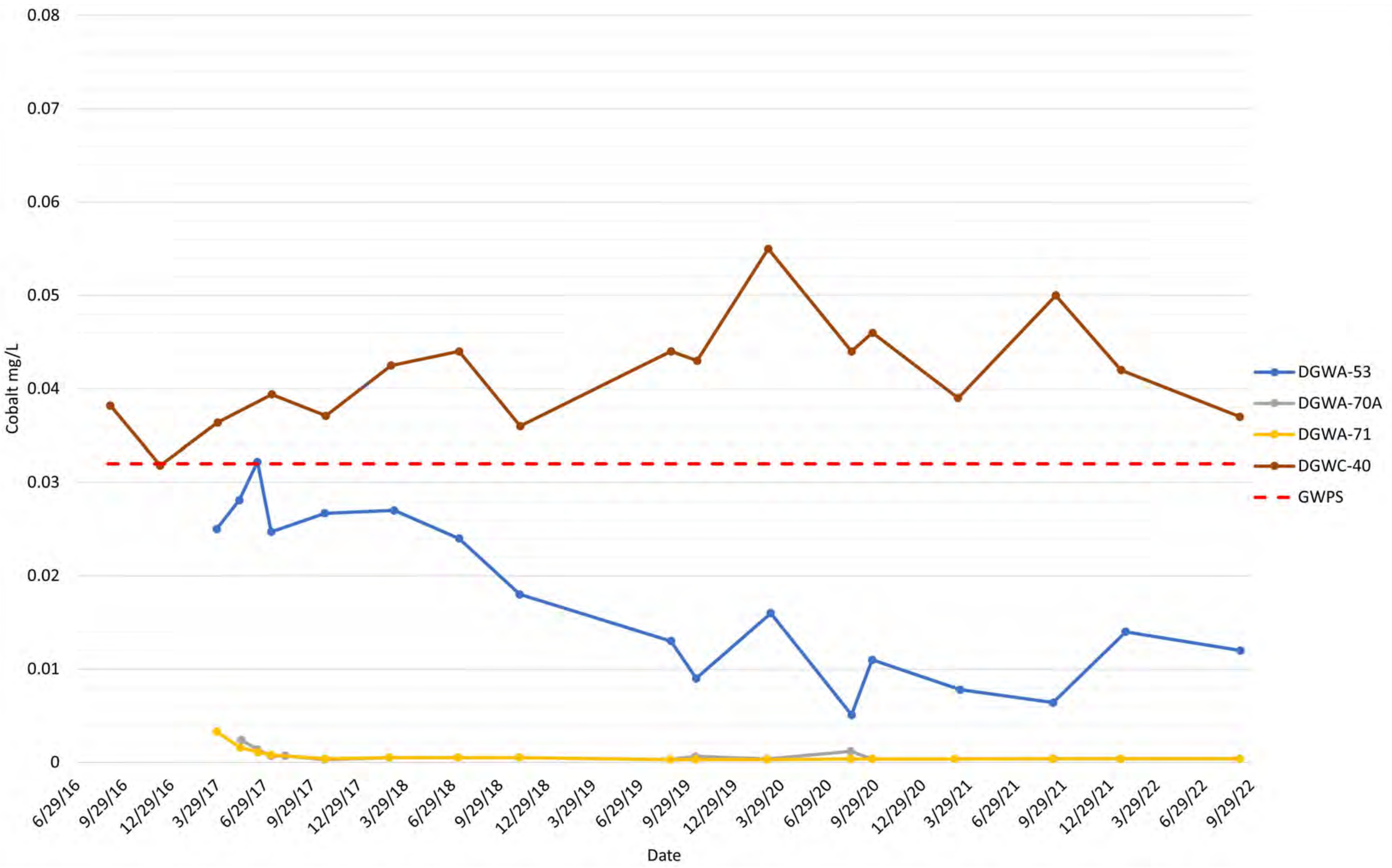
CONSULTANT

YYYY-MM-DD	2022-09-18
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	TR

TITLE
DGWC-69 ARSENIC POURBAIX

Note: ORP converted to SHE

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	17



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

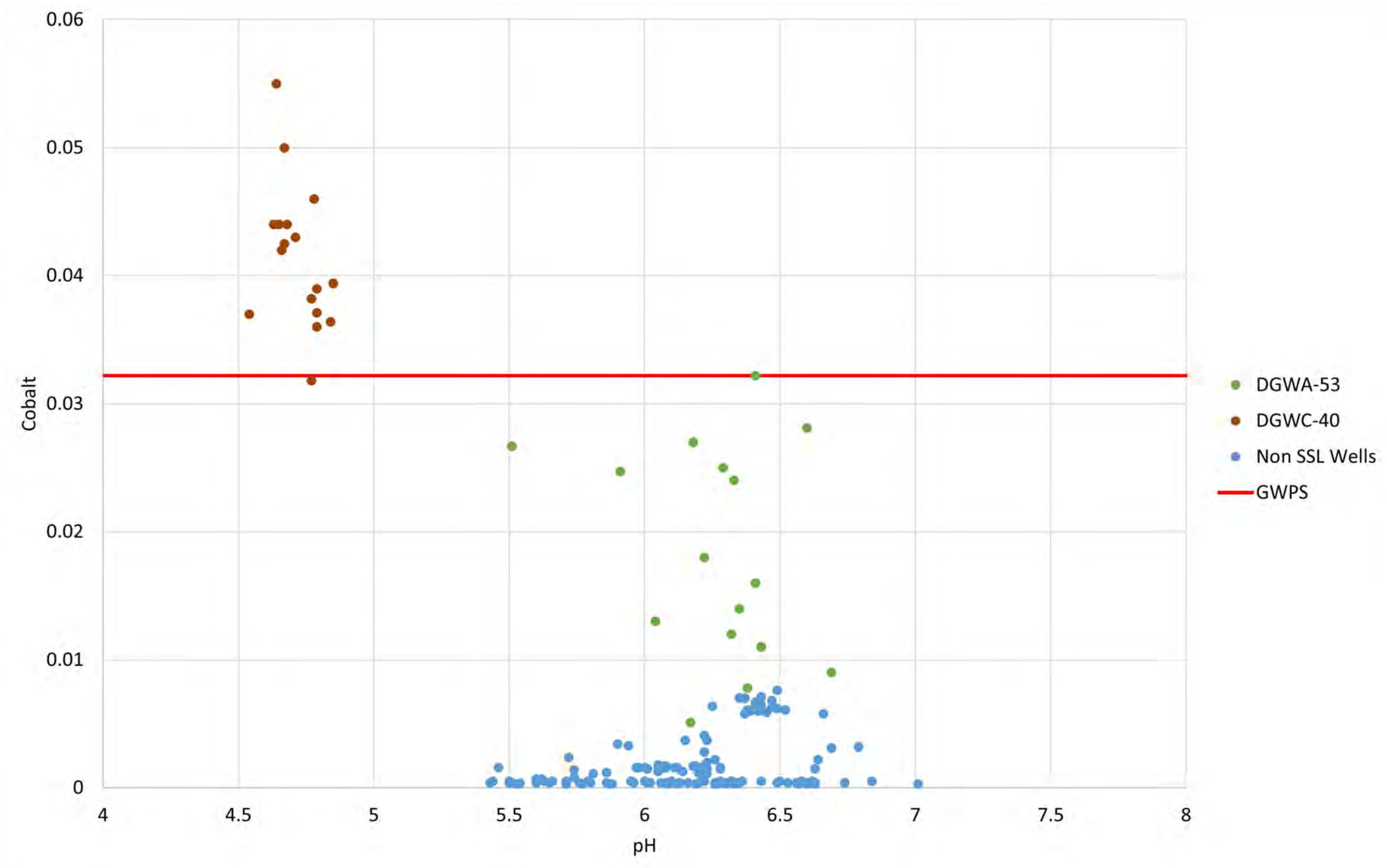
CONSULTANT

wsp

YYYY-MM-DD	2022-09-18
DESIGNED	NP
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
COBALT CONCENTRATION IN GROUNDWATER AT DGWC-40 AND BACKGROUND WELLS

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	18



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

YYYY-MM-DD	2022-09-18
DESIGNED	PJN
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
GROUNDWATER pH AND COBALT CONCENTRATIONS AT AP-1, SPECIFICALLY SHOWING DGWC-40 AND DGWA-53 AS COMPARED TO ALL OTHER AP-1 WELLS

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	19

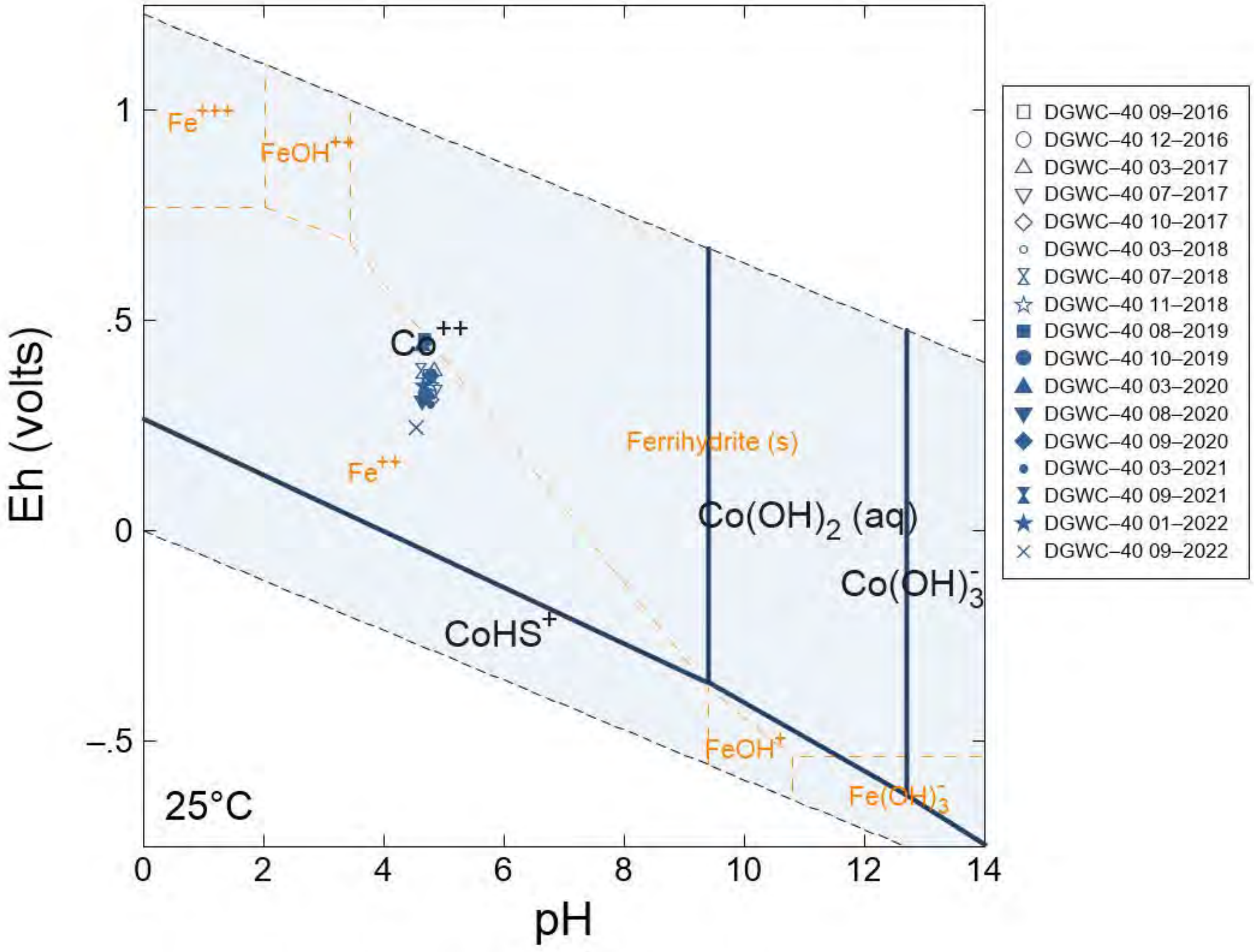


Diagram Co^{++}, T = 25 °C , P = 1.013 bars, a [main] = $10^{-6.339}$, a [H_2O] = 1,
a [SO_4^{--}] = $10^{-2.844}$, a [Fe^{+++}] = $10^{-5.683}$ (speciates; Suppressed: (16 species)

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PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

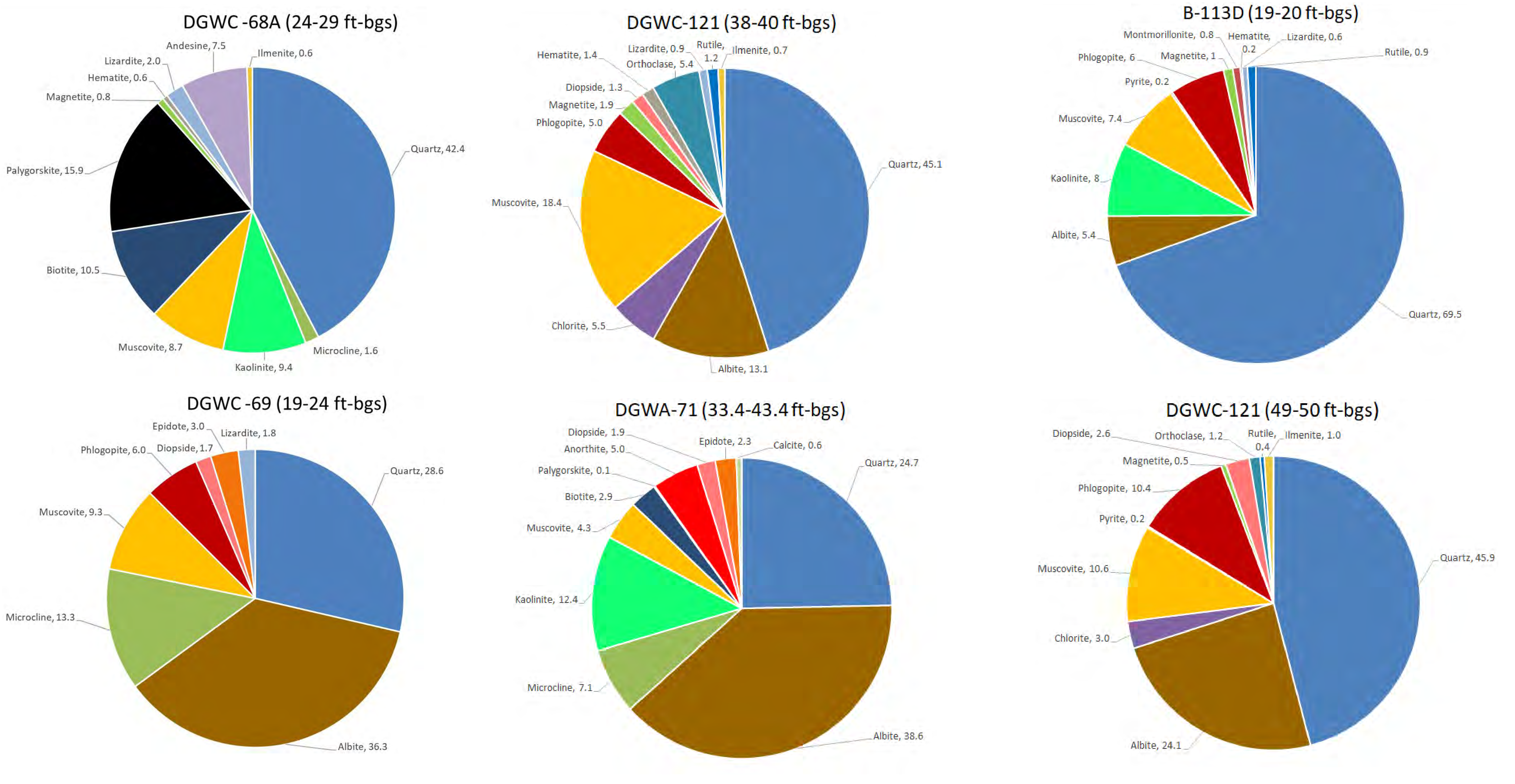
CONSULTANT

YYYY-MM-DD	2022-09-18
DESIGNED	NP
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
DGWC-40 COBALT POURBAIX
Note: ORP converted to SHE

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	20

PATH: https://golderassociates.sharepoint.com/sites/127388/Project Files/5 Technical Work/2000-Martin Lake Ash Ponds/Tier II Report | FILE NAME: Figure Book.xlsx



DGWC -68A (24-29 ft-bgs)

DGWC-121 (38-40 ft-bgs)

B-113D (19-20 ft-bgs)

DGWC -69 (19-24 ft-bgs)

DGWA-71 (33.4-43.4 ft-bgs)

DGWC-121 (49-50 ft-bgs)

GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

YYYY-MM-DD	2023-04-25
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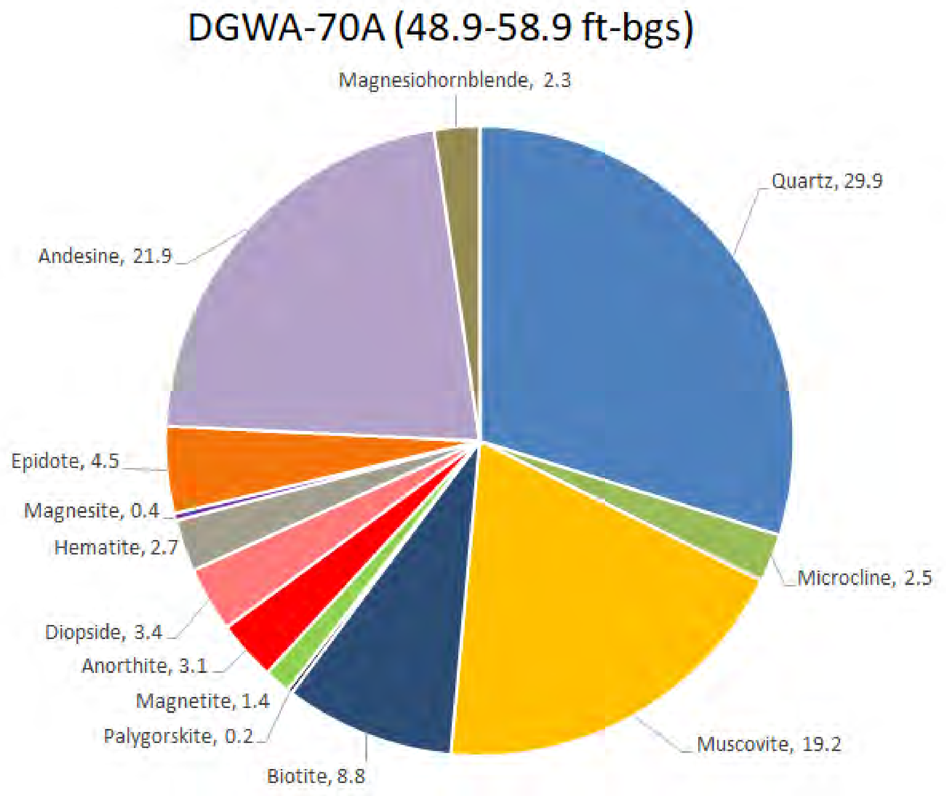
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

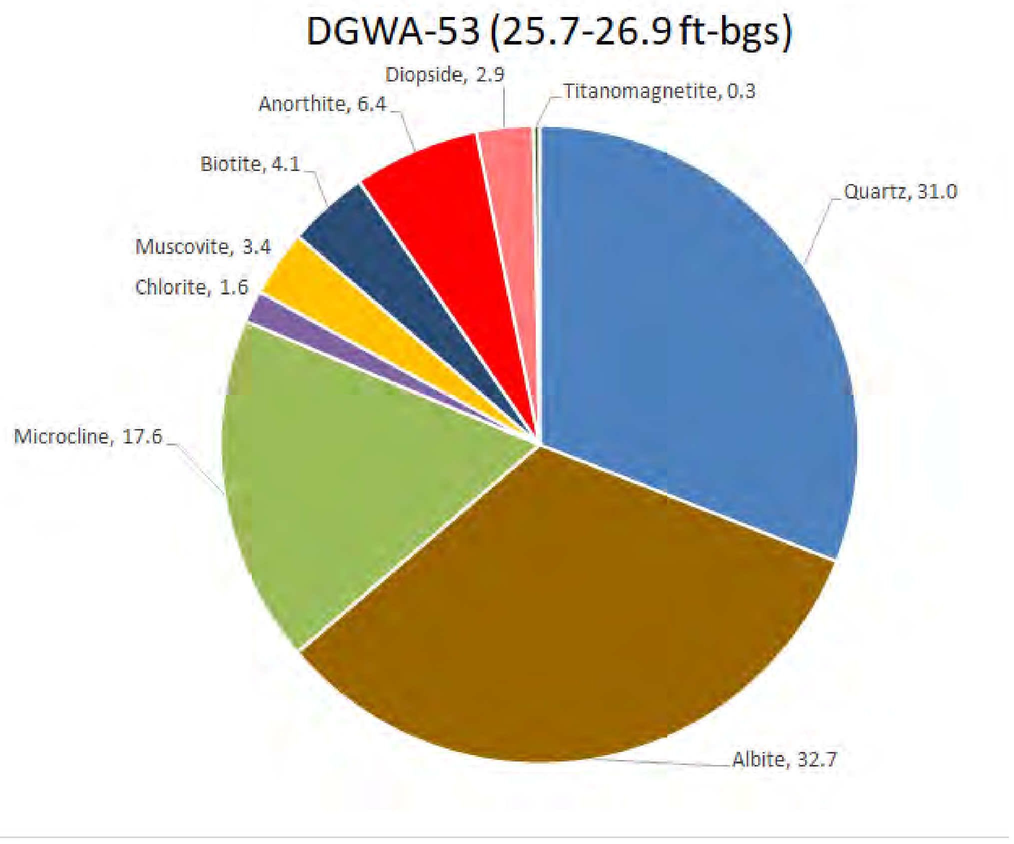
TITLE
MINERALOGY OF OVERBURDEN AT AP-1

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	21

22a



22b



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

YYYY-MM-DD	2023-04-25
DESIGNED	NP
PREPARED	NP
REVIEWED	PJN
APPROVED	TR

TITLE
MINERALOGY OF PWR AND BEDROCK AT AP-1

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	22

	DGWC-68A (24-29')	DGWC-69 (19-24')	DGWC-121 (38-40')	DGWC-121 (49-50')		B-113D (19-20')	DGWA-53 (25.7-26.9)
Exchangeable Phase	0	0.77	0	0		0	0
Carbonate Phase	0	1.6	0	0		0	0
Amorphous Phase	0	15	0	0		0	0
Metal Hydroxide Phase	0	7.3	0.54	0.56		0.38	0
Organic Phase	0	0	0	0		0	0
Acid/Sulfide Fraction	1.2	2.8	0	0		0	0.66
Residual Fraction	0.76	0.77	0	0		0	0.28

Borehole and depth below ground surface (Arsenic mg/kg)

GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

YYYY-MM-DD	2023-04-25
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PREPARED	NP
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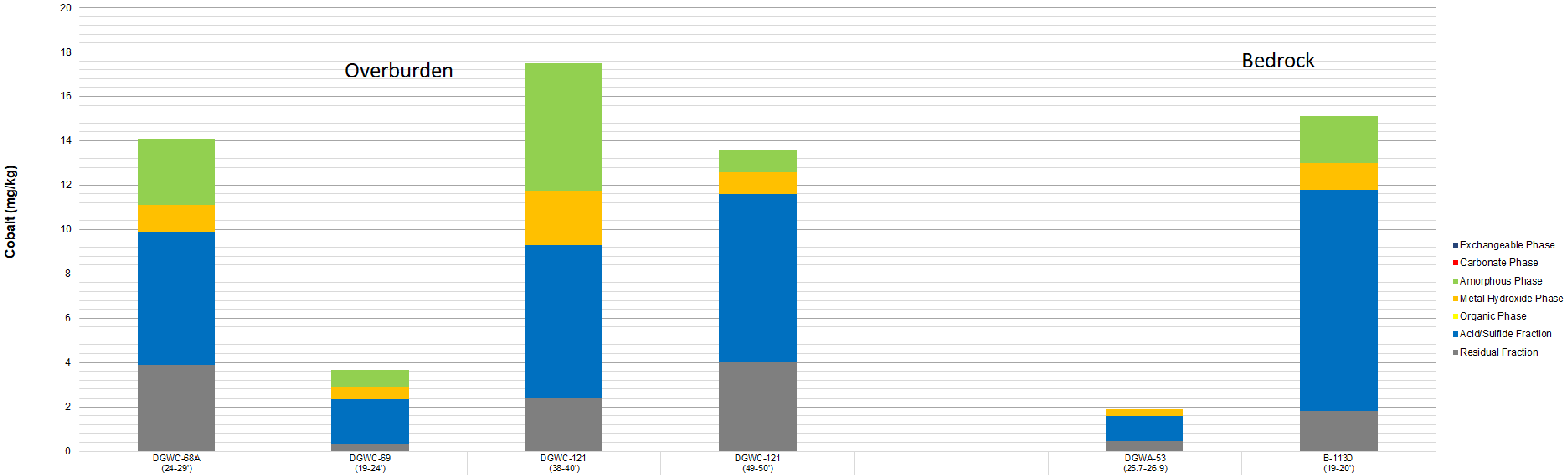
APPROVED	TR

TITLE
ARSENIC SEQUENTIAL EXTRACTION AT AP-1

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	23



	DGWC-68A (24-29')	DGWC-69 (19-24')	DGWC-121 (38-40')	DGWC-121 (49-50')		DGWA-53 (25.7-26.9)	B-113D (19-20')
Exchangeable Phase	0	0	0	0		0	0
Carbonate Phase	0	0	0	0		0	0
Amorphous Phase	3	0.79	5.8	1		0	2.1
Metal Hydroxide Phase	1.2	0.56	2.4	0.98		0.32	1.2
Organic Phase	0	0	0	0		0	0
Acid/Sulfide Fraction	6	2	6.9	7.6		1.1	10
Residual Fraction	3.9	0.33	2.4	4		0.47	1.8

Borehole and depth below ground surface (Cobalt mg/kg)

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PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

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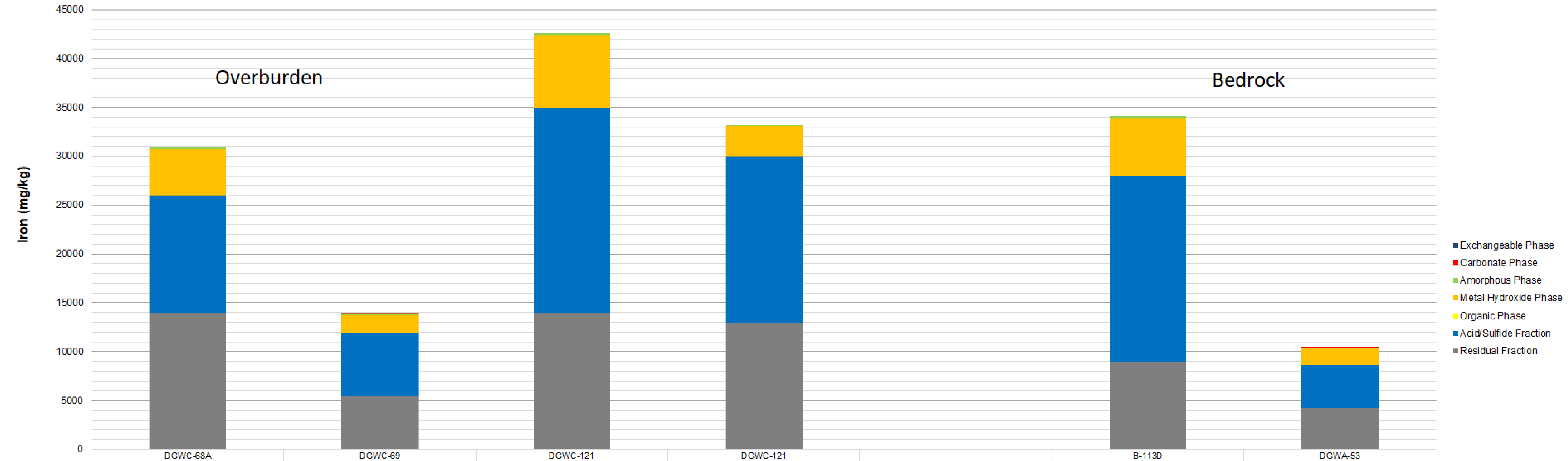
TITLE
COBALT SEQUENTIAL EXTRACTION AT AP-1

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	24



	DGWC-68A (24-29')	DGWC-69 (19-24')	DGWC-121 (38-40')	DGWC-121 (49-50')		B-113D (19-20')	DGWA-53 (25.7-26.9)
Exchangeable Phase	0	0	0	0		0	0
Carbonate Phase	0	11	0	0		0	13
Amorphous Phase	290	200	240	62		260	130
Metal Hydroxide Phase	4700	1800	7400	3100		5900	1700
Organic Phase	0	0	0	0		0	0
Acid/Sulfide Fraction	12000	6400	21000	17000		19000	4400
Residual Fraction	14000	5500	14000	13000		9000	4200

Borehole and depth below ground surface (Iron mg/kg)

GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

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TITLE
IRON SEQUENTIAL EXTRACTION AT AP-1

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	25

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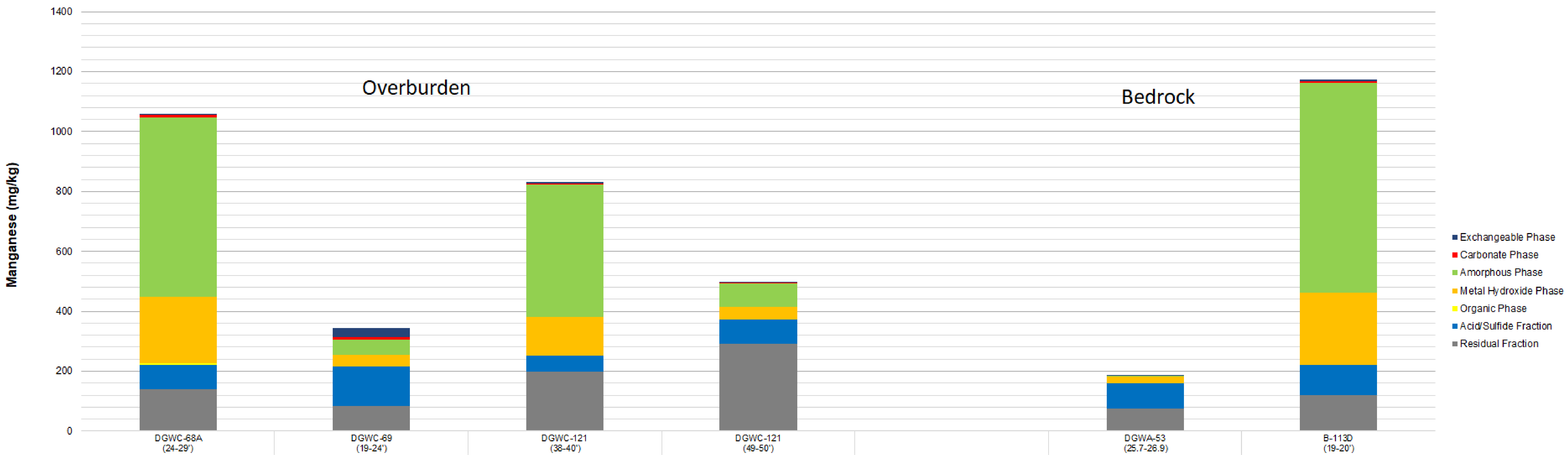

	DGWC-68A (24-29')	DGWC-69 (19-24')	DGWC-121 (38-40')	DGWC-121 (49-50')	DGWA-53 (25.7-26.9)	B-113D (19-20')
Exchangeable Phase	3.7	30	3.7	0.84	0.52	5.1
Carbonate Phase	7.1	7.9	5.2	3.6	0.94	5.9
Amorphous Phase	600	52	440	78	1.1	700
Metal Hydroxide Phase	220	39	130	42	24	240
Organic Phase	5.5	0	0	0	0	2
Acid/Sulfide Fraction	82	130	52	83	85	100
Residual Fraction	140	85	200	290	74	120

Borehole and depth below ground surface (Manganese mg/kg)

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PLANT MCDONOUGH-ATKINSON

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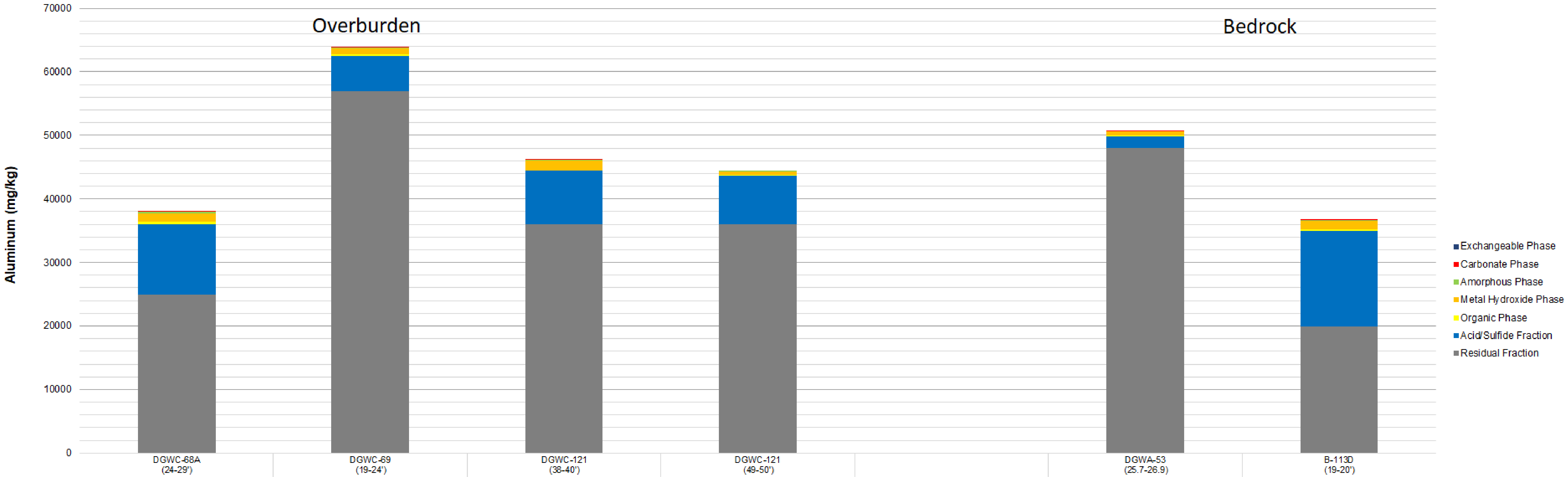
TITLE
MANGANESE SEQUENTIAL EXTRACTION AT AP-1

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	26



	DGWC-68A (24-29')	DGWC-69 (19-24')	DGWC-121 (38-40')	DGWC-121 (49-50')		DGWA-53 (25.7-26.9)	B-113D (19-20')
Exchangeable Phase	0	0	0	0		0	0
Carbonate Phase	13	11	11	0		8.2	5.3
Amorphous Phase	170	57	100	33		35	150
Metal Hydroxide Phase	1400	1000	1500	570		620	1400
Organic Phase	390	250	110	91		110	160
Acid/Sulfide Fraction	11000	5500	8400	7700		1900	15000
Residual Fraction	25000	57000	36000	36000		48000	20000

Borehole and depth below ground surface (Aluminum mg/kg)

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PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

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PREPARED	NP
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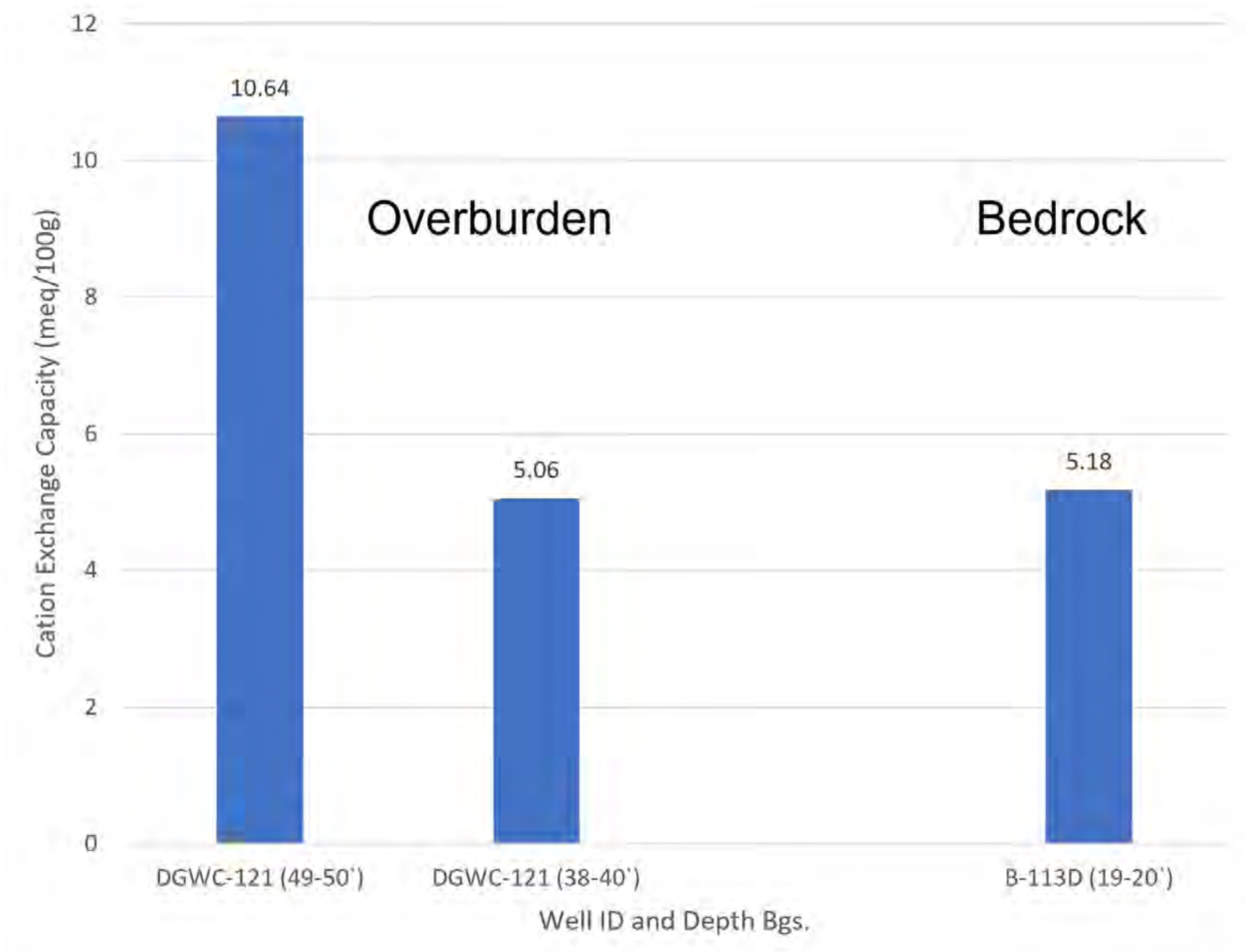
APPROVED	TR

TITLE
ALUMINUM SEQUENTIAL EXTRACTION AT AP-1

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	27



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PLANT MCDONOUGH-ATKINSON

PROJECT
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CONSULTANT

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TITLE
CATION EXCHANGE CAPACITY OF OVERBURDEN AND BEDROCK AT AP-1

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	28

APPENDIX A

Analytical Results (2016-2022)

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-3	B-3	B-7	B-7	B-7	B-26	B-26	B-27	B-27	B-28	B-29	B-31	B-41	B-50	B-51	B-54	B-54
			8/17/2020	11/11/2020	9/12/2019	9/17/2019	10/22/2019	8/30/2016	12/6/2016	8/30/2016	12/6/2016	1/23/2018	1/24/2018	1/25/2018	1/24/2018	1/23/2018	1/25/2018	9/17/2019	10/22/2019
Appendix III	Boron	mg/L	------	2.6	4.6	4.3	4.10	0.85	0.55	1.13	1.36	------	------	------	------	------	------	5.8	4.8
	Calcium	mg/L	------	147	------	------	117.0	83.2	46.2	166.0	163.0	52.1	56.4	68.3	78.5	64.8	54.5	------	143
	Chloride	mg/L	------	------	------	------	12.70	4.30	2.80	6.80	6.90	27	13.9	7.3	22.1	16.3	5.6	------	9.1
	Fluoride	mg/L	0.077 J	------	------	------	0.12 J	0.2 J	0.15 J	1.0	0.81	------	------	------	------	------	------	------	0.22 J
	pH, field measured	S.U.	5.51	5.42	------	4.34	4.36	5.51	5.84	4.72	4.83	------	------	------	------	------	------	5.22	5.22
	Sulfate	mg/L	------	------	------	------	800	330	220	860	730	277	199	281	361	426	92.6	------	877
	Total Dissolved Solids	mg/L	------	------	------	------	816	566	432	1270	1110	------	------	------	------	------	------	------	950
Appendix IV	Antimony	mg/L	< 0.00028	< 0.00028	< 0.00027	< 0.00027	< 0.00027	< 0.00080	< 0.00080	< 0.00080	< 0.00080	------	------	------	------	------	------	< 0.00027	< 0.00027
	Arsenic	mg/L	< 0.00078	< 0.00078	0.0032 J	0.0029 J	0.0035 J	< 0.0016	< 0.0016	0.007	<0.00050	<0.00050	< 0.00052	< 0.00052	< 0.00052	0.0043 J	< 0.00052	0.0018 J	0.0025 J
	Barium	mg/L	0.026	0.027	0.018	0.016	0.017	0.0377	0.0157	0.0447	0.037	------	------	------	------	------	------	0.017	0.021
	Beryllium	mg/L	0.0035	0.0028 J	0.0018 J	0.0019 J	0.0019 J	0.0009	0.0002	0.0275	0.0184	------	------	------	------	------	------	0.0028 J	0.0029 J
	Cadmium	mg/L	0.00077 J	0.00069 J	0.0089	0.0089	0.0088	< 0.000070	< 0.000070	0.0054	0.0046	------	------	------	------	------	------	0.0018 J	0.002 J
	Chromium	mg/L	< 0.00055	0.00068 J	0.0018 J	0.0019 J	0.0021 J	< 0.00090	< 0.00090	< 0.00090	< 0.00090	------	------	------	------	------	------	< 0.00039	0.0011 J
	Cobalt	mg/L	0.061	0.049	0.15	0.14	0.15	< 0.00050	< 0.00050	0.93	0.598	------	------	------	------	------	------	0.018	0.026
	Lead	mg/L	< 0.000036	0.000093 J	0.000082 J	0.0001 J	0.00013 J	< 0.00010	< 0.00010	0.0005 J	0.0003 J	------	------	------	------	------	------	< 0.000046	0.00012 J
	Lithium	mg/L	0.58	0.61	0.0061 J	0.0056 J	0.0056 J	0.02	0.0212 J	0.0496 J	0.0443 J	------	------	------	------	------	------	0.0062 J	0.0063 J
	Mercury	mg/L	0.0001 J	< 0.000078	0.00021 J	0.00033 J	0.00029 J	0.00008	0.00005 J	0.00005 J	0.00007 J	------	------	------	------	------	------	0.0003 J	0.00021 J
	Molybdenum	mg/L	0.0015 J	0.0017 J	< 0.00095	< 0.00095	< 0.00095	< 0.0017	< 0.0017	< 0.0017	< 0.0017	------	------	------	------	------	------	< 0.00095	< 0.00095
	Selenium	mg/L	0.0021 J	0.0039 J	0.02	0.019	0.02	0.0092	0.0038 J	0.0447	0.0212	------	------	------	------	------	------	0.0097 J	0.012
	Thallium	mg/L	< 0.00014	< 0.00014	0.00051 J	0.0005 J	0.00056 J	< 0.00020	< 0.00020	< 0.00020	< 0.00020	------	------	------	------	------	------	0.00014 J	0.00016 J
	Radium	pCi/L	1.78 U	------	------	------	0.772 U	8.98	4.47	0.815 U	1.24	------	------	------	------	------	------	------	1.97
	Radium-226	pCi/L	0.992	------	------	------	0.506	1.19	0.786	0.287 U	0.942	------	------	------	------	------	------	------	0.862
	Radium-228	pCi/L	0.784 U	------	------	------	0.266 U	7.79	3.68	0.528 U	0.296 U	------	------	------	------	------	------	------	1.11
Field Measured	Conductivity	uS/cm	1166.8	1201.9	------	1088.5	1013.3	752.2	552.3	1400.9	1343.9	------	------	------	------	------	------	1236	1158.6
	Dissolved Oxygen	mg/L	0.17	0.18	------	0.51	0.29	3.30	1.70	0.25	0.15	------	------	------	------	------	------	0.03	0.08
	Oxidation Reduction Potential	millivolts	151.2	523	------	163.8	123.0	120.0	89.1	258.7	177.1	------	------	------	------	------	------	160.4	61.8
	Temperature	Deg C	20.13	19.54	------	20.4	20.20	24.97	16.65	21.55	17.23	------	------	------	------	------	------	20.95	19.41
	Turbidity	ntu	1.72	6.27	------	0.89	1.88	4.46	0.94	0.95	2.10	------	------	------	------	------	------	0.05	0.39
	Water level depth	ft	35.38	35.5	------	21.11	21.97	24.56	26.40	20.17	20.90	------	------	------	------	------	------	5.91	5.89
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	------	22	9.5	30	10	< 20	117	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	< 20	------	------	------	------	------	------	------	------	------	------	------	12
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	< 20	------	------	------	------	------	------	------	------	------	------	------	< 1.0
	Aluminum	mg/L	------	------	------	------	0.56	------	0.0234 J	------	1.45	------	------	------	------	------	------	------	0.19
	Dissolved Organic Carbon	mg/L	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------	------	------	------	< 0.50
	Hardness	mg/L	------	------	------	------	------	------	189	------	584	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	< 0.076	------	------	------	------	0.0064 J	0.0227 J	0.0087 J	0.1	3.6	0.0562	------	< 0.015
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	< 0.20	------	------	------	------	------	------	------	------	------	------	------	< 0.20
	Iron, Ferrous	mg/L	------	------	------	------	< 0.20	------	------	------	------	------	------	------	------	------	------	------	< 0.20
	Magnesium	mg/L	------	------	------	------	43.7	------	14.1	------	48.8	27.7	18.9	15.1	27.3	24.5	8.01	------	49.7
	Manganese	mg/L	------	------	------	------	19.6	------	0.0303	------	22.9	1.01	0.163	0.0256	0.494	12.2	0.194	------	9.4
	Nitrate as N	mg/L	------	------	------	------	0.57	------	------	------	------	------	------	------	------	------	------	------	0.38
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	< 0.020	------	------	------	------	------	------	------	------	------	------	------	< 0.020
	Potassium	mg/L	------	------	------	------	9.5	------	5.12	------	14.7	4.91	2.76	4.47	5.17	9.46	4.04	------	8.4
	Silica	mg/L	------	------	------	------	------	------	52.5	------	51.5	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	15.3	------	24.5	------	24.1	------	------	------	------	------	------	------	14.3
	Sodium	mg/L	------	------	------	------	22.2	------	28.8	------	26.2	22.7	18.4	29.3	26.8	21.6	13.4	------	25.4
	Sulfide	mg/L	------	------	------	------	<0.2	------	------	------	------	------	------	------	------	------	------	------	<0.2
	Total Organic Carbon	mg/L	------	------	------	------	<0.5	------	------	------	------	------	------	------	------	------	------	------	<0.5
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-54	B-54	B-56	B-56	B-56	B-56	B-56	B-56	B-57	B-57	B-58	B-59	B-60	B-60	B-60	B-61	B-61
			3/10/2021	9/13/2022	8/17/2020	9/28/2020	3/3/2021	9/13/2021	1/27/2022	9/16/2022	9/27/2016	1/15/2021	9/26/2016	9/26/2016	10/4/2016	9/11/2019	10/21/2019	10/4/2016	2/19/2018
Appendix III	Boron	mg/L	------	------	------	1.4	1.4	1.5	1.6	1.60	0.407 J	0.43	1.62	4.79	0.28	0.31	0.28	0.76	------
	Calcium	mg/L	------	------	------	15.1	18.5	15.2	19.8	18.4	------	132	------	------	------	------	106.0	------	------
	Chloride	mg/L	------	------	------	8.7	8.3	7.1	7.6	6.90	------	25.5	------	------	------	------	28.6	------	------
	Fluoride	mg/L	------	------	0.19	0.098 J	0.34	0.2	0.21	0.22	------	1.1	------	------	------	------	0.54	------	------
	pH, field measured	S.U.	5.33	5.34	4.82	4.9	4.71	4.69	4.7	4.56	------	3.83	------	------	------	4.55	4.66	------	4.79
	Sulfate	mg/L	------	------	------	211	225	189	185	234	------	1080	------	------	------	------	858	------	------
	Total Dissolved Solids	mg/L	------	------	------	320	303	321	344	353	------	1430	------	------	------	------	1100	------	------
Appendix IV	Antimony	mg/L	------	------	< 0.00028	< 0.00028	< 0.00028	< 0.00078	0.0011 J	< 0.00078	------	< 0.00028	------	------	------	< 0.00027	< 0.00027	------	------
	Arsenic	mg/L	------	------	0.0032 J	0.0047 J	0.0030 J	0.0031 J	0.0045 J	< 0.0022	------	0.0032 J	------	------	------	0.0016 J	0.0008 J	------	------
	Barium	mg/L	------	------	0.03	0.026	0.028	0.026	0.03	0.028	------	0.0099 J	------	------	------	0.011	0.011	------	------
	Beryllium	mg/L	------	------	0.0013 J	0.0012 J	0.0011	0.0012	0.0012	0.0013	0.0198	0.017	0.0013 J	0.0075	0.0071	0.0057	0.005	------	0.0013 J
	Cadmium	mg/L	------	------	0.00029 J	0.00024 J	0.00026 J	0.00028 J	0.00025 J	0.00030 J	------	0.0034	------	------	------	0.001 J	0.00079 J	------	------
	Chromium	mg/L	------	------	0.0014 J	< 0.00055	0.00059 J	< 0.0011	0.0014 J	< 0.0011	------	< 0.00055	------	------	------	< 0.00039	0.0005 J	------	------
	Cobalt	mg/L	------	------	0.042	0.042	0.050	0.047	0.052	0.051	------	0.47	------	------	------	0.31	0.29	------	------
	Lead	mg/L	------	------	0.00022 J	0.000091 J	0.00010 J	< 0.00089	< 0.00089	< 0.00089	------	0.00087 J	------	------	------	0.0008 J	0.0007 J	------	------
	Lithium	mg/L	0.0059 J	0.0058 J	0.0056 J	0.005 J	0.0051 J	0.0055 J	0.0061 J	0.0057 J	------	0.11	------	------	------	0.03 J	0.028 J	------	------
	Mercury	mg/L	------	------	0.00016 J	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	------	< 0.000078	------	------	------	< 0.00014	< 0.00014	------	------
	Molybdenum	mg/L	------	------	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	------	< 0.00069	------	------	------	< 0.00095	< 0.00095	------	------
	Selenium	mg/L	------	------	0.011	0.029	0.013	0.011	0.0066	0.01	------	0.015	------	------	------	0.0074 J	0.0072 J	------	------
	Thallium	mg/L	------	------	0.00016 J	0.00023 J	0.00026 J	0.00024 J	0.00032 J	0.00024 J	------	0.00051 J	------	------	------	0.00039 J	0.00035 J	------	------
	Radium	pCi/L	------	------	1.15 U	1.39	1.01 U	0.854 U	0.831 U	0.752 U	------	2.36	------	------	------	------	1.18	------	------
	Radium-226	pCi/L	------	------	0.436 U	0.471	0.592 U	0.33 U	0.306 U	0.227	------	1.24	------	------	------	------	------	------	------
	Radium-228	pCi/L	------	------	0.712 U	0.914	0.414 U	0.524 U	0.525 U	0.525 U	------	1.12	------	------	------	------	------	------	------
Field Measured	Conductivity	uS/cm	944.1	860.8	478.2	425	528.96	474.76	545.98	532.7	------	1779.7	------	------	------	1323.3	1313.1	------	688.4
	Dissolved Oxygen	mg/L	0.17	0.12	0.52	0.06	0.1	0.23	3.68	0.12	------	0.26	------	------	------	0.21	0.06	------	0.20
	Oxidation Reduction Potential	millivolts	652.2	110.4	160.3	125.6	38.2	85.7	104.4	127.2	------	113.2	------	------	------	180.9	106.6	------	115.8
	Temperature	Deg C	19.31	19.92	22.96	19.23	18.12	21.75	17.26	18.41	------	16.02	------	------	------	25.22	20.57	------	17.86
	Turbidity	ntu	0.47	0.17	4.38	2.64	1.93	3.44	4.96	4.57	------	3.33	------	------	------	1.3	3.37	------	4.40
	Water level depth	ft	8.76	6.35	29.52	29.24	28.79	26.97	28.59	31.25	------	19.09	------	------	------	32.6	33.40	------	21.75
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------	------	< 20	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------	------	< 20	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	2.1	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.87 J	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	------	0.1	------	------	------	------	------	------	86.2	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	0.1	------	------	------	------	------	------	52.3	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	0.0	------	------	------	------	------	------	33.9	------	------
	Magnesium	mg/L	------	------	------	------	34.2	------	34.1	34.1	------	------	------	------	------	------	35.5	------	------
	Manganese	mg/L	------	------	------	------	------	------	------	0.9	------	------	------	------	------	------	21.7	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.0050	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.025	------	------
	Potassium	mg/L	------	------	------	------	5.0	------	5.1	5.0	------	------	------	------	------	------	13.4	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	22	------	------
	Sodium	mg/L	------	------	------	------	19.4	------	20.7	22.2	------	------	------	------	------	------	64.4	------	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	<0.2	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.7 J	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-61	B-61	B-61	B-62	B-62	B-62	B-62	B-62	B-62	B-62	B-62	B-62	B-62	B-63	B-63	B-63	B-63
			1/28/2019	9/11/2019	10/22/2019	10/6/2016	1/30/2019	9/11/2019	10/21/2019	8/13/2020	9/24/2020	3/12/2021	9/9/2021	1/20/2022	9/8/2022	10/7/2016	2/19/2018	1/28/2019	9/11/2019
Appendix III	Boron	mg/L	0.73	0.52	0.59	0.053 J	0.14	0.068	0.06	------	0.074 J	0.092 J	0.068	0.077	0.06	------	------	0.44	0.26
	Calcium	mg/L	54.5	------	55.5	------	51.4	------	31.2	------	28.8	28.8	29.2	36.3	31.4	------	------	< 0.69	------
	Chloride	mg/L	10	------	10.60	------	7.1	------	6.50	------	5.7	5.9	5.8	5.6	5.30	------	------	7.9	------
	Fluoride	mg/L	0.31	------	0.15 J	------	0.43	------	0.23 J	0.11	0.093 J	0.11	0.14	0.099 J	0.13	------	------	0.45	------
	pH, field measured	S.U.	4.91	4.94	4.91	------	------	6.27	6.24	6.4	6.55	6.34	6.31	6.32	6.22	------	5.63	5.39	5.48
	Sulfate	mg/L	268	------	308	------	74.7	------	55.3	------	50.6	46.5	49.2	50.3	45.8	------	------	87.9	------
	Total Dissolved Solids	mg/L	439	------	389	------	287	------	180	------	170	172	174	187	160	------	------	204	------
Appendix IV	Antimony	mg/L	< 0.00078	0.00043 J	< 0.00027	------	< 0.00078	< 0.00027	< 0.00027	< 0.00028	0.00046 J	< 0.0014	< 0.00078	< 0.00078	< 0.00078	------	------	< 0.00078	< 0.00027
	Arsenic	mg/L	< 0.00057	< 0.00035	< 0.00035	------	< 0.00057	< 0.00035	< 0.00035	< 0.00078	< 0.00078	< 0.0039	< 0.0011	0.0033 J	< 0.0022	------	------	< 0.00057	< 0.00035
	Barium	mg/L	0.013	0.013	0.014	------	0.018	0.023	0.026	0.026	0.025	0.027	0.021	0.021	0.018	------	------	0.028	0.021
	Beryllium	mg/L	< 0.000050	0.00085 J	0.00088 J	0.00009 J	< 0.000050	0.00012 J	0.000078 J	0.00011 J	0.00013 J	< 0.00023	0.00014 J	0.00015 J	0.00013 J	0.0004 J	0.00049 J	< 0.000050	0.00035 J
	Cadmium	mg/L	< 0.000093	0.00044 J	0.00045 J	------	< 0.000093	< 0.00011	< 0.00011	< 0.00012	< 0.00012	< 0.00059	< 0.00011	< 0.00011	< 0.00011	------	------	< 0.000093	< 0.00011
	Chromium	mg/L	< 0.0016	< 0.00039	< 0.00039	------	< 0.0016	< 0.00039	0.00098 J	< 0.00055	< 0.00055	< 0.0028	< 0.0011	< 0.0011	< 0.0011	------	------	< 0.0016	< 0.00039
	Cobalt	mg/L	0.078	0.066	0.073	------	< 0.00052	0.0003 J	0.00031 J	< 0.00038	< 0.00038	< 0.0019	< 0.00039	< 0.00039	< 0.00039	------	------	0.053	0.043
	Lead	mg/L	< 0.00027	0.00012 J	0.00013 J	------	< 0.00027	< 0.000046	< 0.000046	< 0.000036	< 0.000036	< 0.00018	< 0.00089	< 0.00089	< 0.00089	------	------	< 0.00027	0.000047 J
	Lithium	mg/L	< 0.00097	0.0014 J	0.0015 J	------	< 0.00097	0.0078 J	0.0078 J	0.0087 J	0.0084 J	0.0087 J	0.0094 J	0.0092 J	0.0085 J	------	------	< 0.00097	0.0064 J
	Mercury	mg/L	< 0.000036	< 0.00014	< 0.00014	------	< 0.000036	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	------	------	< 0.000036	< 0.00014
	Molybdenum	mg/L	< 0.0019	< 0.00095	< 0.00095	------	< 0.0019	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.0034	< 0.00074	< 0.00074	< 0.00074	------	------	< 0.0019	< 0.00095
	Selenium	mg/L	< 0.0014	0.0017 J	0.0022 J	------	< 0.0014	< 0.0013	< 0.0013	< 0.0016	< 0.0016	< 0.0078	< 0.0014	< 0.0014	< 0.0014	------	------	< 0.0014	< 0.0013
	Thallium	mg/L	< 0.00014	0.00034 J	0.00037 J	------	< 0.00014	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00072	< 0.00018	< 0.00018	< 0.00018	------	------	< 0.00014	< 0.000052
	Radium	pCi/L	1.92 U	------	1.31	------	1.97 U	------	1.82	1.63	1.28 U	1.18 U	1.7	1.71	1.96	------	------	2.14 U	------
	Radium-226	pCi/L	0.535 U	------	0.332 U	------	0.897 U	------	------	0.647	0.669	0.815	0.757	0.869	0.627	------	------	0.903 U	------
	Radium-228	pCi/L	1.38 U	------	0.978	------	1.07 U	------	------	0.986	0.608 U	0.369 U	0.946	0.844	1.33	------	------	1.24 U	------
Field Measured	Conductivity	uS/cm	572.9	513.4	555.5	------	------	269.3	304.5	279.7	296	276.4	268.58	304.59	270.2	------	335.4	266.1	249.5
	Dissolved Oxygen	mg/L	0.07	0.19	0.12	------	------	0.19	0.10	0.25	0.23	0.26	0.18	1.07	0.12	------	0.04	0.27	0.15
	Oxidation Reduction Potential	millivolts	90.7	99.4	87.2	------	------	14	-3.0	-5.8	57	1.3	14.5	-16.6	41.3	------	96.1	74.8	163.2
	Temperature	Deg C	19.43	25.55	19.32	------	------	21.03	17.50	19.59	18.16	17.35	19.81	15.84	20.71	------	19.41	18.97	24.09
	Turbidity	ntu	0.53	1.41	2.66	------	------	1.68	3.09	3.3	4.35	3.98	3.00	4.19	4.84	------	4.89	0.04	0.15
	Water level depth	ft	15.74	22.94	24.30	------	------	16.04	17.70	17.2	15.6	15.6	12.4	15.48	15.51	------	31.65	24.38	29.6
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	------	67.4	------	81	70.3	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	1	------	------	------	70	------	------	67.4	------	81	70.3	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	< 1.0	------	------	------	< 20	------	------	< 5.0	------	< 1.8	< 5.0	------	------	------	------
	Aluminum	mg/L	------	------	0.22	------	------	------	< 0.032	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	2.4	------	------	------	78.5	------	------	------	------	------	6.5	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	0.4	------	------	------	78.5	------	------	------	------	78.5	5.0	------	------	------	------
	Iron, Ferrous	mg/L	------	------	2.0	------	------	------	2.7	------	------	------	------	2.7	1.5	------	------	------	------
	Magnesium	mg/L	------	------	15.8	------	------	------	5.2	------	------	5.6	------	5.6	5.1	------	------	------	------
	Manganese	mg/L	------	------	9.4	------	------	------	0.36	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	< 0.0050	------	------	------	0.005 J	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	< 0.020	------	------	------	< 0.020	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	7.3	------	------	------	2.3	------	------	2.2	------	2.8	2.4	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	5.9	------	------	------	15.1	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	23.9	------	------	------	10.2	------	------	10.4	------	10.8	10.2	------	------	------	------
	Sulfide	mg/L	------	------	<0.2	------	------	------	<0.2	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	<0.5	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	B-63	B-63	B-63	B-63	B-63	B-64	B-64	B-64	B-64	B-64	B-64	B-64	B-65	B-65	B-65	B-65	B-65
			10/22/2019	3/12/2021	9/14/2021	1/20/2022	9/14/2022	11/7/2016	2/19/2018	1/28/2019	9/12/2019	10/21/2019	3/10/2021	9/13/2022	11/22/2016	2/19/2018	1/28/2019	9/12/2019	9/17/2019
Appendix III	Boron	mg/L	0.22	------	0.35	0.21	0.38	3.04	------	3.9	3.3	2.8	------	------	1.87	------	1.4	1.2	1.3
	Calcium	mg/L	20.7	------	22.7	22.9	26.3	------	------	157	------	------	------	------	------	------	52.8	------	------
	Chloride	mg/L	18.00	------	7.1	15	6.50	------	------	6.6	------	6.7	------	------	------	------	9.7	------	------
	Fluoride	mg/L	0.2 J	------	0.16	0.12	0.14	------	------	< 0.029	------	0.048 J	------	------	------	------	< 0.029	------	------
	pH, field measured	S.U.	5.55	5.51	5.46	5.46	5.31	------	5.06	5.03	5.03	4.99	4.98	5.00	------	5.78	5.72	6.87	5.73
	Sulfate	mg/L	56.5	------	73.2	49.4	93.3	------	------	598	------	837	------	------	------	------	251	------	------
	Total Dissolved Solids	mg/L	178	------	170	177	206	------	------	962	------	1110	------	------	------	------	454	------	------
Appendix IV	Antimony	mg/L	0.00066 J	------	< 0.00078	< 0.00078	< 0.00078	------	------	< 0.00078	< 0.00027	< 0.00027	------	------	------	------	< 0.00078	< 0.00027	0.00061 J
	Arsenic	mg/L	< 0.00035	------	< 0.0011	0.0022 J	< 0.0022	------	<0.00052	< 0.00057	< 0.00035	< 0.00035	------	------	<0.0016	0.00084 J	< 0.00057	0.00036 J	< 0.00035
	Barium	mg/L	0.021	------	0.026	0.02	0.032	------	------	0.015	0.018	0.017	------	------	------	------	0.03	0.027	0.028
	Beryllium	mg/L	0.0003 J	------	0.00042 J	0.00034 J	0.00053	0.0031	0.0043	0.0044	0.0051	0.0045	------	------	<0.0004	<0.000091	< 0.000050	< 0.000074	< 0.000074
	Cadmium	mg/L	0.00014 J	------	0.00025 J	< 0.00011	0.00018 J	------	------	< 0.000093	0.001 J	0.001 J	------	------	------	------	0.0014	0.0014 J	0.0015 J
	Chromium	mg/L	0.00064 J	------	< 0.0011	< 0.0011	< 0.0011	------	------	< 0.0016	< 0.00039	< 0.00039	------	------	------	------	< 0.0016	< 0.00039	< 0.00039
	Cobalt	mg/L	0.046	0.046	0.037	0.039	0.05	------	------	< 0.00052	0.0043 J	0.0043 J	------	------	------	------	0.047	0.036	0.041
	Lead	mg/L	0.000073 J	------	< 0.00089	< 0.00089	< 0.00089	------	------	< 0.00027	< 0.000046	< 0.000046	------	------	------	------	< 0.00027	< 0.000046	< 0.000046
	Lithium	mg/L	0.0062 J	0.0066 J	0.0064 J	0.0062 J	0.0072 J	------	------	< 0.00097	0.012 J	0.011 J	0.0111 J	0.013 J	------	------	< 0.00097	0.0099 J	0.01 J
	Mercury	mg/L	< 0.00014	------	< 0.000078	< 0.00013	< 0.00013	------	------	< 0.000036	< 0.00014	< 0.00014	------	------	------	------	< 0.000036	< 0.00014	< 0.00014
	Molybdenum	mg/L	< 0.00095	------	< 0.00074	< 0.00074	< 0.00074	------	------	< 0.0019	< 0.00095	< 0.00095	------	------	------	------	< 0.0019	< 0.00095	< 0.00095
	Selenium	mg/L	< 0.0013	------	< 0.0014	< 0.0014	< 0.0014	------	------	< 0.0014	0.0017 J	0.0013 J	------	------	------	------	< 0.0014	< 0.0013	< 0.0013
	Thallium	mg/L	< 0.000052	------	< 0.00018	< 0.00018	< 0.00018	------	------	< 0.00014	< 0.000052	< 0.000052	------	------	------	------	< 0.00014	< 0.000052	0.000062 J
	Radium	pCi/L	1.28 U	------	1.68	0.846 U	1.61	------	------	2.43	------	2.13	------	------	------	------	1.05 U	------	------
	Radium-226	pCi/L	0.872	------	0.981	0.455	0.639	------	------	0.815	------	------	------	------	------	------	0.307 U	------	------
	Radium-228	pCi/L	0.407 U	------	0.703 U	0.391 U	0.97	------	------	1.61	------	------	------	------	------	------	0.738 U	------	------
Field Measured	Conductivity	uS/cm	262.8	284.18	262.66	278.9	331.4	------	1238.4	1138.8	1204.5	1392.9	835.5	1315.2	------	740.1	588.1	867.1	549.6
	Dissolved Oxygen	mg/L	0.21	0.07	0.17	0.05	0.39	------	0.11	0.35	0.15	0.11	0.29	0.04	------	0.10	0.20	0.44	0.1
	Oxidation Reduction Potential	millivolts	52.9	93.6	76.2	43.5	86.9	------	-37.4	226.1	468.5	544.4	295.5	500.5	------	-75.4	123.8	-45.2	76.6
	Temperature	Deg C	15.61	25.96	22.09	17.79	21.62	------	18.71	16.20	21.19	18.84	17.45	21.01	------	18.39	18.84	30.56	25.82
	Turbidity	ntu	3.74	3.97	4.95	4.87	4.81	------	2.70	2.76	0.2	1.00	0.94	0.75	------	1.84	1.76	0.45	0.64
	Water level depth	ft	30.65	29.62	29.34	28.84	31.38	------	5.70	5.35	6.4	6.95	10.22	7.00	------	15.45	14.24	22.19	18.79
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	50.8	33.2	------	------	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	39	------	------	50.8	33.2	------	------	------	------	< 20	------	------	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	< 20	------	------	< 1.8	< 5.00	------	------	------	------	< 20	------	------	------	------	------	------	------
	Aluminum	mg/L	0.043 J	------	------	------	------	------	------	------	------	< 0.032	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	1 J	------	------	------	------	------	------	------	------	< 0.50	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	0.3	------	------	------	1.6	------	------	------	------	< 0.20	------	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	0.3	------	------	------	0.1	------	------	------	------	< 0.20	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	< 0.20	------	------	------	1.5	------	------	------	------	< 0.20	------	------	------	------	------	------	------
	Magnesium	mg/L	7.2	------	------	8.0	9.3	------	------	------	------	36.0	------	------	------	------	------	------	------
	Manganese	mg/L	4.2	------	------	------	------	------	------	------	------	29.2	------	------	------	------	------	------	------
	Nitrate as N	mg/L	0.0095 J	------	------	------	------	------	------	------	------	0.029 J	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	< 0.020	------	------	------	------	------	------	------	------	0.046	------	------	------	------	------	------	------
	Potassium	mg/L	2.3	------	------	2.8	2.7	------	------	------	------	5.4	------	------	------	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	13.2	------	------	------	------	------	------	------	------	25.8	------	------	------	------	------	------	------
	Sodium	mg/L	11.4	------	------	11.7	13.0	------	------	------	------	24.9	------	------	------	------	------	------	------
	Sulfide	mg/L	<0.2	------	------	------	------	------	------	------	------	<0.2	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	0.69 J	------	------	------	------	------	------	------	------	<0.5	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-65	B-66	B-66	B-66	B-66	B-66	B-66	B-66	B-68	B-68	B-68	B-68	B-68	B-68	B-72	B-72	B-73
			10/21/2019	1/30/2019	9/12/2019	10/21/2019	3/12/2021	9/14/2021	1/25/2022	9/16/2022	3/31/2017	4/12/2017	1/22/2018	10/22/2019	3/11/2021	9/9/2022	5/4/2017	1/25/2018	5/2/2017
Appendix III	Boron	mg/L	1.10	2.00	2.00	1.9	------	2.1	2.3	2.20	1.25	1.16	1.53	1.40	------	------	------	------	------
	Calcium	mg/L	51.6	62.4	------	85.5	------	60.9	54.9	63.9	48.2	------	49.7	57.9	------	------	------	38.1	------
	Chloride	mg/L	9.90	9.3	------	9.9	------	8.9	8.7	8.40	3.80	------	3.80	4.20	------	------	------	5.4	------
	Fluoride	mg/L	0.095 J	0.51	------	0.3 J	------	0.22	0.12	0.18	0.54	------	0.65	0.53	------	------	------	------	------
	pH, field measured	S.U.	5.70	6.83	6.87	6.74	6.53	5.54	6.35	6.60	6.68	6.63	30.20	6.61	6.78	6.64	------	------	------
	Sulfate	mg/L	268	292	------	302	------	268	240	285	38	------	28.4 J	25.6	------	------	------	96	------
	Total Dissolved Solids	mg/L	403	601	------	617	------	490	482	498	288	------	263	225	------	------	------	------	------
Appendix IV	Antimony	mg/L	0.00034 J	< 0.00078	< 0.00027	< 0.00027	------	< 0.00078	< 0.00078	< 0.00078	<0.0003	------	<0.0006	< 0.00027	------	------	------	------	------
	Arsenic	mg/L	< 0.00035	< 0.00057	< 0.00035	< 0.00035	< 0.00078	< 0.0011	< 0.0011	< 0.0022	0.488	0.498	0.536	0.42	0.47	0.51	< 0.00040	< 0.00052	0.0066
	Barium	mg/L	0.027	0.016	0.017	0.018	------	0.018	0.021	0.02	0.0796	------	0.117	0.12	------	------	------	------	------
	Beryllium	mg/L	< 0.000074	< 0.000050	< 0.000074	< 0.000074	------	< 0.000054	< 0.000054	< 0.000054	<0.00007	------	<0.000091	< 0.000074	------	------	------	------	------
	Cadmium	mg/L	0.0014 J	< 0.000093	< 0.00011	< 0.00011	------	< 0.00011	< 0.00011	< 0.00011	<0.00006	------	<0.00014	< 0.00011	------	------	------	------	------
	Chromium	mg/L	< 0.00039	< 0.0016	< 0.00039	< 0.00039	------	< 0.0011	< 0.0011	< 0.0011	<0.0003	------	<0.00045	< 0.00039	------	------	------	------	------
	Cobalt	mg/L	0.041	< 0.00052	0.006	0.0074	0.010	0.012	0.013	0.012	0.0025 J	------	0.0032 J	0.0033 J	------	------	------	------	------
	Lead	mg/L	< 0.000046	< 0.00027	< 0.000046	< 0.000046	------	< 0.00089	< 0.00089	< 0.00089	<0.00007	------	<0.000067	0.000071 J	------	------	------	------	------
	Lithium	mg/L	0.0098 J	< 0.00097	< 0.00078	< 0.00078	------	< 0.00073	0.00073 J	< 0.00073	0.0016 J	------	<0.0015	0.00095 J	------	------	------	------	------
	Mercury	mg/L	< 0.00014	< 0.000036	< 0.00014	< 0.00014	------	< 0.000078	< 0.00013	< 0.00013	<0.000041	------	0.00006 J	< 0.00014	------	------	------	------	------
	Molybdenum	mg/L	< 0.00095	< 0.0019	0.0018 J	0.0015 J	------	< 0.00074	< 0.00074	< 0.00074	0.175	------	0.225	0.21	0.18	0.17	------	------	------
	Selenium	mg/L	< 0.0013	< 0.0014	< 0.0013	< 0.0013	------	< 0.0014	< 0.0014	< 0.0014	<0.0014	------	<0.0018	< 0.0013	------	------	------	------	------
	Thallium	mg/L	< 0.000052	< 0.00014	< 0.000052	< 0.000052	------	< 0.00018	< 0.00018	< 0.00018	0.00008 J	------	<0.000052	0.000071 J	------	------	------	------	------
	Radium	pCi/L	0.618 U	0.975 U	------	1.07 U	------	0.421 U	0 U	0.832 U	0.358 U	------	1.28	1.6	------	------	------	------	------
	Radium-226	pCi/L	------	0.404	------	------	------	0.152 U	-0.0327 U	0.12 U	------	------	------	0.834	------	------	------	------	------
	Radium-228	pCi/L	------	0.571 U	------	------	------	0.269 U	-0.0963 U	0.712 U	------	------	------	0.766 U	------	------	------	------	------
Field Measured	Conductivity	uS/cm	551.3	858.8	867.1	843.5	740.8	759.32	1556	788.5	424.9	425.4	------	427.5	466.68	0.5	------	------	------
	Dissolved Oxygen	mg/L	0.16	0.21	0.44	0.15	0.33	0.47	0.16	0.52	0.13	0.21	------	0.06	0.1	0.07	------	------	------
	Oxidation Reduction Potential	millivolts	59.5	42.7	-45.2	-57.9	25.6	14.5	-14.5	-30.5	-31.6	-24.1	------	-71.7	-51.4	-40.4	------	------	------
	Temperature	Deg C	17.67	12.16	30.56	21.32	18.92	22.27	18.78	19.97	18.61	19.41	------	19.37	18.82	19.09	------	------	------
	Turbidity	ntu	0.64	1.05	0.45	1.92	0.67	2.1	2.26	1.02	1.98	0.81	------	4.69	4.23	4.71	------	------	------
	Water level depth	ft	19.20	21.12	22.19	23.18	21.61	20.1	20.42	23.50	3.28	3.13	------	3.86	4.25	4.70	------	------	------
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	96.3	119.0	------	------	184.0	------	------	------	------	102	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	< 20	------	------	158	------	------	96.3	119.0	------	------	------	197	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	< 20	------	------	< 20	------	------	< 1.8	< 5.00	------	------	------	< 20	------	------	------	------	------
	Aluminum	mg/L	< 0.032	------	------	< 0.032	------	------	------	------	------	------	------	< 0.032	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	< 0.50	------	------	2.8	------	------	------	------	------	------	------	0.53 J	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	191.0	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	< 0.20	------	------	1.5	------	------	------	3.0	------	------	5.3	5	------	------	------	0.1	------
	Iron, Ferric (Fe2)	mg/L	< 0.20	------	------	1.5	------	------	------	0.5	------	------	------	5	------	------	------	------	------
	Iron, Ferrous	mg/L	< 0.20	------	------	< 0.20	------	------	------	2.5	------	------	------	< 0.20	------	------	------	------	------
	Magnesium	mg/L	24.1	------	------	41	------	------	40.9	44.0	------	------	12.1	13.3	------	------	------	13.2	------
	Manganese	mg/L	5.5	------	------	5.2	------	------	------	4.3	------	------	5.5	6	------	------	------	0.343	------
	Nitrate as N	mg/L	0.12	------	------	< 0.0050	------	------	------	------	------	------	------	0.0064 J	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	< 0.020	------	------	< 0.020	------	------	------	------	------	------	------	< 0.020	------	------	------	------	------
	Potassium	mg/L	5.9	------	------	6.5	------	------	5.3	5.5	------	------	4.8	5.2	------	------	------	3.93	------
	Silica	mg/L	------	------	------	------	------	------	------	------	24.3	------	------	------	------	------	------	------	------
	Silicon	mg/L	13.7	------	------	12.3	------	------	------	------	------	------	------	11.8	------	------	------	------	------
	Sodium	mg/L	14.5	------	------	50.3	------	------	35.1	30.5	------	------	8.0	8.9	------	------	------	14	------
	Sulfide	mg/L	<0.2	------	------	<0.2	------	------	------	------	------	------	------	<0.2	------	------	------	------	------
	Total Organic Carbon	mg/L	<0.5	------	------	2.2	------	------	------	------	------	------	------	<0.5	------	------	------	------	------
	Zinc	mg/L	------	------	0.0057 J	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-73	B-73	B-73	B-74	B-74	B-74	B-74	B-74	B-76	B-76	B-76	B-77	B-77	B-77	B-77	B-77	B-77
			1/25/2018	3/11/2021	9/8/2022	5/3/2017	1/26/2018	8/14/2020	9/25/2020	9/14/2022	9/18/2019	10/22/2019	3/12/2021	9/18/2019	10/24/2019	8/13/2020	9/24/2020	3/4/2021	9/14/2021
Appendix III	Boron	mg/L	------	------	------	------	------	------	0.3	------	0.37	0.39		0.31	0.31	------	0.27	0.35	0.29
	Calcium	mg/L	45	------	------	------	23.7 J	------	18.6	------	------	104.0	------	------	15.6	------	17.9	14.8	17
	Chloride	mg/L	3.8	------	------	------	6.4	------	6	------	------	23.1	------	------	3.3	------	5.3	2.9	4.7
	Fluoride	mg/L	------	------	------	------	------	0.16	0.14	------	------	1	------	------	0.096 J	< 0.050	< 0.050	< 0.050	0.078 J
	pH, field measured	S.U.	------	6.71	6.63	------	------	6.19	6.16	6.01	5.67	5.66	5.72	6.14	6.26	6.14	6.46	6.33	6.42
	Sulfate	mg/L	41.5	------	------	------	28.5	------	20.1	------	------	894	------	------	8.6	------	2.9	4.9	2.5
	Total Dissolved Solids	mg/L	------	------	------	------	------	------	134	------	------	832	------	------	106	------	124	128	94
Appendix IV	Antimony	mg/L	------	------	------	------	------	< 0.00028	< 0.00028	------	< 0.00027	< 0.00027	------	0.00066 J	< 0.00027	0.00043 J	0.00036 J	0.00063 J	< 0.00078
	Arsenic	mg/L	0.0125	0.012 J	0.019	0.0034 J	0.0098	0.01	0.012	0.0054	0.0034 J	0.0041 J	------	0.00052 J	0.0029 J	0.002 J	0.0025 J	0.0020 J	< 0.0011
	Barium	mg/L	------	------	------	------	------	0.077	0.066	------	0.047	0.032	------	0.093	0.1	0.11	0.12	0.11	0.12
	Beryllium	mg/L	------	------	------	------	------	0.000076 J	0.000097 J	------	0.012	0.014	------	0.00024 J	< 0.000074	0.00014 J	0.000053 J	0.000057 J	< 0.000054
	Cadmium	mg/L	------	------	------	------	------	0.00026 J	0.00017 J	------	0.0018 J	0.00033 J	------	< 0.00011	< 0.00011	< 0.00012	< 0.00012	< 0.00012	< 0.00011
	Chromium	mg/L	------	------	------	------	------	< 0.00055	< 0.00055	------	0.0042 J	0.00087 J	------	0.002 J	< 0.00039	0.0021 J	0.0007 J	0.00098 J	< 0.0011
	Cobalt	mg/L	------	------	------	------	------	0.0023 J	0.0028 J	------	0.45	0.47	0.35	0.0034	0.0021 J	0.0011 J	0.0004 J	0.0017 J	< 0.00039
	Lead	mg/L	------	------	------	------	------	< 0.000036	0.000041 J	------	0.0012 J	< 0.000046	------	0.0014 J	< 0.000046	0.0016 J	0.00021 J	0.00029 J	< 0.00089
	Lithium	mg/L	------	------	------	------	------	0.0011 J	0.0014 J	------	0.046	0.045	0.019 J	0.0049 J	0.0036 J	0.0018 J	0.00095 J	0.0011 J	< 0.00073
	Mercury	mg/L	------	------	------	------	------	< 0.000078	< 0.000078	------	< 0.00014	< 0.00014	------	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078
	Molybdenum	mg/L	------	------	------	------	------	0.052	0.049	0.042	< 0.00095	< 0.00095	------	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074
	Selenium	mg/L	------	------	------	------	------	< 0.0016	< 0.0016	------	0.012	0.013	------	0.0013 J	< 0.0013	< 0.0016	< 0.0016	0.0017 J	< 0.0014
	Thallium	mg/L	------	------	------	------	------	< 0.00014	< 0.00014	------	0.00028 J	< 0.000052	------	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018
	Radium	pCi/L	------	------	------	------	------	1.67	1.29 U	------	------	2.54	------	0.617	1.87	2.17	0.761 U	2.16	0.617 U
	Radium-226	pCi/L	------	------	------	------	------	0.678	0.485	------	------	0.983	------	0.428	0.988	0.782	0.664	0.543 U	0.428
	Radium-228	pCi/L	------	------	------	------	------	0.989	0.804 U	------	------	1.56	------	0.19	0.885	1.39	0.0967 U	1.62	0.189 U
Field Measured	Conductivity	uS/cm	------	383.83	429.8	------	------	207.8	198.68	157.4	952.7	1032.0	990.63	240.52	292.8	274	419.8	314.07	350.45
	Dissolved Oxygen	mg/L	------	0.24	0.10	------	------	0.06	0.14	0.14	0.61	0.05	0.08	2.1	0.50	0.19	0.09	0.1	0.28
	Oxidation Reduction Potential	millivolts	------	34.9	56.7	------	------	221.5	62.5	102.7	82.3	14.8	97.4	49.4	-63.4	-40.9	23.2	-64.7	-72.4
	Temperature	Deg C	------	20.26	21.73	------	------	19.59	19.42	19.40	23.88	20.87	18.12	22	19.02	27.52	20.16	19.86	22.81
	Turbidity	ntu	------	6.8	0.35	------	------	2.51	4.67	0.49	9.34	2.04	1.22	7.08	2.35	4.79	2.81	4.74	2.54
	Water level depth	ft	------	4.65	4.86	------	------	5.19	3.92	5.65	19.33	16.43	15.4	34.7	34.42	31.33	30.05	30.9	30.12
Supplemental	Alkalinity as CaCO3, Total	mg/L	164	------	------	------	90	------	------		------	------	------	------	------	------	------	104	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	------		------	13.5	------	------	110	------	------	104	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------		------	< 1.0	------	------	< 20	------	------	< 5.0	------
	Aluminum	mg/L	------	------	------	------	------	------	------		------	2.7	------	------	< 0.032	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------		------	------	------	------	2.2	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------		------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	0.291	------	------	------	1.22	------	------		------	< 0.20	------	------	29	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------		------	< 0.20	------	------	10.8	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------		------	30.7	------	------	18.2	------	------	------	------
	Magnesium	mg/L	14.1	------	------	------	7.04	------	------		------	27.7	------	------	4.2	------	------	4.3	------
	Manganese	mg/L	3.64	------	------	------	2.53	------	------		------	20.7	------	------	2.3	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------		------	< 0.0050	------	------	0.009 J	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------		------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------		------	< 0.020	------	------	< 0.020	------	------	------	------
	Potassium	mg/L	3.7	------	------	------	3.3	------	------		------	10.8	------	------	1.1	------	------	1.3	------
	Silica	mg/L	------	------	------	------	------	------	------		------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------		------	23.2	------	------	11	------	------	------	------
	Sodium	mg/L	8.11	------	------	------	9.85	------	------		------	47.4	------	------	8.1	------	------	7.5	------
	Sulfide	mg/L	------	------	------	------	------	------	------		------	<0.2	------	------	<0.2	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------		------	------	------	------	2.3	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------		------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-77	B-77	B-78	B-78	B-78	B-79	B-79	B-79	B-80	B-80	B-81	B-81	B-81	B-82	B-82	B-82	B-82
			1/20/2022	9/13/2022	9/23/2019	10/22/2019	3/12/2021	9/22/2019	10/22/2019	3/11/2021	9/20/2019	10/22/2019	9/21/2019	9/25/2019	10/22/2019	9/23/2019	10/21/2019	8/17/2020	9/28/2020
Appendix III	Boron	mg/L	0.28	0.33	5.7	6.40	------	6.3	6.00	------	11.2	8.00	2.1	2.1	3.80	1.4	1.20	------	1.1
	Calcium	mg/L	18.6	15.7	------	127.0	------	------	129.0	------	------	134.0	------	------	116.0	------	27.0	------	26.5
	Chloride	mg/L	5	2.40	------	12.50	------	------	11.30	------	------	14.10	------	------	12.50	------	14.30	------	9.9
	Fluoride	mg/L	< 0.050	0.08 J	------	0.16 J	------	------	0.077 J	------	------	0.83	------	------	0.18 J	------	0.2 J	< 0.050	< 0.050
	pH, field measured	S.U.	6.48	6.34	5.09	4.74	4.57	5.65	5.35	5.05	5.70	6.81	6.23	------	6.39	5.21	5.34	5.48	5.84
	Sulfate	mg/L	< 0.50	10	------	840	------	------	897	------	------	642	------	------	593	------	334	------	287
	Total Dissolved Solids	mg/L	129	113	------	775	------	------	844	------	------	891	------	------	817	------	458	------	454
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	< 0.00027	< 0.00027	------	0.00061 J	< 0.00027	------	< 0.00027	< 0.00027	0.00033 J	< 0.00027	< 0.00027	< 0.00027	< 0.00027	< 0.00028	< 0.00028
	Arsenic	mg/L	0.003 J	< 0.0022	0.0019 J	0.0024 J	------	< 0.00035	< 0.00035	------	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00078	< 0.00078
	Barium	mg/L	0.13	0.089	0.044	0.019	------	0.06	0.037	------	0.035	0.022	0.088	0.08	0.068	0.031	0.03	0.024	0.023
	Beryllium	mg/L	< 0.000054	0.00013 J	0.0085	0.0087	------	0.0029 J	0.0062	------	0.0021 J	0.00014 J	0.00035 J	< 0.000074	0.00022 J	0.0015 J	0.0011 J	0.0014 J	0.0015 J
	Cadmium	mg/L	< 0.00011	< 0.00011	0.00094 J	0.00078 J	------	0.00084 J	0.00092 J	------	0.0023 J	< 0.00011	0.0012 J	0.0012 J	< 0.00011	0.00044 J	0.00035 J	0.00058 J	0.00066 J
	Chromium	mg/L	< 0.0011	< 0.0011	0.0015 J	0.00085 J	------	0.0018 J	< 0.00039	------	0.00085 J	< 0.00039	0.0018 J	< 0.00039	< 0.00039	0.0011 J	< 0.00039	< 0.00055	< 0.00055
	Cobalt	mg/L	< 0.00039	< 0.00039	0.059	0.048	------	0.02	0.008	------	0.012	0.013	0.032	0.034	0.074	0.0038 J	0.0089	0.0028 J	0.0053
	Lead	mg/L	< 0.00089	< 0.00089	0.00011 J	0.0001 J	------	0.00014 J	0.000052 J	------	0.00043 J	< 0.000046	0.00074 J	0.000095 J	< 0.000046	0.00016 J	< 0.000046	0.000059 J	0.00011 J
	Lithium	mg/L	< 0.00073	0.0020 J	0.012 J	0.0071 J	0.010 J	0.0099 J	0.0046 J	< 0.0040	0.0058 J	0.0049 J	0.013 J	0.016 J	0.014 J	0.0039 J	0.0036 J	0.0016 J	0.001 J
	Mercury	mg/L	< 0.00013	< 0.00013	< 0.00014	< 0.00014	------	< 0.00014	< 0.00014	------	< 0.00014	< 0.00014	< 0.00014	< 0.00014	< 0.00014	< 0.00014	< 0.00014	0.00011 J	< 0.000078
	Molybdenum	mg/L	< 0.00074	< 0.00074	< 0.00095	< 0.00095	------	0.0014 J	< 0.00095	------	< 0.00095	0.0047 J	0.003 J	0.0041 J	0.0026 J	< 0.00095	< 0.00095	< 0.00069	< 0.00069
	Selenium	mg/L	< 0.0014	< 0.0014	0.015	0.023	------	0.0024 J	0.0028 J	------	0.0043 J	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	0.0016 J	< 0.0016	0.0021 J
	Thallium	mg/L	< 0.00018	< 0.00018	0.00011 J	0.00016 J	------	0.000056 J	< 0.000052	------	0.00011 J	< 0.000052	0.000097 J	< 0.000052	< 0.000052	0.000099 J	0.00011 J	< 0.00014	< 0.00014
	Radium	pCi/L	0.92	1.11	------	1.96	------	------	1.08 U	------	------	1.01 U	------	------	1.11 U	------	------	0.662 U	0.747 U
	Radium-226	pCi/L	0.553	------	------	0.722	------	------	1.04	------	------	0.532	------	------	0.935	------	------	0.119 U	0.157 U
	Radium-228	pCi/L	0.367 U	------	------	1.24	------	------	0.0443 U	------	------	0.476 U	------	------	0.173 U	------	------	0.543 U	0.59 U
Field Measured	Conductivity	uS/cm	417.83	291.5	1087.4	935.5	916.6	1091.3	1055.1	757.38	1309.2	1116.2	786.9	------	1061.0	574.9	632.8	605.4	568.5
	Dissolved Oxygen	mg/L	0.2	0.05	0.12	0.10	0.17	0.93	0.05	0.35	0.79	0.05	4.48	------	0.09	1.07	0.12	0.15	0.12
	Oxidation Reduction Potential	millivolts	-78.5	-15.2	230.0	369.8	384.7	62.6	31.0	494.28	91.8	-103.9	84.7	------	-73.8	83.5	70.9	119.9	112.1
	Temperature	Deg C	17.35	22.29	22.72	20.74	18.37	21.68	20.41	17.81	21.31	20.18	21.42	------	16.19	23.21	21.07	21.22	19.72
	Turbidity	ntu	4.62	4.94	2.15	0.38	0.89	4.55	1.99	0.63	6.97	0.56	5.93	------	4.93	4.93	2.93	3.55	3.26
	Water level depth	ft	30.01	32.92	9.54	10.61	12.64	5.40	7.45	8.85	15.42	18.61	29.92	------	33.87	15.51	15.02	19.78	17.4
Supplemental	Alkalinity as CaCO3, Total	mg/L	158	86.2	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	158	86.2	------	6.5	------	------	12.5	------	------	77	------	------	63	------	15.5	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	< 1.8	< 5.00	------	< 1.0	------	------	< 1.0	------	------	< 20	------	------	< 20	------	< 1.0	------	------
	Aluminum	mg/L	------	------	------	0.39	------	------	0.064 J	------	------	< 0.032	------	------	< 0.032	------	0.12	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	0.53 J	------	------	8.5	------	------	0.97 J	------	1.2	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	29.8	------	0.2	------	------	1.4	------	------	9.6	------	------	11.2	------	< 0.20	------	------
	Iron, Ferric (Fe2)	mg/L	------	22.8	------	0.2	------	------	< 0.20	------	------	1.9	------	------	2.5	------	< 0.20	------	------
	Iron, Ferrous	mg/L	------	7.0	------	< 0.20	------	------	1.5	------	------	7.7	------	------	8.7	------	< 0.20	------	------
	Magnesium	mg/L	6.2	4.6	------	21.5	------	------	46.4	------	------	45	------	------	43.6	------	51.9	------	------
	Manganese	mg/L	------	------	------	28.5	------	------	6.7	------	------	23.1	------	------	19.3	------	1.8	------	------
	Nitrate as N	mg/L	------	------	------	0.6	------	------	0.4	------	------	< 0.0050	------	------	< 0.0050	------	0.22	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	< 0.020	------	------	< 0.020	------	------	< 0.020	------	------	< 0.020	------	< 0.020	------	------
	Potassium	mg/L	2.4	1.1	------	4	------	------	7.3	------	------	8.2	------	------	11.0	------	4.4	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	18.1	------	------	14.4	------	------	10.9	------	------	12.6	------	6	------	------
	Sodium	mg/L	7.8	7.7	------	21.8	------	------	27.3	------	------	29.2	------	------	22.4	------	25.8	------	------
	Sulfide	mg/L	------	------	------	<0.2	------	------	<0.2	------	------	<0.2	------	------	<0.2	------	<0.2	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	0.55 J	------	------	8.9	------	------	1.1	------	1.3	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-82	B-82	B-82	B-82	B-83	B-83	B-83	B-83	B-83	B-83	B-83	B-84	B-85	B-86	B-87	B-87	B-88
			3/12/2021	9/14/2021	1/25/2022	9/16/2022	10/21/2019	8/14/2020	9/25/2020	3/4/2021	9/16/2021	1/21/2022	9/13/2022	10/21/2019	11/21/2019	11/21/2019	11/25/2019	12/10/2019	11/22/2019
Appendix III	Boron	mg/L	------	0.78	0.7	0.61	0.28	------	0.35	0.33	0.3	0.32	0.33	0.96	5.45	5.26	14.00	14.2	3.6
	Calcium	mg/L	------	33.4	36.4	34.3	35.1	------	39.8	39.1	39.4	40.8	36.2	63.8	137	153.0	336		156
	Chloride	mg/L	------	9.5	9.9	9.40	3.40	------	3	3.2	2.6	2.4	2.50	28.40	8.4	8.90	11.5	------	9.1
	Fluoride	mg/L	------	0.052 J	< 0.050	0.079 J	0.13 J	0.05 J	< 0.050	0.071 J	0.066 J	< 0.050	0.081 J	0.077 J	------	------	------	------	------
	pH, field measured	S.U.	5.29	5.15	5.07	5.02	5.54	5.59	5.97	5.60	5.58	5.56	5.60	5.86	------	------	------	------	------
	Sulfate	mg/L	------	326	363	404	103	------	107	113	106	106	109	334	568	531	179	------	619
	Total Dissolved Solids	mg/L	------	536	668	468	214	------	244	234	223	236	210	541	------	------	------	------	------
Appendix IV	Antimony	mg/L	------	< 0.00078	< 0.00078	< 0.00078	< 0.00027	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00027	------	------	------	------	------
	Arsenic	mg/L	< 0.00078	< 0.0011	0.003 J	< 0.0022	< 0.00035	< 0.00078	< 0.00078	< 0.00078	< 0.0011	0.0014 J	< 0.0022	< 0.00035	------	------	------	------	------
	Barium	mg/L	------	0.022	0.026	0.02	0.034	0.056	0.027	0.032	0.03	0.024	0.025	0.047	------	------	------	------	------
	Beryllium	mg/L	------	0.0017	0.0021	0.002	0.00039 J	0.0007 J	0.00028 J	0.00037 J	0.00028 J	0.00039 J	0.00044 J	0.00012 J	------	0.0028 J	------	------	------
	Cadmium	mg/L	------	0.0007	0.00072	0.00073	0.00041 J	0.00037 J	0.00026 J	0.00032 J	0.0003 J	0.0003 J	0.00031 J	< 0.00011	------	------	------	------	------
	Chromium	mg/L	------	< 0.0011	< 0.0011	< 0.0011	0.0017 J	0.005 J	0.0051 J	0.0049 J	0.003 J	0.0034 J	0.0022 J	< 0.00039	------	------	------	------	------
	Cobalt	mg/L	0.0021 J	0.0015 J	0.0039 J	0.0017 J	0.018	0.021	0.0073	0.0099	0.011	0.011	0.012	0.081	------	------	------	------	0.018 J
	Lead	mg/L	------	< 0.00089	< 0.00089	< 0.00089	0.00012 J	0.00092 J	0.000065 J	0.00017 J	< 0.00089	< 0.00089	< 0.00089	< 0.000046	------	------	------	------	------
	Lithium	mg/L	------	0.001 J	0.00082 J	0.00078 J	0.003 J	0.0045 J	0.0018 J	0.0024 J	0.0021 J	0.0022 J	0.0027 J	0.0031 J	------	------	------	------	------
	Mercury	mg/L	------	< 0.000078	< 0.00013	< 0.00013	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	< 0.00014	------	------	------	------	------
	Molybdenum	mg/L	------	< 0.00074	< 0.00074	< 0.00074	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.00095	------	------	------	------	------
	Selenium	mg/L	------	< 0.0014	0.002 J	< 0.0014	0.0082 J	0.015	0.019	0.024	0.025	0.027	0.024	< 0.0013	------	------	------	------	------
	Thallium	mg/L	------	< 0.00018	< 0.00018	< 0.00018	0.000072 J	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.000052	------	------	------	------	------
	Radium	pCi/L	------	1.03 U	0.33 U	0.694 U	------	0.95 U	0.0359 U	1.15 U	0.442 U	0.549 U	0.893 U	------	------	------	------	------	------
	Radium-226	pCi/L	------	0.295 U	0.209 U	------	------	0.367 U	0.0359 U	0.314 U	0.207 U	-0.0529 U	------	------	------	------	------	------	------
	Radium-228	pCi/L	------	0.739 U	0.121 U	------	------	0.583 U	-0.0284 U	0.831 U	0.235 U	0.549 U	------	------	------	------	------	------	------
Field Measured	Conductivity	uS/cm	612.5	772.42	1905.1	829.6	312.9	329.3	392.3	384.11	360.59	375.2	354.4	796.0	------	------	------	------	------
	Dissolved Oxygen	mg/L	0.2	0.4	0.76	0.43	0.12	0.12	0.39	0.52	0.16	0.59	0.17	0.17	------	------	------	------	------
	Oxidation Reduction Potential	millivolts	89.4	172.5	76	169.7	38.6	94.2	104.3	79.3	102.8	152	49.5	32.1	------	------	------	------	------
	Temperature	Deg C	19.77	21.7	18.86	22.36	20.92	23.5	20.61	20.43	20.88	18.08	22.08	21.28	------	------	------	------	------
	Turbidity	ntu	1.58	3.92	0.85	2.23	2.28	4.83	3.3	4.7	4.3	0.97	0.99	2.50	------	------	------	------	------
	Water level depth	ft	16.81	15.8	14.36	19.62	32.60	32.4	29.82	30.5	29.15	30.7	31.23	36.70	------	------	------	------	------
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	9.1	5.0	------	------	------	38.2	------	38.7	39.2	------	< 20	< 20	< 1.0	------	25
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	9.1	5.0	36	------	------	38.2	------	38.7	39.2	52	< 20	< 20	< 1.0	------	25
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	< 1.8	< 5.00	< 20	------	------	< 5.0	------	< 1.8	< 5.00	< 20	< 20	< 20	< 1.0	------	< 20
	Aluminum	mg/L	------	------	------	------	0.21	------	------	------	------	------	------	< 0.032	0.509 J	0.329 J	0.65 J	------	0.13 J
	Dissolved Organic Carbon	mg/L	------	------	------	------	< 0.50	------	------	------	------	------	------	2.2	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	0.1	0.32	------	------	------	------	------	< 0.025	< 0.20	< 0.20	0.34	0.41	------	0.49
	Iron, Ferric (Fe2)	mg/L	------	------	------	0.1	0.32	------	------	------	------	------	< 0.025	< 0.20	< 0.20	0.34	0.41	------	0.49
	Iron, Ferrous	mg/L	------	------	------	0.0	< 0.20	------	------	------	------	------	0.0	< 0.20	0.23	< 0.20	1.4	------	< 0.20
	Magnesium	mg/L	------	------	80.4	79.6	9.8	------	------	10.2	------	11.1	10.1	32.1	46.9	47.2	95.0	------	45.9
	Manganese	mg/L	------	------	------	------	3.5	------	------	------	------	------	------	16.6	8.68	8.31	5.8	------	16.4
	Nitrate as N	mg/L	------	------	------	------	3	------	------	------	------	------	------	< 0.0050	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	< 0.020	------	------	------	------	------	------	< 0.020	------	------	------	------	------
	Potassium	mg/L	------	------	5.2	5.2	2.9	------	------	2.4	------	2.5	2.6	9.8	8.13	8.29	13.1	------	12.1
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	
	Silicon	mg/L	------	------	------	------	6.5	------	------	------	------	------	------	12.2	14.5	14.5	------	------	19.6
	Sodium	mg/L	------	------	18	17.1	10.7	------	------	13.1	------	12.1	9.6	36.6	25.4	25.8	33.7	------	28.5
	Sulfide	mg/L	------	------	------	------	<0.2	------	------	------	------	------	------	<0.2	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	<0.5	------	------	------	------	------	------	2.0	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-88	B-88	B-88	B-88	B-88	B-88	B-89	B-89	B-89	B-90	B-90	B-90	B-90	B-90	B-91	B-91	B-91
			8/17/2020	9/25/2020	3/5/2021	9/13/2021	1/27/2022	9/16/2022	11/25/2019	8/14/2020	9/23/2020	12/16/2019	1/2/2020	3/10/2021	1/26/2022	9/12/2022	12/17/2019	1/2/2020	3/10/2021
Appendix III	Boron	mg/L	------	1.8	3.5	2	2.7	2.10	1.09	------	0.76	5.6	5.6	4.4	3.2	2.60	6.4	6.2	4.3
	Calcium	mg/L	------	79.8	128	80.5	105	97.6	38.9	------	31.4	179	151	------	------	------	180	162	------
	Chloride	mg/L	------	10	7.8	8.2	8.8	8.70	<0.024	------	9.1	8.8	8.3	------	------	------	8.6	8.3	------
	Fluoride	mg/L	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.054 J	------	< 0.050	< 0.050	------	------	------	------	------	------	------	------
	pH, field measured	S.U.	5.76	5.75	5.21	5.68	5.5	5.47	------	5.83	5.87	------	------	5.48	5.45	5.35	------	------	5.34
	Sulfate	mg/L	------	344	497	321	371	433	<0.017	------	138	620	570	------	------	------	730	589	------
	Total Dissolved Solids	mg/L	------	624	798	572	654	564	------	------	260	------	------	------	------	------	------	------	------
Appendix IV	Antimony	mg/L	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	------	< 0.00028	< 0.00028	------	------	------	------	------	------	------	------
	Arsenic	mg/L	< 0.00078	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022	------	< 0.00078	< 0.00078	------	------	------	------	------	------	------	------
	Barium	mg/L	0.022	0.021	0.022	0.016	0.018	0.016	------	0.031	0.028	------	------	------	------	------	------	------	------
	Beryllium	mg/L	0.0014 J	0.00063 J	0.0050	0.001	0.0019	0.0013	------	0.000074 J	0.000054 J	------	------	------	------	------	------	------	------
	Cadmium	mg/L	0.0018 J	0.00022 J	0.0065	0.0013	0.0036	0.0019	------	0.00063 J	0.00057 J	------	------	------	------	------	------	------	------
	Chromium	mg/L	0.0014 J	0.00085 J	0.0017 J	< 0.0011	< 0.0011	< 0.0011	------	< 0.00055	0.00072 J	------	------	------	------	------	------	------	------
	Cobalt	mg/L	0.0031 J	0.0015 J	0.022	0.0018 J	0.0038 J	0.0014 J	0.0032 J	0.0058	0.0025 J	------	------	------	------	------	------	------	------
	Lead	mg/L	0.00081 J	0.00035 J	0.012	< 0.00089	0.0022	< 0.00089	------	< 0.000036	< 0.000036	------	------	------	------	------	------	------	------
	Lithium	mg/L	0.006 J	0.0016 J	0.029 J	0.0017 J	0.0066 J	0.0021 J	------	0.0055 J	0.0055 J	------	------	------	------	------	------	------	------
	Mercury	mg/L	0.00011 J	< 0.000078	0.00010 J	< 0.000078	< 0.00013	< 0.00013	------	0.00014 J	0.00008 J	------	------	------	------	------	------	------	------
	Molybdenum	mg/L	0.0012 J	0.0012 J	< 0.00069	< 0.00074	< 0.00074	< 0.00074	------	< 0.00069	< 0.00069	------	------	------	------	------	------	------	------
	Selenium	mg/L	0.0017 J	0.0033 J	0.0033 J	0.0021 J	< 0.0014	0.0020 J	------	< 0.0016	< 0.0016	------	------	------	------	------	------	------	------
	Thallium	mg/L	< 0.00014	< 0.00014	0.00020 J	< 0.00018	< 0.00018	< 0.00018	------	< 0.00014	< 0.00014	------	------	------	------	------	------	------	------
	Radium	pCi/L	2.47	0.925 U	2.84	0.771 U	1.18	1.25	------	1.49 U	0.537 U	------	------	------	------	------	------	------	------
	Radium-226	pCi/L	0.556	0.925	1.28	0.437 U	0.584	------	------	0.116 U	0.232 U	------	------	------	------	------	------	------	------
	Radium-228	pCi/L	1.91	-0.198 U	1.56	0.334 U	0.593 U	------	------	1.37	0.305 U	------	------	------	------	------	------	------	------
Field Measured	Conductivity	uS/cm	976.7	758.3	1081.98	735.87	884.11	979.6	------	448.7	401.1	------	------	966.7	825.91	829.9	------	------	1040.63
	Dissolved Oxygen	mg/L	0.19	0.15	0.15	0.25	0.11	0.52	------	0.24	0.21	------	------	0.37	0.34	0.10	------	------	0.49
	Oxidation Reduction Potential	millivolts	83.3	26.5	123.9	55.6	53.3	121.4	------	106.1	156.4	------	------	589.2	97.8	76.4	------	------	97.5
	Temperature	Deg C	20.64	19.03	17.75	19.72	18.78	18.77	------	20.31	21.06	------	------	18.87	16.94	19.98	------	------	21.61
	Turbidity	ntu	4.58	1.2	4.5	2.2	3.92	2.40	------	0.00	0.3	------	------	2.08	0.84	1.13	------	------	4.15
	Water level depth	ft	32.4	33.6	38.27	36.85	36.5	37.90	------	23.44	23.1	------	------	3.32	2.66	3.80	------	------	5.65
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	< 5.0	------	13.9	15.8	10.5	------	------	34.5	29.5	------	------	------	< 20	14	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	< 5.0	------	13.9	15.8	10.5	------	------	34.5	29.5	------	------	------	< 20	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	< 5.0	------	< 1.8	< 5.00	< 1.0	------	------	< 20	< 20	------	------	------	< 20	------	------
	Aluminum	mg/L	------	------	------	------	------	------	< 0.089	------	------	0.15	0.11	------	------	------	0.23	0.064 J	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	0.3	< 0.20	------	------	0.86	0.2	------	------	------	0.2	< 0.20	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	0.3	< 0.20	------	------	0.86	0.2	------	------	------	0.2	< 0.20	------
	Iron, Ferrous	mg/L	------	------	------	------	------	0.0	< 0.20	------	------	0.4	1.1	------	------	------	< 0.20	< 0.20	------
	Magnesium	mg/L	------	------	40.4	------	37.4	35.7	20.2	------	------	53.1	49.5	------	------	------	54	52.7	------
	Manganese	mg/L	------	------	------	------	------	------	0.91	------	------	11.1	10.9	------	------	------	9.6	9.3	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	9.6	------	11.2	11.3	5.8	------	------	11.3	9.5	------	------	------	9.1	8.5	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	15.1	------	------	14.7	14.1	------	------	------	14.9	14.3	------
	Sodium	mg/L	------	------	25.0	------	29.7	28.6	25.1	------	------	29.9	27.9	------	------	------	26.5	25.4	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-91	B-91	B-92	B-92	B-92	B-92	B-92	B-92	B-93	B-93	B-93	B-93	B-93	B-93	B-93	B-93	B-94
			1/26/2022	9/12/2022	12/18/2019	1/2/2020	3/9/2021	9/15/2021	1/26/2022	9/12/2022	12/19/2019	1/2/2020	8/19/2020	9/28/2020	3/9/2021	9/15/2021	1/26/2022	9/12/2022	1/30/2020
Appendix III	Boron	mg/L	3.6	2.90	3.9	3.9	2.9	2.3	2.7	2.90	3.3	3.3	------	3	3.4	3.1	3.6	3.60	13.2
	Calcium	mg/L	------	------	139	127	------	110	96	104.0	168	156	------	110	127	129	141	133.0	346
	Chloride	mg/L	------	------	9.4	9.4	------	10.4	9.4	10.20	10.4	10.4	------	10.8	13.5	13.2	14.7	15.00	9
	Fluoride	mg/L	------	------	------	------	------	0.18	0.3	0.24	------	------	0.32	0.3	0.34	0.34	0.41	0.4	------
	pH, field measured	S.U.	5.29	5.28	------	------	4.62	4.55	4.5	4.56	------	------	4.78	4.67	4.73	4.6	4.74	4.70	------
	Sulfate	mg/L	------	------	481	461	------	384	305	394	533	544	------	419	488	478	477	508	1120
	Total Dissolved Solids	mg/L	------	------	------	------	------	612	572	696	------	------	------	686	790	812	766	884	------
Appendix IV	Antimony	mg/L	------	------	------	------	------	< 0.00078	< 0.00078	< 0.00078	------	------	< 0.00028	0.0014 J	< 0.0014	< 0.00078	< 0.00078	0.00096 J	------
	Arsenic	mg/L	------	------	------	------	------	0.0012 J	0.0015 J	< 0.0022	------	------	0.0013 J	0.0027 J	< 0.0039	< 0.0011	0.002 J	< 0.0022	------
	Barium	mg/L	------	------	------	------	------	0.015	0.016	0.017	------	------	0.018	0.017	0.016 J	0.016	0.021	0.015	------
	Beryllium	mg/L	------	------	0.022	0.023	0.017	0.014	0.018	0.017	0.0069	0.011	0.015	0.015	0.017	0.015	0.017	0.017	------
	Cadmium	mg/L	------	------	------	------	------	0.00096	0.001	0.0014	------	------	0.00077 J	0.00074 J	0.00075 J	0.00088	0.00079	0.00084	------
	Chromium	mg/L	------	------	------	------	------	< 0.0011	< 0.0011	< 0.0011	------	------	0.00057 J	0.00066 J	< 0.0028	< 0.0011	0.0011 J	< 0.0011	------
	Cobalt	mg/L	------	------	------	------	------	0.063	0.071	0.073	0.066	0.07	0.068	0.064	0.061	0.062	0.064	0.057	------
	Lead	mg/L	------	------	------	------	------	< 0.00089	< 0.00089	< 0.00089	------	------	0.00012 J	0.00012 J	< 0.00018	< 0.00089	< 0.00089	< 0.0044	------
	Lithium	mg/L	------	------	------	------	------	0.012 J	0.015 J	0.015 J	------	------	0.011 J	0.011 J	0.012 J	0.011 J	0.013 J	0.013 J	------
	Mercury	mg/L	------	------	------	------	------	0.00017 J	< 0.00013	0.00015 J	------	------	0.00026	0.00024 J	0.00015 J	0.000098 J	< 0.00013	0.00016 J	------
	Molybdenum	mg/L	------	------	------	------	------	< 0.00074	< 0.00074	< 0.00074	------	------	< 0.00069	< 0.00069	< 0.0034	< 0.00074	< 0.00074	< 0.00074	------
	Selenium	mg/L	------	------	------	------	------	0.0067	0.0039 J	0.012	------	------	0.018	0.036	0.0099 J	0.0076	0.0063	0.013	------
	Thallium	mg/L	------	------	------	------	------	< 0.00018	< 0.00018	0.00020 J	------	------	< 0.00014	< 0.00014	< 0.00072	< 0.00018	< 0.00018	< 0.00090	------
	Radium	pCi/L	------	------	------	------	------	1.39	1.27 U	2.34	------	------	1.19 U	1.54	0.786 U	1.84	0.758 U	1.09	------
	Radium-226	pCi/L	------	------	------	------	------	0.416 U	0.415	------	------	------	0.725	0.391 U	0.307 U	0.372 U	0.24 U	------	------
	Radium-228	pCi/L	------	------	------	------	------	0.977	0.857 U	------	------	------	0.467 U	1.15	0.479 U	1.47	0.518 U	------	------
Field Measured	Conductivity	uS/cm	902.58	895.7	------	------	963.1	925.76	1683.4	854.2	------	------	913.1	851.93	1024.81	1029.5	2242.6	1053.5	------
	Dissolved Oxygen	mg/L	0.07	0.09	------	------	0.19	0.12	0.11	0.10	------	------	0.56	0.33	0.37	0.32	0.86	0.45	------
	Oxidation Reduction Potential	millivolts	49.8	90.8	------	------	674.9	567.8	342.4	410.4	------	------	190	446.58	520.6	521	276.7	498.1	------
	Temperature	Deg C	17.9	20.93	------	------	17.72	20.08	16.61	21.11	------	------	19.68	19.19	21.23	20.7	18.24	21.10	------
	Turbidity	ntu	0.79	1.02	------	------	0.67	1.78	0.42	1.11	------	------	4.52	3.36	1.38	2.67	3.8	0.95	------
	Water level depth	ft	4.00	4.55	------	------	7.55	5.95	5.32	5.95	------	------	8.68	7.38	9.12	9.41	8.00	9.30	------
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	< 20	< 1.0	------	------	< 1.8	< 5.00	40	37	------	------	< 5.0	------	4 J	< 5.00	28.1
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	< 20	------	------	------	< 1.8	< 5.00	40	37	------	------	< 5.0	------	4 J	< 5.00	28.1
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	< 20	------	------	------	< 1.8	< 5.00	< 20	< 20	------	------	< 5.0	------	< 1.8	< 5.00	< 5.0
	Aluminum	mg/L	------	------	0.61	0.76	------	------	------	------	0.51	0.4	------	------	------	------	------	------	0.33
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	< 0.20	0.37	------	------	------	0.036 J	0.32 J	0.66	------	------	------	------	------	< 0.025	0.6
	Iron, Ferric (Fe2)	mg/L	------	------	< 0.20	0.31	------	------	------	0.036 J	0.32 J	0.66	------	------	------	------	------	< 0.025	0.6
	Iron, Ferrous	mg/L	------	------	< 0.20	< 0.20	------	------	------	0.0	< 0.50	0.49	------	------	------	------	------	0.0	< 0.50
	Magnesium	mg/L	------	------	22.1	20.7	------	------	15.5	17.4	29.1	26.8	------	------	22.9	------	23.6	22.4	90.3
	Manganese	mg/L	------	------	29.2	28	------	------	------	------	34.8	33.1	------	------	------	------	------	------	3.4
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	8.1	6.7	------	------	6.1	5.7	11.5	9.1	------	------	6.5	------	7.5	6.5	10.9
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	23.1	22.5	------	------	------	------	25.3	23.2	------	------	------	------	------	------	21.7
	Sodium	mg/L	------	------	23.9	20.4	------	------	18.7	18.4	27.9	27.3	------	------	24.1	------	25.4	24.5	28.5
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-94	B-94	B-95	B-95	B-95	B-95	B-95	B-96	B-96	B-96	B-96	B-96	B-97	B-97	B-97	B-97	B-97
			2/4/2020	3/4/2021	2/17/2020	2/26/2020	3/9/2021	1/26/2022	9/12/2022	2/14/2020	2/26/2020	3/9/2021	1/26/2022	9/13/2022	2/17/2020	2/27/2020	3/9/2021	9/15/2021	1/26/2022
Appendix III	Boron	mg/L	14	------	4.5	4.4	2.8	2	1.50	4.3	3.8	4.5	3.7	3.40	------	------	------	3.3	3.7
	Calcium	mg/L	352	------	132	------	------	------	------	163	------	------	------	------	190	------	------	178	198
	Chloride	mg/L	8.4	------	8.4	------	------	------	------	------	------	------	------	------	20.9	------	------	18.8	19.8
	Fluoride	mg/L	< 0.050	------	------	------	------	------	--	------	------	------	------	------	------	------	------	0.085 J	0.088 J
	pH, field measured	S.U.	------	------	------	------	5.36	5.33	5.33	------	------	4.99	5.01	5.03	------	------	5.55	5.49	6.52
	Sulfate	mg/L	1120	------	274	------	------		--	------	------	------	------	------	242	------		551	531
	Total Dissolved Solids	mg/L	------	------	------	------	------		--	------	------	------	------	------	------	------	------	892	930
Appendix IV	Antimony	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.00078	< 0.00078
	Arsenic	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.0011	0.0014 J
	Barium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.02	0.02
	Beryllium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	< 0.000074	0.0019 J	0.0019	0.0016	0.0017
	Cadmium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.00056	0.00055
	Chromium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.0011	< 0.0011
	Cobalt	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.003 J	0.003 J
	Lead	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.00089	< 0.00089
	Lithium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.0042 J	0.0047 J
	Mercury	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.000078	< 0.00013
	Molybdenum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.00074	< 0.00074
	Selenium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.0024 J	0.0015 J
	Thallium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.00018	< 0.00018
	Radium	pCi/L	------	1.95	------	------	------	------	------	------	------	------	------	------	------	------	------	2.11	1.47 U
	Radium-226	pCi/L	------	0.533	------	------	------	------	------	------	------	------	------	------	------	------	------	0.566	0.566
	Radium-228	pCi/L	------	1.42	------	------	------	------	------	------	------	------	------	------	------	------	------	1.54	0.899 U
Field Measured	Conductivity	uS/cm	------	1962.7	------	------	757.4	592.65	555.3	------	------	1020.3	1017.8	1033.9	------	------	1188.1	1261.6	2663.6
	Dissolved Oxygen	mg/L	------	0.17	------	------	0.15	0.09	0.15	------	------	0.26	0.09	0.09	------	------	0.15	0.11	0.09
	Oxidation Reduction Potential	millivolts	------	475.2	------	------	440.1	44.5	107.6	------	------	238.5	416.3	552.6	------	------	593.6	530.9	262
	Temperature	Deg C	------	18.10	------	------	16.73	18.17	22.11	------	------	18.23	18.14	20.16	------	------	18.92	20.98	17.38
	Turbidity	ntu	------	4.18	------	------	2.49	3.12	1.45	------	------	3.83	0.56	0.94	------	------	1.31	0.98	0.15
	Water level depth	ft	------	16.58	------	------	3.23	3.20	3.80	------	------	7.15	5.90	6.73	------	------	5.72	6.45	5.61
Supplemental	Alkalinity as CaCO3, Total	mg/L	27.7	------	23.6	20.1	------	------	------	17.5	13.3	------	------	------	46.9	45.7	------	------	53
	Alkalinity, Bicarbonate as CaCO3	mg/L	27.7	------	23.6	20.1	------	------	------	17.5	13.3	------	------	------	46.9	45.7	------	------	53
	Alkalinity, Carbonate as CaCO3	mg/L	< 5.0	------	< 5.0	< 5.0	------	------	------	< 5.0	< 5.0	------	------	------	< 5.0	< 5.0	------	------	< 1.8
	Aluminum	mg/L	0.15	------	0.26	------	------	------	------	------	------	------	------	------	< 0.032	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	< 0.50	0.55 J	------	------	------	< 0.50	< 0.50	------	------	------	< 0.50	0.78 J	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	0.57	------	118	------	------	------	------	------	------	------	------	------	81.4	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	0.57	------	118	------	------	------	------	------	------	------	------	------	81.4	------	------	------	------
	Iron, Ferrous	mg/L	< 0.50	------	< 0.50	------	------	------	------	------	------	------	------	------	< 0.50	------	------	------	------
	Magnesium	mg/L	86.3	------	40.1	------	------	------	------	32	------	------	------	------	30.3	------	------	------	32.6
	Manganese	mg/L	1.9	------	7.7	------	------	------	------	------	------	------	------	------	10.9	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	9.6	------	10.1	------	------	------	------	------	------	------	------	------	5.7	------	------	------	5.5
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	18.6	------	13.7	------	------	------	------	------	------	------	------	------	11.5	------	------	------	------
	Sodium	mg/L	31.7	------	24.4	------	------	------	------	------	------	------	------	------	34.7	------	------	------	38.8
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	<0.5	0.79 J	------	------	------	<0.5	1.40	------	------	------	<0.5	<0.5	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-97	B-98	B-98	B-98	B-98	B-98	B-98	B-99	B-99	B-99	B-99	B-99	B-100	B-100	B-100	B-100	B-100
			9/13/2022	2/17/2020	2/27/2020	3/15/2021	9/15/2021	1/26/2022	9/13/2022	7/23/2020	8/3/2020	3/9/2021	1/26/2022	9/12/2022	7/23/2020	8/3/2020	8/17/2020	9/25/2020	3/8/2021
Appendix III	Boron	mg/L	3.70	------	------	------	2.6	0.12	0.62	3.8	4	3.1	2.7	2.20	------	------	------	0.27	0.24
	Calcium	mg/L	201.0	85.9	------	------	105	31.9	63.3	------	------	------	------	------	------	------	------	44.7	47.7
	Chloride	mg/L	19.50	96.8	------	------	29.9	4.9	4.90	------	------	------	------	------	------	------	------	13.2	12.9
	Fluoride	mg/L	0.14	------	------	------	0.098 J	0.13	0.18	------	------	------	------	------	------	------	< 0.050	< 0.050	< 0.050
	pH, field measured	S.U.	5.54	------	------	6.3	5.4	6.52	6.18	5.90	5.81	5.73	5.67	5.71	4.88	4.93	5.02	5.53	5.32
	Sulfate	mg/L	677	150	------	------	325	18.4	92.1	------	------	------	------	------	------	------	------	385	388
	Total Dissolved Solids	mg/L	1050	------	------	------	524	139	267	------	------	------	------	------	------	------	------	724	660
Appendix IV	Antimony	mg/L	< 0.00078	------	------	------	< 0.00078	< 0.00078	< 0.00078	------	------	------	------	------	------	------	0.0013 J	< 0.00028	0.0017 J
	Arsenic	mg/L	< 0.0022	------	------	------	< 0.0011	< 0.0011	< 0.0022	------	------	------	------	------	< 0.00078	------	< 0.00078	< 0.00078	< 0.00078
	Barium	mg/L	0.02	------	------	------	0.082	0.035	0.092	------	------	------	------	------	------	------	0.015	0.022	0.022
	Beryllium	mg/L	0.0017	< 0.000074	< 0.000074	< 0.000046	0.00087	0.000068 J	0.000062 J	------	------	------	------	------	------	------	0.0004 J	0.00035 J	0.00046 J
	Cadmium	mg/L	0.00055	------	------	------	0.0003 J	< 0.00011	0.00031 J	------	------	------	------	------	------	------	0.00059 J	0.00027 J	0.00027 J
	Chromium	mg/L	< 0.0011	------	------	------	< 0.0011	0.0013 J	< 0.0011	------	------	------	------	------	------	------	< 0.00055	0.00094 J	0.00057 J
	Cobalt	mg/L	0.0029 J	< 0.00030	------	< 0.00038	0.0048 J	< 0.00039	0.00063 J	------	------	------	------	------	0.086	0.087	0.077	0.034	0.029
	Lead	mg/L	< 0.00089	------	------	------	< 0.00089	< 0.00089	< 0.00089	------	------	------	------	------	------	------	0.000088 J	0.00021 J	0.00018 J
	Lithium	mg/L	0.0052 J	------	------	------	0.0012 J	0.0013 J	0.0011 J	------	------	------	------	------	------	------	0.0013 J	0.0027 J	0.0024 J
	Mercury	mg/L	< 0.00013	------	------	------	< 0.000078	< 0.00013	< 0.00013	------	------	------	------	------	------	------	0.00011 J	< 0.000078	------
	Molybdenum	mg/L	< 0.00074	------	------	------	< 0.00074	0.0015 J	0.00084 J	------	------	------	------	------	------	------	< 0.00069	< 0.00069	< 0.00069
	Selenium	mg/L	0.0032 J	------	------	------	0.0033 J	< 0.0014	< 0.0014	------	------	------	------	------	------	------	< 0.0016	< 0.0016	0.0019 J
	Thallium	mg/L	< 0.00018	------	------	------	< 0.00018	< 0.00018	< 0.00018	------	------	------	------	------	------	------	< 0.00014	< 0.00014	< 0.00014
	Radium	pCi/L	1.11	------	------	------	2.2	0.52 U	2.03	------	------	------	------	------	------	------	1.4 U	0.799 U	0.168 U
	Radium-226	pCi/L	------	------	------	------	1.31	0.52	------	------	------	------	------	------	------	------	0.277 U	0.132 U	0.145 U
	Radium-228	pCi/L	------	------	------	------	0.889	-2.35 U	------	------	------	------	------	------	------	------	1.12	0.667 U	0.0231 U
Field Measured	Conductivity	uS/cm	1415.3	------	------	185.25	851.03	396.52	404.7	1053.5	------	772.1	776.4	727.5	956.3	------	874.4	929.9	877.32
	Dissolved Oxygen	mg/L	0.14	------	------	3.29	0.08	2.27	3.10	1.32	------	0.1	0.15	0.19	0.21	------	0.72	0.11	0.12
	Oxidation Reduction Potential	millivolts	421.3	------	------	116.6	96.6	133.1	117.9	82.2	------	137.4	118.7	47.1	157.1	------	90.9	106.4	24.6
	Temperature	Deg C	20.16	------	------	17.39	20.71	17.71	20.93	22.38	------	16.38	14.85	23.52	23.69	------	22.32	21.46	21.46
	Turbidity	ntu	0.65	------	------	1.78	4.89	3.94	4.34	2.45	------	4.09	3.51	3.79	3.32	------	2.79	4.79	4.4
	Water level depth	ft	7.15	------	------	8.7	9.64	8.91	14.60	4.00	------	3.9	3.41	4.20	34.30	------	34.92	32.25	33.54
Supplemental	Alkalinity as CaCO3, Total	mg/L	54.0	157	85.6	------	------	70.2	102.0	------	------	------	------	------	------	------	------	------	34.1
	Alkalinity, Bicarbonate as CaCO3	mg/L	54.0	157	85.6	------	------	70.2	102.0	------	------	------	------	------	------	------	------	------	34.1
	Alkalinity, Carbonate as CaCO3	mg/L	< 5.00	< 5.0	< 5.0	------	------	< 1.8	< 5.00	------	------	------	------	------	------	------	------	------	< 5.0
	Aluminum	mg/L	------	0.28	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	13.2	5.4	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	< 0.025	90.4	------	------	------	------	0.1	------	------	------	------	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	< 0.025	90.4	------	------	------	------	0.1	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	0.0	< 0.50	------	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------
	Magnesium	mg/L	34.3	6.3	------	------	------	2.2	4.7	------	------	------	------	------	------	------	------	------	48.8
	Manganese	mg/L	------	2.6	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	5.6	8.6	------	------	------	5.9	8.2	------	------	------	------	------	------	------	------	------	1.3
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	7.1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	40.1	107	------	------	------	4.8	8.9	------	------	------	------	------	------	------	------	------	28.8
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	13.5	5.6	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-100	B-100	B-100	B-101D	B-101D	B-101D	B-101D	B-101D	B-102D	B-102D	B-102D	B-102D	B-102D	B-102D	B-104D	B-104D	B-104D
			9/13/2021	1/21/2022	9/8/2022	1/12/2021	3/5/2021	9/13/2021	1/26/2022	9/16/2022	12/17/2020	1/11/2021	3/4/2021	9/10/2021	1/27/2022	9/15/2022	12/9/2020	1/12/2021	3/4/2021
Appendix III	Boron	mg/L	0.24	0.24	0.24	1.70	1.9	1.60	1.4	1.40	2.40	2.7	2.5	2.5	2.7	2.30	0.26 J	0.28	0.26
	Calcium	mg/L	51.5	49.9	46.0	56.3	68.9	53.6	49.7	57 .0	71.5	73.0	79.7	84.7	86.9	70.3	154	156	150
	Chloride	mg/L	11.1	11.3	10.20	20.6	9.0	8.7	9	8.70	10.30	9.8	10.4	10.2	10.4	9.90	7.7	7.5	7.9
	Fluoride	mg/L	< 0.050	< 0.050	0.072 J	0.052 J	0.053 J	0.051 J	< 0.050	0.099 J	0.079 J	0.077 J	0.11	0.083 J	0.062 J	0.11	0.33	0.36	0.43
	pH, field measured	S.U.	5.27	5.23	5.24	5.26	6.52	6.07	5.87	5.92	5.39	5.55	5.43	5.36	5.33	5.43	6.44	6.24	6.27
	Sulfate	mg/L	351	344	399	207	236	174	144	223	249	249	256	271	231	258	415	471	474
	Total Dissolved Solids	mg/L	636	638	606	405	462	343	290	365	449	442	459	474	459	437	862	836	818
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	< 0.00078	0.00039 J	0.0019 J	0.001 J	0.00082 J	< 0.00078	0.0016	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	0.00079 J	0.00048 J	0.00077 J
	Arsenic	mg/L	< 0.0011	< 0.0011	< 0.0022	< 0.00078	0.0017 J	< 0.0011	< 0.0011	< 0.0022	< 0.00078	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022	< 0.00078	< 0.00078	0.0025 J
	Barium	mg/L	0.021	0.023	0.021	0.076	0.064	0.076	0.062	0.063	0.022	0.024	0.022	0.02	0.022	0.019	0.026	0.022	0.021
	Beryllium	mg/L	0.00053	0.00053	0.00058	0.000066 J	0.000047 J	0.000067 J	0.000079 J	0.000067 J	0.0014	0.0013 J	0.0012	0.0011	0.0011	0.001	0.0013 J	0.0015 J	0.0015
	Cadmium	mg/L	0.00029 J	0.00059	0.00027 J	< 0.00012	< 0.00012	< 0.00011	0.00011 J	< 0.00011	0.00067	0.00080 J	0.00081	0.00083	0.00091	0.00091	< 0.00012	< 0.00012	< 0.00012
	Chromium	mg/L	< 0.0011	< 0.0011	< 0.0011	< 0.00055	< 0.00055	0.0014 J	< 0.0011	< 0.0011	< 0.00055	< 0.00055	< 0.00055	< 0.0011	< 0.0011	< 0.0011	0.0011 J	< 0.00055	< 0.00055
	Cobalt	mg/L	0.035	0.034	0.028	0.0034 J	0.0023 J	0.003 J	0.0028 J	0.0035 J	0.014	0.015	0.014	0.013	0.014	0.012	0.17	0.19	0.19
	Lead	mg/L	< 0.00089	< 0.00089	< 0.00089	< 0.000036	0.000065 J	< 0.00089	< 0.00089	< 0.00089	0.000037 J	0.000050 J	0.000059 J	< 0.00089	< 0.00089	< 0.00089	0.000051 J	< 0.000036	< 0.000036
	Lithium	mg/L	0.0022 J	0.0021 J	0.0023 J	0.012 J	0.015 J	0.011 J	0.0098 J	0.011 J	0.012 J	0.015 J	0.014 J	0.012 J	0.013 J	0.013 J	0.039 J	0.039	0.038
	Mercury	mg/L	< 0.000078	< 0.00013	< 0.00013	< 0.000078	0.00014 J	< 0.000078	< 0.00013	< 0.00013	------	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	0.000079 J	< 0.000078	< 0.000078
	Molybdenum	mg/L	< 0.00074	< 0.00074	< 0.00074	0.0022 J	< 0.00069	< 0.00074	< 0.00074	< 0.00074	------	< 0.00069	< 0.00069	< 0.00074	< 0.00074	0.0015 J	0.0012 J	< 0.00069	< 0.00069
	Selenium	mg/L	< 0.0014	< 0.0014	< 0.0014	< 0.0016	0.0031 J	< 0.0014	< 0.0014	< 0.0014	------	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014	< 0.0016	0.0016 J	0.0031 J
	Thallium	mg/L	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	------	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00014	< 0.00014
	Radium	pCi/L	0.774 U	0.769 U	0.643 U	1.91	2.17	1.8	1.21	1.64	1.22 U	0.635 U	0.789 U	1.74	0.628 U	0.61 U	15.2	17	14.5
	Radium-226	pCi/L	0.116 U	0.0921 U	0.114	0.74	0.885	0.33 U	0.422	0.335	0.162 U	0.312	0.188 U	0.642	0.142 U	0.21	5.14	3.85	4.48
	Radium-228	pCi/L	0.658 U	0.677 U	0.53	1.17	1.28	1.47	0.79	1.30	1.06 U	0.323 U	0.601 U	1.1	0.486 U	0.4 U	10.1	13.1	9.97
Field Measured	Conductivity	uS/cm	750.79	871.77	0.8	634.12	636.9	509.33	474.04	546.0	613.1	590.16	596.2	643.64	693.29	614.4	1060.17	1076.86	1019.6
	Dissolved Oxygen	mg/L	0.13	0.17	0.10	0.39	0.29	0.93	1.84	0.21	0.25	1.09	0.31	0.24	0.39	0.31	1.53	0.57	0.28
	Oxidation Reduction Potential	millivolts	29.3	37.8	44.4	56.60	249.8	44.7	94.2	107.8	75.7	55.2	162.8	55.7	55.4	62.0	10.5	20.6	-7.80
	Temperature	Deg C	23.12	16.89	23.50	10.53	15.52	26.6	15.94	20.77	11.10	14.4	17.19	22.05	16.47	21.96	17.26	14.12	18.89
	Turbidity	ntu	4.33	4.06	4.72	1.18	1.85	2.36	3.5	0.98	0.75	0.72	0.41	0.88	1.38	0.73	2.85	0.97	1.42
	Water level depth	ft	35.00	33.39	30.94	29.31	35.54	30.82	32.9	37.11	32.92	31.95	31.8	30.2	31.95	34.68	9.73	10.73	9.17
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	32.2	31.5	------	50.4	------	32.9	35.5	------	------	9.4	------	10.1	11.6	------	------	72.2
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	32.2	31.5	------	50.4	------	32.9	35.5	------	------	9.4	------	10.1	11.6	------	------	72.2
	Alkalinity, Carbonate as CaCO3	mg/L	------	< 1.8	< 5.0	------	< 5.0	------	< 1.8	< 5.00	------	------	< 5.0	------	< 1.8	< 5.00	------	------	< 5.0
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	25.0	------	------	------	------	0.1	------	------	------	------	------	0.033 J	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	18.0	------	------	------	------	0.1	------	------	------	------	------	0.033 J	------	------	------
	Iron, Ferrous	mg/L	------	------	7.0	------	------	------	------	0.0	------	------	------	------	------	0.0	------	------	------
	Magnesium	mg/L	------	49.7	46.3	------	25.9	------	16.4	20.7	------	------	16.3	------	17.3	15.0	------	------	26.3
	Manganese	mg/L	------	------	17.2	------	------	------	------	0.7	------	------	------	------	------	2.8	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	1.5	1.2	------	5.8	------	5.9	6.0	------	------	6.6	------	6.9	6.2	------	------	8.5
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	28.3	27.0	------	20.8	------	19.3	18.9	------	------	18.5	------	20.4	17.9	------	------	18.8
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	B-104D	B-104D	B-104D	B-105D	B-105D	B-105D	B-105D	B-105D	B-106D	B-106D	B-106D	B-106D	B-106D	B-107D	B-107D	B-107D	B-107D
			9/14/2021	1/24/2022	9/13/2022	12/9/2020	3/8/2021	9/15/2021	1/19/2022	9/7/2022	12/17/2020	3/4/2021	9/13/2021	1/25/2022	9/16/2022	12/9/2020	3/4/2021	9/13/2021	1/24/2022
Appendix III	Boron	mg/L	0.23	0.24	0.26	0.79	0.64	0.76	0.88	0.87	1.40	1.4	1.3	1.2	1.00	11.7	12.0	10.7	12.3
	Calcium	mg/L	151	163	153.0	76.9	79.6	72.7	74.2	73.2	43.2	42.1	42.1	40	35.3	85.4	83.9	83.6	89.9
	Chloride	mg/L	7.9	7.8	8.00	17.1	17.4	17.4	16.3	16.40	8.00	7.8	7	7.4	6.60	12.5	13.0	11.7	12.8
	Fluoride	mg/L	0.5	0.28	0.35	0.075 J	0.32	0.078 J	0.058 J	0.11	0.052	0.055 J	0.052 J	< 0.050	0.080 J	< 0.050	< 0.050	< 0.050	< 0.050
	pH, field measured	S.U.	8.58	6.48	6.49	6.48	6.37	6.38	6.62	6.44	5.82	5.85	5.91	5.84	5.82	5.91	5.97	5.88	6.05
	Sulfate	mg/L	456	423	505	220	228	240	220	263	179	170	147	132	137	273	309	275	276
	Total Dissolved Solids	mg/L	776	806	832	474	477	455	453	479	340	321	296	295	240	564	525	567	552
Appendix IV	Antimony	mg/L	< 0.00078	0.001 J	< 0.00078	< 0.00028	0.00069 J	0.0082	< 0.00078	< 0.00078	0.00048	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00028	< 0.00028	< 0.00078	< 0.00078
	Arsenic	mg/L	0.0019 J	0.0035 J	< 0.0022	< 0.00078	0.0025 J	< 0.0011	0.0051	0.0026 J	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022	< 0.00078	< 0.00078	< 0.0011	< 0.0011
	Barium	mg/L	0.021	0.024	0.021	0.030	0.041	0.037	0.04	0.035	0.022	0.021	0.02	0.02	0.021	0.13	0.12	0.087	0.092
	Beryllium	mg/L	0.0011	0.0012	0.0014	< 0.000046	< 0.000046	< 0.000054	< 0.000054	< 0.000054	0.00012	0.00013 J	0.00013 J	0.00011 J	0.00011 J	< 0.00023	0.000050 J	< 0.000054	< 0.000054
	Cadmium	mg/L	< 0.00011	< 0.00011	< 0.00011	< 0.00012	< 0.00012	< 0.00011	< 0.00011	< 0.00011	0.0002	0.00021 J	0.00024 J	0.00012 J	< 0.00011	< 0.00012	< 0.00012	< 0.00011	< 0.00011
	Chromium	mg/L	< 0.0011	< 0.0011	< 0.0011	< 0.00055	< 0.00055	0.0012 J	< 0.0011	< 0.0011	< 0.00055	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00055	< 0.00055	< 0.0011	< 0.0011
	Cobalt	mg/L	0.1	0.1	0.14	0.012	0.0042 J	0.0065	0.006	0.0040 J	0.00087	0.00070 J	0.00056 J	< 0.00039	< 0.00039	0.0017 J	0.0012 J	0.00083 J	0.00088 J
	Lead	mg/L	< 0.00089	< 0.00089	< 0.00089	0.000052 J	< 0.000036	< 0.00089	< 0.00089	< 0.00089	< 0.000036	< 0.000036	< 0.00089	< 0.00089	< 0.00089	0.000044 J	< 0.000036	< 0.00089	< 0.00089
	Lithium	mg/L	0.036	0.036	0.04	0.014 J	0.015 J	0.014 J	0.013 J	0.013 J	0.0048	0.0054 J	0.0056 J	0.0055 J	0.0054 J	0.017 J	0.015 J	0.014 J	0.015 J
	Mercury	mg/L	< 0.000078	< 0.00013	< 0.00013	0.000087 J		< 0.000078	< 0.00013	0.00014 J	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	0.00016 J	< 0.000078	< 0.000078	< 0.00013
	Molybdenum	mg/L	< 0.00074	0.00083 J	< 0.00074	< 0.00069	0.0011 J	< 0.00074	< 0.00074	< 0.00074	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.00069	< 0.00069	< 0.00074	< 0.00074
	Selenium	mg/L	< 0.0014	< 0.0014	< 0.0014	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014	< 0.0016	< 0.0016	< 0.0014	< 0.0014
	Thallium	mg/L	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00014	< 0.00018	< 0.00018
	Radium	pCi/L	9.6	11.9	9.12	1.25 U	1.87	2.01	2.45	3.05	0.952 U	0.681 U	0.625 U	0.454 U	0.655 U	1.49	2.14	0.813 U	1.14 U
	Radium-226	pCi/L	2.74	3.53	3.01	0.378 U	0.363 U	0.392	0.399	0.883	0.195 U	0.159 U	0.159 U	-0.0175 U	0.227	0.806	0.627	0.349 U	0.446
	Radium-228	pCi/L	6.86	8.37	6.11	0.873 U	1.51	1.62	2.05	2.17	0.757 U	0.522 U	0.466 U	0.454 U	0.428 U	0.683 U	1.51	0.464 U	0.691 U
Field Measured	Conductivity	uS/cm	1037.6	1921.5	1.1	674.08	607.5	634.64	602.01	623.3	479.77	472.92	406.42	439.97	421.0	751.9	704.6	648.52	714.01
	Dissolved Oxygen	mg/L	0.4	0.18	0.15	1.03	0.28	5.26	2.16	0.10	0.9	0.35	0.42	0.6	1.07	0.3	0.27	0.06	0.26
	Oxidation Reduction Potential	millivolts	-105.5	-63.8	27.3	23.2	49.4	-9.2	-46.4	-0.5	-111.9	87.9	23.3	41.0	92.8	95.8	268	-41.7	-2.9
	Temperature	Deg C	27.06	18.42	23.14	18.49	19.7	20.42	18.48	23.85	13.93	18.01	20.62	18.03	18.79	17.85	20.6	21.69	16.82
	Turbidity	ntu	2.17	3.49	0.52	1.05	0.59	2.46	1.54	1.20	1.33	0.55	2.39	0.99	1.16	1.24	0.53	4.75	0.5
	Water level depth	ft	8.61	12.48	14.37	18.09	17.6	19.00	17.45	19.09	35.61	35.95	38.42	40.3	40.74	21.64	21.55	22.15	22.75
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	85.1	69.1	------	91.1	------	38.4	42.0	------	24.0	------	25.5	29.9	------	31.5	------	31.3
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	85.1	69.1	------	91.1	------	38.4	42.0	------	24.0	------	25.5	29.9	------	31.5	------	31.3
	Alkalinity, Carbonate as CaCO3	mg/L	------	< 1.8	< 5.00	------	< 5.0	------	< 1.8	< 5.0	------	< 5.0	------	< 1.8	< 5.00	------	< 5.0	------	< 1.8
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	10.3	------	------	------	------	1.9	------	------	------	------	0.031 J	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	8.3	------	------	------	------	1.9	------	------	------	------	0.031 J	------	------	------	------
	Iron, Ferrous	mg/L	------	------	2.0	------		------	------	0.0	------	------	------	------	0.0	------	------	------	------
	Magnesium	mg/L	------	27.8	27.5	------	24.8	------	26.7	25.2	------	18.5	------	18.0	16.7	------	29.6	------	32.3
	Manganese	mg/L	------	------	------	------	------	------	------	0.7	------	------	------	------	0.1	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	8.7	8.2	------	10.4	------	8.6	8.2	------	4.2	------	4.0	3.8	------	6.5	------	6.3
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	19.7	19.6	------	19.5	------	19.2	19.9	------	16.5	------	15.80	14.6	------	19.2	------	20.6
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	B-107D	B-108D	B-108D	B-108D	B-108D	B-108D	B-109D	B-109D	B-109D	B-109D	B-109D	B-110D	B-110D	B-110D	B-111D	B-111D	B-111D
			9/14/2022	12/9/2020	3/4/2021	9/14/2021	1/24/2022	9/15/2022	1/13/2021	3/8/2021	9/10/2021	1/20/2022	9/20/2022	12/17/2020	1/13/2021	3/16/2021	12/9/2020	1/12/2021	3/5/2021
Appendix III	Boron	mg/L	11.20	6.7	6.4	6.8	6.8	7.10	0.46	0.55	0.41	0.6	0.61	0.28	0.27	0.28	0.34 J	0.26	0.44
	Calcium	mg/L	82.6	90.5	86.6	83.3	88.2	85.1	40.3	40.2	42.1	40	40.5	47.8	48.6	49.9	105	103	110
	Chloride	mg/L	12.90	29.1	29.4	28.8	32.9	27.60	3.1	3.9	4.8	3.7	3.50	2.1	1.8	2	12.8	15.7	39.2
	Fluoride	mg/L	0.053 J	< 0.050	< 0.050	< 0.050	< 0.050	0.061 J	0.17	0.14	0.15	0.11	0.15	0.72	0.64	0.76	0.33	0.32	0.51
	pH, field measured	S.U.	5.87	5.94	5.88	5.81	5.99	5.86	6.42	6.42	6.86	6.43	6.38	6.99	7.22	7.53	6.64	6.71	6.69
	Sulfate	mg/L	327	277	309	299	277	318	99.8	102	93.2	93.1	108	51.4	48.2	51.4	197	222	270
	Total Dissolved Solids	mg/L	582	573	569	576	502	540	303	305	284	309	327	251	222	194	490	500	634
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	0.00042 J	0.00084 J	0.004	< 0.00078	< 0.00078	< 0.00028	< 0.00028	< 0.00028	< 0.00028	< 0.00028	0.00060 J
	Arsenic	mg/L	< 0.0022	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022	< 0.00078	< 0.00078	< 0.0011	0.0026 J	< 0.0022	0.0017 J	0.0030 J	0.0036 J	< 0.00078	< 0.00078	0.0023 J
	Barium	mg/L	0.057	0.066	0.060	0.06	0.056	0.054	0.060	0.056	0.022	0.047	0.055	0.0061 J	0.0064 J	0.0061	0.027	0.027	0.038
	Beryllium	mg/L	< 0.000054	< 0.00023	< 0.000046	< 0.000054	< 0.000054	< 0.000054	0.000059 J	0.000079 J	< 0.000054	0.000071 J	0.000080 J	< 0.000046	< 0.000046	< 0.000046	< 0.00023	< 0.000046	< 0.000046
	Cadmium	mg/L	< 0.00011	< 0.00012	< 0.00012	< 0.00011	< 0.00011	< 0.00011	< 0.00012	< 0.00012	< 0.00011	< 0.00011	< 0.00011	< 0.00012	< 0.00012	< 0.00012	< 0.00012	< 0.00012	< 0.00012
	Chromium	mg/L	< 0.0011	< 0.00055	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00055	0.00061 J	< 0.0011	< 0.0011	< 0.0011	< 0.00055	< 0.00055	< 0.00055	< 0.00055	< 0.00055	< 0.00055
	Cobalt	mg/L	0.00061 J	0.0048 J	0.0017 J	0.0017 J	0.00061 J	0.0010 J	< 0.00038	< 0.00038	< 0.00039	< 0.00039	< 0.00039	0.0016 J	0.0013 J	0.00083 J	0.00076 J	0.00070 J	0.00052 J
	Lead	mg/L	< 0.00089	< 0.000036	< 0.000036	< 0.00089	< 0.00089	< 0.00089	< 0.000036	< 0.000036	< 0.00089	< 0.00089	< 0.00089	< 0.000036	< 0.000036	< 0.000036	0.000058 J	0.000051 J	< 0.000036
	Lithium	mg/L	0.015 J	0.016 J	0.014 J	0.015 J	0.014 J	0.016 J	0.016 J	0.014 J	0.013 J	0.014 J	0.013 J	0.011 J	0.013 J	0.013 J	0.021 J	0.021 J	0.028 J
	Mercury	mg/L	< 0.00013	0.00014 J	< 0.000078	< 0.000078	< 0.00013	< 0.00013	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	< 0.000078	< 0.000078	------	0.000094 J	< 0.000078	< 0.000078
	Molybdenum	mg/L	< 0.00074	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	0.0022 J	0.0014 J	0.0011 J	0.0012 J	0.0014 J	0.076	0.078	0.076	0.0055 J	0.0054 J	0.0067 J
	Selenium	mg/L	< 0.0014	< 0.0016	0.0016 J	< 0.0014	< 0.0014	< 0.0014	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014	< 0.0016	< 0.0016	0.0016 J	< 0.0016	< 0.0016	0.0022 J
	Thallium	mg/L	< 0.00018	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00014	< 0.00014	< 0.00014	< 0.00014	< 0.00014
	Radium	pCi/L	0.737 U	1.31 U	2.02	0.917 U	0.812 U	1.36	11.8	12.1	9.45	16.2	16.5	0.979 U	1.05 U	1.26	12.3	9.63	9.05
	Radium-226	pCi/L	0.195	0.615	0.648	0.302 U	0.812	0.243	4.32	4.98	3.09	6.82	7.66	0.645	0.454	0.447	6.52	4.68	4.00
	Radium-228	pCi/L	0.542 U	0.699 U	1.37	0.615 U	-0.262 U	1.12	7.46	7.14	6.36	9.4	8.81	0.334 U	0.593 U	0.809 U	5.80	4.95	5.05
Field Measured	Conductivity	uS/cm	0.7	799.7	755.7	766.58	744.83	757.4	433.95	429.44	314.33	435.76	441.6	423.4	377.5	360.8	734.3	717.6	887.8
	Dissolved Oxygen	mg/L	0.12	0.23	0.35	0.05	0.5	0.12	0.65	0.21	8.5	0.28	1.32	2.92	3.95	2.96	0.13	0.2	0.28
	Oxidation Reduction Potential	millivolts	94.2	95.4	358.9	29.9	-39.6	116.0	22.5	-75.3	-84.2	-71.7	13.9	130.7	112.4	124.7	-1.9	22.5	-13.6
	Temperature	Deg C	21.26	16.46	19.18	21.84	19.05	21.81	8.59	18.73	27.11	15.35	23.11	6.36	12.09	12.82	17.85	15.16	17.27
	Turbidity	ntu	1.05	0.06	0.87	2.38	0.36	0.95	3.39	2.7	3.86	1.17	1.89	1.12	1.2	0.63	0.6	1.58	1.21
	Water level depth	ft	24.05	21.45	20.54	21.00	21.65	23.40	39.36	41.33	38.61	42.31	42.35	8.75	8.81	8.6	12.75	11.93	11.78
Supplemental	Alkalinity as CaCO3, Total	mg/L	28.0	------	30.4	------	26.8	27.4	------	99.2	------	99.6	96.2	------	------	151	------	------	146
	Alkalinity, Bicarbonate as CaCO3	mg/L	28.0	------	30.4	------	26.8	27.4	------	99.2	------	99.6	96.2	------	------	151	------	------	146
	Alkalinity, Carbonate as CaCO3	mg/L	< 5.00	------	< 5.0	------	< 1.8	< 5.00	------	< 5.0	------	< 1.8	< 5.00	------	------	< 5.0	------	------	< 5.0
	Aluminum	mg/L		------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	0.4	------	------	------	------	0.4	------	------	------	------	13.6	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	< 0.025	------	------	------	------	< 0.025	------	------	------	------	11.1	------	------	------	------	------	------
	Iron, Ferrous	mg/L	0.5	------	------	------	------	0.5	------	------	------	------	2.5	------	------	------	------	------	------
	Magnesium	mg/L	30.4	------	34.6	------	34.9	34.4	------	11.7	------	11.3	11.7	------	------	7	------	------	11.5
	Manganese	mg/L	------	------	------	------	------	0.3	------	------	------	------	0.3	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	5.9	------	5.7	------	5.4	5.5	------	8.2	------	7.4	7.4	------	------	2.4	------	------	19.6
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	19.2	------	18.3	------	18.2	17.9		22.0	------	21.1	22.1	------	------	18.4	------	------	54.5
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	B-111D	B-111D	B-111D	B-112D	B-112D	B-112D	B-112D	B-113D	B-113D	B-113D	B-113D	B-113D	B-115D	B-115D	B-115D	B-115D	B-116D
			9/14/2021	1/24/2022	9/14/2022	4/15/2021	9/16/2021	1/19/2022	9/7/2022	3/26/2021	4/16/2021	9/17/2021	1/26/2022	9/12/2022	4/14/2021	9/14/2021	1/20/2022	9/14/2022	4/13/2021
Appendix III	Boron	mg/L	0.32	0.49	0.24	0.26	0.27	0.31	0.26	0.034 J	0.16	0.089	0.12	0.05	0.69	0.61	0.55	0.58	< 0.0052
	Calcium	mg/L	98.4	107	90.7	34.6	28.4	24.1	26.5	------	47.2	44.1	48.4	36.5	52.0	63	83.6	65.5	10.6
	Chloride	mg/L	27.3	30.6	10.30	10.0	2.7	2.5	2.90	------	6.7	48.8	19.8	7.60	7.9	9	15.8	10.70	3.2
	Fluoride	mg/L	0.57	0.38	0.38	0.30	0.34	0.25	0.27	------	0.71	0.87	0.74	1	0.99	1	0.59	0.63	< 0.050
	pH, field measured	S.U.	7.29	7.11	7.09	6.83	6.74	6.74	6.72	8.42	7.77	7.97	7.86	7.95	4.80	5.38	5.77	5.76	6.06
	Sulfate	mg/L	243	238	228	95.6	21.2	18.4	18.2	------	46.5	89.1	55.5	35	256	278	293	297	1.3
	Total Dissolved Solids	mg/L	586	566	470	289	162	167	153	------	229	329	234	197	480	499	553	519	96
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	< 0.00078	0.00041 J	< 0.00078	< 0.00078	< 0.00078	------	0.0021 J	< 0.00078	< 0.00078	< 0.00078	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00028
	Arsenic	mg/L	0.0029 J	0.0022 J	< 0.0022	0.00078 J	< 0.0011	0.005	< 0.0022	------	< 0.00078	< 0.0011	0.0018 J	< 0.0022	0.0028 J	0.0018 J	0.0027 J	< 0.0022	0.0012 J
	Barium	mg/L	0.043	0.038	0.028	0.026	0.0032 J	0.0034 J	0.0026 J	------	0.0032 J	0.0048 J	0.0051	0.0051	0.018	0.016	0.015	0.014	0.02
	Beryllium	mg/L	< 0.000054	< 0.000054	< 0.000054	< 0.000046	< 0.000054	< 0.000054	< 0.000054	------	< 0.000046	< 0.000054	< 0.000054	< 0.000054	0.012	0.011	0.011	0.01	< 0.000046
	Cadmium	mg/L	< 0.00011	< 0.00011	< 0.00011	< 0.00012	< 0.00011	< 0.00011	< 0.00011	------	0.00019 J	< 0.00011	< 0.00011	< 0.00011	0.00041 J	0.00035 J	0.00029 J	0.00018 J	< 0.00012
	Chromium	mg/L	< 0.0011	< 0.0011	< 0.0011	0.00085 J	0.0014 J	< 0.0011	< 0.0011	------	0.0011 J	< 0.0011	< 0.0011	< 0.0011	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00055
	Cobalt	mg/L	< 0.00039	0.00041 J	< 0.00039	0.0025 J	0.00054 J	< 0.00039	< 0.00039	------	< 0.00038	< 0.00039	< 0.00039	< 0.00039	0.30	0.28	0.24	0.23	< 0.00038
	Lead	mg/L	< 0.00089	< 0.00089	< 0.00089	0.00014 J	< 0.00089	< 0.00089	< 0.00089	------	0.00014 J	< 0.00089	< 0.00089	< 0.00089	0.00032 J	< 0.00089	< 0.00089	< 0.00089	< 0.000036
	Lithium	mg/L	0.029 J	0.026 J	0.020 J	0.0045 J	0.0038 J	0.0044 J	0.0039 J	------	0.013 J	0.013 J	0.014 J	0.0084 J	0.089	0.085	0.081	0.082	0.0066 J
	Mercury	mg/L	< 0.000078	< 0.00013	< 0.00013	< 0.000078	< 0.000078	< 0.00013	< 0.00013	------	< 0.000078	< 0.000078	< 0.00013	< 0.00013	< 0.000078	< 0.000078	< 0.00013	< 0.00013	0.00018 J
	Molybdenum	mg/L	0.013	0.0052 J	0.0069 J	0.037	0.032	0.032	0.028	0.025	0.078	0.074	0.074	0.052	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.00069
	Selenium	mg/L	< 0.0014	< 0.0014	< 0.0014	< 0.0016	< 0.0014	< 0.0014	< 0.0014	------	< 0.0016	< 0.0014	< 0.0014	< 0.0014	0.0060	0.0041 J	0.0022 J	0.0045 J	< 0.0016
	Thallium	mg/L	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00018	< 0.00018	< 0.00018	------	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00014
	Radium	pCi/L	4.39	5.68	6.23	0.945 U	0.241 U	0.738 U	0.755 U	------	0.852 U	1.08 U	0.596 U	0.440 U	14.7	11.9	9.86	13.3	0.505 U
	Radium-226	pCi/L	2.47	3.19	2.79	0.404	0.241 U	0.0331 U	0.265	------	0.379	0.28 U	0.241 U	0.145 U	3.73	3.07	3.68	3.83	0.0948 U
	Radium-228	pCi/L	1.92	2.49	3.44	0.541 U	-0.18 U	0.705 U	0.49	------	0.473 U	0.803 U	0.355 U	0.295 U	11	8.87	6.18	9.50	0.41 U
Field Measured	Conductivity	uS/cm	947.92	972.44	729.5	485.5	289.94	274.2	257.4	------	348.1	604.44	451.44	350.2	586.3	639.99	848.81	800.2	128.4
	Dissolved Oxygen	mg/L	0.29	0.2	0.12	0.13	0.14	0.16	0.08	------	0.38	0.23	1.36	0.24	0.12	0.04	0.19	0.25	4.31
	Oxidation Reduction Potential	millivolts	-94.6	-147.2	-44.7	12.2	13.3	5.2	-11.5	------	-103.3	-115.3	13.9	-105.7	216.5	35.5	26.1	98.8	1078.8
	Temperature	Deg C	22.05	16.87	19.37	17.95	19.87	16.6	20.37	------	16.37	19.02	13.86	22.61	24.46	22.8	16.99	24.37	18.52
	Turbidity	ntu	2.12	0.95	1.83	4.26	3.77	1.75	0.75	------	3.72	0.83	4.1	0.97	4.96	1.76	3.77	2.29	1.55
	Water level depth	ft	12.3	12.58	14.65	7.11	7.42	7.28	7.92	------	5.51	21.9	7.52	12.28	21.27	24.85	22.76	23.40	41.6
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	131	112.0	115	------	117	106.0	------	136	------	125	125.0	< 5.0	------	12	8.9	57.0
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	131	112.0	115	------	117	106.0	------	136	------	125	125.0	< 5.0	------	12	8.9	57.0
	Alkalinity, Carbonate as CaCO3	mg/L	------	< 1.8	< 5.00	< 5.0	------	< 1.8	< 5.0	------	< 5.0	------	< 1.8	< 5.0	< 5.0	------	< 1.8	< 5.00	< 5.0
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	2.2	------	------	------	0.026 J	------	------	------	------	0.3	------	------	------	7.5	------
	Iron, Ferric (Fe2)	mg/L	------	------	0.7	------	------	------	0.026 J	------	------	------	------	0.3	------	------	------	1.0	------
	Iron, Ferrous	mg/L	------	------	1.5	------	------	------	0.0	------	------	------	------	0.0	------	------	------	6.5	------
	Magnesium	mg/L	------	11.1	8.8	9.0	------	7.6	8.0	------	6.7	------	7.2	4.8	16.6	------	19.5	16.6	3.7
	Manganese	mg/L	------	------	------	------	------	------	0.1	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	16.6	6.2	4.2	------	2.5	3.1	------	4.4	------	10.5	4.8	9.1	------	12.2	10.1	3.0
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	57.0	38.8	61.1	------	12.9	15.0	------	20.6	------	29.1	22.2	18.7	------	26.7	21.8	8.2
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-116D	B-116D	B-116D	B-117D	B-117D	B-117D	B-117D	B-118	B-118	B-118	B-118	B-119D	B-119D	B-119D	B-119D	B-120D	B-120D
			9/9/2021	1/19/2022	9/8/2022	4/14/2021	9/8/2021	1/19/2022	9/15/2022	4/13/2021	9/8/2021	1/19/2022	9/9/2022	4/13/2021	9/8/2021	1/19/2022	9/12/2022	4/15/2021	9/14/2021
Appendix III	Boron	mg/L	< 0.0086	< 0.0086	< 0.0086	< 0.0052	< 0.0086	< 0.0086	0.011 J	< 0.0052	< 0.0086	< 0.0086	< 0.0086	0.039 J	0.018 J	0.012 J	0.05	1.9	1.7
	Calcium	mg/L	9.9	10.7	10.1	9.8	11.3	9.7	9.5	6.5	5.0	5.1	5.2	20.5	20.2	16.1	10.4	171	162
	Chloride	mg/L	2.7	2.6	2.40	4.9	6.00	5	4.60	5.2	3.0	2.8	3.10	9.9	7.5	3.8	1.80	6.2	6.1
	Fluoride	mg/L	< 0.050	< 0.050	0.065 J	0.056 J	0.058 J	0.058 J	0.090 J	0.055 J	< 0.050	< 0.050	0.080 J	0.12	0.16	0.099 J	0.084 J	< 0.050	< 0.050
	pH, field measured	S.U.	6.02	6.04	5.97	6.06	6.00	6.02	5.86	6.02	6.01	6.01	6.49	6.64	6.88	6.61	6.57	5.46	5.3
	Sulfate	mg/L	0.73 J	0.73 J	0.54 J	11.7	31.1	21.5	14.4	7	0.99 J	1.1	2.8	82.2	76.2	31.1	2.8	556	552
	Total Dissolved Solids	mg/L	93	93	82	115	152	129	106	89	65	81	78	229	191	145	87	982	882
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	< 0.00078	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00028	< 0.00078	0.002 J	< 0.00078	< 0.00028	0.00087 J	0.0019 J	0.0015 J	0.00029 J	< 0.00078
	Arsenic	mg/L	< 0.0011	< 0.0011	< 0.0022	0.0015 J	< 0.0011	< 0.0011	< 0.0022	0.00094 J	0.0011 J	< 0.0011	< 0.0022	0.0019 J	0.0014 J	< 0.0011	< 0.0022	< 0.00078	< 0.0011
	Barium	mg/L	0.017	0.019	0.017	0.048	0.048	0.047	0.043	0.032	0.021	0.025	0.022	0.0087	0.008	0.0047 J	0.0029 J	0.044	0.031
	Beryllium	mg/L	< 0.000054	< 0.000054	< 0.000054	< 0.000046	< 0.000054	< 0.000054	< 0.000054	< 0.000046	< 0.000054	< 0.000054	< 0.000054	< 0.000046	< 0.000054	< 0.000054	< 0.000054	0.00085	0.00087
	Cadmium	mg/L	< 0.00011	< 0.00011	< 0.00011	< 0.00012	< 0.00011	< 0.00011	< 0.00011	< 0.00012	< 0.00011	< 0.00011	< 0.00011	< 0.00012	< 0.00011	< 0.00011	< 0.00011	0.0010	0.0011
	Chromium	mg/L	< 0.0011	< 0.0011	< 0.0011	< 0.00055	< 0.0011	< 0.0011	< 0.0011	0.00059 J	< 0.0011	0.0015 J	0.0017 J	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00055	< 0.0011
	Cobalt	mg/L	< 0.00039	< 0.00039	< 0.00039	0.00079 J	0.00043 J	< 0.00039	< 0.00039	0.0009 J	< 0.00039	< 0.00039	< 0.00039	0.0015 J	0.00077 J	0.00066 J	0.0031 J	0.017	0.0055
	Lead	mg/L	< 0.00089	< 0.00089	< 0.00089	< 0.000036	< 0.00089	< 0.00089	< 0.00089	0.00012 J	< 0.00089	< 0.00089	< 0.00089	< 0.000036	< 0.00089	< 0.00089	< 0.00089	0.00019 J	< 0.00089
	Lithium	mg/L	0.0055 J	0.0061 J	0.0054 J	0.013 J	0.0069 J	0.0085 J	0.0094 J	0.0019 J	0.0028 J	0.0027 J	0.0024 J	0.0045 J	0.0028 J	0.0031 J	0.0045 J	0.088	0.077
	Mercury	mg/L	< 0.000078	< 0.00013	< 0.00013	< 0.000078	< 0.000078	< 0.00013	< 0.00013	< 0.000078	< 0.000078	< 0.00013	< 0.00013	< 0.000078	< 0.000078	< 0.00013	< 0.00013	< 0.000078	< 0.000078
	Molybdenum	mg/L	< 0.00074	< 0.00074	< 0.00074	0.00081 J	< 0.00074	< 0.00074	< 0.00074	0.0056 J	0.0056 J	0.0056 J	0.0047 J	0.027	0.022	0.02	0.015	0.00089 J	< 0.00074
	Selenium	mg/L	< 0.0014	< 0.0014	< 0.0014	< 0.0016	< 0.0014	< 0.0014	< 0.0014	< 0.0016	< 0.0014	< 0.0014	< 0.0014	< 0.0016	< 0.0014	< 0.0014	< 0.0014	0.0016 J	0.0022 J
	Thallium	mg/L	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00014	< 0.00018
	Radium	pCi/L	0.887 U	1.04	0.686 U	1.2	0.695 U	0.125 U	0.875 U	0.948 U	0.0324 U	0.832 U	0.787 U	0.904 U	0.168 U	0.858 U	0.328 U	2.31	3.68
	Radium-226	pCi/L	0.388 U	0.103 U	0.124	0.528	0.124 U	0.103	0.241	0.21	-0.0218 U	0.0637 U	0.182	0.118 U	-0.019 U	0.0374 U	0.145	0.0454 U	1.17
	Radium-228	pCi/L	0.499 U	0.934	0.56	0.668 U	0.571 U	0.02	0.63	0.738 U	0.0324 U	0.768	0.61	0.786 U	0.168 U	0.821 U	0.18	2.26	2.51
Field Measured	Conductivity	uS/cm	108.28	125.22	123.5	149.9	147.2	137.7	154.1	100.1	91.98	86.28	93.0	310.4	305.64	258.23	134.8	1164.1	1133.2
	Dissolved Oxygen	mg/L	4.72	4.61	4.06	1.32	2.02	4.14	1.30	4.26	4.7	5.28	10.62	2.60	1.64	1.31	4.71	0.14	0.21
	Oxidation Reduction Potential	millivolts	75.1	58.5	41.1	604.9	98.3	64.8	117.8	188.1	88.6	49.2	90.7	1.7	33.6	-2.6	19.1	12.8	102.8
	Temperature	Deg C	19.23	17.23	20.94	18.48	20.16	16.91	18.40	16.76	18.91	15.78	17.26	17.90	20.36	14.23	17.91	18.06	20.66
	Turbidity	ntu	3.76	2.81	3.05	1.49	4.88	2.41	1.33	4.79	2.05	4.43	4.90	1.82	0.93	1.54	2.47	3.22	2.08
	Water level depth	ft	42.7	42.6	44.98	29.15	29.33	30.10	31.56	51.1	50.73	51.28	52.12	53.49	50.85	48.98	52.26	33.91	34.56
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	51	50.3	48.5	------	40.3	42.0	40.1	------	36.7	35.2	77.1	------	66.2	60.6	52.2	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	51	50.3	48.5	------	40.3	42.0	40.1	------	36.7	35.2	77.1	------	66.2	60.6	52.2	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	< 1.8	< 5.0	< 5.0	------	< 1.8	< 5.0	< 5.0	------	< 1.8	< 5.0	< 5.0	------	< 1.8	< 5.0	< 5.0	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	0.1	------	------	------	< 0.025	------	------	------	0.1	------	------	------	1.5	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	0.1	------	------	------	< 0.025	------	------	------	0.1	------	------	------	1.5	------	------
	Iron, Ferrous	mg/L	------	------	0.0	------	------	------	0.0	------	------	------	0.0	------	------	------	0.0	------	------
	Magnesium	mg/L	------	3.8	3.4	1.6	------	1.5	1.5	2.4	------	2.1	2.0	5.0	------	4.0	3.2	35.7	------
	Manganese	mg/L	------	------	------	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	2.5	2.2	2.6	------	2.6	2.6	3.3	------	2.3	2.3	2.9	------	2.3	2.0	11.4	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	8.2	7.7	13.8	------	17.8	16.6	12.3	------	9.0	10.0	44.7	------	24.8	10.2	38.8	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	B-120D	B-120D	B-122D	B-123D	B-123D	CR+0.2	CR+0.2	CR+0.2	CR+0.2	CR+0.2	CR+0.4	CR+0.4	CR+0.4	CR+0.4	CR+0.4	CR-0.1	CR-0.1
			1/20/2022	9/19/2022	9/14/2022	6/9/2022	9/20/2022	11/10/2020	2/2/2021	3/9/2021	9/7/2021	10/27/2022	11/10/2020	2/2/2021	3/9/2021	9/7/2021	10/27/2022	2/2/2021	3/9/2021
Appendix III	Boron	mg/L	1.9	1.70	0.25	0.55	0.49	------	<0.0052	< 0.0052	< 0.0086	<0.040	------	<0.0052	< 0.0052	< 0.0086	<0.040	<0.0052	< 0.0052
	Calcium	mg/L	158	142.0	51.0	90.4	90.8	4.1	5.0	5.2	7.8	7.7	4.2	5.3	4.7	6.7	7.7	5.2	5.3
	Chloride	mg/L	6	5.80	15.50	13.20	8.60	4.8	6.20	6.4	9.7	11.90	4.8	6.30	7.0	9.9	11.70	6.60	6.5
	Fluoride	mg/L	< 0.050	0.057 J	0.17	0.48	0.57	< 0.10	<0.05	< 0.050	0.14	0.18	< 0.10	<0.05	< 0.050	0.14	0.18	<0.05	< 0.050
	pH, field measured	S.U.	5.28	5.21	6.07	6.48	7.13	7.42	7.57	7.3	------	------	7.35	7.65	7.4	------	------	7.78	7.2
	Sulfate	mg/L	475	489	121	175	292	3.0	4.4	3.8	6.4	7.7	3.0	4.5	4.3	7	7.6	4.8	4.2
	Total Dissolved Solids	mg/L	816	867	315	602	533	45.0	41	28.0	73	36	43.0	27	42.0	77	55.0	25	45.0
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	< 0.00078	< 0.00078	< 0.00078	------	------	------	------	------	------	------	------	------	------	------	------
	Arsenic	mg/L	0.0016 J	< 0.0022	< 0.0022	< 0.0022	< 0.0022	------	<0.00000078	<0.00000078	<0.00000078	------	------	< 0.0000050	< 0.00078	< 0.0011	<0.0050	< 0.0000050	< 0.00078
	Barium	mg/L	0.025	0.023	0.046	0.028	0.023	------	------	------	------	------	------	------	------	------	------	------	------
	Beryllium	mg/L	0.0011	0.0011	0.00028 J	0.002	0.00022 J	<0.000046	<0.000046	< 0.000046	------	------	<0.000046	< 0.00050	< 0.000046	------	------	< 0.000046	< 0.000046
	Cadmium	mg/L	0.00098	0.0012	< 0.00011	< 0.00011	< 0.00011	------	------	------	------	------	------	------	------	------	------	------	------
	Chromium	mg/L	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	------	------	------	------	------	------	------	------	------	------	------	------
	Cobalt	mg/L	0.0045 J	0.0027 J	0.0033 J	0.068	0.056	<0.00038	<0.00038	< 0.00038	< 0.00038	<0.0050	<0.00038	<0.00038	<0.00038	<0.00038	<0.0050	<0.00038	<0.00038
	Lead	mg/L	< 0.00089	< 0.00089	< 0.00089	< 0.00089	< 0.00089	------	------	------	------	------	------	------	------	------	------	------	------
	Lithium	mg/L	0.079	0.076	0.013 J	0.031	0.034	------	------	------	------	<0.030	------	------	------	------	<0.030	------	------
	Mercury	mg/L	< 0.00013	< 0.00013	< 0.00013	< 0.00013	< 0.00013	------	------	------	------	------	------	------	------	------	------	------	------
	Molybdenum	mg/L	< 0.00074	< 0.00074	0.0011 J	0.0017	0.0015 J	------	<0.00069	< 0.00069	< 0.00069	------	------	< 0.010	< 0.00069	< 0.00069	<0.010	< 0.00069	< 0.00069
	Selenium	mg/L	0.0021 J	0.0038 J	< 0.0014	< 0.0014	< 0.0014	------	------	------	------	------	------	------	------	------	------	------	------
	Thallium	mg/L	< 0.00018	< 0.00018	< 0.00018	< 0.00018	< 0.00018	------	------	------	------	------	------	------	------	------	------	------	------
	Radium	pCi/L	1.21 U	2.22	7.94	------	2.95	------	------	------	------	------	------	------	------	------	------	------	------
	Radium-226	pCi/L	0.914	0.706	3.11	------	0.792	------	------	------	------	------	------	------	------	------	------	------	------
	Radium-228	pCi/L	0.3 U	1.51	4.83	------	2.16	------	------	------	------	------	------	------	------	------	------	------	------
Field Measured	Conductivity	uS/cm	1117.6	1025.2	459.3	820.4	817.9	------	80	------	------	------	------	80	------	------	------	83	------
	Dissolved Oxygen	mg/L	1.22	0.26	0.26	2.43	8.47	------	13.08	------	------	------	------	13.02	------	------	------	12.92	------
	Oxidation Reduction Potential	millivolts	-33.5	84.5	16.9	-35.8	4.9	------	-3.4	------	------	------	------	-4.8	------	------	------	-8.1	------
	Temperature	Deg C	16.02	20.66	21.86	24.30	21.87	------	7.91	------	------	------	------	7.87	------	------	------	8.02	------
	Turbidity	ntu	2.13	1.07	0.85	4.53	4.57	------	13.7	------	------	------	------	14.2	------	------	------	16.0	------
	Water level depth	ft	35.00	35.50	33.52	20.65	120.75	------	------	------	------	------	------	------	------	------	------	------	------
Supplemental	Alkalinity as CaCO3, Total	mg/L	35.8	27.8	123.0	65.7	38.5	20.2	20.4	17.3	26.9	27.0	17.3	20.5	17.7	26.6	27.3	20.7	17.2
	Alkalinity, Bicarbonate as CaCO3	mg/L	35.8	27.8	123.0	65.7	38.5	20.2	20.4	17.3	26.9	27.0	17.3	20.5	17.7	26.6	27.3	20.7	17.2
	Alkalinity, Carbonate as CaCO3	mg/L	< 1.8	< 5.00	< 5.0	< 5.0	< 5.0	------	------	------	------	------	------	------	------	------	------	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	0.1	13.8	24.2	5.4	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	0.1	9.8	------	0.9	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	0.0	4.0	------	4.5	------	------	------	------	------	------	------	------	------	------	------	------
	Magnesium	mg/L	34.3	31.8	9.9	15.4	13.0	2.0	2	2.2	2.3	2.3	2.0	2.1	2.2	2.9	2.3	2.1	2.1
	Manganese	mg/L	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	9.8	9.3	4.0	10.9	7.6	2.5	2.7	2.7	4.3	4.2	2.4	2.8	2.6	3.4	4.2	2.8	2.7
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	35.7	33.1	31.3	35.2	29.0	5.5	6.8	6.7	12.9	12.5	5.4	7	6.5	10	12.5	7	6.6
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	CR-0.1	CR-0.1	CR-0.2	CR-0.2	CR-0.2	CR-0.2	CR-0.2	CR-0.5	CR-0.5	CR-0.5	CR-0.5	CR-0.5	CR-0.8	CR-0.8	CR-0.8	DGWA-2	DGWA-2
			9/7/2021	10/27/2022	11/10/2020	2/2/2021	3/9/2021	9/7/2021	10/27/2022	11/10/2020	2/2/2021	3/9/2021	9/7/2021	10/27/2022	11/10/2020	2/2/2021	3/9/2021	3/30/2017	7/11/2017
Appendix III	Boron	mg/L	< 0.0086	0.041	------	<0.0052	< 0.0052	0.046	0.046	------	<0.0052	< 0.0052	< 0.0086	0.048	------	<0.0052	< 0.0052	1.56	1.39
	Calcium	mg/L	6.6	8.1	4.3	5.0	5.2	6.6	7.7	4.3	5.2	5.5	6.5	7.7	4.4	4.9	5.0	103	98.4
	Chloride	mg/L	9.8	12.70	11.2	6.20	6.6	9.8	12.30	4.9	6.20	6.7	9.6	12.80	5.1	6.40	6.3	4.8	4.6
	Fluoride	mg/L	0.14	0.19	< 0.10	<0.05	< 0.050	0.13	0.18	< 0.10	<0.05	< 0.050	0.14	0.17	< 0.10	<0.05	< 0.050	0.06 J	0.04 J
	pH, field measured	S.U.	------	------	7.82	7.48	7.0	------	------	7.40	7.46	7.0	------	------	7.62	7.15	7.1	5.75	5.87
	Sulfate	mg/L	8	9.1	3.2	4.3	3.8	7.3	7.1	3.0	4.3	3.7	6.3	7.3	3.2	4.5	3.8	360	330
	Total Dissolved Solids	mg/L	78	42.0	48.0	38	50.0	77	104	47.0	31	77.0	75	75	50.0	30	21.0	580	542
Appendix IV	Antimony	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.00030	< 0.00060
	Arsenic	mg/L	------	------	------	< 0.0000050	< 0.00078	< 0.0011	------	------	< 0.0000050	< 0.00078	< 0.0011	------	------	< 0.0000050	< 0.00078	< 0.00040	< 0.00050
	Barium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.0232	0.0201
	Beryllium	mg/L	------	------	<0.000046	< 0.000046	< 0.000046	------	------	<0.000046	< 0.000046	< 0.000046	------	------	<0.000046	<0.000046	< 0.000046	< 0.000070	< 0.000090
	Cadmium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.0005 J	0.0003 J
	Chromium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.0005 J	< 0.00050
	Cobalt	mg/L	<0.00038	<0.0050	<0.00038	<0.00038	<0.00038	<0.00038	<0.0050	<0.00038	<0.00038	<0.00038	<0.00038	<0.0050	<0.00038	<0.00038	< 0.00038	0.0255	0.0238
	Lead	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.0001 J	< 0.000070
	Lithium	mg/L	------	<0.030	------	------	------	------	<0.030	------	------	------	------	<0.030	------	------	------	0.0807	0.0731
	Mercury	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.00007 J	< 0.000041
	Molybdenum	mg/L	------	------	------	< 0.00069	< 0.00069	------	------	------	< 0.00069	< 0.00069	------	------	------	< 0.00069	< 0.00069	0.0009 J	< 0.0010
	Selenium	mg/L	------	------	------	------	------	< 0.0014	------	------	------	------	< 0.0014	------	------	------	------	< 0.0014	< 0.0018
	Thallium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.000050	< 0.000050
	Radium	pCi/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.737 U	0.871 U
	Radium-226	pCi/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.105 U	0.142 U
	Radium-228	pCi/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.632 U	0.729
Field Measured	Conductivity	uS/cm	------	------	------	79	------	------	------	------	78	------	------	------	------	80	------	808.72	738.5
	Dissolved Oxygen	mg/L	------	------	------	13	------	------	------	------	13.05	------	------	------	------	13.97	------	1.03	0.28
	Oxidation Reduction Potential	millivolts	------	------	------	-19.3	------	------	------	------	-20.8	------	------	------	------	-21.3	------	-11.8	65.2
	Temperature	Deg C	------	------	------	8.11	------	------	------	------	8.19	------	------	------	------	8.32	------	19.32	22.18
	Turbidity	ntu	------	------	------	14	------	------	------	------	14.4	------	------	------	------	14	------	4.88	0.83
	Water level depth	ft	------	------	------		------	------	------	------	------	------	------	------	------	------	------	29.98	28.60
Supplemental	Alkalinity as CaCO3, Total	mg/L	26.8	27.4	20.7	17.2	17.6	27.5	27.4	20.2	17	17.0	27.1	27.2	20	17	17.2	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	26.8	27.4	20.7	17.2	17.6	27.5	27.4	20.2	17	17.0	27.1	27.2	20	17	17.2	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Magnesium	mg/L	2.7	2.4	2.1	2.1	2.0	2.8	2.3	2.0	2.1	2.1	2.6	2.3	2.0	2.1	2.1	------	------
	Manganese	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	3.2	4.3	2.6	2.8	2.7	3.3	4.2	2.5	2.8	2.7	3.1	4.3	2.5	2.8	2.6	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	9.4	13.8	5.9	6.8	6.6	9.7	12.5	5.7	7	6.9	9.2	12.8	5.6	7	6.5	------	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	DGWA-2	DGWA-8	DGWA-8	DGWA-9	DGWA-9	DGWA-26	DGWA-26	DGWA-27	DGWA-27	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53
			10/24/2017	8/30/2016	12/6/2016	8/30/2016	12/6/2016	8/30/2016	12/6/2016	8/30/2016	12/6/2016	3/28/2017	9/26/2016	3/28/2017	5/11/2017	6/15/2017	7/12/2017	10/24/2017	11/15/2017
Appendix III	Boron	mg/L	1.18	2.63	2.72	1.72	1.92	0.854	0.552	1.13	1.36	0.0612	0.0607 J	0.06	0.08	0.07	0.0735	0.077	------
	Calcium	mg/L	86	82.7	76.8	64.9	59.3	83.2	46.2	166	163	30.8	------	30.8	35.8	36.0	40.3	30.3	------
	Chloride	mg/L	4.4	9.7	9.8	6	6.2	4.3	2.8	6.8	6.9	3.7	------	3.70	2.30	2.60	2.3	2.7	2.2
	Fluoride	mg/L	0.43	0.39	0.47	0.78	1.1	0.2 J	0.15 J	1	0.81	0.12 J	------	0.12 J	0.07 J	0.19 J	0.1 J	0.06 J	0.05 J
	pH, field measured	S.U.	5.82	------	------	------	------	5.51	5.84	4.72	4.83	6.29	------	6.29	6.60	6.41	5.91	5.51	6.5
	Sulfate	mg/L	260	450	480	300	320	330	220	860	730	49	------	49	21	16	10	15	3.8
	Total Dissolved Solids	mg/L	523	693	727	414	449	566	432	1270	1110	202	------	202	241	251	218	671	241
Appendix IV	Antimony	mg/L	< 0.00060	< 0.00080	< 0.00080	< 0.00080	< 0.00080	< 0.00080	< 0.00080	< 0.00080	< 0.00080	< 0.00030	------	<0.0003	<0.0003	0.0006 J	< 0.00060	< 0.00060	------
	Arsenic	mg/L	< 0.00050	< 0.0016	< 0.0016	0.0241	< 0.0016	< 0.0016	< 0.0016	0.007	< 0.0016	0.0005 J	------	0.0005 J	0.0005 J	<0.0005	< 0.00050	< 0.00050	------
	Barium	mg/L	0.0206	0.0435	0.0431	0.0162	0.0138	0.0377	0.0157	0.0447	0.037	0.134	------	0.134	0.126	0.14	0.173	0.109	------
	Beryllium	mg/L	< 0.000090	0.0018 J	0.0034	0.0045	0.005	0.0009 J	0.0002 J	0.0275	0.0184	< 0.000070	<0.003	<0.00007	<0.00007	<0.00009	< 0.000090	< 0.000090	------
	Cadmium	mg/L	0.0003 J	0.0019	0.0025	0.0004 J	0.0005 J	< 0.000070	< 0.000070	0.0054	0.0046	< 0.000060	<0.001	<0.00006	0.00008 J	<0.0001	< 0.00010	< 0.00010	------
	Chromium	mg/L	< 0.00050	< 0.00090	< 0.00090	< 0.00090	< 0.00090	< 0.00090	< 0.00090	< 0.00090	< 0.00090	< 0.00030	------	<0.0003	<0.0003	<0.0005	< 0.00050	< 0.00050	------
	Cobalt	mg/L	0.0292	0.0568	0.0873	0.0896	0.122	< 0.00050	< 0.00050	0.93	0.598	0.025	------	0.025	0.0281	0.0322	0.0247	0.0267	------
	Lead	mg/L	< 0.000070	< 0.00010	< 0.00010	< 0.00060	< 0.00010	< 0.00010	< 0.00010	0.0005 J	0.0003 J	< 0.000070	------	<0.00007	<0.00007	<0.00007	< 0.000070	< 0.000070	------
	Lithium	mg/L	0.0995	0.005 J	0.0066 J	0.0212 J	0.0242 J	0.02 J	0.0212 J	0.0496 J	0.0443 J	0.0108 J	------	0.0108 J	0.0087 J	0.0088 J	0.0075 J	0.0103 J	------
	Mercury	mg/L	< 0.000036	0.00009 J	0.0001 J	< 0.000041	0.00005 J	0.00008 J	0.00005 J	0.00005 J	0.00007 J	< 0.000041	------	<0.000041	<0.000041	0.00008 J	< 0.000041	< 0.000036	------
	Molybdenum	mg/L	< 0.0010	< 0.0017	< 0.0017	< 0.0017	< 0.0017	< 0.0017	< 0.0017	< 0.0017	< 0.0017	0.0242	------	0.0242	0.0375	0.0409	0.0321	0.0227	------
	Selenium	mg/L	< 0.0018	0.0032 J	< 0.0010	0.0833	0.0065 J	0.0092 J	0.0038 J	0.0447	0.0212	< 0.0014	------	<0.0014	<0.0014	<0.0018	< 0.0018	< 0.0018	------
	Thallium	mg/L	< 0.000050	< 0.00020	< 0.00020	< 0.0010	0.0006 J	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.000050	------	<0.00005	<0.00005	<0.00005	< 0.000050	< 0.000050	------
	Radium	pCi/L	1.19	0.919 U	0.407 U	1.33	0.828 U	8.98	4.47	0.815 U	1.24 U	6.36	------	6.36	3.45	4.58	4.37	4.46	------
	Radium-226	pCi/L	0.604	0.084 U	0.261	0.412	0.184 U	1.19	0.786	0.287 U	0.942	2.86	------	2.86	------	------	2.03	2.28	------
	Radium-228	pCi/L	0.589 U	0.835 U	0.146 U	0.918	0.644 U	7.79	3.68	0.528 U	0.296 U	3.50	------	3.50	------	------	2.34	2.18	------
Field Measured	Conductivity	uS/cm	601.3	867.9	940.7	------	------	752.2	552.32	1400.9	1343.94	331.86	------	331.9	370.4	366.0	416	0	450.61
	Dissolved Oxygen	mg/L	0.29	0.15	0.27	------	------	3.3	1.7	0.25	0.15	0.1	------	0.10	8.33	0.08	2.81	9.78	1.65
	Oxidation Reduction Potential	millivolts	106.2	135.9	113.1	------	------	120	89.1	258.7	177.1	25.34	------	25.3	-31.9	-14.6	53.1	105.5	-89.2
	Temperature	Deg C	19.36	21.99	15.30	------	------	24.97	16.65	21.55	17.23	17.8	------	17.80	20.31	21.77	26.12	31.4	18.74
	Turbidity	ntu	0.82	1.36	3.27	------	------	4.46	0.94	0.95	2.1	7.66	------	7.66	1.06	5.61	3.05	3.29	3.2
	Water level depth	ft	29.83	14.75	18.01	------	------	24.56	26.4	20.17	20.9	9.42	------	9.42	9.08	7.85	7.01	12.44	17.17
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Magnesium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Manganese	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sulfide	mg/L	------	------	------	------	< 0.363	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-53	DGWA-70	DGWA-70A	DGWA-70A	DGWA-70A
			3/8/2018	7/12/2018	11/7/2018	3/13/2019	8/28/2019	10/16/2019	3/9/2020	8/13/2020	9/22/2020	3/12/2021	9/9/2021	1/28/2022	9/8/2022	3/28/2017	5/15/2017	6/15/2017	7/11/2017
Appendix III	Boron	mg/L	0.13 J	< 0.076	0.073	0.08	------	0.06	0.08 J	------	0.056 J	0.064	0.065	0.062	0.05	0.0067 J	0.0073 J	<0.006	< 0.0060
	Calcium	mg/L	39.8	34.7	28.6	26.7	------	17.7	23.7	------	15.5	18.4	18.3	19.5	17.2	5.14	6.5	5.4	5.96
	Chloride	mg/L	2.4	2.2	2.3	3.60	------	2.00	1.8	------	1.6	2.0	1.8	1.8	1.60	3.8	2.20	2.00	2.1
	Fluoride	mg/L	< 0.029	0.071 J	< 0.029	0.13 J	0.42	0.11 J	0.1 J	0.062 J	0.099 J	0.076 J	0.099 J	0.08 J	0.11	1.2	0.005 J	0.02 J	0.06 J
	pH, field measured	S.U.	6.18	------	6.22	6.00	6.04	6.69	6.41	6.17	6.43	6.38	6.41	6.35	6.32	5.9	5.72	5.74	5.62
	Sulfate	mg/L	9.7	8	12.8	23.7	------	15.1	9.5	------	13.5	8.8	11.9	13.1	12	2.7	1	0.86 J	1.4
	Total Dissolved Solids	mg/L	213	198	200	201	------	126	171	------	142	124	131	155	129	39	88	65	25
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	0.0003 J	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00030	<0.0003	<0.0006	< 0.00060
	Arsenic	mg/L	< 0.00057	< 0.00057	0.0009 J	------	< 0.00035	0.0018 J	0.00068 J	< 0.00078	0.00093 J	< 0.00078	< 0.0011	0.0024 J	0.0029 J	< 0.00040	<0.0004	<0.0005	< 0.00050
	Barium	mg/L	0.19	0.18	0.15	------	0.087	0.077	0.099	0.046	0.07	0.076	0.099	0.068	0.077	0.0166	0.0181	0.0277	0.0306
	Beryllium	mg/L	< 0.00025	< 0.000050	< 0.000050	------	< 0.000074	< 0.000074	< 0.000074	< 0.000046	< 0.000046	< 0.000046	< 0.000054	< 0.000054	< 0.000054	< 0.000070	<0.00007	<0.00009	< 0.000090
	Cadmium	mg/L	< 0.000093	< 0.00013 J	< 0.000093	------	< 0.00011	< 0.00011	< 0.00011	< 0.00012	< 0.00012	< 0.00012	< 0.00011	< 0.00011	< 0.00011	< 0.000060	<0.00006	<0.0001	< 0.00010
	Chromium	mg/L	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039	< 0.00039	< 0.00039	< 0.00055	< 0.00055	< 0.00055	< 0.0011	< 0.0011	< 0.0011	0.0008 J	0.0006 J	0.0006 J	0.0005 J
	Cobalt	mg/L	0.027	0.024	0.018	------	0.013	0.009	0.016	0.0051	0.011	0.0078	0.0064	0.014	0.012	0.0034 J	0.0024 J	0.0014 J	0.0007 J
	Lead	mg/L	< 0.00027	< 0.00027	< 0.00027	------	< 0.000046	< 0.000046	< 0.000046	< 0.000036	< 0.000036	< 0.000036	< 0.00089	< 0.00089	< 0.00089	0.00009 J	0.0001 J	0.0002 J	< 0.000070
	Lithium	mg/L	0.011 J	0.0084 J	0.0077 J	------	0.0092 J	0.0094 J	0.0077 J	0.0085 J	0.0089 J	0.0083 J	0.0091 J	0.0091 J	0.0083 J	0.0054 J	0.002 J	<0.0015	< 0.0015
	Mercury	mg/L	< 0.000036	< 0.000036	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	< 0.000041	<0.000041	0.00007 J	< 0.000041
	Molybdenum	mg/L	0.035	0.034	0.029	------	0.031	0.037	0.026	0.012	0.039	0.018	0.025	0.026	0.027	< 0.00060	<0.0006	<0.001	< 0.0010
	Selenium	mg/L	< 0.0014	< 0.0014	< 0.0014	------	< 0.0013	< 0.0013	< 0.0013	< 0.0016	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014	< 0.0014	<0.0014	<0.0018	< 0.0018
	Thallium	mg/L	< 0.00014	< 0.00014	< 0.00014	------	< 0.000052	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.000050	<0.00005	<0.00005	< 0.000050
	Radium	pCi/L	2.14	4.65	3.05	------	2.68	1.89	3.51	1.04	2.27	1.63	2.72	2.1	1.69	0.866 U	0.288 U	1.01 U	0.254 U
	Radium-226	pCi/L	0.372	2.18	2.23	------	1.38	1.26	2.32	0.706	0.95	0.844	1.42	0.925	------	0.263	------	------	0.0557 U
	Radium-228	pCi/L	1.77	2.47	0.819 U	------	1.3	0.626 U	1.19	0.337 U	1.32	0.786 U	1.3	1.17	------	0.603 U	------	------	0.198 U
Field Measured	Conductivity	uS/cm	378.52	------	334.2	374.1	208.5	190.3	240.4	149.9	210.82	195.64	198	171.6	0.2	81.61	81.1	62.9	68.8
	Dissolved Oxygen	mg/L	0.11	------	0.61	0.55	0.88	4.85	0.32	2.84	0.42	0.91	1.41	2.97	1.70	2.33	4.94	4.12	4.97
	Oxidation Reduction Potential	millivolts	32.5	------	30.6	89.2	51.8	15.2	-50.4	161.6	-21.2	53.7	16.7	72.3	20.9	-56.11	124.8	26.6	38.6
	Temperature	Deg C	16.51	------	17.81	15.03	26.84	20.35	18.69	24.69	20.64	25.66	23.38	14.31	21.90	18.52	22.52	22.34	21.16
	Turbidity	ntu	7.95	------	17.90	9.91	2.99	2.27	8.84	4.11	4.05	8.6	4.5	11.99	4.39	4.11	3.53	9.12	3.55
	Water level depth	ft	13.66	------	14.91	12.63	16.65	15.05	22.06	21.52	15.71	13.7	14.6	19.2	27.45	26.06	41.68	41.92	41.95
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	------	91.0	------	82.9	78.6	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	73	------	------	------	91.0	------	82.9	78.6	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	< 20	------	------	------	< 5.0	------	< 1.8	< 5.0	------	------	------	------
	Aluminum	mg/L	------	------	------	------	------	< 0.032	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	1.4	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	< 0.20	------	------	------	------	------	------	5.4	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	2.4	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	< 0.20	------	------	------	------	------	------	3.0	------	------	------	------
	Magnesium	mg/L	------	------	------	------	------	5.3	------	------	------	6.5	------	6.9	5.8	------	------	------	------
	Manganese	mg/L	------	------	------	------	------	2.9	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	0.24	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	------	3.6	------	------	------	3.9	------	4.2	3.6	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	18.2	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	------	6.1	------	------	------	9.0	------	8.9	7.3	------	------	------	------
	Sulfide	mg/L	------	------	------	------	------	<0.363	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	1.9	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-70A	DGWA-71
			8/8/2017	10/24/2017	1/23/2018	2/27/2018	7/10/2018	11/6/2018	3/12/2019	8/27/2019	10/15/2019	3/2/2020	8/11/2020	9/22/2020	3/1/2021	9/9/2021	1/18/2022	9/7/2022	3/28/2017
Appendix III	Boron	mg/L	<0.006	0.0082 J	------	0.0062 J	0.0077 J	0.0065 J	0.0073 J	------	<0.0049	0.0055 J	------	< 0.0052	< 0.0052	< 0.0086	0.024 J	< 0.0086	0.0097 J
	Calcium	mg/L	5.2	4.93	4.95	5.6	5.0	5.5	5.1	------	5.1	5.3	------	5	4.1	5.3	6.1	5.9	8.31
	Chloride	mg/L	2.20	2.4	2.4	2.50	1.90	2.30	2.50	------	2.20	1.9	------	1.9	1.9	1.9	1.9	2.10	3.6
	Fluoride	mg/L	0.04 J	< 0.030	------	<0.029	0.082 J	<0.029	0.039 J	< 0.029	<0.029	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.061 J	0.06 J
	pH, field measured	S.U.	5.60	5.71	------	5.50	5.44	5.71	5.52	5.53	5.61	5.54	5.86	6.01	5.43	5.5	5.5	5.60	5.94
	Sulfate	mg/L	1.5	1.4	0.67 J	0.54 J	0.25 J	0.12 J	0.35 J	------	0.16 J	< 0.50	------	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	17
	Total Dissolved Solids	mg/L	53	49	------	43	80	65	43	------	70	52	------	46	25.0	53	54	34	90
Appendix IV	Antimony	mg/L	<0.0006	< 0.00060	------	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	0.0013 J	< 0.00028	< 0.00028	0.0015 J	< 0.00078	< 0.00078	0.0007 J
	Arsenic	mg/L	<0.0005	< 0.00050	<0.00052	< 0.00057	< 0.00057	< 0.00057	------	< 0.00035	0.00052 J	< 0.00035	< 0.00078	< 0.00078	< 0.00078	< 0.0011	0.0046 J	0.0024 J	< 0.00040
	Barium	mg/L	0.0277	0.0333	------	0.034	0.037	0.037	------	0.037	0.034	0.035	0.041	0.038	0.042	0.038	0.043	0.039	0.0378
	Beryllium	mg/L	<0.00009	< 0.000090	------	0.000063 J	0.000095 J	0.00012 J	------	0.000079 J	< 0.000074	0.000096 J	0.00013 J	0.000068 J	0.00012 J	0.000089 J	0.000092 J	0.000084 J	0.00009 J
	Cadmium	mg/L	<0.0001	< 0.00010	------	< 0.000093	< 0.000093	< 0.000093	------	< 0.00011	< 0.00011	0.00041 J	< 0.00012	< 0.00012	< 0.00012	< 0.00011	< 0.00011	< 0.00011	< 0.000060
	Chromium	mg/L	0.0005 J	0.0005 J	------	< 0.0016	< 0.0016	< 0.0016	------	0.00071 J	0.034	0.0013 J	0.0016 J	0.00089 J	< 0.00055	< 0.0011	< 0.0011	< 0.0011	0.0023 J
	Cobalt	mg/L	0.0007 J	< 0.00030	------	< 0.00052	< 0.00052	< 0.00052	------	< 0.00030	0.00064 J	0.00037 J	0.0012 J	< 0.00038	< 0.00038	< 0.00039	< 0.00039	< 0.00039	0.0033 J
	Lead	mg/L	0.00007 J	< 0.000070	------	< 0.00027	< 0.00027	< 0.00027	------	0.000078 J	< 0.000046	0.000074 J	0.0003 J	0.000078 J	< 0.000036	< 0.00089	< 0.00089	< 0.00089	< 0.000070
	Lithium	mg/L	<0.0015	< 0.0015	------	< 0.00097	< 0.00097	< 0.00097	------	< 0.00078	< 0.00078	< 0.00078	0.0019 J	< 0.00081	< 0.00081	< 0.00073	< 0.00073	< 0.00073	0.0025 J
	Mercury	mg/L	<0.000036	< 0.000036	------	< 0.000036	< 0.000055 J	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	< 0.000041
	Molybdenum	mg/L	<0.001	< 0.0010	------	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	0.0009 J
	Selenium	mg/L	<0.0018	< 0.0018	------	< 0.0014	< 0.0014	< 0.0014	------	< 0.0013	< 0.0013	< 0.0013	< 0.0016	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014	< 0.0014
	Thallium	mg/L	<0.00005	< 0.000050	------	< 0.00014	< 0.00014	< 0.00014	------	< 0.000052	< 0.000052	0.000078 J	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	0.00006 J
	Radium	pCi/L	1.48	0.472 U	------	1.22	0.362 U	0.859 U	------	1.97	0.319 U	0.419 U	0.812 U	0.45 U	0.552 U	0.779 U	1.26	0.504 U	0.257 U
	Radium-226	pCi/L	------	0.471	------	0.138 U	0.362	0.328	------	1.11	0.2 U	0.267 U	0.178 U	0.178 U	0.121 U	-0.0648 U	0.0285 U	------	0.0695 U
	Radium-228	pCi/L	------	0.00142 U	------	1.08	-0.0842 U	0.531 U	------	0.863	0.119 U	0.152 U	0.634 U	0.272 U	0.431 U	0.779	1.23	------	0.187 U
Field Measured	Conductivity	uS/cm	73.1	72.19	------	68.3	60.5	67.2	63.3	65.7	66.7	54.6	61.2	59.6	51.09	67.29	71.6	70.0	134.53
	Dissolved Oxygen	mg/L	4.92	4.82	------	4.33	4.79	4.40	5.31	4.61	5.11	5.20	8.28	4.43	3.86	4.91	4.78	4.62	0.74
	Oxidation Reduction Potential	millivolts	169.8	219.41	------	91.6	86.6	38.8	127.8	75.1	108.5	148.6	143.5	97.5	371.8	90.7	164.6	137.2	-23.89
	Temperature	Deg C	17.82	20.17	------	17.10	20.20	17.53	18.11	20.17	13.80	15.26	18.32	17.36	17.41	18.3	16.15	18.99	18.65
	Turbidity	ntu	4.02	1.29	------	2.14	4.91	3.17	1.93	1.12	0.19	2.30	3.94	3.67	0.75	0.65	0.44	0.00	4.84
	Water level depth	ft	42.28	41.96	------	41.24	40.60	41.59	37.21	41.05	43.75	38.90	39.88	41.14	39.1	41.57	41.78	43.38	29.13
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	25	------	------	------	------	------	------	------	------	------	20.4	------	27	27.6	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	23	------	------	------	20.4	------	27	27.6	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	< 20	------	------	------	< 5.0	------	< 1.8	< 5.0	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	< 0.032	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	0.0279 J	------	------	------	------	------	0.25	------	------	------	------	------	------	< 0.025	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.025	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------	0.0	------
	Magnesium	mg/L	------	------	2.18	------	------	------	------	------	2.2	------	------	------	2.1	------	2.4	2.3	------
	Manganese	mg/L	------	------	0.0212	------	------	------	------	------	< 0.0061	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	< 0.0050	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	0.1	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	1.66	------	------	------	------	------	1.6	------	------	------	1.6	------	1.7	1.6	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	8.2	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	3.61	------	------	------	------	------	3.1	------	------	------	2.6	------	3.5	3.4	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	<0.363	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	<0.5	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71	DGWA-71
			5/12/2017	6/16/2017	7/11/2017	10/24/2017	11/15/2017	1/22/2018	2/27/2018	7/10/2018	11/6/2018	3/12/2019	8/27/2019	10/15/2019	3/2/2020	8/11/2020	9/22/2020	3/1/2021	9/8/2021
Appendix III	Boron	mg/L	0.0082 J	0.0085 J	0.0077 J	0.0083 J	------	------	0.0069 J	0.0059 J	0.0067 J	0.0068 J	------	0.0054 J	0.01 J	------	< 0.0052	0.0054 J	< 0.0086
	Calcium	mg/L	8.0	7.7	7.71	6.86	------	5.8	6.1	5.7	5.7	5.5	------	5.1	5.8	------	5.4	5.9	6.1
	Chloride	mg/L	3.80	3.40	3.1	3.2	3.1	3.8	3.20	2.50	2.60	3.30	------	3.30	3	------	5.2	3.9	5.9
	Fluoride	mg/L	<0.004	0.008 J	0.007 J	< 0.030	< 0.030	------	<0.029	<0.029	<0.029	<0.029	< 0.029	<0.029	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	pH, field measured	S.U.	5.46	5.81	5.74	5.86	5.77	------	5.66	5.63	5.79	5.74	5.87	5.88	5.77	5.96	6.06	5.80	5.76
	Sulfate	mg/L	17	11	11	9.6	7.8	7.6	7.4	7.2	7.3	7	------	7.4	8.5	------	6.5	5.2	6.1
	Total Dissolved Solids	mg/L	92	100	59	117	90	------	79	88	85	74	------	89	67	------	74	62.0	75
Appendix IV	Antimony	mg/L	<0.0003	0.0007 J	< 0.00060	< 0.00060	------	------	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	0.0018 J	0.0018 J	< 0.00028	0.0019 J	< 0.00078
	Arsenic	mg/L	0.0004 J	<0.0005	< 0.00050	< 0.00050	------	< 0.00052	< 0.00057	< 0.00057	< 0.00057	------	< 0.00035	0.00071 J	< 0.00035	< 0.00078	< 0.00078	< 0.00078	< 0.0011
	Barium	mg/L	0.04	0.0369	0.0362	0.0313	------	------	0.029	0.027	0.026	------	0.027	0.024	0.026	0.026	0.024	0.028	0.025
	Beryllium	mg/L	<0.00007	0.0001 J	< 0.000090	< 0.000090	------	------	0.000092 J	0.000091 J	0.00013 J	------	< 0.000074	0.000088 J	0.0001 J	0.00011 J	0.000069 J	0.00011 J	0.000091 J
	Cadmium	mg/L	<0.00006	<0.0001	< 0.00010	< 0.00010	------	------	< 0.000093	< 0.000093	< 0.000093	------	< 0.00011	< 0.00011	< 0.00011	< 0.00012	< 0.00012	< 0.00012	< 0.00011
	Chromium	mg/L	0.0004 J	0.0005 J	< 0.00050	< 0.00050	------	------	< 0.0016	< 0.0016	< 0.0016	------	0.0018 J	0.0025 J	0.00045 J	0.0006 J	< 0.00055	< 0.00055	< 0.0011
	Cobalt	mg/L	0.0016 J	0.0011 J	0.0008 J	0.0004 J	------	------	< 0.00052	< 0.00052	< 0.00052	------	< 0.00030	< 0.00030	< 0.00030	< 0.00038	< 0.00038	< 0.00038	< 0.00039
	Lead	mg/L	0.00008 J	<0.00007	< 0.000070	< 0.000070	------	------	< 0.00027	< 0.00027	< 0.00027	------	< 0.000046	< 0.000046	< 0.000046	< 0.000036	< 0.000036	< 0.000036	< 0.00089
	Lithium	mg/L	0.0016 J	0.0016 J	< 0.0015	< 0.0015	------	------	0.0013 J	0.0012 J	0.0014 J	------	0.0014 J	0.0012 J	0.0011 J	0.0015 J	0.0012 J	0.0012 J	0.0013 J
	Mercury	mg/L	0.00006 J	0.00007 J	< 0.000041	< 0.000036	------	------	< 0.000036	< 0.00010 J	0.000041 J	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	0.000090 J	0.000096 J
	Molybdenum	mg/L	<0.0006	<0.001	< 0.0010	< 0.0010	------	------	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074
	Selenium	mg/L	<0.0014	<0.0018	< 0.0018	< 0.0018	------	------	< 0.0014	< 0.0014	< 0.0014	------	< 0.0013	< 0.0013	< 0.0013	< 0.0016	< 0.0016	< 0.0016	< 0.0014
	Thallium	mg/L	<0.00005	<0.00005	< 0.000050	< 0.000050	------	------	< 0.00014	< 0.00014	< 0.00014	------	< 0.000052	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018
	Radium	pCi/L	0.165 U	0.732 U	0.461 U	0.724 U	------	------	0.714 U	0.426 U	0.455 U	------	1.3 U	1.21 U	1.3	0.965 U	0.216 U	0.389 U	0.051 U
	Radium-226	pCi/L	------	------	0.0113 U	0.278 U	------	------	0.132 U	0.324	0.13 U	------	0.435 U	0.628	0.752	0.217 U	0.216 U	0.0137 U	0.051 U
	Radium-228	pCi/L	------	------	0.45 U	0.446 U	------	------	0.582 U	0.102 U	0.325 U	------	0.867	0.586 U	0.545 U	0.748 U	-0.365 U	0.375 U	-0.185 U
Field Measured	Conductivity	uS/cm	133.5	111.5	104.8	96.26	95.67	------	89.9	76.3	78.8	78.4	73.5	76.1	67.1	78.4	72.2	79.57	77.38
	Dissolved Oxygen	mg/L	0.65	0.53	0.67	2.66	0.81	------	0.60	0.63	0.59	0.39	3.56	0.71	0.31	0.87	0.71	0.33	1.36
	Oxidation Reduction Potential	millivolts	94.5	29.7	11.7	137.13	89.5	------	79.0	75.2	36.2	92.6	78.3	60.2	62.4	109.5	97.7	94.1	128.8
	Temperature	Deg C	18.49	19.19	21.73	17.95	16.91	------	16.12	19.13	18.44	17.96	21.27	14.62	16.29	18.68	17.83	17.58	20.69
	Turbidity	ntu	4.51	5.06	1.79	1.73	4.72	------	0.62	2.22	2.38	2.71	3.33	1.99	0.57	2.22	1.21	0.28	1.88
	Water level depth	ft	28.74	28.80	28.65	28.98	29.09	------	28.63	28.71	29.53	26.60	29.00	29.96	26.60	29.02	29.22	27.57	28.22
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	29	------	------	------	------	------	------	------	------	------	23.9	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	------	------	------	21	------	------	------	23.9	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	------	------	------	< 20	------	------	------	< 5.0	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	0.07 J	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	< 0.50	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	0.273	------	------	------	------	------	0.25	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------
	Magnesium	mg/L	------	------	------	------	------	0.941	------	------	------	------	------	0.77	------	------	------	0.85	------
	Manganese	mg/L	------	------	------	------	------	0.1	------	------	------	------	------	0.043	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	0.5	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	0.1	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	------	0.745	------	------	------	------	------	0.75	------	------	------	0.76	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	15.5	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	------	8.97	------	------	------	------	------	7	------	------	------	8.6	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	<0.363	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	<0.5	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWA-71	DGWA-71	DGWC-2	DGWC-2	DGWC-2	DGWC-2	DGWC-2	DGWC-2	DGWC-2	DGWC-2	DGWC-2	DGWC-2	DGWC-2	DGWC-2	DGWC-2	DGWC-2	DGWC-2
			1/18/2022	9/7/2022	3/30/2017	5/11/2017	6/15/2017	2/27/2018	7/11/2018	11/6/2018	3/12/2019	8/27/2019	10/17/2019	3/3/2020	8/11/2020	9/23/2020	3/2/2021	9/9/2021	1/20/2022
Appendix III	Boron	mg/L	0.015 J	< 0.0086	1.56	1.65	1.44	1.1	0.82	0.90	0.72	------	0.73	0.68	------	0.57	0.52	0.51	0.5
	Calcium	mg/L	6.6	6.4	103.0	102.0	96.2	66.7	55.0	54.5	52.2	------	47.2	48.4	------	44.4	44.0	42	44.6
	Chloride	mg/L	5.9	8.20	4.80	4.40	4.80	4.1	3.30	3.70	3.10	------	2.80	2.3	------	2.1	2.1	2.1	2
	Fluoride	mg/L	< 0.050	0.056 J	0.06 J	0.06 J	0.07 J	0.28 J	0.6	<0.029	0.052 J	< 0.029	0.042 J	< 0.050	< 0.050	< 0.050	< 0.050	0.053 J	< 0.050
	pH, field measured	S.U.	5.51	5.65	5.75	5.67	5.75	5.85	5.85	5.88	5.94	5.94	6.16	5.94	6.04	5.99	6.01	6	5.93
	Sulfate	mg/L	6.3	7	360	340	300	189	162	190	159	------	134	118	------	122	112	110	101
	Total Dissolved Solids	mg/L	76	82	580	573	626	401	334	334	297	------	302	277	------	267	241	260	238
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	<0.0003	<0.0003	0.0006 J	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078
	Arsenic	mg/L	0.0054	< 0.0022	<0.0004	<0.0004	<0.0005	< 0.00057	< 0.00057	< 0.00057	------	0.00099 J	< 0.00035	0.0025 J	< 0.00078	< 0.00078	< 0.00078	< 0.0011	0.0023 J
	Barium	mg/L	0.029	0.025	0.0232	0.0231	0.0223	0.021	0.022	0.021	------	0.023	0.022	0.022	0.022	0.023	0.023	0.022	0.022
	Beryllium	mg/L	0.00012 J	0.000075 J	<0.00007	<0.00007	<0.00009	< 0.000050	< 0.000050	< 0.000050	------	< 0.000074	< 0.000074	< 0.000074	< 0.000046	< 0.000046	< 0.000046	< 0.000054	< 0.000054
	Cadmium	mg/L	< 0.00011	< 0.00011	0.0005 J	0.0004 J	0.0003 J	0.00062 J	0.00018 J	0.00014 J	------	0.00012 J	0.00013 J	0.00014 J	< 0.00012	0.00013 J	< 0.00012	< 0.00011	< 0.00011
	Chromium	mg/L	< 0.0011	< 0.0011	0.0005 J	0.0005 J	<0.0005	< 0.0016	< 0.0016	< 0.0016	------	0.0004 J	0.00046 J	< 0.00039	0.00067 J	< 0.00055	0.00064 J	< 0.0011	< 0.0011
	Cobalt	mg/L	< 0.00039	< 0.00039	0.0255	0.0284	0.0238	0.042	0.02	0.024	------	0.0088 J	0.0084	0.0073	0.0064	0.0062	0.0055	0.0048 J	0.004 J
	Lead	mg/L	< 0.00089	< 0.00089	0.0001 J	0.00009 J	0.0001 J	< 0.00027	< 0.00027	< 0.00027	------	0.00006 J	0.000086 J	< 0.000046	0.000064 J	0.000094 J	0.00014 J	< 0.00089	< 0.00089
	Lithium	mg/L	0.0013 J	0.0012 J	0.0807	0.085	0.0781	0.088	0.033 J	0.037 J	------	0.032 J	0.029 J	0.026 J	0.028 J	0.022 J	0.023 J	0.024 J	0.024 J
	Mercury	mg/L	0.00015 J	0.00013 J	0.00007 J	0.000083 J	0.00008 J	< 0.000036	< 0.000036	< 0.00064	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013
	Molybdenum	mg/L	< 0.00074	< 0.00074	0.0009 J	0.0009 J	<0.001	< 0.0019	< 0.0019	< 0.0019	------	0.002 J	0.0018 J	0.0022 J	0.002 J	0.0022 J	0.0021 J	0.0023 J	0.0022 J
	Selenium	mg/L	< 0.0014	< 0.0014	<0.0014	<0.0014	<0.0018	0.0017 J	0.0045 J	0.0046 J	------	0.0069 J	0.0051 J	0.0047 J	0.0053 J	0.0046 J	0.0037 J	0.0031 J	0.0031 J
	Thallium	mg/L	< 0.00018	< 0.00018	<0.00005	<0.00005	<0.00005	< 0.00014	< 0.00014	< 0.00014	------	< 0.000052	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018
	Radium	pCi/L	0.729 U	0.588 U	0.737 U	0.892 U	0.979 U	0.863 U	0.663 U	0.664	------	1.6	1.74	1.23	1.37	1.96 U	1.54 U	1.22 U	0.722 U
	Radium-226	pCi/L	0.125 U	------	------	------	------	0.308 U	0.663	0.273	------	0.982	1.11	0.664	0.613	0.971	0.417 U	0.4 U	0.508
	Radium-228	pCi/L	0.604 U	------	------	------	------	0.555 U	-0.56 U	0.391 U	------	0.621 U	0.631 U	0.565 U	0.755 U	0.988 U	1.12 U	0.815 U	0.214 U
Field Measured	Conductivity	uS/cm	128.78	77.6	808.7	794.2	709.1	551.07	451.2	472.5	427.7	402.1	415.3	375.0	385.3	377	394.5	372.41	363.96
	Dissolved Oxygen	mg/L	1.11	1.66	1.03	0.11	0.17	0.28	0.22	0.28	0.13	0.13	6.42	0.45	0.56	0.2	0.2	0.2	0.15
	Oxidation Reduction Potential	millivolts	106.8	4.6	-11.8	123.0	74.3	112.2	128.3	74.6	105.0	72.1	88.3	69.2	110.2	44.7	168.6	109.3	156.9
	Temperature	Deg C	16.36	18.80	19.32	21.55	23.34	19.77	21.03	19.50	19.58	21.68	15.61	19.10	19.57	19.21	15.27	20.8	16.94
	Turbidity	ntu	1.67	1.43	4.88	4.47	9.61	2.98	3.10	3.22	1.57	1.57	4.67	0.54	3.67	2.44	3.7	4.19	4.26
	Water level depth	ft	28.57	29.92	29.98	29.08	28.94	30.74	30.55	32.18	29.16	31.28	31.40	29.85	31.12	30.9	30.61	30.15	29.75
Supplemental	Alkalinity as CaCO3, Total	mg/L	22.5	16.0	------	------	------	------	------	------	------	------	------	------	------	------	55.5	------	48.7
	Alkalinity, Bicarbonate as CaCO3	mg/L	22.5	16.0	------	------	------	------	------	------	------	------	54	------	------	------	55.5	------	48.7
	Alkalinity, Carbonate as CaCO3	mg/L	< 1.8	< 5.0	------	------	------	------	------	------	------	------	< 20	------	------	------	< 5.0	------	< 1.8
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	0.2	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	< 0.50	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	< 0.025	------	------	------	------	------	------	------	------	0.4	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	< 0.025	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	0.0	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------
	Magnesium	mg/L	0.93	0.9	------	------	------	------	------	------	------	------	10.4	------	------	------	9.5	------	9.2
	Manganese	mg/L	------	------	------	------	------	------	------	------	------	------	1.4	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	0.095	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	< 0.020	------	------	------	------	------	------
	Potassium	mg/L	0.66	0.8	------	------	------	------	------	------	------	------	6.1	------	------	------	6.1	------	6
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	14.8	------	------	------	------	------	------
	Sodium	mg/L	9.1	8.1	------	------	------	------	------	------	------	------	11	------	------	------	10.5	------	10.4
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	<0.2	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	<0.5	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	<0.018	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-2	DGWC-4	DGWC-4	DGWC-4	DGWC-4	DGWC-4	DGWC-4	DGWC-4	DGWC-4	DGWC-4	DGWC-4	DGWC-4	DGWC-4	DGWC-4	DGWC-4	DGWC-4	DGWC-4
			9/20/2022	3/28/2017	5/12/2017	6/15/2017	7/11/2017	10/24/2017	11/15/2017	2/27/2018	7/10/2018	11/6/2018	3/12/2019	8/27/2019	10/15/2019	3/2/2020	8/12/2020	9/22/2020	3/1/2021
Appendix III	Boron	mg/L	0.42	4.01	3.58	3.58	3.85	3.82	------	4.10	4.50	4.10	4.60	------	5.00	5.9	------	4.3	4.7
	Calcium	mg/L	37.8	229	233.0	224.0	249	232	------	245.0	275.0	284.0	295.0	------	276.0	320	------	263	322
	Chloride	mg/L	2.00	29	29.00	28.00	28	28	27	24.60	24.90	24.80	24.20	------	20.90	18.7	------	17	15.0
	Fluoride	mg/L	0.076 J	0.17 J	<0.004	0.02 J	0.02 J	< 0.030	0.79	<0.029	0.36	<0.029	0.082 J	<0.029	<0.029	< 0.050	< 0.050	< 0.050	< 0.050
	pH, field measured	S.U.	5.98	6.01	5.87	6.03	6.04	5.99	5.92	6.03	5.96	5.97	5.85	5.84	5.98	5.88	5.93	5.88	5.82
	Sulfate	mg/L	98.4	680	680	730	740	930	820	811	787	902	987	------	888	840	------	800	840
	Total Dissolved Solids	mg/L	230	1160	1230	1290	1160	229	1330	1380	1390	1480	1490	------	1520	1540	------	1400	1140
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00030	<0.0003	0.0008 J	< 0.00060	< 0.00060	------	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	0.00058 J	< 0.00028	< 0.00028	0.00049 J
	Arsenic	mg/L	< 0.0022	0.0005 J	0.0005 J	<0.0005	0.0008 J	< 0.00050	------	< 0.00057	< 0.00057	< 0.00057	------	< 0.00035	< 0.00035	< 0.00035	< 0.00078	< 0.00078	< 0.00078
	Barium	mg/L	0.02	0.0363	0.0337	0.03	0.0301	0.0351	------	0.036	0.036	0.035	------	0.036	0.033	0.036	0.036	0.03	0.039
	Beryllium	mg/L	< 0.000054	0.0002 J	0.0002 J	0.0001 J	0.0001 J	0.0002 J	------	0.00018 J	0.00017 J	< 0.00021 J	------	0.00024 J	0.00022 J	0.00025 J	0.00024 J	0.00019 J	0.00027 J
	Cadmium	mg/L	< 0.00011	0.0006 J	0.0006 J	0.0005 J	0.0006 J	0.0007 J	------	0.00074 J	0.00065 J	0.00071 J	------	0.00072 J	0.00077 J	0.00088 J	0.0008 J	0.00065 J	0.00085
	Chromium	mg/L	< 0.0011	0.0005 J	<0.0003	<0.0005	< 0.00050	< 0.00050	------	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039	< 0.00039	< 0.00039	< 0.00055	< 0.00055	< 0.00055
	Cobalt	mg/L	0.0028 J	0.0018 J	0.0015 J	0.0015 J	0.0015 J	0.0017 J	------	0.0018 J	0.0018 J	0.0018 J	------	0.0018 J	0.0018 J	0.0021 J	0.0018 J	0.0014 J	0.0020 J
	Lead	mg/L	< 0.00089	0.0002 J	<0.00007	<0.00007	< 0.000070	< 0.000070	------	< 0.00027	< 0.00027	< 0.00027	------	0.000049 J	0.0001 J	< 0.000046	< 0.000036	< 0.000036	0.00012 J
	Lithium	mg/L	0.021 J	0.0031 J	0.0027 J	0.0025 J	0.0022 J	0.0024 J	------	0.0027 J	0.003 J	0.0029 J	------	0.0033 J	0.0029 J	0.0035 J	0.0031 J	0.0026 J	0.0035 J
	Mercury	mg/L	< 0.00013	< 0.000041	0.000082 J	0.00008 J	< 0.000041	< 0.000036	------	< 0.000036	< 0.000055 J	< 0.00059	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078
	Molybdenum	mg/L	0.0021 J	0.008 J	0.0062 J	0.0044 J	0.0041 J	0.0072 J	------	0.0069 J	0.0044 J	0.0065 J	------	0.0065 J	0.0061 J	0.0059 J	0.0057 J	0.0028 J	0.0051 J
	Selenium	mg/L	0.0018 J	< 0.0014	<0.0014	<0.0018	< 0.0018	< 0.0018	------	< 0.0014	< 0.0014	< 0.0014	------	< 0.0013	0.0014 J	< 0.0013	< 0.0016	< 0.0016	< 0.0016
	Thallium	mg/L	< 0.00018	< 0.000050	<0.00005	<0.00005	< 0.000050	< 0.000050	------	< 0.00014	< 0.00014	< 0.00014	------	< 0.000052	0.000073 J	< 0.000052	< 0.00014	< 0.00014	< 0.00014
	Radium	pCi/L	0.450 U	1.36	1.15	0.765 U	1.13	1.24	------	1.82	1.37	1.2	------	1.79	2.11 U	1.99	1.95	1.43 U	1.05 U
	Radium-226	pCi/L	------	0.598	------	------	0.372	0.882	------	0.695	0.588	0.503	------	0.752	1.06	0.968	0.708	0.536	0.778
	Radium-228	pCi/L	------	0.764 U	------	------	0.754	0.361 U	------	1.12	0.777 U	0.701	------	1.04	1.05 U	1.02	1.24	0.89 U	0.273 U
Field Measured	Conductivity	uS/cm	334.5	1464.33	1528.3	1440.3	1484	1501.7	1654.8	1609.3	1604.6	1630.7	1791.5	1760.7	1675.8	1696.6	1744	1697.7	1762.53
	Dissolved Oxygen	mg/L	0.42	0.2	0.27	0.23	0.23	0.21	0.29	0.17	0.33	2.33	0.40	0.26	0.18	0.18	0.16	0.22	0.13
	Oxidation Reduction Potential	millivolts	122.4	83.26	150.7	77.6	67.7	74.8	112.4	124.2	567.1	111.0	75.9	108.7	81.6	66.4	123.6	41.1	132.6
	Temperature	Deg C	21.06	19.99	23.75	24.82	21.9	20.2	16.07	15.20	21.11	18.59	17.59	20.39	18.70	16.47	19.94	17.64	16.78
	Turbidity	ntu	1.16	7.45	1.20	3.50	0.24	2.2	1.2	0.41	0.85	1.22	4.82	4.38	0.88	0.83	2.02	0.18	3.18
	Water level depth	ft	30.90	16.38	16.80	16.64	16.17	18.66	19.08	19.20	20.80	21.95	20.29	23.13	23.77	20.51	24.15	23.62	23.41
Supplemental	Alkalinity as CaCO3, Total	mg/L	47.5	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	151
	Alkalinity, Bicarbonate as CaCO3	mg/L	47.5	------	------	------	------	------	------	------	------	------	------	------	136	------	------	------	151
	Alkalinity, Carbonate as CaCO3	mg/L	< 5.00	------	------	------	------	------	------	------	------	------	------	------	< 20	------	------	------	< 5.0
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	< 0.032	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	< 0.50	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	< 0.025	------	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	< 0.025	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	0.0	------	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------
	Magnesium	mg/L	7.6	------	------	------	------	------	------	------	------	------	------	------	33.3	------	------	------	39.0
	Manganese	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	24.5	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	0.094	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	0.0	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	5.1	------	------	------	------	------	------	------	------	------	------	------	9	------	------	------	10.4
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	12.9	------	------	------	------
	Sodium	mg/L	9.5	------	------	------	------	------	------	------	------	------	------	------	51.1	------	------	------	63.0
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	<0.363	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	<0.5	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-4	DGWC-4	DGWC-4	DGWC-5	DGWC-5	DGWC-5	DGWC-5	DGWC-5	DGWC-5	DGWC-5	DGWC-5	DGWC-5	DGWC-5	DGWC-5	DGWC-5	DGWC-5	DGWC-5
			9/10/2021	1/24/2022	9/19/2022	8/31/2016	12/6/2016	3/28/2017	7/11/2017	10/25/2017	2/27/2018	7/10/2018	11/6/2018	3/12/2019	8/27/2019	10/16/2019	3/2/2020	8/12/2020	9/22/2020
Appendix III	Boron	mg/L	5	5.1	4.80	7.5	5.64	6.16	4.61	4	4.30	3.20	4.20	4.30	------	4.30	5.5	------	4.6
	Calcium	mg/L	285	299	376.0	82.6	73.9	89.1	84.6	95.6	108.0	71.4	124.0	110.0	------	109.0	116	------	99.2
	Chloride	mg/L	13.9	12.5	11.20	8.6	8	9.5	9	9.4	9.70	9.70	10.20	10.60	------	11.60	10.5	------	10.5
	Fluoride	mg/L	< 0.050	< 0.050	0.061 J	1	0.76	1.2	0.7	1.4	1.3	0.42	0.04 J	0.31	0.32	0.32	0.33	0.13	0.12
	pH, field measured	S.U.	5.83	5.79	5.76	4.31	4.43	4.44	4.46	4.54	4.87	4.77	4.89	4.42	4.83	4.78	4.8	4.84	4.83
	Sulfate	mg/L	823	816	925	400	460	380	440	510	453	400	556	484	------	493	455	------	423
	Total Dissolved Solids	mg/L	1520	1520	1670	524	690	545	612	650	698	635	809	711	------	702	759	------	716
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080	< 0.00030	< 0.00060	< 0.00060	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	0.00032 J	< 0.00028	< 0.00028
	Arsenic	mg/L	< 0.0011	0.0011 J	< 0.0022	0.0035 J	0.0032 J	0.0385	0.0203	0.0119	0.0094	0.0057	< 0.00057	------	< 0.00035	0.0036 J	0.0052	0.002 J	0.0062
	Barium	mg/L	0.032	0.035	0.032	0.0266	0.0186	0.0187	0.0174 J	0.0175	0.017	0.015	0.016	------	0.017	0.02	0.018	0.017	0.017
	Beryllium	mg/L	0.00028 J	0.00033 J	0.00034 J	0.0054	0.0064	0.0049	0.005	0.0069	0.0086	0.0048	0.01	------	0.01	0.0072	0.0098	0.0081	0.0081
	Cadmium	mg/L	0.0009	0.00098	0.00091	0.0002 J	0.0004 J	0.0002 J	0.0003 J	0.0006 J	0.00072 J	0.00034 J	0.00098 J	------	0.00082 J	0.00069 J	0.00089 J	0.00079 J	0.00072 J
	Chromium	mg/L	< 0.0011	< 0.0011	< 0.0011	< 0.0047	< 0.00090	< 0.00030	< 0.0045	< 0.00050	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039	< 0.00039	0.00045 J	< 0.00055	< 0.00055
	Cobalt	mg/L	0.0019 J	0.0019 J	0.0018 J	0.055	0.0432	0.04	0.0351 J	0.0209	0.024	0.025	0.019	------	0.02	0.022	0.028	0.021	0.02
	Lead	mg/L	< 0.00089	< 0.00089	< 0.00089	0.0002 J	0.0004 J	< 0.00030	< 0.00030	0.0024 J	< 0.00027	< 0.00027	< 0.00027	------	0.000051 J	0.000085 J	0.000051 J	0.000063 J	0.000048 J
	Lithium	mg/L	0.0035 J	0.0038 J	0.0037 J	0.0026 J	0.0046 J	0.0028 J	0.0031 J	0.0055 J	0.0066 J	0.0034 J	0.0082 J	------	0.008 J	0.006 J	0.0079 J	0.0067 J	0.0065 J
	Mercury	mg/L	0.00013 J	0.00022	< 0.00013	0.00015 J	0.00012 J	0.00017 J	0.0002 J	0.00009 J	< 0.000090 J	< 0.00018 J	< 0.00055	------	0.00016 J	< 0.00014	< 0.00014	0.00017 J	0.0002 J
	Molybdenum	mg/L	0.0052 J	0.0045 J	0.0037 J	< 0.0017	< 0.0017	< 0.00060	< 0.0010	< 0.0010	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069
	Selenium	mg/L	< 0.0014	< 0.0014	< 0.0014	0.0182	0.012	0.168	0.0607	0.034	0.035	0.019	0.0026 J	------	0.0031 J	0.015	0.032	0.011	0.04
	Thallium	mg/L	< 0.00018	< 0.00018	< 0.00018	< 0.0010	< 0.00020	0.0002 J	< 0.00030	< 0.00030	< 0.00014	< 0.00014	< 0.00014	------	< 0.000052	0.000078 J	0.000062 J	< 0.00014	< 0.00014
	Radium	pCi/L	1.46	0.944 U	1.55	2.49	0.348 U	0.693 U	1.38	2.06	1.97	1.03 U	1.13	------	1.81	1.63	2.28	1.13	1.4 U
	Radium-226	pCi/L	0.266 U	0.33	------	0.504	0.283	0.415	0.33	1.98	0.637	0.357	0.584	------	0.679	0.949	1.1	0.362	0.561 U
	Radium-228	pCi/L	1.19	0.614 U	------	1.99	0.0648 U	0.278 U	1.05	0.0791 U	1.33	0.677 U	0.548 U	------	1.13	0.683 U	1.18	0.772 U	0.841 U
Field Measured	Conductivity	uS/cm	1768.7	2004	1838.2	597.73	759.39	719.7	658.5	703.21	866.7	799.3	966.1	599.9	925.8	860.0	896.3	911.2	894.3
	Dissolved Oxygen	mg/L	0.42	0.42	0.41	0.19	0.25	1.38	1.1	0.42	0.35	1.05	0.19	2.62	0.23	0.23	0.27	0.72	0.33
	Oxidation Reduction Potential	millivolts	72.2	62	160.3	332.5	168.6	337.08	91.6	479.45	137.9	576.3	472.0	332.9	297.7	539.9	96.4	380	528.8
	Temperature	Deg C	19.1	17.36	19.90	26.09	17.72	20.15	23.83	18	16.87	23.11	20.53	17.54	22.00	19.72	16.06	19.73	19.52
	Turbidity	ntu	4.53	2.73	0.92	2.02	3.45	0.32	0.39	0.9	0.13	0.79	1.84	0.12	0.48	0.38	0.51	0.45	0.15
	Water level depth	ft	24.42	24.43	26.20	5.9	5.3	5.99	5.93	6.35	6.68	7.65	7.94	7.19	9.53	9.94	7.73	10.28	9.23
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	131	127.0	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	131	127.0	------	------	------	------	------	------	------	------	------	------	1	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	< 1.8	< 5.00	------	------	------	------	------	------	------	------	------	------	< 1.0	------	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	0.54	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.50	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	< 0.025	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	< 0.025	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	0.0	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------	------
	Magnesium	mg/L	------	37.7	41.3	------	------	------	------	------	------	------	------	------	------	25.2	------	------	------
	Manganese	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	21.9	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	0.3	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	0.0	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	9.8	10.5	------	------	------	------	------	------	------	------	------	------	4.4	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	18.6	------	------	------
	Sodium	mg/L	------	55.1	59.4	------	------	------	------	------	------	------	------	------	------	20.1	------	------	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	<0.363	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	<0.5	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-5	DGWC-5	DGWC-5	DGWC-5	DGWC-8	DGWC-8	DGWC-8	DGWC-8	DGWC-8	DGWC-8	DGWC-8	DGWC-8	DGWC-8	DGWC-8	DGWC-8	DGWC-8	DGWC-8
			3/2/2021	9/10/2021	1/24/2022	9/14/2022	12/6/2016	3/29/2017	7/11/2017	10/24/2017	2/27/2018	7/10/2018	11/6/2018	3/12/2019	8/28/2019	10/16/2019	3/3/2020	8/12/2020	9/23/2020
Appendix III	Boron	mg/L	4.3	4.7	4.4	5.00	2.72	3.04	2.55	2.29	2.10	1.80	1.70	1.50	------	1.20	1.5	------	1
	Calcium	mg/L	114	123	112	117.0	76.8	90.5	91.1	78.1	64.2	59.3	57.0	54.3	------	47.3	46	------	39.3
	Chloride	mg/L	9.8	9.9	9.9	11.20	9.80	9.9	9.7	9.9	9.50	8.70	10.50	10.70	------	10.40	9.6	------	9.1
	Fluoride	mg/L	0.15	0.16	0.19	0.27	0.47	0.51	0.2 J	0.82	0.59	0.14 J	0.35	0.35	0.098 J	0.14 J	< 0.050	0.056 J	< 0.050
	pH, field measured	S.U.	5.00	4.89	4.79	4.75	5.39	5.23	5.33	5.05	5.08	5.11	5.13	5.07	5.11	5.33	5.12	5.3	5.21
	Sulfate	mg/L	412	449	434	505	480	660	440	430	340	280	307	295	------	235	195	------	178
	Total Dissolved Solids	mg/L	730	792	810	850	727	654	679	468	520	472	456	438	------	374	369	------	333
Appendix IV	Antimony	mg/L	0.0015 J	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00030	< 0.00060	< 0.00060	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	< 0.00028
	Arsenic	mg/L	0.0013 J	0.0031 J	0.0019 J	0.0038 J	< 0.0016	0.001 J	0.0012 J	0.0015 J	0.002 J	< 0.00057	< 0.00057	------	< 0.00035	< 0.00035	0.00096 J	< 0.00078	< 0.00078
	Barium	mg/L	0.017	0.015	0.018	0.018	0.0435	0.044	0.0389	0.0369	0.035	0.03	0.027	------	0.025	0.027	0.026	0.034	0.025
	Beryllium	mg/L	0.0063	0.0075	0.0084	0.01	0.0031 J R	0.0031	0.0022 J	0.0042	0.0047	0.003	0.0028 J	------	0.0021 J	0.0019 J	0.0018 J	0.0018 J	0.0015 J
	Cadmium	mg/L	0.00075	0.00093	0.00094	0.00087	0.0024	0.0024	0.0021	0.0029	0.0029	0.0025	0.0027	------	0.0022 J	0.0022 J	0.002 J	0.0021 J	0.0018 J
	Chromium	mg/L	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00090	0.0004 J	< 0.00050	< 0.00050	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039	0.0013 J	0.00061 J	0.0028 J	0.00086 J
	Cobalt	mg/L	0.021	0.022	0.025	0.027	0.0898	0.0902	0.0601	0.123	0.13	0.072	0.077	------	0.051	0.054	0.044	0.053	0.04
	Lead	mg/L	0.000080 J	< 0.00089	< 0.00089	< 0.00089	< 0.00010	0.0001 J	< 0.000070	< 0.000070	< 0.00027	< 0.00027	< 0.00027	------	0.000082 J	0.00029 J	0.00023 J	0.0007 J	0.00011 J
	Lithium	mg/L	0.0064 J	0.0071 J	0.0068 J	0.0081 J	< 0.0206 R	0.0059 J	0.0045 J	0.0072 J	0.0075 J	0.0061 J	0.0051 J	------	0.0048 J	0.0045 J	0.0052 J	0.0058 J	0.0045 J
	Mercury	mg/L	0.000094 J	0.0003	0.00028	0.00022	0.00005 J	0.00012 J	0.00006 J	< 0.000036	< 0.000042 J	< 0.000082 J	< 0.00044 J	------	< 0.00014	< 0.00014	< 0.00014	0.000079 J	< 0.000078
	Molybdenum	mg/L	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017	< 0.00060	< 0.0010	< 0.0010	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069
	Selenium	mg/L	0.0081	0.0099	0.0048 J	0.019	0.0055 J	0.0048 J	0.0031 J	0.0069 J	0.0096 J	< 0.0014	0.0019 J	------	< 0.0013	0.0016 J	0.0018 J	< 0.0016	0.0028 J
	Thallium	mg/L	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00020	0.0002 J	0.0001 J	0.0003 J	0.00033 J	0.00027 J	0.00027 J	------	0.00022 J	0.00025 J	0.00023 J	0.00023 J	0.0002 J
	Radium	pCi/L	0.971 U	1.15	0.807 U	0.665 U	------	0.28 U	0.209 U	0.615 U	1.05 U	0.363 U	0.577 U	------	0.815 U	0.999 U	0.481 U	0.721 U	0.8 U
	Radium-226	pCi/L	0.303 U	0.121 U	0.26	------	------	0.126 U	0.174	0.615	0.536	0.363	0.371	------	0.474	0.649	0.294 U	0.247 U	0.335 U
	Radium-228	pCi/L	0.668 U	1.03	0.547 U	------	------	0.155 U	0.0346 U	-0.0176 U	0.509 U	-0.0736 U	0.206 U	------	0.341 U	0.35 U	0.187 U	0.474 U	0.465 U
Field Measured	Conductivity	uS/cm	952.58	942.71	1081	1020.3	940.7	894.25	871.5	819.77	672.3	601.0	599.6	598.9	524.2	534.2	488.6	494.9	458.5
	Dissolved Oxygen	mg/L	0.37	0.44	0.35	0.50	0.27	0.2	0.2	0.18	0.15	0.29	0.56	0.51	0.07	8.25	0.17	4.97	0.4
	Oxidation Reduction Potential	millivolts	505.2	551.6	503.2	505.7	113.1	32.31	94.3	115.81	71.7	561.7	191.2	99.3	118.1	117.5	107.9	152.9	36.5
	Temperature	Deg C	15.62	20.15	16.85	19.64	15.30	21.24	23.33	17.78	18.12	22.73	20.23	20.93	21.26	15.35	17.86	20.68	21.01
	Turbidity	ntu	1.13	4.41	1.5	2.03	3.27	0.47	0.51	0.44	0.40	1.00	2.45	4.11	1.78	8.67	1.05	4.94	2.54
	Water level depth	ft	11.2	11.5	9.79	11.66	18.01	18.88	15.15	21.26	26.79	28.76	31.40	28.22	32.25	32.85	28.36	32.4	33
Supplemental	Alkalinity as CaCO3, Total	mg/L	9.4	------	6.2	< 5.00	------	------	------	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	9.4	------	6.2	< 5.00	------	------	------	------	------	------	------	------	------	4	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------	------	------	------	------	< 1.0	------	------	------
	Aluminum	mg/L	------	------	------	------	0.224	------	------	------	------	------	------	------	------	0.82	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.50	------	------	------
	Hardness	mg/L	------	------	------	------	413	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	< 0.025	------	0.0055 J	------	------	------	------	------	------	------	< 0.20	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	< 0.025	------	------	------	------	------	------	------	------	------	< 0.20	------	------	------
	Iron, Ferrous	mg/L	------	------	------	0.0	------	------	------	------	------	------	------	------	------	< 0.20	------	------	------
	Magnesium	mg/L	23.9	------	23.1	24.5	46	------	------	------	------	------	------	------	------	22	------	------	------
	Manganese	mg/L	------	------	------	------	5	5.09	------	------	------	------	------	------	------	5.4	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	1.3	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	0.037	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	4.4	------	3.9	3.9	5.83	------	------	------	------	------	------	------	------	5.2	------	------	------
	Silica	mg/L	------	------	------	------	22	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	10.3	------	------	------	------	------	------	------	------	12.2	------	------	------
	Sodium	mg/L	19.1	------	18.3	19.8	22.3	------	------	------	------	------	------	------	------	15.5	------	------	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	<0.363	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	<0.5	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.0	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-8	DGWC-8	DGWC-8	DGWC-8	DGWC-9	DGWC-9	DGWC-9	DGWC-9	DGWC-9	DGWC-9	DGWC-9	DGWC-9	DGWC-9	DGWC-9	DGWC-9	DGWC-9	DGWC-9
			3/2/2021	9/13/2021	1/25/2022	9/15/2022	8/30/2016	12/6/2016	3/28/2017	7/11/2017	10/24/2017	2/27/2018	7/11/2018	11/6/2018	3/12/2019	8/27/2019	10/17/2019	3/3/2020	8/11/2020
Appendix III	Boron	mg/L	0.96	0.86	0.98	0.83	1.72	1.92	2.01	1.78	1.72	1.70	1.4	1.40	1.20	------	1.20	1.1	------
	Calcium	mg/L	35.6	36	36.8	29.3	64.9	59.3	71.6	73.7	92.5	73.1	88.5	81.1	78.1	------	75.6	59.5	------
	Chloride	mg/L	8.6	8.2	9.3	8.30	6.00	6.20	6.6	6.9	6.7	8.20	10.5	8.70	8.50	------	10.00	6.6	------
	Fluoride	mg/L	0.059 J	0.069 J	< 0.050	0.077 J	0.78	1.1	1.1	1.1	1.7	1.2	1.3	1.1	0.97	0.68	1.2	1.4	1.3
	pH, field measured	S.U.	6.60	5.05	5.16	5.20	4.08	4.15	4.16	4.23	4.06	4.04	4.03	4.00	3.98	4.02	4.02	4.07	4
	Sulfate	mg/L	152	145	134	134	300	320	300	320	430	327	344	438	362	------	331	247	------
	Total Dissolved Solids	mg/L	291	306	281	234	414	449	404	436	599	482	532	554	493	------	550	444	------
Appendix IV	Antimony	mg/L	0.00046 J	< 0.00078	< 0.00078	< 0.00078	<0.0008	< 0.00080	< 0.00030	< 0.00060	< 0.00060	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028
	Arsenic	mg/L	< 0.00078	< 0.0011	< 0.0011	< 0.0022	0.0241	0.0206	0.0243	0.0194	0.0249	0.04	0.016	0.017	------	0.021	0.033	0.015	0.022
	Barium	mg/L	0.029	0.019	0.019	0.021	0.0162	0.0154	0.017	0.0154 J	0.0148	0.015	0.017	0.015	------	0.016	0.015	0.016	0.016
	Beryllium	mg/L	0.0012	0.0015	0.0012	0.00088	0.0045	0.0047 J R	0.0052	0.0048	0.0051	0.0057	0.0058	0.006	------	0.007	0.0063	0.0048	0.0062
	Cadmium	mg/L	0.0017	0.002	0.0016	0.0011	0.0004 J	0.0005 J	0.0005 J	0.0005 J	0.0006 J	0.00058 J	0.00067 J	0.0006 J	------	0.00071 J	0.00064 J	0.00059 J	0.00059 J
	Chromium	mg/L	0.0015 J	< 0.0011	< 0.0011	< 0.0011	<0.0009	< 0.00090	0.001 J	< 0.0045	< 0.0023	< 0.0016	< 0.0016	< 0.0016	------	0.00048 J	0.00051 J	0.0057 J	0.00061 J
	Cobalt	mg/L	0.033	0.028	0.019	0.0046 J	0.0896	0.115	0.124	0.136	0.151	0.16	0.18	0.2	------	0.24	0.21	0.2	0.22
	Lead	mg/L	0.00027 J	< 0.00089	< 0.00089	< 0.00089	<0.0006	< 0.00010	< 0.00030	< 0.00030	< 0.00030	< 0.00027	< 0.0014	< 0.0014	------	< 0.00023	< 0.00023	0.00017 J	< 0.00018
	Lithium	mg/L	0.0046 J	0.0034 J	0.0032 J	0.0039 J	0.0212 J	0.0231 J R	0.0249 J	0.022 J	0.0281 J	0.031 J	0.028 J	0.028 J	------	0.031 J	0.029 J	0.028 J	0.032
	Mercury	mg/L	< 0.000078	< 0.000078	< 0.00013	< 0.00013	<0.000041	< 0.000040	< 0.000041	< 0.000041	< 0.000036	< 0.000042 J	< 0.000036	< 0.00046 J	------	0.00021 J	0.00042 J	< 0.00014	0.00026
	Molybdenum	mg/L	< 0.00069	< 0.00074	< 0.00074	< 0.00074	<0.0017	< 0.0017	< 0.00060	< 0.0010	< 0.0010	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069
	Selenium	mg/L	< 0.0016	< 0.0014	< 0.0014	< 0.0014	0.0833	0.0837	0.0954	0.0561	0.0653	0.13	0.045	0.12	------	0.067	0.19	0.046	0.11
	Thallium	mg/L	0.00019 J	0.00019 J	0.00019 J	< 0.00018	<0.001	0.0006 J	0.0007 J	0.0007 J	0.0006 J	0.00038 J	< 0.00071	< 0.00071	------	0.00053 J	0.00076 J	0.00044 J	< 0.00072
	Radium	pCi/L	0.751 U	0.916 U	0.356 U	0.896	1.33	------	1.06	0.62 U	1.21	1.79	1.81	1.13	------	1.55	0.702 U	1.37	0.819 U
	Radium-226	pCi/L	0.204 U	-0.0716 U	0.0721 U	------	0.412	------	0.468	0.328	0.565	0.605	0.667	0.49	------	0.834	0.702	0.926	0.349
	Radium-228	pCi/L	0.547 U	0.916	0.284 U	------	0.92	------	0.594 U	0.292 U	0.649 U	1.18	1.14	0.637	------	0.72	-0.342 U	0.447 U	0.47 U
Field Measured	Conductivity	uS/cm	442.51	395.76	426.6	367.2	589.8	614.24	605.44	622.8	656.24	643.0	666.9	712.9	712.9	739.2	749.2	621.9	675.8
	Dissolved Oxygen	mg/L	0.42	0.82	0.42	0.54	3.73	0.18	0.2	0.23	0.27	0.19	0.25	0.26	1.13	0.43	0.36	3.46	0.84
	Oxidation Reduction Potential	millivolts	82.3	121.3	120	148.5	154.4	100.14	171.65	49	121.55	96.3	184.6	119.4	149.8	201.9	118.8	204.8	123.7
	Temperature	Deg C	17.41	20.84	18.44	19.73	22.95	16.15	21.82	25.65	20.83	19.45	23.54	19.06	20.44	23.00	18.92	19.02	20.93
	Turbidity	ntu	6.6	1.06	1.94	0.32	3.37	0.76	0.9	0.06	1.8	3.94	3.90	1.80	4.85	1.21	1.00	1.69	1.8
	Water level depth	ft	34.52	37.32	39.6	39.65	14.15	16.1	17.05	12.12	19.44	21.75	23.60	25.10	22.06	25.41	26.40	20.58	25.98
Supplemental	Alkalinity as CaCO3, Total	mg/L	6.0	------	8.3	9.2	------	------	------	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	6.0	------	8.3	9.2	------	------	------	------	------	------	------	------	------	------	< 20	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------	------	------	------	------	------	< 20	------	------
	Aluminum	mg/L	------	------	------	------	------	4.73	------	------	------	------	------	------	------	------	8.7	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.55 J	------	------
	Hardness	mg/L	------	------	------	------	------	202	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	< 0.025	------	------	------	------	------	------	------	------	------	------	< 0.015	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	< 0.025	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------
	Iron, Ferrous	mg/L	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------
	Magnesium	mg/L	17.4	------	17.9	15.0	------	8.98	------	------	------	------	------	------	------	------	11.4	------	------
	Manganese	mg/L	------	------	------	------	------	3.12	------	------	------	------	------	------	------	------	5.7	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1.4	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.020	------	------
	Potassium	mg/L	4.6	------	4.4	3.7	------	5.85	------	------	------	------	------	------	------	------	6.5	------	------
	Silica	mg/L	------	------	------	------	------	15.2	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	7.1	------	------	------	------	------	------	------	------	9.1	------	------
	Sodium	mg/L	13.2	------	14.4	12.3	------	11.7	------	------	------	------	------	------	------	------	20	------	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	<0.2	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.7 J	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.1	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-9	DGWC-9	DGWC-9	DGWC-9	DGWC-9	DGWC-10	DGWC-10	DGWC-10	DGWC-10	DGWC-10	DGWC-10	DGWC-10	DGWC-10	DGWC-10	DGWC-10	DGWC-10	DGWC-10
			9/22/2020	3/2/2021	9/10/2021	1/26/2022	9/19/2022	8/31/2016	12/6/2016	3/29/2017	7/12/2017	10/24/2017	11/15/2017	2/27/2018	7/10/2018	11/6/2018	3/12/2019	8/27/2019	10/15/2019
Appendix III	Boron	mg/L	0.78	0.77	0.54	0.69	0.80	3.5	3.3	4.3	3.38	3.45	------	3.2	2.40	2.10	0.98	------	1.60
	Calcium	mg/L	54.7	48.8	47.7	48.4	45.1	81.7	74.2	79.5	86.3	81.5	------	96.2	95.3	94.8	83.5	------	79.1
	Chloride	mg/L	8	8.4	9	9.1	13.20	11	10	11	11	11	12	10.8	11.00	12.30	12.10	------	9.40
	Fluoride	mg/L	0.99	0.93	2	1.2	0.8	1	1.3	1.5	1.7	2.1	1.4	2.3	2	2	1.7	1.4	1.4
	pH, field measured	S.U.	4	3.99	3.98	3.88	3.98	4.58	4.9	4.62	4.81	4.8	4.9	5.55	5.27	5.30	5.26	5.14	4.96
	Sulfate	mg/L	282	266	264	245	274	400	190	360	390	410	390	335	301	356	297	------	263
	Total Dissolved Solids	mg/L	461	449	466	409	456	525	595	525	598	353	582	542	510	512	436	------	447
Appendix IV	Antimony	mg/L	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080	< 0.00030	< 0.00060	< 0.00060	------	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027
	Arsenic	mg/L	0.04	0.021	0.031	0.012	0.016	0.0058	0.0017 J	0.0055	0.0042 J	0.0058	------	0.011	0.0036 J	0.0044 J	------	0.0024 J	0.0078
	Barium	mg/L	0.015	0.017	0.014	0.016	0.017	0.0321	0.029	0.0335	0.0314	0.0317	------	0.028	0.027	0.025	------	0.021	0.024
	Beryllium	mg/L	0.0049	0.0050	0.0049	0.0054	0.0047	0.0046	0.0048	0.0048	0.0046	0.0048	------	0.011	0.012	0.012	------	0.0092	0.01
	Cadmium	mg/L	0.00059 J	0.00057	0.00053	0.00059	0.00076	0.0012	0.0013	0.0013	0.0013	0.0014	------	0.001	0.0016	0.0012	------	0.00077 J	0.00095 J
	Chromium	mg/L	< 0.00055	0.00059 J	< 0.0011	0.0029 J	< 0.0011	< 0.00090	< 0.00090	0.0008 J	0.0006 J	0.0007 J	------	< 0.0016	< 0.0016	< 0.0016	------	0.00083 J	0.00078 J
	Cobalt	mg/L	0.16	0.18	0.21	0.22	0.25	0.193	0.2	0.184	0.177	0.175	------	0.2	0.2	0.2	------	0.13	0.17
	Lead	mg/L	0.00015 J	0.00028 J	< 0.00089	< 0.0044	< 0.0044	< 0.00010	< 0.00010	< 0.00030	< 0.00030	< 0.00030	------	< 0.0014	< 0.00027	< 0.00027	------	0.00024 J	0.00014 J
	Lithium	mg/L	0.025 J	0.028 J	0.027 J	0.029 J	0.023 J	0.0022 J	< 0.0021	0.002 J	0.0019 J	0.0022 J	------	0.0037 J	0.0047 J	0.0049 J	------	0.0053 J	0.0051 J
	Mercury	mg/L	0.00013 J	0.00017 J	0.00014 J	0.00014 J	0.0002	0.00007 J	0.00009 J	0.00008 J	< 0.000041	< 0.000036	------	< 0.000036	< 0.000051 J	< 0.00034 J	------	< 0.00014	< 0.00014
	Molybdenum	mg/L	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017	< 0.0017	< 0.00060	< 0.0010	< 0.0010	------	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095
	Selenium	mg/L	0.23	0.070	0.057	0.025	0.048	0.0366	0.0026 J	0.0286	0.0257	0.0281	------	0.067	0.023	0.049	------	0.015	0.071
	Thallium	mg/L	0.00043 J	< 0.00072	0.0004 J	< 0.00090	< 0.00090	0.0004 J	0.0004 J	0.0006 J	0.0005 J	0.0004 J	------	< 0.00071	0.00032 J	0.00039 J	------	0.00036 J	0.00039 J
	Radium	pCi/L	1.15 U	1.29 U	1.28	0.789 U	1.38	1.08	1.31	1.24	0.831	0.838 U	------	1.55	1.65	1.46	------	1.58	0.831 U
	Radium-226	pCi/L	0.326 U	0.603	0.252 U	0.237	------	0.0836 U	0.324	0.279	0.253	0.542	------	0.612	0.685	0.822	------	0.504	0.615
	Radium-228	pCi/L	0.823 U	0.683 U	1.03	0.552 U	------	1.00	0.984	0.96	0.578	0.296 U	------	0.942	0.96	0.641	------	1.08	0.216 U
Field Measured	Conductivity	uS/cm	684.09	697.6	649.01	679.25	656.6	621.27	772.9	766.86	758.63	758.1	766.7	721.5	669.8	679.6	608.4	533.8	596.6
	Dissolved Oxygen	mg/L	1.79	3.87	2.66	2.53	2.15	0.21	0.63	0.19	0.22	2.69	0.27	0.23	0.70	2.37	4.27	3.07	2.56
	Oxidation Reduction Potential	millivolts	148.7	389.1	366.3	376.2	186.9	169.5	185.8	85.34	105.05	136.47	110.6	102.4	104.1	106.5	67.5	158.7	127.9
	Temperature	Deg C	17.77	14.85	19.19	18.08	19.28	22.79	15.81	19.28	21.11	20.23	18.21	19.8	24.10	19.33	20.43	22.04	19.28
	Turbidity	ntu	1.39	2.17	0.87	1.23	0.87	3.7	3.94	0.25	0.88	0.98	1.88	1.67	8.88	1.52	4.71	3.37	0.50
	Water level depth	ft	24.34	28.41	25.16	------	31.25	20.81	21.07	22.8	16.53	23.07	24.77	26.09	27.78	29.25	27.37	31.26	29.75
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------	------	------	------	------	------	------	1.5
	Alkalinity, Carbonate as CaCO3	mg/L	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------	------	------	------	------	------	------	< 1.0
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1.8
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.50
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	< 0.025	------	------	------	------	------	------	------	------	------	------	------	< 0.20
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	< 0.025	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------	------	< 0.20
	Magnesium	mg/L	------	6.7	------	5.9	8.3	------	------	------	------	------	------	------	------	------	------	------	8.6
	Manganese	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	4.7
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1.6
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.00321
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	5.3	------	5.4	5.7	------	------	------	------	------	------	------	------	------	------	------	7.5
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	6.9
	Sodium	mg/L	------	28.4	------	32.6	34.3	------	------	------	------	------	------	------	------	------	------	------	11
	Sulfide	mg/L	------	------	------	------	------	2	< 0.363	< 0.363	< 0.363	------	< 0.363	< 0.363	------	< 0.363	1.6	< 0.363	< 0.363
	Total Organic Carbon	mg/L	------	------	------	------	------	< 0.50	< 0.50	< 0.50	< 0.50	------	1.9	< 0.50	------	< 0.50	< 0.50	< 0.50	< 0.50
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	DGWC-10	DGWC-10	DGWC-10	DGWC-10	DGWC-10	DGWC-10	DGWC-10	DGWC-11	DGWC-11	DGWC-11	DGWC-11	DGWC-11	DGWC-11	DGWC-11	DGWC-11	DGWC-11	DGWC-11
			3/3/2020	8/11/2020	9/24/2020	3/4/2021	9/10/2021	1/26/2022	9/15/2022	8/31/2016	12/6/2016	3/29/2017	7/12/2017	10/24/2017	2/27/2018	7/10/2018	11/6/2018	3/12/2019	8/27/2019
Appendix III	Boron	mg/L	1.5	------	0.45	0.65	0.24	0.4	0.42	0.914	1.15	1.07	1.14	1.18	1.2	1.10	1.20	1.20	------
	Calcium	mg/L	63.6	------	53.1	75.8	82.4	76.8	64.4	44.2	48.3	50.5	50.8	55	51.4	56.2	62.6	61.4	------
	Chloride	mg/L	8.4	------	5.9	7.2	8.2	9	8.20	11	11	12	11	12	12.7	13.70	15.20	14.50	------
	Fluoride	mg/L	1.5	1.4	0.97	1.8	2.2	1.8	0.84	0.06 J	0.06 J	0.04 J	0.03 J	< 0.030	< 0.029	0.047 J	<0.029	0.052 J	< 0.029
	pH, field measured	S.U.	4.77	4.92	4.89	5.27	5.05	4.9	4.87	5.83	5.91	5.74	5.82	5.79	5.94	5.62	5.69	5.70	5.55
	Sulfate	mg/L	213	------	204	240	271	241	229	200	190	200	210	210	220	240	302	275	------
	Total Dissolved Solids	mg/L	382	------	283	430	474	425	280	307	358	300	382	342	393	422	412	433	------
Appendix IV	Antimony	mg/L	< 0.00027	< 0.00028	< 0.00028	< 0.00028	< 0.00078	0.0021 J	< 0.00078	< 0.00080	< 0.00080	< 0.00030	< 0.00060	< 0.00060	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027
	Arsenic	mg/L	0.0025 J	0.0028 J	0.0078	0.0060	0.0076	0.0043 J	0.0024 J	< 0.0016	< 0.0016	< 0.00040	< 0.00050	< 0.00050	< 0.00057	< 0.00057	< 0.00057	------	< 0.00035
	Barium	mg/L	0.024	0.024	0.021	0.025	0.019	0.022	0.018	0.0545	0.0564	0.0565	0.0572	0.0596	0.067	0.073	0.074	------	0.071
	Beryllium	mg/L	0.0085	0.0066	0.0077	0.0086	0.0074	0.0091	0.0063	< 0.000080	< 0.000080	< 0.000070	< 0.000090	< 0.000090	0.000058 J	0.000076 J	< 0.000094 J	------	0.00014 J
	Cadmium	mg/L	0.00095 J	0.00071 J	0.00055 J	0.00088	0.00061	0.0007	0.00047 J	< 0.000070	< 0.000070	< 0.000060	< 0.00010	< 0.00010	< 0.000093	< 0.000093	< 0.000093	------	0.00012 J
	Chromium	mg/L	0.00092 J	0.00097 J	0.001 J	0.00090 J	< 0.0011	0.0011 J	< 0.0011	< 0.00090	< 0.00090	< 0.00030	< 0.00050	< 0.00050	< 0.0016	< 0.0016	< 0.0016	------	0.0006 J
	Cobalt	mg/L	0.18	0.11	0.086	0.071	0.076	0.099	0.055	< 0.00050	0.0006 J	< 0.00050	< 0.00030	< 0.00030	< 0.00052	< 0.00052	< 0.00052	------	0.00076 J
	Lead	mg/L	0.00011 J	0.00007 J	0.00013 J	0.000092 J	< 0.00089	< 0.00089	< 0.0044	< 0.00010	< 0.00010	< 0.000070	< 0.000070	< 0.000070	< 0.00027	< 0.00027	< 0.00027	------	0.00012 J
	Lithium	mg/L	0.0049 J	0.0033 J	0.0049 J	0.0042 J	0.0051 J	0.0059 J	0.0053 J	0.0022 J	0.0027 J	0.0021 J	0.0022 J	0.0024 J	0.0022 J	0.0019 J	0.0022 J	------	0.0023 J
	Mercury	mg/L	< 0.00014	< 0.000078	0.000081 J	< 0.000078	< 0.000078	< 0.00013	< 0.00013	0.00005 J	0.00008 J	0.00006 J	< 0.000041	< 0.000036	< 0.000036	< 0.000047 J	< 0.00028 J	------	< 0.00014
	Molybdenum	mg/L	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017	< 0.0017	< 0.00060	< 0.0010	< 0.0010	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095
	Selenium	mg/L	0.021	0.023	0.074	0.050	0.034	0.015	0.02	< 0.0010	< 0.0010	< 0.0014	< 0.0018	< 0.0018	< 0.0014	< 0.0014	< 0.0014	------	< 0.0013
	Thallium	mg/L	0.00042 J	0.00037 J	0.00034 J	0.00042 J	0.00027 J	0.00033 J	< 0.00090	< 0.00020	< 0.00020	< 0.000050	< 0.00030	< 0.000050	< 0.00014	< 0.00014	< 0.00014	------	< 0.000052
	Radium	pCi/L	1.69	1.45	1.39	1.48	0.882 U	1.21	0.953	1.09	0.409 U	0.727	0.85 U	0.98 U	1.14	0.495 U	1.41	------	2.13
	Radium-226	pCi/L	1.05	0.412	0.317 U	0.362 U	0.383	0.182 U	------	0.0794 U	0.132 U	0.0526 U	0.101 U	0.461	0.496	0.277 U	0.425	------	1.07
	Radium-228	pCi/L	0.638	1.04	1.07	1.12	0.499 U	1.03	------	1.01	0.277 U	0.67	0.749 U	0.519 U	0.64 U	0.218 U	0.98	------	1.06
Field Measured	Conductivity	uS/cm	550.1	531.2	469.6	598.7	647.24	620.87	540.5	442.97	483.97	488.79	494.12	512.31	530.41	547.5	593.3	573.4	621.2
	Dissolved Oxygen	mg/L	3.37	3.05	6.41	5.65	6.1	6.16	5.06	0.18	0.18	0.13	0.2	0.23	0.15	0.24	0.25	0.08	0.23
	Oxidation Reduction Potential	millivolts	111.7	599.4	88.95	712.4	102.5	210.1	129.9	321.6	110.34	66.31	83.2	125.53	130.9	93.3	96.8	67.5	89.6
	Temperature	Deg C	18.79	21.99	18.16	18.5	20.23	17.68	19.72	23.4	17.99	21.43	22.31	20.21	18.79	24.90	20.19	19.85	20.69
	Turbidity	ntu	2.34	1.25	0.97	1.98	0.99	1.85	0.66	3.11	3.8	0.58	0.65	0.45	1.19	4.49	1.60	4.88	4.18
	Water level depth	ft	24.70	32.95	30.11	28	26.35	27.99	32.26	9.33	7.69	8.2	5.9	8.85	10.3	11.61	12.75	12.05	14.40
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	9.0	------	5.3	< 5.00	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	9.0	------	5.3	< 5.00	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------	------	------	------	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	< 0.025	------	------	------	------	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	< 0.025	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------
	Magnesium	mg/L	------	------	------	7.3	------	7.4	6.2	------	------	------	------	------	------	------	------	------	------
	Manganese	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	7.0	------	6.9	5.7	------	------	------	------	------	------	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	10.9	------	11.1	10.3	------	------	------	------	------	------	------	------	------	------
	Sulfide	mg/L	< 0.363	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	------	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
	Total Organic Carbon	mg/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.7 J	< 0.50	< 0.50	< 0.50	< 0.50	------	< 0.50	0.93 J	< 0.50	< 0.50	< 0.50	< 0.50
	Zinc	mg/L	0.1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-11	DGWC-11	DGWC-11	DGWC-11	DGWC-11	DGWC-11	DGWC-11	DGWC-11	DGWC-12	DGWC-12	DGWC-12	DGWC-12	DGWC-12	DGWC-12	DGWC-12	DGWC-12	DGWC-12
			10/15/2019	3/2/2020	8/11/2020	9/22/2020	3/2/2021	9/9/2021	1/25/2022	9/15/2022	9/1/2016	12/7/2016	3/29/2017	7/12/2017	10/25/2017	2/27/2018	7/11/2018	11/7/2018	3/12/2019
Appendix III	Boron	mg/L	1.20	1.6	------	1.3	1.3	1.5	1.7	1.70	7.64	8.07	8.46	7.55	9.97	8.00	10.2	7.70	4.80
	Calcium	mg/L	61.2	65.8	------	72.7	65.3	66.8	70.2	66.6	80.6	82.1	88.3	87	92.1	85.6	93.6	73.3	62.1
	Chloride	mg/L	15.60	15	------	16	14.4	13.6	14.1	12.10	13	20	13	12	13	11.70	11.3	11.80	12.10
	Fluoride	mg/L	<0.029	0.064 J	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.064 J	0.02 J	0.16 J	0.1 J	0.2 J	0.6	0.34	< 0.029	0.07 J	0.065 J
	pH, field measured	S.U.	5.60	5.62	5.68	5.53	5.59	5.59	5.54	5.52	5.67	5.65	5.61	5.81	6.07	5.73	5.65	5.85	5.98
	Sulfate	mg/L	273	264	------	267	250	247	250	287	390	350	150	350	400	356	344	298	284
	Total Dissolved Solids	mg/L	461	458	------	481	456	433	465	414	568	559	550	594	571	582	593	504	465
Appendix IV	Antimony	mg/L	< 0.00027	< 0.00027	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080	< 0.00030	< 0.00060	< 0.00060	< 0.00078	< 0.00078	< 0.00078	------
	Arsenic	mg/L	< 0.00035	< 0.00035	< 0.00078	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022	< 0.0016	< 0.0016	< 0.00040	< 0.00050	0.0006 J	< 0.00057	< 0.00057	< 0.00057	------
	Barium	mg/L	0.064	0.071	0.064	0.058	0.052	0.054	0.047	0.047	0.0254	0.0241	0.0268	0.0262	0.0268	0.025	0.026	0.028	------
	Beryllium	mg/L	0.00012 J	0.00016 J	0.00011 J	0.00015 J	0.00014 J	0.00013 J	0.00019 J	0.00018 J	0.0002 J	0.0002 J	0.0002 J	0.0002 J	0.0002 J	0.00021 J	0.0002 J	< 0.00019 J	------
	Cadmium	mg/L	< 0.00011	< 0.00011	< 0.00012	0.00016 J	0.00013 J	< 0.00011	0.00016 J	< 0.00011	0.0004 J	0.0003 J	0.0003 J	0.0004 J	0.0004 J	0.00038 J	0.00033 J	< 0.00031 J	------
	Chromium	mg/L	< 0.00039	0.0006 J	0.00061 J	0.00058 J	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00090	< 0.00090	< 0.00030	< 0.00050	< 0.00050	< 0.0016	< 0.0016	< 0.0016	------
	Cobalt	mg/L	0.0006 J	0.00078 J	0.00055 J	0.00098 J	0.00065 J	0.00081 J	0.0015 J	0.0010 J	0.0021 J	0.0026 J	0.0026 J	0.0033 J	0.0021 J	0.0021 J	0.002 J	0.0057 J	------
	Lead	mg/L	0.000076 J	0.00015 J	0.000053 J	0.0001 J	< 0.000036	< 0.00089	< 0.00089	< 0.00089	< 0.00010	< 0.00010	< 0.000070	< 0.000070	< 0.000070	< 0.00027	< 0.00027	< 0.00027	------
	Lithium	mg/L	0.0019 J	0.0023 J	0.0028 J	0.0019 J	0.0017 J	0.0029 J	0.0021 J	0.0024 J	< 0.0021	< 0.0021	< 0.0011	< 0.0015	< 0.0015	0.00097 J	< 0.00097	< 0.00097	------
	Mercury	mg/L	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	0.00009 J	< 0.000041	0.00014 J	0.00008 J	0.00006 J	< 0.000060 J	0.000036 J	0.000045 J	------
	Molybdenum	mg/L	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017	< 0.0017	< 0.00060	< 0.0010	< 0.0010	< 0.0019	< 0.0019	< 0.0019	------
	Selenium	mg/L	< 0.0013	< 0.0013	< 0.0016	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014	0.0017 J	< 0.0010	0.0017 J	0.0019 J	0.0024 J	0.0024 J	< 0.0014	0.0016 J	------
	Thallium	mg/L	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00020	< 0.00020	0.00008 J	0.00009 J	0.00009 J	< 0.00014	< 0.00014	< 0.00014	------
	Radium	pCi/L	0.622 U	1.3	1.02	0.502 U	0.666 U	1.2 U	0.983 U	1.12	1.11	2.66	0.0726 U	0.538 U	0.216 U	0.83	0.728 U	0.414 U	------
	Radium-226	pCi/L	0.191 U	0.833	0.104 U	0.145 U	0.145 U	0.416	0.103 U	------	0.113 U	0.23 U	0.0726 U	0.0323 U	0.216 U	0.423	0.258	0.378	------
	Radium-228	pCi/L	0.431 U	0.466 U	0.915	0.357 U	0.521 U	0.782 U	0.88	------	0.999	2.43	-0.00566 U	0.506 U	-0.000688 U	0.407 U	0.47 U	0.0358 U	------
Field Measured	Conductivity	uS/cm	616.9	636.9	582.4	659.28	670.3	588.64	1481.8	670.9	738.83	795.03	773.23	741.8	847.41	734.0	718.1	684.1	605.4
	Dissolved Oxygen	mg/L	0.23	0.14	0.11	0.22	0.21	0.16	0.23	0.33	0.14	0.19	0.2	0.18	0.24	0.17	0.12	0.20	0.05
	Oxidation Reduction Potential	millivolts	137.7	74.8	250.7	82.7	302.9	54.4	81	74.3	464.8	182.33	175.5	95.6	63.78	133.7	185.0	83.6	55.7
	Temperature	Deg C	18.96	15.02	23.37	19.61	14.67	20.72	18.23	21.52	22.17	15.3	19.51	21.95	16.74	17.32	23.83	17.43	19.32
	Turbidity	ntu	4.92	1.84	2.79	2.48	0.26	4.59	2.71	1.05	0.16	1.09	2.61	1.58	2.4	4.88	4.57	4.82	4.96
	Water level depth	ft	13.59	8.39	17.34	14.34	12.44	13.4	11.49	16.86	8.29	7.48	7.53	7.00	8.3	6.87	8.66	8.75	7.81
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	10.9	------	11.9	12.5	------	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	7	------	------	------	10.9	------	11.9	12.5	------	------	------	------	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	< 1.0	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------	------	------	------	------
	Aluminum	mg/L	< 0.032	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	< 0.50	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	< 0.20	------	------	------	------	------	------	< 0.025	------	------	------	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	< 0.025	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	< 0.20	------	------	------	------	------	------	0.0	------	------	------	------	------	------	------	------	------
	Magnesium	mg/L	< 0.011	------	------	------	26.7	------	33.6	25.8	------	------	------	------	------	------	------	------	------
	Manganese	mg/L	< 0.0061	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	0.009 J	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	0.1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	< 0.026	------	------	------	4.7	------	4.7	4.5	------	------	------	------	------	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	< 0.020	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	< 0.19	------	------	------	20.3	------	22.8	21.0	------	------	------	------	------	------	------	------	------
	Sulfide	mg/L	2.0	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
	Total Organic Carbon	mg/L	<0.5	1.3	< 0.50	< 0.50	2.2	< 0.50	0.7 J	0.69 J	------	< 0.50	------	0.55 J	8.9	< 0.50	1.1	------	2.3
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-12	DGWC-12	DGWC-12	DGWC-12	DGWC-12	DGWC-12	DGWC-12	DGWC-12	DGWC-12	DGWC-12	DGWC-13	DGWC-13	DGWC-13	DGWC-13	DGWC-13	DGWC-13	DGWC-13
			8/27/2019	9/17/2019	10/15/2019	3/2/2020	8/11/2020	9/22/2020	3/3/2021	9/9/2021	1/25/2022	9/15/2022	9/6/2016	12/7/2016	3/30/2017	7/12/2017	11/15/2017	2/28/2018	7/10/2018
Appendix III	Boron	mg/L	------	6.9	5.90	3.3	------	4.2	3.6	2	0.7	3.30	1.00	0.9	0.898	0.996	0.795	0.11	0.72
	Calcium	mg/L	------	------	61.4	46.5	------	55.4	50.1	29.2	28.5	41.5	44.0	39.8	46.3	47.8	49.3	13.1	42.6
	Chloride	mg/L	------	------	11.60	8.9	------	10.8	10.3	8.5	8.1	8.20	16.00	14	16	14	16	2.70	14.80
	Fluoride	mg/L	< 0.029	------	<0.029	0.071 J	< 0.050	< 0.050	0.085 J	0.099 J	0.093 J	0.078 J	0.17 J	0.3	0.12 J	0.13 J	0.44	0.18 J	0.32
	pH, field measured	S.U.	5.55	5.60	5.89	6.13	5.69	6.00	6.13	6.07	5.96	5.75	5.69	5.96	5.94	5.84	5.87	5.99	5.92
	Sulfate	mg/L	------	------	270	181	------	183	203	126	111	191	170	160	180	170	180	43.5	152
	Total Dissolved Solids	mg/L	------	------	472	338	------	338	325	275	258	377	296	270	287	312	325	84	306
Appendix IV	Antimony	mg/L	< 0.00027	< 0.00027	< 0.00027	0.0003 J	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	<0.0008	< 0.00080	< 0.00030	< 0.00060	< 0.00060	< 0.00078	0.0014 J
	Arsenic	mg/L	< 0.00035	< 0.00035	0.00063 J	< 0.00035	< 0.00078	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022	<0.0016	< 0.0016	< 0.00040	< 0.00050	< 0.00050	< 0.00057	< 0.00057
	Barium	mg/L	0.024	0.02	0.02	0.04	0.028	0.036	0.035	0.04	0.054	0.035	0.0297	0.0266	0.0308	0.0291	0.0309	0.0079 J	0.035
	Beryllium	mg/L	0.00028 J	0.00049 J	0.00016 J	0.000074 J	0.00024 J	0.00017 J	0.00011 J	0.000084 J	< 0.000054	0.00019 J	<0.00008	< 0.000080	0.00007 J	< 0.000090	< 0.000090	< 0.000050	0.00005 J
	Cadmium	mg/L	0.00037 J	0.00035 J	0.00025 J	< 0.00011	0.00038 J	0.00017 J	0.00016 J	< 0.00011	< 0.00011	0.00017 J	<0.00007	0.0002 J	0.00008 J	< 0.00010	< 0.00010	< 0.000093	< 0.000093
	Chromium	mg/L	< 0.00039	< 0.00039	< 0.00039	< 0.00039	0.00094 J	< 0.00055	0.00099 J	< 0.0011	< 0.0011	< 0.0011	<0.0009	< 0.00090	0.0009 J	< 0.00050	< 0.00050	0.0022 J	< 0.0016
	Cobalt	mg/L	0.0021 J	0.0079	0.0058	0.029	0.006	0.013	0.010	0.034	0.018	0.025	<0.0005	< 0.00050	0.0005 J	0.0004 J	< 0.00030	< 0.00052	< 0.00052
	Lead	mg/L	0.0001 J	< 0.000046	< 0.000046	< 0.000046	< 0.000036	0.00011 J	< 0.000036	< 0.00089	< 0.00089	< 0.00089	<0.0001	< 0.00010	0.0002 J	< 0.000070	< 0.000070	< 0.00027	< 0.00027
	Lithium	mg/L	0.0011 J	0.0011 J	0.00091 J	< 0.00078	0.0011 J	< 0.00081	< 0.00081	< 0.00073	< 0.00073	0.00088 J	0.0029 J	0.003 J	0.0035 J	0.0028 J	0.0028 J	< 0.00097	0.0028 J
	Mercury	mg/L	< 0.00014	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	<0.000041	0.00009 J	0.00007 J	< 0.000041	< 0.000036	< 0.000036	< 0.000054 J
	Molybdenum	mg/L	< 0.00095	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	0.0371	0.0273	0.03	0.0323	0.0275	0.0093 J	0.024
	Selenium	mg/L	< 0.0013	0.0014 J	0.0019 J	< 0.0013	0.0019 J	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014	0.0011 J	0.0015 J	0.0015 J	< 0.0018	0.0019 J	< 0.0014	0.0028 J
	Thallium	mg/L	0.000089 J	0.000097 J	0.000091 J	0.00013 J	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	<0.0002	< 0.00020	< 0.000050	< 0.000050	< 0.000050	< 0.00014	< 0.00014
	Radium	pCi/L	0.434 U	------	0.359 U	1.2 U	0.77 U	0.515 U	1.85	1.78	0.739 U	0.52 U	1.32	1.76	1.59	1.36	1.08 U	0.721 U	0.746 U
	Radium-226	pCi/L	0.434 U	------	0.264 U	0.456	0.234 U	-0.0641 U	0.648 U	0.23 U	0.364	------	0.428	0.434	0.387	0.578	------	0.118 U	0.327
	Radium-228	pCi/L	-0.115 U	------	0.0947 U	0.746 U	0.536 U	0.515 U	1.20	1.55	0.375 U	------	0.89	1.33	1.20	0.786	------	0.603 U	0.419 U
Field Measured	Conductivity	uS/cm	749.9	581.46	622.1	531.5	699.4	558.58	566	447.02	958.95	514.0	477.1	443.1	480.83	461.4	487.7	142.1	433.3
	Dissolved Oxygen	mg/L	0.18	0.02	0.16	0.02	0.08	0.21	0.09	0.09	0.16	0.06	1.41	2.64	4.24	1.01	2.47	0.26	3.21
	Oxidation Reduction Potential	millivolts	109.4	99.3	57.4	6.2	220	38.1	785.2	14.8	4.1	37.9	98.9	116.59	-15.7	78.4	49	76.3	118.6
	Temperature	Deg C	20.84	19.19	18.52	15.79	21.97	21.6	16.51	20.43	17.24	19.50	23.73	16.58	21.23	20.47	18.73	14.85	21.32
	Turbidity	ntu	3.58	2.18	4.34	4.89	3.45	4.91	4.37	4.19	4.67	3.18	3.19	1.02	4.35	0.5	1.9	0.49	4.61
	Water level depth	ft	9.69	9.51	9.40	7.29	10.58	9.04	9.21	9.15	8.73	11.08	33.70	33.37	33.58	32.8	34.01	25.68	33.71
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	43.5	------	74.7	33.6	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	32	------	------	------	43.5	------	74.7	33.6	------	------	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	< 20	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------	------	------
	Aluminum	mg/L	------	------	< 0.032	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	< 0.50	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	2.2	------	------	------	------	------	------	9.9	------	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	------	2.9	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	4.3	------	------	------	------	------	------	7.0	------	------	------	------	------	------	------
	Magnesium	mg/L	------	------	22.7	------	------	------	20.2	------	16.8	19.5	------	------	------	------	------	------	------
	Manganese	mg/L	------	------	0.78	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	< 0.0050	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	0.0	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	4.3	------	------	------	6.2	------	9	5.5	------	------	------	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	7.5	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	14.6	------	------	------	14.8	------	11.6	12.7	------	------	------	------	------	------	------
	Sulfide	mg/L	< 0.20	< 0.20	<0.363	------	------	------	------	------	------	------	------	------	0.46	------	------	------	------
	Total Organic Carbon	mg/L	< 0.50	1.4	<0.5	------	------	------	------	------	------	------	------	------	< 0.50	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-13	DGWC-13	DGWC-13	DGWC-13	DGWC-13	DGWC-13	DGWC-13	DGWC-13	DGWC-13	DGWC-13	DGWC-13	DGWC-14	DGWC-14	DGWC-14	DGWC-14	DGWC-14	DGWC-14
			11/7/2018	3/13/2019	8/28/2019	10/16/2019	3/3/2020	8/12/2020	9/23/2020	3/2/2021	9/9/2021	1/25/2022	9/15/2022	8/31/2016	12/6/2016	3/29/2017	7/12/2017	10/25/2017	2/27/2018
Appendix III	Boron	mg/L	0.76	0.62	------	0.65	0.61	------	0.57	0.58	0.62	0.69	0.69	0.0419 J	0.0804	0.103	0.044	0.0565	0.05
	Calcium	mg/L	44.8	42.1	------	43.8	49.3	------	39	40.5	38.2	43.2	36.7	9.95	10.4	14.4	10.5	9.67	10.0
	Chloride	mg/L	16.70	12.40	------	17.40	9.4	------	12.6	13.1	12.9	14.3	13.70	3.1	3.1	3.8	2.9	3.5	3.40
	Fluoride	mg/L	0.088 J	0.13 J	0.091 J	0.14 J	0.078 J	0.051 J	0.058 J	0.084 J	0.083 J	0.063 J	0.095 J	0.06 J	0.1 J	0.02 J	< 0.030	< 0.030	<0.029
	pH, field measured	S.U.	5.87	5.79	5.71	5.69	5.71	5.68	5.72	5.68	5.69	5.64	5.56	5.68	5.63	5.68	5.66	6.18	5.63
	Sulfate	mg/L	162	179	------	167	157	------	134	131	127	116	133	44	45	81	44	42	41
	Total Dissolved Solids	mg/L	314	656	------	296	263	------	278	256	246	256	216	106	138	102	118	88	99
Appendix IV	Antimony	mg/L	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080	< 0.00030	< 0.00060	< 0.00060	< 0.00078
	Arsenic	mg/L	< 0.00057	------	< 0.00035	< 0.00035	< 0.00035	< 0.00078	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022	< 0.0016	< 0.0016	< 0.00040	< 0.00050	< 0.00050	< 0.00057
	Barium	mg/L	0.034	------	0.033	0.034	0.035	0.032	0.03	0.030	0.027	0.028	0.027	0.0576	0.0608	0.0693	0.0585	0.0563	0.059
	Beryllium	mg/L	< 0.000059 J	------	< 0.000074	< 0.000074	< 0.000074	0.000078 J	0.000068 J	0.000073 J	0.00007 J	0.000091 J	0.000080 J	< 0.000080	< 0.000080	< 0.000070	< 0.000090	< 0.000090	< 0.000050
	Cadmium	mg/L	< 0.000093	------	< 0.00011	< 0.00011	< 0.00011	< 0.00012	< 0.00012	< 0.00012	< 0.00011	< 0.00011	< 0.00011	< 0.000070	< 0.000070	< 0.000060	< 0.00010	< 0.00010	< 0.000093
	Chromium	mg/L	< 0.0016	------	< 0.00039	< 0.00039	0.00066 J	0.00074 J	0.00059 J	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00090	< 0.00090	< 0.00030	< 0.00050	< 0.00050	< 0.0016
	Cobalt	mg/L	< 0.00052	------	< 0.00030	< 0.00030	< 0.00030	< 0.00038	0.00038 J	< 0.00038	< 0.00039	< 0.00039	< 0.00039	< 0.00050	< 0.00050	< 0.00050	< 0.00030	< 0.00030	< 0.00052
	Lead	mg/L	< 0.00027	------	< 0.000046	< 0.000046	< 0.000046	< 0.000036	0.000098 J	< 0.000036	< 0.00089	< 0.00089	< 0.00089	< 0.00010	< 0.00010	< 0.000070	< 0.000070	< 0.000070	< 0.00027
	Lithium	mg/L	0.0033 J	------	0.0033 J	0.0029 J	0.0035 J	0.0034 J	0.0033 J	0.0033 J	0.0036 J	0.0037 J	0.004 J	0.0031 J	0.0042 J	0.0041 J	0.0036 J	0.0032 J	0.0035 J
	Mercury	mg/L	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	0.00005 J	0.00008 J	0.00006 J	< 0.000041	< 0.000036	< 0.000036
	Molybdenum	mg/L	0.018	------	0.015	0.014	0.018	0.012	0.012	0.011	0.011	0.0093 J	0.0094 J	< 0.0017	< 0.0017	< 0.00060	< 0.0010	< 0.0010	< 0.0019
	Selenium	mg/L	0.0029 J	------	0.0039 J	0.0031 J	0.0062 J	0.0038 J	0.0053 J	0.0060	0.006	0.006	0.0040 J	0.0016 J	< 0.0010	< 0.0014	< 0.0018	< 0.0018	< 0.0014
	Thallium	mg/L	< 0.00014	------	< 0.000052	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00020	< 0.00020	< 0.000050	< 0.000050	< 0.000050	< 0.00014
	Radium	pCi/L	1.22 U	------	1.43	1.73	1.03	1.63	0.935 U	1.12 U	1.23 U	0.254 U	1.01	0.997 U	0.659 U	0.313 U	1.03 U	0.607 U	0.695 U
	Radium-226	pCi/L	0.432	------	0.916	0.997	0.608	0.703	0.207 U	0.328 U	0.361 U	0.254	------	0.204 U	0.127 U	0.0588 U	0.357	0.58	0.309 U
	Radium-228	pCi/L	0.787 U	------	0.517 U	0.732 U	0.421 U	0.926 U	0.728 U	0.791	0.87	-0.0253 U	------	0.793	0.532 U	0.254 U	0.674 U	0.0271 U	0.386 U
Field Measured	Conductivity	uS/cm	468.3	448.7	447.4	450.5	442.9	450.2	406.7	434.51	396.69	410.65	394.0	134.33	152.32	169.28	142.4	145.28	137.5
	Dissolved Oxygen	mg/L	3.23	3.59	3.47	3.42	4.34	3.58	3.59	4.49	4.05	4.68	3.92	4.04	4.41	4.45	4.31	4.92	4.62
	Oxidation Reduction Potential	millivolts	55.1	128.0	229.6	70.4	89.3	137.6	56.1	126.5	133.2	78.3	120.2	444.6	153.87	247.97	59.4	31.31	71.3
	Temperature	Deg C	18.30	18.87	22.57	19.19	18.99	20.01	20.67	18.56	20.93	18.8	20.22	27.22	16.11	22.17	23.24	20.26	18.96
	Turbidity	ntu	1.09	0.53	1.77	0.67	0.54	2.78	3.23	0.33	1.00	0.19	0.55	0.33	0.15	0.17	1.93	0.41	0.36
	Water level depth	ft	34.42	33.10	33.55	34.15	32.35	34.02	32.75	34.6	32.9	35.04	34.34	21.96	22.62	21.92	20.75	20.8	21.06
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	23.5	------	21.9	22.1	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	27	------	------	------	23.5	------	21.9	22.1	------	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	< 20	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------	------
	Aluminum	mg/L	------	------	------	0.049 J	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	< 0.50	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	< 0.20	------	------	------	------	------	------	< 0.025	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	< 0.20	------	------	------	------	------	------	< 0.025	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	< 0.20	------	------	------	------	------	------	0.0	------	------	------	------	------	------
	Magnesium	mg/L	------	------	------	8.1	------	------	------	8.2	------	8.9	7.9	------	------	------	------	------	------
	Manganese	mg/L	------	------	------	< 0.0061	------	------	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	0.89	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	5.9	------	------	------	5.6	------	5.7	4.9	------	------	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	8.1	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	26.2	------	------	------	23.7	------	24.7	20.7	------	------	------	------	------	------
	Sulfide	mg/L	------	------	------	<0.363	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	< 0.50	<0.5	< 0.50	0.79 J	1.4	< 0.50	5.6	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	<0.018	------	------	------	------	------	------	------	------	------	0.03	< 0.018	0.085

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	DGWC-14	DGWC-14	DGWC-14	DGWC-14	DGWC-14	DGWC-14	DGWC-14	DGWC-14	DGWC-14	DGWC-14	DGWC-14	DGWC-14	DGWC-15	DGWC-15	DGWC-15	DGWC-15	DGWC-15
			7/11/2018	11/7/2018	3/13/2019	8/27/2019	10/16/2019	3/3/2020	8/11/2020	9/22/2020	3/2/2021	9/9/2021	1/25/2022	9/13/2022	9/6/2016	12/7/2016	3/30/2017	7/12/2017	10/25/2017
Appendix III	Boron	mg/L	0.057	0.06	0.05	------	0.05	0.15	------	0.086 J	0.089	0.08	0.097	0.09	1.25	1.56	1.5	1.49	1.47
	Calcium	mg/L	9.9	9.7	9.7	------	9.4	14.0	------	11.6	11.4	11.1	12.4	11.2	33.6	34.7	36.9	38.4	36.2
	Chloride	mg/L	3.2	3.10	3.40	------	3.50	4.10	------	3.2	3.5	3.3	3.7	3.50	19.00	20	21	21	21
	Fluoride	mg/L	< 0.029	<0.029	0.042 J	< 0.029	0.052 J	<0.05	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.059 J	0.11 J	0.11 J	< 0.0040	0.07 J	0.26 J
	pH, field measured	S.U.	5.61	5.58	5.61	5.58	5.66	5.73	5.73	5.7	5.69	5.7	5.69	5.71	5.79	5.94	5.8	5.81	5.9
	Sulfate	mg/L	40.6	41.3	41.2	------	42.1	45.5	------	40.2	42.6	42.3	44.4	41.2	180	180	210	170	180
	Total Dissolved Solids	mg/L	119	113	280	------	104	123	------	105	105	99	120	80	304	287	312	490	290
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	0.0011 J	< 0.00028	< 0.00078	< 0.00078	< 0.00078	<0.0008	< 0.00080	< 0.00030	< 0.00060	< 0.00060
	Arsenic	mg/L	< 0.00057	< 0.00057	------	< 0.00035	0.00039 J	< 0.00035	< 0.00078	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022	<0.0016	< 0.0016	0.0006 J	< 0.00050	< 0.00050
	Barium	mg/L	0.061	0.055	------	0.059	0.059	0.064	0.061	0.06	0.064	0.059	0.064	0.063	0.0497	0.0469	0.0495	0.0517	0.0474
	Beryllium	mg/L	< 0.000050	< 0.000050	------	< 0.000074	< 0.000074	< 0.000074	< 0.000046	< 0.000046	< 0.000046	< 0.000054	< 0.000054	< 0.000054	<0.00008	< 0.000080	< 0.000070	< 0.000090	< 0.000090
	Cadmium	mg/L	< 0.000093	< 0.000093	------	< 0.00011	< 0.00011	< 0.00011	< 0.00012	< 0.00012	< 0.00012	< 0.00011	< 0.00011	< 0.00011	<0.00007	0.00009 J	0.00009 J	< 0.00010	< 0.00010
	Chromium	mg/L	< 0.0016	< 0.0016	------	< 0.00039	< 0.00039	< 0.00039	< 0.00055	< 0.00055	< 0.00055	< 0.0011	< 0.0011	< 0.0011	<0.0009	< 0.00090	0.0005 J	< 0.00050	< 0.00050
	Cobalt	mg/L	< 0.00052	< 0.00052	------	< 0.00030	< 0.00030	< 0.00030	< 0.00038	< 0.00038	< 0.00038	< 0.00039	< 0.00039	< 0.00039	0.0042 J	0.0028 J	0.0024 J	0.002 J	0.0019 J
	Lead	mg/L	< 0.00027	< 0.00027	------	< 0.000046	< 0.000046	< 0.000046	0.000096 J	0.000044 J	0.000083 J	< 0.00089	< 0.00089	< 0.00089	<0.0001	0.0002 J	0.0001 J	0.0001 J	< 0.000070
	Lithium	mg/L	0.0034 J	0.0037 J	------	0.0038 J	0.0032 J	0.008 J	0.0035 J	0.0038 J	0.0040 J	0.0044 J	0.0043 J	0.0043 J	0.0064 J	0.0066 J	0.0061 J	0.006 J	0.0061 J
	Mercury	mg/L	< 0.000036	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	<0.000041	< 0.000041	0.00006 J	< 0.000041	< 0.000036
	Molybdenum	mg/L	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	<0.0017	< 0.0017	< 0.00060	< 0.0010	< 0.0010
	Selenium	mg/L	0.002 J	0.0016 J	------	< 0.0013	0.0017 J	0.0014 J	< 0.0016	< 0.0016	< 0.0016	0.0017 J	0.0016 J	< 0.0014	<0.001	< 0.0010	< 0.0014	< 0.0018	< 0.0018
	Thallium	mg/L	< 0.00014	< 0.00014	------	< 0.000052	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	<0.0002	< 0.00020	< 0.000050	< 0.000050	< 0.000050
	Radium	pCi/L	1.04 U	0.593 U	------	1.17 U	1.04 U	1.44	1.17 U	1.2 U	0.861 U	0.643 U	0.229 U	0.538 U	0.731 U	1.73	0.276 U	0.584 U	0.454 U
	Radium-226	pCi/L	0.414	0.293 U	------	0.55	0.459 U	0.838	0.298 U	0.283 U	0.293 U	0.502	0.229	------	0.161 U	0.0845 U	------	0.584	0.309 U
	Radium-228	pCi/L	0.624 U	0.3 U	------	0.62 U	0.578 U	0.603 U	0.875	0.914 U	0.568 U	0.141 U	-0.0763 U	------	0.57 U	1.65	------	-0.0433 U	0.145 U
Field Measured	Conductivity	uS/cm	132.3	141.2	135.0	148.2	142.8	187.9	137.1	146.77	157.53	149.86	162.44	163.9	457.8	472.69	468	458.4	469.54
	Dissolved Oxygen	mg/L	4.53	4.30	4.91	4.43	4.57	3.51	5.99	4.61	4.41	4.93	4.61	4.70	0.19	0.11	0.18	0.11	0.54
	Oxidation Reduction Potential	millivolts	95.6	89.7	80.5	101.5	103.1	110.3	102.1	87.84	144.1	94	94	99.2	63.1	109	-32.88	62.5	29.8
	Temperature	Deg C	23.07	18.19	20.08	20.97	20.38	19.16	19.95	19.36	16.83	20	16.42	21.00	24.43	18.19	24.01	22.88	20.66
	Turbidity	ntu	0.79	0.33	0.44	0.30	0.55	3.79	0.45	0.86	3.26	2.02	3.04	0.61	3.96	4.99	4.4	4.83	2.43
	Water level depth	ft	20.77	21.00	18.48	21.18	21.60	17.65	21.32	21.15	19.95	19.4	20.94	22.49	38.15	39.34	39.4	40.4	39.43
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	15.1	------	15.2	15.2	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	13	------	------	------	15.1	------	15.2	15.2	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	< 1.0	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------
	Aluminum	mg/L	------	------	------	------	< 0.032	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	< 0.20	------	------	------	------	------	------	0.0	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	------	------	------	0.0	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	< 0.20	------	------	------	------	------	------	0.0	------	------	------	------	------
	Magnesium	mg/L	------	------	------	------	4.4	------	------	------	5.0	------	5.3	4.7	------	------	------	------	------
	Manganese	mg/L	------	------	------	------	< 0.0061	------	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	0.41	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	0.027	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	3.1	------	------	------	3.4	------	3.4	3.2	------	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	12.7	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	6.3	------	------	------	7.0	------	7.6	7.0	------	------	------	------	------
	Sulfide	mg/L	------	------	------	------	<0.363	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	<0.5	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	0.14	< 0.018	< 0.018	< 0.018	< 0.018	< 0.018	0.042	0.039	0.038	0.23	0.23	0.45	------	------	< 0.018	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-15	DGWC-15	DGWC-15	DGWC-15	DGWC-15	DGWC-15	DGWC-15	DGWC-15	DGWC-15	DGWC-15	DGWC-15	DGWC-15	DGWC-15	DGWC-17	DGWC-17	DGWC-17	DGWC-17
			2/28/2018	7/11/2018	11/7/2018	3/14/2019	8/28/2019	10/17/2019	3/3/2020	8/13/2020	9/23/2020	3/2/2021	9/9/2021	1/24/2022	9/13/2022	9/7/2016	12/8/2016	3/30/2017	7/12/2017
Appendix III	Boron	mg/L	1.60	1.4	0.80	1.60	------	1.50	1.7	------	1.6	1.4	1.6	1.4	1.50	0.683	0.688	0.743	0.62
	Calcium	mg/L	35.0	37.5	11.4	34.7	------	37.0	37.8	------	35.6	36.0	34.4	33.2	34.4	8.61	7.92	9.56	10.4
	Chloride	mg/L	20.10	21.4	22.40	24.00	------	22.00	22.7	------	22.4	22.8	21.9	21.5	21.90	17	19	20	18
	Fluoride	mg/L	<0.029	< 0.029	<0.029	0.057 J	< 0.050	0.079 J	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.065 J	0.32	0.31	0.1 J	0.27 J
	pH, field measured	S.U.	5.80	5.87	5.90	5.77	5.88	5.76	5.79	6.58	5.85	5.81	5.83	6.06	5.82	5.05	5.12	5.08	5
	Sulfate	mg/L	168	154	168	195	------	146	148	------	146	148	139	127	145	230	240	260	230
	Total Dissolved Solids	mg/L	313	320	325	340	------	319	323	------	317	272	292	294	289	353	408	338	417
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	< 0.00078	------	0.00033 J	< 0.00027	< 0.00027	0.00073 J	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080	< 0.00030	< 0.00060
	Arsenic	mg/L	< 0.00057	< 0.00057	< 0.00057	------	< 0.00035	0.00064 J	< 0.00035	0.0013 J	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022	< 0.0016	< 0.0016	0.0008 J	< 0.00050
	Barium	mg/L	0.045	0.05	0.042	------	0.047	0.046	0.05	0.06	0.043	0.043	0.041	0.041	0.042	0.0694	0.062	0.0615	0.0532
	Beryllium	mg/L	< 0.000050	< 0.000050	< 0.00057 J	------	< 0.000074	< 0.000074	< 0.000074	0.00022 J	0.000058 J	< 0.000046	< 0.000054	< 0.000054	< 0.000054	0.0006 J	0.0005 J	0.0006 J	0.0005 J
	Cadmium	mg/L	< 0.000093	< 0.000093	< 0.00031 J	------	< 0.00011	< 0.00011	0.00012 J	0.00013 J	< 0.00012	< 0.00012	< 0.00011	< 0.00011	< 0.00011	0.0003 J	0.0003 J	0.0003 J	0.0002 J
	Chromium	mg/L	< 0.0016	< 0.0016	0.0024 J	------	< 0.00039	0.00058 J	0.00046 J	0.0048 J	< 0.00055	< 0.00055	< 0.0011	< 0.0011	< 0.0011	0.0026 J	0.0025 J	0.0026 J	0.0022 J
	Cobalt	mg/L	< 0.0016 J	0.0018 J	0.025	------	0.0015 J	0.0018 J	0.0018 J	0.0024 J	0.0018 J	0.0013 J	0.0016 J	0.0015 J	0.0016 J	0.0247	0.029	0.0283	0.023
	Lead	mg/L	< 0.00027	< 0.00027	< 0.00027	------	0.000059 J	< 0.000046	< 0.000046	0.0012 J	0.000082 J	< 0.000036	< 0.00089	< 0.00089	< 0.00089	< 0.00010	< 0.00010	0.0001 J	< 0.000070
	Lithium	mg/L	0.0062 J	0.0058 J	< 0.00097	------	0.0063 J	0.0064 J	0.0059 J	0.0089 J	0.006 J	0.0051 J	0.0057 J	0.0051 J	0.0057 J	< 0.0021	< 0.0021	< 0.0011	< 0.0015
	Mercury	mg/L	< 0.000036	< 0.000036	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	0.00006 J	< 0.000041	0.00012 J	0.00005 J
	Molybdenum	mg/L	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017	< 0.0017	< 0.00060	< 0.0010
	Selenium	mg/L	< 0.0014	< 0.0014	0.0079 J	------	< 0.0013	< 0.0013	< 0.0013	0.0018 J	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014	0.007 J	0.0087 J	0.0099 J	0.0072 J
	Thallium	mg/L	< 0.00014	< 0.00014	< 0.00016 J	------	< 0.000052	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00020	< 0.00020	0.0002 J	0.0002 J
	Radium	pCi/L	1.25	2.13	0.786 U	------	1.01 U	1.03 U	0.293 U	3.58	1.69 U	0.599 U	0.624 U	0.534 U	0.761 U	1.17	1.65	0.865 U	0.362 U
	Radium-226	pCi/L	0.459	0.513	0.244	------	0.544	0.619	0.293	1.97	0.408 U	0.0977 U	0.259 U	0.135 U	------	0.177 U	0.121 U	0.0393 U	0.362
	Radium-228	pCi/L	0.794	1.62	0.542 U	------	0.467 U	0.406 U	-0.119 U	1.61	1.28 U	0.501 U	0.365 U	0.399 U	------	0.995	1.53	0.826 U	-0.115 U
Field Measured	Conductivity	uS/cm	454.2	442.5	471.1	458.2	457.1	458.4	438.2	453.6	439.52	436.57	424.16	792	432.7	503.83	584.54	575.68	553.4
	Dissolved Oxygen	mg/L	0.26	0.10	0.12	0.08	0.37	0.08	0.13	8.7	0.26	0.49	0.49	0.69	0.49	0.19	0.3	0.13	0.26
	Oxidation Reduction Potential	millivolts	92.1	108.4	60.8	96.6	18.9	1.1	-27.0	93.9	32.89	173.6	114.9	14.1	115.2	118.6	89.77	-32.96	58.9
	Temperature	Deg C	16.40	22.03	20.04	18.56	24.57	18.08	19.46	28.36	21.81	17.65	21.64	18.33	23.74	26.8	15.57	21.56	22.38
	Turbidity	ntu	1.68	1.51	1.72	0.78	3.30	1.23	0.27	4.7	1.35	0.45	2.34	0.78	0.54	4.58	3.84	3.4	1.22
	Water level depth	ft	40.32	39.84	40.87	39.40	41.90	42.71	40.12	39.6	41.3	41.2	40.9	41.44	41.70	27.82	28.2	28.04	26.33
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	------	15.6	------	17.4	17.3	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	8.5	------	------	------	15.6	------	17.4	17.3	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	< 1.0	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------
	Aluminum	mg/L	------	------	------	------	------	< 0.032	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	0.2	------	------	------	------	------	------	0.1	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	< 0.20	------	------	------	------	------	------	0.1	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	< 0.20	------	------	------	------	------	------	0.0	------	------	------	------
	Magnesium	mg/L	------	------	------	------	------	16.5	------	------	------	15.4	------	14.3	14.9	------	------	------	------
	Manganese	mg/L	------	------	------	------	------	0.073	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	0.029 J	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	< 0.020	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	------	4.5	------	------	------	4.5	------	4.3	4.4	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	13.2	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	------	19.6	------	------	------	22.2	------	20.2	21.5	------	------	------	------
	Sulfide	mg/L	------	------	------	------	------	<0.2	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	<0.5	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	< 0.018	< 0.018	< 0.018	< 0.018	< 0.018	------	<0.018	------	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	DGWC-17	DGWC-17	DGWC-17	DGWC-17	DGWC-17	DGWC-17	DGWC-17	DGWC-17	DGWC-17	DGWC-17	DGWC-17	DGWC-17	DGWC-17	DGWC-17	DGWC-19	DGWC-19	DGWC-19
			10/25/2017	2/28/2018	7/11/2018	11/7/2018	3/13/2019	8/27/2019	10/18/2019	3/4/2020	8/14/2020	9/24/2020	3/3/2021	9/13/2021	1/24/2022	9/14/2022	9/1/2016	12/7/2016	3/29/2017
Appendix III	Boron	mg/L	0.739	0.63	0.79	1.60	0.76	------	0.82	0.85	------	0.88	0.71	0.78	0.9	0.87	3.08	3.34	3.96
	Calcium	mg/L	10.9	10.9	13 J	37.0	11.9 J	------	12.9	15.8	------	12.7	14.3	15.8	15.6	16.4	65.6	68.3	68
	Chloride	mg/L	19	17.00	19.50	21.40	19.90	------	22.00	19.6	------	22.7	20.9	18.2	19.2	19.00	41	41	42
	Fluoride	mg/L	0.49	0.54	0.15 J	0.095 J	0.084 J	0.24 J	0.086 J	< 0.050	0.069 J	0.056 J	0.085 J	0.063 J	< 0.050	0.1	0.75	0.37	0.35
	pH, field measured	S.U.	5.73	5.22	5.07	5.09	5.07	4.96	5.08	5.07	5.01	5.1	5.23	5.06	5.15	5.08	4.64	4.63	4.7
	Sulfate	mg/L	240	203	234	248	268	------	222	222	------	259	237	222	225	268	240	250	250
	Total Dissolved Solids	mg/L	343	364	393	408	802	------	403	414	------	411	384	424	426	434	396	400	390
Appendix IV	Antimony	mg/L	< 0.00060	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	0.00045 J	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080	< 0.00030
	Arsenic	mg/L	0.0007 J	< 0.00073 J	< 0.00057	< 0.00057	------	< 0.00035	0.0012 J	0.0014 J	< 0.00078	0.0011 J	< 0.00078	< 0.0011	0.0014 J	< 0.0022	0.0022 J	< 0.0016	0.002 J
	Barium	mg/L	0.0544	0.053	0.053	0.044	------	0.05	0.045	0.044	0.046	0.033	0.036	0.031	0.031	0.031	0.0214	0.0191	0.0209
	Beryllium	mg/L	0.0005 J	0.00053 J	0.00058 J	< 0.000050	------	0.00066 J	0.00071 J	0.00062 J	0.00064 J	0.0006 J	0.00056	0.00052	0.00059	0.00058	0.0019 J	0.0021 J	0.0017 J
	Cadmium	mg/L	0.0002 J	0.00022 J	0.00029 J	< 0.000093	------	0.00033 J	0.00029 J	0.00028 J	0.00029 J	0.00024 J	0.00023 J	0.00023 J	0.00027 J	0.00024 J	0.0004 J	0.0004 J	0.0004 J
	Chromium	mg/L	0.0024 J	0.0022 J	0.0024 J	< 0.0016	------	0.0031 J	0.0027 J	0.0035 J	0.0033 J	0.0029 J	0.0028 J	0.0027 J	0.0029 J	0.0023 J	0.0031 J	< 0.00090	0.0025 J
	Cobalt	mg/L	0.0259	< 0.020	0.025	< 0.0016 J	------	0.031	0.023	0.023	0.026	0.028	0.016	0.019	0.019	0.016	0.0553	0.0561	0.0534
	Lead	mg/L	< 0.000070	< 0.00027	< 0.00027	< 0.00027	------	0.00009 J	0.000074 J	0.00013 J	0.00017 J	0.000079 J	0.00015 J	< 0.00089	< 0.00089	< 0.00089	< 0.00010	< 0.00010	< 0.000070
	Lithium	mg/L	< 0.0015	< 0.00097	< 0.00097	0.0058 J	------	0.00089 J	0.00096 J	0.0011 J	0.0015 J	0.00096 J	0.0011 J	< 0.00073	< 0.00073	< 0.00073	0.0034 J	0.0034 J	0.0031 J
	Mercury	mg/L	0.00005 J	< 0.000036	< 0.000036	0.000059 J	------	0.00016 J	< 0.00014	< 0.00014	0.000098 J	0.000082 J	< 0.000078	0.000086 J	< 0.00013	< 0.00013	0.00004 J	0.00005 J	0.00009 J
	Molybdenum	mg/L	< 0.0010	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017	< 0.0017	< 0.00060
	Selenium	mg/L	0.0078 J	0.0072 J	0.007 J	< 0.0014	------	0.0073 J	0.0093 J	0.0074 J	0.0084 J	0.015	0.0072	0.0071	0.0064	0.0064	0.0093 J	< 0.0010	0.0071 J
	Thallium	mg/L	0.0002 J	0.00015 J	0.00017 J	< 0.00014	------	0.00018 J	0.00014 J	0.00019 J	0.00019 J	0.00018 J	0.00017 J	< 0.00018	< 0.00018	< 0.00018	0.0005 J	0.0005 J	0.0004 J
	Radium	pCi/L	0.401 U	1.1 U	0.64 U	0.795 U	------	1.12	0.89 U	0.493 U	0.804 U	0.369 U	0.660 U	0.85 U	0.692 U	0.489 U	1.07 U	0.903 U	0.302 U
	Radium-226	pCi/L	0.235 U	0.223 U	0.165 U	0.413	------	0.442	0.721	0.324	-0.0503 U	0.155 U	0.397 U	0.171 U	0.102 U	------	0.0154 U	0.166 U	0.0639 U
	Radium-228	pCi/L	0.166 U	0.874	0.475 U	0.382 U	------	0.675	0.169 U	0.169 U	0.804 U	0.214 U	0.263 U	0.679 U	0.59	------	1.05	0.737 U	0.238 U
Field Measured	Conductivity	uS/cm	554.02	526.5	541.8	581.4	566.2	618.2	590.8	592.2	627.6	612.09	596.5	598.52	603.24	0.6	632.92	618.01	629.46
	Dissolved Oxygen	mg/L	0.27	0.30	0.25	0.77	0.19	0.21	0.33	0.20	0.08	0.1	3.67	0.6	0.4	0.51	0.33	0.81	0.28
	Oxidation Reduction Potential	millivolts	31.91	94.7	174.3	99.6	114.7	158.7	54.9	91.4	245.6	30.28	140.6	99.5	41.2	102.4	584.1	547.9	580.16
	Temperature	Deg C	19.7	14.40	22.31	22.31	20.21	22.09	15.74	17.72	20.28	18.87	17.89	20.03	18.65	20.89	27.44	18.88	24.38
	Turbidity	ntu	0.37	2.25	0.78	0.00	3.37	2.12	4.98	4.85	4.83	4.04	4.73	2.24	4.91	0.53	4.72	1.2	4.48
	Water level depth	ft	27.45	28.05	29.00	29.70	28.24	30.50	31.40	29.44	32.6	32.85	33.00	34.85	36.17	37.09	21.35	22.22	21.75
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	------	------	< 5.0	------	5.2	< 5.00	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	3.5	------	------	------	< 5.0	------	5.2	< 5.00	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	< 1.0	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------
	Aluminum	mg/L	------	------	------	------	------	------	0.54	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	0.4	------	------	------	------	------	------	< 0.025	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------	< 0.025	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------	0.0	------	------	------
	Magnesium	mg/L	------	------	------	------	------	------	53.8	------	------	------	48.4	------	49.2	52.8	------	------	------
	Manganese	mg/L	------	------	------	------	------	------	0.73	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	0.87	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	< 0.020	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	------	------	4	------	------	------	4.0	------	3.6	3.7	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	5.7	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	------	------	17.1	------	------	------	17.5	------	16.9	17.5	------	------	------
	Sulfide	mg/L	------	------	------	------	------	------	<0.2	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	<0.5	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	0.0	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	DGWC-19	DGWC-19	DGWC-19	DGWC-19	DGWC-19	DGWC-19	DGWC-19	DGWC-19	DGWC-19	DGWC-19	DGWC-19	DGWC-19	DGWC-19	DGWC-19	DGWC-19	DGWC-20	DGWC-20
			7/12/2017	10/25/2017	2/28/2018	7/11/2018	11/7/2018	3/13/2019	8/28/2019	10/16/2019	3/3/2020	8/11/2020	9/22/2020	3/2/2021	9/9/2021	1/25/2022	9/14/2022	9/2/2016	12/7/2016
Appendix III	Boron	mg/L	2.82	3.19	2.90	3.70	2.60	2.60	------	2.20	3.1	------	2.6	2.3	2.7	2.5	2.40	6.77	6.04
	Calcium	mg/L	70	77	72.0	82.7	81.7	76.9	------	85.7	86.8	------	103	93.2	93.6	101	105.0	96.3	91.9
	Chloride	mg/L	41	41	36.40	38.20	38.80	40.10	------	33.20	30.9	------	27.6	27.0	25.4	23.7	18.70	15	16
	Fluoride	mg/L	0.34	0.9	1.2	0.37	0.2 J	0.22 J	0.2	0.23 J	0.056 J	0.2	0.084 J	0.19	0.18	0.16	0.18	0.66	0.66
	pH, field measured	S.U.	4.76	4.66	4.63	4.71	4.69	4.76	4.85	4.87	4.89	4.9	4.91	4.84	4.82	4.79	4.81	4.7	4.68
	Sulfate	mg/L	250	270	244	249	266	299	------	323	292	------	310	324	315	288	388	580	650
	Total Dissolved Solids	mg/L	360	423	440	457	461	113	------	500	526	------	513	513	480	694	572	1100	930
Appendix IV	Antimony	mg/L	< 0.00060	< 0.00060	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	0.00036 J	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080
	Arsenic	mg/L	0.0016 J	0.0022 J	< 0.0028 J	0.0009 J	< 0.0012 J	------	0.00049 J	0.00046 J	< 0.00035	0.0014 J	0.0017 J	0.0013 J	0.0027 J	0.0014 J	< 0.0022	0.0159	0.0037 J
	Barium	mg/L	0.0212	0.021	0.021	0.023	0.024	------	0.026	0.024	0.028	0.027	0.026	0.026	0.025	0.026	0.027	0.0097 J	0.0087 J
	Beryllium	mg/L	0.0018 J	0.0019 J	0.002 J	0.002 J	0.002 J	------	0.0018 J	0.0017 J	0.0021 J	0.002 J	0.002 J	0.0019	0.0022	0.0019	0.0018	0.0026 J	0.0035
	Cadmium	mg/L	0.0004 J	0.0004 J	0.00035 J	0.00039 J	< 0.00031 J	------	0.00033 J	0.00034 J	0.00037 J	0.0003 J	0.00036 J	0.00035 J	0.00037 J	0.00041 J	0.00032 J	0.0023	0.0023
	Chromium	mg/L	0.0023 J	0.0024 J	0.0021 J	0.0022 J	0.0028 J	------	0.0028 J	0.0024 J	0.0028 J	0.0024 J	0.003 J	0.0024 J	0.003 J	0.0029 J	0.0024 J	0.0017 J	< 0.00090
	Cobalt	mg/L	0.0489	0.0514	0.051	0.051	0.048	------	0.048	0.046	0.054	0.049	0.051	0.051	0.055	0.054	0.052	0.497	0.614
	Lead	mg/L	< 0.000070	< 0.000070	< 0.00027	< 0.00027	< 0.00027	------	0.00026 J	< 0.000046	0.00007 J	0.000053 J	0.00016 J	0.000045 J	< 0.00089	< 0.00089	< 0.00089	< 0.00060	< 0.00010
	Lithium	mg/L	0.0032 J	0.0031 J	0.0031 J	0.0034 J	0.0034 J	------	0.0032 J	0.0026 J	0.0034 J	0.0031 J	0.0034 J	0.0030 J	0.0035 J	0.0031 J	0.0032 J	0.0021 J	0.005 J
	Mercury	mg/L	< 0.000041	< 0.000036	< 0.000036	< 0.000036	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	< 0.000041	0.00008 J
	Molybdenum	mg/L	< 0.0010	< 0.0010	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017	< 0.0017
	Selenium	mg/L	0.0065 J	0.0087 J	0.011	0.0036 J	0.0068 J	------	0.004 J	0.006 J	0.0066 J	0.0096 J	0.0052 J	0.0091	0.0083	0.0029 J	0.0073	0.0671	0.0056 J
	Thallium	mg/L	0.0005 J	0.0004 J	0.00049 J	0.0005 J	< 0.00052 J	------	0.00053 J	0.00053 J	0.0006 J	0.00059 J	0.0005 J	0.00056 J	0.00056 J	0.00057 J	0.00056 J	< 0.0010	0.0006 J
	Radium	pCi/L	0.283 U	0.927 U	0.813 U	0.751 U	1.02	------	0.661 U	1.79	0.383 U	0.723 U	0.96 U	0.775 U	0.239 U	0.415 U	0.674 U	1.48	1.26 U
	Radium-226	pCi/L	0.26 U	0.394	0.296 U	0.267 U	0.294	------	0.276 U	0.495	0.383	0.265 U	0.48	0.140 U	0.126 U	0.115 U	------	0.149 U	0.359 U
	Radium-228	pCi/L	0.0232 U	0.533 U	0.517 U	0.484 U	0.726 U	------	0.385 U	1.29	-0.299 U	0.458 U	0.48 U	0.635 U	0.113 U	0.3 U	------	1.33	0.905 U
Field Measured	Conductivity	uS/cm	656.3	642.75	649.9	637.3	648.2	673.1	710.0	731.1	762.1	751.9	749.02	767.8	692.04	799.57	0.8	1171.6	1178.3
	Dissolved Oxygen	mg/L	0.22	0.18	0.21	0.31	0.17	0.16	0.14	0.20	0.09	0.22	0.2	0.55	0.41	0.17	0.16	0.25	0.64
	Oxidation Reduction Potential	millivolts	59.8	91.2	132.5	479.6	312.4	412.2	328.3	453.0	206.1	306.5	472.72	524.8	436.6	494	120.6	116.5	149.32
	Temperature	Deg C	25.69	17.41	17.05	22.84	19.52	21.00	22.62	20.04	19.55	20.96	20.3	16.94	22.27	18.97	20.97	21.5	17.59
	Turbidity	ntu	4.51	0.73	0.43	0.77	4.57	3.14	4.92	4.09	4.82	4.35	3.42	0.82	4.96	4.1	1.47	4.9	1.56
	Water level depth	ft	19.73	20.92	20.26	20.95	21.56	20.63	22.45	23.10	22.04	24.72	24.5	24.49	24.98	25.5	26.57	19.92	20.89
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	`	------	------	------	------	------	------	------	------	< 5.0	------	3.5 J	< 5.00	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	------	2.5	------	------	------	< 5.0	------	3.5 J	< 5.00	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------	< 1.0	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	0.44	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------	0.026 J	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------	0.026 J	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------	0.0	------	------
	Magnesium	mg/L	------	------	------	------	------	------	------	12.1	------	------	------	12.2	------	13	12.1	------	------
	Manganese	mg/L	------	------	------	------	------	------	------	2	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	0.013 J	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	< 0.00321	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	------	------	------	3.9	------	------	------	3.9	------	4.2	4.1	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	2.8	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	------	------	------	29.3	------	------	------	33.2	------	35.9	38.9	------	------
	Sulfide	mg/L	------	------	------	------	------	------	------	<0.363	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	<0.5	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	0.0	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-20	DGWC-21
			3/29/2017	7/12/2017	10/25/2017	2/28/2018	7/11/2018	11/7/2018	3/13/2019	8/29/2019	10/17/2019	3/4/2020	8/13/2020	9/22/2020	3/2/2021	9/10/2021	1/21/2022	9/15/2022	9/2/2016
Appendix III	Boron	mg/L	8.23	6.81	8.94	6.3	5.70	5.00	5.60	------	5.00	3.6	------	4.9	3.4	4.8	3.6	4.20	4.81
	Calcium	mg/L	95.7	100	97.3	86.3	92.4	85.9	86.4	------	86.9	103	------	79.2	74.7	69.8	104	70.1	70.2
	Chloride	mg/L	17	18	20	18.6	20.40	21.50	24.80	------	24.90	27.8	------	25.8	28.0	26.2	27	26.20	25
	Fluoride	mg/L	0.34	0.41	0.68	0.76	1.3	0.099 J	0.45	0.78	0.26 J	1.5	0.9	0.15	1.4	0.25	1.3	0.69	0.07 J
	pH, field measured	S.U.	4.7	4.67	4.71	4.51	4.68	4.64	4.65	4.64	4.64	4.22	4.36	4.66	4.45	4.67	4.47	4.58	5.70
	Sulfate	mg/L	640	630	610	584	501	554	539	------	426	434	------	408	458	399	406	462	300
	Total Dissolved Solids	mg/L	923	956	854	888	826	834	639	------	751	761	------	724	742	678	702	618	459
Appendix IV	Antimony	mg/L	< 0.00030	< 0.00060	< 0.00060	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00080
	Arsenic	mg/L	0.015	0.0121	0.0135	0.018	0.0055	0.0054	------	0.0064	0.0094	0.029	0.014	0.0063	0.019	0.0083	0.015	0.016	< 0.0016
	Barium	mg/L	0.0094 J	0.0099 J	0.0096 J	0.0094 J	0.01	0.011	------	0.018	0.015	0.017	0.019	0.011	0.021	0.0098	0.018	0.017	0.0252
	Beryllium	mg/L	0.0026 J	0.0025 J	0.0027 J	0.0025 J	0.0026 J	0.0024 J	------	0.005	0.0041	0.0089	0.0063	0.0027 J	0.0057	0.0024	0.007	0.0056	0.0001 J
	Cadmium	mg/L	0.0021	0.0021	0.002	0.0018	0.0018	0.0018	------	0.002 J	0.0017 J	0.0026	0.0021 J	0.0014 J	0.0025	0.0012	0.0028	0.0021	0.0006 J
	Chromium	mg/L	0.0016 J	< 0.0023	0.0015 J	< 0.0016	< 0.0016	0.0032 J	------	0.0017 J	0.0015 J	0.0032 J	0.0023 J	0.0013 J	0.0022 J	< 0.0011	0.0021 J	0.0014 J	< 0.00090
	Cobalt	mg/L	0.443	0.538	0.432	0.46	0.47	0.42	------	0.66	0.57	0.84	0.73	0.47	0.77	0.45	0.95	0.75	0.0085 J
	Lead	mg/L	< 0.00030	< 0.00030	< 0.00030	< 0.0014	< 0.0014	< 0.00027	------	0.00015 J	0.000097 J	0.00068 J	0.00044 J	0.00013 J	0.00047 J	< 0.00089	< 0.0089	< 0.0044	0.0002 J
	Lithium	mg/L	0.0021 J	0.0019 J	0.0022 J	0.0019 J	0.0022 J	0.0019 J	------	0.0093 J	0.0075 J	0.019 J	0.012 J	0.0026 J	0.011 J	0.0023 J	0.012 J	0.0096 J	0.0057 J
	Mercury	mg/L	0.00008 J	< 0.000041	< 0.000036	< 0.000036	< 0.000036	0.000038 J	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	0.000090 J	< 0.000078	< 0.00013	< 0.00013	0.00006 J
	Molybdenum	mg/L	< 0.00060	< 0.0010	< 0.0010	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017
	Selenium	mg/L	0.0521	0.0483	0.0506	0.076	0.022	0.044	------	0.029	0.071	0.071	0.091	0.023	0.078	0.031	0.041	0.062	< 0.0010
	Thallium	mg/L	0.0006 J	0.0006 J	0.0005 J	< 0.00071	< 0.00071	< 0.00053 J	------	0.00084 J	0.00062 J	0.0023 J	0.0016 J	0.00055 J	0.0014 J	0.00052 J	< 0.0018	0.0010 J	< 0.00020
	Radium	pCi/L	0.373 U	0.91 U	0.853 U	0.727 U	1.3	0.746 U	------	0.996 U	2	1.67	1.77	1.61 U	1.76	0.689 U	0.826 U	1.38	0.908 U
	Radium-226	pCi/L	0.186	0.345	0.382	0.298 U	0.31 U	0.451	------	0.666	0.395 U	0.763	0.379 U	0.6	0.281 U	0.067 U	0.355 U	------	0.177 U
	Radium-228	pCi/L	0.187 U	0.565 U	0.471 U	0.429 U	0.992	0.295 U	------	0.33 U	1.6	0.908	1.39	1.01 U	1.48	0.622 U	0.471 U	------	0.731
Field Measured	Conductivity	uS/cm	1166.4	1138.8	1086.48	1090.86	1003.9	1008.4	1001.1	974.1	991.5	935.9	966.7	926.17	982.62	892.33	964.43	913.2	642.0
	Dissolved Oxygen	mg/L	0.28	0.17	0.17	0.23	0.60	0.22	0.16	0.35	0.36	0.25	0.15	0.24	0.65	0.13	0.18	0.08	0.22
	Oxidation Reduction Potential	millivolts	358.1	75.1	110.8	154.3	473.4	149.4	140.7	377.8	112.1	201.5	278.1	113.29	402.9	156.3	250	126.0	90.1
	Temperature	Deg C	22.94	24.4	19.96	18.25	24.60	20.03	19.85	22.87	16.02	17.48	21.38	19.65	17.85	21.75	17.01	21.69	21.69
	Turbidity	ntu	1.97	2.55	0.86	0.16	1.28	4.08	2.38	2.79	0.45	0.45	3.6	0.41	2.3	2.4	2.04	1.00	2.40
	Water level depth	ft	21.1	20.94	21.55	21.00	22.20	22.56	21.05	24.55	24.34	21.65	26.12	23.83	22.63	23.22	24.15	25.32	13.60
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	< 5.0	------	< 1.8	< 5.00	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	< 1.0	------	------	------	< 5.0	------	< 1.8	< 5.00	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	< 1.0	------	------	------	< 5.0	------	< 1.8	< 5.00	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	0.79	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	------	------	0.1	------	------	------	------	------	------	0.034 J	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	0.55	------	------	------	------	------	------	< 0.025	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------	0.5	------
	Magnesium	mg/L	------	------	------	------	------	------	------	------	42	------	------	------	22.3	------	27.3	25.4	------
	Manganese	mg/L	------	------	------	------	------	------	------	------	20.6	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	0.042 J	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	< 0.020	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	------	------	------	------	8.5	------	------	------	9.6	------	12.8	7.7	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	7.3	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	------	------	------	------	25.2	------	------	------	17.9	------	20.6	17.3	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	<0.2	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	<0.5	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	0.5	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21	DGWC-21
			12/8/2016	3/30/2017	7/12/2017	10/25/2017	2/28/2018	7/11/2018	11/7/2018	3/13/2019	8/29/2019	10/17/2019	3/3/2020	8/14/2020	9/24/2020	3/3/2021	9/9/2021	1/20/2022	9/15/2022
Appendix III	Boron	mg/L	3.57	5.68	5.2	7.92	5.9	8.30	4.90	6.20	------	7.00	6.8	------	6.1	5.3	5.8	6.9	6.70
	Calcium	mg/L	70.1	72.5	80.4	75.6	73.2	82.3	78.5	79.9	------	79.8	87.4	------	80	82.1	75.3	83.7	82.2
	Chloride	mg/L	24	24	23	23	19.9	20.90	20.50	21.30	------	20.10	19.7	------	20	19.7	20.2	18.6	17.60
	Fluoride	mg/L	0.14 J	< 0.0040	0.04 J	0.34	< 0.029	<0.029	<0.029	0.043 J	0.079 J	<0.029	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.087 J
	pH, field measured	S.U.	5.64	5.79	5.71	5.68	5.71	5.71	5.61	5.62	5.61	5.57	5.65	5.66	5.64	5.63	5.73	5.73	5.69
	Sulfate	mg/L	280	270	290	290	267	277	286	312	------	255	269	------	269	264	238	223	268
	Total Dissolved Solids	mg/L	491	436	505	474	480	485	516	486	------	498	490	------	494	459	396	451	440
Appendix IV	Antimony	mg/L	< 0.00080	< 0.00030	< 0.00060	< 0.00060	< 0.00078	0.0013 J	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078
	Arsenic	mg/L	< 0.0016	< 0.00040	< 0.00050	< 0.00050	< 0.00057	< 0.00057	< 0.00057	------	< 0.00035	< 0.00035	< 0.00035	< 0.00078	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022
	Barium	mg/L	0.0262	0.0272	0.0276	0.0262	0.027	0.027	0.024	------	0.027	0.027	0.027	0.027	0.024	0.024	0.023	0.024	0.024
	Beryllium	mg/L	0.0001 J	0.0002 J	0.0001 J	0.0002 J	0.00016 J	0.00016 J	< 0.00018 J	------	0.00018 J	0.00015 J	0.00019 J	0.0002 J	0.00018 J	0.00017 J	0.00018 J	0.00019 J	0.00018 J
	Cadmium	mg/L	0.0006 J	0.0008 J	0.0006 J	0.0005 J	0.00054 J	0.00054 J	< 0.00048 J	------	0.00087 J	0.0006 J	0.00063 J	0.00054 J	0.00073 J	0.00044 J	0.00012 J	< 0.00011	0.00029 J
	Chromium	mg/L	< 0.00090	0.0005 J	0.0006 J	< 0.00050	< 0.0016	< 0.0016	< 0.0016	------	0.00041 J	< 0.00039	0.00048 J	< 0.00055	0.00096 J	0.0020 J	< 0.0011	< 0.0011	< 0.0011
	Cobalt	mg/L	0.0095 J	0.0076 J	0.0092 J	0.0092 J	< 0.0094 J	0.0097 J	0.0096 J	------	0.01	0.01	0.01	0.0098	0.01	0.0087	0.0096	0.0076	0.0081
	Lead	mg/L	< 0.00010	0.0004 J	0.0001 J	< 0.000070	0.00047 J	< 0.00027	< 0.00027	------	0.00023 J	0.000046 J	0.00015 J	< 0.000036	0.00014 J	< 0.000036	< 0.00089	< 0.00089	< 0.00089
	Lithium	mg/L	0.0054 J	0.0065 J	0.0057 J	0.006 J	0.0061 J	0.0057 J	0.0059 J	------	0.0061 J	0.0063 J	0.0065 J	0.0058 J	0.0062 J	0.0054 J	0.006 J	0.0058 J	0.0069 J
	Mercury	mg/L	< 0.000041	0.00008 J	0.00006 J	0.00005 J	< 0.000036	< 0.000036	0.000051 J	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	0.00012 J	< 0.000078	< 0.000078	< 0.00013	< 0.00013
	Molybdenum	mg/L	< 0.0017	< 0.00060	< 0.0010	< 0.0010	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074
	Selenium	mg/L	< 0.0010	< 0.0014	< 0.0018	< 0.0018	< 0.0014	< 0.0014	< 0.0014	------	< 0.0013	< 0.0013	< 0.0013	< 0.0016	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014
	Thallium	mg/L	< 0.00020	< 0.000050	< 0.000050	< 0.000050	< 0.00014	< 0.00014	< 0.00014	------	< 0.000052	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018
	Radium	pCi/L	1.03 U	0.884 U	1.22	1.07 U	1.45	1.59	1.16	------	0.582 U	0.427 U	0.567 U	0.602 U	0.396 U	0.248 U	0.702 U	0.337 U	0.771 U
	Radium-226	pCi/L	0.161 U	0.0767 U	0.195 U	0.347 U	0.266 U	0.305	0.29	------	0.582	0.287 U	0.567	0.118 U	0.264 U	-0.018 U	0.148 U	0.107 U	------
	Radium-228	pCi/L	0.864 U	0.807 U	1.02	0.72 U	1.18	1.28	0.865	------	-0.0351 U	0.14 U	-0.0636 U	0.484 U	0.132 U	0.248 U	0.554 U	0.23 U	------
Field Measured	Conductivity	uS/cm	679.89	631.75	679.7	651.92	682.6	640.1	665.9	701.9	693.7	690.1	706.9	688	672.7	671	634.11	676.9	651.5
	Dissolved Oxygen	mg/L	0.28	1.68	0.24	0.2	0.29	0.23	0.19	0.22	0.12	0.21	0.20	0.32	0.19	0.22	0.15	0.27	0.08
	Oxidation Reduction Potential	millivolts	99.84	126.81	107.9	109.47	63.9	136.8	379.0	133.9	613.3	146.2	108.1	92.9	78.5	252.3	9	112.8	124.8
	Temperature	Deg C	15.42	20.65	24.61	20.57	18.29	24.90	21.51	19.59	23.80	18.53	19.76	21.31	19.23	19.64	21.53	14.30	22.46
	Turbidity	ntu	0.43	0.03	0.43	0.42	0.52	4.96	2.19	0.50	0.60	0.45	1.81	0.66	0.1	0.54	1.21	0.36	0.84
	Water level depth	ft	14.95	15.58	16.15	16.8	16.5	17.61	18.11	17.60	19.50	19.77	18.61	19.55	17.61	15.75	15.8	17.06	18.89
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	29.0	------	29.9	31.6
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	------	28	------	------	------	29.0	------	29.9	31.6
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	------	< 20	------	------	------	< 5.0	------	< 1.8	< 5.00
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	< 0.032	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	< 0.50	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	------	------	------	< 0.015	------	------	------	------	------	------	< 0.025
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	------	0.69	------	------	------	------	------	------	< 0.025
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------	0.0
	Magnesium	mg/L	------	------	------	------	------	------	------	------	------	16.2	------	------	------	16.3	------	17.1	17.5
	Manganese	mg/L	------	------	------	------	------	------	------	------	------	1.7	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	< 0.0050	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	< 0.020	------	------	------		------		
	Potassium	mg/L	------	------	------	------	------	------	------	------	------	6.5	------	------	------	6.8	------	6.8	6.6
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	8.9	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	------	------	------	------	------	22.1	------	------	------	23.6	------	23	22.4
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	<0.2	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	<0.5	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	<0.018	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22	DGWC-22
			9/2/2016	12/8/2016	3/29/2017	7/13/2017	10/25/2017	2/28/2018	7/12/2018	11/7/2018	3/14/2019	8/29/2019	10/18/2019	3/3/2020	8/14/2020	9/24/2020	3/3/2021	9/10/2021	1/20/2022
Appendix III	Boron	mg/L	3.99	3.1	4.85	3.85	3.9	5.1	3.60	3.30	4.10	------	4.20	4.6	------	4.1	3.9	4.5	4.2
	Calcium	mg/L	61.6	60.1	64.7	67.2	66.8	62.3	71.0	60.9	64.8	------	61.7	68.7	------	62.6	62.3	62.3	67.3
	Chloride	mg/L	30	26	30	29.00	29	23.4	26.10	25.80	26.30	------	23.40	21.8	------	21.5	20.6	17.3	18.1
	Fluoride	mg/L	0.3	0.12 J	0.11 J	0.09 J	0.25 J	< 0.029	0.13 J	<0.029	0.042 J	0.054 J	<0.029	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	pH, field measured	S.U.	5.74	6.03	5.77	5.71	5.77	5.77	5.62	5.71	5.67	5.66	5.61	5.74	5.76	5.69	5.71	5.65	5.72
	Sulfate	mg/L	140	260	290	300	290	278	197	320	297	------	254	242	------	262	252	234	221
	Total Dissolved Solids	mg/L	502	464	462	492	477	476	486	511	491	------	480	452	------	455	442	468	434
Appendix IV	Antimony	mg/L	< 0.00080	< 0.00080	< 0.00030	<0.0006	< 0.00060	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078
	Arsenic	mg/L	< 0.0016	< 0.0016	< 0.00040	<0.0005	< 0.00050	< 0.0010 J	< 0.00057	< 0.00057	------	< 0.00035	< 0.00035	< 0.00035	< 0.00078	< 0.00078	< 0.00078	< 0.0011	< 0.0011
	Barium	mg/L	0.0397	0.0408	0.0417	0.0376	0.0384	0.035	0.036	0.031	------	0.031	0.032	0.035	0.035	0.031	0.031	0.027	0.029
	Beryllium	mg/L	0.0002 J	0.0001 J	0.0002 J	0.0002 J	0.0002 J	0.00019 J	0.00018 J	< 0.00017 J	------	0.00015 J	0.00014 J	0.00017 J	0.00016 J	0.00017 J	0.00013 J	0.00014 J	0.00014 J
	Cadmium	mg/L	0.0003 J	0.0004 J	0.0004 J	0.0005 J	0.0007 J	0.00086 J	< 0.00091 J	< 0.00064 J	------	0.00053 J	0.00056 J	0.00061 J	0.00057 J	0.00058 J	0.00050	0.00061	0.00052
	Chromium	mg/L	0.0012 J	< 0.00090	< 0.00030	<0.0005	< 0.00050	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039	< 0.00039	< 0.00039	< 0.00055	< 0.00055	< 0.00055	< 0.0011	< 0.0011
	Cobalt	mg/L	0.0102	0.0079 J	0.0097 J	0.0106	0.0094 J	< 0.0098 J	0.011	0.0088 J	------	0.0094 J	0.0084	0.0098	0.0087	0.01	0.0078	0.0076	0.0075
	Lead	mg/L	< 0.00010	< 0.00010	< 0.000070	<0.00007	< 0.000070	< 0.00027	< 0.00027	< 0.00027	------	< 0.000046	< 0.000046	< 0.000046	< 0.000036	< 0.000036	< 0.000036	< 0.00089	< 0.00089
	Lithium	mg/L	0.0046 J	0.0047 J	0.0043 J	0.0044 J	0.0042 J	0.0043 J	0.0036 J	0.004 J	------	0.0035 J	0.0041 J	0.0046 J	0.0039 J	0.0037 J	0.0038 J	0.0039 J	0.0032 J
	Mercury	mg/L	0.00005 J	< 0.000041	0.0001 J	<0.000041	< 0.000036	< 0.000036	0.000055 J	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	0.00011 J	< 0.00013
	Molybdenum	mg/L	< 0.0017	< 0.0017	< 0.00060	<0.001	< 0.0010	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074
	Selenium	mg/L	< 0.0010	< 0.0010	< 0.0014	<0.0018	< 0.0018	< 0.0014	0.0017 J	< 0.0014	------	< 0.0013	< 0.0013	< 0.0013	< 0.0016	< 0.0016	< 0.0016	< 0.0014	< 0.0014
	Thallium	mg/L	< 0.00020	< 0.00020	0.00006 J	0.00007 J	0.00007 J	< 0.00014	< 0.00014	< 0.00014	------	0.000064 J	< 0.000052	0.00007 J	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018
	Radium	pCi/L	1.54	0.505 U	0.715 U	1.14	1.6	0.918 U	0.981 U	0.832 U	------	1.87	1.1 U	0.517 U	1.83	1.02 U	0.547 U	0.616 U	0.298 U
	Radium-226	pCi/L	0.227	0.0754 U	0.22	------	0.557	0.522	0.374	0.395	------	0.48	0.693	0.388	0.2 U	0.311 U	-0.0221 U	0.0544 U	0.244 U
	Radium-228	pCi/L	1.31	0.43 U	0.495 U	------	1.04	0.396 U	0.607 U	0.437 U	------	1.39	0.404 U	0.129 U	1.63	0.709 U	0.547 U	0.562 U	0.0536 U
Field Measured	Conductivity	uS/cm	661.25	615.98	682.32	703.8	678	696.2	653.5	672.7	670.7	667.4	670.1	668.9	640.8	648.8	662.7	622.77	645.57
	Dissolved Oxygen	mg/L	0.24	0.18	0.28	0.33	0.2	0.25	0.25	0.55	0.25	0.17	0.12	0.26	0.27	0.44	0.25	0.17	0.28
	Oxidation Reduction Potential	millivolts	96.5	74.8	-0.75	111.3	109.94	81.5	98.1	135.4	124.2	347.3	133.5	99.3	129.7	85.8	436.1	251.8	76.2
	Temperature	Deg C	22.97	16.22	25.3	23.09	20.32	18.25	22.45	20.93	20.11	22.49	18.02	19.75	20.53	19.43	19.18	20.54	15.71
	Turbidity	ntu	2.68	1.01	0.55	0.07	0.49	0.68	0.90	1.50	0.25	0.92	0.71	0.74	0.22	0.16	0.71	0.78	1.11
	Water level depth	ft	11.62	13.12	13.81	15.37	16.85	15.81	17.20	18.69	16.22	19.91	20.78	17.00	21.18	20.41	19	20.58	20.83
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	24.2	------	24.4
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	------	------	17	------	------	------	24.2	------	24.4
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	------	------	< 1.0	------	------	------	< 5.0	------	< 1.8
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	< 0.032	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	< 0.50	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	0.0345 J	------	------	------	------	------	------	------	< 0.015	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------
	Magnesium	mg/L	------	------	------	------	------	------	------	------	------	------	22.6	------	------	------	22.1	------	23.5
	Manganese	mg/L	------	------	1.39	------	------	------	------	------	------	------	1.2	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	0.059	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	< 0.020	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	------	------	------	------	------	------	6.5	------	------	------	6.7	------	6.8
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	11.5	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	------	------	------	------	------	------	26.7	------	------	------	28.4	------	30.6
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	<0.2	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	<0.5	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	<0.018	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	DGWC-22	DGWC-23	DGWC-23	DGWC-23	DGWC-23	DGWC-23	DGWC-23	DGWC-23	DGWC-23	DGWC-23	DGWC-23	DGWC-23	DGWC-23	DGWC-23	DGWC-23	DGWC-23	DGWC-23
			9/16/2022	3/30/2017	5/12/2017	6/15/2017	7/12/2017	10/26/2017	3/1/2018	7/12/2018	11/8/2018	3/14/2019	8/29/2019	10/18/2019	3/4/2020	8/13/2020	9/24/2020	3/3/2021	9/9/2021
Appendix III	Boron	mg/L	4.20	4.68	4.03	4.11	3.74	4.07	4.37	4.00	4.70	4.70	------	4.50	4.8	------	4.6	4.0	4.7
	Calcium	mg/L	66.2	68.1	71.1	65.9	70	67.2	66.5	72.0	73.5	73.2	------	67.7	69.8	------	73.7	68.1	76.4
	Chloride	mg/L	18.00	17	17.00	16.00	16	17	14.80	15.20	14.60	15.20	------	14.40	13.9	------	13.7	14.0	12.3
	Fluoride	mg/L	0.068 J	0.12 J	0.36	0.21 J	0.22 J	0.66	0.18 J	0.25 J	0.052 J	0.092 J	0.095 J	0.079 J	0.075 J	0.1	0.075 J	0.063 J	0.084 J
	pH, field measured	S.U.	5.62	6.03	5.97	6.00	5.97	5.9	6.19	5.97	5.96	5.99	5.96	5.99	5.68	6	6.19	5.85	6
	Sulfate	mg/L	265	220	220	200	220	220	209	202	292	266	------	203	204	------	215	221	217
	Total Dissolved Solids	mg/L	462	380	438	458	461	446	454	432	450	453	------	448	408	------	456	425	455
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00030	<0.0003	0.0007 J	< 0.00060	< 0.00060	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	< 0.00028	< 0.00028	< 0.00078
	Arsenic	mg/L	< 0.0022	< 0.00040	<0.0004	<0.0005	< 0.00050	< 0.00050	< 0.00057	< 0.00057	< 0.00057	------	< 0.00035	< 0.00035	< 0.00035	< 0.00078	< 0.00078	< 0.00078	< 0.0011
	Barium	mg/L	0.029	0.0184	0.0202	0.0188	0.0186	0.0176	0.0164	0.022	0.022	------	0.025	0.019	0.032	0.027	0.02	0.019	0.021
	Beryllium	mg/L	0.00023 J	0.0004 J	0.0004 J	0.0004 J	0.0004 J	0.0004 J	< 0.000050	0.00035 J	< 0.00047 J	------	0.00041 J	0.00038 J	0.00077 J	0.00041 J	0.00045 J	0.00050	0.0005 J
	Cadmium	mg/L	0.00065	0.0002 J	0.0003 J	0.0002 J	0.0002 J	0.0003 J	< 0.000093	< 0.00028 J	< 0.00032 J	------	0.00022 J	0.00022 J	0.00024 J	0.00027 J	0.00018 J	0.00015 J	0.00019 J
	Chromium	mg/L	< 0.0011	0.0012 J	0.0004 J	0.0005 J	0.0007 J	0.0007 J	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039	0.00041 J	0.00081 J	0.00085 J	0.00084 J	0.0014 J	< 0.0011
	Cobalt	mg/L	0.0098	< 0.00050	<0.0005	0.0003 J	< 0.00030	< 0.00030	< 0.00052	< 0.00052	< 0.00091 J	------	0.00036 J	< 0.00030	0.00043 J	0.00048 J	< 0.00038	0.00039 J	0.00049 J
	Lead	mg/L	< 0.00089	< 0.000070	<0.00007	<0.00007	< 0.000070	< 0.000070	< 0.00027	< 0.00027	< 0.00027	------	0.000066 J	< 0.000046	< 0.000046	< 0.000036	< 0.000036	< 0.000036	< 0.00089
	Lithium	mg/L	0.0033 J	0.0162 J	0.0036 J	0.0063 J	0.0068 J	0.0049 J	0.0759	0.0047 J	0.0053 J	------	0.0017 J	0.0039 J	0.004 J	0.0052 J	0.0045 J	0.014 J	0.0081 J
	Mercury	mg/L	< 0.00013	0.0002 J	0.00015 J	0.00019 J	0.00012 J	0.00012 J	< 0.000036	0.00016 J	0.00014 J	------	< 0.00014	< 0.00014	0.00026	0.00014 J	0.0002 J	0.00033	0.00011 J
	Molybdenum	mg/L	< 0.00074	0.0084 J	0.0085 J	0.0104	0.0092 J	0.0077 J	0.0045 J	0.012	0.012	------	0.014	0.0091 J	0.0047 J	0.013	0.0088 J	0.0026 J	0.01
	Selenium	mg/L	< 0.0014	< 0.0014	<0.0014	<0.0018	< 0.0018	< 0.0018	< 0.0014	< 0.0014	< 0.0014	------	< 0.0013	< 0.0013	< 0.0013	< 0.0016	< 0.0016	< 0.0016	< 0.0014
	Thallium	mg/L	< 0.00018	< 0.000050	<0.00005	<0.00005	< 0.000050	< 0.000050	< 0.00014	< 0.00014	< 0.00020 J	------	< 0.000052	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018
	Radium	pCi/L	1.01	0.297 U	0.693 U	0.435 U	0.703 U	0.984 U	0.743 U	0.918 U	1.47	------	2.21	1.32	1.39	1.48 U	1.49	1.05 U	1.81
	Radium-226	pCi/L	------	0.0393 U	------	------	0.243	0.468	0.511	0.335	0.526	------	1.06	1.03	0.791	0.504	0.324 U	0.354 U	0.903
	Radium-228	pCi/L	------	0.258 U	------	------	0.46 U	0.516 U	0.232 U	0.583 U	0.941	------	1.15	0.294 U	0.601 U	0.971 U	1.17	0.695 U	0.903
Field Measured	Conductivity	uS/cm	670.5	636.24	627.1	591.9	635.6	616.92	689.5	582.9	612.9	642.9	656.1	622.7	554.5	651.5	701.78	628.3	660.71
	Dissolved Oxygen	mg/L	0.32	0.55	0.52	0.32	0.35	0.24	0.80	0.31	0.25	0.62	0.25	0.53	0.34	0.29	0.26	0.53	0.43
	Oxidation Reduction Potential	millivolts	83.5	273.96	190.3	123.4	68.2	124.48	140.7	163.4	322.2	193.5	111.3	303.3	512.2	109.9	100.38	516.4	62.5
	Temperature	Deg C	21.29	23.06	20.84	25.61	28.59	16.2	18.96	21.73	17.32	17.27	20.93	14.17	16.69	23.01	18.3	17.27	20.78
	Turbidity	ntu	0.71	2.93	0.78	3.60	0.33	0.61	1.40	0.81	1.39	0.50	1.15	0.76	0.59	2.05	0.35	0.43	2.79
	Water level depth	ft	22.95	14.86	15.15	14.57	16.7	19.13	16.64	19.30	19.34	18.86	21.49	25.40	17.20	22.14	24.5	21.35	24.15
Supplemental	Alkalinity as CaCO3, Total	mg/L	24.7	------	------	------	------	------	------	------	------	------	------	------	------	------	------	67.7	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	24.7	------	------	------	------	------	------	------	------	------	------	81	------	------	------	67.7	------
	Alkalinity, Carbonate as CaCO3	mg/L	< 5.00	------	------	------	------	------	------	------	------	------	------	< 20	------	------	------	< 5.0	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	< 0.032	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	< 0.50	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	< 0.025	------	------	------	------	------	------	------	------	------	------	0.036 J	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	< 0.025	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------
	Iron, Ferrous	mg/L	0.0	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------
	Magnesium	mg/L	22.8	------	------	------	------	------	------	------	------	------	------	18.5	------	------	------	16.8	------
	Manganese	mg/L	------	------	------	------	------	------	------	------	------	------	------	1.8	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	< 0.0050	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	< 0.020	------	------	------	------	------
	Potassium	mg/L	6.8	------	------	------	------	------	------	------	------	------	------	8.2	------	------	------	11.0	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	10.3	------	------	------	------	------
	Sodium	mg/L	30.4	------	------	------	------	------	------	------	------	------	------	24.4	------	------	------	22.1	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	<0.2	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	<0.5	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	<0.018	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-23	DGWC-23	DGWC-37	DGWC-37	DGWC-37	DGWC-37	DGWC-37	DGWC-37	DGWC-37	DGWC-37	DGWC-37	DGWC-37	DGWC-37	DGWC-37	DGWC-37	DGWC-37	DGWC-37
			1/20/2022	9/20/2022	9/8/2016	12/7/2016	3/30/2017	7/13/2017	10/26/2017	1/23/2018	3/1/2018	7/12/2018	11/8/2018	3/13/2019	8/28/2019	10/18/2019	3/9/2020	8/13/2020	9/24/2020
Appendix III	Boron	mg/L	4.5	4.60	1.58	2.01	1.47	2.10	1.86	------	1.87	1.50	1.40	1.80	------	1.30	1.8	------	1.6
	Calcium	mg/L	82.7	90.0	52.5	29.7	62.6	64.1	60.8	57.7	57.0	59.1	53.6	54.8	------	52.5	64.2	------	55.9
	Chloride	mg/L	12	11.60	6.2	6.1	6.3	6.50	6.4	6.3	6.30	5.80	5.80	6.90	------	5.80	6	------	5.6
	Fluoride	mg/L	< 0.050	0.11	0.08 J	0.21 J	0.05 J	0.06 J	0.08 J	------	0.22 J	0.32	<0.029	0.08 J	0.074 J	0.075 J	0.054 J	0.068 J	0.061 J
	pH, field measured	S.U.	5.95	6.00	6.32	6.32	6.22	6.30	6.33	------	6.28	6.43	6.36	6.26	6.27	6.26	6.34	6.34	6.3
	Sulfate	mg/L	211	242	97	100	110	200	97	102	94.6	89.2	102	92.2	------	76.4	90.3	------	84.1
	Total Dissolved Solids	mg/L	453	511	279	300	273	312	340	------	311	290	295	286	------	269	357	------	280
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	< 0.00080	< 0.00080	< 0.00030	<0.0006	< 0.00060	------	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	< 0.00028
	Arsenic	mg/L	< 0.0011	< 0.0022	< 0.0016	0.0019 J	< 0.00040	<0.0005	< 0.00050	< 0.0050	< 0.00057	< 0.00057	< 0.00057	------	< 0.00035	< 0.00035	< 0.00035	< 0.00078	< 0.00078
	Barium	mg/L	0.024	0.019	0.123	0.125	0.11	0.11	0.112	------	0.102	0.11	0.11	------	0.086	0.079	0.092	0.088	0.094
	Beryllium	mg/L	0.00046 J	0.00037 J	< 0.000080	< 0.000080	< 0.000070	<0.00009	< 0.000090	------	< 0.000050	0.00007 J	< 0.000050	------	0.000086 J	< 0.000074	< 0.000074	0.0001 J	0.000088 J
	Cadmium	mg/L	0.00012 J	0.00017 J	0.0002 J	0.0001 J	0.0001 J	<0.0001	< 0.00010	------	< 0.000093	< 0.000093	< 0.000093	------	< 0.00011	< 0.00011	< 0.00011	< 0.00012	0.00027 J
	Chromium	mg/L	< 0.0011	< 0.0011	< 0.00090	< 0.00090	< 0.00030	<0.0005	0.0007 J	------	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039	< 0.00039	< 0.00039	0.00058 J	< 0.00055
	Cobalt	mg/L	0.00058 J	0.00053 J	< 0.00050	0.0005 J	< 0.00050	0.0003 J	0.0003 J	------	< 0.00052	< 0.00052	< 0.00052	------	< 0.00030	< 0.00030	< 0.00030	< 0.00038	< 0.00038
	Lead	mg/L	< 0.00089	< 0.00089	< 0.00010	< 0.00010	0.0014 J	<0.00007	< 0.000070	------	< 0.00027	< 0.00027	< 0.00027	------	0.000061 J	< 0.000046	< 0.000046	< 0.000036	< 0.000036
	Lithium	mg/L	0.0029 J	0.0051 J	< 0.0021	< 0.0021	0.0029 J	<0.0015	0.0018 J	------	0.0024 J	0.0028 J	0.0023 J	------	0.0025 J	0.0026 J	0.0017 J	0.0023 J	0.0021 J
	Mercury	mg/L	< 0.00013	< 0.00013	< 0.000041	< 0.000041	0.00006 J	<0.000041	< 0.000036	------	< 0.000036	0.000044 J	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	0.000091 J
	Molybdenum	mg/L	0.0073 J	0.0095 J	< 0.0017	< 0.0017	< 0.00060	<0.001	< 0.0010	------	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069
	Selenium	mg/L	< 0.0014	< 0.0014	< 0.0010	< 0.0010	< 0.0014	<0.0018	< 0.0018	------	< 0.0014	< 0.0014	< 0.0014	------	< 0.0013	< 0.0013	< 0.0013	< 0.0016	< 0.0016
	Thallium	mg/L	< 0.00018	< 0.00018	< 0.00020	< 0.00020	< 0.000050	<0.00005	< 0.000050	------	< 0.00014	< 0.00014	< 0.00014	------	< 0.000052	< 0.000052	< 0.000052	< 0.00014	< 0.00014
	Radium	pCi/L	0.61 U	1.17 U	0.827 U	0.56 U	0.302 U	0.731	1.04 U	------	0.344 U	0.566 U	0.623 U	------	1.24 U	------	0.499 U	0.99	1.03 U
	Radium-226	pCi/L	0.404	------	0.184 U	0.19 U	0.170 U		0.607	------	0.344 U	0.273	0.451	------	0.508	------	0.499	0.166	0.28 U
	Radium-228	pCi/L	0.206 U	------	0.643 U	0.37 U	0.132 U		0.428 U	------	-0.28 U	0.293 U	0.172 U	------	0.736 U	------	-0.0603 U	0.824	0.746 U
Field Measured	Conductivity	uS/cm	656.99	728.0	471.7	475.96	483.28	493.3	485.74	------	454.7	434.4	426.3	438.9	399.1	396.2	445.3	411.9	425.4
	Dissolved Oxygen	mg/L	0.2	0.64	0.19	0.14	0.16	0.24	0.31	------	0.28	0.85	1.16	0.95	1.71	1.52	0.44	1.06	0.99
	Oxidation Reduction Potential	millivolts	80.1	122.1	54.3	56.59	57.52	80.8	73.4	------	81.5	109.8	78.0	73.0	131.7	37.0	23.7	226.3	85.6
	Temperature	Deg C	15.61	19.32	20.74	18.97	18.3	21.78	18.11	------	18.26	25.49	18.53	15.84	20.51	15.89	18.51	22.44	19.01
	Turbidity	ntu	1.08	0.93	2.32	1.14	0.07	0.04	1.16	------	0.00	4.12	3.20	0.30	4.46	1.14	0.32	4.63	1.22
	Water level depth	ft	21.41	26.22	13.2	12.92	13.35	13.30	13.39	------	13.75	13.64	13.50	12.83	14.00	14.28	12.30	14.35	13.73
Supplemental	Alkalinity as CaCO3, Total	mg/L	72.8	87.3	------	------	------		------	136	------	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	72.8	87.3	------	------	------		------	------	------	------	------	------	------	117	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	< 1.8	< 5.00	------	------	------		------	------	------	------	------	------	------	< 20	------	------	------
	Aluminum	mg/L	------	------	------	------	------		------	------	------	------	------	------	------	< 0.032	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------		------	------	------	------	------	------	------	0.52 J	------	------	------
	Hardness	mg/L	------	------	------	------	------		------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	< 0.025	------	------	------		------	0.1	------	------	------	------	------	< 0.20	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	< 0.025	------	------	------		------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	0.0	------	------	------		------	------	------	------	------	------	------	< 0.20	------	------	------
	Magnesium	mg/L	19.9	20.4	------	------	------		------	12.3	------	------	------	------	------	10.9	------	------	------
	Manganese	mg/L	------	------	------	------	------		------	0.154	------	------	------	------	------	0.11	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------		------	------	------	------	------	------	------	0.3	------	------	------
	Phosphate	mg/L	------	------	------	------	------		------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------		------	------	------	------	------	------	------	0.089	------	------	------
	Potassium	mg/L	7	7.7	------	------	------		------	4.16	------	------	------	------	------	3.7	------	------	------
	Silica	mg/L	------	------	------	------	------		------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------		------	------	------	------	------	------	------	13	------	------	------
	Sodium	mg/L	22.6	22.9	------	------	------		------	10.5	------	------	------	------	------	10.9	------	------	------
	Sulfide	mg/L	------	------	------	------	------		------	------	------	------	------	------	------	<0.2	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------		------	------	------	------	------	------	------	<0.5	------	------	------
	Zinc	mg/L	------	------	------	------	------		------	------	------	------	------	------	------	------	<0.018	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-37	DGWC-37	DGWC-37	DGWC-37	DGWC-38	DGWC-38	DGWC-38	DGWC-38	DGWC-38	DGWC-38	DGWC-38	DGWC-38	DGWC-38	DGWC-38	DGWC-38	DGWC-38	DGWC-38
			3/11/2021	9/16/2021	1/21/2022	9/9/2022	9/8/2016	12/7/2016	3/30/2017	7/13/2017	10/26/2017	1/23/2018	3/1/2018	7/12/2018	11/8/2018	3/13/2019	8/28/2019	10/18/2019	3/9/2020
Appendix III	Boron	mg/L	1.4	1.4	1.4	2.00	2.69	3.08	3.19	3.09	2.92	------	3.08	2.80	3.40	2.90	------	3.10	3
	Calcium	mg/L	56.0	63	64.4	66.2	70.3	38.4	80.3	90.8	81.3	79.9	81.8	86.7	86.6	85.3	------	97.8	91.9
	Chloride	mg/L	5.6	5.6	5.7	5.40	7.4	7.4	7.7	7.50	8.2	8.2	8.10	8.00	8.10	9.10	------	8.60	8.1
	Fluoride	mg/L	0.057 J	0.084 J	0.053 J	0.082 J	0.1 J	0.27 J	0.12 J	0.13 J	0.47	------	<0.029	0.23 J	<0.029	0.084 J	0.066 J	0.073 J	0.064 J
	pH, field measured	S.U.	6.49	6.33	6.31	6.30	6.01	6.07	5.97	6.11	6.06	------	6.05	6.05	6.07	6.05	5.98	6.00	6.12
	Sulfate	mg/L	81.9	95	89.8	96.6	270	250	290	270	260	238	242	256	291	300	------	239	244
	Total Dissolved Solids	mg/L	255	278	316	300	437	478	448	504	554	------	492	478	507	487	------	494	554
Appendix IV	Antimony	mg/L	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080	< 0.00030	<0.0006	< 0.00060	------	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027
	Arsenic	mg/L	< 0.00078	< 0.0011	< 0.0011	< 0.0022	< 0.0016	< 0.0016	< 0.00040	0.0005 J	< 0.00050	< 0.0050	< 0.00057	< 0.00057	< 0.00057	------	< 0.00035	< 0.00035	< 0.00035
	Barium	mg/L	0.075	0.083	0.085	0.079	0.0333	0.0336	0.0325	0.0332	0.0333	------	0.0333	0.034	0.035	------	0.033	0.032	0.032
	Beryllium	mg/L	< 0.000046	0.000059 J	0.000059 J	0.000057 J	< 0.000080	< 0.000080	< 0.000070	<0.00009	< 0.000090	------	< 0.000050	< 0.000050	< 0.000050	------	< 0.000074	< 0.000074	< 0.000074
	Cadmium	mg/L	< 0.00012	0.00013 J	< 0.00011	< 0.00011	0.0002 J	0.0002 J	0.0002 J	0.0002 J	0.0002 J	------	< 0.000093	< 0.00024 J	0.00024 J	------	0.0003 J	0.00016 J	0.00017 J
	Chromium	mg/L	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00090	< 0.00090	< 0.00030	<0.0005	0.0005 J	------	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039	0.00092 J	0.00044 J
	Cobalt	mg/L	< 0.00038	< 0.00039	< 0.00039	< 0.00039	0.0015 J	0.0017 J	0.0016 J	0.0016 J	0.0016 J	------	< 0.00052	0.0015 J	0.0016 J	------	0.0016 J	0.0016 J	0.0016 J
	Lead	mg/L	< 0.000036	< 0.00089	< 0.00089	< 0.00089	< 0.00010	< 0.00010	< 0.000070	<0.00007	0.0001 J	------	< 0.00027	< 0.00027	< 0.00027	------	< 0.000046	0.000074 J	0.000061 J
	Lithium	mg/L	0.0024 J	0.0021 J	0.002 J	0.0019 J	0.0032 J	0.0035 J	0.0035 J	0.0032 J	0.0034 J	------	0.0033 J	0.0034 J	0.003 J	------	0.0034 J	0.0032 J	0.0033 J
	Mercury	mg/L	------	< 0.000078	< 0.00013	< 0.00013	< 0.000041	< 0.000041	0.00007 J	<0.000041	< 0.000036	------	< 0.000036	0.00004 J	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014
	Molybdenum	mg/L	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017	< 0.0017	0.0011 J	0.0012 J	0.0011 J	------	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	0.001 J
	Selenium	mg/L	< 0.0016	< 0.0014	< 0.0014	< 0.0014	< 0.0010	< 0.0010	< 0.0014	<0.0018	< 0.0018	------	< 0.0014	< 0.0014	< 0.0014	------	< 0.0013	< 0.0013	< 0.0013
	Thallium	mg/L	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00020	< 0.00020	0.0001 J	0.0001 J	0.0001 J	------	< 0.00014	< 0.00014	< 0.00014	------	0.00014 J	0.0001 J	0.00016 J
	Radium	pCi/L	0.956 U	0.691 U	0.343 U	0.719 U	1.48	0.22 U	0.519 U	1.11	1.13 U	------	0.985 U	0.615 U	0.58 U	------	0.517 U	------	1.04
	Radium-226	pCi/L	0.369 U	0.0559 U	0.1 U	------	0.424	0.00686 U	0.0740 U	------	0.42 U	------	0.138 U	0.283	0.422	------	0.517	------	0.673
	Radium-228	pCi/L	0.587 U	0.635 U	0.243 U	------	1.06	0.213 U	0.445 U	------	0.714 U	------	0.847	0.332 U	0.158 U	------	-0.0409 U	------	0.364 U
Field Measured	Conductivity	uS/cm	411.53	434.56	481.56	0.5	675.85	695.23	687.66	692.4	685.29	------	643.4	664.9	651.2	673.5	683.0	683.5	642.0
	Dissolved Oxygen	mg/L	1.18	1.25	0.65	0.87	0.23	0.16	0.11	0.17	0.24	------	0.21	0.11	0.15	0.17	0.12	0.11	0.16
	Oxidation Reduction Potential	millivolts	730.71	78.1	95.2	73.0	63	56.93	60.66	83.8	351.2	------	82.7	42.8	82.0	54.6	110.5	36.1	-5.5
	Temperature	Deg C	17.35	18.86	15.96	21.21	22.16	17.61	19.53	21.78	21.77	------	18.57	23.78	18.96	18.07	22.28	17.38	18.44
	Turbidity	ntu	0.82	2.4	0.5	0.46	1.53	0.52	0.14	0.17	2.00	------	0.44	0.21	1.11	1.22	1.05	1.24	0.93
	Water level depth	ft	13.85	13.9	13.45	14.35	6.16	6.17	6.45	6.80	6.74	------	6.65	7.00	6.25	4.62	6.96	7.23	4.84
Supplemental	Alkalinity as CaCO3, Total	mg/L	132	------	128	134.0	------	------	------	------	------	83	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	132	------	128	134.0	------	------	------	------	------	------	------	------	------	------	------	81	------
	Alkalinity, Carbonate as CaCO3	mg/L	< 5.0	------	< 1.8	< 5.0	------	------	------	------	------	------	------	------	------	------	------	< 20	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.032	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.50	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	0.1	------	------	------	------	------	< 0.040	------	------	------	------	------	< 0.20	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	0.1	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------	------	< 0.20	------
	Magnesium	mg/L	12	------	13.9	14.7	------	------	------	------	------	27.2	------	------	------	------	------	28.6	------
	Manganese	mg/L	------	------	------	------	------	------	------	------	------	0.649	------	------	------	------	------	0.67	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.0050	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------		------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.020	------
	Potassium	mg/L	3.9	------	4.1	4.4	------	------	------	------	------	4.18	------	------	------	------	------	4.8	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	11.4	------
	Sodium	mg/L	10.7	------	11.1	11.0	------	------	------	------	------	10.9	------	------	------	------	------	13.8	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	<0.2	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	<0.5	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	<0.018

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-38	DGWC-38	DGWC-38	DGWC-38	DGWC-38	DGWC-38	DGWC-39	DGWC-39	DGWC-39	DGWC-39	DGWC-39	DGWC-39	DGWC-39	DGWC-39	DGWC-39	DGWC-39	DGWC-39
			8/13/2020	9/24/2020	3/11/2021	9/15/2021	1/21/2022	9/12/2022	9/8/2016	12/7/2016	3/30/2017	7/13/2017	10/26/2017	1/23/2018	3/1/2018	7/12/2018	11/8/2018	3/13/2019	8/28/2019
Appendix III	Boron	mg/L	------	2.9	2.7	2.8	2.8	2.80	3.35	3.63	3.57	3.41	3.41	------	2.86	3.00	3.40	3.40	------
	Calcium	mg/L	------	84.1	85.8	88.3	91	87.6	87.2	96.7	98.9	95.0	90.6	81.5	79.6	89.8	89.0	96.3	------
	Chloride	mg/L	------	8.2	8.0	7.6	8.5	8.50	9.2	8.9	8.7	8.40	8.3	8.2	8.10	7.70	7.70	8.20	------
	Fluoride	mg/L	0.06 J	0.057 J	0.058 J	0.06 J	0.1	0.12	0.17 J	0.33	0.17 J	0.14 J	0.54	------	0.13 J	0.13 J	0.072 J	0.085 J	0.086 J
	pH, field measured	S.U.	6.05	6.05	6.22	6.08	6.08	6.05	6.47	6.43	6.42	6.47	6.49	------	6.37	6.45	6.49	6.28	6.41
	Sulfate	mg/L	------	240	154	219	188	234	280	250	310	220	210	181	166	169	200	265	------
	Total Dissolved Solids	mg/L	------	489	463	474	482	468	522	565	496	508	532	------	440	463	485	526	------
Appendix IV	Antimony	mg/L	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080	< 0.00030	<0.0006	< 0.00060	------	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027
	Arsenic	mg/L	< 0.00078	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022	< 0.0016	< 0.0016	0.0007 J	0.0009 J	< 0.00050	< 0.0050	0.0011 J	0.00057 J	< 0.00057	------	< 0.00035
	Barium	mg/L	0.032	0.032	0.032	0.032	0.031	0.027	0.0978	0.0844	0.0858	0.0919	0.0899	------	0.0742	0.094	0.1	------	0.099
	Beryllium	mg/L	< 0.000046	0.000058 J	< 0.000046	< 0.000054	< 0.000054	< 0.000054	< 0.000080	< 0.000080	< 0.000070	<0.00009	< 0.000090	------	< 0.000050	< 0.000050	< 0.000050	------	< 0.000074
	Cadmium	mg/L	0.00021 J	0.00081 J	< 0.00012	0.00021 J	0.0002 J	0.00013 J	< 0.000070	< 0.000070	< 0.000060	<0.0001	< 0.00010	------	< 0.000093	< 0.000093	< 0.000093	------	< 0.00011
	Chromium	mg/L	< 0.00055	< 0.00055	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00090	< 0.00090	< 0.00030	<0.0005	< 0.00050	------	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039
	Cobalt	mg/L	0.0014 J	0.0013 J	0.0017 J	0.0016 J	0.0017 J	0.0014 J	0.0068 J	0.0071 J	0.006 J	0.0063 J	0.0062 J	------	< 0.00052	0.0059 J	0.0062 J	------	0.0067 J
	Lead	mg/L	< 0.000036	0.00014 J	0.00014 J	< 0.00089	< 0.00089	< 0.00089	< 0.00010	< 0.00010	< 0.000070	<0.00007	< 0.000070	------	< 0.00027	< 0.00027	< 0.00027	------	0.00008 J
	Lithium	mg/L	0.0028 J	0.0029 J	0.0030 J	0.0029 J	0.0025 J	0.0030 J	< 0.0021	< 0.0021	< 0.0011	<0.0015	< 0.0015	------	< 0.00097	< 0.00097	< 0.00097	------	< 0.00078
	Mercury	mg/L	< 0.000078	0.000085 J	------	< 0.000078	< 0.00013	< 0.00013	< 0.000041	< 0.000041	0.000059 J	<0.000041	< 0.000036	------	< 0.000036	< 0.000036	< 0.000036	------	< 0.00014
	Molybdenum	mg/L	0.00098 J	0.001 J	0.00092 J	0.00099 J	0.0013 J	0.0012 J	< 0.0017	< 0.0017	< 0.00060	<0.001	< 0.0010	------	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095
	Selenium	mg/L	< 0.0016	< 0.0016	0.0019 J	< 0.0014	< 0.0014	< 0.0014	< 0.0010	< 0.0010	< 0.0014	<0.0018	< 0.0018	------	< 0.0014	< 0.0014	< 0.0014	------	< 0.0013
	Thallium	mg/L	0.00016 J	0.00015 J	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00020	< 0.00020	0.0001 J	0.00009 J	0.0001 J	------	< 0.00014	< 0.00014	< 0.00014	------	0.000069 J
	Radium	pCi/L	0.132 U	0.593 U	0.0784 U	2.37	0.0873 U	0.479 U	1.44	2.16	0.264 U	0.517 U	0.875 U	------	1.24	0.935 U	1.15 U	------	1.15 U
	Radium-226	pCi/L	0.132 U	0.156 U	0.0784 U	0.543	0.0873 U	------	0.157 U	0.0206 U	0.264	------	0.56	------	0.14 U	0.196	0.54	------	0.396
	Radium-228	pCi/L	-0.316 U	0.437 U	-0.0501 U	1.83	-0.0214 U	------	1.28	2.14	-0.437 U	------	0.315 U	------	1.1	0.739 U	0.609 U	------	0.754 U
Field Measured	Conductivity	uS/cm	672.4	658.75	665.3	690.15	702.88	710.9	854.01	863.97	796.77	794.0	786.98	------	681.3	723.8	723.6	780.5	800.9
	Dissolved Oxygen	mg/L	0.13	0.19	0.56	0.14	0.25	0.18	0.37	0.16	0.08	0.16	0.2	------	0.19	0.11	0.19	0.13	0.11
	Oxidation Reduction Potential	millivolts	286.8	70.6	723.2	38.7	113.8	45.7	-29.3	-21.52	-42.08	-9.2	23.9	------	29.5	-47.1	390.0	14.4	18.9
	Temperature	Deg C	23.22	19.73	16.87	19.64	15.79	21.73	23.51	18.97	20.84	22.58	22.04	------	15.51	21.57	18.97	16.00	22.36
	Turbidity	ntu	1.56	2.12	1.65	4.77	3.33	1.45	1.09	4.06	4.77	0.98	4.89	------	2.25	0.83	4.58	4.98	2.05
	Water level depth	ft	6.89	6.34	6.79	6.15	6.20	6.84	7.91	7.02	7.20	7.70	7.90	------	7.65	8.18	7.75	5.65	9.85
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	84.6	------	94	87.1	------	------	------	------	------	194	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	84.6	------	94	87.1	------	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	< 5.0	------	< 1.8	< 5.0	------	------	------	------	------	------	------	------	------	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	0.0	------	------	11.2	------	------	9.4	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------	------
	Magnesium	mg/L	------	------	25.7	------	27.3	26.4	------	------	------	------	------	19.7	------	------	------	------	------
	Manganese	mg/L	------	------	------	------	------	------	------	------	12.7	------	------	11.3	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	4.3	------	4.5	4.1	------	------	------	------	------	2.36	------	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	12.1	------	12.4	12.0	------	------	------	------	------	11	------	------	------	------	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	DGWC-39	DGWC-39	DGWC-39	DGWC-39	DGWC-39	DGWC-39	DGWC-39	DGWC-39	DGWC-40	DGWC-40	DGWC-40	DGWC-40	DGWC-40	DGWC-40	DGWC-40	DGWC-40	DGWC-40
			10/18/2019	3/9/2020	8/13/2020	9/25/2020	3/11/2021	9/17/2021	1/20/2022	9/7/2022	9/2/2016	12/8/2016	3/30/2017	7/13/2017	10/26/2017	1/24/2018	3/2/2018	7/12/2018	11/8/2018
Appendix III	Boron	mg/L	3.60	2.9	------	3.3	2.5	2.8	2.8	3.30	0.895	0.841	0.937	0.93	0.873	------	0.97	0.92	0.80
	Calcium	mg/L	108.0	100	------	92.5	91.9	98.6	96.2	92.5	39.6	37.9	43.9	46.2	41.8	40.8	43.2	47.1	43.5
	Chloride	mg/L	8.00	7.5	------	7.9	7.7	8.3	8	8.20	20	18	20	21.00	21	18.7	19.50	19.90	19.30
	Fluoride	mg/L	0.14 J	0.075 J	0.076 J	0.086 J	0.083 J	0.13	0.1	0.11	0.5	0.35	0.21 J	0.2 J	0.5	------	0.33	0.57	0.11 J
	pH, field measured	S.U.	6.35	6.37	6.39	6.38	6.66	6.49	6.52	6.43	4.77	4.77	4.84	4.85	4.79	------	4.67	4.63	4.79
	Sulfate	mg/L	182	171	------	153	123	156	123	146	230	270	240	220	220	230	219	222	273
	Total Dissolved Solids	mg/L	489	508	------	460	440	446	416	449	583	319	344	386	373	------	359	365	399
Appendix IV	Antimony	mg/L	< 0.00027	< 0.00027	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080	< 0.00030	<0.0008	< 0.00060	------	< 0.00078	< 0.00078	< 0.00078
	Arsenic	mg/L	0.00075 J	0.00039 J	< 0.00078	0.00087 J	< 0.00078	< 0.0011	0.0019 J	< 0.0022	< 0.0016	< 0.0016	0.0006 J	<0.0016	< 0.00050	< 0.00052	0.0011 J	< 0.00057	< 0.00057
	Barium	mg/L	0.1	0.076	0.089	0.1	0.078	0.09	0.093	0.099	0.0171	0.0163	0.0177	0.0171	0.0168	------	0.0169	0.018	0.017
	Beryllium	mg/L	< 0.000074	< 0.000074	< 0.000046	< 0.000046	< 0.000046	< 0.000054	< 0.000054	< 0.000054	0.0028 J	0.0026 J	0.003	0.0028 J	0.0027 J	------	0.0033	0.0032	0.0027 J
	Cadmium	mg/L	< 0.00011	< 0.00011	< 0.00012	< 0.00012	< 0.00012	< 0.00011	< 0.00011	< 0.00011	0.0008 J	0.0007 J	0.0007 J	0.0008 J	0.0008 J	------	< 0.000093	< 0.00087 J	0.00076 J
	Chromium	mg/L	< 0.00039	< 0.00039	< 0.00055	< 0.00055	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00090	< 0.00090	0.0007 J	<0.0009	0.0007 J	------	< 0.0016	< 0.0016	< 0.0016
	Cobalt	mg/L	0.007	0.007	0.006	0.0061	0.0058	0.0076	0.0061	0.0065	0.0382	0.0318	0.0364	0.0382	0.0371	------	0.0425	0.044	0.036
	Lead	mg/L	< 0.000046	< 0.000046	< 0.000036	0.00022 J	< 0.000036	< 0.00089	< 0.00089	< 0.00089	< 0.00010	< 0.00010	0.00007 J	<0.0001	0.00007 J	------	< 0.00027	< 0.00027	< 0.00027
	Lithium	mg/L	< 0.00078	< 0.00078	< 0.00081	< 0.00081	< 0.00081	< 0.00073	< 0.00073	< 0.00073	0.0022 J	< 0.0021	0.0023 J	0.0022 J	0.0021 J	------	0.0023 J	0.0022 J	0.002 J
	Mercury	mg/L	< 0.00014	< 0.00014	< 0.000078	< 0.000078	------	< 0.000078	< 0.00013	< 0.00013	0.000044 J	< 0.000041	0.00009 J	0.000044 J	< 0.000036	------	< 0.000036	0.000045 J	< 0.000036
	Molybdenum	mg/L	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017	< 0.0017	< 0.00060	<0.0017	< 0.0010	------	< 0.0019	< 0.0019	< 0.0019
	Selenium	mg/L	< 0.0013	< 0.0013	< 0.0016	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014	0.0019 J	0.0022 J	0.0023 J	0.0019 J	0.0036 J	------	< 0.0014	< 0.0014	0.0016 J
	Thallium	mg/L	< 0.000052	0.000071 J	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00020	< 0.00020	0.00006 J	<0.0002	0.00007 J	------	< 0.00014	< 0.00014	< 0.00014
	Radium	pCi/L	------	1.36	0.626 U	0.181 U	0.969 U	0.911 U	0.172 U	0.637 U	1.44	2.56	0.0844 U	1.44	0.748 U	------	0.485 U	0.231 U	0.465 U
	Radium-226	pCi/L	------	0.694	0.255 U	0.0807 U	0.0788 U	0.149 U	0.172 U	------	0.0392 U	0.0616 U	-0.160 U	------	0.661	------	0.298 U	0.231	0.328
	Radium-228	pCi/L	------	0.664 U	0.371 U	0.0999 U	0.89 U	0.762 U	-0.207 U	------	1.4	2.5	0.0844 U	------	0.0869 U	------	0.187 U	-0.236 U	0.137 U
Field Measured	Conductivity	uS/cm	807.9	710.0	768.8	754.07	726.2	767.17	745.4	766.0	520.89	550.25	541.81	545.4	544.7	------	554.3	523.3	518.5
	Dissolved Oxygen	mg/L	0.11	0.12	0.17	0.21	0.09	0.78	0.14	0.11	1.31	1.00	2.65	1.54	1.26	------	1.96	2.21	1.79
	Oxidation Reduction Potential	millivolts	-54.6	14.4	22	13.6	436	-18.6	-39	-40.6	167.8	125.2	182.24	132.9	108.7	------	104.7	179.3	143.1
	Temperature	Deg C	18.08	16.99	20.22	21.11	15.71	21.37	15.12	70.96	22.47	16	22.8	24.42	20.58	------	14.76	23.51	18.92
	Turbidity	ntu	2.25	6.58	3.12	3.65	4.68	2.66	4.95	2.99	1.57	0.82	0.52	0.08	0.02	------	0.32	0.87	0.32
	Water level depth	ft	9.58	5.90	10.49	7.55	8.55	7.00	6.97	9.06	18.04	17.86	17.2	16.22	17.8	------	16.45	15.30	17.81
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	245	------	229	256.0	------	------	------	------	------	1.5	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	216	------	------	------	245	------	229	256.0	------	------	------	------	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	< 20	------	------	------	< 5.0	------	< 1.8	< 5.0	------	------	------	------	------	------	------	------	------
	Aluminum	mg/L	0.049 J	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	0.96 J	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	11.2	------	------	------	------	------	------	12.3	------	------	------	------	------	< 0.0043	------	------	------
	Iron, Ferric (Fe2)	mg/L	11.2	------	------	------	------	------	------	6.3	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	0.7	------	------	------	------	------	------	6.0	------	------	------	------	------	------	------	------	------
	Magnesium	mg/L	25	------	------	------	22.6	------	24	22.4	------	------	------	------	------	20.5	------	------	------
	Manganese	mg/L	13.3	------	------	------	------	------	------	------	------	------	------	------	------	2.73	------	------	------
	Nitrate as N	mg/L	< 0.0050	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	< 0.020	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	2.9	------	------	------	2.4	------	2.8	2.9	------	------	------	------	------	5.52	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	2.7	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	16.9	------	------	------	14.4	------	13.9	13.6	------	------	------	------	------	16.8	------	------	------
	Sulfide	mg/L	<0.2	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	0.93 J	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	<0.018	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	DGWC-40	DGWC-40	DGWC-40	DGWC-40	DGWC-40	DGWC-40	DGWC-40	DGWC-40	DGWC-40	DGWC-40	DGWC-42	DGWC-42	DGWC-42	DGWC-42	DGWC-42	DGWC-42	DGWC-42
			3/13/2019	8/28/2019	10/18/2019	3/4/2020	8/13/2020	9/23/2020	3/8/2021	9/14/2021	1/19/2022	9/7/2022	9/7/2016	12/8/2016	3/31/2017	7/13/2017	10/25/2017	1/23/2018	2/28/2018
Appendix III	Boron	mg/L	0.80	------	0.90	0.86	------	0.76	0.72	0.7	0.82	0.84	0.924	0.957	0.99	1.03	0.982	------	0.92
	Calcium	mg/L	41.0	------	44.9	49.6	------	41.9	44.9	45.1	44.7	44.8	43.6	45.8	48.3	52.3	50.9	45.7	45.1
	Chloride	mg/L	19.70	------	19.20	20.6	------	19.7	19.1	16.7	16.5	15.00	33	32	33.00	33.00	32	26.2	29
	Fluoride	mg/L	0.15 J	0.14	0.13 J	0.11 J	0.16	0.054 J	0.17	0.13	0.12	0.14	0.02 J	0.06 J	<0.004	<0.03	< 0.030	------	< 0.029
	pH, field measured	S.U.	4.60	4.68	4.71	4.64	4.65	4.78	4.79	4.67	4.66	4.54	5.35	5.41	5.36	5.27	5.38	------	5.37
	Sulfate	mg/L	445	------	205	177	------	190	191	186	177	203	370	350	380	370	370	349	350
	Total Dissolved Solids	mg/L	351	------	360	400	------	357	346	347	336	339	611	535	661	641	626	------	616
Appendix IV	Antimony	mg/L	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	< 0.00028	0.00033 J	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080	<0.0003	<0.0006	< 0.00060	------	< 0.00078
	Arsenic	mg/L	------	< 0.00035	< 0.00035	0.00065 J	< 0.00078	< 0.00078	< 0.00078	< 0.0011	0.003 J	< 0.0022	< 0.0016	< 0.0016	0.0007 J	<0.0005	< 0.00050	< 0.0050	< 0.0011 J
	Barium	mg/L	------	0.017	0.019	0.018	0.018	0.019	0.016	0.027	0.018	0.016	0.0194	0.0189	0.0194	0.021	0.0196	------	0.017
	Beryllium	mg/L	------	0.0032	0.0033	0.0039	0.0033	0.0031	0.0030	0.0032	0.0034	0.0031	0.0021 J	0.0023 J	0.0025 J	0.0025 J	0.0026 J	------	0.0029 J
	Cadmium	mg/L	------	0.00087 J	0.00088 J	0.00093 J	0.00084 J	0.0008 J	0.00072	0.00086	0.00085	0.00081	0.0007 J	0.0003 J	0.0009 J	0.0008 J	0.0005 J	------	0.00025 J
	Chromium	mg/L	------	0.00061 J	0.00078 J	0.0011 J	0.00072 J	0.0011 J	0.00060 J	0.0021 J	< 0.0011	< 0.0011	< 0.00090	< 0.00090	0.001 J	0.0008 J	0.0005 J	------	< 0.0016
	Cobalt	mg/L	------	0.044	0.043	0.055	0.044	0.046	0.039	0.05	0.042	0.037	0.0695	0.0652	0.0524	0.0481	0.0435	------	< 0.017
	Lead	mg/L	------	0.000081 J	0.00015 J	0.00017 J	0.000049 J	0.00028 J	0.000054 J	< 0.00089	< 0.00089	< 0.00089	0.0002 J	0.0002 J	0.0004 J	0.0004 J	0.0002 J	------	< 0.00027
	Lithium	mg/L	------	0.0022 J	0.0024 J	0.0027 J	0.0022 J	0.0022 J	0.0022 J	0.003 J	0.0024 J	0.0023 J	0.012 J	0.0118 J	0.0119 J	0.0116 J	0.0122 J	------	0.012 J
	Mercury	mg/L	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	------	< 0.000078	< 0.00013	< 0.00013	< 0.000041	< 0.000041	0.00004 J	<0.000041	< 0.000036	------	< 0.000036
	Molybdenum	mg/L	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017	< 0.0017	<0.0006	<0.001	< 0.0010	------	< 0.0019
	Selenium	mg/L	------	0.0017 J	0.0027 J	0.0049 J	0.0018 J	0.0067 J	0.0023 J	0.0015 J	< 0.0014	0.0018 J	< 0.0010	< 0.0010	<0.0014	<0.0018	< 0.0018	------	< 0.0014
	Thallium	mg/L	------	0.00007 J	< 0.000052	0.000068 J	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.00020	< 0.00020	0.00009 J	0.00009 J	0.00009 J	------	< 0.00014
	Radium	pCi/L	------	0.592 U	------	1.62	1.6	1.28 U	0.714 U	1.8	1.7	0.772 U	0.876 U	0.955	0.102 U	1.08 U	1.46	------	0.882 U
	Radium-226	pCi/L	------	0.403	------	1.07	0.193 U	0.414 U	0.147 U	0.192 U	0.123 U	------	0.00696 U	0.177	0.102 U	------	0.444	------	0.555
	Radium-228	pCi/L	------	0.189 U	------	0.554 U	1.41	0.869 U	0.567 U	1.61	1.58	------	0.869	0.778 U	-0.109 U	------	1.02	------	0.327 U
Field Measured	Conductivity	uS/cm	510.2	537.9	535.2	561.1	535.1	546.1	474.3	511.89	547.83	469.3	775.3	832.42	866.3	904.1	895.85	------	848.87
	Dissolved Oxygen	mg/L	3.14	2.37	1.93	3.94	2.79	2.28	2.83	2.46	2.5	2.64	0.31	0.37	0.82	0.06	0.31	------	0.21
	Oxidation Reduction Potential	millivolts	142.2	252.1	122.0	239.7	106	165.5	98	220.3	142.8	48.9	145.1	47.26	141.9	83.0	69.15	------	93.2
	Temperature	Deg C	20.79	23.55	20.21	17.89	21.2	21.03	19.61	21.18	19.19	20.84	27.68	14.95	21.59	22.55	19.3	------	18.39
	Turbidity	ntu	0.38	0.91	4.64	1.38	1.16	1.8	0.45	1.85	1.18	1.03	3.05	2.58	4.97	4.81	4.63	------	3.95
	Water level depth	ft	14.94	20.21	20.90	15.42	19.4	17.58	17.1	17.6	17.35	18.90	26.57	28.73	29.68	31.15	31.01	------	31.13
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------		------	------	------	< 5.0	------	< 1.8	< 5.0	------	------	------	------	------	5.5	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	< 1.0	------	------	------	< 5.0	------	< 1.8	< 5.0	------	------	------	------	------		------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	< 1.0	------	------	------	< 5.0	------	< 1.8	< 5.0	------	------	------	------	------		------
	Aluminum	mg/L	------	------	0.41	------	------	------		------			------	------	------	------	------		------
	Dissolved Organic Carbon	mg/L	------	------	< 0.50	------	------	------		------			------	------	------	------	------		------
	Hardness	mg/L	------	------		------	------	------		------			------	------	------	------	------		------
	Iron, Total	mg/L	------	------	0.2	------	------	------		------		< 0.025	------	------	------	------	------	0.4	------
	Iron, Ferric (Fe2)	mg/L	------	------	0.2	------	------	------		------		< 0.025	------	------	------	------	------		------
	Iron, Ferrous	mg/L	------	------	< 0.20	------	------	------		------		0.0	------	------	------	------	------		------
	Magnesium	mg/L	------	------	19.6	------	------	------	18.8	------	19.9	19.4	------	------	------	------	------	36.5	------
	Manganese	mg/L	------	------	3.3	------	------	------		------			------	------	------	------	------	11.1	------
	Nitrate as N	mg/L	------	------	1	------	------	------		------			------	------	------	------	------		------
	Phosphate	mg/L	------	------		------	------	------		------			------	------	------	------	------		------
	Phosphorus, Total Orthophosphate	mg/L	------	------	< 0.020	------	------	------		------			------	------	------	------	------		------
	Potassium	mg/L	------	------	5.7	------	------	------	6	------	5.9	5.9	------	------	------	------	------	5.97	------
	Silica	mg/L	------	------		------	------	------		------			------	------	------	------	------		------
	Silicon	mg/L	------	------	9.4	------	------	------		------			------	------	------	------	------		------
	Sodium	mg/L	------	------	17.8	------	------	------	20.7	------	19.9	19.2	------	------	------	------	------	58.7	------
	Sulfide	mg/L	------	------	<0.2	------	------	------		------			------	------	------	------	------		------
	Total Organic Carbon	mg/L	------	------	<0.5	------	------	------		------			------	------	------	------	------		------
	Zinc	mg/L	------	------	------	------	------	------		------			------	------	------	------	------		------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-42	DGWC-42	DGWC-42	DGWC-42	DGWC-42	DGWC-42	DGWC-42	DGWC-42	DGWC-42	DGWC-42	DGWC-42	DGWC-42	DGWC-47	DGWC-47	DGWC-47	DGWC-47	DGWC-47
			7/11/2018	11/7/2018	3/14/2019	8/28/2019	10/17/2019	3/4/2020	8/13/2020	9/22/2020	3/3/2021	9/13/2021	1/20/2022	9/13/2022	9/1/2016	12/8/2016	3/31/2017	7/13/2017	10/26/2017
Appendix III	Boron	mg/L	0.83	0.89	0.89	------	0.94	1.00	------	0.88	0.87	0.95	0.83	1.10	0.345	0.352	0.31	0.28	0.269
	Calcium	mg/L	47.8	45.5	43.5	------	44.1	48.8	------	43.8	38.8	38.9	38.1	34.2	69.3	71.1	62.6	52.5	46.7
	Chloride	mg/L	29.30	28.60	24.80	------	25.80	23.6	------	22.1	20.8	17.1	18.2	18.70	12	12	9.10	5.70	6.6
	Fluoride	mg/L	<0.029	<0.029	<0.029	<0.05	<0.029	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	1.8	1.1	0.88	0.84	1
	pH, field measured	S.U.	5.19	5.18	5.10	5.30	5.20	5.18	5.34	5.76	5.30	5.15	5.27	5.04	5.11	5.71	4.58	4.95	4.41
	Sulfate	mg/L	366	439	404	------	321	329	------	320	329	285	281	326	470	400	350	270	290
	Total Dissolved Solids	mg/L	638	626	630	------	612	721	------	547	531	508	504	540	704	587	545	441	444
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080	<0.0003	<0.0006	< 0.00060
	Arsenic	mg/L	< 0.00057	< 0.00057	------	< 0.00035	< 0.00035	< 0.00035	< 0.00078	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022	0.0037 J	0.0032 J	0.0031 J	0.0018 J	0.0016 J
	Barium	mg/L	0.02	0.017	------	0.018	0.018	0.015	0.027	0.016	0.015	0.014	0.014	0.016	0.0162	0.0247	0.0189	0.0165	0.0152
	Beryllium	mg/L	0.0029 J	0.0031	------	0.0023 J	0.0027 J	0.0029 J	0.0026 J	0.0013 J	0.0023	0.0024	0.002	0.0028	0.0165	0.0116	0.0112	0.0098	0.0119
	Cadmium	mg/L	0.0024	< 0.00091 J	------	0.0015 J	0.00058 J	0.00037 J	0.0013 J	0.0007 J	0.00038 J	0.00042 J	0.00038 J	0.00069	0.0017	0.0002 J	0.002	0.0017	0.0015
	Chromium	mg/L	< 0.0016	< 0.0016	------	< 0.00039	0.00041 J	0.00042 J	0.0021 J	0.001 J	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00090	< 0.00090	0.0007 J	<0.0005	< 0.00050
	Cobalt	mg/L	0.019	0.02	------	0.029	0.03	0.014	0.025	0.014	0.0087	0.008	0.0056	0.0069	0.536	0.381	0.354	0.396	0.383
	Lead	mg/L	0.00052 J	0.00047 J	------	0.00036 J	0.00026 J	0.0001 J	0.0016 J	0.00074 J	0.00024 J	< 0.00089	< 0.00089	< 0.00089	0.0005 J	< 0.00010	0.0009 J	0.0007 J	0.0009 J
	Lithium	mg/L	0.01 J	0.012 J	------	0.01 J	0.011 J	0.0091 J	0.011 J	0.0099 J	0.0079 J	0.015 J	0.0069 J	0.0091 J	0.0854	0.0667	0.0767	0.0743	0.071
	Mercury	mg/L	< 0.000036	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	< 0.000041	< 0.000041	<0.000041	<0.000041	< 0.000036
	Molybdenum	mg/L	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017	< 0.0017	<0.0006	<0.001	< 0.0010
	Selenium	mg/L	< 0.0014	< 0.0014	------	< 0.0013	< 0.0013	< 0.0013	< 0.0016	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014	0.0217	0.017	0.0133	0.0068 J	0.0097 J
	Thallium	mg/L	< 0.00014	< 0.00014	------	0.000069 J	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	0.0002 J	< 0.00020	0.0002 J	0.0002 J	0.0003 J
	Radium	pCi/L	0.924 U	0.654 U	------	0.883 U	1.38	0.722 U	1.23 U	1.03 U	0.920 U	1.15 U	0.0465 U	0.829 U	4.47	2.88	1.14	2.37	2.88
	Radium-226	pCi/L	0.556	0.385	------	0.507	0.408 U	0.615	0.248 U	0.268 U	0.165 U	0.128 U	0.0182 U	------	2.03	0.569	0.41	------	1.73
	Radium-228	pCi/L	0.368 U	0.269 U	------	0.376 U	0.967	0.107 U	0.977	0.758 U	0.755	1.02	0.0283 U	------	2.44	2.31	0.729 U	------	1.15
Field Measured	Conductivity	uS/cm	803.5	864.7	828.2	822.1	811.9	774.3	792.9	758.9	791.59	708.11	770.9	0.8	861.87	789.84	693.8	628.3	597.76
	Dissolved Oxygen	mg/L	0.49	0.15	0.09	0.24	0.10	0.14	0.13	7.93	0.09	0.8	0.29	1.19	0.17	0.12	0.46	0.17	0.31
	Oxidation Reduction Potential	millivolts	124.9	87.8	122.7	85.0	4.8	49.9	129.7	141.8	71.3	72.4	96.3	120.7	-15.7	-2.8	181.4	104.0	90.22
	Temperature	Deg C	22.40	20.26	18.34	24.95	19.62	17.33	20.68	19.99	19.01	22.85	17.18	20.10	26.16	15.57	18.46	21.71	22.04
	Turbidity	ntu	3.13	3.77	2.12	3.67	4.14	0.98	4.01	4.2	6.67	2.65	2.93	0.74	1.86	1.63	2.72	1.70	0.4
	Water level depth	ft	32.10	32.54	31.20	33.70	34.28	29.65	35.17	31.5	31.3	29.85	30.9	31.21	20.62	20.28	18.75	26.60	19.85
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	9.4	------	9.1	6.4	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	6	------	------	------	9.4	------	9.1	6.4	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	< 1.0	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------	------
	Aluminum	mg/L	------	------	------	------	0.22	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	0.7	------	------	------	------	------	------	0.2	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	1	------	------	------	------	------	------	0.2	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	< 0.20	------	------	------	------	------	------	0.0	------	------	------	------	------
	Magnesium	mg/L	------	------	------	------	31.3	------	------	------	31.6	------	29.7	25.0	------	------	------	------	------
	Manganese	mg/L	------	------	------	------	9.2	------	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	< 0.0050	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	< 0.020	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	5.3	------	------	------	5.3	------	5.2	5.3	------	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	13.3	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	53.5	------	------	------	59.0	------	62.3	78.3	------	------	------	------	------
	Sulfide	mg/L	------	------	------	------	<0.2	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	<0.5	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-47	DGWC-47	DGWC-47	DGWC-47	DGWC-47	DGWC-47	DGWC-47	DGWC-47	DGWC-47	DGWC-47	DGWC-47	DGWC-47	DGWC-47	DGWC-48	DGWC-48	DGWC-48	DGWC-48
			3/1/2018	7/12/2018	11/7/2018	3/14/2019	8/29/2019	10/17/2019	3/4/2020	8/12/2020	9/23/2020	3/3/2021	9/10/2021	1/21/2022	9/13/2022	9/1/2016	12/8/2016	3/30/2017	7/13/2017
Appendix III	Boron	mg/L	0.30	0.26	0.30	0.26	0.52	0.25	0.24	------	0.21	0.17	0.16	0.17	0.18	0.955	0.919	0.925	0.97
	Calcium	mg/L	44.2	41.6	38.6	36.6	4.4	36.2	36.0	------	22.3	25.5	24.4	31	24.8	95.1	105	98.6	102.0
	Chloride	mg/L	10.70	9.50	8.60	6.60	------	7.00	4.40	------	3.3	2.9	2.4	3.1	3.30	18	17	16	15.00
	Fluoride	mg/L	1.4	0.96	0.74	1.6	0.52	0.46	0.74	0.22	0.11	0.71	0.22	0.64	0.47	1.5	1.6	0.86	1.1
	pH, field measured	S.U.	3.93	4.33	4.48	3.88	------	4.60	3.86	4.43	4.4	3.98	4.1	3.72	4.15	4.7	4.58	4.19	4.30
	Sulfate	mg/L	245	240	143	238	------	179	176	------	111	143	123	135	150	540	540	550	500
	Total Dissolved Solids	mg/L	435	372	348	378	------	327	334	------	229	228	274	289	277	845	777	775	789
Appendix IV	Antimony	mg/L	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	0.0012 J	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00080	< 0.00080	< 0.00030	<0.0006
	Arsenic	mg/L	0.0029 J	0.0023 J	< 0.0022 J	------	0.00089 J	0.0013 J	0.0012 J	0.00081 J	< 0.00078	< 0.00078	0.0016 J	0.0036 J	< 0.0022	< 0.0016	< 0.0016	0.0015 J	0.0012 J
	Barium	mg/L	0.0164	0.015	0.02	------	0.018	0.019	0.017	0.016	0.014	0.020	0.021	0.017	0.022	0.0157	0.0155	0.0131	0.014
	Beryllium	mg/L	0.0146	0.013	0.014	------	0.011	0.0093	0.01	0.0068	0.0069	0.0081	0.009	0.01	0.0094	0.008	0.0086	0.0106	0.0106
	Cadmium	mg/L	0.0025	0.0021	0.0016	------	0.0021 J	0.0033	0.0017 J	0.001 J	0.0013 J	0.0016	0.0014	0.0019	0.0011	0.0013	0.0042	0.0089	0.0033
	Chromium	mg/L	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039	< 0.00039	< 0.00039	< 0.00055	< 0.00055	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00090	< 0.00090	< 0.00030	0.0007 J
	Cobalt	mg/L	0.401	0.36	0.35	------	0.28	0.26	0.28	0.21	0.17	0.20	0.23	0.24	0.21	0.539	0.575	0.573	0.531
	Lead	mg/L	< 0.00027	0.001 J	0.00091 J	------	0.0006 J	0.0011 J	0.00088 J	0.0004 J	0.00053 J	0.00070 J	< 0.00089	< 0.00089	< 0.00089	0.0008 J	0.0019 J	0.0035 J	0.002 J
	Lithium	mg/L	0.0772	0.073	0.082	------	0.056	0.066	0.063	0.054	0.046	0.049	0.053	0.055	0.05	0.125	0.122	0.144	0.143
	Mercury	mg/L	< 0.000036	< 0.000036	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	< 0.000041	< 0.000041	0.00006 J	<0.000041
	Molybdenum	mg/L	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	< 0.0017	< 0.0017	< 0.00060	<0.001
	Selenium	mg/L	0.0124	0.015	0.0045 J	------	0.004 J	0.0062 J	0.0065 J	0.002 J	< 0.0016	0.0039 J	0.0035 J	0.0016 J	0.0031 J	0.0084 J	0.0084 J	0.0079 J	0.0062 J
	Thallium	mg/L	0.00032 J	0.00031 J	< 0.00032 J	------	0.00025 J	0.00025 J	0.00021 J	0.00018 J	0.00026 J	0.00023 J	0.00036 J	0.00028 J	0.00021 J	< 0.00020	< 0.00020	0.00009 J	0.00008 J
	Radium	pCi/L	2.21	1.73	1.72	------	3.05	2.58	1.68	2.56	2.3 U	1.27 U	2.32	0.785 U	1.97	2.37	2.87	1.71	1.78
	Radium-226	pCi/L	1.03	0.435	0.982	------	1.68	1.15	0.93	0.87	0.961	0.608 U	0.479	0.3 U	------	0.282	0.435	0.236	------
	Radium-228	pCi/L	1.18	1.29	0.736 U	------	1.37	1.43	0.751	1.69	1.34 U	0.660 U	1.84	0.485 U	------	2.09	2.43	1.47	------
Field Measured	Conductivity	uS/cm	605.1	511.1	508.8	516.5	432.2	447.7	446.3	418	318.8	374.13	341.4	408.32	0.4	978.61	1112.43	1036.59	1056.7
	Dissolved Oxygen	mg/L	0.33	0.29	0.28	0.18	0.46	0.14	0.37	0.24	1.14	0.16	0.45	0.5	0.08	0.17	0.16	0.43	0.17
	Oxidation Reduction Potential	millivolts	352.2	108.1	82.9	411.6	177.8	8.7	400.9	585	141.3	380.7	314.6	219.9	83.4	37.6	118.34	275.33	105.7
	Temperature	Deg C	16.09	23.88	21.31	19.72	22.60	20.50	14.78	24.19	21.76	16.63	23.63	408.32	24.19	24.93	15.74	24.05	24.50
	Turbidity	ntu	1.64	0.65	4.39	0.76	1.87	1.12	1.34	0.33	0.34	0.88	2.5	0.5	0.77	0.28	1.32	0.58	3.33
	Water level depth	ft	19.31	18.85	20.72	17.63	23.55	28.72	16.98	24.61	23.7	18.1	18.47	219.9	19.58	16.99	17.25	16.65	16.80
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	< 20	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	< 20	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------	------
	Aluminum	mg/L	------	------	------	------	------	1.1	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	3.5	------	------	------	------	------	------	3.6	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	< 0.20	------	------	------	------	------	------	3.1	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	2.5	------	------	------	------	------	------	0.5	------	------	------	------
	Magnesium	mg/L	------	------	------	------	------	10	------	------	------	7.7	------	9	7.3	------	------	------	------
	Manganese	mg/L	------	------	------	------	------	10.5	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	< 0.0050	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	< 0.020	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	------	6.4	------	------	------	5.7	------	6.4	5.4	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	23	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	------	11.7	------	------	------	8.1	------	9.3	7.8	------	------	------	------
	Sulfide	mg/L	------	------	------	------	------	<0.2	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	<0.5	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	0.2	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-48	DGWC-48	DGWC-48	DGWC-48	DGWC-48	DGWC-48	DGWC-48	DGWC-48	DGWC-48	DGWC-48	DGWC-48	DGWC-48	DGWC-48	DGWC-48	DGWC-67	DGWC-67	DGWC-67
			10/26/2017	3/2/2018	7/12/2018	11/7/2018	3/14/2019	8/29/2019	10/18/2019	3/4/2020	8/13/2020	9/23/2020	3/3/2021	9/10/2021	1/24/2022	9/13/2022	3/31/2017	5/12/2017	6/16/2017
Appendix III	Boron	mg/L	0.746	0.88	0.82	0.74	0.72	------	0.74	0.77	------	0.65	0.57	0.55	0.61	0.61	2.91	3.24	3.42
	Calcium	mg/L	94	86.6	89.1	88.0	74.6	------	72.7	79.7	------	72.2	66.0	68.7	61.2	65.3	39.9	43.6	42.5
	Chloride	mg/L	14	12.80	11.70	11.40	10.20	------	9.60	9.1	------	8	14.2	10.9	11.3	8.90	5.70	5.60	5.50
	Fluoride	mg/L	1.7	1.1	0.65	0.63	1.4	0.78	0.46	0.7	0.47	0.32	0.67	0.47	0.59	0.43	0.02 J	<0.004	0.03 J
	pH, field measured	S.U.	4.39	4.14	4.36	4.23	4.12	4.28	4.22	4.27	4.26	4.64	4.14	4.3	4.03	4.25	6.25	6.23	6.22
	Sulfate	mg/L	510	456	409	432	450	------	336	368	------	313	312	272	265	309	110	100	100
	Total Dissolved Solids	mg/L	753	704	705	678	625	------	593	630	------	575	521	532	500	527	270	287	309
Appendix IV	Antimony	mg/L	< 0.00060	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	0.00039 J	< 0.00028	0.0018 J	< 0.00078	< 0.00078	< 0.00030	<0.0003	0.0008 J
	Arsenic	mg/L	0.0008 J	0.0017 J	0.0015 J	< 0.00057	------	< 0.00035	0.00079 J	0.0006 J	< 0.00078	< 0.00078	< 0.00078	< 0.0011	< 0.0011	< 0.0022	< 0.00040	<0.0004	<0.0005
	Barium	mg/L	0.0117	0.0131	0.013	0.014	------	0.014	0.014	0.014	0.013	0.013	0.014	0.013	0.014	0.014	0.12	0.127	0.11
	Beryllium	mg/L	0.0078	0.0096	0.0086	0.0078	------	0.0081	0.0099	0.008	0.0071	0.0072	0.0068	0.007	0.0069	0.0071	< 0.000070	<0.00007	<0.00009
	Cadmium	mg/L	0.0032	0.0049	0.0032	0.0031	------	0.003	0.0028	0.0036	0.0028	0.0025	0.0033	0.0028	0.0029	0.0026	< 0.000060	<0.00006	<0.0001
	Chromium	mg/L	< 0.00050	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039	< 0.00039	0.0004 J	< 0.00055	< 0.00055	< 0.00055	< 0.0011	< 0.0011	< 0.0011	< 0.00030	0.0007 J	<0.0005
	Cobalt	mg/L	0.482	0.49	0.46	0.48	------	0.42	0.41	0.42	0.35	0.37	0.36	0.36	0.34	0.31	0.0065 J	0.0037 J	0.0041 J
	Lead	mg/L	0.0022 J	< 0.00027	0.0014 J	0.0023 J	------	0.001 J	0.00095 J	0.0012 J	0.00092 J	0.001 J	0.0011	0.00099 J	0.0011	0.00093 J	< 0.000070	0.00009 J	<0.00007
	Lithium	mg/L	0.115	0.129	0.12	0.12	------	0.11	0.11	0.12	0.098	0.1	0.096	0.095	0.11	0.099	0.0062 J	0.0054 J	0.0048 J
	Mercury	mg/L	< 0.000036	< 0.000036	< 0.000036	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	< 0.000078	< 0.000078	< 0.00013	< 0.00013	0.00007 J	<0.000041	0.00007 J
	Molybdenum	mg/L	< 0.0010	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	0.0006 J	<0.0006	<0.001
	Selenium	mg/L	0.0058 J	< 0.0014	0.013	0.0038 J	------	0.0023 J	0.005 J	0.0061 J	0.0029 J	0.0016 J	0.0025 J	0.0022 J	< 0.0014	0.0019 J	< 0.0014	<0.0014	<0.0018
	Thallium	mg/L	0.00009 J	< 0.00014	< 0.00014	< 0.00014	------	0.000078 J	< 0.000052	0.000068 J	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	< 0.000050	<0.00005	<0.00005
	Radium	pCi/L	3.74	2.26	1.81	1.94	------	2.37	1.42	1.31	1.74	1.51 U	1.41	2.21	0.668 U	1.42	0.404 U	0.206 U	0.966 U
	Radium-226	pCi/L	1.66	1.05	0.401	0.593	------	0.973	0.552	0.598	0.717	0.337 U	0.478 U	0.387	0.228	------	0.0392 U	------	------
	Radium-228	pCi/L	2.08	1.21	1.41	1.35	------	1.4	0.866	0.707	1.02	1.17 U	0.936	1.82	0.44 U	------	0.365 U	------	------
Field Measured	Conductivity	uS/cm	979.55	960.5	866.0	860.0	824.2	770.6	744.4	794.2	729.9	742.5	730.41	690.22	1294.2	0.7	421.85	425.8	421.6
	Dissolved Oxygen	mg/L	0.18	0.29	0.25	0.22	0.29	0.19	0.19	0.13	0.27	0.09	0.12	0.43	0.17	0.27	0.2	0.18	0.12
	Oxidation Reduction Potential	millivolts	118.81	132.5	132.5	246.6	329.3	233.8	134.9	255.4	109.6	137.1	316.3	203.1	303.2	129.6	-10.85	75.5	-31.1
	Temperature	Deg C	21.38	15.16	25.22	20.35	20.91	22.65	17.50	16.76	20.35	20.03	17.95	20.34	17.93	20.54	18.43	20.16	19.81
	Turbidity	ntu	2.28	0.50	1.73	4.56	2.62	2.58	3.65	1.17	0.75	0.54	3.77	0.54	0.54	1.10	2.51	3.95	3.93
	Water level depth	ft	17.2	16.10	16.13	17.23	15.05	19.71	21.24	11.93	19.75	18.25	16.2	13.78	15.38	16.28	8.31	8.69	8.40
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	< 20	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	< 20	------	------	------	< 5.0	------	< 1.8	< 5.00	------	------	------
	Aluminum	mg/L	------	------	------	------	------	------	1.3	------	------	------	------	------	------	------	< 0.0162	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	193	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	5.2	------	------	------	------	------	------	4.1	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	4.9	------	------	------	------	------	------	1.6	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	0.3	------	------	------	------	------	------	2.5	------	------	------
	Magnesium	mg/L	------	------	------	------	------	------	17.5	------	------	------	15.9	------	14.2	15.1	19.9	------	------
	Manganese	mg/L	------	------	------	------	------	------	13.7	------	------	------	------	------	------	------	0.933	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	< 0.0050	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	< 0.020	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	------	------	15.2	------	------	------	14.7	------	13.2	14.0	4.37	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	22.4	------	------
	Silicon	mg/L	------	------	------	------	------	------	28	------	------	------	------	------	------	------	10.5	------	------
	Sodium	mg/L	------	------	------	------	------	------	25.6	------	------	------	21.8	------	19.7	21.7	11.9	------	------
	Sulfide	mg/L	------	------	------	------	------	------	<0.2	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	<0.5	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	0.2	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-67	DGWC-68
			7/13/2017	10/26/2017	1/26/2018	3/2/2018	7/13/2018	11/8/2018	3/13/2019	8/28/2019	10/17/2019	3/9/2020	8/13/2020	9/23/2020	3/11/2021	9/16/2021	1/19/2022	9/8/2022	3/31/2017
Appendix III	Boron	mg/L	3.46	3.21		3.49	3.10	3.50	3.50	------	3.60	3.6	------	3.2	3.4	3.4	4.1	4.30	1.54
	Calcium	mg/L	43.7	40.4	39	40.1	43.3	40.1	41.2	------	46.9	46.9	------	42	45.4	46	48.8	47.4	54
	Chloride	mg/L	5.20	6	6.1	5.80	5.90	6.10	6.80	------	6.90	6.7	------	7.1	7.4	7.9	8.3	8.90	3.8
	Fluoride	mg/L	0.03 J	< 0.030		<0.029	0.25 J	0.5	0.07 J	<0.05	0.038 J	< 0.050	< 0.050	< 0.050	< 0.050	0.069 J	< 0.050	0.096 J	0.54
	pH, field measured	S.U.	6.15	6.64	------	6.18	6.19	6.23	6.19	6.22	6.14	6.23	6.28	6.23	6.28	6.2	6.21	6.21	6.68
	Sulfate	mg/L	110	100	101	98.5	136	118	233	------	99.4	100	------	99.8	76.7	101	97.2	117	38
	Total Dissolved Solids	mg/L	275	319	------	264	297	295	278	------	281	209	------	296	265	282	272	252	------
Appendix IV	Antimony	mg/L	<0.0006	< 0.00060	------	< 0.00078	0.0023 J	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028	< 0.00028	< 0.00028	< 0.00078	< 0.00078	< 0.00078	< 0.00030
	Arsenic	mg/L	<0.0005	< 0.00050	< 0.00052	< 0.00057	< 0.00057	< 0.00057	------	< 0.00035	0.00042 J	< 0.00035	< 0.00078	< 0.00078	0.00080 J	< 0.0011	0.0033 J	< 0.0022	0.459
	Barium	mg/L	0.102	0.105	------	0.104	0.11	0.11	------	0.11	0.1	0.11	0.095	0.1	0.11	0.088	0.091	0.082	0.0859
	Beryllium	mg/L	<0.00009	< 0.000090	------	< 0.000050	< 0.000050	< 0.000050	------	< 0.000074	< 0.000074	< 0.000074	< 0.000046	< 0.000046	< 0.000046	< 0.000054	< 0.000054	< 0.000054	< 0.000070
	Cadmium	mg/L	<0.0001	< 0.00010	------	< 0.000093	< 0.000093	< 0.000093	------	0.00017 J	< 0.00011	0.00021 J	0.00015 J	0.00018 J	0.00053	< 0.00011	< 0.00011	< 0.00011	0.0001 J
	Chromium	mg/L	<0.0005	< 0.00050	------	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039	< 0.00039	0.00088 J	< 0.00055	< 0.00055	0.0014 J	< 0.0011	< 0.0011	< 0.0011	< 0.00030
	Cobalt	mg/L	0.0037 J	0.0022 J	------	< 0.00052	0.0017 J	0.002 J	------	0.0013 J	0.0013 J	0.0015 J	0.0015 J	0.0011 J	0.0016 J	0.0012 J	0.0011 J	0.0010 J	0.0028 J
	Lead	mg/L	<0.00007	< 0.000070	------	< 0.00027	< 0.00027	< 0.00027	------	< 0.000046	< 0.000046	0.000047 J	0.000056 J	< 0.000036	0.00025 J	< 0.00089	< 0.00089	< 0.00089	< 0.000070
	Lithium	mg/L	0.0044 J	0.0043 J	------	0.0047 J	0.0041 J	0.0039 J	------	0.0046 J	0.0047 J	0.0048 J	0.0044 J	0.0043 J	0.0050 J	0.0044 J	0.0046 J	0.0048 J	0.002 J
	Mercury	mg/L	<0.000041	< 0.000036	------	< 0.000036	< 0.000036	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	------	< 0.000078	< 0.00013	< 0.00013	0.00007 J
	Molybdenum	mg/L	<0.001	< 0.0010	------	< 0.0019	< 0.0019	< 0.0019	------	< 0.00095	< 0.00095	< 0.00095	< 0.00069	< 0.00069	< 0.00069	< 0.00074	< 0.00074	< 0.00074	0.214
	Selenium	mg/L	<0.0018	< 0.0018	------	< 0.0014	< 0.0014	< 0.0014	------	< 0.0013	< 0.0013	< 0.0013	< 0.0016	< 0.0016	0.0027 J	< 0.0014	< 0.0014	< 0.0014	< 0.0070
	Thallium	mg/L	<0.00005	< 0.000050	------	< 0.00014	< 0.00014	< 0.00014	------	< 0.000052	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	0.00008 J
	Radium	pCi/L	0.387 U	0.619 U	------	1.31	0.667 U	0.911 U	------	0.751 U	------	0.819 U	0.897 U	0.131 U	1.55	0.201 U	0.853 U	0.699 U	0.358 U
	Radium-226	pCi/L	------	0.333 U	------	0.702	0.228 U	0.36	------	0.54	------	0.617	0.305	0.131 U	0.249 U	0.126 U	0.177 U	------	0.342
	Radium-228	pCi/L	------	0.286 U	------	0.611 U	0.439 U	0.551 U	------	0.211 U	------	0.202 U	0.592 U	-0.234 U	1.3	0.075 U	0.676 U	------	0.0162 U
Field Measured	Conductivity	uS/cm	418.9	378.07	------	424.8	394.5	395.8	403.5	410.1	412.1	406.7	419.9	419.94	444.47	417.25	438.06	440.0	424.85
	Dissolved Oxygen	mg/L	0.12	0.15	------	0.24	0.25	0.20	0.07	0.18	0.30	0.25	0.1	0.29	0.1	0.05	0.2	0.12	0.13
	Oxidation Reduction Potential	millivolts	-31.1	65.38	------	102.3	86.5	81.9	73.3	71.7	30.8	49.1	245	52.2	97.4	67.5	50.3	83.7	-31.56
	Temperature	Deg C	19.81	17.66	------	15.69	19.72	18.86	18.07	21.42	18.63	17.66	22.42	20.32	19.18	19.16	17.32	20.73	18.61
	Turbidity	ntu	3.93	0.71	------	1.55	1.68	1.69	4.19	3.58	1.15	0.96	1.94	3.22	3.1	3.00	1.55	0.00	1.98
	Water level depth	ft	8.40	9.26	------	9.09	9.76	9.70	9.38	10.47	10.78	9.29	10.93	9.9	10.59	10.85	9.95	10.90	3.28
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	104	------	------	------	------	------	------	------	------	------	98	------	91.5	99.1	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	93	------	------	------	98	------	91.5	99.1	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	< 20	------	------	------	< 5.0	------	< 1.8	< 5.0	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	< 0.032	------	------	------	------	------	------	------	< 0.0162
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	< 0.50	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	191
	Iron, Total	mg/L	------	------	0.0184 J	------	------	------	------	------	< 0.20	------	------	------	------	------	------	< 0.025	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.025	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	------	< 0.20	------	------	------	------	------	------	0.0	------
	Magnesium	mg/L	------	------	16.3	------	------	------	------	------	17.9	------	------	------	18.1	------	19.2	18.5	13.7
	Manganese	mg/L	------	------	0.473	------	------	------	------	------	0.39	------	------	------	------	------	------	------	6.39
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	0.007 J	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	< 0.020	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	3.87	------	------	------	------	------	4	------	------	------	4	------	3.9	3.8	5.06
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	24.3
	Silicon	mg/L	------	------	------	------	------	------	------	------	10.3	------	------	------	------	------	------	------	11.4
	Sodium	mg/L	------	------	9.58	------	------	------	------	------	11.3	------	------	------	10.6	------	11.3	10.8	11.6
	Sulfide	mg/L	------	------	------	------	------	------	------	------	<0.2	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	<0.5	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	<0.018	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DGWC-68	DGWC-68	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A
			4/12/2017	1/22/2018	5/1/2017	5/12/2017	6/16/2017	7/13/2017	8/8/2017	10/26/2017	1/22/2018	3/2/2018	7/13/2018	11/8/2018	3/13/2019	8/28/2019	10/16/2019	3/9/2020	8/13/2020
Appendix III	Boron	mg/L	1.16	1.53	------	1.80	1.88	1.97	2.10	2.05	------	2.05	1.70	1.80	1.90	------	1.50	1.8	------
	Calcium	mg/L	------	------	------	51.7	47.9	52.3	46.3	48.2	45.5	48.9	52.4	46.8	47.5	------	49.7	54	------
	Chloride	mg/L	------	3.8	------	4.20	4.20	4.40	4.20	4.4	4.2	4.20	4.00	0.00	4.60	------	4.20	3.6	------
	Fluoride	mg/L	------	0.65	------	0.37	0.12 J	0.12 J	0.11 J	0.11 J	------	0.23 J	0.099 J	0.04 J	0.12 J	0.1	0.093 J	0.082 J	0.076 J
	pH, field measured	S.U.	6.63	------	------	6.63	6.63	6.84	6.57	7.01	------	6.58	6.62	6.50	6.57	6.60	6.60	6.6	6.63
	Sulfate	mg/L	------	------	------	50	47	49	48	48	43.1	44.7	43.3	43.5	44.1	------	32.1	37.4	------
	Total Dissolved Solids	mg/L	------	263	------	300	271	246	278	287	------	252	275	277	267	------	218	188	------
Appendix IV	Antimony	mg/L	------	< 0.00060	------	<0.0003	0.0008 J	<0.0006	<0.0006	< 0.00060	------	< 0.00078	< 0.00078	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	< 0.00028
	Arsenic	mg/L	0.498	0.536	< 0.00040	<0.0004	<0.0005	<0.0005	<0.0005	< 0.00050	< 0.00052	< 0.00057	< 0.00057	0.0006 J	------	< 0.00035	< 0.00035	< 0.00035	< 0.00078
	Barium	mg/L	------	0.117	------	0.089	0.0855	0.0859	0.0852	0.0878	------	0.0878	0.091	0.092	------	0.089	0.089	0.088	0.088
	Beryllium	mg/L	------	< 0.000091	------	<0.00007	<0.00009	<0.00009	<0.00009	< 0.000090	------	< 0.000050	0.000084 J	< 0.000050	------	< 0.000074	< 0.000074	< 0.000074	< 0.000046
	Cadmium	mg/L	------	< 0.00014	------	0.00008 J	<0.0001	<0.0001	<0.0001	< 0.00010	------	< 0.000093	0.00019 J	0.00025 J	------	0.00017 J	0.00017 J	0.00026 J	0.00021 J
	Chromium	mg/L	------	< 0.00045	------	<0.0003	<0.0005	0.0005 J	<0.0005	< 0.00050	------	< 0.0016	< 0.0016	< 0.0016	------	< 0.00039	< 0.00039	< 0.00039	< 0.00055
	Cobalt	mg/L	------	0.0032 J	------	0.0015 J	0.0003 J	0.0005 J	<0.0003	< 0.00030	------	< 0.00052	< 0.00052	< 0.00052	------	< 0.00030	< 0.00030	< 0.00030	< 0.00038
	Lead	mg/L	------	< 0.000067	------	<0.00007	<0.00007	<0.00007	<0.00007	< 0.000070	------	< 0.00027	< 0.00027	< 0.00027	------	< 0.000046	< 0.000046	< 0.000046	< 0.000036
	Lithium	mg/L	------	< 0.0015	------	0.0016 J	<0.0015	<0.0015	<0.0015	< 0.0015	------	< 0.00097	< 0.00097	< 0.00097	------	< 0.00078	< 0.00078	< 0.00078	< 0.00081
	Mercury	mg/L	------	0.00006 J	------	<0.000041	0.00007 J	<0.000041	<0.000036	< 0.000036	------	< 0.000036	< 0.000036	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078
	Molybdenum	mg/L	------	0.225	------	0.275	0.19	0.211	0.207	0.226	------	0.215	0.22	0.2	------	0.21	0.22	0.19	0.19
	Selenium	mg/L	------	< 0.0018	------	<0.0014	<0.0018	<0.0018	<0.0018	< 0.0018	------	< 0.0014	< 0.0014	< 0.0014	------	< 0.0013	< 0.0013	< 0.0013	< 0.0016
	Thallium	mg/L	------	< 0.000052	------	<0.00005	<0.00005	<0.00005	<0.00005	< 0.000050	------	< 0.00014	0.00015 J	< 0.00014	------	< 0.000052	< 0.000052	< 0.000052	< 0.00014
	Radium	pCi/L	------	1.28	------	1.18	0.332 U	0.304 U	1.4	0.477 U	------	1.13	0.407 U	0.393 U	------	1.77	2.12	1.33	1.46
	Radium-226	pCi/L	------	0.829	------	------	------	------	------	0.477	------	0.336	0.175 U	0.393	------	0.635	0.323 U	0.84	0.16 U
	Radium-228	pCi/L	------	0.447 U	------	------	------	------	------	-0.0971 U	------	0.796	0.232 U	-0.0363 U	------	1.13	1.8	0.489 U	1.3
Field Measured	Conductivity	uS/cm	425.37	------	------	465.0	423.8	451.1	457.8	397.84	------	446.5	424.4	444.2	430.1	425.5	431.9	399.4	429.5
	Dissolved Oxygen	mg/L	0.21	------	------	0.15	0.08	0.21	0.14	0.14	------	0.16	0.21	0.15	0.12	0.13	0.17	0.13	0.09
	Oxidation Reduction Potential	millivolts	-24.09	------	------	52.4	2.3	54.9	36.0	51.12	------	99.1	94.5	106.4	79.3	67.6	41.6	38.2	238.7
	Temperature	Deg C	19.41	------	------	19.07	19.14	24.88	18.79	20.48	------	16.87	19.73	17.94	18.16	20.39	17.28	17.40	21.07
	Turbidity	ntu	0.81	------	------	3.79	2.77	1.38	0.13	0.6	------	1.32	2.39	1.28	1.45	0.97	0.51	0.46	0.98
	Water level depth	ft	3.13	------	------	9.85	9.01	9.84	9.85	9.91	------	9.54	10.14	9.90	9.83	10.39	10.52	9.19	10.8
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	184	------	------	------	------	------	------	187	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	213	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 20	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.056 J	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.50	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	------	------	0.0319 J	------	------	------	------	------	< 0.20	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	< 0.20	------	------
	Magnesium	mg/L	------	12.1	------	------	------	------	------	------	18.6	------	------	------	------	------	18.9	------	------
	Manganese	mg/L	------	5.52	------	------	------	------	------	------	0.116	------	------	------	------	------	0.057	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.011 J	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.054	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	0.054	------	------
	Potassium	mg/L	------	4.75	------	------	------	------	------	------	3.5	------	------	------	------	------	4	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	7.7	------	------
	Sodium	mg/L	------	8	------	------	------	------	------	------	8.76	------	------	------	------	------	9.7	------	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	<0.363	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	<0.5	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	<0.018	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-68A	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69
			9/23/2020	3/10/2021	9/16/2021	10/27/2021	1/25/2022	9/7/2022	8/30/2016	3/31/2017	4/12/2017	5/12/2017	6/16/2017	7/13/2017	10/26/2017	11/15/2017	1/26/2018	3/2/2018	7/13/2018
Appendix III	Boron	mg/L	1.7	1.7	1.3	------	2.2	2.00	2.63	0.41	0.207	0.31	0.38	0.32	0.779	0.667	------	0.05	0.04
	Calcium	mg/L	50.2	54.2	60.6	------	60.4	53.5	82.7	18.6 J	------	18.9 J	17.7	17.6	33.3	30.6	9.67 J	8.1	7.9
	Chloride	mg/L	3.6	3.6	3.4	------	3.8	4.10	9.70	4.40	------	4.40	4.70	4.70	4.2	4.7	6.5	6.40	5.30
	Fluoride	mg/L	0.07 J	0.070 J	0.55	------	0.067 J	0.11	0.39	0.16 J	------	0.12 J	0.16 J	0.13 J	0.29 J	0.28 J	------	0.18 J	0.19 J
	pH, field measured	S.U.	6.6	6.74	6.79	6.56	6.53	6.62	5.33	6.26	6.19	6.20	6.22	6.35	6.69	6.22	------	6.10	5.95
	Sulfate	mg/L	38.7	38.4	22.3	------	36.3	36.5	450	21	------	17	20	17	31	29	12.6	10.1	8.6
	Total Dissolved Solids	mg/L	251	232	259	------	259	256	693	138	------	243	155	122	234	188	------	73	95
Appendix IV	Antimony	mg/L	< 0.00028	0.00032 J	< 0.00078	------	< 0.00078	< 0.00078	------	< 0.00030	------	<0.0003	0.0007 J	<0.0006	< 0.00060	< 0.00060	------	< 0.00078	< 0.00078
	Arsenic	mg/L	< 0.00078	< 0.00078	0.46	0.0016 J	< 0.0011	< 0.0022	------	0.0233	0.0077	0.0097	0.0113	0.0029 J	0.114	0.164	0.0463	0.0127	0.017
	Barium	mg/L	0.094	0.090	0.13	0.0863	0.1	0.098	------	0.0951	------	0.0929	0.1	0.0985	0.136	0.107	------	0.0671	0.074
	Beryllium	mg/L	< 0.000046	0.000061 J	< 0.000054	------	< 0.000054	< 0.000054	------	< 0.000070	------	<0.00007	<0.00009	<0.00009	< 0.000090	< 0.000090	------	< 0.000050	0.000058 J
	Cadmium	mg/L	0.00024 J	< 0.00012	< 0.00011	------	0.00035 J	0.00020 J	------	0.00009 J	------	0.0002 J	0.0002 J	<0.0001	< 0.00010	< 0.00010	------	< 0.000093	< 0.000093
	Chromium	mg/L	< 0.00055	< 0.00055	0.0014 J	< 0.0011	< 0.0011	< 0.0011	------	< 0.00030	------	<0.0003	<0.0005	<0.0005	< 0.00050	< 0.00050	------	< 0.0016	< 0.0016
	Cobalt	mg/L	< 0.00038	< 0.00038	0.0032 J	< 0.00039	< 0.00039	< 0.00039	------	0.0024 J	------	0.0016 J	0.0009 J	0.0004 J	0.0031 J	0.0028 J	------	< 0.00052	< 0.00052
	Lead	mg/L	0.00035 J	0.000067 J	< 0.00089	------	< 0.00089	< 0.00089	------	< 0.000070	------	0.0001 J	<0.00007	<0.00007	< 0.000070	0.00009 J	------	< 0.00027	< 0.00027
	Lithium	mg/L	< 0.00081	< 0.00081	0.00082 J	------	< 0.00073	< 0.00073	------	0.0037 J	------	0.003 J	0.0031 J	0.0029 J	0.0034 J	0.0034 J	------	0.0028 J	0.0026 J
	Mercury	mg/L	< 0.000078	------	< 0.000078	------	< 0.00013	< 0.00013	------	0.00007 J	------	<0.000041	0.00007 J	<0.000041	< 0.000036	< 0.000036	------	< 0.000036	< 0.000036
	Molybdenum	mg/L	0.2	0.20	0.18	------	0.23	0.2	------	0.0144	------	0.0117	0.0087 J	0.0053 J	0.0244	0.0237	------	0.0072 J	0.007 J
	Selenium	mg/L	< 0.0016	0.0017 J	< 0.0014	------	< 0.0014	< 0.0014	------	< 0.0014	------	<0.0014	<0.0018	<0.0018	< 0.0018	< 0.0018	------	< 0.0014	< 0.0014
	Thallium	mg/L	< 0.00014	< 0.00014	< 0.00018	------	< 0.00018	< 0.00018	------	< 0.000050	------	<0.00005	<0.00005	<0.00005	< 0.000050	< 0.000050	------	< 0.00014	< 0.00014
	Radium	pCi/L	0.563 U	0.568 U	1.74	------	0.323 U	0.174 U	------	1.39	------	1.29	1.61	1.14	2.04	1.99	------	0.918 U	1.36 U
	Radium-226	pCi/L	0.11 U	0.0288 U	1.17	------	0.189 U	------	------	0.847	------	------	------	------	1.46	------	------	0.468	0.694
	Radium-228	pCi/L	0.453 U	0.539 U	0.568 U	------	0.134 U	------	------	0.539 U	------	------	------	------	0.575 U	------	------	0.45 U	0.664 U
Field Measured	Conductivity	uS/cm	429.65	386.4	490.46	------	458.89	437.9	867.9	194.65	148.06	183.0	187.7	175.1	299.2	293.9	------	119.4	108.7
	Dissolved Oxygen	mg/L	0.25	0.14	0.05	------	0.13	0.11	0.15	0.24	0.61	0.60	0.29	0.39	0.15	0.18	------	0.84	1.45
	Oxidation Reduction Potential	millivolts	46.4	656.5	-28.3	------	63.5	44.8	135.9	-38.67	37.76	38.5	50.0	58.1	23.22	18.3	------	97.4	103.6
	Temperature	Deg C	21.24	17.72	19.41	------	17.27	21.17	21.99	19.86	19.77	19.98	19.37	24.85	21.69	19.5	------	17.45	19.83
	Turbidity	ntu	1.12	0.67	4.6	------	3.45	0.00	1.36	3.71	1.87	4.19	1.13	3.85	2.75	4.62	------	3.44	1.53
	Water level depth	ft	10.13	10.3	3.92	------	10.19	10.80	14.60	5.47	5.58	5.82	6.35	6.85	7.36	6.84	------	7.01	7.64
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	208	------	------	192	201.0	------	------	------	------	------	------	------	------	44	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	208	------	------	192	201.0	------	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	< 5.0	------	------	< 1.8	< 5.0	------	------	------	------	------	------	------	------	------	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	< 0.0162	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	76.1	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	0.1	------	------	------	------	------	------	------	------	2.04	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	0.1	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	0.0	------	------	------	------	------	------	------	------	------	------	------
	Magnesium	mg/L	------	18.7	------	------	19.9	17.6	------	5.08	------	------	------	------	------	------	2.41	------	------
	Manganese	mg/L	------	------	------	------	------	------	------	1.3	------	------	------	------	------	------	0.435	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	4	------	------	4.5	3.8	------	4.11	------	------	------	------	------	------	3.03	------	------
	Silica	mg/L	------	------	------	------	------	------	------	27.9	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	13	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	10	------	------	11.1	9.6	------	9.69	------	------	------	------	------	------	9.09	------	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1

GROUNDWATER ANALYTICAL RESULTS (2016-2022)

Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4

Atlanta, Georgia

Analyte		Units	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-69	DGWC-121	DGWC-121	DW_DS	DW_DS	DW_DS	DW_DS
			11/8/2018	3/13/2019	8/28/2019	10/16/2019	3/9/2020	8/13/2020	9/23/2020	3/10/2021	9/16/2021	1/25/2022	9/7/2022	6/6/2022	9/8/2022	11/10/2020	2/2/2021	3/9/2021	9/7/2021
Appendix III	Boron	mg/L	0.05	0.028 J	------	0.38	0.035 J	------	0.041 J	0.024 J	0.32	0.035 J	0.23	1.40	2.10	------	<0.0052	< 0.0052	< 0.0086
	Calcium	mg/L	8.5	7.6	------	16.2	8.6	------	8	8.5	18	9.2	13.1	44.1	45.0	4.3	5.1	5.1	7.3
	Chloride	mg/L	5.90	6.20	------	4.70	5.7	------	4.7	5.0	4.5	5.4	4.90	4.70	4.50	4.8	6.10	6.2	9.8
	Fluoride	mg/L	0.12 J	0.086 J	0.07 J	0.13 J	0.068 J	0.084 J	0.064 J	0.055 J	0.11	0.054 J	0.11	0.056 J	0.093 J	< 0.10	<0.05	< 0.050	0.14
	pH, field measured	S.U.	6.00	6.08	6.09	6.19	6.12	6.26	6.08	6.13	6.16	6.02	6.20	6.33	6.32	7.03	7.70	7.3	------
	Sulfate	mg/L	9.7	8.4	------	13.3	7.6	------	5.9	6.4	17.9	7.1	11.6	83.9	84.8	3.0	4.3	3.6	10.4
	Total Dissolved Solids	mg/L	112	95	------	108	115	------	102	78.0	113	84	102	270	261	38.0	30	47.0	83
Appendix IV	Antimony	mg/L	< 0.00078	------	< 0.00027	< 0.00027	< 0.00027	0.0019 J	< 0.00028	0.0018 J	< 0.00078	< 0.00078	< 0.00078	<0.00078	< 0.00078	------	------	------	------
	Arsenic	mg/L	0.02	------	0.025	0.023	0.029	0.029	0.032	0.028	0.023	0.028	0.024	<0.0022	< 0.0022	------	< 0.0000050	< 0.00078	------
	Barium	mg/L	0.072	------	0.061	0.1	0.057	0.13	0.055	0.048	0.078	0.049	0.065	0.04	0.042	------	------	------	------
	Beryllium	mg/L	< 0.000050	------	< 0.000074	< 0.000074	0.000075 J	0.000063 J	0.000061 J	0.000050 J	< 0.000054	0.000059 J	< 0.000054	<0.000054	< 0.000054	<0.000046	<0.000046	< 0.000046	------
	Cadmium	mg/L	< 0.000093	------	< 0.00011	0.00017 J	< 0.00011	< 0.00012	< 0.00012	< 0.00012	< 0.00011	< 0.00011	< 0.00011	<0.00011	< 0.00011	------	------	------	------
	Chromium	mg/L	< 0.0016	------	0.00049 J	< 0.00039	0.0012 J	< 0.00055	0.0011 J	0.00090 J	< 0.0011	0.0013 J	< 0.0011	<0.0011	< 0.0011	------	------	------	------
	Cobalt	mg/L	< 0.00052	------	< 0.00030	< 0.00030	< 0.00030	< 0.00038	< 0.00038	< 0.00038	< 0.00039	< 0.00039	< 0.00039	0.0028 J	0.0019 J	<0.00038	<0.00038	< 0.00038	<0.00038
	Lead	mg/L	< 0.00027	------	< 0.000046	< 0.000046	0.00009 J	0.000059 J	0.00017 J	0.00010 J	< 0.00089	< 0.00089	< 0.00089	<0.00089	< 0.00089	------	------	------	------
	Lithium	mg/L	0.0025 J	------	0.0024 J	0.0032 J	0.0025 J	0.0031 J	0.0023 J	0.0023 J	0.0023 J	0.0026 J	0.0025 J	0.013 J	0.010 J	------	------	------	------
	Mercury	mg/L	< 0.000036	------	< 0.00014	< 0.00014	< 0.00014	< 0.000078	< 0.000078	------	< 0.000078	< 0.00013	< 0.00013	<0.00013	< 0.00013	------	------	------	------
	Molybdenum	mg/L	0.0059 J	------	0.0059 J	0.01	0.0062 J	0.011	0.0056 J	0.0056 J	0.009 J	0.0057 J	0.0067 J	0.00093 J	< 0.00074	------	< 0.010	< 0.00069	------
	Selenium	mg/L	< 0.0014	------	< 0.0013	< 0.0013	< 0.0013	< 0.0016	< 0.0016	< 0.0016	< 0.0014	< 0.0014	< 0.0014	<0.0014	< 0.0014	------	------	------	------
	Thallium	mg/L	< 0.00014	------	< 0.000052	< 0.000052	< 0.000052	< 0.00014	< 0.00014	< 0.00014	< 0.00018	< 0.00018	< 0.00018	<0.00018	< 0.00018	------	------	------	------
	Radium	pCi/L	0.719 U	------	1.38	0.826 U	1.39	2.66	1.8	1.6	2.06	0.834 U	1.82	------	2	------	------	------	------
	Radium-226	pCi/L	0.719	------	1.14	0.542	0.839	1.54	1.2	0.867	1.22	0.713	------	------	------	------	------	------	------
	Radium-228	pCi/L	-0.368 U	------	0.236 U	0.284 U	0.549 U	1.12	0.596 U	0.728 U	0.839 U	0.121 U	------	------	------	------	------	------	------
Field Measured	Conductivity	uS/cm	121.0	113.4	108.8	159.2	108.2	226	113.04	97.2	175.58	116.45	140.2	362.8	387.8	------	79	------	------
	Dissolved Oxygen	mg/L	1.49	2.56	2.97	1.36	2.65	0.6	3.25	3.58	1.93	2.48	1.67	0.22	0.05	------	14.72	------	------
	Oxidation Reduction Potential	millivolts	97.7	72.6	55.8	108.8	66.9	296.8	56.3	317.7	69.8	94.7	113.4	-83.7	-73.6	------	-11	------	------
	Temperature	Deg C	18.72	17.00	21.42	17.98	18.02	22.46	20.84	17.91	19.97	17.55	22.33	20.79	20.14	------	8.01	------	------
	Turbidity	ntu	0.49	2.44	0.40	1.53	4.24	3.78	4.77	1.26	2.94	3.87	4.33	4.78	0.99	------	11.8	------	------
	Water level depth	ft	7.22	6.68	7.10	8.05	7.03	7.4	6.42	6.52	6.35	6.32	6.82	15.05	15.11	------	------	------	------
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	------	38.3	------	37.9	54.2	------	111.0	17.7	16.7	17.4	26.4
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	65	------	------	------	38.3	------	37.9	54.2	------	111.0	17.7	16.7	17.4	26.4
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	< 20	------	------	------	< 5.0	------	< 1.8	< 5.0	------	< 5.0	------	------	------	------
	Aluminum	mg/L	------	------	------	< 0.032	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	< 0.50	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	< 0.20	------	------	------	------	------	------	0.1	------	3.3	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	< 0.20	------	------	------	------	------	------	0.1	------	0.6	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	< 0.20	------	------	------	------	------	------	0.0	------	2.8	------	------	------	------
	Magnesium	mg/L	------	------	------	3.9	------	------	------	2.3	------	2.4	3.4	------	12.7	2.0	2	2.1	2.9
	Manganese	mg/L	------	------	------	0.37	------	------	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	0.17	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	0.027	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	0.027	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	3.5	------	------	------	2.4	------	2.6	2.8	------	3.7	2.5	2.7	2.6	3.2
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	13.6	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	9.3	------	------	------	9.8	------	10.8	9.6	------	10.8	5.6	6.9	6.4	9.6
	Sulfide	mg/L	------	------	------	1.6	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	<0.5	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	<0.018	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	DW_DS	DW_US	DW_US	DW_US	DW_US	DW_US	EW-OF	SW-1	SW-1	SW-1	SW-1	SW-2	SW-2	SW-2	SW-2	SW-3	SW-3
			10/27/2022	11/10/2020	2/2/2021	3/9/2021	9/7/2021	10/27/2022	1/14/2021	3/11/2020	3/1/2021	1/19/2022	9/8/2022	3/11/2020	3/1/2021	1/19/2022	9/8/2022	3/11/2020	3/1/2021
Appendix III	Boron	mg/L	0.07	------	<0.0052	< 0.0052	0.073	<0.040	5.3	0.15	0.13	0.5	0.54	0.22	0.11	0.091	0.08	0.52	0.24
	Calcium	mg/L	14.4	4.2	4.9	5.4	6.7	7.6	158	------	23.3	------	------	------	30.8	------	------	------	32.0
	Chloride	mg/L	25.60	4.9	6.10	6.4	9.9	12.00	8.6	------	4.9	------	------	------	8.3	------	------	------	8.2
	Fluoride	mg/L	0.36	< 0.10	<0.05	< 0.050	0.14	0.17	0.14	------	0.078 J	------	------	------	0.26	------	------	------	0.29
	pH, field measured	S.U.	------	6.90	7.51	7.1	------	------	6.61	7.05	6.79	6.84	6.70	7.33	7.36	7.43	7.10	7.2	7.50
	Sulfate	mg/L	36.4	3.1	4.3	3.7	6.5	7.0	550	------	28.1	------	------	------	42.4	------	------	------	47.3
	Total Dissolved Solids	mg/L	52.0	43.0	29	28.0	82	67	974	------	121	------	------	------	153	------	------	------	124
Appendix IV	Antimony	mg/L	------	------	------	------	------	------	< 0.00028	------	------	------	------	------	------	------	------	------	------
	Arsenic	mg/L	------	------	< 0.0000050	< 0.00078	------	------	0.0016 J	------	------	------	------	------	------	------	------	------	------
	Barium	mg/L	------	------	------	------	------	------	0.029	------	------	------	------	------	------	------	------	------	------
	Beryllium	mg/L	------	<0.000046	<0.000046	< 0.000046	------	------	0.0027 J	< 0.000074	------	------	------	< 0.000074	------	------	------	0.00011 J	------
	Cadmium	mg/L	------	------	------	------	------	------	0.00090 J	------	------	------	------	------	------	------	------	------	------
	Chromium	mg/L	------	------	------	------	------	------	< 0.00055	------	------	------	------	------	------	------	------	------	------
	Cobalt	mg/L	<0.0050	<0.00038	< 0.00038	< 0.00038	< 0.00039	<0.0050	0.037	0.00096 J	------	------	------	0.0031 J	------	------	------	0.0047 J	------
	Lead	mg/L	------	------	------	------	------	------	0.00020 J	------	------	------	------	------	------	------	------	------	------
	Lithium	mg/L	<0.030	------	------	------	------	<0.030	0.0064 J	------	------	------	------	------	------	------	------	------	------
	Mercury	mg/L	------	------	------	------	------	------	0.00014 J	------	------	------	------	------	------	------	------	------	------
	Molybdenum	mg/L	------	------	< 0.010	< 0.00069	------	------	< 0.00069	------	------	------	------	------	------	------	------	------	------
	Selenium	mg/L	------	------	------	------	------	------	0.012	------	------	------	------	------	------	------	------	------	------
	Thallium	mg/L	------	------	------	------	------	------	< 0.00014	------	------	------	------	------	------	------	------	------	------
	Radium	pCi/L	------	------	------	------	------	------	2.12	------	------	------	------	------	------	------	------	------	------
	Radium-226	pCi/L	------	------	------	------	------	------	1.36	------	------	------	------	------	------	------	------	------	------
	Radium-228	pCi/L	------	------	------	------	------	------	0.763 U	------	------	------	------	------	------	------	------	------	------
Field Measured	Conductivity	uS/cm	------	------	79	------	------	------	1168.9	------	205.8	381.3	0.5	------	265.6	241.77	0.2	------	265.7
	Dissolved Oxygen	mg/L	------	------	12.87	------	------	------	5.74	------	7.2	7.41	3.12	------	9.2	9.64	6.11	------	9.16
	Oxidation Reduction Potential	millivolts	------	------	-9.8	------	------	------	113.5	------	208.1	21.7	90.1	------	232.3	38.7	92.8	------	178.9
	Temperature	Deg C	------	------	8.07	------	------	------	13.51	------	14.44	12.4	27.20	------	14.7	11.2	24.80	------	14.6
	Turbidity	ntu	------	------	12.3	------	------	------	3.41	------	11.8	5.36	9.43	------	4.69	6.46	3.05	------	11.87
	Water level depth	ft	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Supplemental	Alkalinity as CaCO3, Total	mg/L	39.3	20.3	20.1	17.4	28	26.7	8.2	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Bicarbonate as CaCO3	mg/L	39.3	20.3	20.1	17.4	28	26.7	8.2	------	------	------	------	------	------	------	------	------	------
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	< 5.0	------	------	------	------	------	------	------	------	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	0.21	------	------	------	------	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	0.21	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Magnesium	mg/L	4.0	2.0	2	2.2	2.8	2.2	35.3	------	------	------	------	------	------	------	------	------	------
	Manganese	mg/L	------	------	------	------	------	------	5.4	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	7.3	2.6	2.7	2.7	3.4	4.1	6.2	------	------	------	------	------	------	------	------	------	------
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	29.4	5.5	6.8	6.8	10.1	12.2	25.9	------	------	------	------	------	------	------	------	------	------
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	SW-3	SW-3	SW-4	SW-4	SW-4	SW-4	UT01_DS	UT01_DS	UT01_DS	UT01_DS	UT01_DS	UT01_US	UT01_US	UT01_US	UT01_US	UT01_US	UT02
			1/19/2022	9/8/2022	3/11/2020	3/1/2021	1/19/2022	9/13/2022	11/10/2020	2/2/2021	3/9/2021	9/7/2021	10/27/2022	11/10/2020	2/2/2021	3/9/2021	9/7/2021	10/27/2022	11/10/2020
Appendix III	Boron	mg/L	0.2	0.18	0.52	0.33	0.55	0.61	------	0.11	0.064	0.13	0.160	------	0.046	< 0.0052	0.041	0.059	------
	Calcium	mg/L	------	------	------	31.1	------	------	22.3	17.4	12.2	18.5	15.1	21.3	17.2	14.1	16.3	14.2	21.9
	Chloride	mg/L	------	------	------	6.8	------	------	11.5	9.9	10.4	12.7	10.90	12.0	10.7	11.2	13.3	11.80	11.7
	Fluoride	mg/L	------	------	------	0.15	------	------	0.18	0.17	0.49	0.31	0.26	0.18	0.22	0.42	0.34	0.30	0.18
	pH, field measured	S.U.	7.39	7.13	7.09	7.40	7.02	6.61	7.18	7.19	7.4	------	------	7.30	7.07	7.3	------	------	7.31
	Sulfate	mg/L	------	------	------	46.1	------	------	20.5	16.5	12.9	16.7	15.3	16.1	14.5	12.6	13.2	11.9	16.5
	Total Dissolved Solids	mg/L	------	------	------	176	------	------	145.0	100	96.0	130	167	132.0	97	80.0	117	51.0	127.0
Appendix IV	Antimony	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Arsenic	mg/L	------	------	------	------	------	------	------	< 0.0000050	< 0.00078	< 0.0011	<0.0050	------	< 0.0000050	< 0.00078	< 0.0011	<0.0050	------
	Barium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Beryllium	mg/L	------	------	0.00015 J	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Cadmium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Chromium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Cobalt	mg/L	------	------	0.0025 J	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Lead	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Lithium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Mercury	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Molybdenum	mg/L	------	------	------	------	------	------	<0.00069	<0.00069	< 0.00069	< 0.00069	<0.010	< 0.00069	< 0.00069	< 0.00069	< 0.00069	<0.010	< 0.00069
	Selenium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Thallium	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Radium	pCi/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Radium-226	pCi/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Radium-228	pCi/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Field Measured	Conductivity	uS/cm	255.14	0.2	------	263.8	330.8	444.6	------	252	------	------	------	------	187	------	------	------	------
	Dissolved Oxygen	mg/L	10.07	6.86	------	8.70	9.34	6.84	------	10.6	------	------	------	------	11.82	------	------	------	------
	Oxidation Reduction Potential	millivolts	2.5	64.8	------	181.65	32.9	187.6	------	110.4	------	------	------	------	144.3	------	------	------	------
	Temperature	Deg C	11.15	24.10	------	14.8	12.86	18.61	------	8.56	------	------	------	------	8.17	------	------	------	------
	Turbidity	ntu	5.63	2.29	------	11.9	4.82	8.77	------	5.96	------	------	------	------	4.05	------	------	------	------
	Water level depth	ft	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Supplemental	Alkalinity as CaCO3, Total	mg/L	------	------	------	------	------	------	68.8	55.1	32.2	62.2	46.6	68.8	53.5	40.0	60.1	40.5	67.9
	Alkalinity, Bicarbonate as CaCO3	mg/L	------	------	------	------	------	------	68.8	55.1	32.2	62.2	46.6	68.8	53.5	40.0	60.1	40.5	67.9
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Magnesium	mg/L	------	------	------	------	------	------	4.8	3.6	2.8	3.9	3.0	4.2	3.3	2.9	3.3	2.7	4.4
	Manganese	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Potassium	mg/L	------	------	------	------	------	------	3.9	2.9	2.8	3.5	3.4	3.6	2.9	2.8	3.2	3.6	3.8
	Silica	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Sodium	mg/L	------	------	------	------	------	------	13.9	12.2	10.5	13.4	11.1	14.2	12.7	11.7	13.3	11.9	14.4
	Sulfide	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE 1
GROUNDWATER ANALYTICAL RESULTS (2016-2022)
Plant McDonough-Atkinson Ash Pond 1 and Ash Pond 2 and 3/4
Atlanta, Georgia

Analyte		Units	UT02	UT02	UT02	UT02	UT03	UT03	UT03	UT03
			2/2/2021	3/9/2021	9/7/2021	10/27/2022	2/2/2021	3/9/2021	9/7/2021	10/27/2022
Appendix III	Boron	mg/L	0.063	0.063	0.081	0.092	0.069	0.054	0.088	0.21
	Calcium	mg/L	17.4	13.2	17.3	15.2	17.3	12.7	17.4	16.6
	Chloride	mg/L	10.4	10.7	13.1	11.60	10.2	10.4	12.9	11.00
	Fluoride	mg/L	0.17	0.45	0.32	0.28	0.17	0.47	0.32	0.27
	pH, field measured	S.U.	7.05	7.0	------	------	7.01	7.3	------	------
	Sulfate	mg/L	15.5	14.2	15.2	13.6	15.4	13.4	15.1	16.7
	Total Dissolved Solids	mg/L	99	89.0	120	116	98	84.0	72	92.0
Appendix IV	Antimony	mg/L	------	------	------	------	------	------	------	------
	Arsenic	mg/L	< 0.0000050	< 0.00078	< 0.0011	<0.0050	< 0.0000050	< 0.00078	< 0.0011	<0.0050
	Barium	mg/L	------	------	------	------	------	------	------	------
	Beryllium	mg/L	------	------	------	------	------	------	------	------
	Cadmium	mg/L	------	------	------	------	------	------	------	------
	Chromium	mg/L	------	------	------	------	------	------	------	------
	Cobalt	mg/L	------	------	------	------	------	------	------	------
	Lead	mg/L	------	------	------	------	------	------	------	------
	Lithium	mg/L	------	------	------	------	------	------	------	------
	Mercury	mg/L	------	------	------	------	------	------	------	------
	Molybdenum	mg/L	< 0.00069	< 0.00069	------	------	< 0.00069	< 0.00069	< 0.00069	<0.010
	Selenium	mg/L	------	------	------	------	------	------	------	------
	Thallium	mg/L	------	------	------	------	------	------	------	------
	Radium	pCi/L	------	------	------	------	------	------	------	------
	Radium-226	pCi/L	------	------	------	------	------	------	------	------
	Radium-228	pCi/L	------	------	------	------	------	------	------	------
Field Measured	Conductivity	uS/cm	190	------	------	------	189	------	------	------
	Dissolved Oxygen	mg/L	11.9	------	------	------	11.17	------	------	------
	Oxidation Reduction Potential	millivolts	147.3	------	------	------	143.9	------	------	------
	Temperature	Deg C	8.11	------	------	------	7.44	------	------	------
	Turbidity	ntu	4.19	------	------	------	4.6	------	------	------
	Water level depth	ft	------	------	------	------	------	------	------	------
Supplemental	Alkalinity as CaCO3, Total	mg/L	54.7	34.9	62.5	42.7	54.3	33.3	60.6	43.5
	Alkalinity, Bicarbonate as CaCO3	mg/L	54.7	34.9	62.5	42.7	54.3	33.3	60.6	43.5
	Alkalinity, Carbonate as CaCO3	mg/L	------	------	------	------	------	------	------	------
	Aluminum	mg/L	------	------	------	------	------	------	------	------
	Dissolved Organic Carbon	mg/L	------	------	------	------	------	------	------	------
	Hardness	mg/L	------	------	------	------	------	------	------	------
	Iron, Total	mg/L	------	------	------	------	------	------	------	------
	Iron, Ferric (Fe2)	mg/L	------	------	------	------	------	------	------	------
	Iron, Ferrous	mg/L	------	------	------	------	------	------	------	------
	Magnesium	mg/L	3.3	2.8	3.6	2.8	3.4	2.8	3.5	3.4
	Manganese	mg/L	------	------	------	------	------	------	------	------
	Nitrate as N	mg/L	------	------	------	------	------	------	------	------
	Phosphate	mg/L	------	------	------	------	------	------	------	------
	Phosphorus, Total Orthophosphate	mg/L	------	------	------	------	------	------	------	------
	Potassium	mg/L	3	2.7	3.2	3.6	2.9	2.7	3.2	3.6
	Silica	mg/L	------	------	------	------	------	------	------	------
	Silicon	mg/L	------	------	------	------	------	------	------	------
	Sodium	mg/L	12.7	10.9	13.4	12.2	12.6	10.8	13.2	12.1
	Sulfide	mg/L	------	------	------	------	------	------	------	------
	Total Organic Carbon	mg/L	------	------	------	------	------	------	------	------
	Zinc	mg/L	------	------	------	------	------	------	------	------

Notes:

1) mg/L - Milligrams per Liter; pCi/L - picocuries per Liter; S.U. - Standard Units; uS/cm - microSiemens per centimeter; Deg C - Degrees Celsius; ntu - Nephelometric turbidity units; ft - feet.

2) < indicates the substance was not detected above the analytical method detection limit (MDL). Value displayed is the method detection limit.

3) J indicates the substance was detected at such low levels that the precision of the laboratory instruments could no produce a reliable value. Therefore, the value displayed is qualified by the laboratory as an estimated number.

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

APPENDIX B

Total Metals Laboratory Results (3050 Extraction)

BROOKSAPPLIEDLABS
18804 North Creek Parkway, Ste 100, Bothell, WA 98011 • USA • T: 206 632 6206 F: 206 632 6017 • info@brooksapplied.com

July 24, 2017

Golder Associates - Greensboro
ATTN: Rachel Kirkman
5B Oak Branch Drive
Greensboro, NC, 27407
Rachel)Kirkman@golder.com

RE: Project GOL-GB1701

Dear Rachel Kirkman,

On July 7, 2017, Brooks Applied Labs (BAL) received four (4) water samples in a sealed container with a temperature of 3.0°C. The samples were logged-in for total recoverable and dissolved arsenic [As] and arsenic speciation analyses, including arsenite [As(III)], arsenate [As(V)], monomethylarsonic acid [MMAs], and dimethylarsinic acid [DMAs].

The samples submitted for dissolved arsenic and arsenic speciation analyses were filtered in the field by the client.

All samples were received, prepared, analyzed, and stored according to BAL SOPs and EPA methodology. Reagent water for dilutions and sample preservatives is monitored for contamination to account for any biases associated with the sample results.

Total Recoverable and Dissolved Arsenic Quantitation by ICP-QQQ-MS

Arsenic quantitation was performed by inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). The ICP-QQQ-MS uses advanced interference removal techniques to ensure accuracy of the sample results. For more information, please visit the *Interference Reduction Technology* section on our website, brooksapplied.com. Prior to analysis all total recoverable arsenic sample fractions were preserved to (*1% HNO_3 (v/v) + 1% HCl (v/v)*) and oven digested in the same containers the samples were received in.

The total recoverable and dissolved arsenic results were *not* method blank corrected as described in the calculations section of the relevant BAL SOP(s) and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

Arsenic Speciation Analysis by IC-ICP-CRC-MS

Arsenic speciation analysis was performed by ion chromatography coupled to an inductively coupled plasma collision reaction cell mass spectrometer (IC-ICP-CRC-MS).

The arsenic speciation results were *not* method blank corrected as described in the calculations section of the relevant BAL SOP(s) and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

If the native sample result and/or the DUP result is not detected (ND) above the MDL, then the associated RPD is not calculated (N/C).

All data was reported without qualification (aside from concentration qualifiers) and all associated quality control sample results met the acceptance criteria.

BAL, an accredited laboratory, certifies that the reported results of all analyses for which BAL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report.

Please feel free to contact me if you have any questions regarding this report.

Sincerely,

Jeremy Maute
Project Manager
Brooks Applied Labs, LLC
jeremy@brooksapplied.com

Anna Prestbo
Project Coordinator
Brooks Applied Labs, LLC
annap@brooksapplied.com

Report Information

Laboratory Accreditation

BAL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BAL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received	**MS**	matrix spike
BAL	Brooks Applied Labs	**MSD**	matrix spike duplicate
BLK	method blank	**ND**	non-detect
BS	blank spike	**NR**	non-reportable
CAL	calibration standard	**N/C**	not calculated
CCB	continuing calibration blank	**PS**	post preparation spike
CCV	continuing calibration verification	**REC**	percent recovery
COC	chain of custody record	**RPD**	relative percent difference
D	dissolved fraction	**SCV**	secondary calibration verification
DUP	duplicate	**SOP**	standard operating procedure
IBL	instrument blank	**SRM**	standard reference material
ICV	initial calibration verification	**T**	total fraction
MDL	method detection limit	**TR**	total recoverable fraction
MRL	method reporting limit		

Definition of Data Qualifiers

(Effective 9/23/09)

E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Result is estimated.
J	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1	Estimated value. A full explanation is presented in the narrative.
J-M	Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N	Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M	Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N	Spike recovery was not within acceptance criteria. Result is estimated.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Applied Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BAL.

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
FB-1	1727041-01	Water	Sample	07/06/2017	07/07/2017
FB-1	1727041-02	Water	Sample	07/06/2017	07/07/2017
B-70A	1727041-03	Water	Sample	07/06/2017	07/07/2017
B-70A	1727041-04	Water	Sample	07/06/2017	07/07/2017
B-70A	1727041-05	Water	Sample	07/06/2017	07/07/2017
B-69	1727041-06	Water	Sample	07/06/2017	07/07/2017
B-69	1727041-07	Water	Sample	07/06/2017	07/07/2017
B-69	1727041-08	Water	Sample	07/06/2017	07/07/2017
B-68	1727041-09	Water	Sample	07/06/2017	07/07/2017
B-68	1727041-10	Water	Sample	07/06/2017	07/07/2017
B-68	1727041-11	Water	Sample	07/06/2017	07/07/2017

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
As	Water	EPA 1638 Mod	07/14/2017	07/18/2017	B171701	1700855
As	Water	EPA 1638 Mod	07/14/2017	07/20/2017	B171701	1700863
As(III)	Water	SOP BAL-4100	07/11/2017	07/12/2017	B171687	1700824
As(V)	Water	SOP BAL-4100	07/11/2017	07/12/2017	B171687	1700824
DMAs	Water	SOP BAL-4100	07/11/2017	07/12/2017	B171687	1700824
MMAs	Water	SOP BAL-4100	07/11/2017	07/12/2017	B171687	1700824

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
B-68										
1727041-09	As	Water	TR	552		0.112	0.408	µg/L	B171701	1700855
1727041-10	As	Water	D	533		0.112	0.408	µg/L	B171701	1700855
1727041-11	As(III)	Water	D	504		0.200	1.00	µg/L	B171687	1700824
1727041-11	As(V)	Water	D	38.3		0.200	1.00	µg/L	B171687	1700824
1727041-11	DMAs	Water	D	≤ 0.250	U	0.250	1.05	µg/L	B171687	1700824
1727041-11	MMAs	Water	D	≤ 0.200	U	0.200	1.15	µg/L	B171687	1700824
B-69										
1727041-06	As	Water	TR	21.8		0.112	0.408	µg/L	B171701	1700855
1727041-07	As	Water	D	23.0		0.112	0.408	µg/L	B171701	1700855
1727041-08	As(III)	Water	D	20.6		0.200	1.00	µg/L	B171687	1700824
1727041-08	As(V)	Water	D	2.02		0.200	1.00	µg/L	B171687	1700824
1727041-08	DMAs	Water	D	≤ 0.250	U	0.250	1.05	µg/L	B171687	1700824
1727041-08	MMAs	Water	D	≤ 0.200	U	0.200	1.15	µg/L	B171687	1700824
B-70A										
1727041-03	As	Water	TR	≤ 0.112	U	0.112	0.408	µg/L	B171701	1700863
1727041-04	As	Water	D	≤ 0.112	U	0.112	0.408	µg/L	B171701	1700863
1727041-05	As(III)	Water	D	≤ 0.080	U	0.080	0.400	µg/L	B171687	1700824
1727041-05	As(V)	Water	D	0.121	J	0.080	0.400	µg/L	B171687	1700824
1727041-05	DMAs	Water	D	≤ 0.100	U	0.100	0.420	µg/L	B171687	1700824
1727041-05	MMAs	Water	D	≤ 0.080	U	0.080	0.460	µg/L	B171687	1700824
FB-1										
1727041-01	As	Water	TR	≤ 0.112	U	0.112	0.408	µg/L	B171701	1700863
1727041-02	As(III)	Water	D	≤ 0.080	U	0.080	0.400	µg/L	B171687	1700824
1727041-02	As(V)	Water	D	0.096	J	0.080	0.400	µg/L	B171687	1700824
1727041-02	DMAs	Water	D	≤ 0.100	U	0.100	0.420	µg/L	B171687	1700824
1727041-02	MMAs	Water	D	≤ 0.080	U	0.080	0.460	µg/L	B171687	1700824

Accuracy & Precision Summary

Batch: B171687
Lab Matrix: Water
Method: SOP BAL-4100

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B171687-BS1	**Blank Spike, (1714053)**						
	As(III)		5.000	5.138	µg/L	103% 75-125	
	As(V)		5.000	4.431	µg/L	89% 75-125	
	DMAs		3.198	2.805	µg/L	88% 75-125	
B171687-BS2	**Blank Spike, (1714054)**						
	As(V)		0.3510	0.280	µg/L	80% 75-125	
	MMAs		4.554	4.641	µg/L	102% 75-125	
B171687-DUP1	**Duplicate, (1727041-11)**						
	As(III)	504.1		498.1	µg/L		1% 25
	As(V)	38.27		38.53	µg/L		0.7% 25
	DMAs	ND		ND	µg/L		N/C 25
	MMAs	ND		ND	µg/L		N/C 25
B171687-MS1	**Matrix Spike, (1727041-11)**						
	As(III)	504.1	50.00	543.2	µg/L	NR 75-125	
	As(V)	38.27	50.00	86.89	µg/L	97% 75-125	
	DMAs	ND	49.00	48.01	µg/L	98% 75-125	
	MMAs	ND	50.35	49.88	µg/L	99% 75-125	
B171687-MSD1	**Matrix Spike Duplicate, (1727041-11)**						
	As(III)	504.1	50.00	550.4	µg/L	NR 75-125	N/C 25
	As(V)	38.27	50.00	87.68	µg/L	99% 75-125	0.9% 25
	DMAs	ND	49.00	49.04	µg/L	100% 75-125	2% 25
	MMAs	ND	50.35	50.45	µg/L	100% 75-125	1% 25

Accuracy & Precision Summary

Batch: B171701
Lab Matrix: Water
Method: EPA 1638 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B171701-BS1	**Blank Spike, (1727001)**						
	As		20.41	21.02	µg/L	103% 75-125	
B171701-SRM1	**Standard Reference Material (1724007, T221 as SRM)**						
	As		17.70	18.31	µg/L	103% 75-125	
B171701-SRM2	**Standard Reference Material (1721039, NIST 1640a (batch SRM))**						
	As		8.075	8.057	µg/L	100% 75-125	
B171701-SRM3	**Standard Reference Material (1724007, T221 as SRM)**						
	As		17.70	18.84	µg/L	106% 75-125	
B171701-SRM4	**Standard Reference Material (1721039, NIST 1640a (batch SRM))**						
	As		8.075	7.761	µg/L	96% 75-125	
B171701-DUP2	**Duplicate, (1727041-03)**						
	As	ND		ND	µg/L		N/C 20
B171701-MS2	**Matrix Spike, (1727041-03)**						
	As	ND	102.0	99.99	µg/L	98% 75-125	
B171701-MSD2	**Matrix Spike Duplicate, (1727041-03)**						
	As	ND	102.0	101.3	µg/L	99% 75-125	1% 20

Method Blanks & Reporting Limits

Batch: B171687
Matrix: Water
Method: SOP BAL-4100
Analyte: As(III)

Sample	Result	Units
B171687-BLK1	0.00	µg/L
B171687-BLK2	0.00	µg/L
B171687-BLK3	0.00	µg/L
B171687-BLK4	0.00	µg/L

Average: 0.000
Limit: 0.020

MDL: 0.004
MRL: 0.020

Analyte: As(V)

Sample	Result	Units
B171687-BLK1	0.001	µg/L
B171687-BLK2	0.0005	µg/L
B171687-BLK3	0.00009	µg/L
B171687-BLK4	-0.0008	µg/L

Average: 0.000
Limit: 0.020

MDL: 0.004
MRL: 0.020

Analyte: DMAs

Sample	Result	Units
B171687-BLK1	0.00	µg/L
B171687-BLK2	0.00	µg/L
B171687-BLK3	0.00	µg/L
B171687-BLK4	0.00	µg/L

Average: 0.000
Limit: 0.021

MDL: 0.005
MRL: 0.021

Method Blanks & Reporting Limits

Analyte: MMAs

Sample	Result	Units
B171687-BLK1	0.00	µg/L
B171687-BLK2	0.00	µg/L
B171687-BLK3	0.00	µg/L
B171687-BLK4	0.00	µg/L

Average: 0.000
Limit: 0.023

MDL: 0.004
MRL: 0.023

Method Blanks & Reporting Limits

Batch: B171701
Matrix: Water
Method: EPA 1638 Mod
Analyte: As

Sample	Result	Units
B171701-BLK5	-0.001	µg/L
B171701-BLK6	0.002	µg/L
B171701-BLK7	-0.002	µg/L
B171701-BLK8	-0.004	µg/L

Average: -0.001
Limit: 0.040

MDL: 0.011
MRL: 0.040

Sample Containers

Lab ID: 1727041-01
Sample: FB-1
Report Matrix: Water
Sample Type: Sample
Collected: 07/06/2017
Received: 07/07/2017

Des	Container	Size	Lot	Preservation	Pres-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0079	0.2% HNO3 (BAL)	1724042	<2	Cooler

Comments: Half Filtered int0 1727041-12

Lab ID: 1727041-02
Sample: FB-1
Report Matrix: Water
Sample Type: Sample
Collected: 07/06/2017
Received: 07/07/2017

Des	Container	Size	Lot	Preservation	Pres-Lot	pH	Ship. Cont.
A	Vacutainer	6 mL	16-0257	EDTA (PP)	NA	4-6	Cooler
B	EXTRA_VOL	6 mL	16-0257	EDTA (PP)	NA	4-6	Cooler

Lab ID: 1727041-03
Sample: B-70A
Report Matrix: Water
Sample Type: Sample
Collected: 07/06/2017
Received: 07/07/2017

Des	Container	Size	Lot	Preservation	Pres-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0079	0.2% HNO3 (BAL)	1724042	<2	Cooler

Lab ID: 1727041-04
Sample: B-70A
Report Matrix: Water
Sample Type: Sample
Collected: 07/06/2017
Received: 07/07/2017

Des	Container	Size	Lot	Preservation	Pres-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0079	0.2% HNO3 (BAL)	1724042	<2	Cooler

Lab ID: 1727041-05
Sample: B-70A
Report Matrix: Water
Sample Type: Sample
Collected: 07/06/2017
Received: 07/07/2017

Des	Container	Size	Lot	Preservation	Pres-Lot	pH	Ship. Cont.
A	Vacutainer	6 mL	16-0257	EDTA (PP)	NA	4-6	Cooler
B	EXTRA_VOL	6 mL	16-0257	EDTA (PP)	NA	4-6	Cooler

Sample Containers

Lab ID: 1727041-06
Sample: B-69
Report Matrix: Water
Sample Type: Sample
Collected: 07/06/2017
Received: 07/07/2017

Des	Container	Size	Lot	Preservation	Pres-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0079	0.2% HNO3 (BAL)	1724042	<2	Cooler

Lab ID: 1727041-07
Sample: B-69
Report Matrix: Water
Sample Type: Sample
Collected: 07/06/2017
Received: 07/07/2017

Des	Container	Size	Lot	Preservation	Pres-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0079	0.2% HNO3 (BAL)	1724042	<2	Cooler

Lab ID: 1727041-08
Sample: B-69
Report Matrix: Water
Sample Type: Sample
Collected: 07/06/2017
Received: 07/07/2017

Des	Container	Size	Lot	Preservation	Pres-Lot	pH	Ship. Cont.
A	Vacutainer	6 mL	16-0257	EDTA (PP)	NA	4-6	Cooler
B	EXTRA_VOL	6 mL	16-0257	EDTA (PP)	NA	4-6	Cooler

Lab ID: 1727041-09
Sample: B-68
Report Matrix: Water
Sample Type: Sample
Collected: 07/06/2017
Received: 07/07/2017

Des	Container	Size	Lot	Preservation	Pres-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0079	0.2% HNO3 (BAL)	1724042	<2	Cooler

Lab ID: 1727041-10
Sample: B-68
Report Matrix: Water
Sample Type: Sample
Collected: 07/06/2017
Received: 07/07/2017

Des	Container	Size	Lot	Preservation	Pres-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0079	0.2% HNO3 (BAL)	1724042	<2	Cooler

Lab ID: 1727041-11
Sample: B-68
Report Matrix: Water
Sample Type: Sample
Collected: 07/06/2017
Received: 07/07/2017

Des	Container	Size	Lot	Preservation	Pres-Lot	pH	Ship. Cont.
A	Vacutainer	6 mL	16-0257	EDTA (PP)	NA	4-6	Cooler
B	EXTRA_VOL	6 mL	16-0257	EDTA (PP)	NA	4-6	Cooler

Shipping Containers

Cooler

Received: July 7, 2017 9:30
Tracking No: 787106210796 via FedEx
Coolant Type: Ice
Temperature: 3.0 °C

Description: Cooler
Damaged in transit? No
Returned to client? No
Comments: IR#15

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

BROOKS APPLIED LABS

Chain-of-Custody Form

Ship samples to:
18804 North Creek Parkway, Suite 100
Bothell, WA 98011

For BAL use only

Received by:
Date: 7/7/17
Work Order ID: 1727041
Time: 9:30
Project ID: GPC-GB1701

Client: Georgia Power Company
PO Number: 1779172
Mailing Address: 241 Ralph McGill Blvd
Atlanta, GA 30308
Contact: John Abraham
Phone:
Client Project ID:
Email: jabraham@southernco.com
Email Receipt Confirmation? ([✓ Yes]/No)
Samples Collected By: Ben Hodges - Golder Associates
BAL PM:

Requested TAT
(business days)

☒ 20 (standard)
☐ 15*
☐ 10*
☐ 5*
☐ Other ____

*Surcharges may apply to expedited TATs

		Collection		Client Sample Info				BAL Analyses Required								Comments
	Sample ID	Date	Time	Matrix Type	Number of Containers	Field Filtered? (Yes/No)	Preservation Type HCl /HNO$_3$/Other	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify) Arsenic	As Species (specify) InOrg, III, V, MMA, DMA	Se Species (specify) Se(IV), Se(VI), SeCN, Uknown	Filtration	Other (specify)	Other (specify)	Specify Here
1	FB-1	7/6/17	0900	Water	3	~~No~~ Yes				1	2	~~X~~				
2	B-70A	7/6/17	0955	Water	4	Yes/No				2	2					Filtered/unfiltered As
3	B-69	7/6/17	1515	Water	4	Yes/No				2	2					(Total/Dissolved))
4	B-68	7/6/17	1335	Water	4	Yes/No				2	2					on all samples
5																
6																
7																
8																
9																
10																
	Trip Blank															

Relinquished By:	Date: 7/6/17	Time: 1700	Relinquished By:	Date:	Time:
Received By:	Date:	Time:	Total Number of Packages:		

Page 1 of 1

List Hazardous Contaminants:

samples@brooksapplied.com | brooksapplied.com

BROOKS APPLIED LABS
18804 North Creek Parkway, Ste 100, Bothell, WA 98011 • USA • T: 206 632 6206 F: 206 632 6017 • info@brooksapplied.com

December 11, 2017

Golder Associates - Greensboro
ATTN: Rachel Kirkman
5B Oak Branch Drive
Greensboro, NC, 27407
Rachel)Kirkman@golder.com

RE: Project GOL-GB1701

Dear Rachel Kirkman,

On November 14, 2017, Brooks Applied Labs (BAL) received one (1) water sample in a sealed container with a temperature of 3.0°C. The sample was logged-in for total recoverable and dissolved arsenic [As] and arsenic speciation analyses, including arsenite [As(III)], arsenate [As(V)], monomethylarsonic acid [MMAs], and dimethylarsinic acid [DMAs].

The fractions submitted for dissolved arsenic and arsenic speciation analyses were filtered in the field by the client.

All samples were received, prepared, analyzed, and stored according to BAL SOPs and EPA methodology. Reagent water for dilutions and sample preservatives is monitored for contamination to account for any biases associated with the sample results.

Total Recoverable and Dissolved Arsenic Quantitation by ICP-QQQ-MS

Arsenic quantitation was performed by inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). The ICP-QQQ-MS uses advanced interference removal techniques to ensure accuracy of the sample results. For more information, please visit the *Interference Reduction Technology* section on our website, brooksapplied.com. Prior to analysis all total recoverable arsenic sample fractions were preserved to (*1% HNO_3 (v/v) + 1% HCl (v/v)*) and oven digested in the same containers the samples were received in.

The total recoverable and dissolved arsenic results were *not* method blank corrected as described in the calculations section of the relevant BAL SOP(s) and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

The matrix spike and matrix spike duplicate (B173142-MS2/B173142-MSD2) associated with sample 1746012-01 were spiked below the native sample concentration. Recoveries are not valid indicators of data quality but have been included as a demonstration of instrument precision.

Arsenic Speciation Analysis by IC-ICP-CRC-MS

Arsenic speciation analysis was performed by ion chromatography coupled to an inductively coupled plasma collision reaction cell mass spectrometer (IC-ICP-CRC-MS).

The blank spike (B173144-BS1) for DMA yielded an elevated recovery (129%). Sample results were non-detect for DMA and were determined to not have been adversely affected, therefore no qualification is necessary.

The arsenic speciation results were *not* method blank corrected as described in the calculations section of the relevant BAL SOP(s) and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

If the native sample result and/or the DUP result is not detected (ND) above the MDL, then the associated RPD is not calculated (N/C).

All data was reported without qualification (aside from concentration qualifiers) and all associated quality control sample results met the acceptance criteria.

BAL, an accredited laboratory, certifies that the reported results of all analyses for which BAL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report.

Please feel free to contact me if you have any questions regarding this report.

Sincerely,

Jeremy Maute
Senior Project Manager
Brooks Applied Labs, LLC
jeremy@brooksapplied.com

Margaret Shultz

Margaret Shultz
Project Coordinator
Brooks Applied Labs, LLC
margaret@brooksapplied.com

Report Information

Laboratory Accreditation

BAL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BAL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received	**MS**	matrix spike
BAL	Brooks Applied Labs	**MSD**	matrix spike duplicate
BLK	method blank	**ND**	non-detect
BS	blank spike	**NR**	non-reportable
CAL	calibration standard	**N/C**	not calculated
CCB	continuing calibration blank	**PS**	post preparation spike
CCV	continuing calibration verification	**REC**	percent recovery
COC	chain of custody record	**RPD**	relative percent difference
D	dissolved fraction	**SCV**	secondary calibration verification
DUP	duplicate	**SOP**	standard operating procedure
IBL	instrument blank	**SRM**	standard reference material
ICV	initial calibration verification	**T**	total fraction
MDL	method detection limit	**TR**	total recoverable fraction
MRL	method reporting limit		

Definition of Data Qualifiers

(Effective 9/23/09)

E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Result is estimated.
J	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1	Estimated value. A full explanation is presented in the narrative.
J-M	Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N	Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M	Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N	Spike recovery was not within acceptance criteria. Result is estimated.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Applied Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BAL.

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
AP-1 B-3A	1746012-01	Groundwater	Sample	11/13/2017	11/14/2017
AP-1 B-3A	1746012-02	Groundwater	Sample	11/13/2017	11/14/2017

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
As	Water	EPA 1638 Mod	11/21/2017	11/28/2017	B173142	1701480
As(III)	Water	SOP BAL-4100	11/16/2017	11/17/2017	B173144	1701421
As(V)	Water	SOP BAL-4100	11/16/2017	11/17/2017	B173144	1701421
DMAs	Water	SOP BAL-4100	11/16/2017	11/17/2017	B173144	1701421
MMAs	Water	SOP BAL-4100	11/16/2017	11/17/2017	B173144	1701421

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
AP-1 B-3A										
1746012-01	As	Groundwater	TR	2220		0.561	2.04	µg/L	B173142	1701480
AP-1 B-3A										
1746012-02	As	Groundwater	D	2130		0.561	2.04	µg/L	B173142	1701480
1746012-02	As(III)	Groundwater	D	1660		2.00	10.0	µg/L	B173144	1701421
1746012-02	As(V)	Groundwater	D	214		2.00	10.0	µg/L	B173144	1701421
1746012-02	DMAs	Groundwater	D	≤ 2.50	U	2.50	10.5	µg/L	B173144	1701421
1746012-02	MMAs	Groundwater	D	≤ 2.00	U	2.00	11.5	µg/L	B173144	1701421

Accuracy & Precision Summary

Batch: B173142
Lab Matrix: Water
Method: EPA 1638 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B173142-BS1	**Blank Spike, (1747054)**						
	As		25.00	19.18	µg/L	77% 75-125	
B173142-BS2	**Blank Spike, (1747054)**						
	As		25.00	19.31	µg/L	77% 75-125	
B173142-BS3	**Blank Spike, (1747054)**						
	As		25.00	18.89	µg/L	76% 75-125	
B173142-DUP2	**Duplicate, (1746012-01)**						
	As	2222		2226	µg/L		0.2% 20
B173142-MS2	**Matrix Spike, (1746012-01)**						
	As	2222	1020	3362	µg/L	112% 75-125	
B173142-MSD2	**Matrix Spike Duplicate, (1746012-01)**						
	As	2222	1020	3314	µg/L	107% 75-125	1% 20

Batch: B173144
Lab Matrix: Water
Method: SOP BAL-4100

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B173144-BS1	**Blank Spike, (1736006)**						
	As(III)		5.010	4.760	µg/L	95% 75-125	
	As(V)		5.000	4.681	µg/L	94% 75-125	
	DMAs		3.198	4.121	µg/L	*129%* 75-125	
B173144-BS2	**Blank Spike, (1714054)**						
	MMAs		4.634	4.904	µg/L	106% 75-125	

Accuracy & Precision Summary

Batch: B173144
Lab Matrix: Water
Method: SOP BAL-4100

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B173144-DUP1	**Duplicate, (1746039-01)**						
	As(III)	ND		ND	µg/L		N/C 25
	As(V)	0.215		0.205	µg/L		5% 25
	DMAs	ND		ND	µg/L		N/C 25
	MMAs	ND		ND	µg/L		N/C 25
B173144-MS1	**Matrix Spike, (1746039-01)**						
	As(III)	ND	20.00	19.15	µg/L	96% 75-125	
	As(V)	0.215	20.00	19.72	µg/L	98% 75-125	
	DMAs	ND	20.40	19.52	µg/L	96% 75-125	
	MMAs	ND	20.00	19.25	µg/L	96% 75-125	
B173144-MSD1	**Matrix Spike Duplicate, (1746039-01)**						
	As(III)	ND	20.00	19.10	µg/L	96% 75-125	0.2% 25
	As(V)	0.215	20.00	19.34	µg/L	96% 75-125	2% 25
	DMAs	ND	20.40	19.63	µg/L	96% 75-125	0.5% 25
	MMAs	ND	20.00	19.33	µg/L	97% 75-125	0.4% 25

Method Blanks & Reporting Limits

Batch: B173142
Matrix: Water
Method: EPA 1638 Mod
Analyte: As

Sample	Result	Units
B173142-BLK1	0.004	µg/L
B173142-BLK2	0.005	µg/L
B173142-BLK3	0.006	µg/L
B173142-BLK4	0.005	µg/L

Average: 0.005
Limit: 0.040

MDL: 0.011
MRL: 0.040

Method Blanks & Reporting Limits

Batch: B173144
Matrix: Water
Method: SOP BAL-4100
Analyte: As(III)

Sample	Result	Units
B173144-BLK1	0.00	µg/L
B173144-BLK2	0.00	µg/L
B173144-BLK3	0.00	µg/L
B173144-BLK4	0.00	µg/L

Average: 0.000
Limit: 0.020

MDL: 0.004
MRL: 0.020

Analyte: As(V)

Sample	Result	Units
B173144-BLK1	0.00	µg/L
B173144-BLK2	0.00	µg/L
B173144-BLK3	0.00	µg/L
B173144-BLK4	0.00	µg/L

Average: 0.000
Limit: 0.020

MDL: 0.004
MRL: 0.020

Analyte: DMAs

Sample	Result	Units
B173144-BLK1	0.00	µg/L
B173144-BLK2	0.00	µg/L
B173144-BLK3	0.00	µg/L
B173144-BLK4	0.00	µg/L

Average: 0.000
Limit: 0.021

MDL: 0.005
MRL: 0.021

Method Blanks & Reporting Limits

Analyte: MMAs

Sample	Result	Units
B173144-BLK1	0.00	µg/L
B173144-BLK2	0.00	µg/L
B173144-BLK3	0.00	µg/L
B173144-BLK4	0.00	µg/L

Average: 0.000
Limit: 0.023

MDL: 0.004
MRL: 0.023

Sample Containers

Lab ID: 1746012-01
Sample: AP-1 B-3A
Report Matrix: Groundwater
Sample Type: Sample
Collected: 11/13/2017
Received: 11/14/2017

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125mL	17-0169	0.2% HNO3 (BAL)	1736020	<2	Cooler - 1746012

Lab ID: 1746012-02
Sample: AP-1 B-3A
Report Matrix: Groundwater
Sample Type: Sample
Collected: 11/13/2017
Received: 11/14/2017

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125mL	17-0169	0.2% HNO3 (BAL)	1736020	<2	Cooler - 1746012
B	Vacutainer	6mL	16-0257	EDTA (PP)			Cooler - 1746012
C	EXTRA_VOL	6mL	16-0257	EDTA (PP)			Cooler - 1746012

Shipping Containers

Cooler - 1746012

Received: November 14, 2017 9:30
Tracking No: 788444303244 via FedEx
Coolant Type: Ice
Temperature: 3.0 °C

Description: Cooler
Damaged in transit? No
Returned to client? No
Comments: IR#8

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

BROOKS APPLIED LABS

Chain-of-Custody Form

Ship samples to:
18804 North Creek Parkway, Suite 100
Bothell, WA 98011

For BAL use only

Received by:
Date: 11/14/17
Work Order ID:
Time: 9:30
Project ID:

Client: Golder Associates
Contact: Rachel Kirkman
Client Project ID:
Samples Collected By: Ben Hodges

PO Number: 1779172
Phone: 336-402-5542
Email: rachel_kirkman@golder.co

Mailing Address: 3730 Chamblee Tucker Rd
Atlanta, GA 30341
Email Receipt Confirmation? ([✓ Yes]/No)
BAL PM:

Requested TAT
(business days)

☑ 20 (standard)
☐ 15*
☐ 10*
☐ 5*
☐ Other ____

*Surcharges may apply to expedited TATs

		Collection		Client Sample Info				BAL Analyses Required								Comments
	Sample ID	Date	Time	Matrix Type	Number of Containers	Field Filtered? (Yes/No)	Preservation Type HCl /HNO$_3$/Other	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	As Species (specify) InOrg, III, V, MMA, DMA	Se Species (specify) Se(IV), Se(VI), SeCN, Uknown	Filtration	Other (specify)	Other (specify)	Samples for dissolved and As Speciation were field filtered Specify Here
1	AP-1 B-3A	11/13/17	1400	GW	4	Yes/N				T/D*	X					
2																
3																
4																
5																
6																
7																
8																
9																
10																
	Trip Blank															

Relinquished By:	Date:	Time:	Relinquished By:	Date:	Time:
Received By:	Date:	Time:	Total Number of Packages:		

Page 1 of 1

List Hazardous Contaminants:

samples@brooksapplied.com | brooksapplied.com

BROOKS APPLIED LABS
18804 North Creek Parkway, Ste 100, Bothell, WA 98011 • USA • T: 206 632 6206 F: 206 632 6017 • info@brooksapplied.com

December 11, 2017

Golder Associates - Greensboro
ATTN: Rachel Kirkman
5B Oak Branch Drive
Greensboro, NC, 27407
Rachel)Kirkman@golder.com

RE: Project GOL-GB1701

Dear Rachel Kirkman,

On November 15, 2017, Brooks Applied Labs (BAL) received four (4) water samples in a sealed container with a temperature of 1.5°C. The sample was logged-in for total recoverable and dissolved arsenic [As] and arsenic speciation analyses, including arsenite [As(III)], arsenate [As(V)], monomethylarsonic acid [MMAs], and dimethylarsinic acid [DMAs].

The fractions submitted for dissolved arsenic and arsenic speciation analyses were filtered in the field by the client.

All samples were received, prepared, analyzed, and stored according to BAL SOPs and EPA methodology. Reagent water for dilutions and sample preservatives is monitored for contamination to account for any biases associated with the sample results.

Total Recoverable and Dissolved Arsenic Quantitation by ICP-QQQ-MS

Arsenic quantitation was performed by inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). The ICP-QQQ-MS uses advanced interference removal techniques to ensure accuracy of the sample results. For more information, please visit the *Interference Reduction Technology* section on our website, brooksapplied.com. Prior to analysis all total recoverable arsenic sample fractions were preserved to (*1% HNO_3 (v/v) + 1% HCl (v/v)*) and oven digested in the same containers the samples were received in.

The total recoverable and dissolved arsenic results were *not* method blank corrected as described in the calculations section of the relevant BAL SOP(s) and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

The matrix spike and matrix spike duplicate (B173142-MS1/B173142-MSD1) associated with sample 1746016-01 were spiked at a level ≤ 25% of the native sample concentration, therefore the recoveries are not reported (NR) and the RPDs are not calculated (N/C). The actual recoveries were 87% and 75%, respectively, and the RPD between the MS and MSD was 2%.

Arsenic Speciation Analysis by IC-ICP-CRC-MS

Arsenic speciation analysis was performed by ion chromatography coupled to an inductively coupled plasma collision reaction cell mass spectrometer (IC-ICP-CRC-MS).

The blank spike (B173144-BS1) for DMAs yielded an elevated recovery (129%). Sample results were non-detect for DMA and were determined to not have been adversely affected, therefore no qualification is necessary.

The spiking level of the matrix spike and matrix spike duplicate (B173144-MS2/B173144-MSD2) for As(III) was below the native sample concentration (1746016-06). Recoveries are not valid indicators of data quality, but have been included as a demonstration of instrument precision.

The arsenic speciation results were *not* method blank corrected as described in the calculations section of the relevant BAL SOP(s) and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

If the native sample result and/or the DUP result is not detected (ND) above the MDL, then the associated RPD is not calculated (N/C).

All data was reported without qualification (aside from concentration qualifiers) and all associated quality control sample results met the acceptance criteria.

BAL, an accredited laboratory, certifies that the reported results of all analyses for which BAL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report.

Please feel free to contact me if you have any questions regarding this report.

Sincerely,

Jeremy Maute
Senior Project Manager
Brooks Applied Labs, LLC
jeremy@brooksapplied.com

Margaret Shultz

Margaret Shultz
Project Coordinator
Brooks Applied Labs, LLC
margaret@brooksapplied.com

Report Information

Laboratory Accreditation

BAL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BAL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received	**MS**	matrix spike
BAL	Brooks Applied Labs	**MSD**	matrix spike duplicate
BLK	method blank	**ND**	non-detect
BS	blank spike	**NR**	non-reportable
CAL	calibration standard	**N/C**	not calculated
CCB	continuing calibration blank	**PS**	post preparation spike
CCV	continuing calibration verification	**REC**	percent recovery
COC	chain of custody record	**RPD**	relative percent difference
D	dissolved fraction	**SCV**	secondary calibration verification
DUP	duplicate	**SOP**	standard operating procedure
IBL	instrument blank	**SRM**	standard reference material
ICV	initial calibration verification	**T**	total fraction
MDL	method detection limit	**TR**	total recoverable fraction
MRL	method reporting limit		

Definition of Data Qualifiers

(Effective 9/23/09)

E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Result is estimated.
J	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1	Estimated value. A full explanation is presented in the narrative.
J-M	Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N	Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M	Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N	Spike recovery was not within acceptance criteria. Result is estimated.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Applied Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BAL.

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
AP-1 B-7A	1746016-01	Groundwater	Sample	11/14/2017	11/15/2017
AP-1 B-7A	1746016-02	Groundwater	Sample	11/14/2017	11/15/2017
AP-1 B-7B	1746016-03	Groundwater	Sample	11/14/2017	11/15/2017
AP-1 B-7B	1746016-04	Groundwater	Sample	11/14/2017	11/15/2017
AP-1 B-3B	1746016-05	Groundwater	Sample	11/14/2017	11/15/2017
AP-1 B-3B	1746016-06	Groundwater	Sample	11/14/2017	11/15/2017
FB-1	1746016-07	Water	Field Blank	11/14/2017	11/15/2017
FB-1	1746016-08	Water	Field Blank	11/14/2017	11/15/2017

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
As	Water	EPA 1638 Mod	11/21/2017	11/28/2017	B173142	1701471
As(III)	Water	SOP BAL-4100	11/16/2017	11/17/2017	B173144	1701421
As(V)	Water	SOP BAL-4100	11/16/2017	11/17/2017	B173144	1701421
DMAs	Water	SOP BAL-4100	11/16/2017	11/17/2017	B173144	1701421
MMAs	Water	SOP BAL-4100	11/16/2017	11/17/2017	B173144	1701421

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
AP-1 B-7A										
1746016-01	As	Groundwater	TR	1110		0.112	0.408	µg/L	B173142	1701471
AP-1 B-7A										
1746016-02	As	Groundwater	D	1000		0.112	0.408	µg/L	B173142	1701471
1746016-02	As(III)	Groundwater	D	848		0.200	1.00	µg/L	B173144	1701421
1746016-02	As(V)	Groundwater	D	96.7		0.200	1.00	µg/L	B173144	1701421
1746016-02	DMAs	Groundwater	D	≤ 0.250	U	0.250	1.05	µg/L	B173144	1701421
1746016-02	MMAs	Groundwater	D	≤ 0.200	U	0.200	1.15	µg/L	B173144	1701421
AP-1 B-7B										
1746016-03	As	Groundwater	TR	1190		0.112	0.408	µg/L	B173142	1701471
AP-1 B-7B										
1746016-04	As	Groundwater	D	1120		0.112	0.408	µg/L	B173142	1701471
1746016-04	As(III)	Groundwater	D	947		0.200	1.00	µg/L	B173144	1701421
1746016-04	As(V)	Groundwater	D	98.5		0.200	1.00	µg/L	B173144	1701421
1746016-04	DMAs	Groundwater	D	≤ 0.250	U	0.250	1.05	µg/L	B173144	1701421
1746016-04	MMAs	Groundwater	D	≤ 0.200	U	0.200	1.15	µg/L	B173144	1701421
AP-1 B-3B										
1746016-05	As	Groundwater	TR	1850		0.112	0.408	µg/L	B173142	1701471
AP-1 B-3B										
1746016-06	As	Groundwater	D	1800		0.112	0.408	µg/L	B173142	1701471
1746016-06	As(III)	Groundwater	D	1600		2.00	10.0	µg/L	B173144	1701421
1746016-06	As(V)	Groundwater	D	170		2.00	10.0	µg/L	B173144	1701421
1746016-06	DMAs	Groundwater	D	≤ 2.50	U	2.50	10.5	µg/L	B173144	1701421
1746016-06	MMAs	Groundwater	D	≤ 2.00	U	2.00	11.5	µg/L	B173144	1701421
FB-1										
1746016-07	As	Water	TR	≤ 0.112	U	0.112	0.408	µg/L	B173142	1701471
FB-1										
1746016-08	As	Water	D	≤ 0.112	U	0.112	0.408	µg/L	B173142	1701471
1746016-08	As(III)	Water	D	≤ 0.200	U	0.200	1.00	µg/L	B173144	1701421
1746016-08	As(V)	Water	D	0.345	J	0.200	1.00	µg/L	B173144	1701421
1746016-08	DMAs	Water	D	≤ 0.250	U	0.250	1.05	µg/L	B173144	1701421
1746016-08	MMAs	Water	D	≤ 0.200	U	0.200	1.15	µg/L	B173144	1701421

Accuracy & Precision Summary

Batch: B173142
Lab Matrix: Water
Method: EPA 1638 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B173142-BS1	**Blank Spike, (1747054)**						
	As		25.00	19.18	µg/L	77% 75-125	
B173142-BS2	**Blank Spike, (1747054)**						
	As		25.00	19.31	µg/L	77% 75-125	
B173142-BS3	**Blank Spike, (1747054)**						
	As		25.00	18.89	µg/L	76% 75-125	
B173142-DUP1	**Duplicate, (1746016-01)**						
	As	1111		1092	µg/L		2% 20
B173142-MS1	**Matrix Spike, (1746016-01)**						
	As	1111	204.1	1289	µg/L	NR 75-125	
B173142-MSD1	**Matrix Spike Duplicate, (1746016-01)**						
	As	1111	204.1	1265	µg/L	NR 75-125	N/C 20

Batch: B173144
Lab Matrix: Water
Method: SOP BAL-4100

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B173144-BS1	**Blank Spike, (1736006)**						
	As(III)		5.010	4.760	µg/L	95% 75-125	
	As(V)		5.000	4.681	µg/L	94% 75-125	
	DMAs		3.198	4.121	µg/L	*129%* 75-125	
B173144-BS2	**Blank Spike, (1714054)**						
	MMAs		4.634	4.904	µg/L	106% 75-125	

Accuracy & Precision Summary

Batch: B173144
Lab Matrix: Water
Method: SOP BAL-4100

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B173144-DUP3	**Duplicate, (1746016-06)**								
	As(III)	1595		1590	µg/L			0.3%	25
	As(V)	169.7		163.8	µg/L			4%	25
	DMAs	ND		ND	µg/L			N/C	25
	MMAs	ND		ND	µg/L			N/C	25
B173144-MS2	**Matrix Spike, (1746016-06)**								
	As(III)	1595	500.0	2065	µg/L	94%	75-125		
	As(V)	169.7	500.0	644.9	µg/L	95%	75-125		
	DMAs	ND	510.0	488.9	µg/L	96%	75-125		
	MMAs	ND	500.0	473.5	µg/L	95%	75-125		
B173144-MSD2	**Matrix Spike Duplicate, (1746016-06)**								
	As(III)	1595	500.0	2047	µg/L	90%	75-125	0.9%	25
	As(V)	169.7	500.0	651.8	µg/L	96%	75-125	1%	25
	DMAs	ND	510.0	482.8	µg/L	95%	75-125	1%	25
	MMAs	ND	500.0	481.2	µg/L	96%	75-125	2%	25

Method Blanks & Reporting Limits

Batch: B173142
Matrix: Water
Method: EPA 1638 Mod
Analyte: As

Sample	Result	Units
B173142-BLK1	0.004	µg/L
B173142-BLK2	0.005	µg/L
B173142-BLK3	0.006	µg/L
B173142-BLK4	0.005	µg/L
Average:	0.005	
Limit:	0.040	

MDL: 0.011
MRL: 0.040

Method Blanks & Reporting Limits

Batch: B173144
Matrix: Water
Method: SOP BAL-4100
Analyte: As(III)

Sample	Result	Units
B173144-BLK1	0.00	µg/L
B173144-BLK2	0.00	µg/L
B173144-BLK3	0.00	µg/L
B173144-BLK4	0.00	µg/L

Average: 0.000
Limit: 0.020

MDL: 0.004
MRL: 0.020

Analyte: As(V)

Sample	Result	Units
B173144-BLK1	0.00	µg/L
B173144-BLK2	0.00	µg/L
B173144-BLK3	0.00	µg/L
B173144-BLK4	0.00	µg/L

Average: 0.000
Limit: 0.020

MDL: 0.004
MRL: 0.020

Analyte: DMAs

Sample	Result	Units
B173144-BLK1	0.00	µg/L
B173144-BLK2	0.00	µg/L
B173144-BLK3	0.00	µg/L
B173144-BLK4	0.00	µg/L

Average: 0.000
Limit: 0.021

MDL: 0.005
MRL: 0.021

Method Blanks & Reporting Limits

Analyte: MMAs

Sample	Result	Units
B173144-BLK1	0.00	µg/L
B173144-BLK2	0.00	µg/L
B173144-BLK3	0.00	µg/L
B173144-BLK4	0.00	µg/L

Average: 0.000
Limit: 0.023

MDL: 0.004
MRL: 0.023

Sample Containers

Lab ID: 1746016-01
Sample: AP-1 B-7A
Report Matrix: Groundwater
Sample Type: Sample
Collected: 11/14/2017
Received: 11/15/2017

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0169	0.2% HNO3 (BAL)	1736020	<2	Cooler - 1746016

Lab ID: 1746016-02
Sample: AP-1 B-7A
Report Matrix: Groundwater
Sample Type: Sample
Collected: 11/14/2017
Received: 11/15/2017

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0169	0.2% HNO3 (BAL)	1736020	<2	Cooler - 1746016
B	Vacutainer	6 mL	16-0257	EDTA (PP)	n/a	n/a	Cooler - 1746016
C	EXTRA_VOL	6 mL	16-0257	EDTA (PP)	n/a	n/a	Cooler - 1746016

Lab ID: 1746016-03
Sample: AP-1 B-7B
Report Matrix: Groundwater
Sample Type: Sample
Collected: 11/14/2017
Received: 11/15/2017

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0169	0.2% HNO3 (BAL)	1736020	<2	Cooler - 1746016

Lab ID: 1746016-04
Sample: AP-1 B-7B
Report Matrix: Groundwater
Sample Type: Sample
Collected: 11/14/2017
Received: 11/15/2017

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0169	0.2% HNO3 (BAL)	1736020	<2	Cooler - 1746016
B	Vacutainer	6 mL	16-0257	EDTA (PP)	n/a	n/a	Cooler - 1746016
C	EXTRA_VOL	6 mL	16-0257	EDTA (PP)	n/a	n/a	Cooler - 1746016

Lab ID: 1746016-05
Sample: AP-1 B-3B
Report Matrix: Groundwater
Sample Type: Sample
Collected: 11/14/2017
Received: 11/15/2017

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0169	0.2% HNO3 (BAL)	1736020	<2	Cooler - 1746016

Sample Containers

Lab ID: 1746016-06
Sample: AP-1 B-3B
Report Matrix: Groundwater
Sample Type: Sample
Collected: 11/14/2017
Received: 11/15/2017

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0169	0.2% HNO3 (BAL)	1736020	<2	Cooler - 1746016
B	Vacutainer	6 mL	16-0257	EDTA (PP)	n/a	n/a	Cooler - 1746016
C	EXTRA_VOL	6 mL	16-0257	EDTA (PP)	n/a	n/a	Cooler - 1746016

Lab ID: 1746016-07
Sample: FB-1
Report Matrix: Water
Sample Type: Field Blank
Collected: 11/14/2017
Received: 11/15/2017

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0169	0.2% HNO3 (BAL)	1736020	<2	Cooler - 1746016

Lab ID: 1746016-08
Sample: FB-1
Report Matrix: Water
Sample Type: Field Blank
Collected: 11/14/2017
Received: 11/15/2017

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle HDPE ICP-W	125 mL	17-0169	0.2% HNO3 (BAL)	1736020	<2	Cooler - 1746016
B	Vacutainer	6 mL	16-0257	EDTA (PP)	n/a	n/a	Cooler - 1746016
C	EXTRA_VOL	6 mL	16-0257	EDTA (PP)	n/a	n/a	Cooler - 1746016

Shipping Containers

Cooler - 1746016

Received: November 15, 2017 10:00
Tracking No: 788462235246 via FedEx
Coolant Type: Ice
Temperature: 1.5 °C

Description: Cooler
Damaged in transit? No
Returned to client? No
Comments: IR#15

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

BROOKS APPLIED LABS

Chain-of-Custody Form

Ship samples to:
18804 North Creek Parkway, Suite 100
Bothell, WA 98011

For BAL use only
Received by: Hali Haferman *Date:* 11/15/17
Work Order ID: ______ *Time:* 10:00
Project ID: ______

Client: Golder Associates
Contact: Rachel Kirkman
Client Project ID: ______
Samples Collected By: Ben Hodges
PO Number: 1779172
Phone: 336-402-5542
Email: rachel_kirkman@golder.com
Mailing Address: 3730 Chamblee Tucker Rd
Atlanta, GA 30341
Email Receipt Confirmation? ([✓ Yes]/No)
BAL PM: ______

Requested TAT
(business days)
- ☑ 20 (standard)
- ☐ 15*
- ☐ 10*
- ☐ 5*
- ☐ Other ____

*Surcharges may apply to expedited TATs

		Collection		Client Sample Info				BAL Analyses Required								Comments
	Sample ID	Date	Time	Matrix Type	Number of Containers	Field Filtered? (Yes/No)	Preservation Type HCl /HNO$_3$/Other	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	As Species (specify) InOrg, III, V, MMA, DMA	Se Species (specify) Se(IV), Se(VI), SeCN, Unknown	Filtration	Other (specify)	Other (specify)	Samples for dissolved and As Speciation were field filtered Specify Here
1	AP-1 B-7A	11/14/17	1100	GW	4	Y/N				T/D	X					
2	AP-1 B-7B	11/14/17	1700	GW	4	Y/N				T/D	X					
3	AP-1 B-3B	11/14/17	1430	GW	4	Y/N				T/D	X					
4	FB-1	11/14/17	1050	W	4	Y/N				T/D	X					
5																
6																
7																
8																
9																
10																
	Trip Blank															

Relinquished By:	Date: 11/14/17	Time: 1830	Relinquished By:	Date:	Time:
Received By:	Date:	Time:	Total Number of Packages:		

Page 1 of 1

List Hazardous Contaminants: ______

samples@brooksapplied.com | brooksapplied.com

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

February 20, 2020

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

RE: Project: Plant McDonough Soils
Pace Project No.: 2628680

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on February 05, 2020. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

CERTIFICATIONS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Pace Analytical Services Ormond Beach

8 East Tower Circle, Ormond Beach, FL 32174
Alaska DEC- CS/UST/LUST
Alabama Certification #: 41320
Arizona Certification# AZ0819
Colorado Certification: FL NELAC Reciprocity
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
New Hampshire Certification #: 2958
New Jersey Certification #: FL022
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

SAMPLE SUMMARY

Project: Plant McDonough Soils
Pace Project No.: 2628680

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2628680001	**B-94 (39-40.5)**	Solid	01/21/20 00:00	02/05/20 13:55
2628680002	**DGWC-9 (24.5-26)**	Solid	01/29/20 00:00	02/05/20 13:55
2628680003	**DGWC-10 (39.5-41)**	Solid	01/29/20 00:00	02/05/20 13:55
2628680004	**DGWA-71 (37.5-39)**	Solid	01/29/20 00:00	02/05/20 13:55
2628680005	**DGWA-70A (54-55.5)**	Solid	01/28/20 00:00	02/05/20 13:55
2628680006	**A-1 (0-3)**	Solid	01/27/20 00:00	02/05/20 13:55
2628680007	**A-1 (3-6)**	Solid	01/27/20 00:00	02/05/20 13:55
2628680008	**A-1 (6-9)**	Solid	01/27/20 00:00	02/05/20 13:55
2628680009	**A-1 (10-11.5)**	Solid	01/28/20 00:00	02/05/20 13:55
2628680010	**A-1 (11.5-13)**	Solid	01/28/20 00:00	02/05/20 13:55
2628680011	**A-1 (13-14.5)**	Solid	01/28/20 00:00	02/05/20 13:55
2628680012	**A-1 (14.5-16)**	Solid	01/28/20 00:00	02/05/20 13:55
2628680013	**A-1 (16-17.5)**	Solid	01/28/20 00:00	02/05/20 13:55
2628680014	**A-1 (17.5-19)**	Solid	01/28/20 00:00	02/05/20 13:55
2628680015	**A-1 (19-20.5)**	Solid	01/28/20 00:00	02/05/20 13:55
2628680016	**A-1 (20.5-22)**	Solid	01/28/20 00:00	02/05/20 13:55
2628680017	**A-2 (1-3)**	Solid	01/30/20 00:00	02/05/20 13:55
2628680018	**A-2 (3-6)**	Solid	01/30/20 00:00	02/05/20 13:55
2628680019	**A-2 (6-9)**	Solid	01/30/20 00:00	02/05/20 13:55
2628680020	**A-3 (2-3)**	Solid	01/30/20 00:00	02/05/20 13:55
2628680021	**A-3 (3-6)**	Solid	01/30/20 00:00	02/05/20 13:55
2628680022	**A-3 (6-9)**	Solid	01/30/20 00:00	02/05/20 13:55

SAMPLE ANALYTE COUNT

Project: Plant McDonough Soils
Pace Project No.: 2628680

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2628680001	**B-94 (39-40.5)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680002	**DGWC-9 (24.5-26)**	EPA 6010	CS2	4	PASI-O
		EPA 6020	SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
2628680003	**DGWC-10 (39.5-41)**	EPA 6010	CS2	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680004	**DGWA-71 (37.5-39)**	EPA 6010	CS2	4	PASI-O
		EPA 6020	SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680005	**DGWA-70A (54-55.5)**	EPA 6010	CS2	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680006	**A-1 (0-3)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680007	**A-1 (3-6)**	EPA 6010	ATC, CS2	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680008	**A-1 (6-9)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680009	**A-1 (10-11.5)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680010	**A-1 (11.5-13)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O

SAMPLE ANALYTE COUNT

Project: Plant McDonough Soils
Pace Project No.: 2628680

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680011	**A-1 (13-14.5)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680012	**A-1 (14.5-16)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680013	**A-1 (16-17.5)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680014	**A-1 (17.5-19)**	EPA 6010	CS2	4	PASI-O
		EPA 6020	SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680015	**A-1 (19-20.5)**	EPA 6010	ATC, CS2	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680016	**A-1 (20.5-22)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680017	**A-2 (1-3)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	LEC, SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680018	**A-2 (3-6)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680019	**A-2 (6-9)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O

SAMPLE ANALYTE COUNT

Project: Plant McDonough Soils
Pace Project No.: 2628680

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974-87	JM2	1	PASI-O
2628680020	**A-3 (2-3)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680021	**A-3 (3-6)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628680022	**A-3 (6-9)**	EPA 6010	ATC	4	PASI-O
		EPA 6020	SLG	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O

ANALYTICAL RESULTS

Project:	Plant McDonough Soils
Pace Project No.:	2628680

Sample: B-94 (39-40.5) **Lab ID: 2628680001** Collected: 01/21/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	ND	mg/kg	3.8	1.9	1	02/18/20 04:46	02/18/20 18:37	7440-42-8	M1
Calcium	**1510**	mg/kg	38.4	19.2	1	02/18/20 04:46	02/18/20 18:37	7440-70-2	
Lithium	ND	mg/kg	38.4	4.9	1	02/18/20 04:46	02/18/20 18:37	7439-93-2	N2
Molybdenum	ND	mg/kg	0.77	0.38	1	02/18/20 04:46	02/18/20 18:37	7439-98-7	M1
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	ND	mg/kg	2.7	0.51	20	02/11/20 03:16	02/12/20 12:39	7440-36-0	N2
Arsenic	**0.53J**	mg/kg	1.3	0.51	20	02/11/20 03:16	02/12/20 12:39	7440-38-2	
Barium	**75.4**	mg/kg	1.3	0.59	20	02/11/20 03:16	02/12/20 12:39	7440-39-3	
Beryllium	**1.3**	mg/kg	0.16	0.077	20	02/11/20 03:16	02/12/20 12:39	7440-41-7	
Cadmium	ND	mg/kg	0.16	0.072	20	02/11/20 03:16	02/12/20 12:39	7440-43-9	
Chromium	**7.1**	mg/kg	1.3	0.76	20	02/11/20 03:16	02/12/20 12:39	7440-47-3	
Cobalt	**7.0**	mg/kg	1.3	0.52	20	02/11/20 03:16	02/12/20 12:39	7440-48-4	
Lead	**1.4**	mg/kg	1.3	0.48	20	02/11/20 03:16	02/12/20 12:39	7439-92-1	
Selenium	**4.1**	mg/kg	1.3	0.68	20	02/11/20 03:16	02/12/20 12:39	7782-49-2	
Thallium	ND	mg/kg	1.3	0.48	20	02/11/20 03:16	02/12/20 12:39	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.013**	mg/kg	0.0089	0.0045	1	02/11/20 10:15	02/12/20 09:08	7439-97-6	M1
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**24.0**	%	0.10	0.10	1		02/18/20 13:42		

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: DGWC-9 (24.5-26) **Lab ID: 2628680002** Collected: 01/29/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	ND	mg/kg	13.7	6.9	5	02/18/20 04:46	02/19/20 12:07	7440-42-8	D3
Calcium	**95.5J**	mg/kg	137	68.7	5	02/18/20 04:46	02/19/20 12:07	7440-70-2	
Lithium	**62.6J**	mg/kg	137	17.6	5	02/18/20 04:46	02/19/20 12:07	7439-93-2	B,N2
Molybdenum	ND	mg/kg	2.7	1.4	5	02/18/20 04:46	02/19/20 12:07	7439-98-7	D3
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	ND	mg/kg	2.5	0.47	20	02/11/20 03:16	02/12/20 12:42	7440-36-0	N2
Arsenic	**0.80J**	mg/kg	1.2	0.48	20	02/11/20 03:16	02/12/20 12:42	7440-38-2	
Barium	**94.7**	mg/kg	1.2	0.54	20	02/11/20 03:16	02/12/20 12:42	7440-39-3	
Beryllium	**1.8**	mg/kg	0.15	0.071	20	02/11/20 03:16	02/12/20 12:42	7440-41-7	
Cadmium	ND	mg/kg	0.15	0.066	20	02/11/20 03:16	02/12/20 12:42	7440-43-9	
Chromium	**25.7**	mg/kg	1.2	0.70	20	02/11/20 03:16	02/12/20 12:42	7440-47-3	
Cobalt	**11.5**	mg/kg	1.2	0.48	20	02/11/20 03:16	02/12/20 12:42	7440-48-4	
Lead	**5.6**	mg/kg	1.2	0.45	20	02/11/20 03:16	02/12/20 12:42	7439-92-1	
Selenium	**11.0**	mg/kg	1.2	0.63	20	02/11/20 03:16	02/12/20 12:42	7782-49-2	
Thallium	**0.47J**	mg/kg	1.2	0.44	20	02/11/20 03:16	02/12/20 12:42	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	ND	mg/kg	0.010	0.0052	1	02/11/20 12:56	02/12/20 11:58	7439-97-6	

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: DGWC-10 (39.5-41) **Lab ID: 2628680003** Collected: 01/29/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	ND	mg/kg	17.8	8.9	5	02/10/20 05:51	02/12/20 11:34	7440-42-8	M1
Calcium	**323**	mg/kg	178	88.8	5	02/10/20 05:51	02/12/20 11:34	7440-70-2	
Lithium	**27.5J**	mg/kg	178	22.7	5	02/10/20 05:51	02/12/20 11:34	7439-93-2	N2
Molybdenum	ND	mg/kg	3.6	1.8	5	02/10/20 05:51	02/12/20 11:34	7439-98-7	M1
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	ND	mg/kg	2.8	0.54	20	02/10/20 05:51	02/11/20 18:42	7440-36-0	M6,N2
Arsenic	**1.9**	mg/kg	1.4	0.55	20	02/10/20 05:51	02/11/20 18:42	7440-38-2	
Barium	**91.4**	mg/kg	1.4	0.63	20	02/10/20 05:51	02/11/20 18:42	7440-39-3	M6
Beryllium	**2.2**	mg/kg	0.43	0.21	50	02/10/20 05:51	02/12/20 13:57	7440-41-7	
Cadmium	ND	mg/kg	0.17	0.077	20	02/10/20 05:51	02/11/20 18:42	7440-43-9	
Chromium	**17.6**	mg/kg	3.6	2.0	50	02/10/20 05:51	02/12/20 13:57	7440-47-3	
Cobalt	**21.7**	mg/kg	3.6	1.4	50	02/10/20 05:51	02/12/20 13:57	7440-48-4	
Lead	**7.4**	mg/kg	1.4	0.52	20	02/10/20 05:51	02/11/20 18:42	7439-92-1	
Selenium	**259**	mg/kg	1.4	0.73	20	02/10/20 05:51	02/11/20 18:42	7782-49-2	M6,R1
Thallium	**0.65J**	mg/kg	1.4	0.51	20	02/10/20 05:51	02/11/20 18:42	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	ND	mg/kg	0.011	0.0054	1	02/11/20 12:56	02/12/20 12:09	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**19.9**	%	0.10	0.10	1		02/18/20 13:42		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: DGWA-71 (37.5-39) **Lab ID: 2628680004** Collected: 01/29/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	ND	mg/kg	2.5	1.3	1	02/10/20 05:51	02/12/20 11:48	7440-42-8	
Calcium	**698**	mg/kg	25.1	12.6	1	02/10/20 05:51	02/12/20 11:48	7440-70-2	
Lithium	ND	mg/kg	25.1	3.2	1	02/10/20 05:51	02/12/20 11:48	7439-93-2	N2
Molybdenum	ND	mg/kg	0.50	0.25	1	02/10/20 05:51	02/12/20 11:48	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	ND	mg/kg	2.0	0.38	20	02/10/20 05:51	02/11/20 18:54	7440-36-0	N2
Arsenic	ND	mg/kg	1.0	0.39	20	02/10/20 05:51	02/11/20 18:54	7440-38-2	
Barium	**127**	mg/kg	1.0	0.44	20	02/10/20 05:51	02/11/20 18:54	7440-39-3	
Beryllium	**0.55**	mg/kg	0.12	0.058	20	02/10/20 05:51	02/11/20 18:54	7440-41-7	
Cadmium	ND	mg/kg	0.12	0.054	20	02/10/20 05:51	02/11/20 18:54	7440-43-9	
Chromium	**11.9**	mg/kg	1.0	0.58	20	02/10/20 05:51	02/11/20 18:54	7440-47-3	
Cobalt	**5.6**	mg/kg	1.0	0.39	20	02/10/20 05:51	02/11/20 18:54	7440-48-4	
Lead	**1.2**	mg/kg	1.0	0.37	20	02/10/20 05:51	02/11/20 18:54	7439-92-1	
Selenium	**23.0**	mg/kg	1.0	0.52	20	02/10/20 05:51	02/11/20 18:54	7782-49-2	
Thallium	ND	mg/kg	1.0	0.36	20	02/10/20 05:51	02/11/20 18:54	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	ND	mg/kg	0.0092	0.0046	1	02/11/20 12:56	02/12/20 12:11	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**9.6**	%	0.10	0.10	1		02/18/20 13:42		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: DGWA-70A (54-55.5) **Lab ID: 2628680005** Collected: 01/28/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	ND	mg/kg	2.8	1.4	1	02/10/20 05:51	02/12/20 11:51	7440-42-8	
Calcium	**2200**	mg/kg	28.3	14.1	1	02/10/20 05:51	02/12/20 11:51	7440-70-2	
Lithium	ND	mg/kg	28.3	3.6	1	02/10/20 05:51	02/12/20 11:51	7439-93-2	N2
Molybdenum	**0.29J**	mg/kg	0.57	0.28	1	02/10/20 05:51	02/12/20 11:51	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	ND	mg/kg	2.3	0.43	20	02/10/20 05:51	02/11/20 18:57	7440-36-0	N2
Arsenic	**1.2**	mg/kg	1.1	0.44	20	02/10/20 05:51	02/11/20 18:57	7440-38-2	
Barium	**91.2**	mg/kg	1.1	0.50	20	02/10/20 05:51	02/11/20 18:57	7440-39-3	
Beryllium	**0.34**	mg/kg	0.14	0.066	20	02/10/20 05:51	02/11/20 18:57	7440-41-7	
Cadmium	ND	mg/kg	0.14	0.061	20	02/10/20 05:51	02/11/20 18:57	7440-43-9	
Chromium	**23.6**	mg/kg	2.8	1.6	50	02/10/20 05:51	02/12/20 13:59	7440-47-3	
Cobalt	**20.0**	mg/kg	2.8	1.1	50	02/10/20 05:51	02/12/20 13:59	7440-48-4	
Lead	**3.7**	mg/kg	1.1	0.41	20	02/10/20 05:51	02/11/20 18:57	7439-92-1	
Selenium	**142**	mg/kg	1.1	0.58	20	02/10/20 05:51	02/11/20 18:57	7782-49-2	
Thallium	**0.45J**	mg/kg	1.1	0.40	20	02/10/20 05:51	02/11/20 18:57	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	ND	mg/kg	0.0078	0.0039	1	02/11/20 12:56	02/12/20 12:14	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**1.0**	%	0.10	0.10	1		02/18/20 13:42		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-1 (0-3) **Lab ID: 2628680006** Collected: 01/27/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**43.0**	mg/kg	6.9	3.5	2	02/10/20 05:51	02/14/20 13:56	7440-42-8	
Calcium	**5110**	mg/kg	69.3	34.7	2	02/10/20 05:51	02/14/20 13:56	7440-70-2	
Lithium	**24.0J**	mg/kg	69.3	8.9	2	02/10/20 05:51	02/14/20 13:56	7439-93-2	N2
Molybdenum	**4.3**	mg/kg	1.4	0.69	2	02/10/20 05:51	02/14/20 13:56	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**2.4J**	mg/kg	2.8	0.53	20	02/10/20 05:51	02/11/20 19:01	7440-36-0	N2
Arsenic	**95.3**	mg/kg	1.4	0.54	20	02/10/20 05:51	02/11/20 19:01	7440-38-2	
Barium	**314**	mg/kg	1.4	0.61	20	02/10/20 05:51	02/11/20 19:01	7440-39-3	
Beryllium	**5.3**	mg/kg	0.42	0.20	50	02/10/20 05:51	02/12/20 14:01	7440-41-7	
Cadmium	**0.57**	mg/kg	0.17	0.075	20	02/10/20 05:51	02/11/20 19:01	7440-43-9	
Chromium	**29.2**	mg/kg	3.5	2.0	50	02/10/20 05:51	02/12/20 14:01	7440-47-3	
Cobalt	**12.7**	mg/kg	3.5	1.3	50	02/10/20 05:51	02/12/20 14:01	7440-48-4	
Lead	**30.9**	mg/kg	1.4	0.50	20	02/10/20 05:51	02/11/20 19:01	7439-92-1	
Selenium	**123**	mg/kg	1.4	0.71	20	02/10/20 05:51	02/11/20 19:01	7782-49-2	
Thallium	**2.5**	mg/kg	1.4	0.50	20	02/10/20 05:51	02/11/20 19:01	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.082**	mg/kg	0.011	0.0055	1	02/11/20 12:56	02/12/20 12:16	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.9**	%	0.10	0.10	1		02/18/20 13:43		

ANALYTICAL RESULTS

Project:	Plant McDonough Soils
Pace Project No.:	2628680

Sample: A-1 (3-6) **Lab ID: 2628680007** Collected: 01/27/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**21.6**	mg/kg	18.9	9.4	5	02/10/20 05:51	02/15/20 14:25	7440-42-8	
Calcium	**2870**	mg/kg	75.5	37.7	2	02/10/20 05:51	02/14/20 14:01	7440-70-2	
Lithium	**15.9J**	mg/kg	75.5	9.7	2	02/10/20 05:51	02/14/20 14:01	7439-93-2	N2
Molybdenum	**8.4**	mg/kg	1.5	0.75	2	02/10/20 05:51	02/14/20 14:01	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**2.6J**	mg/kg	3.0	0.57	20	02/10/20 05:51	02/11/20 19:04	7440-36-0	N2
Arsenic	**110**	mg/kg	1.5	0.58	20	02/10/20 05:51	02/11/20 19:04	7440-38-2	
Barium	**261**	mg/kg	1.5	0.66	20	02/10/20 05:51	02/11/20 19:04	7440-39-3	
Beryllium	**6.2**	mg/kg	0.45	0.22	50	02/10/20 05:51	02/12/20 14:03	7440-41-7	
Cadmium	**0.57**	mg/kg	0.18	0.081	20	02/10/20 05:51	02/11/20 19:04	7440-43-9	
Chromium	**26.2**	mg/kg	3.8	2.2	50	02/10/20 05:51	02/12/20 14:03	7440-47-3	
Cobalt	**11.6**	mg/kg	3.8	1.5	50	02/10/20 05:51	02/12/20 14:03	7440-48-4	
Lead	**36.8**	mg/kg	1.5	0.55	20	02/10/20 05:51	02/11/20 19:04	7439-92-1	
Selenium	**142**	mg/kg	1.5	0.78	20	02/10/20 05:51	02/11/20 19:04	7782-49-2	
Thallium	**2.6**	mg/kg	1.5	0.54	20	02/10/20 05:51	02/11/20 19:04	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.13**	mg/kg	0.012	0.0060	1	02/11/20 12:56	02/12/20 12:23	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**25.0**	%	0.10	0.10	1		02/18/20 13:43		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-1 (6-9) **Lab ID: 2628680008** Collected: 01/27/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**43.4**	mg/kg	7.2	3.6	2	02/10/20 05:51	02/14/20 14:06	7440-42-8	
Calcium	**6500**	mg/kg	72.2	36.1	2	02/10/20 05:51	02/14/20 14:06	7440-70-2	
Lithium	**18.6J**	mg/kg	72.2	9.2	2	02/10/20 05:51	02/14/20 14:06	7439-93-2	N2
Molybdenum	**3.8**	mg/kg	1.4	0.72	2	02/10/20 05:51	02/14/20 14:06	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**2.0J**	mg/kg	2.9	0.55	20	02/10/20 05:51	02/11/20 19:13	7440-36-0	N2
Arsenic	**84.8**	mg/kg	1.4	0.56	20	02/10/20 05:51	02/11/20 19:13	7440-38-2	
Barium	**288**	mg/kg	1.4	0.63	20	02/10/20 05:51	02/11/20 19:13	7440-39-3	
Beryllium	**4.5**	mg/kg	0.43	0.21	50	02/10/20 05:51	02/12/20 14:05	7440-41-7	
Cadmium	**0.55**	mg/kg	0.17	0.078	20	02/10/20 05:51	02/11/20 19:13	7440-43-9	
Chromium	**30.0**	mg/kg	3.6	2.1	50	02/10/20 05:51	02/12/20 14:05	7440-47-3	
Cobalt	**12.2**	mg/kg	3.6	1.4	50	02/10/20 05:51	02/12/20 14:05	7440-48-4	
Lead	**24.5**	mg/kg	1.4	0.53	20	02/10/20 05:51	02/11/20 19:13	7439-92-1	
Selenium	**116**	mg/kg	1.4	0.74	20	02/10/20 05:51	02/11/20 19:13	7782-49-2	
Thallium	**2.1**	mg/kg	1.4	0.52	20	02/10/20 05:51	02/11/20 19:13	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.11**	mg/kg	0.0094	0.0047	1	02/11/20 12:56	02/12/20 12:25	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**24.3**	%	0.10	0.10	1		02/18/20 13:43		

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-1 (10-11.5) **Lab ID: 2628680009** Collected: 01/28/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**46.7**	mg/kg	6.9	3.4	2	02/10/20 05:51	02/14/20 14:11	7440-42-8	
Calcium	**5440**	mg/kg	68.6	34.3	2	02/10/20 05:51	02/14/20 14:11	7440-70-2	
Lithium	**21.8J**	mg/kg	68.6	8.8	2	02/10/20 05:51	02/14/20 14:11	7439-93-2	N2
Molybdenum	**6.1**	mg/kg	1.4	0.69	2	02/10/20 05:51	02/14/20 14:11	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**1.9J**	mg/kg	2.7	0.52	20	02/10/20 05:51	02/11/20 19:16	7440-36-0	N2
Arsenic	**90.8**	mg/kg	1.4	0.53	20	02/10/20 05:51	02/11/20 19:16	7440-38-2	
Barium	**297**	mg/kg	1.4	0.60	20	02/10/20 05:51	02/11/20 19:16	7440-39-3	
Beryllium	**3.9**	mg/kg	0.41	0.20	50	02/10/20 05:51	02/12/20 14:07	7440-41-7	
Cadmium	**0.57**	mg/kg	0.16	0.074	20	02/10/20 05:51	02/11/20 19:16	7440-43-9	
Chromium	**27.9**	mg/kg	3.4	2.0	50	02/10/20 05:51	02/12/20 14:07	7440-47-3	
Cobalt	**12.5**	mg/kg	3.4	1.3	50	02/10/20 05:51	02/12/20 14:07	7440-48-4	
Lead	**25.1**	mg/kg	1.4	0.50	20	02/10/20 05:51	02/11/20 19:16	7439-92-1	
Selenium	**104**	mg/kg	1.4	0.70	20	02/10/20 05:51	02/11/20 19:16	7782-49-2	
Thallium	**2.2**	mg/kg	1.4	0.49	20	02/10/20 05:51	02/11/20 19:16	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.12**	mg/kg	0.011	0.0053	1	02/11/20 12:56	02/12/20 12:27	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.7**	%	0.10	0.10	1		02/18/20 13:43		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-1 (11.5-13) **Lab ID: 2628680010** Collected: 01/28/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**40.7**	mg/kg	7.4	3.7	2	02/10/20 05:51	02/14/20 14:25	7440-42-8	
Calcium	**6250**	mg/kg	74.3	37.2	2	02/10/20 05:51	02/14/20 14:25	7440-70-2	
Lithium	**26.2J**	mg/kg	74.3	9.5	2	02/10/20 05:51	02/14/20 14:25	7439-93-2	N2
Molybdenum	**3.5**	mg/kg	1.5	0.74	2	02/10/20 05:51	02/14/20 14:25	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**1.5J**	mg/kg	3.0	0.56	20	02/10/20 05:51	02/11/20 19:19	7440-36-0	N2
Arsenic	**69.8**	mg/kg	1.5	0.57	20	02/10/20 05:51	02/11/20 19:19	7440-38-2	
Barium	**351**	mg/kg	1.5	0.65	20	02/10/20 05:51	02/11/20 19:19	7440-39-3	
Beryllium	**3.5**	mg/kg	0.45	0.22	50	02/10/20 05:51	02/12/20 14:09	7440-41-7	
Cadmium	**0.39**	mg/kg	0.18	0.080	20	02/10/20 05:51	02/11/20 19:19	7440-43-9	
Chromium	**30.0**	mg/kg	3.7	2.1	50	02/10/20 05:51	02/12/20 14:09	7440-47-3	
Cobalt	**14.1**	mg/kg	3.7	1.4	50	02/10/20 05:51	02/12/20 14:09	7440-48-4	
Lead	**23.1**	mg/kg	1.5	0.54	20	02/10/20 05:51	02/11/20 19:19	7439-92-1	
Selenium	**109**	mg/kg	1.5	0.76	20	02/10/20 05:51	02/11/20 19:19	7782-49-2	
Thallium	**1.4J**	mg/kg	1.5	0.53	20	02/10/20 05:51	02/11/20 19:19	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.14**	mg/kg	0.012	0.0058	1	02/11/20 12:56	02/12/20 12:30	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.7**	%	0.10	0.10	1		02/18/20 13:43		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-1 (13-14.5) **Lab ID: 2628680011** Collected: 01/28/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**26.7**	mg/kg	6.5	3.2	2	02/10/20 05:51	02/14/20 14:30	7440-42-8	
Calcium	**2420**	mg/kg	64.8	32.4	2	02/10/20 05:51	02/14/20 14:30	7440-70-2	
Lithium	**15.8J**	mg/kg	64.8	8.3	2	02/10/20 05:51	02/14/20 14:30	7439-93-2	N2
Molybdenum	**5.5**	mg/kg	1.3	0.65	2	02/10/20 05:51	02/14/20 14:30	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**1.1J**	mg/kg	2.6	0.49	20	02/10/20 05:51	02/11/20 19:22	7440-36-0	N2
Arsenic	**61.7**	mg/kg	1.3	0.50	20	02/10/20 05:51	02/11/20 19:22	7440-38-2	
Barium	**243**	mg/kg	1.3	0.57	20	02/10/20 05:51	02/11/20 19:22	7440-39-3	
Beryllium	**3.0**	mg/kg	0.39	0.19	50	02/10/20 05:51	02/12/20 14:11	7440-41-7	
Cadmium	**0.32**	mg/kg	0.16	0.070	20	02/10/20 05:51	02/11/20 19:22	7440-43-9	
Chromium	**20.9**	mg/kg	3.2	1.9	50	02/10/20 05:51	02/12/20 14:11	7440-47-3	
Cobalt	**9.1**	mg/kg	3.2	1.3	50	02/10/20 05:51	02/12/20 14:11	7440-48-4	
Lead	**20.3**	mg/kg	1.3	0.47	20	02/10/20 05:51	02/11/20 19:22	7439-92-1	
Selenium	**92.0**	mg/kg	1.3	0.67	20	02/10/20 05:51	02/11/20 19:22	7782-49-2	
Thallium	**1.5**	mg/kg	1.3	0.46	20	02/10/20 05:51	02/11/20 19:22	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.12**	mg/kg	0.012	0.0060	1	02/11/20 12:56	02/12/20 12:32	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.2**	%	0.10	0.10	1		02/18/20 13:44		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-1 (14.5-16) **Lab ID: 2628680012** Collected: 01/28/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**34.4**	mg/kg	7.2	3.6	2	02/10/20 05:51	02/14/20 14:34	7440-42-8	
Calcium	**3640**	mg/kg	72.0	36.0	2	02/10/20 05:51	02/14/20 14:34	7440-70-2	
Lithium	**19.3J**	mg/kg	72.0	9.2	2	02/10/20 05:51	02/14/20 14:34	7439-93-2	N2
Molybdenum	**4.4**	mg/kg	1.4	0.72	2	02/10/20 05:51	02/14/20 14:34	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**1.6J**	mg/kg	2.9	0.55	20	02/10/20 05:51	02/11/20 19:26	7440-36-0	N2
Arsenic	**99.4**	mg/kg	1.4	0.56	20	02/10/20 05:51	02/11/20 19:26	7440-38-2	
Barium	**275**	mg/kg	1.4	0.63	20	02/10/20 05:51	02/11/20 19:26	7440-39-3	
Beryllium	**3.6**	mg/kg	0.43	0.21	50	02/10/20 05:51	02/12/20 14:17	7440-41-7	
Cadmium	**0.64**	mg/kg	0.17	0.078	20	02/10/20 05:51	02/11/20 19:26	7440-43-9	
Chromium	**27.6**	mg/kg	3.6	2.1	50	02/10/20 05:51	02/12/20 14:17	7440-47-3	
Cobalt	**12.9**	mg/kg	3.6	1.4	50	02/10/20 05:51	02/12/20 14:17	7440-48-4	
Lead	**26.4**	mg/kg	1.4	0.52	20	02/10/20 05:51	02/11/20 19:26	7439-92-1	
Selenium	**115**	mg/kg	1.4	0.74	20	02/10/20 05:51	02/11/20 19:26	7782-49-2	
Thallium	**2.2**	mg/kg	1.4	0.52	20	02/10/20 05:51	02/11/20 19:26	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.10**	mg/kg	0.011	0.0054	1	02/11/20 12:56	02/12/20 12:34	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.1**	%	0.10	0.10	1		02/18/20 13:44		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-1 (16-17.5) **Lab ID: 2628680013** Collected: 01/28/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**32.7**	mg/kg	7.8	3.9	2	02/10/20 05:51	02/14/20 14:39	7440-42-8	
Calcium	**3610**	mg/kg	77.7	38.8	2	02/10/20 05:51	02/14/20 14:39	7440-70-2	
Lithium	**20.6J**	mg/kg	77.7	9.9	2	02/10/20 05:51	02/14/20 14:39	7439-93-2	N2
Molybdenum	**2.3**	mg/kg	1.6	0.78	2	02/10/20 05:51	02/14/20 14:39	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**1.6J**	mg/kg	3.1	0.59	20	02/10/20 05:51	02/11/20 19:29	7440-36-0	N2
Arsenic	**82.4**	mg/kg	1.6	0.60	20	02/10/20 05:51	02/11/20 19:29	7440-38-2	
Barium	**291**	mg/kg	1.6	0.68	20	02/10/20 05:51	02/11/20 19:29	7440-39-3	
Beryllium	**3.8**	mg/kg	0.47	0.23	50	02/10/20 05:51	02/12/20 14:19	7440-41-7	
Cadmium	**0.53**	mg/kg	0.19	0.084	20	02/10/20 05:51	02/11/20 19:29	7440-43-9	
Chromium	**25.6**	mg/kg	3.9	2.2	50	02/10/20 05:51	02/12/20 14:19	7440-47-3	
Cobalt	**12.6**	mg/kg	3.9	1.5	50	02/10/20 05:51	02/12/20 14:19	7440-48-4	
Lead	**27.8**	mg/kg	1.6	0.57	20	02/10/20 05:51	02/11/20 19:29	7439-92-1	
Selenium	**96.9**	mg/kg	1.6	0.80	20	02/10/20 05:51	02/11/20 19:29	7782-49-2	
Thallium	**1.8**	mg/kg	1.6	0.56	20	02/10/20 05:51	02/11/20 19:29	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.046**	mg/kg	0.011	0.0055	1	02/11/20 12:56	02/12/20 12:37	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**21.2**	%	0.10	0.10	1		02/18/20 13:44		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-1 (17.5-19) **Lab ID: 2628680014** Collected: 01/28/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**12.2**	mg/kg	3.7	1.9	1	02/10/20 05:51	02/12/20 12:30	7440-42-8	
Calcium	**1670**	mg/kg	37.4	18.7	1	02/10/20 05:51	02/12/20 12:30	7440-70-2	
Lithium	ND	mg/kg	37.4	4.8	1	02/10/20 05:51	02/12/20 12:30	7439-93-2	N2
Molybdenum	**7.2**	mg/kg	0.75	0.37	1	02/10/20 05:51	02/12/20 12:30	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**0.61J**	mg/kg	3.0	0.57	20	02/10/20 05:51	02/11/20 19:32	7440-36-0	N2
Arsenic	**54.2**	mg/kg	1.5	0.58	20	02/10/20 05:51	02/11/20 19:32	7440-38-2	
Barium	**202**	mg/kg	1.5	0.66	20	02/10/20 05:51	02/11/20 19:32	7440-39-3	
Beryllium	**1.6**	mg/kg	0.18	0.087	20	02/10/20 05:51	02/11/20 19:32	7440-41-7	
Cadmium	**0.24**	mg/kg	0.18	0.081	20	02/10/20 05:51	02/11/20 19:32	7440-43-9	
Chromium	**15.9**	mg/kg	1.5	0.85	20	02/10/20 05:51	02/11/20 19:32	7440-47-3	
Cobalt	**6.5**	mg/kg	1.5	0.58	20	02/10/20 05:51	02/11/20 19:32	7440-48-4	
Lead	**12.9**	mg/kg	1.5	0.54	20	02/10/20 05:51	02/11/20 19:32	7439-92-1	
Selenium	**65.0**	mg/kg	1.5	0.77	20	02/10/20 05:51	02/11/20 19:32	7782-49-2	
Thallium	**1.2J**	mg/kg	1.5	0.53	20	02/10/20 05:51	02/11/20 19:32	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.10**	mg/kg	0.011	0.0053	1	02/11/20 12:56	02/12/20 12:39	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**25.2**	%	0.10	0.10	1		02/18/20 13:44		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-1 (19-20.5) **Lab ID: 2628680015** Collected: 01/28/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**13.2J**	mg/kg	16.7	8.3	5	02/10/20 05:51	02/15/20 14:28	7440-42-8	
Calcium	**2350**	mg/kg	66.8	33.4	2	02/10/20 05:51	02/14/20 14:44	7440-70-2	
Lithium	**23.6J**	mg/kg	66.8	8.5	2	02/10/20 05:51	02/14/20 14:44	7439-93-2	N2
Molybdenum	**3.5**	mg/kg	1.3	0.67	2	02/10/20 05:51	02/14/20 14:44	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**1.0J**	mg/kg	2.7	0.51	20	02/10/20 05:51	02/11/20 19:35	7440-36-0	N2
Arsenic	**44.8**	mg/kg	1.3	0.52	20	02/10/20 05:51	02/11/20 19:35	7440-38-2	
Barium	**258**	mg/kg	1.3	0.59	20	02/10/20 05:51	02/11/20 19:35	7440-39-3	
Beryllium	**3.5**	mg/kg	0.40	0.19	50	02/10/20 05:51	02/12/20 14:21	7440-41-7	
Cadmium	**0.26**	mg/kg	0.16	0.072	20	02/10/20 05:51	02/11/20 19:35	7440-43-9	
Chromium	**25.0**	mg/kg	3.3	1.9	50	02/10/20 05:51	02/12/20 14:21	7440-47-3	
Cobalt	**13.9**	mg/kg	3.3	1.3	50	02/10/20 05:51	02/12/20 14:21	7440-48-4	
Lead	**28.2**	mg/kg	1.3	0.49	20	02/10/20 05:51	02/11/20 19:35	7439-92-1	
Selenium	**132**	mg/kg	1.3	0.69	20	02/10/20 05:51	02/11/20 19:35	7782-49-2	
Thallium	**1.1J**	mg/kg	1.3	0.48	20	02/10/20 05:51	02/11/20 19:35	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.13**	mg/kg	0.012	0.0059	1	02/11/20 12:56	02/12/20 12:41	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**27.2**	%	0.10	0.10	1		02/18/20 13:44		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-1 (20.5-22) **Lab ID: 2628680016** Collected: 01/28/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**19.8**	mg/kg	7.4	3.7	2	02/10/20 05:51	02/14/20 14:48	7440-42-8	
Calcium	**3590**	mg/kg	74.5	37.2	2	02/10/20 05:51	02/14/20 14:48	7440-70-2	
Lithium	**22.3J**	mg/kg	74.5	9.5	2	02/10/20 05:51	02/14/20 14:48	7439-93-2	N2
Molybdenum	**4.4**	mg/kg	1.5	0.74	2	02/10/20 05:51	02/14/20 14:48	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**1.3J**	mg/kg	3.0	0.57	20	02/10/20 05:51	02/11/20 19:38	7440-36-0	N2
Arsenic	**61.7**	mg/kg	1.5	0.57	20	02/10/20 05:51	02/11/20 19:38	7440-38-2	
Barium	**256**	mg/kg	1.5	0.66	20	02/10/20 05:51	02/11/20 19:38	7440-39-3	
Beryllium	**3.4**	mg/kg	0.45	0.22	50	02/10/20 05:51	02/12/20 14:23	7440-41-7	
Cadmium	**0.29**	mg/kg	0.18	0.080	20	02/10/20 05:51	02/11/20 19:38	7440-43-9	
Chromium	**22.7**	mg/kg	3.7	2.1	50	02/10/20 05:51	02/12/20 14:23	7440-47-3	
Cobalt	**12.8**	mg/kg	3.7	1.4	50	02/10/20 05:51	02/12/20 14:23	7440-48-4	
Lead	**24.3**	mg/kg	1.5	0.54	20	02/10/20 05:51	02/11/20 19:38	7439-92-1	
Selenium	**106**	mg/kg	1.5	0.77	20	02/10/20 05:51	02/11/20 19:38	7782-49-2	
Thallium	**1.1J**	mg/kg	1.5	0.53	20	02/10/20 05:51	02/11/20 19:38	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.11**	mg/kg	0.012	0.0058	1	02/11/20 12:56	02/12/20 12:43	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**22.0**	%	0.10	0.10	1		02/18/20 13:45		

ANALYTICAL RESULTS

Project:	Plant McDonough Soils
Pace Project No.:	2628680

Sample: A-2 (1-3) **Lab ID: 2628680017** Collected: 01/30/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**87.4**	mg/kg	7.4	3.7	2	02/10/20 05:51	02/14/20 14:53	7440-42-8	
Calcium	**5970**	mg/kg	74.2	37.1	2	02/10/20 05:51	02/14/20 14:53	7440-70-2	
Lithium	**24.0J**	mg/kg	74.2	9.5	2	02/10/20 05:51	02/14/20 14:53	7439-93-2	N2
Molybdenum	**5.0**	mg/kg	1.5	0.74	2	02/10/20 05:51	02/14/20 14:53	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**1.7J**	mg/kg	3.0	0.56	20	02/10/20 05:51	02/11/20 19:41	7440-36-0	N2
Arsenic	**84.8**	mg/kg	1.5	0.57	20	02/10/20 05:51	02/11/20 19:41	7440-38-2	
Barium	**323**	mg/kg	1.5	0.65	20	02/10/20 05:51	02/11/20 19:41	7440-39-3	
Beryllium	**3.7**	mg/kg	0.45	0.22	50	02/10/20 05:51	02/12/20 14:26	7440-41-7	
Cadmium	**1.0**	mg/kg	0.18	0.080	20	02/10/20 05:51	02/11/20 19:41	7440-43-9	
Chromium	**40.9**	mg/kg	3.7	2.1	50	02/10/20 05:51	02/12/20 14:26	7440-47-3	
Cobalt	**14.2**	mg/kg	3.7	1.4	50	02/10/20 05:51	02/12/20 14:26	7440-48-4	
Lead	**32.8**	mg/kg	1.5	0.54	20	02/10/20 05:51	02/11/20 19:41	7439-92-1	
Selenium	**101**	mg/kg	1.5	0.76	20	02/10/20 05:51	02/11/20 19:41	7782-49-2	
Thallium	**2.6**	mg/kg	1.5	0.53	20	02/10/20 05:51	02/11/20 19:41	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.078**	mg/kg	0.012	0.0060	1	02/11/20 12:56	02/12/20 12:50	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.4**	%	0.10	0.10	1		02/18/20 13:45		

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-2 (3-6) **Lab ID: 2628680018** Collected: 01/30/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**243**	mg/kg	7.2	3.6	2	02/10/20 05:51	02/14/20 14:58	7440-42-8	
Calcium	**9960**	mg/kg	72.0	36.0	2	02/10/20 05:51	02/14/20 14:58	7440-70-2	
Lithium	**22.0J**	mg/kg	72.0	9.2	2	02/10/20 05:51	02/14/20 14:58	7439-93-2	N2
Molybdenum	**5.3**	mg/kg	1.4	0.72	2	02/10/20 05:51	02/14/20 14:58	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**1.5J**	mg/kg	7.2	1.4	50	02/10/20 05:51	02/13/20 11:53	7440-36-0	D3,N2
Arsenic	**71.2**	mg/kg	3.6	1.4	50	02/10/20 05:51	02/13/20 11:53	7440-38-2	D3
Barium	**280**	mg/kg	3.6	1.6	50	02/10/20 05:51	02/13/20 11:53	7440-39-3	D3
Beryllium	**4.1**	mg/kg	0.43	0.21	50	02/10/20 05:51	02/13/20 11:53	7440-41-7	D3
Cadmium	**1.8**	mg/kg	0.43	0.19	50	02/10/20 05:51	02/13/20 11:53	7440-43-9	D3
Chromium	**52.1**	mg/kg	3.6	2.1	50	02/10/20 05:51	02/13/20 11:53	7440-47-3	D3
Cobalt	**12.4**	mg/kg	3.6	1.4	50	02/10/20 05:51	02/13/20 11:53	7440-48-4	D3
Lead	**54.8**	mg/kg	3.6	1.3	50	02/10/20 05:51	02/13/20 11:53	7439-92-1	D3
Selenium	**13.8**	mg/kg	3.6	1.9	50	02/10/20 05:51	02/13/20 11:53	7782-49-2	D3
Thallium	**4.8**	mg/kg	3.6	1.3	50	02/10/20 05:51	02/13/20 11:53	7440-28-0	D3
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.11**	mg/kg	0.012	0.0058	1	02/11/20 12:56	02/12/20 12:53	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**28.1**	%	0.10	0.10	1		02/18/20 13:45		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-2 (6-9) **Lab ID: 2628680019** Collected: 01/30/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**308**	mg/kg	7.2	3.6	2	02/10/20 05:51	02/14/20 15:02	7440-42-8	
Calcium	**13300**	mg/kg	72.2	36.1	2	02/10/20 05:51	02/14/20 15:02	7440-70-2	
Lithium	**22.0J**	mg/kg	72.2	9.2	2	02/10/20 05:51	02/14/20 15:02	7439-93-2	N2
Molybdenum	**6.9**	mg/kg	1.4	0.72	2	02/10/20 05:51	02/14/20 15:02	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	ND	mg/kg	7.2	1.4	50	02/10/20 05:51	02/13/20 11:56	7440-36-0	D3,N2
Arsenic	**67.5**	mg/kg	3.6	1.4	50	02/10/20 05:51	02/13/20 11:56	7440-38-2	D3
Barium	**388**	mg/kg	3.6	1.6	50	02/10/20 05:51	02/13/20 11:56	7440-39-3	D3
Beryllium	**4.0**	mg/kg	0.43	0.21	50	02/10/20 05:51	02/13/20 11:56	7440-41-7	D3
Cadmium	**2.2**	mg/kg	0.43	0.19	50	02/10/20 05:51	02/13/20 11:56	7440-43-9	D3
Chromium	**59.6**	mg/kg	3.6	2.1	50	02/10/20 05:51	02/13/20 11:56	7440-47-3	D3
Cobalt	**13.5**	mg/kg	3.6	1.4	50	02/10/20 05:51	02/13/20 11:56	7440-48-4	D3
Lead	**53.0**	mg/kg	3.6	1.3	50	02/10/20 05:51	02/13/20 11:56	7439-92-1	D3
Selenium	**12.2**	mg/kg	3.6	1.9	50	02/10/20 05:51	02/13/20 11:56	7782-49-2	D3
Thallium	**4.3**	mg/kg	3.6	1.3	50	02/10/20 05:51	02/13/20 11:56	7440-28-0	D3
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.090**	mg/kg	0.014	0.0071	1	02/11/20 12:56	02/12/20 12:55	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**31.3**	%	0.10	0.10	1		02/18/20 13:45		

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-3 (2-3) **Lab ID: 2628680020** Collected: 01/30/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**358**	mg/kg	7.2	3.6	2	02/10/20 05:51	02/14/20 15:07	7440-42-8	
Calcium	**13100**	mg/kg	71.7	35.8	2	02/10/20 05:51	02/14/20 15:07	7440-70-2	
Lithium	**17.6J**	mg/kg	71.7	9.2	2	02/10/20 05:51	02/14/20 15:07	7439-93-2	N2
Molybdenum	**7.2**	mg/kg	1.4	0.72	2	02/10/20 05:51	02/14/20 15:07	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	ND	mg/kg	7.2	1.4	50	02/10/20 05:51	02/13/20 11:59	7440-36-0	D3,N2
Arsenic	**57.0**	mg/kg	3.6	1.4	50	02/10/20 05:51	02/13/20 11:59	7440-38-2	D3
Barium	**290**	mg/kg	3.6	1.6	50	02/10/20 05:51	02/13/20 11:59	7440-39-3	D3
Beryllium	**4.1**	mg/kg	0.43	0.21	50	02/10/20 05:51	02/13/20 11:59	7440-41-7	D3
Cadmium	**2.1**	mg/kg	0.43	0.19	50	02/10/20 05:51	02/13/20 11:59	7440-43-9	D3
Chromium	**66.2**	mg/kg	3.6	2.0	50	02/10/20 05:51	02/13/20 11:59	7440-47-3	D3
Cobalt	**12.3**	mg/kg	3.6	1.4	50	02/10/20 05:51	02/13/20 11:59	7440-48-4	D3
Lead	**40.1**	mg/kg	3.6	1.3	50	02/10/20 05:51	02/13/20 11:59	7439-92-1	D3
Selenium	**11.3**	mg/kg	3.6	1.8	50	02/10/20 05:51	02/13/20 11:59	7782-49-2	D3
Thallium	**4.4**	mg/kg	3.6	1.3	50	02/10/20 05:51	02/13/20 11:59	7440-28-0	D3
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.12**	mg/kg	0.014	0.0068	1	02/11/20 12:56	02/12/20 12:57	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**28.0**	%	0.10	0.10	1		02/18/20 13:46		

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-3 (3-6) **Lab ID: 2628680021** Collected: 01/30/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**122**	mg/kg	8.4	4.2	2	02/10/20 05:51	02/14/20 18:14	7440-42-8	
Calcium	**5210**	mg/kg	84.4	42.2	2	02/10/20 05:51	02/14/20 18:14	7440-70-2	
Lithium	**20.4J**	mg/kg	84.4	10.8	2	02/10/20 05:51	02/14/20 18:14	7439-93-2	N2
Molybdenum	**4.2**	mg/kg	1.7	0.84	2	02/10/20 05:51	02/14/20 18:14	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	**1.8J**	mg/kg	8.4	1.6	50	02/10/20 05:51	02/13/20 12:02	7440-36-0	D3,N2
Arsenic	**70.8**	mg/kg	4.2	1.6	50	02/10/20 05:51	02/13/20 12:02	7440-38-2	D3
Barium	**228**	mg/kg	4.2	1.9	50	02/10/20 05:51	02/13/20 12:02	7440-39-3	D3
Beryllium	**4.9**	mg/kg	0.51	0.24	50	02/10/20 05:51	02/13/20 12:02	7440-41-7	D3
Cadmium	**1.6**	mg/kg	0.51	0.23	50	02/10/20 05:51	02/13/20 12:02	7440-43-9	D3
Chromium	**45.8**	mg/kg	4.2	2.4	50	02/10/20 05:51	02/13/20 12:02	7440-47-3	D3
Cobalt	**13.6**	mg/kg	4.2	1.6	50	02/10/20 05:51	02/13/20 12:02	7440-48-4	D3
Lead	**43.6**	mg/kg	4.2	1.5	50	02/10/20 05:51	02/13/20 12:02	7439-92-1	D3
Selenium	**14.5**	mg/kg	4.2	2.2	50	02/10/20 05:51	02/13/20 12:02	7782-49-2	D3
Thallium	**3.7J**	mg/kg	4.2	1.5	50	02/10/20 05:51	02/13/20 12:02	7440-28-0	D3
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.14**	mg/kg	0.011	0.0057	1	02/11/20 12:56	02/12/20 12:59	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**27.1**	%	0.10	0.10	1		02/18/20 13:46		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628680

Sample: A-3 (6-9) **Lab ID: 2628680022** Collected: 01/30/20 00:00 Received: 02/05/20 13:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	**163**	mg/kg	6.5	3.2	2	02/10/20 05:51	02/14/20 18:18	7440-42-8	
Calcium	**10100**	mg/kg	64.7	32.4	2	02/10/20 05:51	02/14/20 18:18	7440-70-2	
Lithium	**14.1J**	mg/kg	64.7	8.3	2	02/10/20 05:51	02/14/20 18:18	7439-93-2	N2
Molybdenum	**4.2**	mg/kg	1.3	0.65	2	02/10/20 05:51	02/14/20 18:18	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	ND	mg/kg	6.5	1.2	50	02/10/20 05:51	02/13/20 12:05	7440-36-0	D3,N2
Arsenic	**70.5**	mg/kg	3.2	1.2	50	02/10/20 05:51	02/13/20 12:05	7440-38-2	D3
Barium	**154**	mg/kg	3.2	1.4	50	02/10/20 05:51	02/13/20 12:05	7440-39-3	D3
Beryllium	**3.9**	mg/kg	0.39	0.19	50	02/10/20 05:51	02/13/20 12:05	7440-41-7	D3
Cadmium	**2.3**	mg/kg	0.39	0.17	50	02/10/20 05:51	02/13/20 12:05	7440-43-9	D3
Chromium	**58.7**	mg/kg	3.2	1.9	50	02/10/20 05:51	02/13/20 12:05	7440-47-3	D3
Cobalt	**12.4**	mg/kg	3.2	1.3	50	02/10/20 05:51	02/13/20 12:05	7440-48-4	D3
Lead	**27.0**	mg/kg	3.2	1.2	50	02/10/20 05:51	02/13/20 12:05	7439-92-1	D3
Selenium	**9.8**	mg/kg	3.2	1.7	50	02/10/20 05:51	02/13/20 12:05	7782-49-2	D3
Thallium	**3.0J**	mg/kg	3.2	1.2	50	02/10/20 05:51	02/13/20 12:05	7440-28-0	D3
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.10**	mg/kg	0.012	0.0059	1	02/12/20 12:38	02/13/20 08:41	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**25.8**	%	0.10	0.10	1		02/18/20 13:46		

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628680

QC Batch: 609232
Analysis Method: EPA 7471
QC Batch Method: EPA 7471
Analysis Description: 7471 Mercury
Associated Lab Samples: 2628680001

METHOD BLANK: 3310322
Matrix: Solid
Associated Lab Samples: 2628680001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.0084	0.0042	02/12/20 09:06	

LABORATORY CONTROL SAMPLE: 3310323

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	0.092	0.094	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3310324 3310325

Parameter	Units	2628680001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.013	0.109	0.107	0.10	0.10	79	84	80-120	3	20	M1

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

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628680

QC Batch: 609233 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 2628680002, 2628680003, 2628680004, 2628680005, 2628680006, 2628680007, 2628680008, 2628680009, 2628680010, 2628680011, 2628680012, 2628680013, 2628680014, 2628680015, 2628680016, 2628680017, 2628680018, 2628680019, 2628680020, 2628680021

METHOD BLANK: 3310326 Matrix: Solid
Associated Lab Samples: 2628680002, 2628680003, 2628680004, 2628680005, 2628680006, 2628680007, 2628680008, 2628680009, 2628680010, 2628680011, 2628680012, 2628680013, 2628680014, 2628680015, 2628680016, 2628680017, 2628680018, 2628680019, 2628680020, 2628680021

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.0079	0.0040	02/12/20 11:48	

LABORATORY CONTROL SAMPLE: 3310327

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	0.093	0.087	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3310328 3310329

Parameter	Units	2628680002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	ND	0.107	0.106	0.10	0.10	95	95	80-120	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.

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628680

QC Batch: 609571
Analysis Method: EPA 7471
QC Batch Method: EPA 7471
Analysis Description: 7471 Mercury
Associated Lab Samples: 2628680022

METHOD BLANK: 3312550
Matrix: Solid
Associated Lab Samples: 2628680022

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.0091	0.0045	02/13/20 08:37	

LABORATORY CONTROL SAMPLE: 3312551

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	0.092	0.085	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3312552 3312553

Parameter	Units	2628680022 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.10	0.121	0.119	0.24	0.24	114	116	80-120	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.

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628680

QC Batch: 609315
Analysis Method: EPA 6010
QC Batch Method: EPA 3050
Analysis Description: 6010 MET Solid
Associated Lab Samples: 2628680003, 2628680004, 2628680005, 2628680006, 2628680007, 2628680008, 2628680009, 2628680010, 2628680011, 2628680012, 2628680013, 2628680014, 2628680015, 2628680016, 2628680017, 2628680018, 2628680019, 2628680020, 2628680021, 2628680022

METHOD BLANK: 3310633
Matrix: Solid
Associated Lab Samples: 2628680003, 2628680004, 2628680005, 2628680006, 2628680007, 2628680008, 2628680009, 2628680010, 2628680011, 2628680012, 2628680013, 2628680014, 2628680015, 2628680016, 2628680017, 2628680018, 2628680019, 2628680020, 2628680021, 2628680022

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	mg/kg	ND	2.8	1.4	02/12/20 11:23	
Calcium	mg/kg	ND	28.1	14.0	02/12/20 11:23	
Lithium	mg/kg	ND	28.1	3.6	02/12/20 11:23	N2
Molybdenum	mg/kg	ND	0.56	0.28	02/12/20 11:23	

LABORATORY CONTROL SAMPLE: 3310634

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	mg/kg	148	138	93	80-120	
Calcium	mg/kg	1480	1480	100	80-120	
Lithium	mg/kg	1480	1460	98		N2
Molybdenum	mg/kg	29.7	29.5	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3310635 3310636

Parameter	Units	2628680003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	mg/kg	ND	161	174	123	129	76	74	75-125	5	20	M1
Calcium	mg/kg	323	1610	1740	1650	1670	82	78	75-125	1	20	
Lithium	mg/kg	27.5J	1610	1740	1350	1410	82	80		5		N2
Molybdenum	mg/kg	ND	32.2	34.6	22.5	25.2	70	73	75-125	11	20	M1

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628680

QC Batch: 611047
Analysis Method: EPA 6010
QC Batch Method: EPA 3050
Analysis Description: 6010 MET Solid
Associated Lab Samples: 2628680001, 2628680002

METHOD BLANK: 3320418
Matrix: Solid
Associated Lab Samples: 2628680001, 2628680002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	mg/kg	ND	3.0	1.5	02/18/20 18:30	
Calcium	mg/kg	ND	30.2	15.1	02/18/20 18:30	
Lithium	mg/kg	5.5J	30.2	3.9	02/18/20 18:30	N2
Molybdenum	mg/kg	ND	0.60	0.30	02/18/20 18:30	

LABORATORY CONTROL SAMPLE: 3320419

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	mg/kg	76.9	69.8	91	80-120	
Calcium	mg/kg	769	757	98	80-120	
Lithium	mg/kg	769	735	96		N2
Molybdenum	mg/kg	15.4	15.5	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3320420 3320421

Parameter	Units	2628680001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	mg/kg	ND	79.4	78.4	60.1	58.7	74	73	75-125	2	20	M1
Calcium	mg/kg	1510	794	784	2130	2190	78	87	75-125	3	20	
Lithium	mg/kg	ND	794	784	630	616	79	79		2		N2
Molybdenum	mg/kg	ND	15.9	15.6	12.3	11.7	76	73	75-125	5	20	M1

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

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628680

QC Batch: 608851 Analysis Method: EPA 6020
QC Batch Method: EPA 3050 Analysis Description: 6020 MET SOLID
Associated Lab Samples: 2628680003, 2628680004, 2628680005, 2628680006, 2628680007, 2628680008, 2628680009, 2628680010, 2628680011, 2628680012, 2628680013, 2628680014, 2628680015, 2628680016, 2628680017, 2628680018, 2628680019, 2628680020, 2628680021, 2628680022

METHOD BLANK: 3308705 Matrix: Solid
Associated Lab Samples: 2628680003, 2628680004, 2628680005, 2628680006, 2628680007, 2628680008, 2628680009, 2628680010, 2628680011, 2628680012, 2628680013, 2628680014, 2628680015, 2628680016, 2628680017, 2628680018, 2628680019, 2628680020, 2628680021, 2628680022

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/kg	ND	2.2	0.43	02/11/20 18:36	N2
Arsenic	mg/kg	ND	1.1	0.43	02/11/20 18:36	
Barium	mg/kg	ND	1.1	0.49	02/11/20 18:36	
Beryllium	mg/kg	ND	0.13	0.065	02/11/20 18:36	
Cadmium	mg/kg	ND	0.13	0.061	02/11/20 18:36	
Chromium	mg/kg	ND	1.1	0.64	02/11/20 18:36	
Cobalt	mg/kg	ND	1.1	0.44	02/11/20 18:36	
Lead	mg/kg	ND	1.1	0.41	02/11/20 18:36	
Selenium	mg/kg	ND	1.1	0.58	02/11/20 18:36	
Thallium	mg/kg	ND	1.1	0.40	02/11/20 18:36	

LABORATORY CONTROL SAMPLE: 3308706

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	29.7	31.5	106	80-120	N2
Arsenic	mg/kg	29.7	30.6	103	80-120	
Barium	mg/kg	29.7	30.3	102	80-120	
Beryllium	mg/kg	3	2.8	96	80-120	
Cadmium	mg/kg	3	3.0	101	80-120	
Chromium	mg/kg	29.7	30.1	101	80-120	
Cobalt	mg/kg	29.7	29.9	101	80-120	
Lead	mg/kg	29.7	30.4	103	80-120	
Selenium	mg/kg	29.7	29.4	99	80-120	
Thallium	mg/kg	29.7	30.5	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3308707 3308708

Parameter	Units	2628680003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	ND	32.2	34.6	14.8	16.2	46	47	75-125	9	20	M6,N2
Arsenic	mg/kg	1.9	32.2	34.6	30.7	35.4	89	97	75-125	14	20	
Barium	mg/kg	91.4	32.2	34.6	124	113	100	61	75-125	9	20	M6
Beryllium	mg/kg	2.2	3.25	3.5	4.7	4.8	80	77	75-125	2	20	
Cadmium	mg/kg	ND	3.25	3.5	3.4	3.7	103	104	75-125	8	20	
Chromium	mg/kg	17.6	32.2	34.6	43.2	47.2	80	85	75-125	9	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.

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628680

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3308707 3308708

Parameter	Units	2628680003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	mg/kg	21.7	32.2	34.6	54.6	59.1	102	108	75-125	8	20	
Lead	mg/kg	7.4	32.2	34.6	43.3	42.7	111	102	75-125	2	20	
Selenium	mg/kg	259	32.2	34.6	209	427	-156	486	75-125	69	20	M6,R1
Thallium	mg/kg	0.65J	32.2	34.6	31.3	32.5	95	92	75-125	4	20	

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

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628680

QC Batch: 609146 Analysis Method: EPA 6020
QC Batch Method: EPA 3050 Analysis Description: 6020 MET SOLID
Associated Lab Samples: 2628680001, 2628680002

METHOD BLANK: 3309971 Matrix: Solid
Associated Lab Samples: 2628680001, 2628680002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/kg	ND	2.4	0.46	02/12/20 12:45	N2
Arsenic	mg/kg	ND	1.2	0.47	02/12/20 12:45	
Barium	mg/kg	ND	1.2	0.53	02/12/20 12:45	
Beryllium	mg/kg	ND	0.14	0.070	02/12/20 12:45	
Cadmium	mg/kg	ND	0.14	0.065	02/12/20 12:45	
Chromium	mg/kg	ND	1.2	0.69	02/12/20 12:45	
Cobalt	mg/kg	ND	1.2	0.47	02/12/20 12:45	
Lead	mg/kg	ND	1.2	0.44	02/12/20 12:45	
Selenium	mg/kg	ND	1.2	0.62	02/12/20 12:45	
Thallium	mg/kg	ND	1.2	0.43	02/12/20 12:45	

LABORATORY CONTROL SAMPLE: 3309972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	28.7	29.8	104	80-120	N2
Arsenic	mg/kg	28.7	28.5	99	80-120	
Barium	mg/kg	28.7	29.3	102	80-120	
Beryllium	mg/kg	2.9	2.8	97	80-120	
Cadmium	mg/kg	2.9	2.9	101	80-120	
Chromium	mg/kg	28.7	29.2	102	80-120	
Cobalt	mg/kg	28.7	29.0	101	80-120	
Lead	mg/kg	28.7	29.0	101	80-120	
Selenium	mg/kg	28.7	23.8	83	80-120	
Thallium	mg/kg	28.7	29.0	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3309973 3309974

Parameter	Units	35528651001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	0.94J	28.4	29	27.7	29.9	94	100	75-125	8	20	N2
Arsenic	mg/kg	5.4	28.4	29	34.9	35.4	104	103	75-125	1	20	
Barium	mg/kg	16.3	28.4	29	45.7	49.0	103	113	75-125	7	20	
Beryllium	mg/kg	0.44	2.8	2.91	4.8	4.9	152	154	75-125	3	20	M6
Cadmium	mg/kg	0.48	2.8	2.91	3.4	3.3	101	97	75-125	2	20	
Chromium	mg/kg	17.5	28.4	29	42.7	46.4	89	100	75-125	8	20	
Cobalt	mg/kg	0.66J	28.4	29	27.6	28.5	95	96	75-125	3	20	
Lead	mg/kg	1.4	28.4	29	29.7	30.1	99	99	75-125	1	20	
Selenium	mg/kg	22.8	28.4	29	46.5	46.2	83	81	75-125	1	20	

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

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628680

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3309973 3309974

Parameter	Units	35528651001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Thallium	mg/kg	0.43J	28.4	29	28.7	29.2	99	99	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.

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628680

QC Batch: 611207
Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 2628680001, 2628680003, 2628680004, 2628680005, 2628680006, 2628680007, 2628680008, 2628680009, 2628680010, 2628680011, 2628680012, 2628680013, 2628680014, 2628680015, 2628680016, 2628680017, 2628680018, 2628680019, 2628680020, 2628680021, 2628680022

SAMPLE DUPLICATE: 3320945

Parameter	Units	2628680001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	24.0	24.4	2	10	

SAMPLE DUPLICATE: 3320946

Parameter	Units	2628680010 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	20.7	21.0	1	10	

SAMPLE DUPLICATE: 3320947

Parameter	Units	2628680019 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	31.3	31.1	1	10	

SAMPLE DUPLICATE: 3320948

Parameter	Units	35528953006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	21.0	21.8	4	10	

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

QUALIFIERS

Project:	Plant McDonough Soils
Pace Project No.:	2628680

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-O	Pace Analytical Services - Ormond Beach

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.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.
R1	RPD value was outside control limits.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough Soils
Pace Project No.: 2628680

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2628680001	**B-94 (39-40.5)**	EPA 3050	611047	EPA 6010	611120
2628680002	**DGWC-9 (24.5-26)**	EPA 3050	611047	EPA 6010	611120
2628680003	**DGWC-10 (39.5-41)**	EPA 3050	609315	EPA 6010	609325
2628680004	**DGWA-71 (37.5-39)**	EPA 3050	609315	EPA 6010	609325
2628680005	**DGWA-70A (54-55.5)**	EPA 3050	609315	EPA 6010	609325
2628680006	**A-1 (0-3)**	EPA 3050	609315	EPA 6010	609325
2628680007	**A-1 (3-6)**	EPA 3050	609315	EPA 6010	609325
2628680008	**A-1 (6-9)**	EPA 3050	609315	EPA 6010	609325
2628680009	**A-1 (10-11.5)**	EPA 3050	609315	EPA 6010	609325
2628680010	**A-1 (11.5-13)**	EPA 3050	609315	EPA 6010	609325
2628680011	**A-1 (13-14.5)**	EPA 3050	609315	EPA 6010	609325
2628680012	**A-1 (14.5-16)**	EPA 3050	609315	EPA 6010	609325
2628680013	**A-1 (16-17.5)**	EPA 3050	609315	EPA 6010	609325
2628680014	**A-1 (17.5-19)**	EPA 3050	609315	EPA 6010	609325
2628680015	**A-1 (19-20.5)**	EPA 3050	609315	EPA 6010	609325
2628680016	**A-1 (20.5-22)**	EPA 3050	609315	EPA 6010	609325
2628680017	**A-2 (1-3)**	EPA 3050	609315	EPA 6010	609325
2628680018	**A-2 (3-6)**	EPA 3050	609315	EPA 6010	609325
2628680019	**A-2 (6-9)**	EPA 3050	609315	EPA 6010	609325
2628680020	**A-3 (2-3)**	EPA 3050	609315	EPA 6010	609325
2628680021	**A-3 (3-6)**	EPA 3050	609315	EPA 6010	609325
2628680022	**A-3 (6-9)**	EPA 3050	609315	EPA 6010	609325
2628680001	**B-94 (39-40.5)**	EPA 3050	609146	EPA 6020	609178
2628680002	**DGWC-9 (24.5-26)**	EPA 3050	609146	EPA 6020	609178
2628680003	**DGWC-10 (39.5-41)**	EPA 3050	608851	EPA 6020	608897
2628680004	**DGWA-71 (37.5-39)**	EPA 3050	608851	EPA 6020	608897
2628680005	**DGWA-70A (54-55.5)**	EPA 3050	608851	EPA 6020	608897
2628680006	**A-1 (0-3)**	EPA 3050	608851	EPA 6020	608897
2628680007	**A-1 (3-6)**	EPA 3050	608851	EPA 6020	608897
2628680008	**A-1 (6-9)**	EPA 3050	608851	EPA 6020	608897
2628680009	**A-1 (10-11.5)**	EPA 3050	608851	EPA 6020	608897
2628680010	**A-1 (11.5-13)**	EPA 3050	608851	EPA 6020	608897
2628680011	**A-1 (13-14.5)**	EPA 3050	608851	EPA 6020	608897
2628680012	**A-1 (14.5-16)**	EPA 3050	608851	EPA 6020	608897
2628680013	**A-1 (16-17.5)**	EPA 3050	608851	EPA 6020	608897
2628680014	**A-1 (17.5-19)**	EPA 3050	608851	EPA 6020	608897
2628680015	**A-1 (19-20.5)**	EPA 3050	608851	EPA 6020	608897
2628680016	**A-1 (20.5-22)**	EPA 3050	608851	EPA 6020	608897
2628680017	**A-2 (1-3)**	EPA 3050	608851	EPA 6020	608897
2628680018	**A-2 (3-6)**	EPA 3050	608851	EPA 6020	608897
2628680019	**A-2 (6-9)**	EPA 3050	608851	EPA 6020	608897
2628680020	**A-3 (2-3)**	EPA 3050	608851	EPA 6020	608897
2628680021	**A-3 (3-6)**	EPA 3050	608851	EPA 6020	608897
2628680022	**A-3 (6-9)**	EPA 3050	608851	EPA 6020	608897
2628680001	**B-94 (39-40.5)**	EPA 7471	609232	EPA 7471	609390
2628680002	**DGWC-9 (24.5-26)**	EPA 7471	609233	EPA 7471	609444

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough Soils
Pace Project No.: 2628680

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2628680003	**DGWC-10 (39.5-41)**	EPA 7471	609233	EPA 7471	609444
2628680004	**DGWA-71 (37.5-39)**	EPA 7471	609233	EPA 7471	609444
2628680005	**DGWA-70A (54-55.5)**	EPA 7471	609233	EPA 7471	609444
2628680006	**A-1 (0-3)**	EPA 7471	609233	EPA 7471	609444
2628680007	**A-1 (3-6)**	EPA 7471	609233	EPA 7471	609444
2628680008	**A-1 (6-9)**	EPA 7471	609233	EPA 7471	609444
2628680009	**A-1 (10-11.5)**	EPA 7471	609233	EPA 7471	609444
2628680010	**A-1 (11.5-13)**	EPA 7471	609233	EPA 7471	609444
2628680011	**A-1 (13-14.5)**	EPA 7471	609233	EPA 7471	609444
2628680012	**A-1 (14.5-16)**	EPA 7471	609233	EPA 7471	609444
2628680013	**A-1 (16-17.5)**	EPA 7471	609233	EPA 7471	609444
2628680014	**A-1 (17.5-19)**	EPA 7471	609233	EPA 7471	609444
2628680015	**A-1 (19-20.5)**	EPA 7471	609233	EPA 7471	609444
2628680016	**A-1 (20.5-22)**	EPA 7471	609233	EPA 7471	609444
2628680017	**A-2 (1-3)**	EPA 7471	609233	EPA 7471	609444
2628680018	**A-2 (3-6)**	EPA 7471	609233	EPA 7471	609444
2628680019	**A-2 (6-9)**	EPA 7471	609233	EPA 7471	609444
2628680020	**A-3 (2-3)**	EPA 7471	609233	EPA 7471	609444
2628680021	**A-3 (3-6)**	EPA 7471	609233	EPA 7471	609444
2628680022	**A-3 (6-9)**	EPA 7471	609571	EPA 7471	609794
2628680001	**B-94 (39-40.5)**	ASTM D2974-87	611207		
2628680003	**DGWC-10 (39.5-41)**	ASTM D2974-87	611207		
2628680004	**DGWA-71 (37.5-39)**	ASTM D2974-87	611207		
2628680005	**DGWA-70A (54-55.5)**	ASTM D2974-87	611207		
2628680006	**A-1 (0-3)**	ASTM D2974-87	611207		
2628680007	**A-1 (3-6)**	ASTM D2974-87	611207		
2628680008	**A-1 (6-9)**	ASTM D2974-87	611207		
2628680009	**A-1 (10-11.5)**	ASTM D2974-87	611207		
2628680010	**A-1 (11.5-13)**	ASTM D2974-87	611207		
2628680011	**A-1 (13-14.5)**	ASTM D2974-87	611207		
2628680012	**A-1 (14.5-16)**	ASTM D2974-87	611207		
2628680013	**A-1 (16-17.5)**	ASTM D2974-87	611207		
2628680014	**A-1 (17.5-19)**	ASTM D2974-87	611207		
2628680015	**A-1 (19-20.5)**	ASTM D2974-87	611207		
2628680016	**A-1 (20.5-22)**	ASTM D2974-87	611207		
2628680017	**A-2 (1-3)**	ASTM D2974-87	611207		
2628680018	**A-2 (3-6)**	ASTM D2974-87	611207		
2628680019	**A-2 (6-9)**	ASTM D2974-87	611207		
2628680020	**A-3 (2-3)**	ASTM D2974-87	611207		
2628680021	**A-3 (3-6)**	ASTM D2974-87	611207		
2628680022	**A-3 (6-9)**	ASTM D2974-87	611207		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 2

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

Section B
Required Project Information:
Report To: Joju Abraham
Copy To: Golder
Purchase Order #: SCS10382775
Project Name: Plant McDonough Soils
Project #: 166849618

Section C
Invoice Information:
Attention: scsinvoices@southernco.com
Company Name:
Address:
Pace Quote
Pace Project Manager: kevin.herring@pacelabs.com
Pace Profile #: 332.7.2

Regulatory Agency

State / Location: GA

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

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Y/N Analyses Test	Metals App III and IV	Residual Chlorine (Y/N)
1	B-94 (39-40.5)	SL	G	1/21/20			1	X									X	
2	DGWC-9 (24.5-26)	SL	G	1/29/20			1	X									X	
3	DGWC-10 (39.5-41)	SL	G	1/29/20			1	X									X	
4	DGWA-71 (37.5-39)	SL	G	1/29/20			1	X									X	
5	DGWA-70A (54-55.5)	SL	G	1/29/20			1	X									X	
6	A-1 (0-3)	SL	G	1/27/20			1	X									X	
7	A-1 (3-6)	SL	G	1/27/20			1	X									X	
8	A-1 (6-9)	SL	G	1/27/20			1	X									X	
9	A-1 (10-11.5)	SL	G	1/28/20			1	X									X	
10	A-1 (11 5-13)	SL	G	1/28/20			1	X									X	
11	A-1 (13-14 5)	SL	G	1/28/20			1	X									X	
12	A-1 (14.5-16)	SL	G	1/28/20			1	X									X	

collection times
Not listed
CJH 2/5/20

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
		2/5/20	13:35	AWhite / PACE	02/05/20	1355	20	N	N	Y

DATE Signed:

WO#: 2628680
2628680

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 2 Of 2

Section A
Required Client Information:

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

Section B
Required Project Information:

Report To:	Joju Abraham
Copy To:	Golder
Purchase Order #:	SCS10382775
Project Name:	Plant McDonough Soils
Project #:	166849616

Section C
Invoice Information:

Attention:	scsinvoices@southernco.com
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	kevin.herring@pacelabs.com
Pace Profile #:	332.7.2

Regulatory Agency	
State / Location	GA

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

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

Preservatives

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Metals App III and IV												Residual Chlorine (Y/N)	
1	A-1 (16-17.5)	SL	G	1/28/20			1	X									X													
2	A-1 (17.5-19)	SL	G	1/28/20			1	X									X													
3	A-1 (19-20.5)	SL	G	1/28/20			1	X									X													
4	A-1 (20.5-22)	SL	G	1/28/20			1	X									X													
5	A-2 (1-3)	SL	G	1/30/20			1	X									X													
6	A-2 (3-6)	SL	G	1/30/20			1	X									X													
7	A-2 (6-9)	SL	G	1/30/20			1	X									X													
8	A-3 (2-3)	SL	G	1/30/20			1	X									X													
9	A-3 (3-6)	SL	G	1/30/20			1	X									X													
10	A-3 (6-9)	SL	G	1/30/20			1	X									X													
11																														
12																														

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
		2/5/20	13:55	[illegible] / PACE	02/05/20	1355	20	N	N	Y
							TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

DATE Signed:

Pace Analytical

Sample Condition Upon Receipt

Client Name: Georgia Power

WO# : 2628680
PM: KH
Due Date: 02/19/20
CLIENT: 26-GA Power

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

Tracking #: ______

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

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

Thermometer Used THR 238 **Type of Ice:** Wet Blue [✓ None] ☐ Samples on ice, cooling process has begun

Cooler Temperature 20°

Temp should be above freezing to 6°C

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: AW 2/5/20

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

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

Person Contacted: ______ Date/Time: ______

Comments/ Resolution: ______

Project Manager Review: ______ **Date:** ______

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

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

February 26, 2020

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

RE: Project: Plant McDonough Soils
Pace Project No.: 2628888

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on February 11, 2020. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Sample DGWC-69 (19-24) was broken in transit and was inable to be analyzed.

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

Sincerely,

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

Enclosures

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

CERTIFICATIONS

Project: Plant McDonough Soils
Pace Project No.: 2628888

Pace Analytical Services Ormond Beach

8 East Tower Circle, Ormond Beach, FL 32174
Alaska DEC- CS/UST/LUST
Alabama Certification #: 41320
Arizona Certification# AZ0819
Colorado Certification: FL NELAC Reciprocity
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
New Hampshire Certification #: 2958
New Jersey Certification #: FL022
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

SAMPLE SUMMARY

Project: Plant McDonough Soils
Pace Project No.: 2628888

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2628888001	**DGWC-19 (34-39)**	Solid	02/05/20 00:00	02/11/20 13:45
2628888002	**DGWC-20 (34-39)**	Solid	02/05/20 00:00	02/11/20 13:45
2628888003	**DGWA-53 (25.7-26.9)**	Solid	02/05/20 00:00	02/11/20 13:45
2628888004	**DGWC-68A (24-29)**	Solid	02/05/20 00:00	02/11/20 13:45

SAMPLE ANALYTE COUNT

Project: Plant McDonough Soils
Pace Project No.: 2628888

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2628888001	**DGWC-19 (34-39)**	EPA 6010	CS2	4	PASI-O
		EPA 6020	LEC	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628888002	**DGWC-20 (34-39)**	EPA 6010	CS2	4	PASI-O
		EPA 6020	LEC	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628888003	**DGWA-53 (25.7-26.9)**	EPA 6010	CS2	4	PASI-O
		EPA 6020	LEC	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O
2628888004	**DGWC-68A (24-29)**	EPA 6010	CS2	4	PASI-O
		EPA 6020	LEC	10	PASI-O
		EPA 7471	JNK	1	PASI-O
		ASTM D2974-87	JM2	1	PASI-O

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628888

Sample: DGWC-19 (34-39) **Lab ID: 2628888001** Collected: 02/05/20 00:00 Received: 02/11/20 13:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	ND	mg/kg	19.1	9.6	5	02/17/20 17:37	02/18/20 10:46	7440-42-8	
Calcium	**473**	mg/kg	191	95.7	5	02/17/20 17:37	02/18/20 10:46	7440-70-2	
Lithium	**30.4J**	mg/kg	191	24.5	5	02/17/20 17:37	02/18/20 10:46	7439-93-2	N2
Molybdenum	**1.9J**	mg/kg	3.8	1.9	5	02/17/20 17:37	02/18/20 10:46	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	ND	mg/kg	2.9	0.54	20	02/16/20 12:38	02/17/20 11:37	7440-36-0	N2
Arsenic	**1.3J**	mg/kg	1.4	0.55	20	02/16/20 12:38	02/17/20 11:37	7440-38-2	
Barium	**288**	mg/kg	1.4	0.63	20	02/16/20 12:38	02/17/20 11:37	7440-39-3	
Beryllium	**1.4**	mg/kg	0.17	0.083	20	02/16/20 12:38	02/17/20 11:37	7440-41-7	
Cadmium	ND	mg/kg	0.17	0.077	20	02/16/20 12:38	02/17/20 11:37	7440-43-9	
Chromium	**30.6**	mg/kg	1.4	0.82	20	02/16/20 12:38	02/17/20 11:37	7440-47-3	
Cobalt	**14.7**	mg/kg	1.4	0.55	20	02/16/20 12:38	02/17/20 11:37	7440-48-4	
Lead	**5.4**	mg/kg	1.4	0.52	20	02/16/20 12:38	02/17/20 11:37	7439-92-1	
Selenium	**7.2**	mg/kg	1.4	0.73	20	02/16/20 12:38	02/17/20 11:37	7782-49-2	
Thallium	**0.60J**	mg/kg	1.4	0.51	20	02/16/20 12:38	02/17/20 11:37	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.010J**	mg/kg	0.011	0.0057	1	02/14/20 14:04	02/17/20 11:11	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**23.5**	%	0.10	0.10	1		02/19/20 11:08		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628888

Sample: DGWC-20 (34-39) **Lab ID: 2628888002** Collected: 02/05/20 00:00 Received: 02/11/20 13:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	ND	mg/kg	17.4	8.7	5	02/17/20 17:37	02/18/20 10:50	7440-42-8	
Calcium	**212**	mg/kg	174	87.1	5	02/17/20 17:37	02/18/20 10:50	7440-70-2	
Lithium	**34.4J**	mg/kg	174	22.3	5	02/17/20 17:37	02/18/20 10:50	7439-93-2	N2
Molybdenum	ND	mg/kg	3.5	1.7	5	02/17/20 17:37	02/18/20 10:50	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	ND	mg/kg	2.5	0.48	20	02/16/20 12:38	02/17/20 11:40	7440-36-0	N2
Arsenic	**0.67J**	mg/kg	1.3	0.48	20	02/16/20 12:38	02/17/20 11:40	7440-38-2	
Barium	**78.8**	mg/kg	1.3	0.55	20	02/16/20 12:38	02/17/20 11:40	7440-39-3	
Beryllium	**1.0**	mg/kg	0.15	0.073	20	02/16/20 12:38	02/17/20 11:40	7440-41-7	
Cadmium	ND	mg/kg	0.15	0.068	20	02/16/20 12:38	02/17/20 11:40	7440-43-9	
Chromium	**15.5**	mg/kg	1.3	0.72	20	02/16/20 12:38	02/17/20 11:40	7440-47-3	
Cobalt	**19.8**	mg/kg	1.3	0.49	20	02/16/20 12:38	02/17/20 11:40	7440-48-4	
Lead	**8.3**	mg/kg	1.3	0.46	20	02/16/20 12:38	02/17/20 11:40	7439-92-1	
Selenium	**11.7**	mg/kg	1.3	0.65	20	02/16/20 12:38	02/17/20 11:40	7782-49-2	
Thallium	**0.53J**	mg/kg	1.3	0.45	20	02/16/20 12:38	02/17/20 11:40	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	ND	mg/kg	0.012	0.0058	1	02/14/20 14:04	02/17/20 11:27	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**16.0**	%	0.10	0.10	1		02/19/20 11:08		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628888

Sample: DGWA-53 (25.7-26.9) **Lab ID: 2628888003** Collected: 02/05/20 00:00 Received: 02/11/20 13:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	ND	mg/kg	2.6	1.3	1	02/17/20 17:37	02/18/20 10:53	7440-42-8	
Calcium	**695**	mg/kg	25.7	12.9	1	02/17/20 17:37	02/18/20 10:53	7440-70-2	
Lithium	**4.7J**	mg/kg	25.7	3.3	1	02/17/20 17:37	02/18/20 10:53	7439-93-2	N2
Molybdenum	**0.44J**	mg/kg	0.51	0.26	1	02/17/20 17:37	02/18/20 10:53	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	ND	mg/kg	2.4	0.46	20	02/16/20 12:38	02/17/20 11:43	7440-36-0	N2
Arsenic	ND	mg/kg	1.2	0.47	20	02/16/20 12:38	02/17/20 11:43	7440-38-2	
Barium	**10.7**	mg/kg	1.2	0.53	20	02/16/20 12:38	02/17/20 11:43	7440-39-3	
Beryllium	ND	mg/kg	0.15	0.070	20	02/16/20 12:38	02/17/20 11:43	7440-41-7	
Cadmium	ND	mg/kg	0.15	0.066	20	02/16/20 12:38	02/17/20 11:43	7440-43-9	
Chromium	**0.75J**	mg/kg	1.2	0.69	20	02/16/20 12:38	02/17/20 11:43	7440-47-3	
Cobalt	**1.1J**	mg/kg	1.2	0.47	20	02/16/20 12:38	02/17/20 11:43	7440-48-4	
Lead	**0.83J**	mg/kg	1.2	0.44	20	02/16/20 12:38	02/17/20 11:43	7439-92-1	
Selenium	**3.0**	mg/kg	1.2	0.62	20	02/16/20 12:38	02/17/20 11:43	7782-49-2	
Thallium	ND	mg/kg	1.2	0.43	20	02/16/20 12:38	02/17/20 11:43	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	ND	mg/kg	0.0091	0.0046	1	02/14/20 14:04	02/17/20 11:30	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**0.41**	%	0.10	0.10	1		02/19/20 11:08		

ANALYTICAL RESULTS

Project: Plant McDonough Soils
Pace Project No.: 2628888

Sample: DGWC-68A (24-29) **Lab ID: 2628888004** Collected: 02/05/20 00:00 Received: 02/11/20 13:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Boron	ND	mg/kg	3.7	1.9	1	02/17/20 17:37	02/18/20 10:57	7440-42-8	
Calcium	**700**	mg/kg	37.4	18.7	1	02/17/20 17:37	02/18/20 10:57	7440-70-2	
Lithium	ND	mg/kg	37.4	4.8	1	02/17/20 17:37	02/18/20 10:57	7439-93-2	N2
Molybdenum	**4.0**	mg/kg	0.75	0.37	1	02/17/20 17:37	02/18/20 10:57	7439-98-7	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
Antimony	ND	mg/kg	3.1	0.59	20	02/16/20 12:38	02/17/20 11:49	7440-36-0	N2
Arsenic	**0.72J**	mg/kg	1.6	0.60	20	02/16/20 12:38	02/17/20 11:49	7440-38-2	
Barium	**218**	mg/kg	1.6	0.69	20	02/16/20 12:38	02/17/20 11:49	7440-39-3	
Beryllium	**2.6**	mg/kg	0.19	0.091	20	02/16/20 12:38	02/17/20 11:49	7440-41-7	
Cadmium	**0.30**	mg/kg	0.19	0.085	20	02/16/20 12:38	02/17/20 11:49	7440-43-9	
Chromium	**34.8**	mg/kg	1.6	0.90	20	02/16/20 12:38	02/17/20 11:49	7440-47-3	
Cobalt	**11.5**	mg/kg	1.6	0.61	20	02/16/20 12:38	02/17/20 11:49	7440-48-4	
Lead	**5.6**	mg/kg	1.6	0.57	20	02/16/20 12:38	02/17/20 11:49	7439-92-1	
Selenium	**12.4**	mg/kg	1.6	0.80	20	02/16/20 12:38	02/17/20 11:49	7782-49-2	
Thallium	ND	mg/kg	1.6	0.56	20	02/16/20 12:38	02/17/20 11:49	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	ND	mg/kg	0.012	0.0060	1	02/14/20 14:04	02/17/20 11:32	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**21.3**	%	0.10	0.10	1		02/19/20 11:08		

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628888

QC Batch: 610342
Analysis Method: EPA 7471
QC Batch Method: EPA 7471
Analysis Description: 7471 Mercury
Associated Lab Samples: 2628888001, 2628888002, 2628888003, 2628888004

METHOD BLANK: 3317083
Matrix: Solid
Associated Lab Samples: 2628888001, 2628888002, 2628888003, 2628888004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.0099	0.0050	02/17/20 11:07	

LABORATORY CONTROL SAMPLE: 3317084

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	0.093	0.093	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3317085 3317086

Parameter	Units	2628888001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.010J	0.116	0.114	0.10	0.12	81	96	80-120	13	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.

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628888

QC Batch: 610973 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: 6010 MET Solid
Associated Lab Samples: 2628888001, 2628888002, 2628888003, 2628888004

METHOD BLANK: 3320192 Matrix: Solid
Associated Lab Samples: 2628888001, 2628888002, 2628888003, 2628888004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	mg/kg	ND	2.9	1.5	02/18/20 10:23	
Calcium	mg/kg	ND	29.2	14.6	02/18/20 10:23	
Lithium	mg/kg	ND	29.2	3.7	02/18/20 10:23	N2
Molybdenum	mg/kg	ND	0.58	0.29	02/18/20 10:23	

LABORATORY CONTROL SAMPLE: 3320193

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	mg/kg	74.8	68.3	91	80-120	
Calcium	mg/kg	748	756	101	80-120	
Lithium	mg/kg	748	706	94		N2
Molybdenum	mg/kg	15	15.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3320194 3320195

Parameter	Units	35529990005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	mg/kg	1.6U	81.3	83.4	78.7	82.2	96	97	75-125	4	20	
Calcium	mg/kg	39000	813	834	43700	46100	583	856	75-125	5	20	E,M1
Lithium	mg/kg	4.2U	813	834	809	836	99	100		3		N2
Molybdenum	mg/kg	0.32U	16.2	16.7	16.6	17.3	101	103	75-125	4	20	

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

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628888

QC Batch: 610635 Analysis Method: EPA 6020
QC Batch Method: EPA 3050 Analysis Description: 6020 MET SOLID
Associated Lab Samples: 2628888001, 2628888002, 2628888003, 2628888004

METHOD BLANK: 3319152 Matrix: Solid
Associated Lab Samples: 2628888001, 2628888002, 2628888003, 2628888004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/kg	ND	2.4	0.45	02/17/20 11:52	N2
Arsenic	mg/kg	ND	1.2	0.45	02/17/20 11:52	
Barium	mg/kg	ND	1.2	0.52	02/17/20 11:52	
Beryllium	mg/kg	ND	0.14	0.068	02/17/20 11:52	
Cadmium	mg/kg	ND	0.14	0.063	02/17/20 11:52	
Chromium	mg/kg	ND	1.2	0.67	02/17/20 11:52	
Cobalt	mg/kg	ND	1.2	0.46	02/17/20 11:52	
Lead	mg/kg	ND	1.2	0.43	02/17/20 11:52	
Selenium	mg/kg	ND	1.2	0.60	02/17/20 11:52	
Thallium	mg/kg	ND	1.2	0.42	02/17/20 11:52	

LABORATORY CONTROL SAMPLE: 3319153

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	29.8	30.2	101	80-120	N2
Arsenic	mg/kg	29.8	28.5	96	80-120	
Barium	mg/kg	29.8	30.2	101	80-120	
Beryllium	mg/kg	3	2.9	98	80-120	
Cadmium	mg/kg	3	3.0	100	80-120	
Chromium	mg/kg	29.8	31.6	106	80-120	
Cobalt	mg/kg	29.8	32.1	108	80-120	
Lead	mg/kg	29.8	29.6	99	80-120	
Selenium	mg/kg	29.8	31.4	105	80-120	
Thallium	mg/kg	29.8	30.4	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3319154 3319155

Parameter	Units	35530115001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	0.43U	27.4	27.9	27.5	28.6	100	102	75-125	4	20	N2
Arsenic	mg/kg	0.82J	27.4	27.9	27.1	28.3	96	99	75-125	5	20	
Barium	mg/kg	6.8	27.4	27.9	33.9	35.3	99	102	75-125	4	20	
Beryllium	mg/kg	0.065U	2.73	2.83	3.2	3.4	115	119	75-125	5	20	
Cadmium	mg/kg	0.061U	2.73	2.83	2.8	2.9	99	103	75-125	5	20	
Chromium	mg/kg	4.6	27.4	27.9	31.9	33.1	99	102	75-125	4	20	
Cobalt	mg/kg	0.44U	27.4	27.9	28.5	30.2	103	107	75-125	6	20	
Lead	mg/kg	9.7	27.4	27.9	39.3	39.8	108	108	75-125	1	20	
Selenium	mg/kg	0.58U	27.4	27.9	27.9	29.0	100	103	75-125	4	20	

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

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628888

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3319154 3319155

Parameter	Units	35530115001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Thallium	mg/kg	0.40U	27.4	27.9	28.3	28.9	103	104	75-125	2	20	

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

QUALITY CONTROL DATA

Project: Plant McDonough Soils
Pace Project No.: 2628888

QC Batch: 611539
Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 2628888001, 2628888002, 2628888003, 2628888004

SAMPLE DUPLICATE: 3322637

Parameter	Units	2628888001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	23.5	21.4	9	10	

SAMPLE DUPLICATE: 3322638

Parameter	Units	35530476006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	3.2	2.7	17	10	D6

SAMPLE DUPLICATE: 3322639

Parameter	Units	35530804002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	5.0	6.1	20	10	D6

SAMPLE DUPLICATE: 3322640

Parameter	Units	35531126024 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.8	14.1	2	10	

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

QUALIFIERS

Project: Plant McDonough Soils
Pace Project No.: 2628888

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-O	Pace Analytical Services - Ormond Beach

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough Soils
Pace Project No.: 2628888

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2628888001	**DGWC-19 (34-39)**	EPA 3050	610973	EPA 6010	611023
2628888002	**DGWC-20 (34-39)**	EPA 3050	610973	EPA 6010	611023
2628888003	**DGWA-53 (25.7-26.9)**	EPA 3050	610973	EPA 6010	611023
2628888004	**DGWC-68A (24-29)**	EPA 3050	610973	EPA 6010	611023
2628888001	**DGWC-19 (34-39)**	EPA 3050	610635	EPA 6020	610696
2628888002	**DGWC-20 (34-39)**	EPA 3050	610635	EPA 6020	610696
2628888003	**DGWA-53 (25.7-26.9)**	EPA 3050	610635	EPA 6020	610696
2628888004	**DGWC-68A (24-29)**	EPA 3050	610635	EPA 6020	610696
2628888001	**DGWC-19 (34-39)**	EPA 7471	610342	EPA 7471	610483
2628888002	**DGWC-20 (34-39)**	EPA 7471	610342	EPA 7471	610483
2628888003	**DGWA-53 (25.7-26.9)**	EPA 7471	610342	EPA 7471	610483
2628888004	**DGWC-68A (24-29)**	EPA 7471	610342	EPA 7471	610483
2628888001	**DGWC-19 (34-39)**	ASTM D2974-87	611539		
2628888002	**DGWC-20 (34-39)**	ASTM D2974-87	611539		
2628888003	**DGWA-53 (25.7-26.9)**	ASTM D2974-87	611539		
2628888004	**DGWC-68A (24-29)**	ASTM D2974-87	611539		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

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

Section B
Required Project Information:
Report To: Joju Abraham
Copy To: Golder
Purchase Order #: SCS10382775
Project Name: Plant McDonough Soils
Project #: 166849618

Section C
Invoice Information:
Attention: scsinvoices@southernco.com
Company Name:
Address:
Pace Quote:
Pace Project Manager: kevin.herring@pacelabs.com
Pace Profile #: 332.7.2

Regulatory Agency:

State / Location: GA

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

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Metals App III and IV	Residual Chlorine (Y/N)
1	DGWC-19 (34-39)	SL	G	2/5/2020			1	X									X	
2	DGWC-20 (34-39)	SL	G	2/5/2020			1	X									X	
3	DGWA-53 (25.7-26.9)	SL	G	2/5/2020			1	X									X	
4	DGWC-68A (24-29)	SL	G	2/5/2020			1	X									X	
5	DGWC-69 (19-24)	SL	G	2/5/2020			1	X									X	
6																		
7																		
8																		
9																		
10																		
11																		
12																		

Requested Analysis Filtered (Y/N)

WO# : 2628888
2628888

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	/Golder	1345	2/11/20	/PACE	02/11/20	1315	2.0	N	N	Y

SAMPLE CONDITIONS

DATE Signed:

Pace Analytical

Sample Condition Upon Rec

WO# : 2628888

PM: KH Due Date: 02/25/20

CLIENT: 26-GA Power

[redacted]

Client Name: Georgia Powe

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Ot

Tracking #: ______________

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

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other ______________

Thermometer Used THB233 **Type of Ice:** Wet Blue [✓ None] ☐ Samples on ice, cooling process has begun

Cooler Temperature 20 **Biological Tissue is Frozen:** Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: AW 2/11/20

Comments:

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

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

Person Contacted: ______________ Date/Time: ______________

Comments/ Resolution: ______________

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)

Laboratory Report

Prepared For:

Golder Associates - Atlanta
3730 Chamblee Tucker Road
Atlanta, GA 30341

Attention: Ms. Kristen Jurinko

Report Number: AAK0548

November 28, 2017

Project: Advanced Engineering Parameters

Project #:Plant McDonough

We appreciate the opportunity to provide the analytical support for your project. The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Approved:

Betsy McDaniel

Project Manager

Golder Associates - Atlanta
3730 Chamblee Tucker Road
Atlanta GA, 30341

Attention: Ms. Kristen Jurinko

November 28, 2017

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AP-1 B-3A	AAK0548-01	Ground Water	11/13/17 14:00	11/15/17 13:15
AP-1 B-3B	AAK0548-02	Ground Water	11/14/17 14:30	11/15/17 13:15
AP-1 B-7A	AAK0548-03	Ground Water	11/14/17 11:00	11/15/17 13:15
AP-1 B-7B	AAK0548-04	Ground Water	11/14/17 17:00	11/15/17 13:15
FB-1	AAK0548-05	DI Water	11/14/17 10:50	11/15/17 13:15

Golder Associates - Atlanta
3730 Chamblee Tucker Road
Atlanta GA, 30341

Attention: Ms. Kristen Jurinko

November 28, 2017

Report No.: **AAK0548**

Project: **Advanced Engineering Parameters**

Client ID: **AP-1 B-3A**

Lab Number ID: **AAK0548-01**

Date/Time Sampled: **11/13/2017 2:00:00PM**

Date/Time Received: **11/15/2017 1:15:00PM**

Matrix: **Ground Water**

Analyte	Result	RL	MDL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
General Chemistry											
Alkalinity as CaCO3	144	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Alkalinity, Bicarbonate as CaCO3	144	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Alkalinity, Carbonate as CaCO3	ND	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Inorganic Anions											
Chloride	10	0.25	0.01	mg/L	EPA 300.0		1	11/18/17 13:10	11/18/17 22:06	7110540	RLC
Sulfate	170	10	0.51	mg/L	EPA 300.0		10	11/18/17 13:10	11/21/17 02:47	7110540	RLC
Metals, Total											
Calcium	71.1	5.00	2.02	mg/L	EPA 6020B		50	11/16/17 10:30	11/22/17 02:33	7110460	CSW
Magnesium	21.2	2.50	0.314	mg/L	EPA 6020B		50	11/16/17 10:30	11/22/17 02:33	7110460	CSW
Potassium	11.4	5.00	0.824	mg/L	EPA 6020B	B-01	50	11/16/17 10:30	11/27/17 17:11	7110460	CSW
Sodium	12.2	5.00	0.674	mg/L	EPA 6020B		50	11/16/17 10:30	11/22/17 02:33	7110460	CSW

Golder Associates - Atlanta
3730 Chamblee Tucker Road
Atlanta GA, 30341

Attention: Ms. Kristen Jurinko

November 28, 2017

Report No.: **AAK0548**

Project: **Advanced Engineering Parameters**

Client ID: **AP-1 B-3B**

Lab Number ID: **AAK0548-02**

Date/Time Sampled: **11/14/2017 2:30:00PM**

Date/Time Received: **11/15/2017 1:15:00PM**

Matrix: **Ground Water**

Analyte	Result	RL	MDL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
General Chemistry											
Alkalinity as CaCO3	152	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Alkalinity, Bicarbonate as CaCO3	152	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Alkalinity, Carbonate as CaCO3	ND	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Inorganic Anions											
Chloride	9.6	0.25	0.01	mg/L	EPA 300.0		1	11/18/17 13:10	11/18/17 22:26	7110540	RLC
Sulfate	170	10	0.51	mg/L	EPA 300.0		10	11/18/17 13:10	11/21/17 03:08	7110540	RLC
Metals, Total											
Calcium	70.9	5.00	2.02	mg/L	EPA 6020B		50	11/16/17 10:30	11/22/17 02:44	7110460	CSW
Magnesium	22.0	2.50	0.314	mg/L	EPA 6020B		50	11/16/17 10:30	11/22/17 02:44	7110460	CSW
Potassium	11.5	5.00	0.824	mg/L	EPA 6020B	B-01	50	11/16/17 10:30	11/27/17 17:17	7110460	CSW
Sodium	12.2	5.00	0.674	mg/L	EPA 6020B		50	11/16/17 10:30	11/22/17 02:44	7110460	CSW

PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

Golder Associates - Atlanta
3730 Chamblee Tucker Road
Atlanta GA, 30341

November 28, 2017

Attention: Ms. Kristen Jurinko

Report No.: AAK0548

Project: Advanced Engineering Parameters

Client ID: AP-1 B-7A

Lab Number ID: AAK0548-03

Date/Time Sampled: 11/14/2017 11:00:00AM

Date/Time Received: 11/15/2017 1:15:00PM

Matrix: Ground Water

Analyte	Result	RL	MDL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
General Chemistry											
Alkalinity as CaCO3	136	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Alkalinity, Bicarbonate as CaCO3	136	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Alkalinity, Carbonate as CaCO3	ND	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Inorganic Anions											
Chloride	4.4	0.25	0.01	mg/L	EPA 300.0		1	11/18/17 13:10	11/18/17 22:47	7110540	RLC
Sulfate	46	1.0	0.05	mg/L	EPA 300.0		1	11/18/17 13:10	11/18/17 22:47	7110540	RLC
Metals, Total											
Calcium	46.3	5.00	2.02	mg/L	EPA 6020B		50	11/16/17 10:30	11/22/17 02:56	7110460	CSW
Magnesium	7.88	0.0500	0.0063	mg/L	EPA 6020B		1	11/16/17 10:30	11/22/17 02:50	7110460	CSW
Potassium	11.6	5.00	0.824	mg/L	EPA 6020B	B-01	50	11/16/17 10:30	11/27/17 17:23	7110460	CSW
Sodium	6.54	0.100	0.0135	mg/L	EPA 6020B		1	11/16/17 10:30	11/22/17 02:50	7110460	CSW

Golder Associates - Atlanta
3730 Chamblee Tucker Road
Atlanta GA, 30341

November 28, 2017

Attention: Ms. Kristen Jurinko

Report No.: AAK0548

Project: Advanced Engineering Parameters

Client ID: AP-1 B-7B

Lab Number ID: AAK0548-04

Date/Time Sampled: 11/14/2017 5:00:00PM

Date/Time Received: 11/15/2017 1:15:00PM

Matrix: Ground Water

Analyte	Result	RL	MDL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
General Chemistry											
Alkalinity as CaCO3	135	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Alkalinity, Bicarbonate as CaCO3	135	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Alkalinity, Carbonate as CaCO3	ND	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Inorganic Anions											
Chloride	4.0	0.25	0.01	mg/L	EPA 300.0		1	11/18/17 13:10	11/18/17 23:28	7110540	RLC
Sulfate	44	1.0	0.05	mg/L	EPA 300.0		1	11/18/17 13:10	11/18/17 23:28	7110540	RLC
Metals, Total											
Calcium	48.0	5.00	2.02	mg/L	EPA 6020B		50	11/16/17 10:30	11/22/17 03:07	7110460	CSW
Magnesium	7.73	0.0500	0.0063	mg/L	EPA 6020B		1	11/16/17 10:30	11/22/17 03:01	7110460	CSW
Potassium	11.8	5.00	0.824	mg/L	EPA 6020B	B-01	50	11/16/17 10:30	11/27/17 17:28	7110460	CSW
Sodium	5.81	0.100	0.0135	mg/L	EPA 6020B		1	11/16/17 10:30	11/22/17 03:01	7110460	CSW

Golder Associates - Atlanta
3730 Chamblee Tucker Road
Atlanta GA, 30341

November 28, 2017

Attention: Ms. Kristen Jurinko

Report No.: AAK0548

Project: Advanced Engineering Parameters

Client ID: FB-1

Lab Number ID: AAK0548-05

Date/Time Sampled: 11/14/2017 10:50:00AM

Date/Time Received: 11/15/2017 1:15:00PM

Matrix: DI Water

Analyte	Result	RL	MDL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
General Chemistry											
Alkalinity as CaCO3	ND	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Alkalinity, Bicarbonate as CaCO3	ND	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Alkalinity, Carbonate as CaCO3	ND	1	1	mg/L	SM 2320 B		1	11/20/17 11:11	11/20/17 15:00	7110563	JAD
Inorganic Anions											
Chloride	0.08	0.25	0.01	mg/L	EPA 300.0	J	1	11/18/17 13:10	11/18/17 23:49	7110540	RLC
Sulfate	ND	1.0	0.05	mg/L	EPA 300.0		1	11/18/17 13:10	11/18/17 23:49	7110540	RLC
Metals, Total											
Calcium	ND	0.100	0.0404	mg/L	EPA 6020B		1	11/16/17 10:30	11/22/17 03:13	7110460	CSW
Magnesium	ND	0.0500	0.0063	mg/L	EPA 6020B		1	11/16/17 10:30	11/22/17 03:13	7110460	CSW
Potassium	0.0237	0.100	0.0165	mg/L	EPA 6020B	B-01, J	1	11/16/17 10:30	11/22/17 03:13	7110460	CSW
Sodium	ND	0.100	0.0135	mg/L	EPA 6020B		1	11/16/17 10:30	11/22/17 03:13	7110460	CSW

Golder Associates - Atlanta
3730 Chamblee Tucker Road
Atlanta GA, 30341

Attention: Ms. Kristen Jurinko

November 28, 2017

Report No.: AAK0548

General Chemistry - Quality Control

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7110563 - SM 2320 B											
Blank (7110563-BLK1)						Prepared & Analyzed: 11/20/17					
Alkalinity as CaCO3	ND	1	1	mg/L							
Alkalinity, Bicarbonate as CaCO3	ND	1	1	mg/L							
Alkalinity, Carbonate as CaCO3	ND	1	1	mg/L							
LCS (7110563-BS1)						Prepared & Analyzed: 11/20/17					
Alkalinity as CaCO3	104	1	1	mg/L	100.00		104	85-115			
Alkalinity, Bicarbonate as CaCO3	104	1	1	mg/L	100.00		104	85-115			
Alkalinity, Carbonate as CaCO3	104	1	1	mg/L	100.00		104	85-115			
Duplicate (7110563-DUP1)		**Source: AAK0541-15**				Prepared & Analyzed: 11/20/17					
Alkalinity as CaCO3	455	1	1	mg/L		460			1	10	
Alkalinity, Bicarbonate as CaCO3	455	1	1	mg/L		460			1	10	
Alkalinity, Carbonate as CaCO3	ND	1	1	mg/L		ND				10	

Golder Associates - Atlanta
3730 Chamblee Tucker Road
Atlanta GA, 30341

Attention: Ms. Kristen Jurinko

November 28, 2017

Report No.: AAK0548

Inorganic Anions - Quality Control

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7110540 - EPA 300.0											
Blank (7110540-BLK1)						Prepared & Analyzed: 11/18/17					
Chloride	ND	0.25	0.01	mg/L							
Sulfate	ND	1.0	0.05	mg/L							
LCS (7110540-BS1)						Prepared & Analyzed: 11/18/17					
Chloride	10.5	0.25	0.01	mg/L	10.000		105	90-110			
Sulfate	10.3	1.0	0.05	mg/L	10.000		103	90-110			
Matrix Spike (7110540-MS1)		**Source: AAK0264-02**				Prepared & Analyzed: 11/18/17					
Chloride	18.3	0.25	0.01	mg/L	10.000	7.69	106	90-110			
Sulfate	13.5	1.0	0.05	mg/L	10.000	3.30	102	90-110			
Matrix Spike (7110540-MS2)		**Source: AAK0548-03**				Prepared & Analyzed: 11/18/17					
Chloride	14.9	0.25	0.01	mg/L	10.000	4.42	105	90-110			
Sulfate	51.4	1.0	0.05	mg/L	10.000	46.4	51	90-110			QM-05
Matrix Spike Dup (7110540-MSD1)		**Source: AAK0264-02**				Prepared & Analyzed: 11/18/17					
Chloride	18.3	0.25	0.01	mg/L	10.000	7.69	107	90-110	0.3	15	
Sulfate	13.5	1.0	0.05	mg/L	10.000	3.30	102	90-110	0.3	15	

Golder Associates - Atlanta
3730 Chamblee Tucker Road
Atlanta GA, 30341

Attention: Ms. Kristen Jurinko

November 28, 2017

Report No.: AAK0548

Metals, Total - Quality Control

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7110460 - EPA 3005A											
Blank (7110460-BLK1)						Prepared: 11/16/17 Analyzed: 11/22/17					
Calcium	ND	0.100	0.0404	mg/L							
Magnesium	ND	0.0500	0.0063	mg/L							
Potassium	0.0296	0.100	0.0165	mg/L							J
Sodium	ND	0.100	0.0135	mg/L							
LCS (7110460-BS1)						Prepared: 11/16/17 Analyzed: 11/22/17					
Calcium	1.06	0.100	0.0404	mg/L	1.0000		106	80-120			
Magnesium	1.05	0.0500	0.0063	mg/L	1.0000		105	80-120			
Potassium	1.11	0.100	0.0165	mg/L	1.0000		111	80-120			
Sodium	1.03	0.100	0.0135	mg/L	1.0000		103	80-120			
Matrix Spike (7110460-MS1)		**Source: AAK0548-01**				Prepared: 11/16/17 Analyzed: 11/22/17					
Calcium	73.6	5.00	2.02	mg/L	1.0000	71.1	248	75-125			QM-02
Magnesium	23.0	2.50	0.314	mg/L	1.0000	21.2	177	75-125			QM-02
Potassium	13.2	5.00	0.824	mg/L	1.0000	11.4	182	75-125			QM-02
Sodium	13.5	5.00	0.674	mg/L	1.0000	12.2	127	75-125			QM-02
Matrix Spike Dup (7110460-MSD1)		**Source: AAK0548-01**				Prepared: 11/16/17 Analyzed: 11/22/17					
Calcium	68.6	5.00	2.02	mg/L	1.0000	71.1	NR	75-125	7	20	QM-02
Magnesium	22.7	2.50	0.314	mg/L	1.0000	21.2	150	75-125	1	20	QM-02
Potassium	12.3	5.00	0.824	mg/L	1.0000	11.4	96	75-125	7	20	QM-02
Sodium	13.2	5.00	0.674	mg/L	1.0000	12.2	97	75-125	2	20	
Post Spike (7110460-PS1)		**Source: AAK0548-01**				Prepared: 11/16/17 Analyzed: 11/22/17					
Calcium	71300			ug/L	1000.0	71100	15	80-120			QM-02
Magnesium	22200			ug/L	1000.0	21200	100	80-120			
Potassium	12100			ug/L	1000.0	11400	71	80-120			QM-02
Sodium	13000			ug/L	1000.0	12200	77	80-120			QM-02

Golder Associates - Atlanta
3730 Chamblee Tucker Road
Atlanta GA, 30341

Attention: Ms. Kristen Jurinko

November 28, 2017

Legend

Definition of Laboratory Terms

ND - Not Detected at levels equal to or greater than the MDL
BRL - Not Detected at levels equal to or greater than the RL
RL - Reporting Limit **MDL** - Method Detection Limit
SOP - Method run per Pace Standard Operating Procedure
CFU - Colony Forming Units
DF - Dilution Factor **TIC** - Tentatively Identified Compound

Sample Information

N-Nitrosodiphenylamine breaks down to diphenylamine in the GCMS; both analytes are reported as N-Nitrososdiphenylamine. Pace is not NELAC certified for N-Nitrososdiphenylamine.

Phthalic acid and phthalic anhydride are reported as dimethyl phthalate

Maleic acid and maleic anhydride are reported as dimethyl malate

1,2-Diphenylhydrazine breaks down to azobenzene in the GCMS; both analytes are reported as azobenzene

Definition of Qualifiers

QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD and/or PDS due to suspected matrix interference. Sample results for the QC batch were accepted based on acceptable LCS recoveries.

QM-02 The spike recovery is outside acceptance limits due to insignificant spike amount as compared to sample concentration.

J Estimated value less than Reporting Limit (RL) but greater than Method Detection Limit(MDL) (CLP J-Flag).

B-01 Analyte was detected in the associated method blank at an estimated level equal to or greater than the MDL. Sample values reported as greater than the MDL and less than 10x the method blank value are reported as estimated values.

Note: Unless otherwise noted, all results are reported on an as received basis.

CHAIN OF CUSTODY RECORD

Pace Analytical®
www.pacelabs.com

Pace Analytical Services, LLC - Atlanta GA
110 TECHNOLOGY PARKWAY, PEACHTREE CORNERS, GA 30092
(770) 734-4200 : FAX (770) 734-4201

PAGE: 1 OF 1

CLIENT NAME: Golder Associates

CLIENT ADDRESS/PHONE NUMBER/FAX NUMBER:
3730 Chamblee Tucker Rd
Atlanta, GA 30341

REPORT TO: Rachel Kirkman

CC:

REQUESTED COMPLETION DATE:

PO #: 1779172

PROJECT NAME/STATE: Advanced Engineering

PROJECT #:

ANALYSIS REQUESTED

Collection DATE	Collection TIME	MATRIX CODE*	COMP	GRAB	SAMPLE IDENTIFICATION	# of CONTAINERS	Metals (Ca, Mg, K)	Alk, Bicarb, Carb, Cl, SO4								LAB ID NUMBER
					CONTAINER TYPE:		P	P								
					PRESERVATION:		3?	7								
11/13/17	1400	GW		X	AP-1 B-3A	2	X	X								1
11/14/17	1430	GW		X	AP-1 B-3B	2	X	X								2
11/14/17	1100	GW		X	AP-1 B-7A	2	X	X								3
11/14/17	1700	GW		X	AP-1 B-7B	2	X	X								4
11/14/17	1050	DW		X	FB-1	2	X	X								5

CONTAINER TYPE
- P - PLASTIC
- A - AMBER GLASS
- G - CLEAR GLASS
- V - VOA VIAL
- S - STERILE
- O - OTHER

PRESERVATION
- 1 - HCl, ≤6°C
- 2 - H_2SO_4, ≤6°C
- 3 - HNO_3
- 4 - NaOH, ≤6°C
- 5 - NaOH/ZnAc, ≤6°C
- 6 - $Na_2S_2O_3$, ≤6°C
- 7 - ≤6°C not frozen

*MATRIX CODES:

DW - DRINKING WATER	S - SOIL
WW - WASTEWATER	SL - SLUDGE
GW - GROUNDWATER	SD - SOLID
SW - SURFACE WATER	A - AIR
ST - STORM WATER	L - LIQUID
W - WATER	P - PRODUCT

REMARKS/ADDITIONAL INFORMATION

SAMPLED BY AND TITLE: Ben Hodges Field Lead
DATE/TIME: 11/15/17 1000

RECEIVED BY: Mike Nguyen
DATE/TIME: 11/15/17 1000

RECEIVED BY LAB: Charles Hawks
DATE/TIME: 11/15/17 1315

ecked: No NA
Ice: [✓ Yes] No NA
Temperature: Min: 2.0 Max:

RELINQUISHED BY: Ben H
DATE/TIME: 11/15/17 1000

RELINQUISHED BY:
DATE/TIME:

SAMPLE SHIPPED VIA: UPS FED-EX USPS [✓ COURIER] CLIENT OTHER FS

Custody Seal: [✓ Intact] Broken Not Present N/A
# of Coolers
Cooler ID:

FOR LAB USE ONLY
LAB #: AAK0548
Entered into LIMS: CH
Tracking #:

Rev. 12/15/2016

Sample Condition Upon Receipt

Pace Analytical

Client Name: GAPower

Project # AAK0548

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

Tracking #: ______

Optional
Proj. Due Date:
Proj. Name:

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

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

Thermometer Used THR082 **Type of Ice:** [✓ Wet] Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 2.0°C **Biological Tissue is Frozen:** Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 11/15/17

Comments:

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

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

Person Contacted: ______ Date/Time: ______

Comments/ Resolution: ______

Project Manager Review: ______ **Date:** ______

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

LOG-IN CHECKLIST

Printed: 11/16/2017 11:09:33AM

Attn: Ms. Kristen Jurinko

Client: Golder Associates - Atlanta
Project: Advanced Engineering Parameters
Date Received: 11/15/17 13:15
Work Order: AAK0548
Logged In By: Charles Hawks

OBSERVATIONS

#Samples: 5
#Containers: 10
Minimum Temp(C): 2.0
Maximum Temp(C): 2.0
Custody Seal(s) Used: Yes

CHECKLIST ITEMS

COC included with Samples	YES
Sample Container(s) Intact	YES
Chain of Custody Complete	YES
Sample Container(s) Match COC	YES
Custody seal Intact	YES
Temperature in Compliance	YES
Sufficient Sample Volume for Analysis	YES
Zero Headspace Maintained for VOA Analyses	YES
Samples labeled preserved (If Applicable)	YES
Samples received within Allowable Hold Times	YES
Samples Received on Ice	YES
Preservation Confirmed	YES

Comments:

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Internal Dept 14
Attn : Kim Gibbs

08-June-2022

Date Rec. : 11 May 2022
LR Report : **CA02233-MAY22**
Project : CA20I-00000-110-18502-05
Client Ref : MI5010-MAY22

CERTIFICATE OF ANALYSIS

Final Report

Sample ID	**TOC** **%**
1: B-113D-19-20'	< 0.05
2: B-104D-55-56'	< 0.05
3: B-115D-75-76'	< 0.05
4: B-47-11-12'	0.06
5: B-48-23-24'	< 0.05
6: DGWC-121-38-40'	< 0.05
7: DGWC-121-49-50'	< 0.05
8: B-122D-39-40'	2.13
9: B-123D-27-28'	< 0.05
10: B-123D-145'	< 0.05

`Control Quality Analysis - not suitable for commercial exchange`

Sarah Thyret-Arbour

Sarah Thyret-Arbour
Technologist, Mineral Services, Analytical

Analysis Report

GS22-01437

F402001 SGS LAKEFIELD RESEARCH
PO BOX 4300
185 CONCESSION STREET
LAKEFIELD, ONTARIO ON K0L 2H0
CANADA

Received : 16-May-2022
Completed : 19-May-2022
Order Reference : Kim Gibbs - Katie Brock - MI5010-May22

Laboratory ID: Client Sample #: Description:	GS22-01437.001 B-113D-19-20`	GS22-01437.002 B-104D-55-56`	GS22-01437.003 B-115D-75-76`	GS22-01437.004 B-47D-11-12`
CEC Actual (meq/100g)	5.18	7.14	7.49	7.78

NOTE:
The analysis report above refers to the time and place of testing, and strictly to the supplied sample(s) only, without reference to any other matter. This report does not evidence or refer to any consignment or shipment or/and SGS sampling and inspection.

Report File Reference Number: 0000220419

Signed and dated in Guelph, ON
On 19-May-2022

For and on behalf of SGS Canada Inc., Agriculture and Food

Jack Legg, CCA-ON, 4R NMS
Branch Manager, Agronomist

Analysis Report

GS22-01437

F402001 SGS LAKEFIELD RESEARCH
PO BOX 4300
185 CONCESSION STREET
LAKEFIELD, ONTARIO ON K0L 2H0
CANADA

Received : 16-May-2022
Completed : 19-May-2022
Order Reference : Kim Gibbs - Katie Brock - MI5010-May22

Laboratory ID: Client Sample #: Description:	GS22-01437.005 B-4D-23-24`	GS22-01437.006 DGWC-121-49-50`	GS22-01437.007 DGWC-121-38-40`	GS22-01437.008 B-122D-39-40`
CEC Actual (meq/100g)	9.77	10.64	5.06	6.92

NOTE:
The analysis report above refers to the time and place of testing, and strictly to the supplied sample(s) only, without reference to any other matter. This report does not evidence or refer to any consignment or shipment or/and SGS sampling and inspection.

Report File Reference Number: 0000220419

Signed and dated in Guelph, ON
On 19-May-2022

For and on behalf of SGS Canada Inc., Agriculture and Food

Jack Legg, CCA-ON, 4R NMS
Branch Manager, Agronomist

Analysis Report
GS22-01437

F402001 SGS LAKEFIELD RESEARCH
PO BOX 4300
185 CONCESSION STREET
LAKEFIELD, ONTARIO ON K0L 2H0
CANADA

Received : 16-May-2022
Completed : 19-May-2022
Order Reference : Kim Gibbs - Katie Brock - MI5010-May22

Laboratory ID:	GS22-01437.009	GS22-01437.010
Client Sample #:	B-123D-27-28`	B-123D-145`
Description:		
CEC Actual (meq/100g)	4.59	18.74

NOTE:
The analysis report above refers to the time and place of testing, and strictly to the supplied sample(s) only, without reference to any other matter. This report does not evidence or refer to any consignment or shipment or/and SGS sampling and inspection.

Report File Reference Number: 0000220419

Signed and dated in Guelph, ON
On 19-May-2022

For and on behalf of SGS Canada Inc., Agriculture and Food

Jack Legg, CCA-ON, 4R NMS
Branch Manager, Agronomist

APPENDIX C

XRD Results

SGS

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for:	*Golder Associates*
Project Number/ LIMS No.	*17836-01/MI4519-JAN20*
Sample Receipt:	*January 21, 2020*
Sample Analysis:	*January 22, 2020*
Reporting Date:	*January 23, 2020*

Instrument:	BRUKER AXS D8 Advance Diffractometer
Test Conditions:	Co radiation, 35 kV, 40 mA Regular Scanning: Step: 0.02°, Step time: 1s, 2θ range: 3-80°
Interpretations :	PDF2/PDF4 powder diffraction databases issued by the International Center for Diffraction Data (ICDD). DiffracPlus Eva and Topas software.
Detection Limit :	0.5-2%. Strongly dependent on crystallinity.

Contents:

1) Method Summary
2) Quantitative XRD Results
3) XRD Pattern(s)

Kim Gibbs

Kim Gibbs, H.B.Sc., P.Geo.
Senior Mineralogist

Lain Glossop, H.B.Sc.
Senior Mineralogist

ACCREDITATION: SGS Minerals Services Lakefield is accredited to the requirements of ISO/IEC 17025 for specific tests as listed on our scope of accreditation, including geochemical, mineralogical and trade mineral tests. To view a list of the accredited methods, please visit the following website and search SGS Canada - Minerals Services - Lakefield: http://palcan.scc.ca/SpecsSearch/GLSearchForm.do.

SGS Minerals
a division of SGS Canada Inc.
P.O. Box 4300, 185 Concession Street, Lakefield, Ontario, Canada K0L 2H0
Tel: (705) 652-2000 Fax: (705) 652-6365 www.sgs.com www.sgs.com/met
Member of the SGS Group (SGS SA)

Method Summary

The Rietveld Method of Mineral Identification by XRD (ME-LR-MIN-MET-MN-D05) method used by SGS Minerals Services is accredited to the requirements of ISO/IEC 17025.

Mineral Identification and Interpretation:

Mineral identification and interpretation involves matching the diffraction pattern of an unknown material to patterns of single-phase reference materials. The reference patterns are compiled by the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD) database and released on software as Powder Diffraction Files (PDF).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Quantitative Rietveld Analysis is performed by using Topas 4.2 (Bruker AXS), a graphics based profile analysis program built around a non-linear least squares fitting system, to determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile until it matches the obtained experimental patterns.

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.05wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

Golder Associates
17836-01/MI4519-JAN20
23-Jan-20

Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	**B-76 (28-38') JAN4519-01** (wt %)	**B-77 (32-40') JAN4519-02** (wt %)	**B-78 (25-30') JAN4519-03** (wt %)	**B-79 (30-35') JAN4519-04** (wt %)	**B-81 (45.4-47.5') JAN4519-05** (wt %)	**B-82 (35.5-37.5') JAN4519-06** (wt %)	**B-84 (43.5-45') JAN4519-07** (wt %)	**B-85 (23.5-25') JAN4519-08** (wt %)	**B-87 (33.5-35') JAN4519-09** (wt %)	**B-92 (6-8') JAN4519-10** (wt %)	**B-93 (6-8') JAN4519-11** (wt %)
Quartz	49.3	46.2	32.5	21.5	39.7	31.3	34.3	33.5	28.7	45.0	38.5
Albite	10.9	4.6	38.5	39.2	19.7	3.2	3.5	25.7	26.4	5.1	15.8
Microcline	6.5	5.9	12.5	10.7	23.3	4.8	-	16.3	12.9	5.4	16.8
Chlorite	4.6	7.2	-	-	-	5.4	7.0	-	-	-	-
Kaolinite	10.6	13.7		6.2	6.1	11.8	13.3	6.1	7.0	18.9	18.1
Muscovite	12.5	11.1	7.7	10.2	9.1	22.9	16.2	4.4	7.0	19.3	10.0
Biotite	4.0	3.9	3.8	5.4	-	7.2	4.9	4.0	6.2	2.5	-
Pyrite	0.6	-	-	-	-	0.5	-	-	-	-	-
Magnetite	0.8	-	-	0.6	-	2.8	-	-	-	1.1	0.3
Gibbsite	-	1.9	-	-	-	-	-	-	-	-	-
Sillimanite	-	2.3	-	-	-	-	-	-	-	1.2	-
Montmorillonite	-	3.2	-	-	-	2.3	-	4.0	4.8	-	-
Anhydrite	-	-	0.4	0.6	-	-	1.2	0.8	0.8	1.5	-
Anorthite	-	-	3.8	3.9	2.2	-	-	3.8	4.5	-	-
Dolomite	-	-	0.2	-	-	-	-	-	-	-	-
Ankerite	-	-	0.7	0.4	-	-	-	0.6	0.9	-	0.5
Diopside	-	-	-	1.2	-	-	-	0.8	0.7	-	-
Hematite	-	-	-	-	-	2.0	-	-	-	-	-
Talc	-	-	-	-	-	4.1	-	-	-	-	-
Magnesite	-	-	-	-	-	1.7	-	-	-	-	-
Orthoclase	-	-	-	-	-	-	19.7	-	-	-	-
TOTAL	100	100	100	100	100	100	100	100	100	100	100

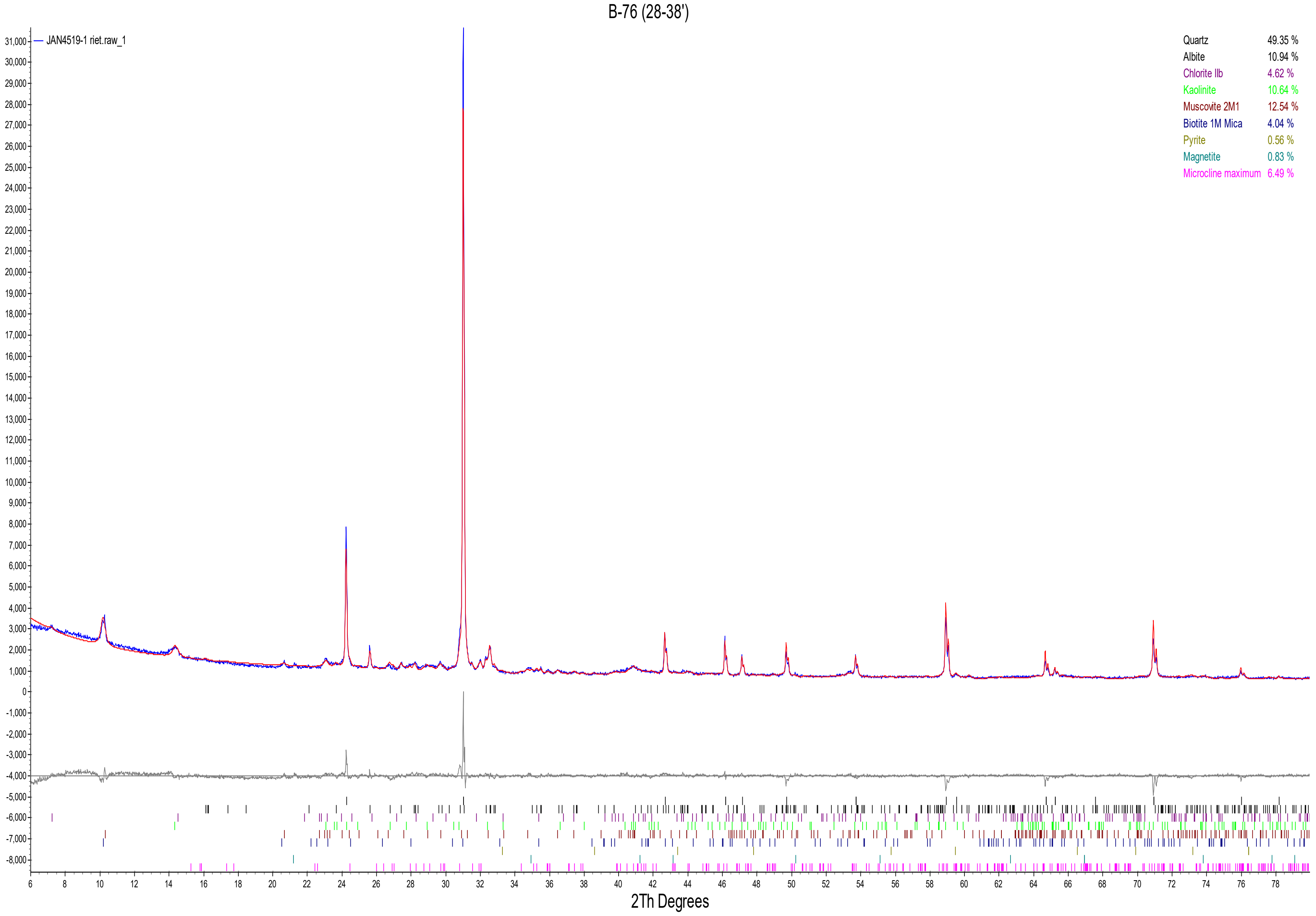
Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

The weight percent quantities indicated have been normalized to a sum of 100%. The quantity of amorphous material has not been determined.

Mineral List

Mineral/Compound	**Formula**
Quartz	SiO_2
Albite	$NaAlSi_3O_8$
Microcline	$KAlSi_3O_8$
Chlorite	$(Fe,(Mg,Mn)_5,Al)(Si_3Al)O_{10}(OH)_8$
Kaolinite	$Al_2Si_2O_5(OH)_4$
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$
Biotite	$K(Mg,Fe)_3(AlSi_3O_{10})(OH)_2$
Pyrite	FeS_2
Magnetite	Fe_3O_4
Gibbsite	$Al(OH)_3$
Sillimanite	Al_2SiO_5
Montmorillonite	$(Na,Ca)_{0.3}(Al,Mg)_2Si_2O_{10}(OH)_2 \cdot 10H_2O$
Anhydrite	$CaSO_4$
Anorthite	$CaAl_2Si_2O_8$
Dolomite	$CaMg(CO_3)_2$
Ankerite	$CaFe(CO_3)_2$
Diopside	$CaMgSi_2O_6$
Hematite	Fe_2O_3
Talc	$Mg_3Si_4O_{10}(OH)_2$
Magnesite	$MgCO_3$
Orthoclase	$KAlSi_3O_8$


B-76 (28-38')
JAN4519-1 riet.raw_1
Quartz 49.35 %
Albite 10.94 %
Chlorite IIb 4.62 %
Kaolinite 10.64 %
Muscovite 2M1 12.54 %
Biotite 1M Mica 4.04 %
Pyrite 0.56 %
Magnetite 0.83 %
Microcline maximum 6.49 %
31,000
30,000
29,000
28,000
27,000
26,000
25,000
24,000
23,000
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21,000
20,000
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18,000
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12,000
11,000
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7,000
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2,000
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-2,000
-3,000
-4,000
-5,000
-6,000
-7,000
-8,000
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78
2Th Degrees

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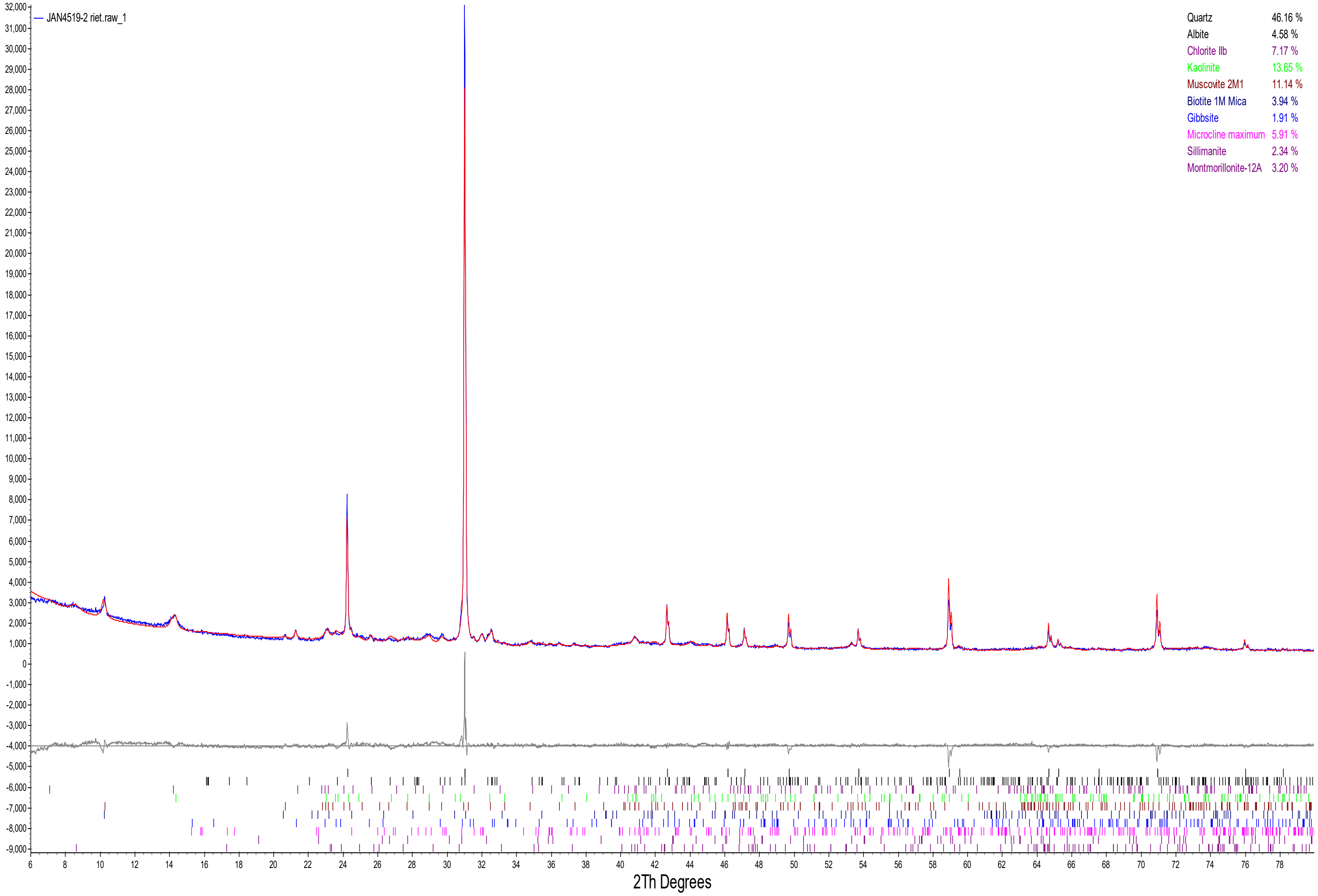
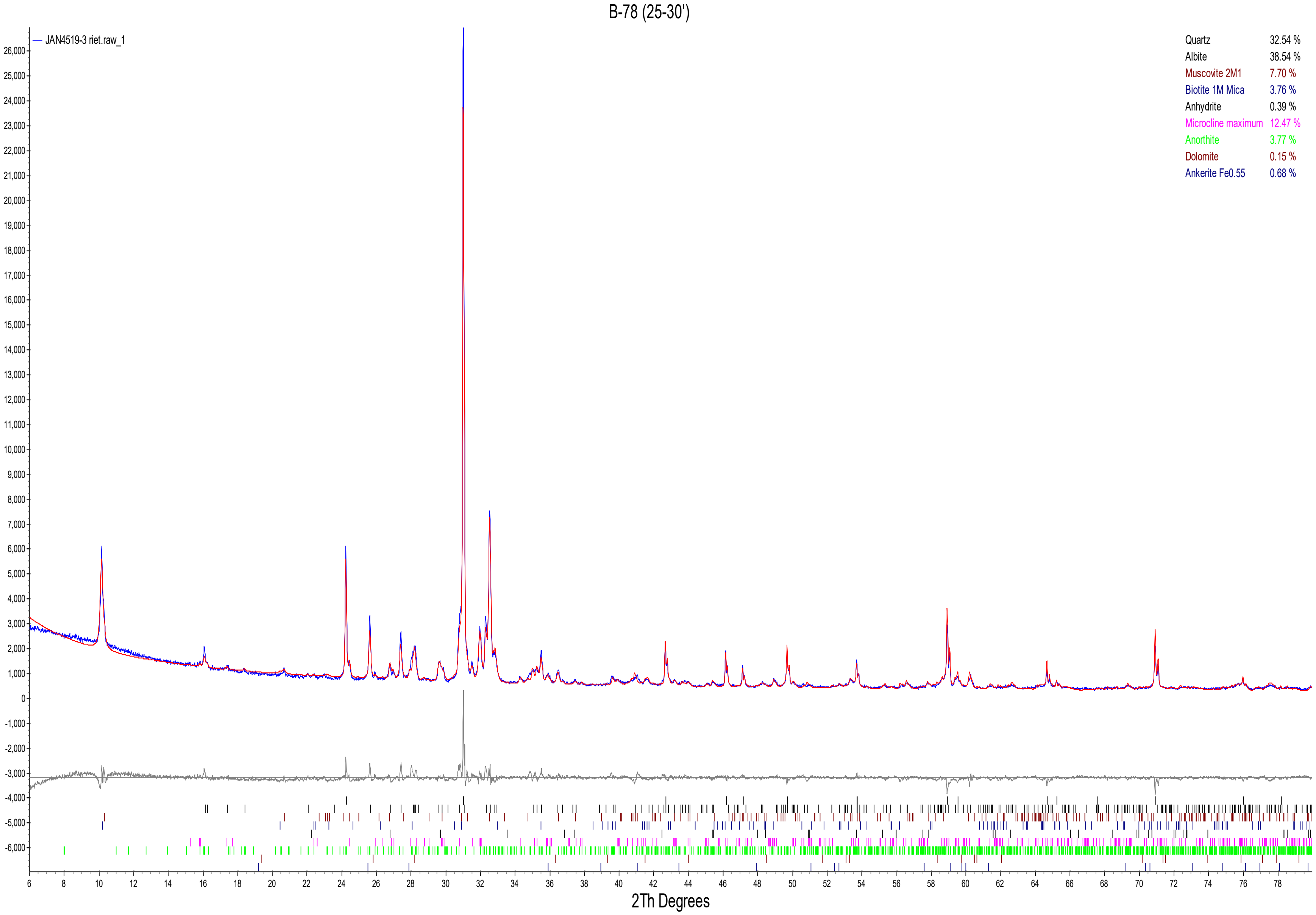
17836-01/MI4519-JAN20
23-Jan-20

B-77 (32-40')




B-78 (25-30')
JAN4519-3 riet.raw_1
Quartz 32.54 %
Albite 38.54 %
Muscovite 2M1 7.70 %
Biotite 1M Mica 3.76 %
Anhydrite 0.39 %
Microcline maximum 12.47 %
Anorthite 3.77 %
Dolomite 0.15 %
Ankerite Fe0.55 0.68 %
26,000
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23,000
22,000
21,000
20,000
19,000
18,000
17,000
16,000
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13,000
12,000
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7,000
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2,000
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-1,000
-2,000
-3,000
-4,000
-5,000
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72
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76
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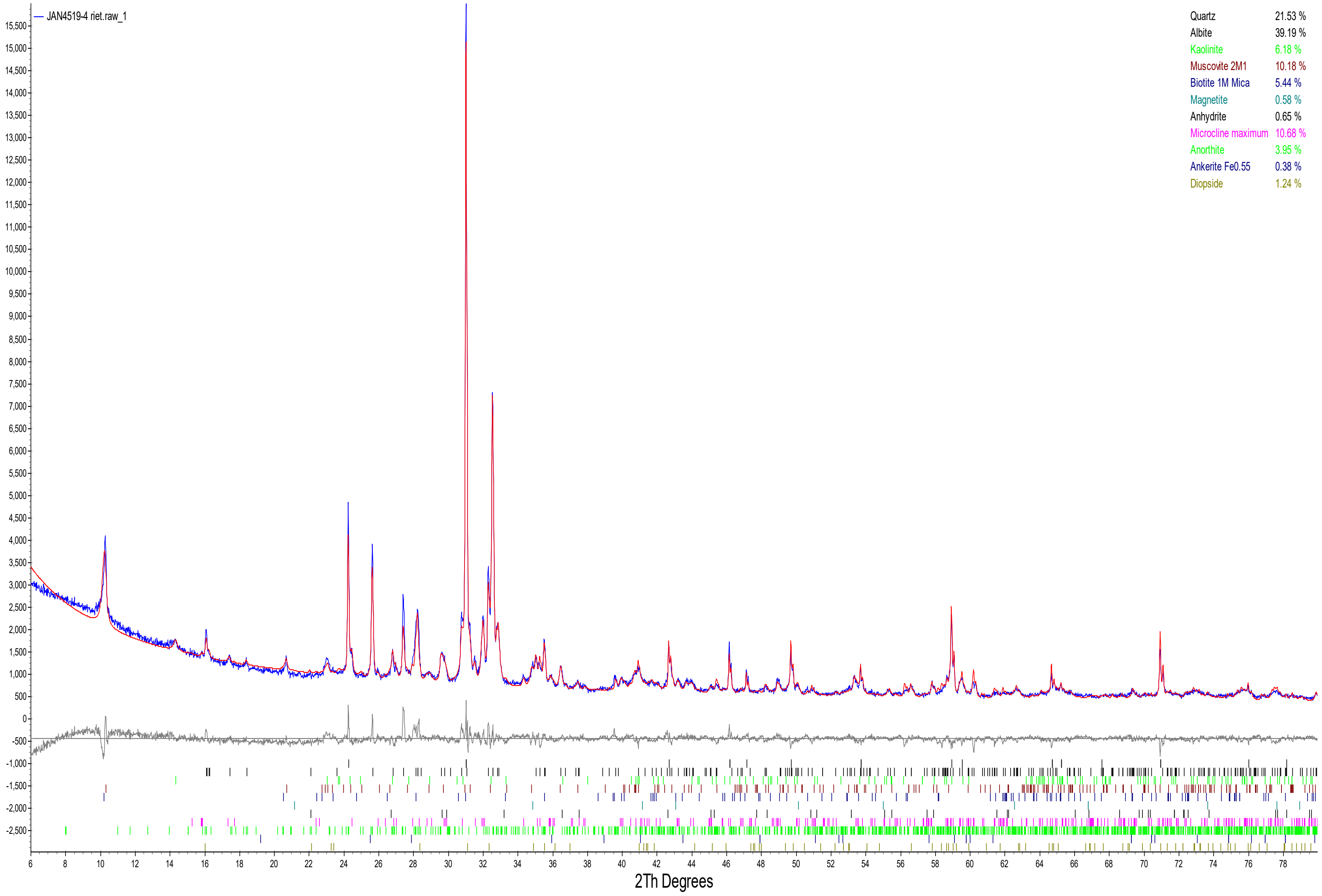
2Th Degrees

B-79 (30-35')


JAN4519-4 riet.raw_1
Quartz 21.53 %
Albite 39.19 %
Kaolinite 6.18 %
Muscovite 2M1 10.18 %
Biotite 1M Mica 5.44 %
Magnetite 0.58 %
Anhydrite 0.65 %
Microcline maximum 10.68 %
Anorthite 3.95 %
Ankerite Fe0.55 0.38 %
Diopside 1.24 %
15,500
15,000
14,500
14,000
13,500
13,000
12,500
12,000
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10,500
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9,500
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64
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68
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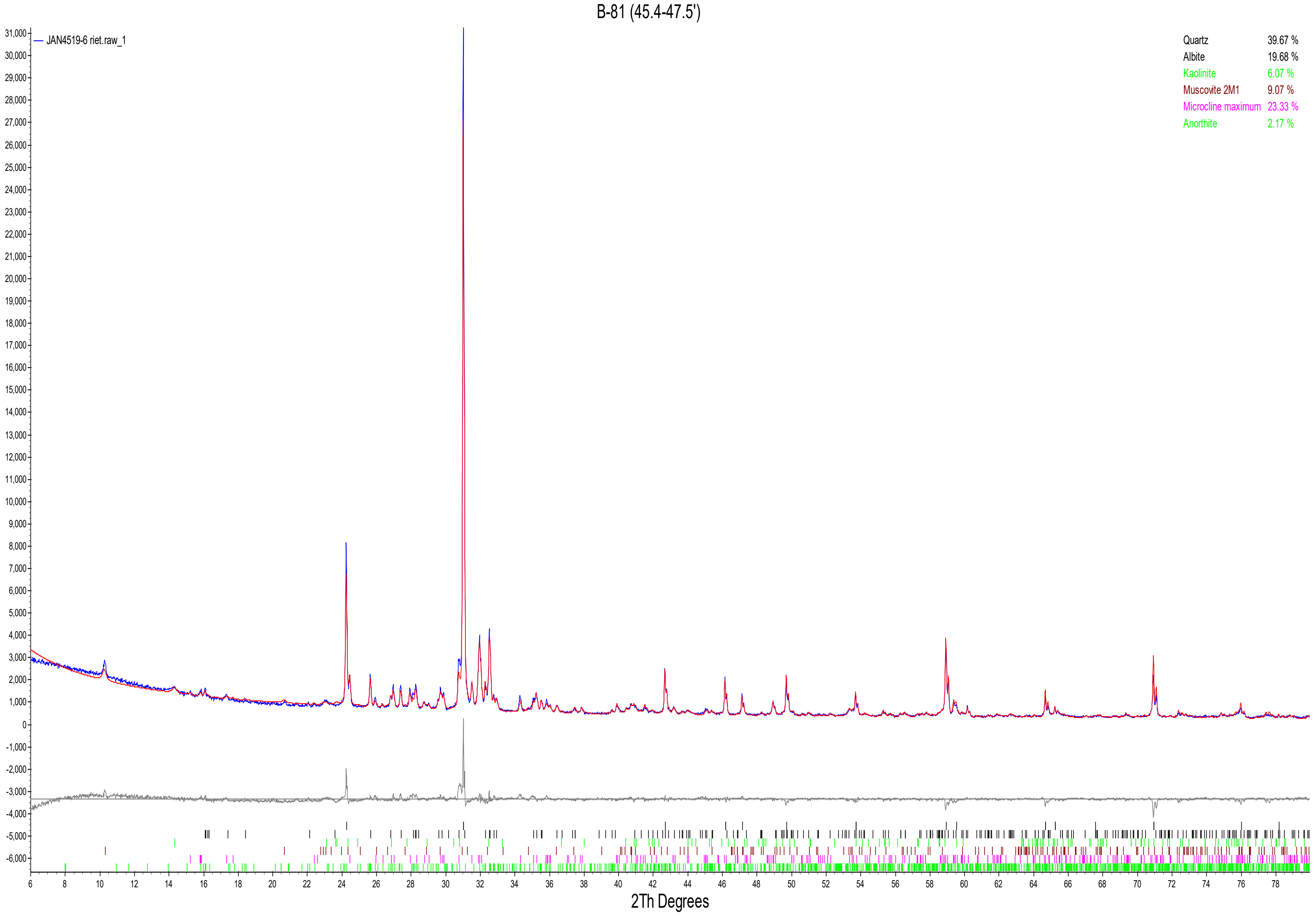
2Th Degrees


B-81 (45.4-47.5')
JAN4519-6 riet.raw_1
Quartz 39.67 %
Albite 19.68 %
Kaolinite 6.07 %
Muscovite 2M1 9.07 %
Microcline maximum 23.33 %
Anorthite 2.17 %
31,000
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72
74
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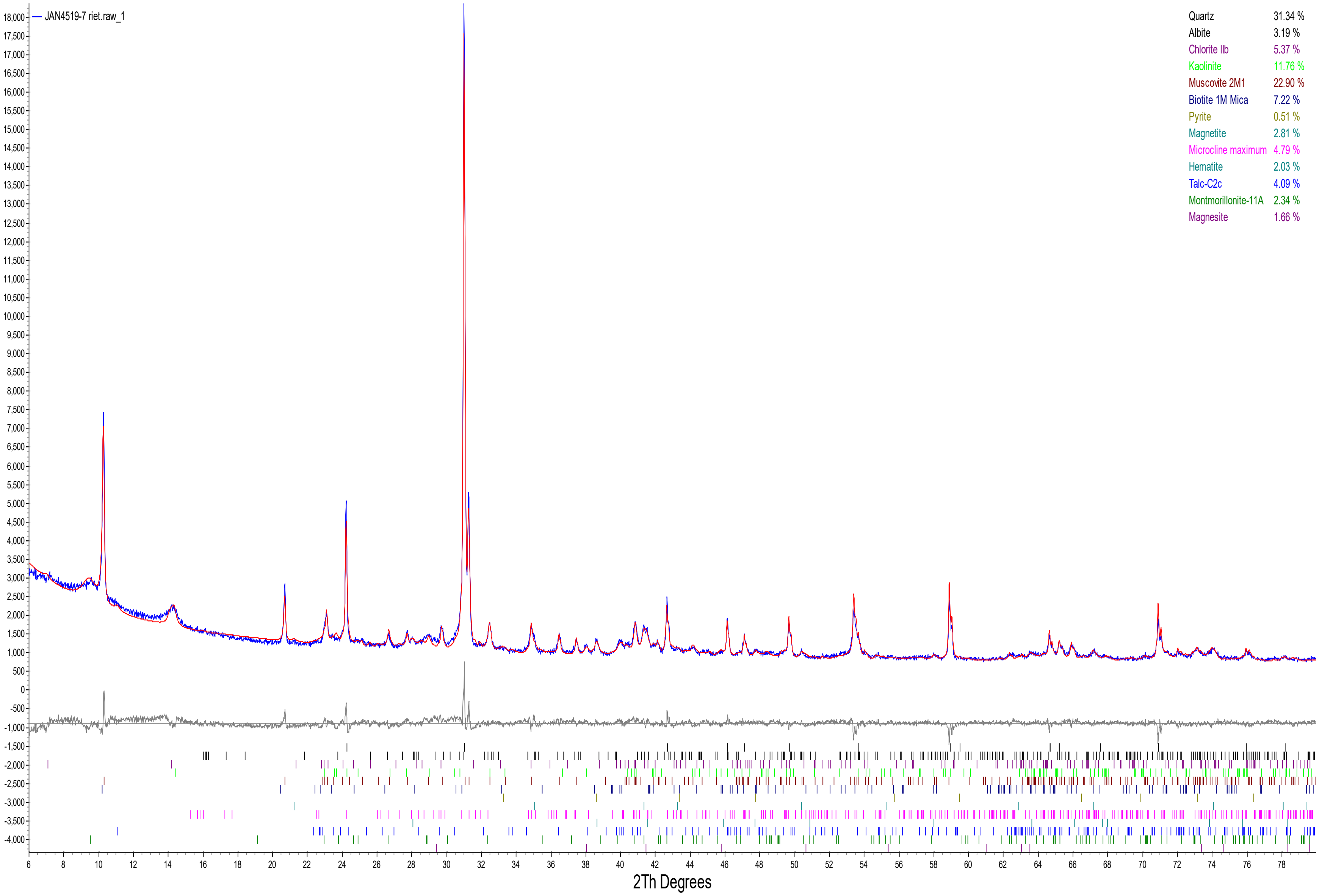
78
2Th Degrees

B-82 (35.5-37.5')


JAN4519-7 riet.raw_1
Quartz 31.34 %
Albite 3.19 %
Chlorite IIb 5.37 %
Kaolinite 11.76 %
Muscovite 2M1 22.90 %
Biotite 1M Mica 7.22 %
Pyrite 0.51 %
Magnetite 2.81 %
Microcline maximum 4.79 %
Hematite 2.03 %
Talc-C2c 4.09 %
Montmorillonite-11A 2.34 %
Magnesite 1.66 %
18,000
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68
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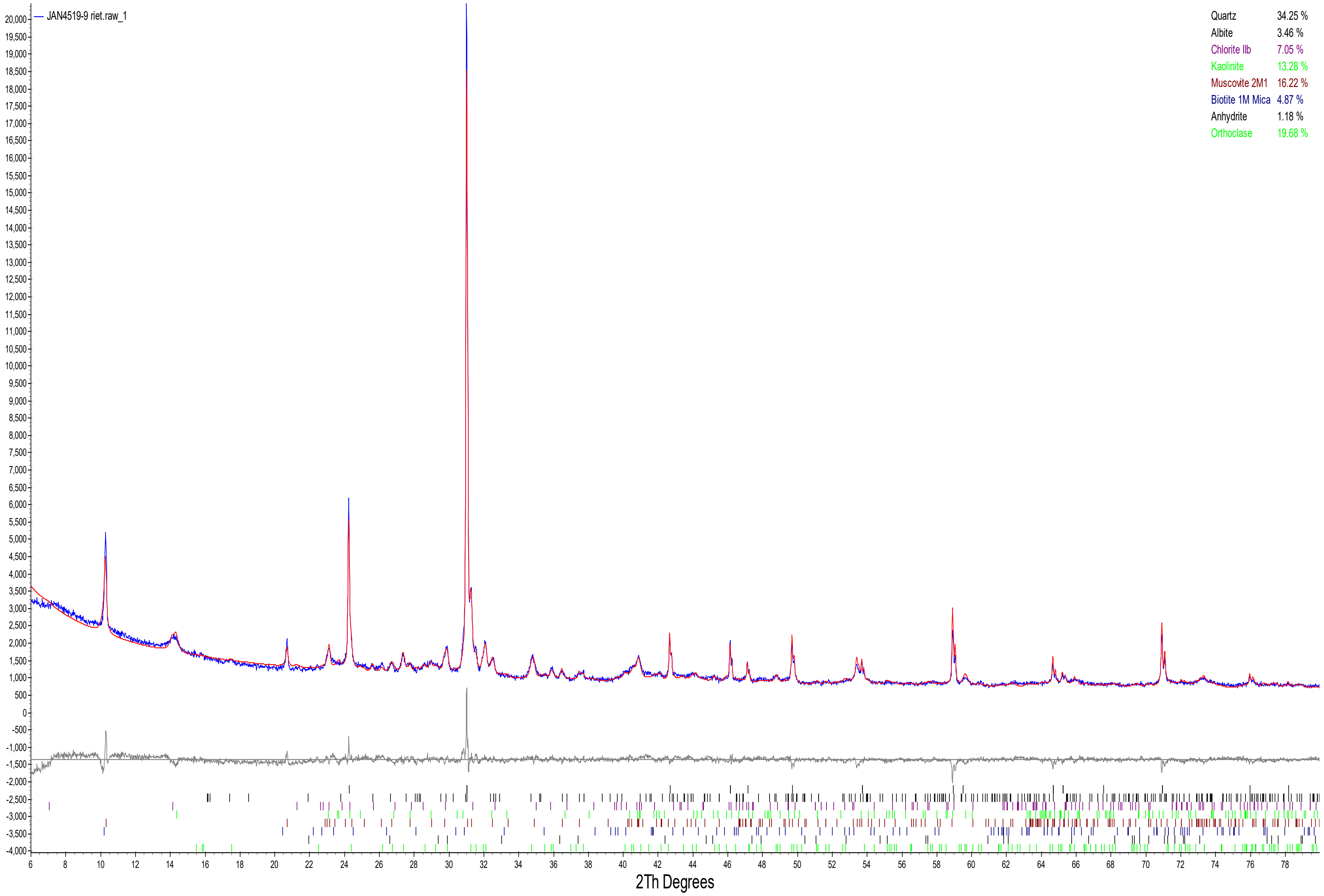
72
74
76
78
2Th Degrees

B-84 (43.5-45')


JAN4519-9 riet.raw_1
Quartz 34.25 %
Albite 3.46 %
Chlorite IIb 7.05 %
Kaolinite 13.28 %
Muscovite 2M1 16.22 %
Biotite 1M Mica 4.87 %
Anhydrite 1.18 %
Orthoclase 19.68 %
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78
2Th Degrees

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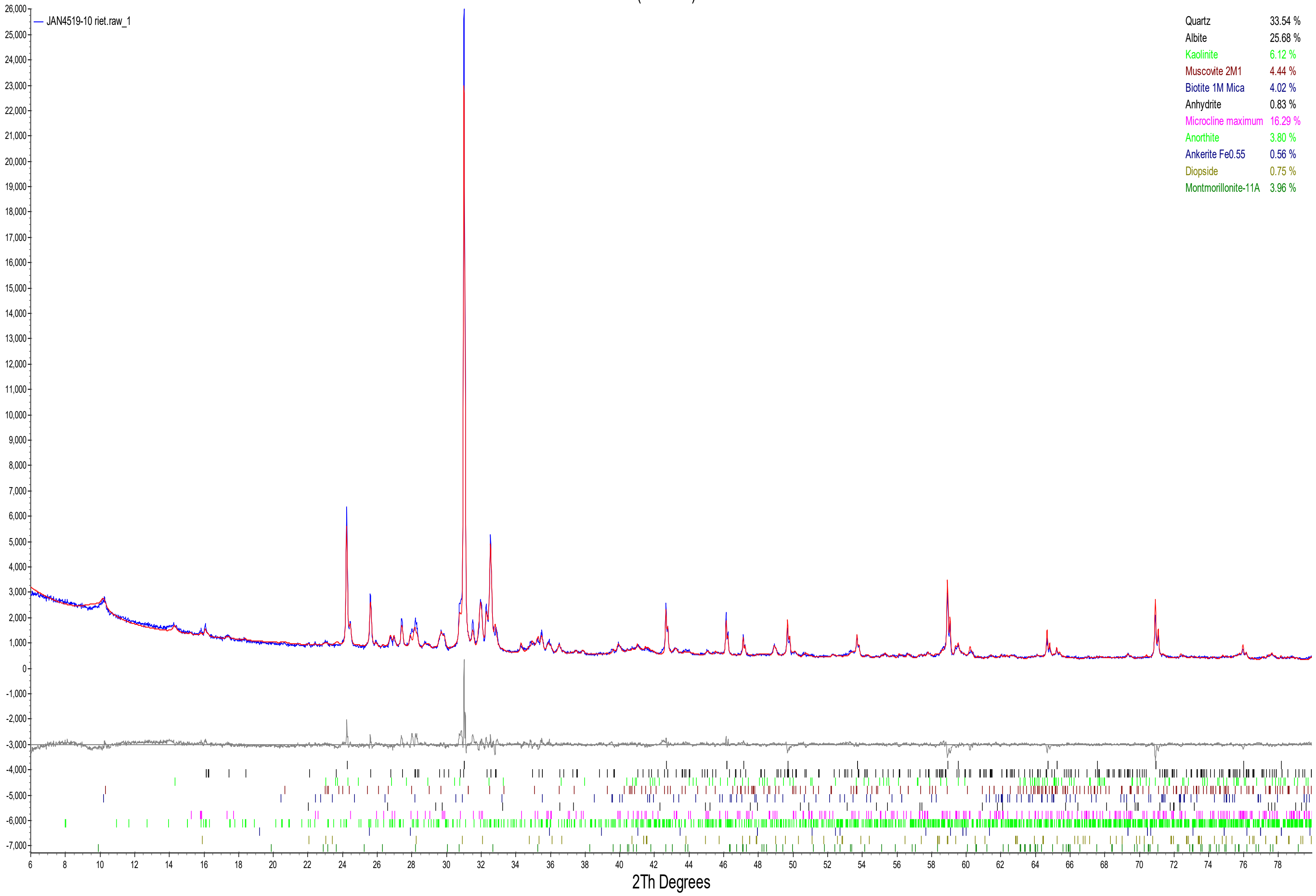
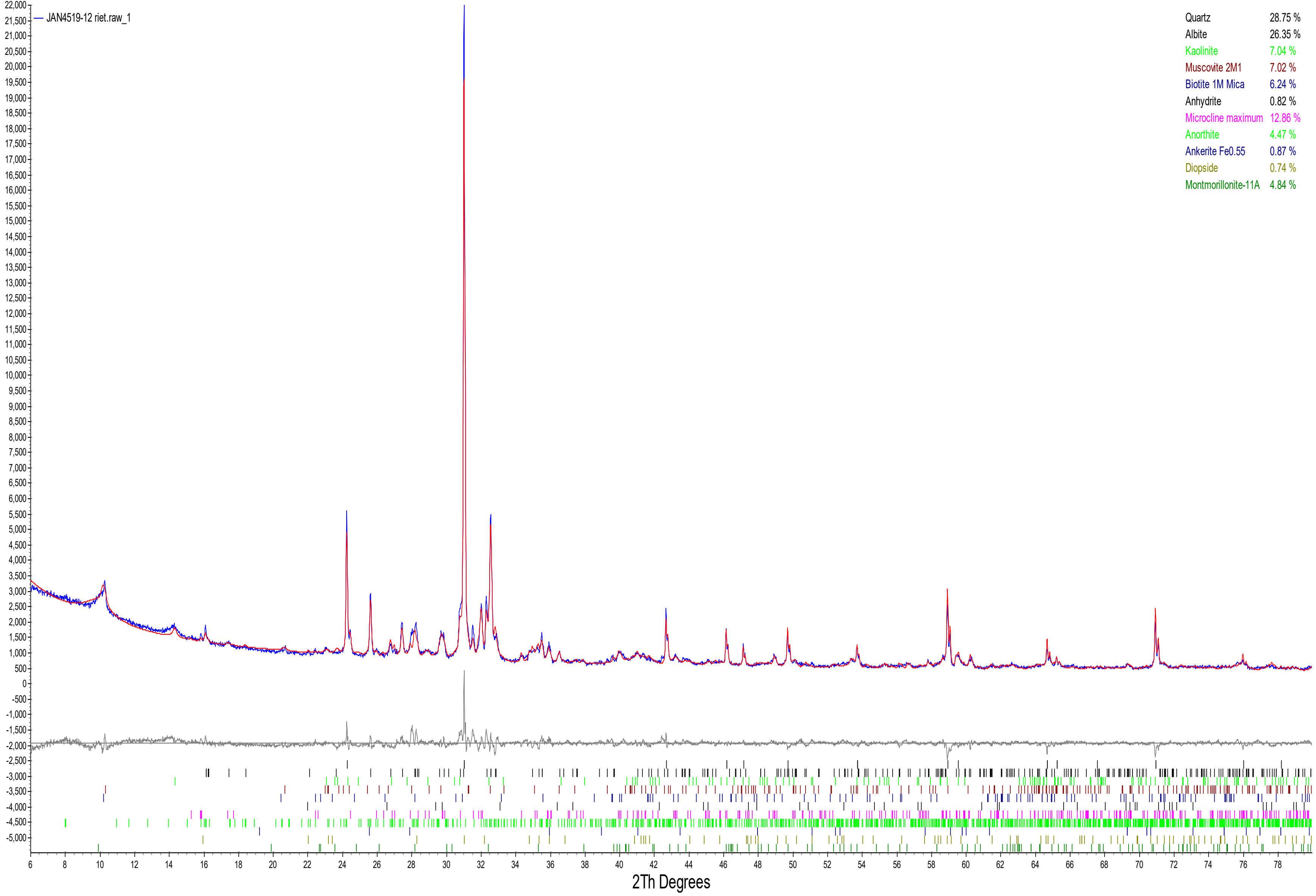
B-85 (23.5-25')



B-87 (33.5-35')


JAN4519-12 riet.raw_1
Quartz 28.75 %
Albite 26.35 %
Kaolinite 7.04 %
Muscovite 2M1 7.02 %
Biotite 1M Mica 6.24 %
Anhydrite 0.82 %
Microcline maximum 12.86 %
Anorthite 4.47 %
Ankerite Fe0.55 0.87 %
Diopside 0.74 %
Montmorillonite-11A 4.84 %
22,000
21,500
21,000
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18,500
18,000
17,500
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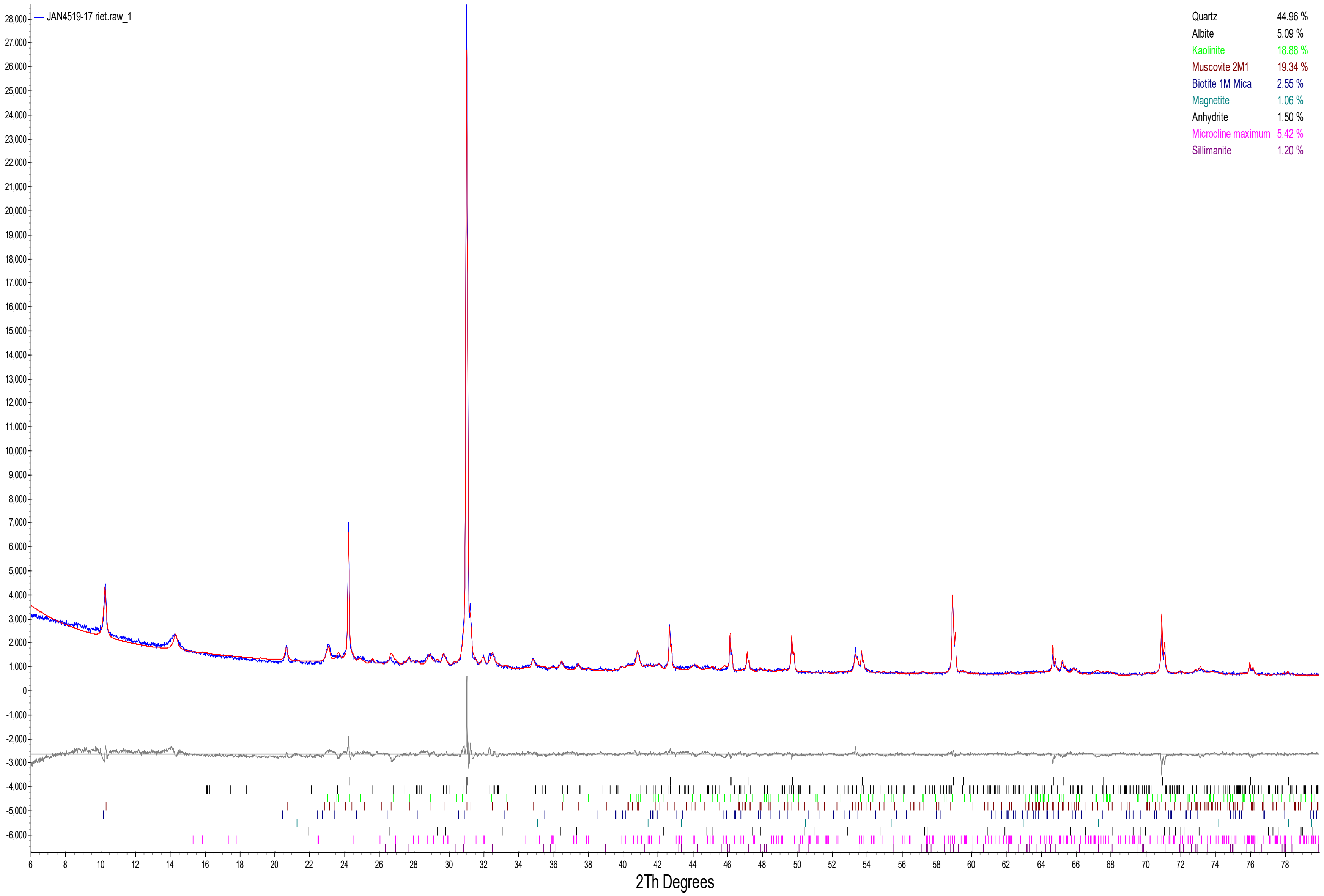
2Th Degrees

B-92 (6-8')


JAN4519-17 riet.raw_1
Quartz 44.96 %
Albite 5.09 %
Kaolinite 18.88 %
Muscovite 2M1 19.34 %
Biotite 1M Mica 2.55 %
Magnetite 1.06 %
Anhydrite 1.50 %
Microcline maximum 5.42 %
Sillimanite 1.20 %
28,000
27,000
26,000
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23,000
22,000
21,000
20,000
19,000
18,000
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-1,000
-2,000
-3,000
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42
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60
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68
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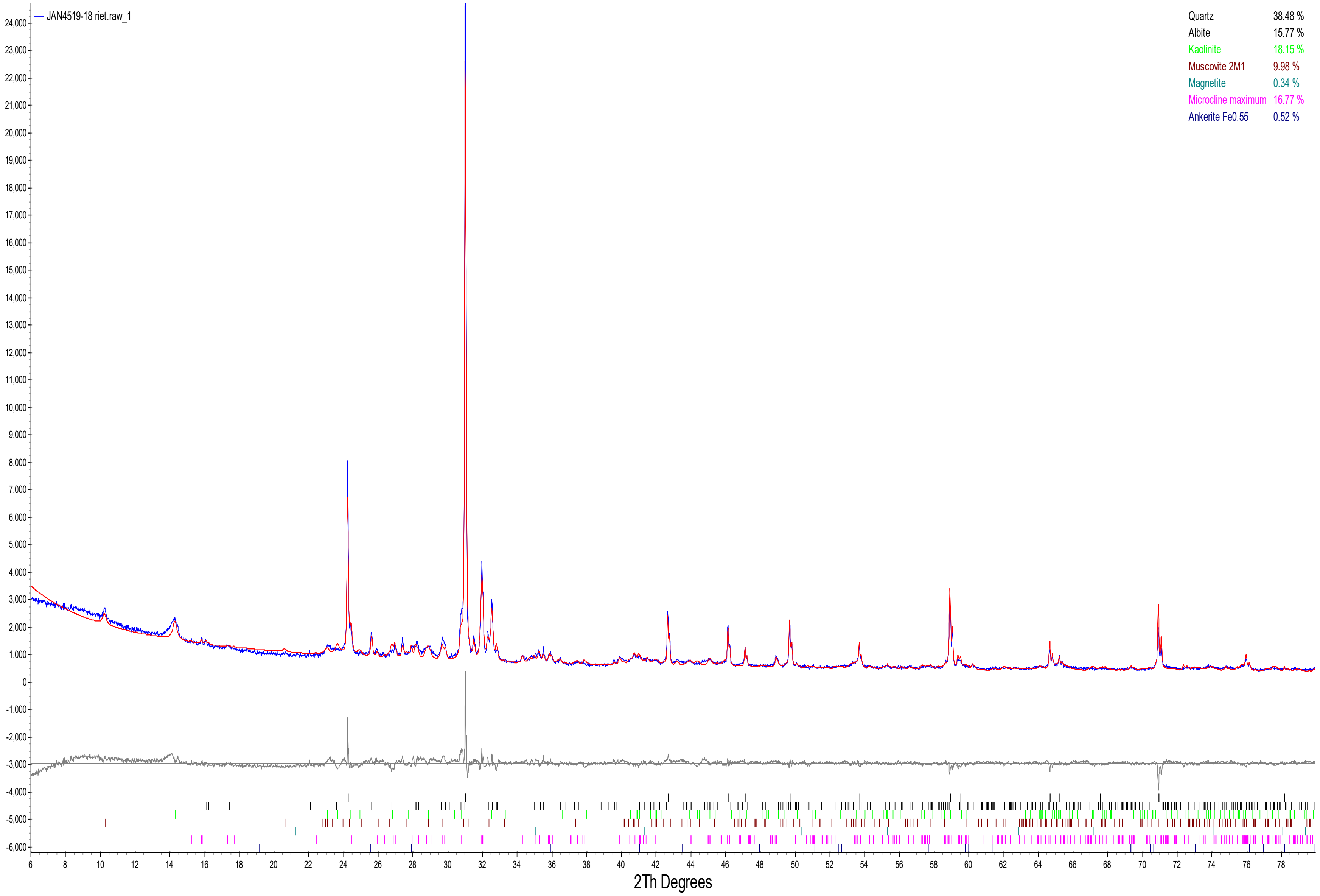
72
74
76
78
2Th Degrees

B-93 (6-8')


JAN4519-18 riet.raw_1
Quartz 38.48 %
Albite 15.77 %
Kaolinite 18.15 %
Muscovite 2M1 9.98 %
Magnetite 0.34 %
Microcline maximum 16.77 %
Ankerite Fe0.55 0.52 %
24,000
23,000
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20,000
19,000
18,000
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15,000
14,000
13,000
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72
74
76
78
2Th Degrees

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for: *Golder Associates*

Project Number/ LIMS No. *17836-01/MI4510-FEB20*

Sample Receipt: *February 13, 2020*

Sample Analysis: *February 13, 2020*

Reporting Date: *February 20, 2020*

Instrument: BRUKER AXS D8 Advance Diffractometer

Test Conditions: Co radiation, 35 kV, 40 mA
Regular Scanning: Step: 0.02°, Step time: 1s, 2θ range: 3-80°

Interpretations : PDF2/PDF4 powder diffraction databases issued by the International Center for Diffraction Data (ICDD). DiffracPlus Eva and Topas software.

Detection Limit : 0.5-2%. Strongly dependent on crystallinity.

Contents:

1) Method Summary
2) Quantitative XRD Results
3) XRD Pattern(s)

Kim Gibbs

Kim Gibbs, H.B.Sc., P.Geo.
Senior Mineralogist

Huyun Zhou

Huyun Zhou, Ph.D., P.Geo.
Senior Mineralogist

Method Summary

The Rietveld Method of Mineral Identification by XRD (ME-LR-MIN-MET-MN-D05) method used by SGS Minerals Services is accredited to the requirements of ISO/IEC 17025.

Mineral Identification and Interpretation:

Mineral identification and interpretation involves matching the diffraction pattern of an unknown material to patterns of single-phase reference materials. The reference patterns are compiled by the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD) database and released on software as Powder Diffraction Files (PDF).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Quantitative Rietveld Analysis is performed by using Topas 4.2 (Bruker AXS), a graphics based profile analysis program built around a non-linear least squares fitting system, to determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile until it matches the obtained experimental patterns.

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.05wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

Golder Associates
17836-01/MI4510-FEB20
02/20/2020

Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	B-94 FEB4510-01 (wt %)	DGWC-9 FEB4510-02 (wt %)	DGWC-10 FEB4510-03 (wt %)	DGWA-71 FEB4510-04 (wt %)	DGWA-70A FEB4510-05 (wt %)	A1: 3-6 FEB4510-06 (wt %)	A1: 16-17.5 FEB4510-07 (wt %)	A1: 19-20.5 FEB4510-08 (wt %)	A2: 3-6 FEB4510-09 (wt %)	A3: 3-6 FEB4510-10 (wt %)
Quartz	24.9	49.9	40.2	24.7	29.9	22.6	21.7	25.4	29.2	20.3
Albite	31.0	-	-	38.6	-	4.3	-	12.7	-	-
Microcline	21.1	1.1	1.0	7.1	2.5	0.8	-	11.5	-	2.9
Anorthite	5.8	3.0	3.8	5.0	3.1	-	4.3	-	-	-
Muscovite	6.8	19.6	17.4	4.3	19.2	6.5	4.7	3.6	2.5	-
Biotite	6.5	5.0	4.5	2.9	8.8	-	-	3.5	0.8	1.0
Epidote	3.4	-	-	2.3	4.5	-	-	0.7	4.1	4.2
Diopside	0.6	0.9	1.2	1.9	3.4	-	-	0.6	7.4	5.8
Kaolinite	-	18.5	26.0	12.4	-	-	-	18.6	4.3	2.7
Pyrite	-	0.1	-	-	-	-	0.7	-	-	-
Magnetite	-	0.9	1.6	-	1.4	7.0	6.2	1.3	11.0	10.0
Anhydrite	-	0.5	-	-	-	-	-	3.0	0.0	-
Magnesite	-	0.6	0.2	-	0.4	-	-	-	-	-
Hematite	-	0.1	2.6	-	2.7	5.2	4.6	1.3	9.8	7.7
Almandine	-	-	1.4	-	-	-	-	-	-	-
Palygorskite	-	-	-	0.1	0.2	-	-	-	-	-
Calcite	-	-	-	0.6	-	-	-	-	-	1.0
Andesine	-	-	-	-	21.9	-	-	-	-	-
Magnesiohornblende	-	-	-	-	2.3	-	-	-	-	-
Mullite	-	-	-	-	-	53.7	57.0	17.8	30.7	44.5
Rutile	-	-	-	-	-	-	0.8	-	0.2	-
TOTAL	100	100	100	100	100	100	100	100	100	100

Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

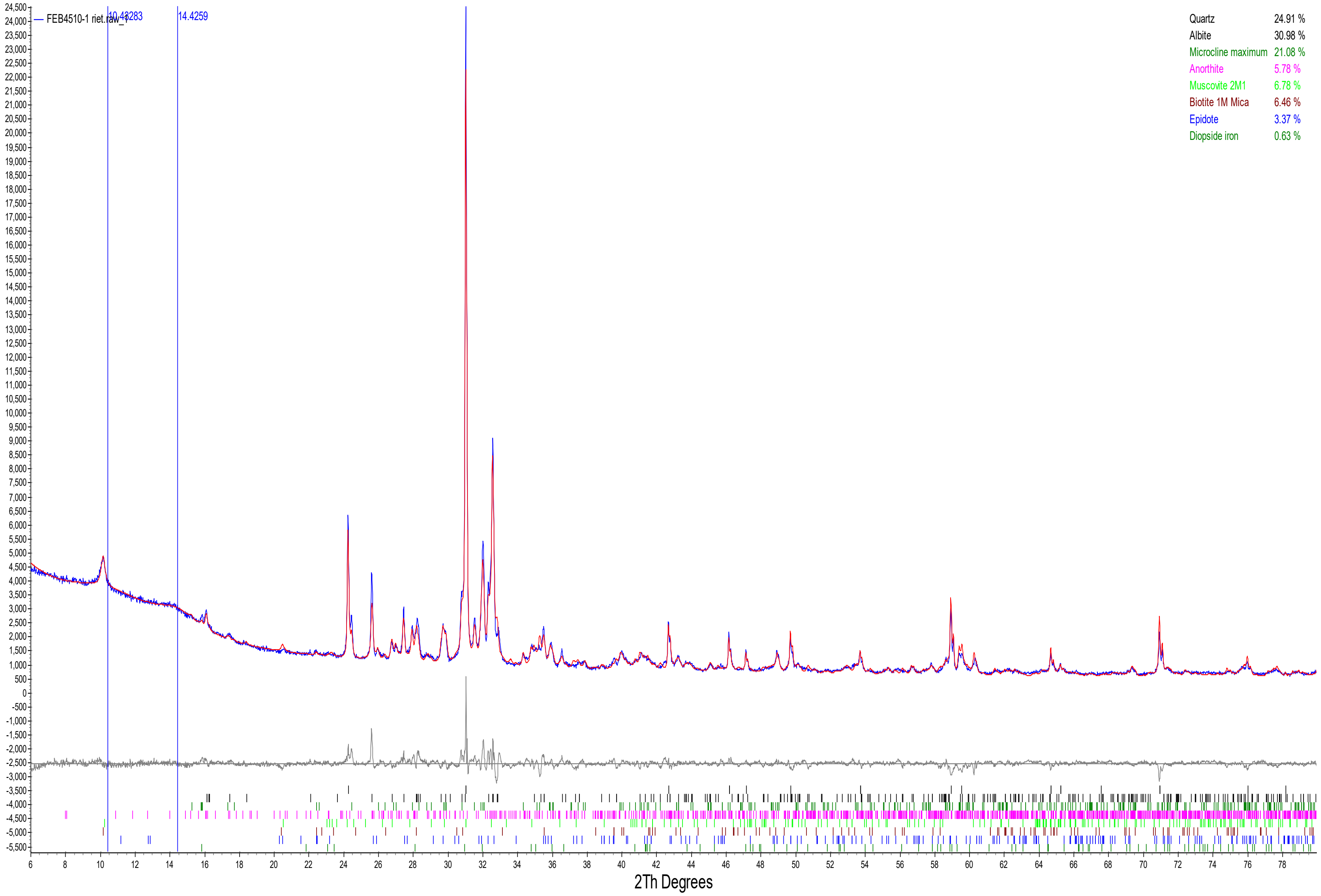
Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

The weight percent quantities indicated have been normalized to a sum of 100%. The quantity of amorphous material has not been determined.

Mineral List

Mineral/Compound	Formula
Quartz	SiO_2
Albite	$NaAlSi_3O_8$
Microcline	$KAlSi_3O_8$
Anorthite	$CaAl_2Si_2O_8$
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$
Biotite	$K(Mg,Fe)_3(AlSi_3O_{10})(OH)_2$
Epidote	$Ca_2(Al,Fe)Al_2O(SiO_4)(Si_2O_7)(OH)$
Diopside	$CaMgSi_2O_6$
Kaolinite	$Al_2Si_2O_5(OH)_4$
Pyrite	FeS_2
Magnetite	Fe_3O_4
Anhydrite	$CaSO_4$
Magnesite	$MgCO_3$
Hematite	Fe_2O_3
Almandine	$Fe_3Al_2Si_3O_{12}$
Palygorskite	$(Mg,Al)_2Si_4O_{10}(OH)\cdot 4H_2O$
Calcite	$CaCO_3$
Andesine	$Na_{0.685}Ca_{0.347}Al_{1.46}Si_{2.54}O_8$
Magnesiohornblende	$Ca_2(Mg,Fe)_4Al(Si_7Al)O_{22}(OH,F)_2$
Mullite	$\sim Al_6Si_3O_{15}$
Rutile	TiO_2

B-94


FEB4510-1 riet.raw_1
10.48283
14.4259
Quartz 24.91 %
Albite 30.98 %
Microcline maximum 21.08 %
Anorthite 5.78 %
Muscovite 2M1 6.78 %
Biotite 1M Mica 6.46 %
Epidote 3.37 %
Diopside iron 0.63 %
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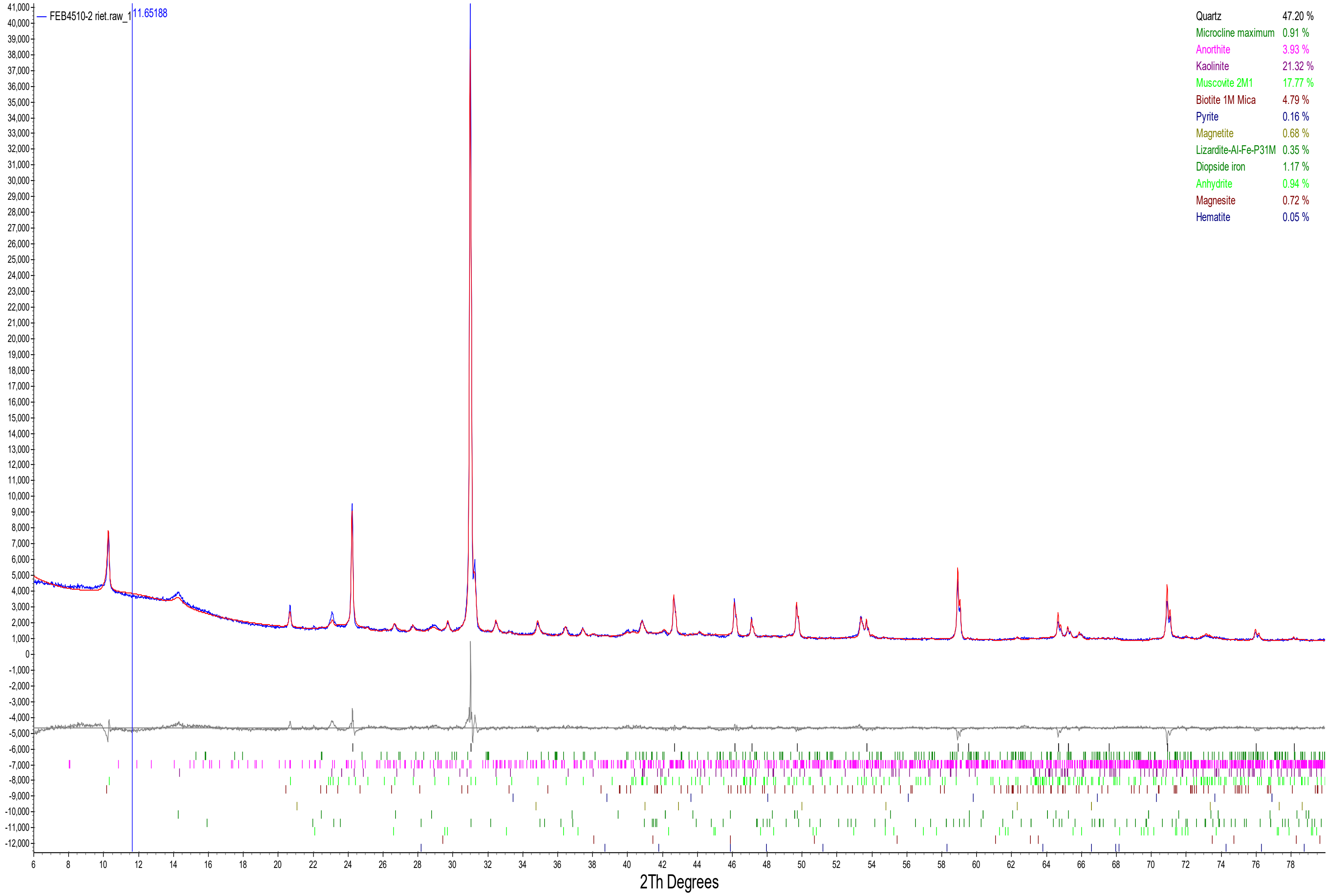
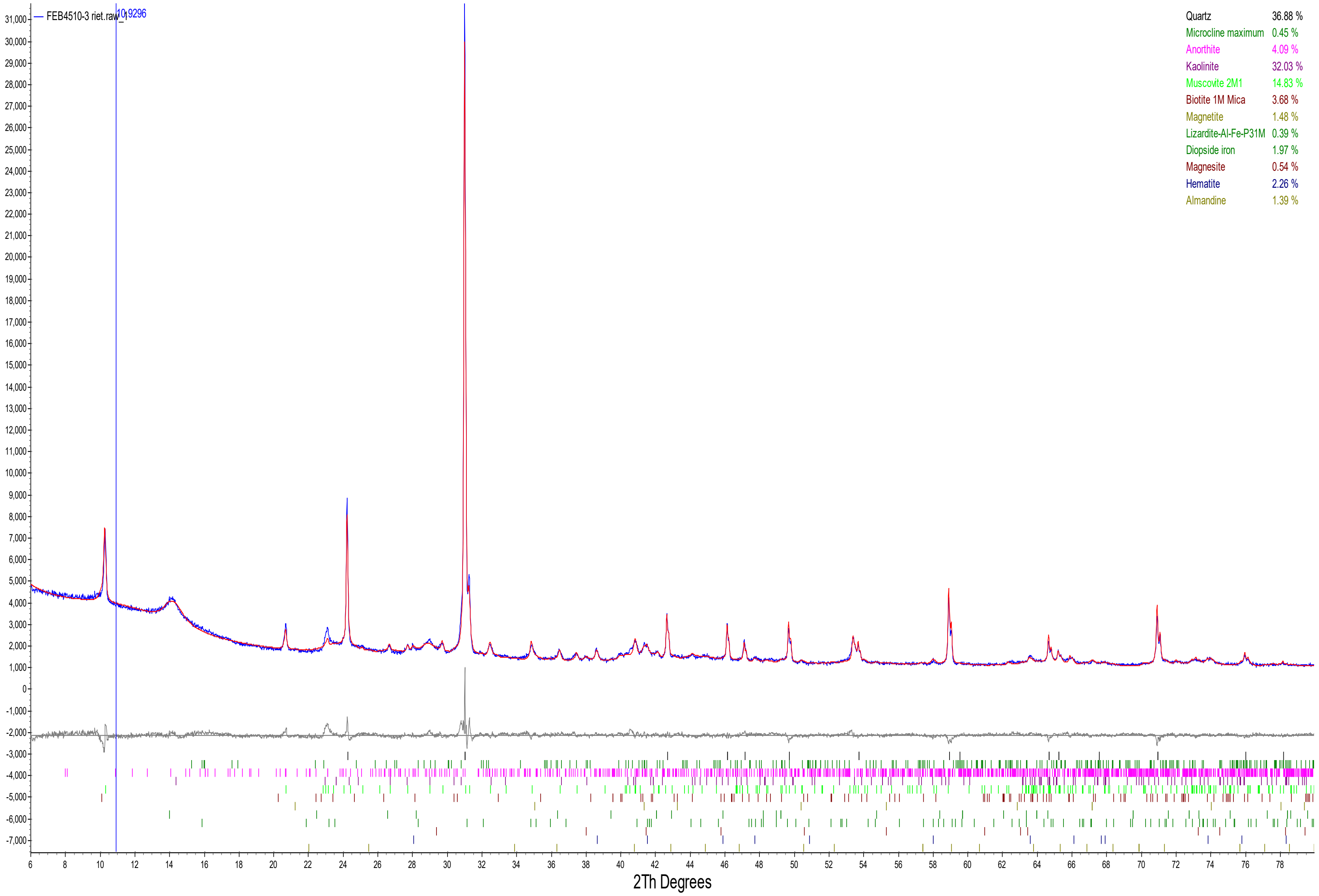
2Th Degrees

Golder Associates
17836-01/MI4510-FEB20
02/20/2020

DGWC-9



DGWC-10


FEB4510-3 riet.raw_
10.9296
Quartz 36.88 %
Microcline maximum 0.45 %
Anorthite 4.09 %
Kaolinite 32.03 %
Muscovite 2M1 14.83 %
Biotite 1M Mica 3.68 %
Magnetite 1.48 %
Lizardite-Al-Fe-P31M 0.39 %
Diopside iron 1.97 %
Magnesite 0.54 %
Hematite 2.26 %
Almandine 1.39 %
31,000
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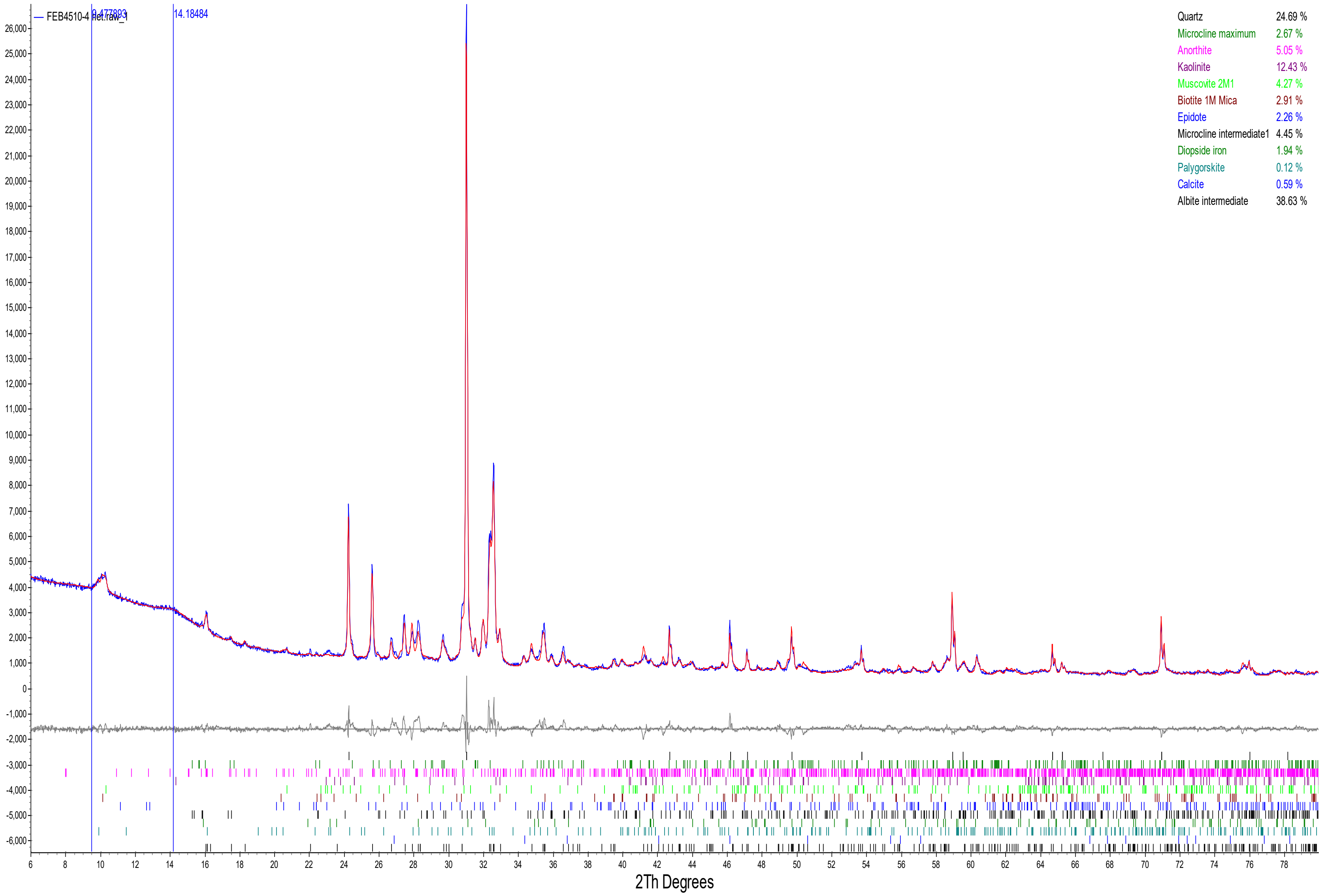
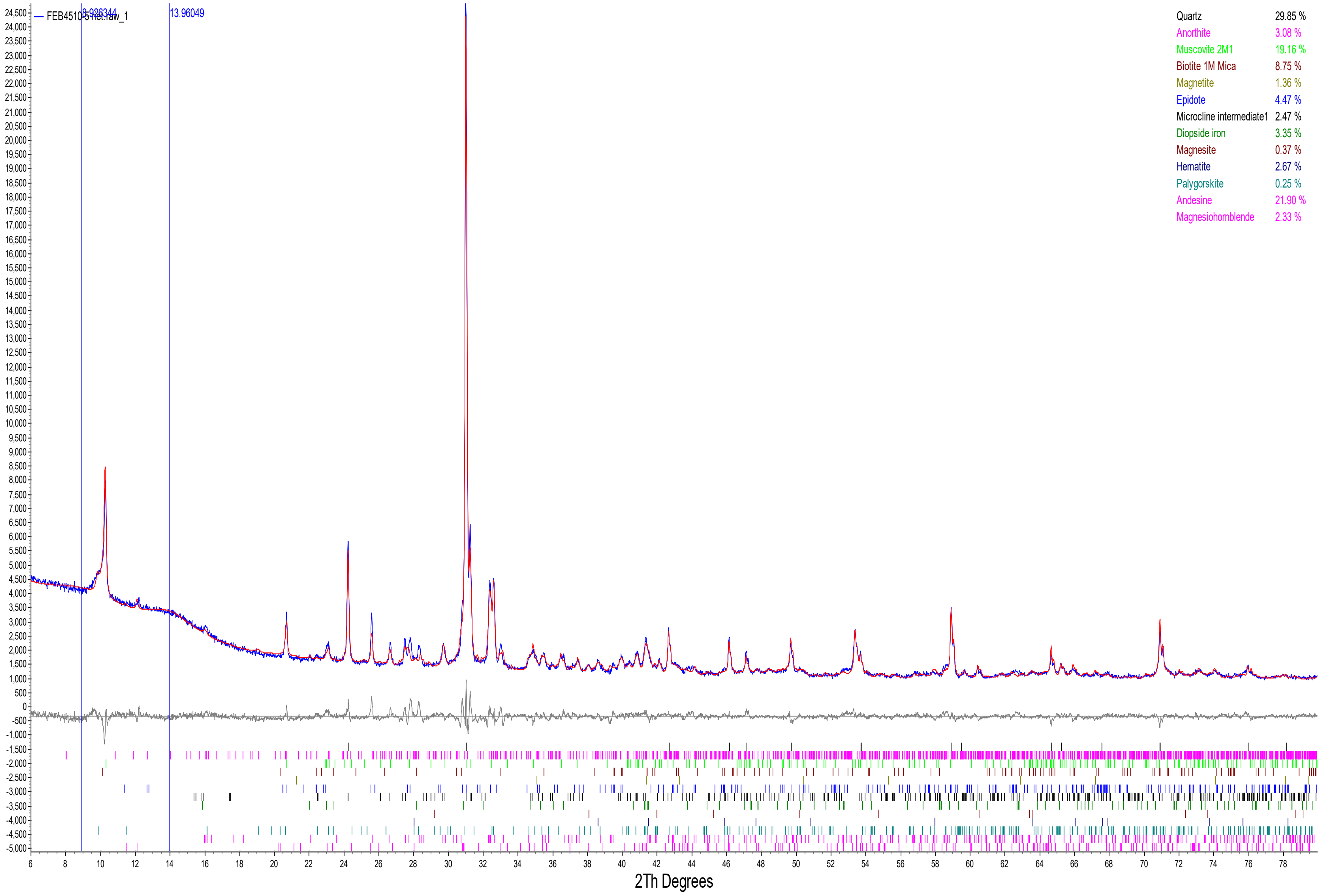
2Th Degrees

Golder Associates
17836-01/MI4510-FEB20
02/20/2020

DGWA-71



DGWA-70A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8.926344
13.96049
Quartz 29.85 %
Anorthite 3.08 %
Muscovite 2M1 19.16 %
Biotite 1M Mica 8.75 %
Magnetite 1.36 %
Epidote 4.47 %
Microcline intermediate1 2.47 %
Diopside iron 3.35 %
Magnesite 0.37 %
Hematite 2.67 %
Palygorskite 0.25 %
Andesine 21.90 %
Magnesiohornblende 2.33 %
24,500
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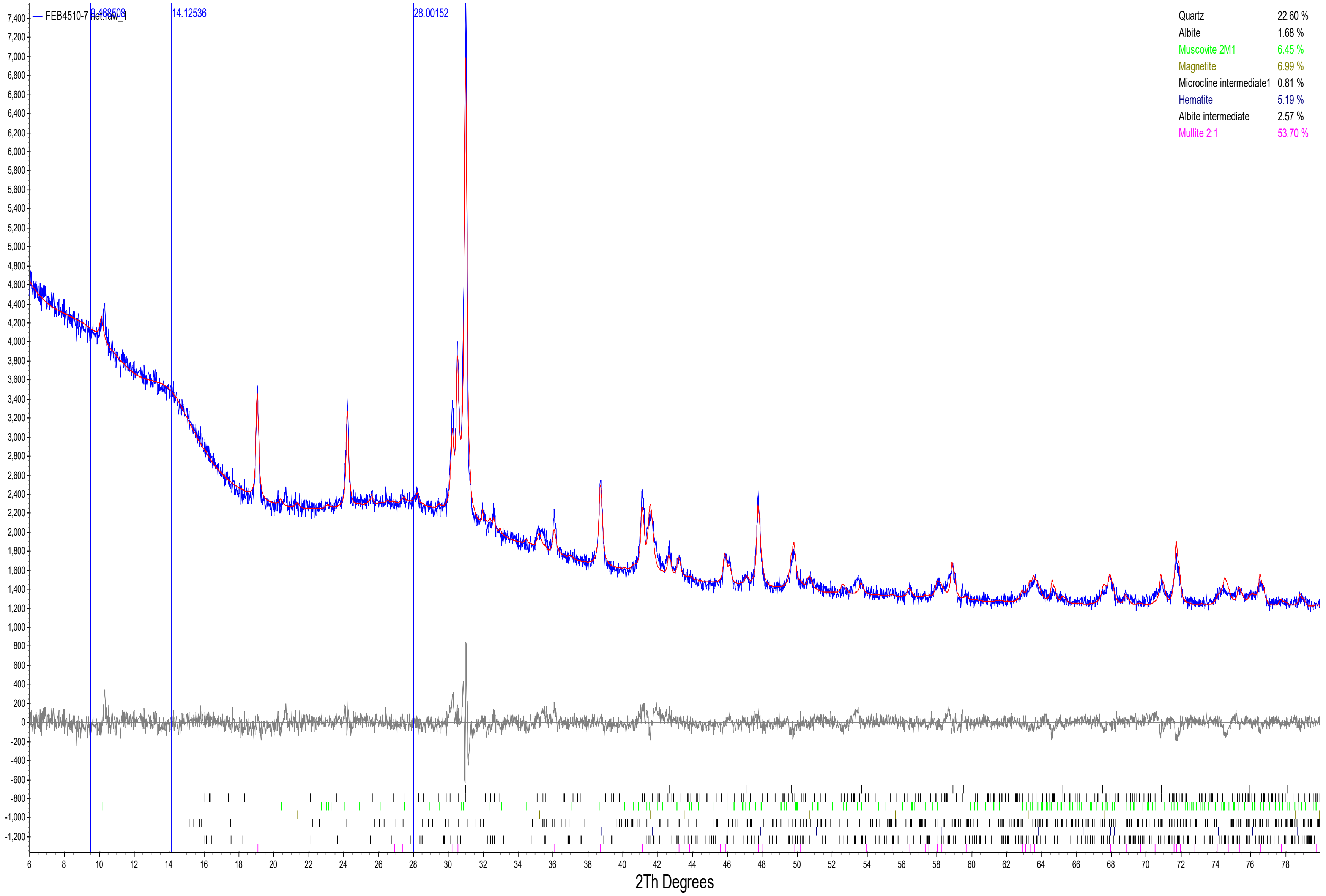
2Th Degrees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9.468508
14.12536
28.00152
Quartz 22.60 %
Albite 1.68 %
Muscovite 2M1 6.45 %
Magnetite 6.99 %
Microcline intermediate1 0.81 %
Hematite 5.19 %
Albite intermediate 2.57 %
Mullite 2:1 53.70 %
7,400
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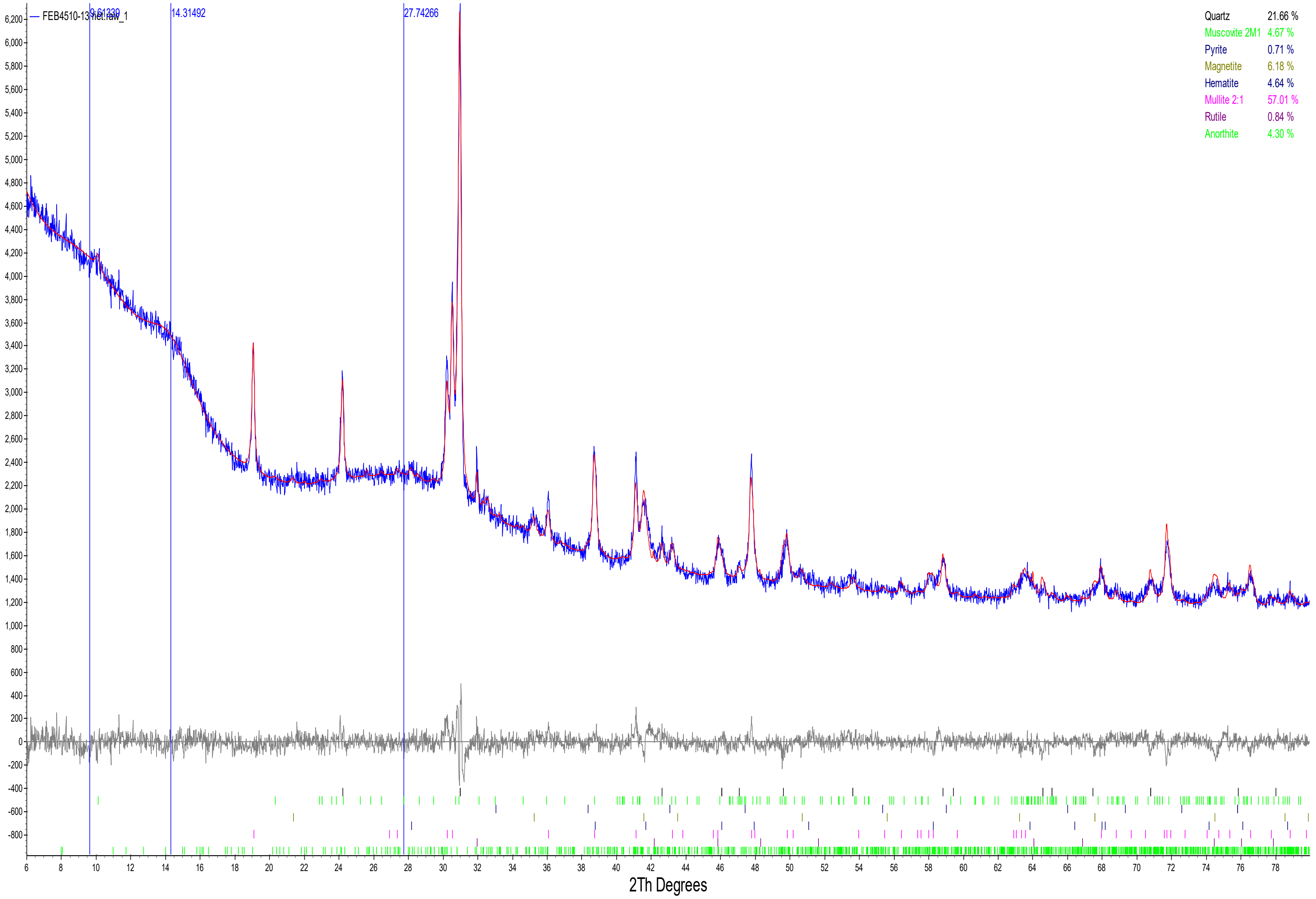
2Th Degrees

A1: 16-17.5


FEB4510-13 net.raw_1
9.61339
14.31492
27.74266
Quartz 21.66 %
Muscovite 2M1 4.67 %
Pyrite 0.71 %
Magnetite 6.18 %
Hematite 4.64 %
Mullite 2:1 57.01 %
Rutile 0.84 %
Anorthite 4.30 %
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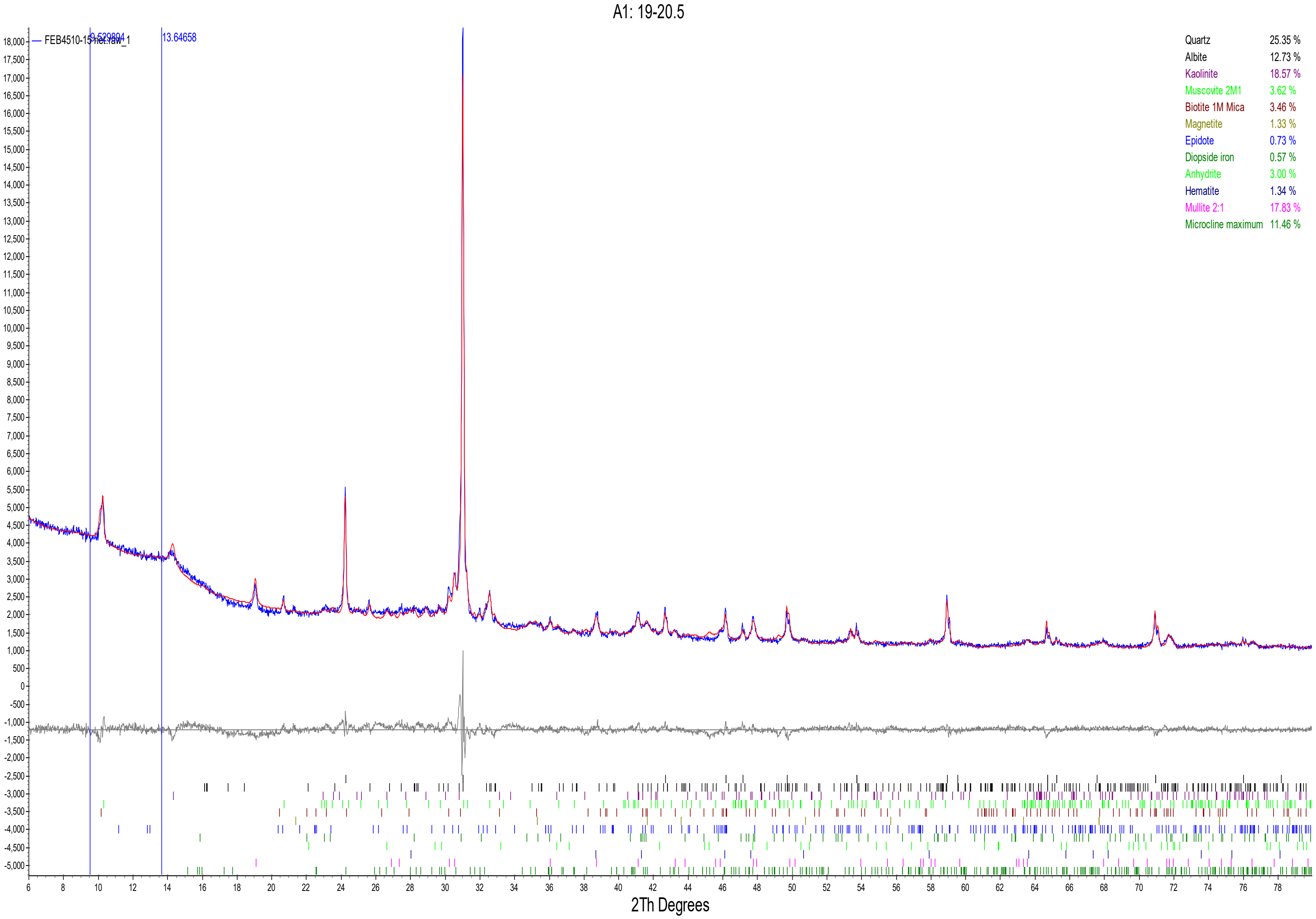
2Th Degrees



A1: 19-20.5

FEB4510-15 riet.raw_1
9.529894
13.64658
Quartz 25.35 %
Albite 12.73 %
Kaolinite 18.57 %
Muscovite 2M1 3.62 %
Biotite 1M Mica 3.46 %
Magnetite 1.33 %
Epidote 0.73 %
Diopside iron 0.57 %
Anhydrite 3.00 %
Hematite 1.34 %
Mullite 2:1 17.83 %
Microcline maximum 11.46 %
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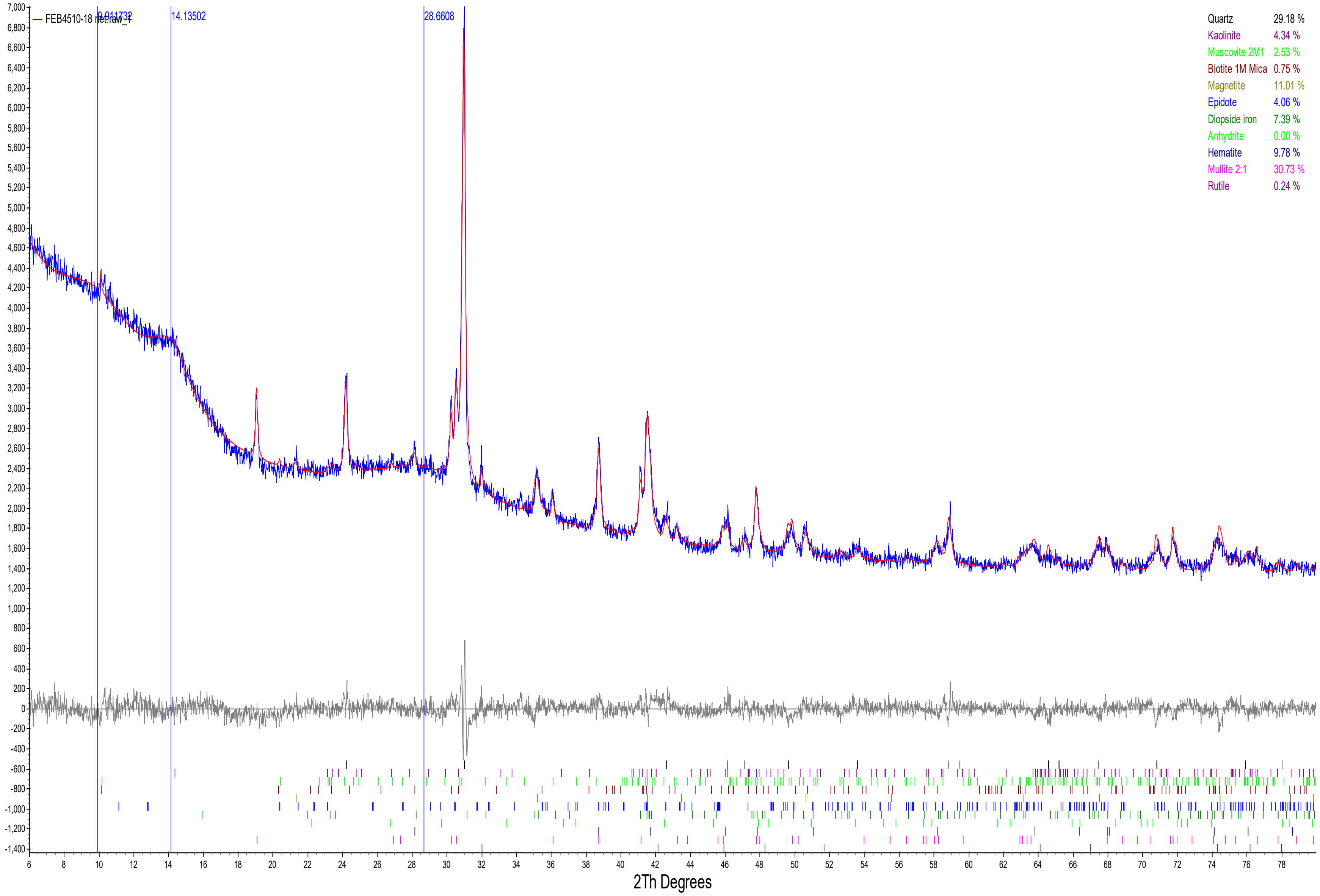
2Th Degrees

A2: 3-6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9.911732
14.13502
28.6608
Quartz 29.18 %
Kaolinite 4.34 %
Muscovite 2M1 2.53 %
Biotite 1M Mica 0.75 %
Magnetite 11.01 %
Epidote 4.06 %
Diopside iron 7.39 %
Anhydrite 0.00 %
Hematite 9.78 %
Mullite 2:1 30.73 %
Rutile 0.24 %
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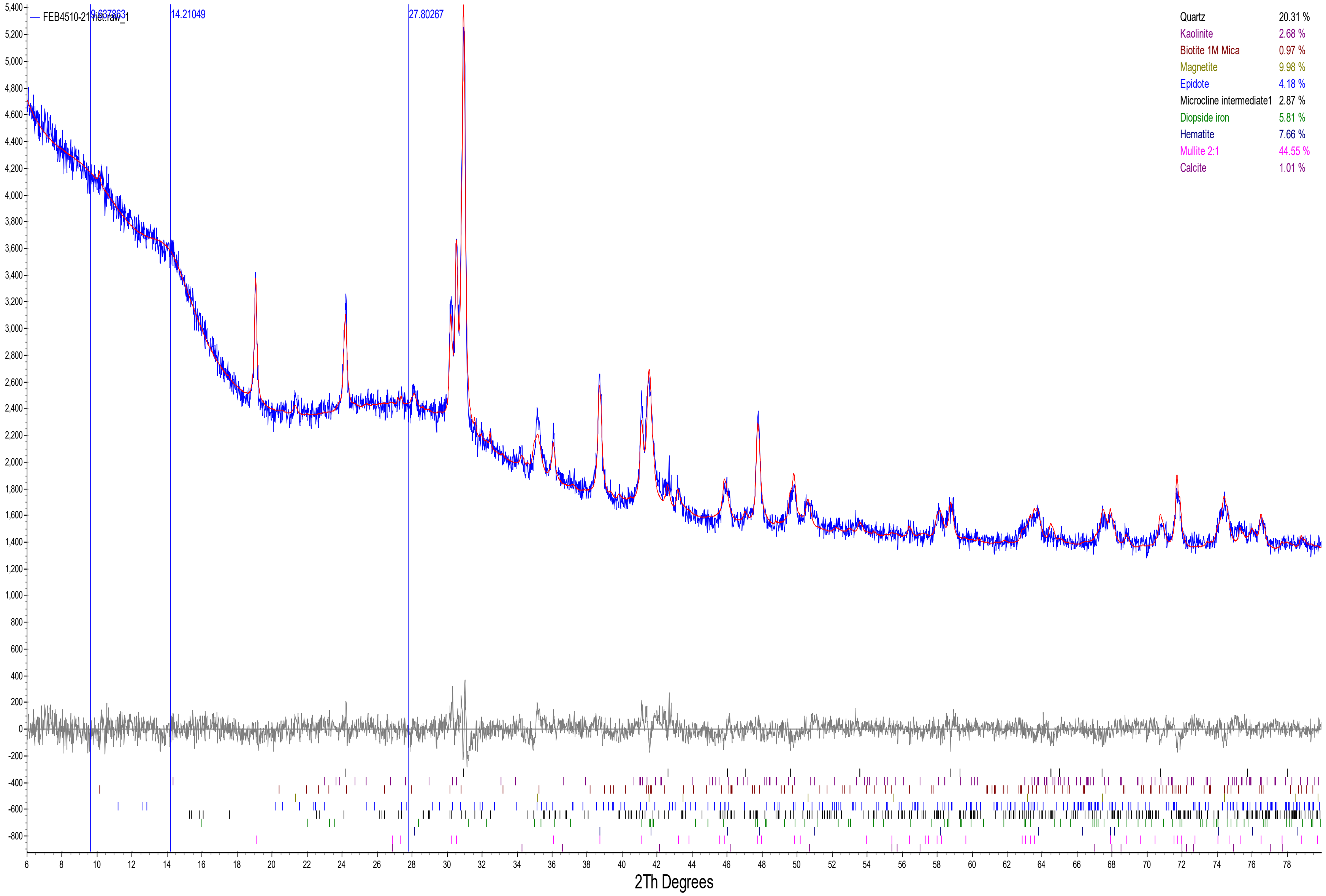
2Th Degrees

A3: 3-6


FEB4510-21 net.raw_1
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14.21049
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Quartz 20.31 %
Kaolinite 2.68 %
Biotite 1M Mica 0.97 %
Magnetite 9.98 %
Epidote 4.18 %
Microcline intermediate1 2.87 %
Diopside iron 5.81 %
Hematite 7.66 %
Mullite 2:1 44.55 %
Calcite 1.01 %
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2Th Degrees

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for: *Golder Associates Inc*

Project Number/ LIMS No. *18502-05/MI5010-MAY22*

Sample Receipt: *May 8, 2022*

Sample Analysis: *May 13, 2022*

Reporting Date: *June 8, 2022*

Instrument: BRUKER AXS D8 Advance Diffractometer

Test Conditions: Co radiation, 35 kV, 40 mA; Detector: LYNXEYE
Regular Scanning: Step: 0.02°, Step time: 0.75s, 2θ range: 6-80°

Interpretations : PDF2/PDF4 powder diffraction databases issued by the International Center for Diffraction Data (ICDD). DiffracPlus Eva and Topas software.

Detection Limit : 0.5-2%. Strongly dependent on crystallinity.

Contents:

1) Method Summary
2) Quantitative XRD Results
3) XRD Pattern(s)

Kim Gibbs

Kim Gibbs, H.B.Sc., P.Geo.
Senior Mineralogist

Huyun Zhou

Huyun Zhou, Ph.D., P.Geo.
Senior Mineralogist

ACCREDITATION: SGS Natural Resources Lakefield is accredited to the requirements of ISO/IEC 17025 for specific tests as listed on our scope of accreditation, including geochemical, mineralogical and trade mineral tests. To view a list of the accredited methods, please visit the following website and search SGS Canada Inc. - Minerals: https://www.scc.ca/en/search/palcan.

Method Summary

The Rietveld Method of Mineral Identification by XRD (ME-LR-MIN-MET-MN-D05) method used by SGS Natural Resources is accredited to the requirements of ISO/IEC 17025.

Mineral Identification and Interpretation:

Mineral identification and interpretation involves matching the diffraction pattern of an unknown material to patterns of single-phase reference materials. The reference patterns are compiled by the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD) database and released on software as Powder Diffraction Files (PDF).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Quantitative Rietveld Analysis is performed by using Topas 4.2 (Bruker AXS), a graphics based profile analysis program built around a non-linear least squares fitting system, to determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile until it matches the obtained experimental patterns.

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.05wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

Golder Associates Inc
18502-05/MI5010-MAY22
08-Jun-22

Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	B-113D-19-20' MAY5010-01 (wt %)	B-104D-55-56' MAY5010-02 (wt %)	B-115D-75-76' MAY5010-03 (wt %)	B-47-11-12' MAY5010-04 (wt %)	B-48-23-24' MAY5010-05 (wt %)
Quartz	69.5	32.1	32.8	25.7	45.6
Lizardite	0.6	-	-	-	-
Rutile	0.9	1.6	1.7	1.0	1.4
Magnetite	1.0	-	-	-	-
Muscovite	7.4	12.1	17.1	38.9	1.8
Kaolinite	8.0	-	-	-	-
Pyrite	0.2	-	-	-	-
Hematite	0.3	-	0.2	0.7	-
Phlogopite	6.0	-	-	-	-
Albite	5.4	32.9	28.9	6.1	36.9
Illite-Montmorillonite	0.8	-	-	-	-
Chlorite	-	3.9	6.1	5.0	2.3
Ilmenite	-	0.8	0.7	-	0.5
Biotite	-	10.7	9.8	9.8	7.1
Orthoclase	-	1.9	2.6	3.8	1.4
Diopside	-	3.8	-	5.2	3.0
Stilpnomelane	-	-	-	2.0	-
Magnesite	-	-	-	1.8	-
Actinolite	-	-	-	-	-
Gypsum	-	-	-	-	-
Gibbsite	-	-	-	-	-
Spessartine	-	-	-	-	-
Calcite	-	-	-	-	-
TOTAL	100	100	100	100	100

Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

The weight percent quantities indicated have been normalized to a sum of 100%.

The quantity of amorphous material has not been determined.

Golder Associates Inc
18502-05/MI5010-MAY22
08-Jun-22

Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	**DGWC-121-38-40'** **MAY5010-06** (wt %)	**DGWC-121-49-50'** **MAY5010-07** (wt %)	**B-122D-39-40'** **MAY5010-08** (wt %)	**B-123D-27-28'** **MAY5010-09** (wt %)	**B-123D-145'** **MAY5010-10** (wt %)
Quartz	45.1	45.9	66.2	35.5	37.6
Lizardite	0.9	-	0.8	1.5	-
Rutile	1.2	0.4	-	1.5	0.8
Magnetite	1.9	0.5	0.8	-	-
Muscovite	18.4	10.6	12.1	7.8	0.6
Kaolinite	-	-	-	30.7	-
Pyrite	-	0.2	-	-	-
Hematite	1.4	-	-	-	-
Phlogopite	5.0	10.4	-	5.8	-
Albite	13.1	24.1	4.8	3.2	41.5
Illite-Montmorillonite	-	-	-	3.3	-
Chlorite	5.5	3.0	1.1	-	0.4
Ilmenite	0.7	1.0	-	-	0.8
Biotite	-	-	2.6	-	10.2
Orthoclase	5.4	1.2	5.2	10.1	1.4
Diopside	1.3	2.6	-	0.6	1.7
Stilpnomelane	-	-	2.2	-	-
Magnesite	-	-	-	-	-
Actinolite	-	-	1.0	-	0.9
Gypsum	-	-	0.4	-	-
Gibbsite	-	-	2.9	-	-
Spessartine	-	-	-	-	2.7
Calcite	-	-	-	-	1.5
TOTAL	100	100	100	100	100

Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

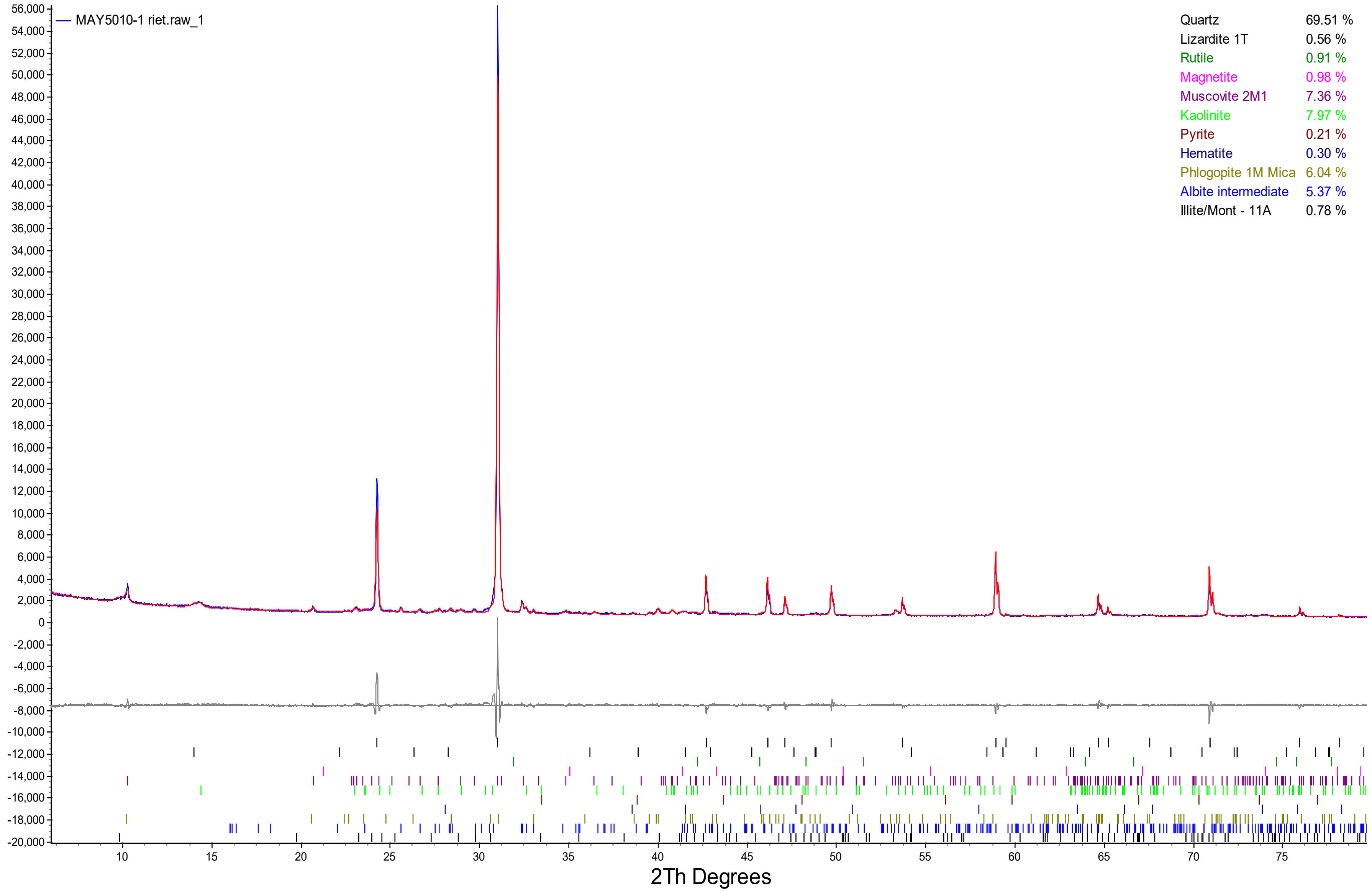
The weight percent quantities indicated have been normalized to a sum of 100%.

The quantity of amorphous material has not been determined.

Mineral List

Mineral/Compound	**Formula**
Quartz	SiO_2
Lizardite	$Mg_3Si_2O_5(OH)_4$
Rutile	TiO_2
Magnetite	Fe_3O_4
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$
Kaolinite	$Al_2Si_2O_5(OH)_4$
Pyrite	FeS_2
Hematite	Fe_2O_3
Phlogopite	$KMg_3(AlSi_3O_{10})(OH)_2$
Albite	$NaAlSi_3O_8$
Illite-Montmorillonite	$KAl_4(Si,Al)_8O_{20}(OH)_4 \cdot 8H_2O$
Chlorite	$(Fe,(Mg,Mn)_5,Al)(Si_3Al)O_{10}(OH)_8$
Ilmenite	$FeTiO_3$
Biotite	$K(Mg,Fe)_3(AlSi_3O_{10})(OH)_2$
Orthoclase	$KAlSi_3O_8$
Diopside	$CaMgSi_2O_6$
Stilpnomelane	$K(Fe^{2+},Mg,Fe^{3+})_8(Si,Al)_{12}(O,OH)_{27} \cdot n(H_2O)$
Magnesite	$MgCO_3$
Actinolite	$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$
Gypsum	$CaSO_4 \cdot 2H_2O$
Gibbsite	$Al(OH)_3$
Spessartine	$Mn_3Al_2Si_3O_{12}$
Calcite	$CaCO_3$

B-113D-19-20'



Quartz	69.51 %
Lizardite 1T	0.56 %
Rutile	0.91 %
Magnetite	0.98 %
Muscovite 2M1	7.36 %
Kaolinite	7.97 %
Pyrite	0.21 %
Hematite	0.30 %
Phlogopite 1M Mica	6.04 %
Albite intermediate	5.37 %
Illite/Mont - 11A	0.78 %

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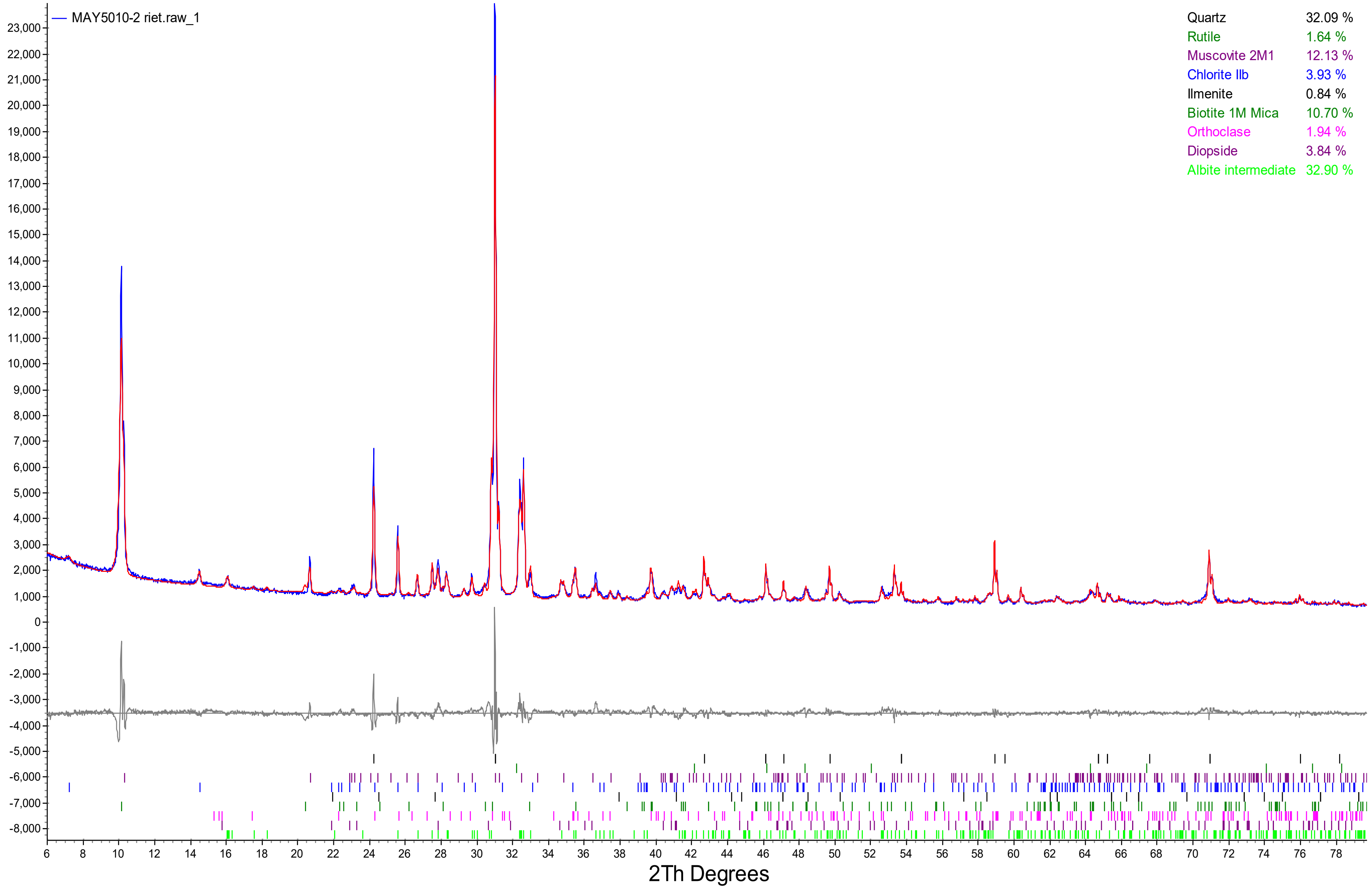
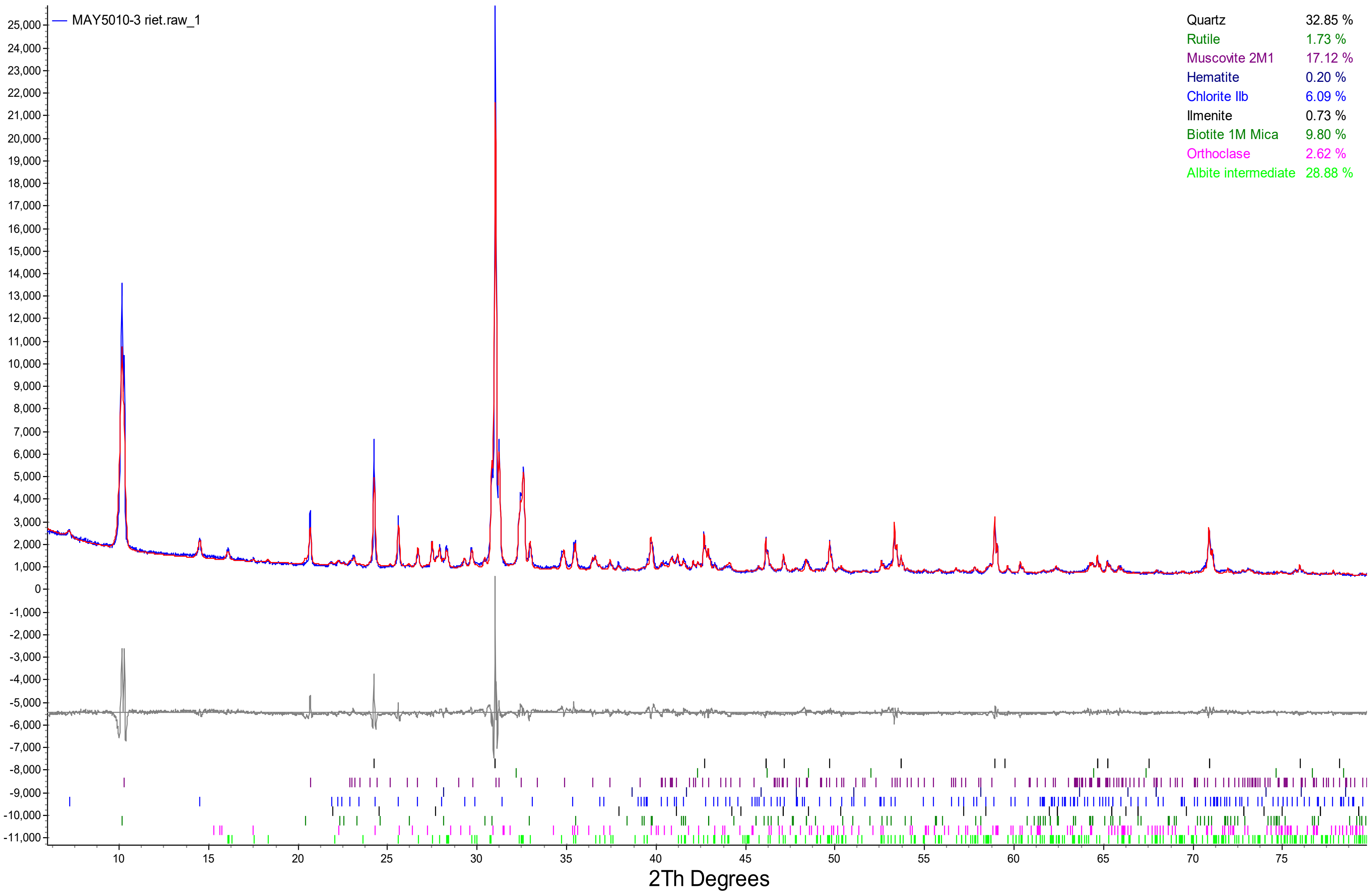
18502-05/MI5010-MAY22
08-Jun-22

B-104D-55-56'



B-115D-75-76'


MAY5010-3 riet.raw_1
Quartz 32.85 %
Rutile 1.73 %
Muscovite 2M1 17.12 %
Hematite 0.20 %
Chlorite IIb 6.09 %
Ilmenite 0.73 %
Biotite 1M Mica 9.80 %
Orthoclase 2.62 %
Albite intermediate 28.88 %
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30
35
40
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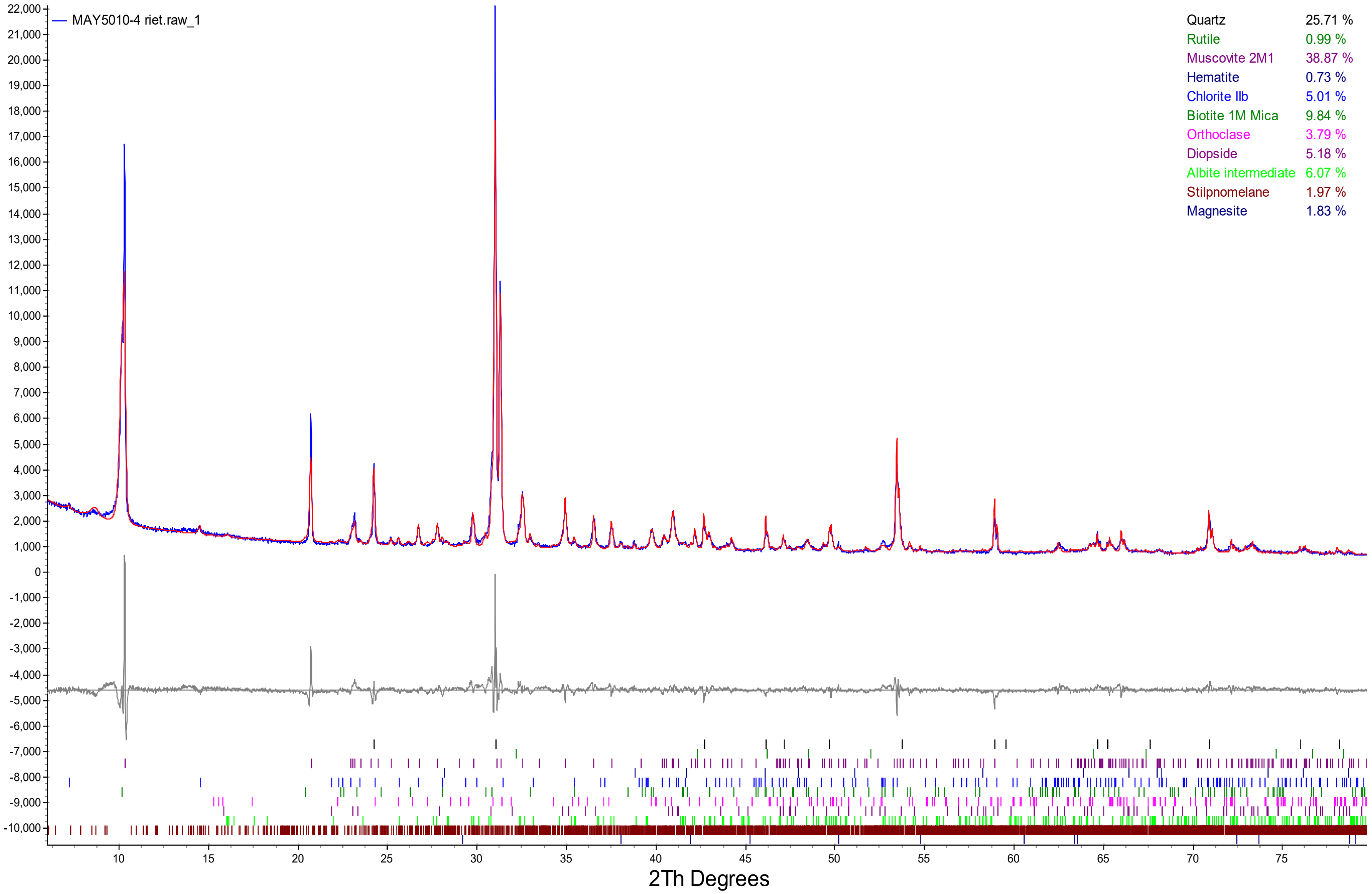
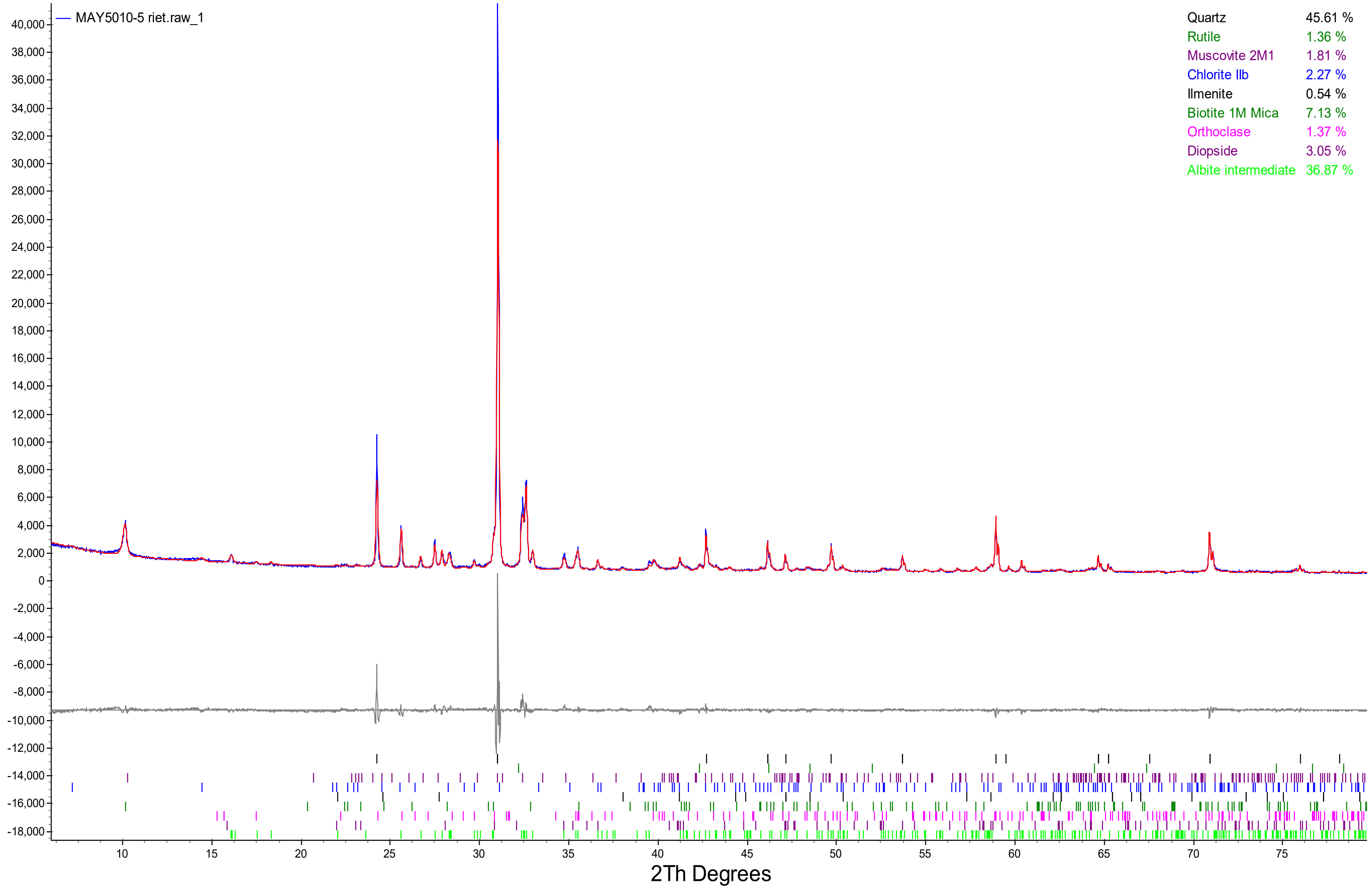
60
65
70
75
2Th Degrees

Golder Associates Inc
18502-05/MI5010-MAY22
08-Jun-22

B-47-11-12'



B-48-23-24'


MAY5010-5 riet.raw_1
Quartz 45.61 %
Rutile 1.36 %
Muscovite 2M1 1.81 %
Chlorite IIb 2.27 %
Ilmenite 0.54 %
Biotite 1M Mica 7.13 %
Orthoclase 1.37 %
Diopside 3.05 %
Albite intermediate 36.87 %
40,000
38,000
36,000
34,000
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28,000
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24,000
22,000
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14,000
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6,000
4,000
2,000
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-2,000
-4,000
-6,000
-8,000
-10,000
-12,000
-14,000
-16,000
-18,000
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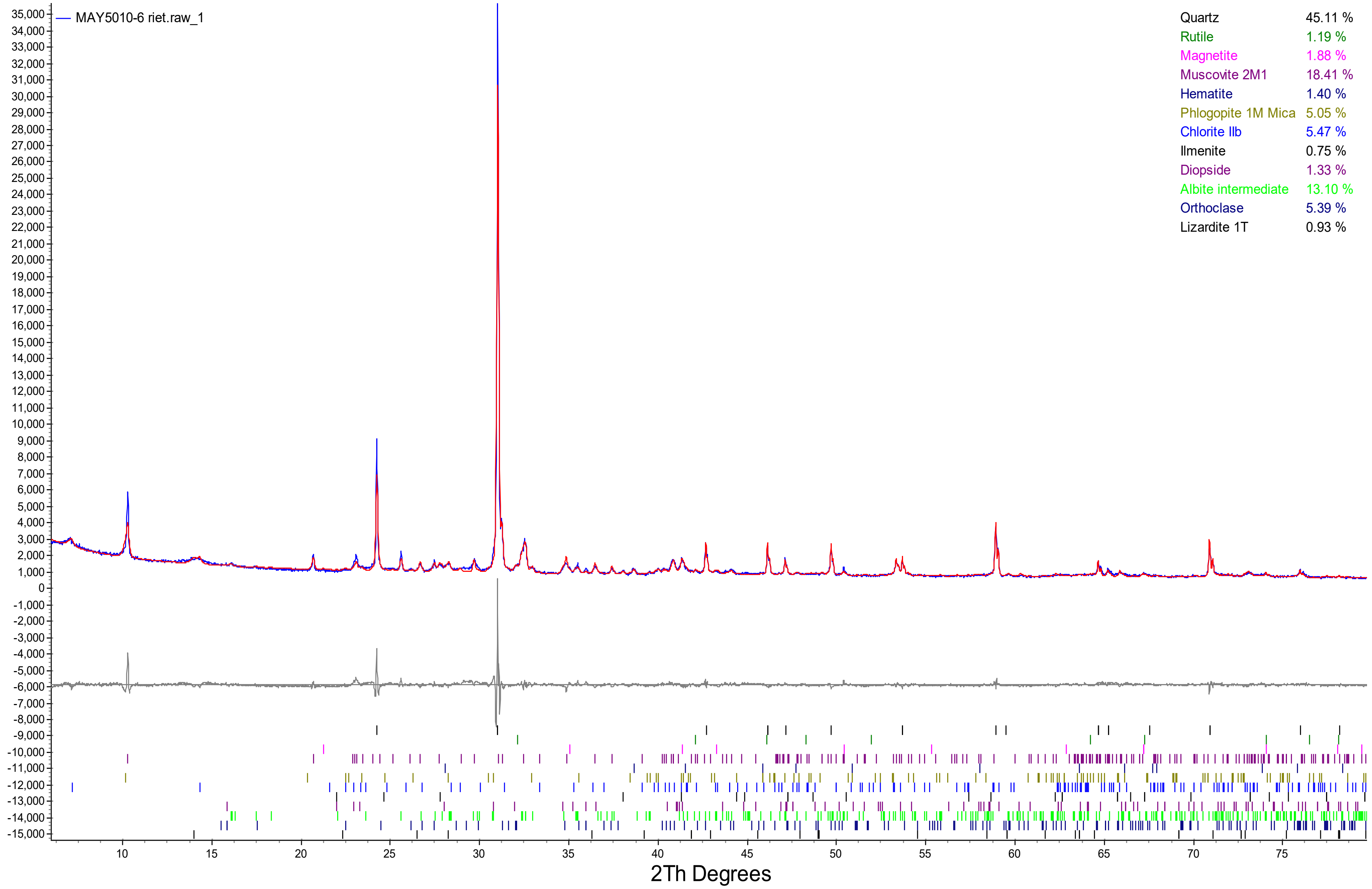
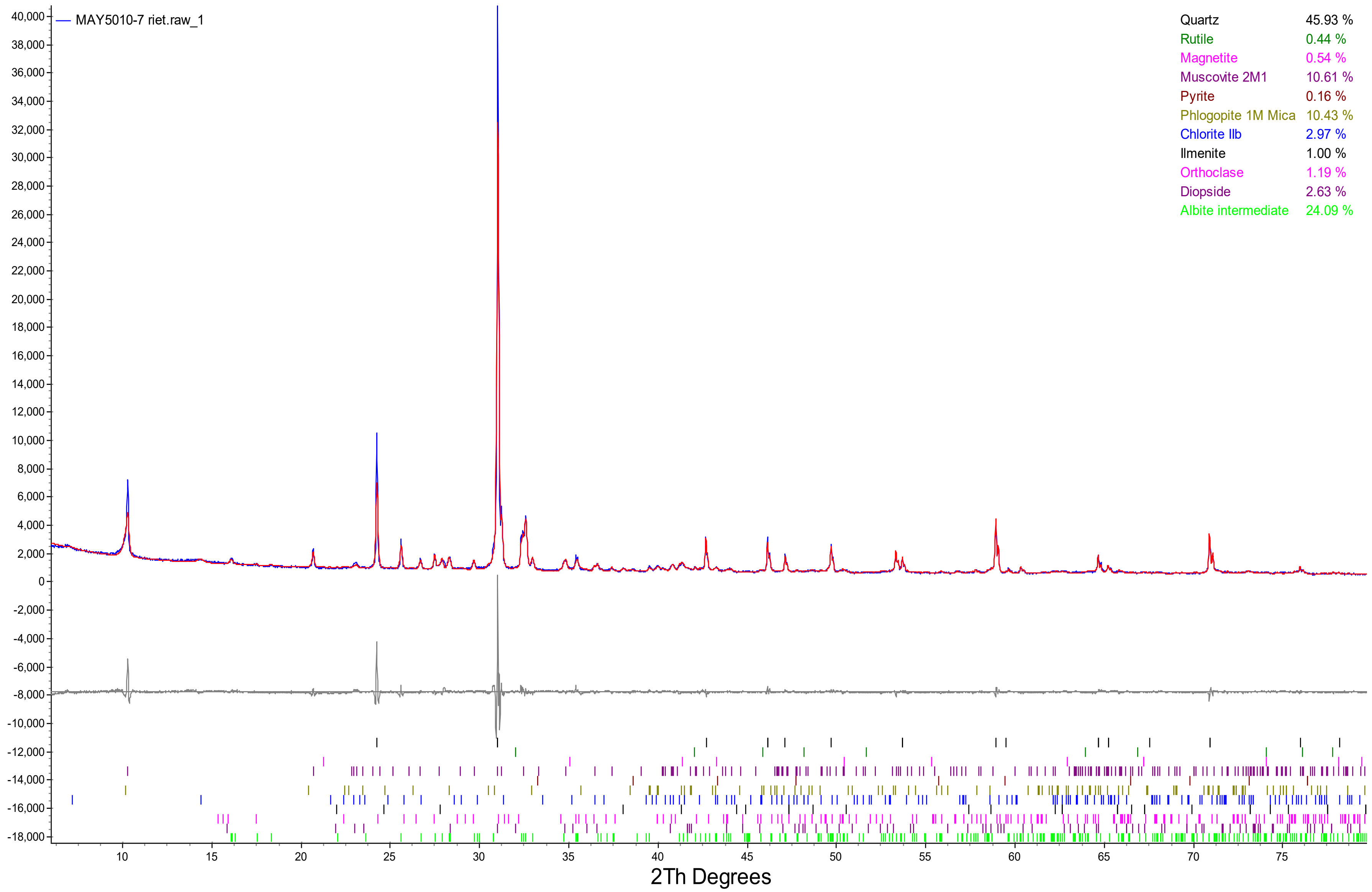
70
75
2Th Degrees

DGWC-121-38-40'

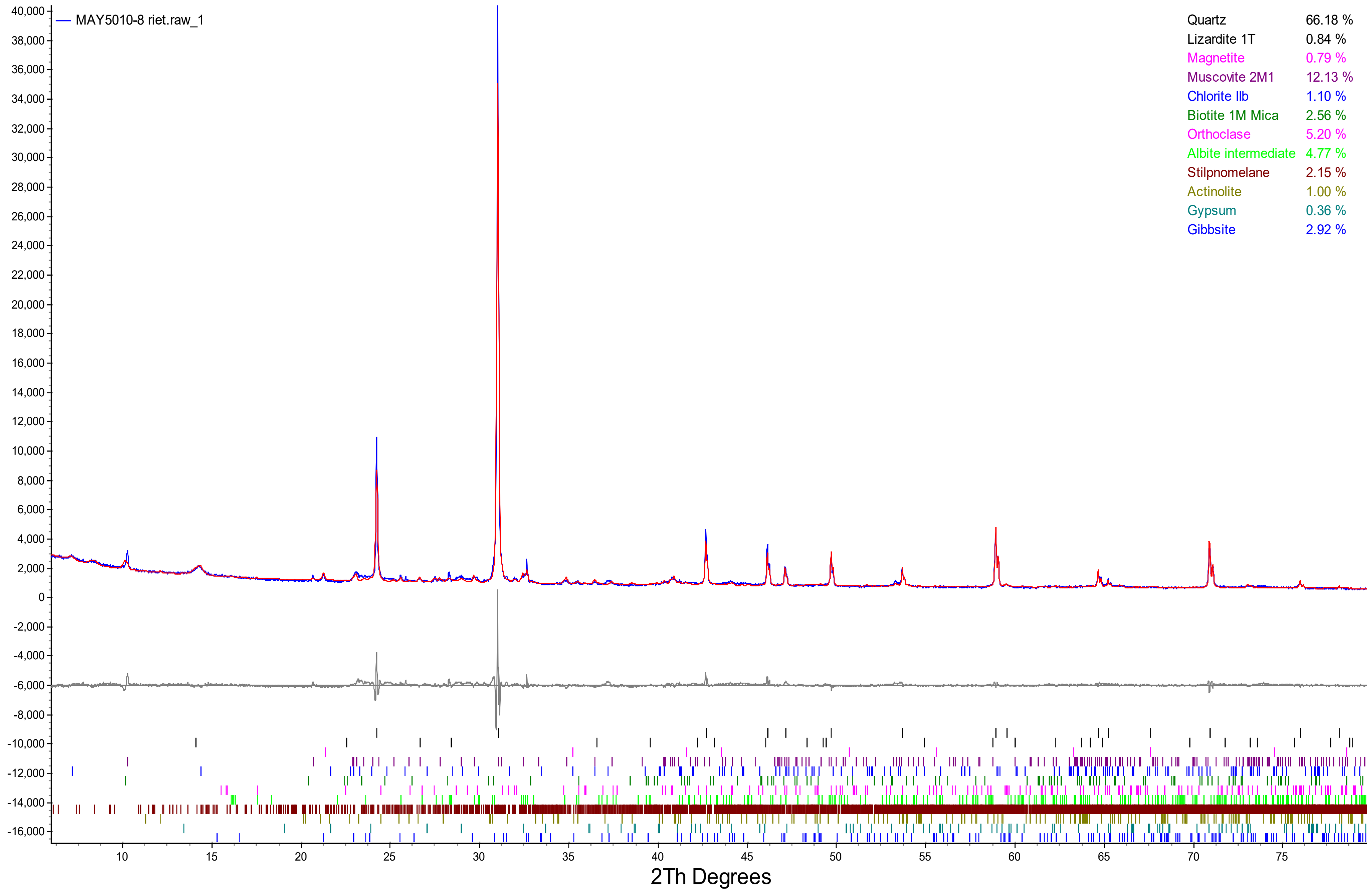


DGWC-121-49-50'



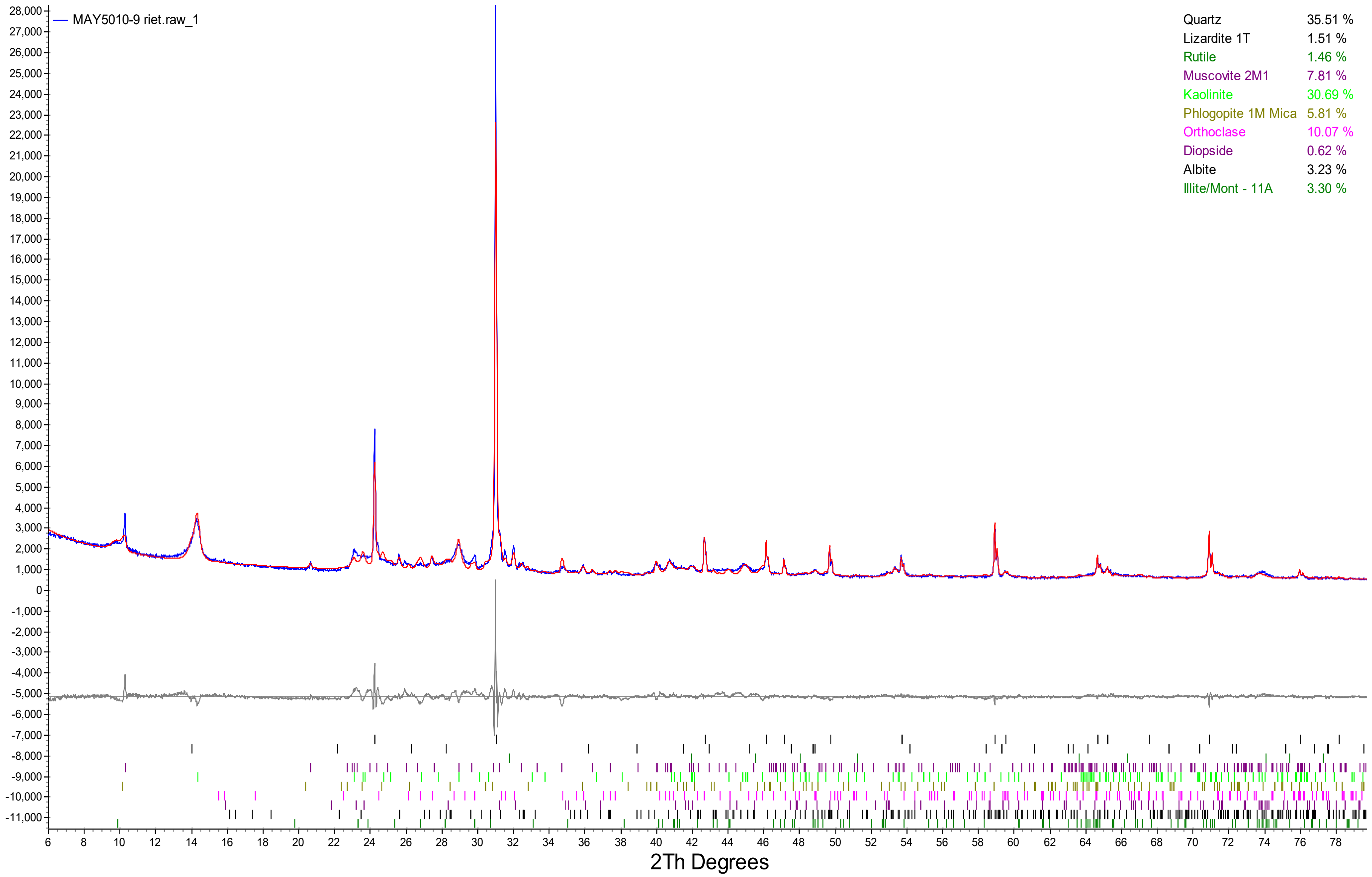
Golder Associates Inc
18502-05/MI5010-MAY22
08-Jun-22

B-122D-39-40'



Golder Associates Inc
18502-05/MI5010-MAY22
08-Jun-22

B-123D-27-28'



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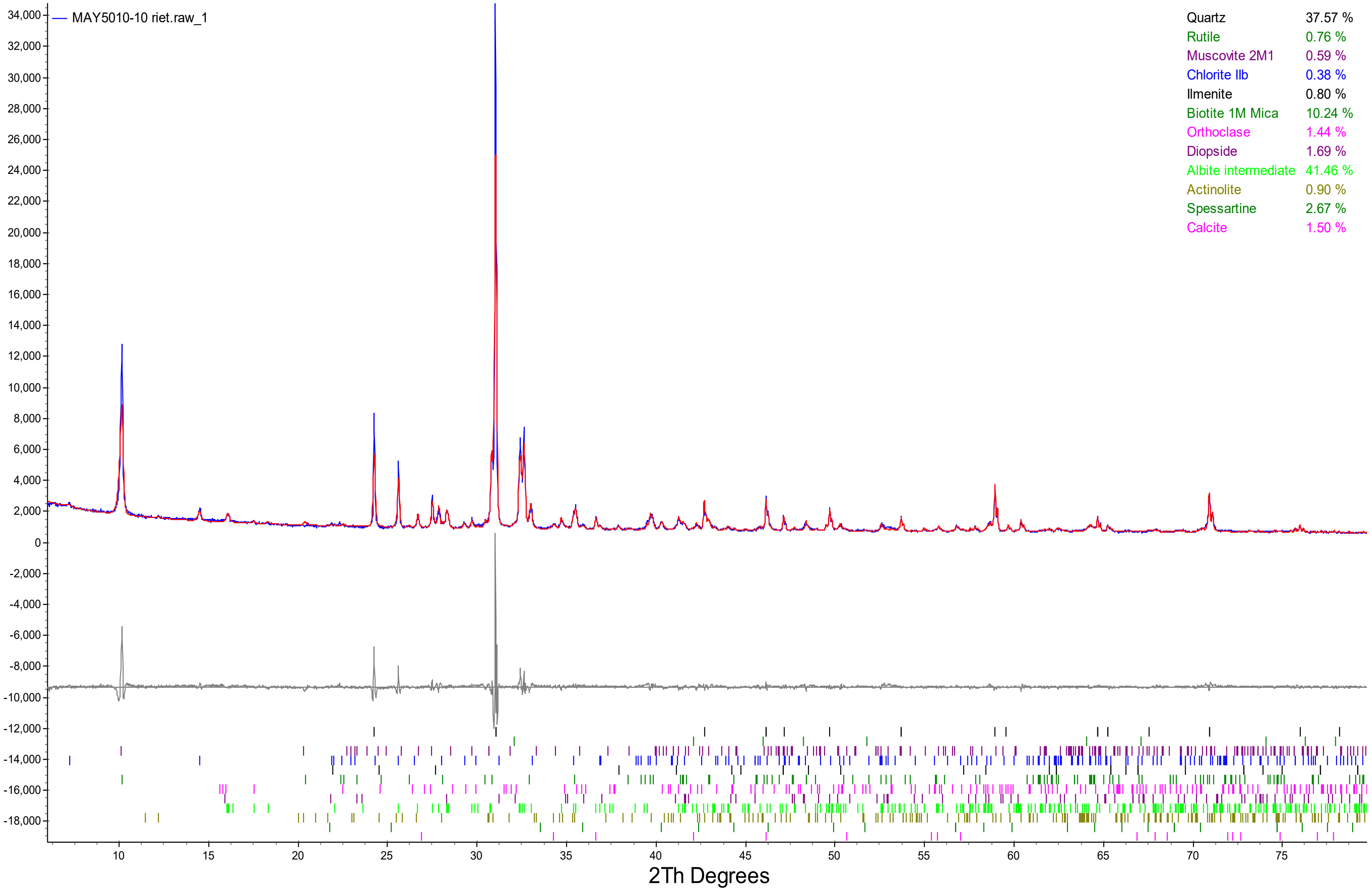
MAY5010-10 riet.raw_1
Quartz 37.57 %
Rutile 0.76 %
Muscovite 2M1 0.59 %
Chlorite IIb 0.38 %
Ilmenite 0.80 %
Biotite 1M Mica 10.24 %
Orthoclase 1.44 %
Diopside 1.69 %
Albite intermediate 41.46 %
Actinolite 0.90 %
Spessartine 2.67 %
Calcite 1.50 %
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30,000
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-10,000
-12,000
-14,000
-16,000
-18,000
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2Th Degrees

APPENDIX D

Sequential Extraction Results

eurofins

Environment Testing
TestAmerica

1
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13

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-18228-1
Client Project/Site: GPC Plant McDonough (166849618)

For:
Golder Associates Inc.
27200 Haggerty Road, Suite B-12
Farmington Hills, Michigan 48331-5719

Attn: Dawn Prell

Ryan Henry

Authorized for release by:
3/12/2020 1:45:40 PM

Ryan Henry, Project Manager I
(865)291-3000
william.henry@testamericainc.com

LINKS

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TotalAccess

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Ask The Expert

Visit us at:
www.testamericainc.com

Table of Contents

Qualifiers

Metals

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
L	A negative instrument reading had an absolute value greater than the reporting limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Golder Associates Inc.
Project/Site: GPC Plant McDonough (166849618)

Job ID: 140-18228-1

Job ID: 140-18228-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-18228-1

Receipt
The samples were received on 2/12/2020 at 9:50am and arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.1° C.

Receipt Exceptions
The Field Sampler was not listed on the Chain of Custody.

Metals
7 Step Sequential Extraction Procedure

These soil samples were prepared and analyzed using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0008, “7 Step Sequential Extraction Procedure”. SW-846 Method 6010B as incorporated in Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

- Step 1 - Exchangeable Fraction: A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate ($MgSO4$), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 2 - Carbonate Fraction: The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 3 - Non-crystalline Materials Fraction: The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 4 - Metal Hydroxide Fraction: The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 5 - Organic-bound Fraction: The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 6 - Acid/Sulfide Fraction: The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO3-H2O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 7 - Residual Fraction: A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Results were calculated using the following equation:

Result, µg/g or mg/Kg, dry weight = $(C \times V \times V1 \times D) / (W \times S \times V2)$

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL
W = Wet weight of sample, g

Job ID: 140-18228-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

SEP Report Notes:

The final report lists the results for each step, the result for the total digestion of the sample, and a sum of the results of steps 1 through 7 by element.

The digestates for steps 1, 2 and 5 were analyzed at a dilution due to instrument problems caused by the high solids content of the digestates. The reporting limits were adjusted accordingly.

Method 6010B: The following samples were diluted due to the presence of titanium, iron, manganese, and aluminum which interferes with Cobalt, Chromium, Arsenic, Cadmium and Selenium: DGWC-19 (34-39) (140-18228-1), DGWC-20 (34-39) (140-18228-2), DGWA-53 (25.7-26.9) (140-18228-3), DGWC-68A (24-29) (140-18228-4) and DGWC-69 (19-24) (140-18228-5). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: Due to sample matrix effect on the internal standard (ISTD), a dilution was required for the following sample: DGWC-69 (19-24) (140-18228-5).

Method 6010B SEP: The following samples were diluted due to the presence of Titanium, Iron, and Aluminum which interferes with Chromium, Cobalt, Arsenic, Cadmium and Selenium: DGWC-19 (34-39) (140-18228-1), DGWC-20 (34-39) (140-18228-2), DGWA-53 (25.7-26.9) (140-18228-3), DGWC-68A (24-29) (140-18228-4) and DGWC-69 (19-24) (140-18228-5). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: The following samples were diluted due to the nature of the sample matrix: DGWC-19 (34-39) (140-18228-1), DGWC-20 (34-39) (140-18228-2), DGWA-53 (25.7-26.9) (140-18228-3), DGWC-68A (24-29) (140-18228-4) and DGWC-69 (19-24) (140-18228-5). Elevated reporting limits (RLs) are provided. The serial dilution analysis indicated a matrix issue with results being higher than the undiluted results. The 1:10 analysis and the associated serial dilution test had results that were better correlated and within the acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
% Moisture: The samples were analyzed for percent moisture using SOP number KNOX-WC-0012 (based on Modified MCAWW 160.3 and SM2540B and on the percent moisture determinations described in methods 3540C and 3550B).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-18228-1	DGWC-19 (34-39)	Solid	02/05/20 00:00	02/12/20 09:50	
140-18228-2	DGWC-20 (34-39)	Solid	02/05/20 00:00	02/12/20 09:50	
140-18228-3	DGWA-53 (25.7-26.9)	Solid	02/05/20 00:00	02/12/20 09:50	
140-18228-4	DGWC-68A (24-29)	Solid	02/05/20 00:00	02/12/20 09:50	
140-18228-5	DGWC-69 (19-24)	Solid	02/05/20 00:00	02/12/20 09:50	

Client Sample ID: DGWC-19 (34-39) Lab Sample ID: 140-18228-1

Date Collected: 02/05/20 00:00 **Matrix: Solid**
Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**48**	**J**	51	8.1	mg/Kg	☼	02/19/20 08:00	02/24/20 15:41	4
Arsenic	**1.1**	**J**	2.5	0.66	mg/Kg	☼	02/19/20 08:00	02/24/20 15:41	4
Barium	**0.65**	**J**	13	0.61	mg/Kg	☼	02/19/20 08:00	02/24/20 15:41	4
Beryllium	ND		1.3	0.39	mg/Kg	☼	02/19/20 08:00	02/24/20 15:41	4
Cadmium	ND		1.3	0.081	mg/Kg	☼	02/19/20 08:00	02/24/20 15:41	4
Chromium	ND		2.5	0.35	mg/Kg	☼	02/19/20 08:00	02/24/20 15:41	4
Cobalt	**0.33**	**J**	13	0.23	mg/Kg	☼	02/19/20 08:00	02/24/20 15:41	4
Iron	ND		25	15	mg/Kg	☼	02/19/20 08:00	02/24/20 15:41	4
Lithium	ND		13	0.76	mg/Kg	☼	02/19/20 08:00	02/24/20 15:41	4
Manganese	**8.4**		3.8	0.16	mg/Kg	☼	02/19/20 08:00	02/24/20 15:41	4
Molybdenum	ND		10	0.41	mg/Kg	☼	02/19/20 08:00	02/24/20 15:41	4
Selenium	ND		2.5	0.86	mg/Kg	☼	02/19/20 08:00	02/24/20 15:41	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30**	**J ***	38	6.1	mg/Kg	☼	02/20/20 08:00	02/25/20 12:08	3
Arsenic	ND	*	1.9	0.49	mg/Kg	☼	02/20/20 08:00	02/25/20 12:08	3
Barium	**1.0**	**J ***	9.5	0.45	mg/Kg	☼	02/20/20 08:00	02/25/20 12:08	3
Beryllium	ND	*	0.95	0.061	mg/Kg	☼	02/20/20 08:00	02/25/20 12:08	3
Cadmium	ND		0.95	0.042	mg/Kg	☼	02/20/20 08:00	02/25/20 12:08	3
Chromium	ND		1.9	0.27	mg/Kg	☼	02/20/20 08:00	02/25/20 12:08	3
Cobalt	ND		9.5	0.24	mg/Kg	☼	02/20/20 08:00	02/25/20 12:08	3
Iron	ND	*	19	11	mg/Kg	☼	02/20/20 08:00	02/25/20 12:08	3
Lithium	ND		9.5	0.57	mg/Kg	☼	02/20/20 08:00	02/25/20 12:08	3
Manganese	**1.6**	**J**	2.8	1.1	mg/Kg	☼	02/20/20 08:00	02/25/20 12:08	3
Molybdenum	ND		7.6	0.31	mg/Kg	☼	02/20/20 08:00	02/25/20 12:08	3
Selenium	**1.2**	**J**	1.9	0.64	mg/Kg	☼	02/20/20 08:00	02/25/20 12:08	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**260**		13	2.7	mg/Kg	☼	02/21/20 08:00	02/25/20 14:12	1
Arsenic	ND		0.63	0.16	mg/Kg	☼	02/21/20 08:00	02/25/20 14:12	1
Barium	**4.1**	**B**	3.2	0.15	mg/Kg	☼	02/21/20 08:00	02/25/20 14:12	1
Beryllium	**0.17**	**J**	0.32	0.019	mg/Kg	☼	02/21/20 08:00	02/25/20 14:12	1
Cadmium	**0.068**	**J B ***	0.32	0.014	mg/Kg	☼	02/21/20 08:00	02/25/20 14:12	1
Chromium	**0.21**	**J**	0.63	0.088	mg/Kg	☼	02/21/20 08:00	02/25/20 14:12	1
Cobalt	**19**		3.2	0.057	mg/Kg	☼	02/21/20 08:00	02/25/20 14:12	1
Iron	**490**		6.3	3.7	mg/Kg	☼	02/21/20 08:00	02/25/20 14:12	1
Lithium	**1.5**	**J**	3.2	0.19	mg/Kg	☼	02/21/20 08:00	02/25/20 14:12	1
Manganese	**450**	**B**	0.95	0.034	mg/Kg	☼	02/21/20 08:00	02/25/20 14:12	1
Molybdenum	ND		2.5	0.10	mg/Kg	☼	02/21/20 08:00	02/25/20 14:12	1
Selenium	ND		0.63	0.21	mg/Kg	☼	02/21/20 08:00	02/25/20 14:12	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1600**		13	2.0	mg/Kg	☼	02/24/20 08:00	02/26/20 12:53	1
Arsenic	ND		0.63	0.28	mg/Kg	☼	02/24/20 08:00	02/26/20 12:53	1
Barium	**33**		3.2	0.15	mg/Kg	☼	02/24/20 08:00	02/26/20 12:53	1
Beryllium	**1.2**		0.32	0.020	mg/Kg	☼	02/24/20 08:00	02/26/20 12:53	1
Cadmium	**0.10**	**J**	0.32	0.014	mg/Kg	☼	02/24/20 08:00	02/26/20 12:53	1

Client Sample Results

Client Sample ID: DGWC-19 (34-39) Lab Sample ID: 140-18228-1

Date Collected: 02/05/20 00:00 **Matrix: Solid**
Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**3.7**		0.63	0.088	mg/Kg	☼	02/24/20 08:00	02/26/20 12:53	1
Cobalt	**7.9**		3.2	0.067	mg/Kg	☼	02/24/20 08:00	02/26/20 12:53	1
Iron	**7900**		6.3	3.7	mg/Kg	☼	02/24/20 08:00	02/26/20 12:53	1
Lithium	**4.7**		3.2	0.19	mg/Kg	☼	02/24/20 08:00	02/26/20 12:53	1
Manganese	**210**		0.95	0.16	mg/Kg	☼	02/24/20 08:00	02/26/20 12:53	1
Molybdenum	**0.19**	**J**	2.5	0.10	mg/Kg	☼	02/24/20 08:00	02/26/20 12:53	1
Selenium	**0.99**	**B ***	0.63	0.59	mg/Kg	☼	02/24/20 08:00	02/26/20 12:53	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**750**	*****	190	30	mg/Kg	☼	02/26/20 08:00	03/03/20 13:39	5
Arsenic	ND	*	9.5	2.4	mg/Kg	☼	02/26/20 08:00	03/03/20 13:39	5
Barium	**42**	**J ***	47	2.3	mg/Kg	☼	02/26/20 08:00	03/03/20 13:39	5
Beryllium	ND	*	4.7	0.40	mg/Kg	☼	02/26/20 08:00	03/03/20 13:39	5
Cadmium	ND		4.7	0.20	mg/Kg	☼	02/26/20 08:00	03/03/20 13:39	5
Chromium	**21**		9.5	1.3	mg/Kg	☼	02/26/20 08:00	03/03/20 13:39	5
Cobalt	ND	*	47	0.76	mg/Kg	☼	02/26/20 08:00	03/03/20 13:39	5
Iron	**56**	**J ***	95	56	mg/Kg	☼	02/26/20 08:00	03/03/20 13:39	5
Lithium	**3.5**	**J B ***	47	2.8	mg/Kg	☼	02/26/20 08:00	03/03/20 13:39	5
Manganese	**31**	*****	14	2.3	mg/Kg	☼	02/26/20 08:00	03/03/20 13:39	5
Molybdenum	ND		38	1.6	mg/Kg	☼	02/26/20 08:00	03/03/20 13:39	5
Selenium	ND		9.5	3.3	mg/Kg	☼	02/26/20 08:00	03/03/20 13:39	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**12000**		13	2.0	mg/Kg	☼	02/26/20 08:00	03/03/20 15:43	1
Arsenic	**1.1**		0.63	0.19	mg/Kg	☼	02/26/20 08:00	03/03/20 15:43	1
Barium	**65**		3.2	0.15	mg/Kg	☼	02/26/20 08:00	03/03/20 15:43	1
Beryllium	**1.3**		0.32	0.015	mg/Kg	☼	02/26/20 08:00	03/03/20 15:43	1
Cadmium	**0.026**	**J**	0.32	0.014	mg/Kg	☼	02/26/20 08:00	03/03/20 15:43	1
Chromium	**18**		0.63	0.088	mg/Kg	☼	02/26/20 08:00	03/03/20 15:43	1
Cobalt	**12**		3.2	0.058	mg/Kg	☼	02/26/20 08:00	03/03/20 15:43	1
Iron	**17000**		6.3	3.7	mg/Kg	☼	02/26/20 08:00	03/03/20 15:43	1
Lithium	**28**		3.2	0.19	mg/Kg	☼	02/26/20 08:00	03/03/20 15:43	1
Manganese	**51**		0.95	0.32	mg/Kg	☼	02/26/20 08:00	03/03/20 15:43	1
Molybdenum	ND		2.5	0.13	mg/Kg	☼	02/26/20 08:00	03/03/20 15:43	1
Selenium	ND		0.63	0.21	mg/Kg	☼	02/26/20 08:00	03/03/20 15:43	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**61000**		130	20	mg/Kg	☼	02/27/20 08:00	03/04/20 14:44	10
Arsenic	**4.1**	**B**	3.2	0.82	mg/Kg	☼	02/27/20 08:00	03/04/20 16:01	5
Barium	**380**		32	1.5	mg/Kg	☼	02/27/20 08:00	03/04/20 14:44	10
Beryllium	**2.2**		0.32	0.0095	mg/Kg	☼	02/27/20 08:00	03/04/20 12:56	1
Cadmium	ND		1.6	0.069	mg/Kg	☼	02/27/20 08:00	03/04/20 16:01	5
Chromium	**55**		0.63	0.088	mg/Kg	☼	02/27/20 08:00	03/04/20 12:56	1
Cobalt	**16**	**J**	32	1.9	mg/Kg	☼	02/27/20 08:00	03/04/20 14:44	10
Iron	**37000**		32	26	mg/Kg	☼	02/27/20 08:00	03/04/20 16:01	5
Lithium	**23**		3.2	0.19	mg/Kg	☼	02/27/20 08:00	03/04/20 12:56	1
Manganese	**350**		0.95	0.066	mg/Kg	☼	02/27/20 08:00	03/04/20 12:56	1

Client Sample ID: DGWC-19 (34-39)

Lab Sample ID: 140-18228-1

Date Collected: 02/05/20 00:00

Matrix: Solid

Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.5	0.10	mg/Kg	☼	02/27/20 08:00	03/04/20 12:56	1
Selenium	ND		3.2	1.1	mg/Kg	☼	02/27/20 08:00	03/04/20 16:01	5

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**76000**		10	1.6	mg/Kg			03/12/20 09:36	1
Arsenic	**6.3**		0.50	0.13	mg/Kg			03/12/20 09:36	1
Barium	**530**		2.5	0.12	mg/Kg			03/12/20 09:36	1
Beryllium	**4.9**		0.25	0.0075	mg/Kg			03/12/20 09:36	1
Cadmium	**0.20**	**J**	0.25	0.011	mg/Kg			03/12/20 09:36	1
Chromium	**97**		0.50	0.070	mg/Kg			03/12/20 09:36	1
Cobalt	**55**		2.5	0.023	mg/Kg			03/12/20 09:36	1
Iron	**62000**		5.0	4.1	mg/Kg			03/12/20 09:36	1
Lithium	**61**		2.5	0.15	mg/Kg			03/12/20 09:36	1
Manganese	**1100**		0.75	0.052	mg/Kg			03/12/20 09:36	1
Molybdenum	**0.19**	**J**	2.0	0.082	mg/Kg			03/12/20 09:36	1
Selenium	**2.2**		0.50	0.17	mg/Kg			03/12/20 09:36	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**110000**		130	20	mg/Kg	☼	02/14/20 08:00	03/06/20 12:20	10
Arsenic	**11**		3.2	0.82	mg/Kg	☼	02/14/20 08:00	03/06/20 13:52	5
Barium	**640**		32	1.5	mg/Kg	☼	02/14/20 08:00	03/06/20 12:20	10
Beryllium	**6.1**		0.32	0.0095	mg/Kg	☼	02/14/20 08:00	03/05/20 12:22	1
Cadmium	ND		1.6	0.069	mg/Kg	☼	02/14/20 08:00	03/06/20 13:52	5
Chromium	**110**		0.63	0.088	mg/Kg	☼	02/14/20 08:00	03/05/20 12:22	1
Cobalt	**36**		32	1.9	mg/Kg	☼	02/14/20 08:00	03/06/20 12:20	10
Iron	**79000**		32	26	mg/Kg	☼	02/14/20 08:00	03/06/20 13:52	5
Lithium	**64**		3.2	0.19	mg/Kg	☼	02/14/20 08:00	03/05/20 12:22	1
Manganese	**710**		0.95	0.066	mg/Kg	☼	02/14/20 08:00	03/05/20 12:22	1
Molybdenum	**0.13**	**J**	2.5	0.10	mg/Kg	☼	02/14/20 08:00	03/05/20 12:22	1
Selenium	ND		3.2	1.1	mg/Kg	☼	02/14/20 08:00	03/06/20 13:52	5

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**20.8**		0.1	0.1	%			02/19/20 11:57	1

Client Sample Results

Client Sample ID: DGWC-20 (34-39)

Lab Sample ID: 140-18228-2

Date Collected: 02/05/20 00:00

Matrix: Solid

Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11**	**J**	48	7.7	mg/Kg	☼	02/19/20 08:00	02/24/20 15:46	4
Arsenic	**0.92**	**J**	2.4	0.63	mg/Kg	☼	02/19/20 08:00	02/24/20 15:46	4
Barium	ND		12	0.58	mg/Kg	☼	02/19/20 08:00	02/24/20 15:46	4
Beryllium	ND		1.2	0.37	mg/Kg	☼	02/19/20 08:00	02/24/20 15:46	4
Cadmium	ND		1.2	0.077	mg/Kg	☼	02/19/20 08:00	02/24/20 15:46	4
Chromium	ND		2.4	0.34	mg/Kg	☼	02/19/20 08:00	02/24/20 15:46	4
Cobalt	**0.98**	**J**	12	0.22	mg/Kg	☼	02/19/20 08:00	02/24/20 15:46	4
Iron	ND		24	14	mg/Kg	☼	02/19/20 08:00	02/24/20 15:46	4
Lithium	ND		12	0.72	mg/Kg	☼	02/19/20 08:00	02/24/20 15:46	4
Manganese	**31**		3.6	0.15	mg/Kg	☼	02/19/20 08:00	02/24/20 15:46	4
Molybdenum	ND		9.6	0.40	mg/Kg	☼	02/19/20 08:00	02/24/20 15:46	4
Selenium	ND		2.4	0.82	mg/Kg	☼	02/19/20 08:00	02/24/20 15:46	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11**	**J ***	36	5.8	mg/Kg	☼	02/20/20 08:00	02/25/20 12:13	3
Arsenic	ND	*	1.8	0.47	mg/Kg	☼	02/20/20 08:00	02/25/20 12:13	3
Barium	**1.6**	**J ***	9.0	0.43	mg/Kg	☼	02/20/20 08:00	02/25/20 12:13	3
Beryllium	ND	*	0.90	0.058	mg/Kg	☼	02/20/20 08:00	02/25/20 12:13	3
Cadmium	ND		0.90	0.040	mg/Kg	☼	02/20/20 08:00	02/25/20 12:13	3
Chromium	ND		1.8	0.25	mg/Kg	☼	02/20/20 08:00	02/25/20 12:13	3
Cobalt	ND		9.0	0.23	mg/Kg	☼	02/20/20 08:00	02/25/20 12:13	3
Iron	ND	*	18	10	mg/Kg	☼	02/20/20 08:00	02/25/20 12:13	3
Lithium	ND		9.0	0.54	mg/Kg	☼	02/20/20 08:00	02/25/20 12:13	3
Manganese	**4.3**		2.7	1.0	mg/Kg	☼	02/20/20 08:00	02/25/20 12:13	3
Molybdenum	ND		7.2	0.30	mg/Kg	☼	02/20/20 08:00	02/25/20 12:13	3
Selenium	**0.62**	**J**	1.8	0.61	mg/Kg	☼	02/20/20 08:00	02/25/20 12:13	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**160**		12	2.5	mg/Kg	☼	02/21/20 08:00	02/25/20 14:18	1
Arsenic	ND		0.60	0.16	mg/Kg	☼	02/21/20 08:00	02/25/20 14:18	1
Barium	**3.7**	**B**	3.0	0.14	mg/Kg	☼	02/21/20 08:00	02/25/20 14:18	1
Beryllium	**0.098**	**J**	0.30	0.018	mg/Kg	☼	02/21/20 08:00	02/25/20 14:18	1
Cadmium	**0.057**	**J B ***	0.30	0.013	mg/Kg	☼	02/21/20 08:00	02/25/20 14:18	1
Chromium	**0.12**	**J**	0.60	0.084	mg/Kg	☼	02/21/20 08:00	02/25/20 14:18	1
Cobalt	**7.2**		3.0	0.054	mg/Kg	☼	02/21/20 08:00	02/25/20 14:18	1
Iron	**380**		6.0	3.5	mg/Kg	☼	02/21/20 08:00	02/25/20 14:18	1
Lithium	**0.24**	**J**	3.0	0.18	mg/Kg	☼	02/21/20 08:00	02/25/20 14:18	1
Manganese	**390**	**B**	0.90	0.033	mg/Kg	☼	02/21/20 08:00	02/25/20 14:18	1
Molybdenum	ND		2.4	0.099	mg/Kg	☼	02/21/20 08:00	02/25/20 14:18	1
Selenium	**0.21**	**J B**	0.60	0.20	mg/Kg	☼	02/21/20 08:00	02/25/20 14:18	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1200**		12	1.9	mg/Kg	☼	02/24/20 08:00	02/26/20 12:58	1
Arsenic	ND		0.60	0.26	mg/Kg	☼	02/24/20 08:00	02/26/20 12:58	1
Barium	**11**		3.0	0.14	mg/Kg	☼	02/24/20 08:00	02/26/20 12:58	1
Beryllium	**0.52**		0.30	0.019	mg/Kg	☼	02/24/20 08:00	02/26/20 12:58	1
Cadmium	**0.10**	**J**	0.30	0.013	mg/Kg	☼	02/24/20 08:00	02/26/20 12:58	1

Client Sample ID: DGWC-20 (34-39)

Lab Sample ID: 140-18228-2

Date Collected: 02/05/20 00:00

Matrix: Solid

Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**1.2**		0.60	0.084	mg/Kg	☼	02/24/20 08:00	02/26/20 12:58	1
Cobalt	**3.0**		3.0	0.064	mg/Kg	☼	02/24/20 08:00	02/26/20 12:58	1
Iron	**4900**		6.0	3.5	mg/Kg	☼	02/24/20 08:00	02/26/20 12:58	1
Lithium	**2.3**	**J**	3.0	0.18	mg/Kg	☼	02/24/20 08:00	02/26/20 12:58	1
Manganese	**230**		0.90	0.16	mg/Kg	☼	02/24/20 08:00	02/26/20 12:58	1
Molybdenum	ND		2.4	0.099	mg/Kg	☼	02/24/20 08:00	02/26/20 12:58	1
Selenium	**1.3**	**B ***	0.60	0.57	mg/Kg	☼	02/24/20 08:00	02/26/20 12:58	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**570**	*****	180	28	mg/Kg	☼	02/26/20 08:00	03/03/20 13:44	5
Arsenic	ND	*	9.0	2.3	mg/Kg	☼	02/26/20 08:00	03/03/20 13:44	5
Barium	**7.7**	**J ***	45	2.2	mg/Kg	☼	02/26/20 08:00	03/03/20 13:44	5
Beryllium	ND	*	4.5	0.38	mg/Kg	☼	02/26/20 08:00	03/03/20 13:44	5
Cadmium	ND		4.5	0.19	mg/Kg	☼	02/26/20 08:00	03/03/20 13:44	5
Chromium	**1.5**	**J**	9.0	1.3	mg/Kg	☼	02/26/20 08:00	03/03/20 13:44	5
Cobalt	ND	*	45	0.72	mg/Kg	☼	02/26/20 08:00	03/03/20 13:44	5
Iron	ND	*	90	53	mg/Kg	☼	02/26/20 08:00	03/03/20 13:44	5
Lithium	**2.6**	**J B ***	45	2.6	mg/Kg	☼	02/26/20 08:00	03/03/20 13:44	5
Manganese	**16**	*****	14	2.2	mg/Kg	☼	02/26/20 08:00	03/03/20 13:44	5
Molybdenum	ND		36	1.5	mg/Kg	☼	02/26/20 08:00	03/03/20 13:44	5
Selenium	ND		9.0	3.1	mg/Kg	☼	02/26/20 08:00	03/03/20 13:44	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**8900**		12	1.9	mg/Kg	☼	02/26/20 08:00	03/03/20 15:48	1
Arsenic	**0.85**		0.60	0.18	mg/Kg	☼	02/26/20 08:00	03/03/20 15:48	1
Barium	**49**		3.0	0.14	mg/Kg	☼	02/26/20 08:00	03/03/20 15:48	1
Beryllium	**0.54**		0.30	0.014	mg/Kg	☼	02/26/20 08:00	03/03/20 15:48	1
Cadmium	**0.015**	**J**	0.30	0.013	mg/Kg	☼	02/26/20 08:00	03/03/20 15:48	1
Chromium	**9.9**		0.60	0.084	mg/Kg	☼	02/26/20 08:00	03/03/20 15:48	1
Cobalt	**9.1**		3.0	0.055	mg/Kg	☼	02/26/20 08:00	03/03/20 15:48	1
Iron	**12000**		6.0	3.5	mg/Kg	☼	02/26/20 08:00	03/03/20 15:48	1
Lithium	**15**		3.0	0.18	mg/Kg	☼	02/26/20 08:00	03/03/20 15:48	1
Manganese	**79**		0.90	0.30	mg/Kg	☼	02/26/20 08:00	03/03/20 15:48	1
Molybdenum	ND		2.4	0.12	mg/Kg	☼	02/26/20 08:00	03/03/20 15:48	1
Selenium	ND		0.60	0.20	mg/Kg	☼	02/26/20 08:00	03/03/20 15:48	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**46000**		120	19	mg/Kg	☼	02/27/20 08:00	03/04/20 14:49	10
Arsenic	**2.0**	**J B**	3.0	0.78	mg/Kg	☼	02/27/20 08:00	03/04/20 16:06	5
Barium	**470**		30	1.4	mg/Kg	☼	02/27/20 08:00	03/04/20 14:49	10
Beryllium	**0.83**		0.30	0.0090	mg/Kg	☼	02/27/20 08:00	03/04/20 13:01	1
Cadmium	ND		1.5	0.066	mg/Kg	☼	02/27/20 08:00	03/04/20 16:06	5
Chromium	**45**		0.60	0.084	mg/Kg	☼	02/27/20 08:00	03/04/20 13:01	1
Cobalt	**8.6**	**J**	30	1.8	mg/Kg	☼	02/27/20 08:00	03/04/20 14:49	10
Iron	**33000**		30	25	mg/Kg	☼	02/27/20 08:00	03/04/20 16:06	5
Lithium	**13**		3.0	0.18	mg/Kg	☼	02/27/20 08:00	03/04/20 13:01	1
Manganese	**230**		0.90	0.063	mg/Kg	☼	02/27/20 08:00	03/04/20 13:01	1

Client Sample ID: DGWC-20 (34-39)

Lab Sample ID: 140-18228-2

Date Collected: 02/05/20 00:00

Matrix: Solid

Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.4	0.099	mg/Kg	☼	02/27/20 08:00	03/04/20 13:01	1
Selenium	ND		3.0	1.0	mg/Kg	☼	02/27/20 08:00	03/04/20 16:06	5

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**56000**		10	1.6	mg/Kg			03/12/20 09:36	1
Arsenic	**3.7**		0.50	0.13	mg/Kg			03/12/20 09:36	1
Barium	**540**		2.5	0.12	mg/Kg			03/12/20 09:36	1
Beryllium	**2.0**		0.25	0.0075	mg/Kg			03/12/20 09:36	1
Cadmium	**0.18**	**J**	0.25	0.011	mg/Kg			03/12/20 09:36	1
Chromium	**57**		0.50	0.070	mg/Kg			03/12/20 09:36	1
Cobalt	**29**		2.5	0.023	mg/Kg			03/12/20 09:36	1
Iron	**50000**		5.0	4.1	mg/Kg			03/12/20 09:36	1
Lithium	**33**		2.5	0.15	mg/Kg			03/12/20 09:36	1
Manganese	**980**		0.75	0.052	mg/Kg			03/12/20 09:36	1
Molybdenum	ND		2.0	0.082	mg/Kg			03/12/20 09:36	1
Selenium	**2.1**		0.50	0.17	mg/Kg			03/12/20 09:36	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**83000**		120	19	mg/Kg	☼	02/14/20 08:00	03/06/20 12:25	10
Arsenic	**5.8**		3.0	0.78	mg/Kg	☼	02/14/20 08:00	03/06/20 13:57	5
Barium	**470**		30	1.4	mg/Kg	☼	02/14/20 08:00	03/06/20 12:25	10
Beryllium	**2.1**		0.30	0.0090	mg/Kg	☼	02/14/20 08:00	03/05/20 12:28	1
Cadmium	ND		1.5	0.066	mg/Kg	☼	02/14/20 08:00	03/06/20 13:57	5
Chromium	**53**		0.60	0.084	mg/Kg	☼	02/14/20 08:00	03/05/20 12:28	1
Cobalt	**39**		30	1.8	mg/Kg	☼	02/14/20 08:00	03/06/20 12:25	10
Iron	**62000**		30	25	mg/Kg	☼	02/14/20 08:00	03/06/20 13:57	5
Lithium	**35**		3.0	0.18	mg/Kg	☼	02/14/20 08:00	03/05/20 12:28	1
Manganese	**1500**		4.5	0.31	mg/Kg	☼	02/14/20 08:00	03/06/20 13:57	5
Molybdenum	ND		2.4	0.099	mg/Kg	☼	02/14/20 08:00	03/05/20 12:28	1
Selenium	ND		3.0	1.0	mg/Kg	☼	02/14/20 08:00	03/06/20 13:57	5

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**17.0**		0.1	0.1	%			02/19/20 11:57	1

Client Sample ID: DGWA-53 (25.7-26.9)

Lab Sample ID: 140-18228-3

Date Collected: 02/05/20 00:00

Matrix: Solid

Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.5	mg/Kg	☼	02/19/20 08:00	02/24/20 15:51	4
Arsenic	ND		2.0	0.52	mg/Kg	☼	02/19/20 08:00	02/24/20 15:51	4
Barium	ND		10	0.48	mg/Kg	☼	02/19/20 08:00	02/24/20 15:51	4
Beryllium	ND		1.0	0.31	mg/Kg	☼	02/19/20 08:00	02/24/20 15:51	4
Cadmium	ND		1.0	0.065	mg/Kg	☼	02/19/20 08:00	02/24/20 15:51	4
Chromium	ND		2.0	0.28	mg/Kg	☼	02/19/20 08:00	02/24/20 15:51	4
Cobalt	ND		10	0.18	mg/Kg	☼	02/19/20 08:00	02/24/20 15:51	4
Iron	ND		20	12	mg/Kg	☼	02/19/20 08:00	02/24/20 15:51	4
Lithium	ND		10	0.60	mg/Kg	☼	02/19/20 08:00	02/24/20 15:51	4
Manganese	**0.52**	**J**	3.0	0.13	mg/Kg	☼	02/19/20 08:00	02/24/20 15:51	4
Molybdenum	ND		8.1	0.33	mg/Kg	☼	02/19/20 08:00	02/24/20 15:51	4
Selenium	ND		2.0	0.69	mg/Kg	☼	02/19/20 08:00	02/24/20 15:51	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**8.2**	**J ***	30	4.8	mg/Kg	☼	02/20/20 08:00	02/25/20 12:19	3
Arsenic	ND	*	1.5	0.39	mg/Kg	☼	02/20/20 08:00	02/25/20 12:19	3
Barium	**1.0**	**J ***	7.6	0.36	mg/Kg	☼	02/20/20 08:00	02/25/20 12:19	3
Beryllium	ND	*	0.76	0.048	mg/Kg	☼	02/20/20 08:00	02/25/20 12:19	3
Cadmium	ND		0.76	0.033	mg/Kg	☼	02/20/20 08:00	02/25/20 12:19	3
Chromium	ND		1.5	0.21	mg/Kg	☼	02/20/20 08:00	02/25/20 12:19	3
Cobalt	ND		7.6	0.19	mg/Kg	☼	02/20/20 08:00	02/25/20 12:19	3
Iron	**13**	**J ***	15	8.8	mg/Kg	☼	02/20/20 08:00	02/25/20 12:19	3
Lithium	ND		7.6	0.45	mg/Kg	☼	02/20/20 08:00	02/25/20 12:19	3
Manganese	**0.94**	**J**	2.3	0.85	mg/Kg	☼	02/20/20 08:00	02/25/20 12:19	3
Molybdenum	ND		6.0	0.25	mg/Kg	☼	02/20/20 08:00	02/25/20 12:19	3
Selenium	**0.86**	**J**	1.5	0.51	mg/Kg	☼	02/20/20 08:00	02/25/20 12:19	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**35**		10	2.1	mg/Kg	☼	02/21/20 08:00	02/25/20 14:23	1
Arsenic	ND		0.50	0.13	mg/Kg	☼	02/21/20 08:00	02/25/20 14:23	1
Barium	**0.75**	**J B**	2.5	0.12	mg/Kg	☼	02/21/20 08:00	02/25/20 14:23	1
Beryllium	ND		0.25	0.015	mg/Kg	☼	02/21/20 08:00	02/25/20 14:23	1
Cadmium	**0.052**	**J B ***	0.25	0.011	mg/Kg	☼	02/21/20 08:00	02/25/20 14:23	1
Chromium	ND		0.50	0.071	mg/Kg	☼	02/21/20 08:00	02/25/20 14:23	1
Cobalt	ND		2.5	0.045	mg/Kg	☼	02/21/20 08:00	02/25/20 14:23	1
Iron	**130**		5.0	2.9	mg/Kg	☼	02/21/20 08:00	02/25/20 14:23	1
Lithium	ND		2.5	0.15	mg/Kg	☼	02/21/20 08:00	02/25/20 14:23	1
Manganese	**1.1**	**B**	0.76	0.027	mg/Kg	☼	02/21/20 08:00	02/25/20 14:23	1
Molybdenum	ND		2.0	0.083	mg/Kg	☼	02/21/20 08:00	02/25/20 14:23	1
Selenium	**0.22**	**J B**	0.50	0.17	mg/Kg	☼	02/21/20 08:00	02/25/20 14:23	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**620**		10	1.6	mg/Kg	☼	02/24/20 08:00	02/26/20 13:03	1
Arsenic	ND		0.50	0.22	mg/Kg	☼	02/24/20 08:00	02/26/20 13:03	1
Barium	**2.7**		2.5	0.12	mg/Kg	☼	02/24/20 08:00	02/26/20 13:03	1
Beryllium	**0.025**	**J**	0.25	0.016	mg/Kg	☼	02/24/20 08:00	02/26/20 13:03	1
Cadmium	**0.026**	**J**	0.25	0.011	mg/Kg	☼	02/24/20 08:00	02/26/20 13:03	1

Client Sample Results

Client Sample ID: DGWA-53 (25.7-26.9)

Lab Sample ID: 140-18228-3

Date Collected: 02/05/20 00:00

Matrix: Solid

Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**0.29**	**J**	0.50	0.071	mg/Kg	☼	02/24/20 08:00	02/26/20 13:03	1
Cobalt	**0.32**	**J**	2.5	0.053	mg/Kg	☼	02/24/20 08:00	02/26/20 13:03	1
Iron	**1700**		5.0	2.9	mg/Kg	☼	02/24/20 08:00	02/26/20 13:03	1
Lithium	**1.6**	**J**	2.5	0.15	mg/Kg	☼	02/24/20 08:00	02/26/20 13:03	1
Manganese	**24**		0.76	0.13	mg/Kg	☼	02/24/20 08:00	02/26/20 13:03	1
Molybdenum	**0.087**	**J**	2.0	0.083	mg/Kg	☼	02/24/20 08:00	02/26/20 13:03	1
Selenium	**0.98**	**B ***	0.50	0.47	mg/Kg	☼	02/24/20 08:00	02/26/20 13:03	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**110**	**J ***	150	24	mg/Kg	☼	02/26/20 08:00	03/03/20 13:49	5
Arsenic	ND	*	7.6	1.9	mg/Kg	☼	02/26/20 08:00	03/03/20 13:49	5
Barium	ND	*	38	1.8	mg/Kg	☼	02/26/20 08:00	03/03/20 13:49	5
Beryllium	ND	*	3.8	0.32	mg/Kg	☼	02/26/20 08:00	03/03/20 13:49	5
Cadmium	ND		3.8	0.16	mg/Kg	☼	02/26/20 08:00	03/03/20 13:49	5
Chromium	ND		7.6	1.1	mg/Kg	☼	02/26/20 08:00	03/03/20 13:49	5
Cobalt	ND	*	38	0.60	mg/Kg	☼	02/26/20 08:00	03/03/20 13:49	5
Iron	ND	*	76	44	mg/Kg	☼	02/26/20 08:00	03/03/20 13:49	5
Lithium	**2.3**	**J B ***	38	2.2	mg/Kg	☼	02/26/20 08:00	03/03/20 13:49	5
Manganese	ND	*	11	1.9	mg/Kg	☼	02/26/20 08:00	03/03/20 13:49	5
Molybdenum	**1.3**	**J**	30	1.3	mg/Kg	☼	02/26/20 08:00	03/03/20 13:49	5
Selenium	ND		7.6	2.6	mg/Kg	☼	02/26/20 08:00	03/03/20 13:49	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1900**		10	1.6	mg/Kg	☼	02/26/20 08:00	03/03/20 15:53	1
Arsenic	**0.66**		0.50	0.15	mg/Kg	☼	02/26/20 08:00	03/03/20 15:53	1
Barium	**14**		2.5	0.12	mg/Kg	☼	02/26/20 08:00	03/03/20 15:53	1
Beryllium	**0.024**	**J**	0.25	0.012	mg/Kg	☼	02/26/20 08:00	03/03/20 15:53	1
Cadmium	ND		0.25	0.011	mg/Kg	☼	02/26/20 08:00	03/03/20 15:53	1
Chromium	**0.61**		0.50	0.071	mg/Kg	☼	02/26/20 08:00	03/03/20 15:53	1
Cobalt	**1.1**	**J**	2.5	0.046	mg/Kg	☼	02/26/20 08:00	03/03/20 15:53	1
Iron	**4400**		5.0	2.9	mg/Kg	☼	02/26/20 08:00	03/03/20 15:53	1
Lithium	**5.1**		2.5	0.15	mg/Kg	☼	02/26/20 08:00	03/03/20 15:53	1
Manganese	**85**		0.76	0.25	mg/Kg	☼	02/26/20 08:00	03/03/20 15:53	1
Molybdenum	**0.22**	**J**	2.0	0.10	mg/Kg	☼	02/26/20 08:00	03/03/20 15:53	1
Selenium	ND		0.50	0.17	mg/Kg	☼	02/26/20 08:00	03/03/20 15:53	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**48000**		100	16	mg/Kg	☼	02/27/20 08:00	03/04/20 14:54	10
Arsenic	**0.28**	**J B**	0.50	0.13	mg/Kg	☼	02/27/20 08:00	03/04/20 13:07	1
Barium	**630**		25	1.2	mg/Kg	☼	02/27/20 08:00	03/04/20 14:54	10
Beryllium	**1.0**		0.25	0.0076	mg/Kg	☼	02/27/20 08:00	03/04/20 13:07	1
Cadmium	ND		0.25	0.011	mg/Kg	☼	02/27/20 08:00	03/04/20 13:07	1
Chromium	ND		5.0	0.71	mg/Kg	☼	02/27/20 08:00	03/04/20 14:54	10
Cobalt	**0.47**	**J**	2.5	0.15	mg/Kg	☼	02/27/20 08:00	03/04/20 13:07	1
Iron	**4200**		5.0	4.1	mg/Kg	☼	02/27/20 08:00	03/04/20 13:07	1
Lithium	**4.6**		2.5	0.15	mg/Kg	☼	02/27/20 08:00	03/04/20 13:07	1
Manganese	**74**		0.76	0.052	mg/Kg	☼	02/27/20 08:00	03/04/20 13:07	1

Client Sample Results

Client: Golder Associates Inc. Job ID: 140-18228-1
Project/Site: GPC Plant McDonough (166849618)

Client Sample ID: DGWA-53 (25.7-26.9) Lab Sample ID: 140-18228-3

Date Collected: 02/05/20 00:00 **Matrix: Solid**
Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	**0.094**	**J**	2.0	0.083	mg/Kg	☼	02/27/20 08:00	03/04/20 13:07	1
Selenium	ND		0.50	0.17	mg/Kg	☼	02/27/20 08:00	03/04/20 13:07	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**51000**		10	1.6	mg/Kg			03/12/20 09:36	1
Arsenic	**0.94**		0.50	0.13	mg/Kg			03/12/20 09:36	1
Barium	**650**		2.5	0.12	mg/Kg			03/12/20 09:36	1
Beryllium	**1.1**		0.25	0.0075	mg/Kg			03/12/20 09:36	1
Cadmium	**0.078**	**J**	0.25	0.011	mg/Kg			03/12/20 09:36	1
Chromium	**0.89**		0.50	0.070	mg/Kg			03/12/20 09:36	1
Cobalt	**1.8**	**J**	2.5	0.023	mg/Kg			03/12/20 09:36	1
Iron	**10000**		5.0	4.1	mg/Kg			03/12/20 09:36	1
Lithium	**14**		2.5	0.15	mg/Kg			03/12/20 09:36	1
Manganese	**190**		0.75	0.052	mg/Kg			03/12/20 09:36	1
Molybdenum	**1.7**	**J**	2.0	0.082	mg/Kg			03/12/20 09:36	1
Selenium	**2.1**		0.50	0.17	mg/Kg			03/12/20 09:36	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**56000**		100	16	mg/Kg	☼	02/14/20 08:00	03/06/20 12:30	10
Arsenic	**1.3**		0.50	0.13	mg/Kg	☼	02/14/20 08:00	03/05/20 12:34	1
Barium	**520**		25	1.2	mg/Kg	☼	02/14/20 08:00	03/06/20 12:30	10
Beryllium	**1.1**		0.25	0.0076	mg/Kg	☼	02/14/20 08:00	03/05/20 12:34	1
Cadmium	ND		0.25	0.011	mg/Kg	☼	02/14/20 08:00	03/05/20 12:34	1
Chromium	**1.7**	**J B**	5.0	0.71	mg/Kg	☼	02/14/20 08:00	03/06/20 12:30	10
Cobalt	**1.4**	**J**	2.5	0.15	mg/Kg	☼	02/14/20 08:00	03/05/20 12:34	1
Iron	**9900**		5.0	4.1	mg/Kg	☼	02/14/20 08:00	03/05/20 12:34	1
Lithium	**12**		2.5	0.15	mg/Kg	☼	02/14/20 08:00	03/05/20 12:34	1
Manganese	**180**		0.76	0.052	mg/Kg	☼	02/14/20 08:00	03/05/20 12:34	1
Molybdenum	**0.75**	**J**	2.0	0.083	mg/Kg	☼	02/14/20 08:00	03/05/20 12:34	1
Selenium	ND		0.50	0.17	mg/Kg	☼	02/14/20 08:00	03/05/20 12:34	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**0.8**		0.1	0.1	%			02/19/20 11:57	1

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Client Sample Results

Client: Golder Associates Inc. Job ID: 140-18228-1
Project/Site: GPC Plant McDonough (166849618)

Client Sample ID: DGWC-68A (24-29) Lab Sample ID: 140-18228-4

Date Collected: 02/05/20 00:00 **Matrix: Solid**
Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		52	8.4	mg/Kg	☼	02/19/20 08:00	02/24/20 15:56	4
Arsenic	ND		2.6	0.68	mg/Kg	☼	02/19/20 08:00	02/24/20 15:56	4
Barium	**2.4**	**J**	13	0.63	mg/Kg	☼	02/19/20 08:00	02/24/20 15:56	4
Beryllium	ND		1.3	0.40	mg/Kg	☼	02/19/20 08:00	02/24/20 15:56	4
Cadmium	ND		1.3	0.084	mg/Kg	☼	02/19/20 08:00	02/24/20 15:56	4
Chromium	ND		2.6	0.37	mg/Kg	☼	02/19/20 08:00	02/24/20 15:56	4
Cobalt	ND		13	0.23	mg/Kg	☼	02/19/20 08:00	02/24/20 15:56	4
Iron	ND		26	15	mg/Kg	☼	02/19/20 08:00	02/24/20 15:56	4
Lithium	ND		13	0.78	mg/Kg	☼	02/19/20 08:00	02/24/20 15:56	4
Manganese	**3.7**	**J**	3.9	0.16	mg/Kg	☼	02/19/20 08:00	02/24/20 15:56	4
Molybdenum	**0.84**	**J**	10	0.43	mg/Kg	☼	02/19/20 08:00	02/24/20 15:56	4
Selenium	ND		2.6	0.89	mg/Kg	☼	02/19/20 08:00	02/24/20 15:56	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**13**	**J ***	39	6.3	mg/Kg	☼	02/20/20 08:00	02/25/20 12:24	3
Arsenic	ND	*	2.0	0.51	mg/Kg	☼	02/20/20 08:00	02/25/20 12:24	3
Barium	**0.78**	**J ***	9.8	0.47	mg/Kg	☼	02/20/20 08:00	02/25/20 12:24	3
Beryllium	**0.063**	**J ***	0.98	0.063	mg/Kg	☼	02/20/20 08:00	02/25/20 12:24	3
Cadmium	ND		0.98	0.043	mg/Kg	☼	02/20/20 08:00	02/25/20 12:24	3
Chromium	ND		2.0	0.27	mg/Kg	☼	02/20/20 08:00	02/25/20 12:24	3
Cobalt	ND		9.8	0.25	mg/Kg	☼	02/20/20 08:00	02/25/20 12:24	3
Iron	ND	*	20	11	mg/Kg	☼	02/20/20 08:00	02/25/20 12:24	3
Lithium	ND		9.8	0.59	mg/Kg	☼	02/20/20 08:00	02/25/20 12:24	3
Manganese	**7.1**		2.9	1.1	mg/Kg	☼	02/20/20 08:00	02/25/20 12:24	3
Molybdenum	ND		7.8	0.32	mg/Kg	☼	02/20/20 08:00	02/25/20 12:24	3
Selenium	**0.98**	**J**	2.0	0.67	mg/Kg	☼	02/20/20 08:00	02/25/20 12:24	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**170**		13	2.7	mg/Kg	☼	02/21/20 08:00	02/25/20 14:44	1
Arsenic	ND		0.65	0.17	mg/Kg	☼	02/21/20 08:00	02/25/20 14:44	1
Barium	**7.8**	**B**	3.3	0.16	mg/Kg	☼	02/21/20 08:00	02/25/20 14:44	1
Beryllium	**0.18**	**J**	0.33	0.020	mg/Kg	☼	02/21/20 08:00	02/25/20 14:44	1
Cadmium	**0.15**	**J B ***	0.33	0.014	mg/Kg	☼	02/21/20 08:00	02/25/20 14:44	1
Chromium	**0.18**	**J**	0.65	0.091	mg/Kg	☼	02/21/20 08:00	02/25/20 14:44	1
Cobalt	**3.0**	**J**	3.3	0.059	mg/Kg	☼	02/21/20 08:00	02/25/20 14:44	1
Iron	**290**		6.5	3.8	mg/Kg	☼	02/21/20 08:00	02/25/20 14:44	1
Lithium	**2.8**	**J**	3.3	0.20	mg/Kg	☼	02/21/20 08:00	02/25/20 14:44	1
Manganese	**600**	**B**	0.98	0.035	mg/Kg	☼	02/21/20 08:00	02/25/20 14:44	1
Molybdenum	**4.4**		2.6	0.11	mg/Kg	☼	02/21/20 08:00	02/25/20 14:44	1
Selenium	ND		0.65	0.22	mg/Kg	☼	02/21/20 08:00	02/25/20 14:44	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1400**		13	2.1	mg/Kg	☼	02/24/20 08:00	02/26/20 13:08	1
Arsenic	ND		0.65	0.29	mg/Kg	☼	02/24/20 08:00	02/26/20 13:08	1
Barium	**48**		3.3	0.16	mg/Kg	☼	02/24/20 08:00	02/26/20 13:08	1
Beryllium	**0.77**		0.33	0.021	mg/Kg	☼	02/24/20 08:00	02/26/20 13:08	1
Cadmium	**0.25**	**J**	0.33	0.014	mg/Kg	☼	02/24/20 08:00	02/26/20 13:08	1

Client Sample Results

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Client Sample ID: DGWC-68A (24-29)

Lab Sample ID: 140-18228-4

Date Collected: 02/05/20 00:00
Date Received: 02/12/20 09:50
Matrix: Solid

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**2.1**		0.65	0.091	mg/Kg	☼	02/24/20 08:00	02/26/20 13:08	1
Cobalt	**1.2**	**J**	3.3	0.069	mg/Kg	☼	02/24/20 08:00	02/26/20 13:08	1
Iron	**4700**		6.5	3.8	mg/Kg	☼	02/24/20 08:00	02/26/20 13:08	1
Lithium	**1.6**	**J**	3.3	0.20	mg/Kg	☼	02/24/20 08:00	02/26/20 13:08	1
Manganese	**220**		0.98	0.17	mg/Kg	☼	02/24/20 08:00	02/26/20 13:08	1
Molybdenum	**6.1**		2.6	0.11	mg/Kg	☼	02/24/20 08:00	02/26/20 13:08	1
Selenium	**0.70**	**B ***	0.65	0.61	mg/Kg	☼	02/24/20 08:00	02/26/20 13:08	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**390**	*****	200	31	mg/Kg	☼	02/26/20 08:00	03/03/20 13:55	5
Arsenic	ND	*	9.8	2.5	mg/Kg	☼	02/26/20 08:00	03/03/20 13:55	5
Barium	**55**	*****	49	2.3	mg/Kg	☼	02/26/20 08:00	03/03/20 13:55	5
Beryllium	ND	*	4.9	0.41	mg/Kg	☼	02/26/20 08:00	03/03/20 13:55	5
Cadmium	ND		4.9	0.21	mg/Kg	☼	02/26/20 08:00	03/03/20 13:55	5
Chromium	**1.7**	**J**	9.8	1.4	mg/Kg	☼	02/26/20 08:00	03/03/20 13:55	5
Cobalt	ND	*	49	0.78	mg/Kg	☼	02/26/20 08:00	03/03/20 13:55	5
Iron	ND	*	98	57	mg/Kg	☼	02/26/20 08:00	03/03/20 13:55	5
Lithium	ND	*	49	2.9	mg/Kg	☼	02/26/20 08:00	03/03/20 13:55	5
Manganese	**5.5**	**J ***	15	2.4	mg/Kg	☼	02/26/20 08:00	03/03/20 13:55	5
Molybdenum	**1.9**	**J**	39	1.6	mg/Kg	☼	02/26/20 08:00	03/03/20 13:55	5
Selenium	ND		9.8	3.4	mg/Kg	☼	02/26/20 08:00	03/03/20 13:55	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11000**		13	2.1	mg/Kg	☼	02/26/20 08:00	03/03/20 15:58	1
Arsenic	**1.2**		0.65	0.20	mg/Kg	☼	02/26/20 08:00	03/03/20 15:58	1
Barium	**69**		3.3	0.16	mg/Kg	☼	02/26/20 08:00	03/03/20 15:58	1
Beryllium	**0.74**		0.33	0.016	mg/Kg	☼	02/26/20 08:00	03/03/20 15:58	1
Cadmium	**0.016**	**J**	0.33	0.014	mg/Kg	☼	02/26/20 08:00	03/03/20 15:58	1
Chromium	**24**		0.65	0.091	mg/Kg	☼	02/26/20 08:00	03/03/20 15:58	1
Cobalt	**6.0**		3.3	0.060	mg/Kg	☼	02/26/20 08:00	03/03/20 15:58	1
Iron	**12000**		6.5	3.8	mg/Kg	☼	02/26/20 08:00	03/03/20 15:58	1
Lithium	**9.4**		3.3	0.20	mg/Kg	☼	02/26/20 08:00	03/03/20 15:58	1
Manganese	**82**		0.98	0.33	mg/Kg	☼	02/26/20 08:00	03/03/20 15:58	1
Molybdenum	**0.93**	**J**	2.6	0.13	mg/Kg	☼	02/26/20 08:00	03/03/20 15:58	1
Selenium	ND		0.65	0.22	mg/Kg	☼	02/26/20 08:00	03/03/20 15:58	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**25000**		130	21	mg/Kg	☼	02/27/20 08:00	03/04/20 14:59	10
Arsenic	**0.76**	**B**	0.65	0.17	mg/Kg	☼	02/27/20 08:00	03/04/20 13:13	1
Barium	**300**		33	1.6	mg/Kg	☼	02/27/20 08:00	03/04/20 14:59	10
Beryllium	**1.2**		0.33	0.0098	mg/Kg	☼	02/27/20 08:00	03/04/20 13:13	1
Cadmium	ND		0.33	0.014	mg/Kg	☼	02/27/20 08:00	03/04/20 13:13	1
Chromium	**45**		0.65	0.091	mg/Kg	☼	02/27/20 08:00	03/04/20 13:13	1
Cobalt	**3.9**	**J**	16	0.98	mg/Kg	☼	02/27/20 08:00	03/04/20 16:21	5
Iron	**14000**		6.5	5.3	mg/Kg	☼	02/27/20 08:00	03/04/20 13:13	1
Lithium	**7.5**		3.3	0.20	mg/Kg	☼	02/27/20 08:00	03/04/20 13:13	1
Manganese	**140**		0.98	0.068	mg/Kg	☼	02/27/20 08:00	03/04/20 13:13	1

Client Sample ID: DGWC-68A (24-29)

Lab Sample ID: 140-18228-4

Date Collected: 02/05/20 00:00

Matrix: Solid

Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	**0.20**	**J**	2.6	0.11	mg/Kg	☼	02/27/20 08:00	03/04/20 13:13	1
Selenium	ND		0.65	0.22	mg/Kg	☼	02/27/20 08:00	03/04/20 13:13	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**38000**		10	1.6	mg/Kg			03/12/20 09:36	1
Arsenic	**2.0**		0.50	0.13	mg/Kg			03/12/20 09:36	1
Barium	**480**		2.5	0.12	mg/Kg			03/12/20 09:36	1
Beryllium	**3.0**		0.25	0.0075	mg/Kg			03/12/20 09:36	1
Cadmium	**0.41**		0.25	0.011	mg/Kg			03/12/20 09:36	1
Chromium	**73**		0.50	0.070	mg/Kg			03/12/20 09:36	1
Cobalt	**14**		2.5	0.023	mg/Kg			03/12/20 09:36	1
Iron	**31000**		5.0	4.1	mg/Kg			03/12/20 09:36	1
Lithium	**21**		2.5	0.15	mg/Kg			03/12/20 09:36	1
Manganese	**1100**		0.75	0.052	mg/Kg			03/12/20 09:36	1
Molybdenum	**14**		2.0	0.082	mg/Kg			03/12/20 09:36	1
Selenium	**1.7**		0.50	0.17	mg/Kg			03/12/20 09:36	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**90000**		130	21	mg/Kg	☼	02/14/20 08:00	03/06/20 12:35	10
Arsenic	**4.1**		3.3	0.85	mg/Kg	☼	02/14/20 08:00	03/06/20 14:02	5
Barium	**580**		33	1.6	mg/Kg	☼	02/14/20 08:00	03/06/20 12:35	10
Beryllium	**2.9**		0.33	0.0098	mg/Kg	☼	02/14/20 08:00	03/05/20 12:40	1
Cadmium	**0.46**	**J**	1.6	0.072	mg/Kg	☼	02/14/20 08:00	03/06/20 14:02	5
Chromium	**75**		0.65	0.091	mg/Kg	☼	02/14/20 08:00	03/05/20 12:40	1
Cobalt	**18**		16	0.98	mg/Kg	☼	02/14/20 08:00	03/06/20 14:02	5
Iron	**39000**		33	27	mg/Kg	☼	02/14/20 08:00	03/06/20 14:02	5
Lithium	**29**		3.3	0.20	mg/Kg	☼	02/14/20 08:00	03/05/20 12:40	1
Manganese	**1300**		0.98	0.068	mg/Kg	☼	02/14/20 08:00	03/05/20 12:40	1
Molybdenum	**18**		2.6	0.11	mg/Kg	☼	02/14/20 08:00	03/05/20 12:40	1
Selenium	ND		3.3	1.1	mg/Kg	☼	02/14/20 08:00	03/06/20 14:02	5

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**23.4**		0.1	0.1	%			02/19/20 11:57	1

Client Sample Results

Client Sample ID: DGWC-69 (19-24)

Lab Sample ID: 140-18228-5

Date Collected: 02/05/20 00:00

Matrix: Solid

Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		47	7.6	mg/Kg	☼	02/19/20 08:00	02/24/20 16:12	4
Arsenic	**0.77**	**J**	2.4	0.61	mg/Kg	☼	02/19/20 08:00	02/24/20 16:12	4
Barium	**1.7**	**J**	12	0.57	mg/Kg	☼	02/19/20 08:00	02/24/20 16:12	4
Beryllium	ND		1.2	0.36	mg/Kg	☼	02/19/20 08:00	02/24/20 16:12	4
Cadmium	ND		1.2	0.076	mg/Kg	☼	02/19/20 08:00	02/24/20 16:12	4
Chromium	ND		2.4	0.33	mg/Kg	☼	02/19/20 08:00	02/24/20 16:12	4
Cobalt	ND		12	0.21	mg/Kg	☼	02/19/20 08:00	02/24/20 16:12	4
Iron	ND		24	14	mg/Kg	☼	02/19/20 08:00	02/24/20 16:12	4
Lithium	ND		12	0.71	mg/Kg	☼	02/19/20 08:00	02/24/20 16:12	4
Manganese	**30**		3.5	0.15	mg/Kg	☼	02/19/20 08:00	02/24/20 16:12	4
Molybdenum	ND		9.4	0.39	mg/Kg	☼	02/19/20 08:00	02/24/20 16:12	4
Selenium	ND		2.4	0.80	mg/Kg	☼	02/19/20 08:00	02/24/20 16:12	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11**	**J ***	35	5.7	mg/Kg	☼	02/20/20 08:00	02/25/20 12:39	3
Arsenic	**1.6**	**J ***	1.8	0.46	mg/Kg	☼	02/20/20 08:00	02/25/20 12:39	3
Barium	**0.62**	**J ***	8.9	0.43	mg/Kg	☼	02/20/20 08:00	02/25/20 12:39	3
Beryllium	**0.073**	**J ***	0.89	0.057	mg/Kg	☼	02/20/20 08:00	02/25/20 12:39	3
Cadmium	ND		0.89	0.039	mg/Kg	☼	02/20/20 08:00	02/25/20 12:39	3
Chromium	ND		1.8	0.25	mg/Kg	☼	02/20/20 08:00	02/25/20 12:39	3
Cobalt	ND		8.9	0.22	mg/Kg	☼	02/20/20 08:00	02/25/20 12:39	3
Iron	**11**	**J ***	18	10	mg/Kg	☼	02/20/20 08:00	02/25/20 12:39	3
Lithium	ND		8.9	0.53	mg/Kg	☼	02/20/20 08:00	02/25/20 12:39	3
Manganese	**7.9**		2.7	0.99	mg/Kg	☼	02/20/20 08:00	02/25/20 12:39	3
Molybdenum	ND		7.1	0.29	mg/Kg	☼	02/20/20 08:00	02/25/20 12:39	3
Selenium	**0.71**	**J**	1.8	0.60	mg/Kg	☼	02/20/20 08:00	02/25/20 12:39	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**57**		24	5.0	mg/Kg	☼	02/21/20 08:00	02/25/20 15:11	2
Arsenic	**15**		1.2	0.31	mg/Kg	☼	02/21/20 08:00	02/25/20 15:11	2
Barium	**3.7**	**J B**	5.9	0.28	mg/Kg	☼	02/21/20 08:00	02/25/20 15:11	2
Beryllium	**0.099**	**J**	0.30	0.018	mg/Kg	☼	02/21/20 08:00	02/25/20 14:49	1
Cadmium	**0.065**	**J B ***	0.59	0.026	mg/Kg	☼	02/21/20 08:00	02/25/20 15:11	2
Chromium	**0.31**	**J**	0.59	0.083	mg/Kg	☼	02/21/20 08:00	02/25/20 14:49	1
Cobalt	**0.79**	**J**	5.9	0.11	mg/Kg	☼	02/21/20 08:00	02/25/20 15:11	2
Iron	**200**		12	6.8	mg/Kg	☼	02/21/20 08:00	02/25/20 15:11	2
Lithium	ND		5.9	0.35	mg/Kg	☼	02/21/20 08:00	02/25/20 15:11	2
Manganese	**52**	**B**	0.89	0.032	mg/Kg	☼	02/21/20 08:00	02/25/20 14:49	1
Molybdenum	**0.46**	**J**	4.7	0.19	mg/Kg	☼	02/21/20 08:00	02/25/20 15:11	2
Selenium	ND		1.2	0.40	mg/Kg	☼	02/21/20 08:00	02/25/20 15:11	2

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1000**		12	1.9	mg/Kg	☼	02/24/20 08:00	02/26/20 13:23	1
Arsenic	**7.3**		0.59	0.26	mg/Kg	☼	02/24/20 08:00	02/26/20 13:23	1
Barium	**31**		3.0	0.14	mg/Kg	☼	02/24/20 08:00	02/26/20 13:23	1
Beryllium	**0.31**		0.30	0.019	mg/Kg	☼	02/24/20 08:00	02/26/20 13:23	1
Cadmium	**0.075**	**J**	0.30	0.013	mg/Kg	☼	02/24/20 08:00	02/26/20 13:23	1

Client Sample ID: DGWC-69 (19-24)

Lab Sample ID: 140-18228-5

Date Collected: 02/05/20 00:00

Matrix: Solid

Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**1.8**		0.59	0.083	mg/Kg	☼	02/24/20 08:00	02/26/20 13:23	1
Cobalt	**0.56**	**J**	3.0	0.063	mg/Kg	☼	02/24/20 08:00	02/26/20 13:23	1
Iron	**1800**		5.9	3.4	mg/Kg	☼	02/24/20 08:00	02/26/20 13:23	1
Lithium	**0.88**	**J**	3.0	0.18	mg/Kg	☼	02/24/20 08:00	02/26/20 13:23	1
Manganese	**39**		0.89	0.15	mg/Kg	☼	02/24/20 08:00	02/26/20 13:23	1
Molybdenum	**0.59**	**J**	2.4	0.097	mg/Kg	☼	02/24/20 08:00	02/26/20 13:23	1
Selenium	**0.81**	**B ***	0.59	0.55	mg/Kg	☼	02/24/20 08:00	02/26/20 13:23	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**250**	*****	180	28	mg/Kg	☼	02/26/20 08:00	03/03/20 14:10	5
Arsenic	ND	*	8.9	2.2	mg/Kg	☼	02/26/20 08:00	03/03/20 14:10	5
Barium	**15**	**J ***	44	2.1	mg/Kg	☼	02/26/20 08:00	03/03/20 14:10	5
Beryllium	ND	*	4.4	0.37	mg/Kg	☼	02/26/20 08:00	03/03/20 14:10	5
Cadmium	ND		4.4	0.19	mg/Kg	☼	02/26/20 08:00	03/03/20 14:10	5
Chromium	**1.3**	**J**	8.9	1.2	mg/Kg	☼	02/26/20 08:00	03/03/20 14:10	5
Cobalt	ND	*	44	0.71	mg/Kg	☼	02/26/20 08:00	03/03/20 14:10	5
Iron	ND	*	89	52	mg/Kg	☼	02/26/20 08:00	03/03/20 14:10	5
Lithium	ND	*	44	2.6	mg/Kg	☼	02/26/20 08:00	03/03/20 14:10	5
Manganese	ND	*	13	2.2	mg/Kg	☼	02/26/20 08:00	03/03/20 14:10	5
Molybdenum	ND		35	1.5	mg/Kg	☼	02/26/20 08:00	03/03/20 14:10	5
Selenium	ND		8.9	3.1	mg/Kg	☼	02/26/20 08:00	03/03/20 14:10	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**5500**		12	1.9	mg/Kg	☼	02/26/20 08:00	03/03/20 16:15	1
Arsenic	**2.8**		0.59	0.18	mg/Kg	☼	02/26/20 08:00	03/03/20 16:15	1
Barium	**12**		3.0	0.14	mg/Kg	☼	02/26/20 08:00	03/03/20 16:15	1
Beryllium	**0.76**		0.30	0.014	mg/Kg	☼	02/26/20 08:00	03/03/20 16:15	1
Cadmium	ND		0.30	0.013	mg/Kg	☼	02/26/20 08:00	03/03/20 16:15	1
Chromium	**3.8**		0.59	0.083	mg/Kg	☼	02/26/20 08:00	03/03/20 16:15	1
Cobalt	**2.0**	**J**	3.0	0.054	mg/Kg	☼	02/26/20 08:00	03/03/20 16:15	1
Iron	**6400**		5.9	3.4	mg/Kg	☼	02/26/20 08:00	03/03/20 16:15	1
Lithium	**5.5**		3.0	0.18	mg/Kg	☼	02/26/20 08:00	03/03/20 16:15	1
Manganese	**130**		0.89	0.30	mg/Kg	☼	02/26/20 08:00	03/03/20 16:15	1
Molybdenum	**0.54**	**J**	2.4	0.12	mg/Kg	☼	02/26/20 08:00	03/03/20 16:15	1
Selenium	ND		0.59	0.20	mg/Kg	☼	02/26/20 08:00	03/03/20 16:15	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**57000**		120	19	mg/Kg	☼	02/27/20 08:00	03/04/20 15:04	10
Arsenic	**0.77**	**B**	0.59	0.15	mg/Kg	☼	02/27/20 08:00	03/04/20 13:28	1
Barium	**420**		30	1.4	mg/Kg	☼	02/27/20 08:00	03/04/20 15:04	10
Beryllium	**1.9**		0.30	0.0089	mg/Kg	☼	02/27/20 08:00	03/04/20 13:28	1
Cadmium	ND		0.30	0.013	mg/Kg	☼	02/27/20 08:00	03/04/20 13:28	1
Chromium	**3.3**	**J**	5.9	0.83	mg/Kg	☼	02/27/20 08:00	03/04/20 15:04	10
Cobalt	**0.33**	**J**	3.0	0.18	mg/Kg	☼	02/27/20 08:00	03/04/20 13:28	1
Iron	**5500**		5.9	4.8	mg/Kg	☼	02/27/20 08:00	03/04/20 13:28	1
Lithium	**6.0**		3.0	0.18	mg/Kg	☼	02/27/20 08:00	03/04/20 13:28	1
Manganese	**85**		0.89	0.061	mg/Kg	☼	02/27/20 08:00	03/04/20 13:28	1

Client Sample ID: DGWC-69 (19-24)

Lab Sample ID: 140-18228-5

Date Collected: 02/05/20 00:00

Matrix: Solid

Date Received: 02/12/20 09:50

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	**0.58**	**J**	2.4	0.097	mg/Kg	☼	02/27/20 08:00	03/04/20 13:28	1
Selenium	ND		0.59	0.20	mg/Kg	☼	02/27/20 08:00	03/04/20 13:28	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**64000**		10	1.6	mg/Kg			03/12/20 09:36	1
Arsenic	**28**		0.50	0.13	mg/Kg			03/12/20 09:36	1
Barium	**490**		2.5	0.12	mg/Kg			03/12/20 09:36	1
Beryllium	**3.2**		0.25	0.0075	mg/Kg			03/12/20 09:36	1
Cadmium	**0.14**	**J**	0.25	0.011	mg/Kg			03/12/20 09:36	1
Chromium	**11**		0.50	0.070	mg/Kg			03/12/20 09:36	1
Cobalt	**3.7**		2.5	0.023	mg/Kg			03/12/20 09:36	1
Iron	**14000**		5.0	4.1	mg/Kg			03/12/20 09:36	1
Lithium	**12**		2.5	0.15	mg/Kg			03/12/20 09:36	1
Manganese	**340**		0.75	0.052	mg/Kg			03/12/20 09:36	1
Molybdenum	**2.2**		2.0	0.082	mg/Kg			03/12/20 09:36	1
Selenium	**1.5**		0.50	0.17	mg/Kg			03/12/20 09:36	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**85000**		120	19	mg/Kg	☼	02/14/20 08:00	03/06/20 12:51	10
Arsenic	**28**		0.59	0.15	mg/Kg	☼	02/14/20 08:00	03/05/20 12:55	1
Barium	**480**		30	1.4	mg/Kg	☼	02/14/20 08:00	03/06/20 12:51	10
Beryllium	**3.2**		0.30	0.0089	mg/Kg	☼	02/14/20 08:00	03/05/20 12:55	1
Cadmium	**0.059**	**J**	0.30	0.013	mg/Kg	☼	02/14/20 08:00	03/05/20 12:55	1
Chromium	**9.0**	**B**	3.0	0.41	mg/Kg	☼	02/14/20 08:00	03/06/20 14:07	5
Cobalt	**3.9**	**J**	15	0.89	mg/Kg	☼	02/14/20 08:00	03/06/20 14:07	5
Iron	**13000**		5.9	4.8	mg/Kg	☼	02/14/20 08:00	03/05/20 12:55	1
Lithium	**13**		3.0	0.18	mg/Kg	☼	02/14/20 08:00	03/05/20 12:55	1
Manganese	**350**		0.89	0.061	mg/Kg	☼	02/14/20 08:00	03/05/20 12:55	1
Molybdenum	**2.2**	**J**	2.4	0.097	mg/Kg	☼	02/14/20 08:00	03/05/20 12:55	1
Selenium	ND	L	0.59	0.20	mg/Kg	☼	02/14/20 08:00	03/05/20 12:55	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**15.3**		0.1	0.1	%			02/19/20 11:57	1

Default Detection Limits

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Prep: 3010A

SEP: Exchangeable

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.077	mg/Kg
Cadmium	0.25	0.016	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Prep: 3010A

SEP: Carbonate

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Aluminum	10	2.1	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.015	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.22	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.47	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Aluminum	30	4.7	mg/Kg
Arsenic	1.5	0.38	mg/Kg
Barium	7.5	0.36	mg/Kg
Beryllium	0.75	0.063	mg/Kg
Cadmium	0.75	0.032	mg/Kg
Chromium	1.5	0.21	mg/Kg
Cobalt	7.5	0.12	mg/Kg
Iron	15	8.8	mg/Kg
Lithium	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg
Molybdenum	6.0	0.25	mg/Kg
Selenium	1.5	0.52	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.15	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.012	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg
Molybdenum	2.0	0.099	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Prep: Residual

Analyte	RL	MDL	Units
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.15	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.15	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

General Chemistry

Analyte	RL	RL	Units
Percent Moisture	0.1	0.1	%

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-37475/17-A
Matrix: Solid
Analysis Batch: 38107

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 37475

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		02/14/20 08:00	03/05/20 10:40	1
Arsenic	ND		0.50	0.13	mg/Kg		02/14/20 08:00	03/05/20 10:40	1
Barium	ND		2.5	0.12	mg/Kg		02/14/20 08:00	03/05/20 10:40	1
Beryllium	ND		0.25	0.0075	mg/Kg		02/14/20 08:00	03/05/20 10:40	1
Cadmium	ND		0.25	0.011	mg/Kg		02/14/20 08:00	03/05/20 10:40	1
Chromium	ND		0.50	0.070	mg/Kg		02/14/20 08:00	03/05/20 10:40	1
Cobalt	ND		2.5	0.15	mg/Kg		02/14/20 08:00	03/05/20 10:40	1
Iron	ND		5.0	4.1	mg/Kg		02/14/20 08:00	03/05/20 10:40	1
Lithium	ND		2.5	0.15	mg/Kg		02/14/20 08:00	03/05/20 10:40	1
Manganese	ND		0.75	0.052	mg/Kg		02/14/20 08:00	03/05/20 10:40	1
Molybdenum	ND		2.0	0.082	mg/Kg		02/14/20 08:00	03/05/20 10:40	1
Selenium	ND		0.50	0.17	mg/Kg		02/14/20 08:00	03/05/20 10:40	1

Lab Sample ID: MB 140-37475/17-A
Matrix: Solid
Analysis Batch: 38133

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 37475

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		02/14/20 08:00	03/06/20 10:50	1
Arsenic	ND		0.50	0.13	mg/Kg		02/14/20 08:00	03/06/20 10:50	1
Barium	ND		2.5	0.12	mg/Kg		02/14/20 08:00	03/06/20 10:50	1
Beryllium	ND		0.25	0.0075	mg/Kg		02/14/20 08:00	03/06/20 10:50	1
Cadmium	ND		0.25	0.011	mg/Kg		02/14/20 08:00	03/06/20 10:50	1
Chromium	0.0785	J	0.50	0.070	mg/Kg		02/14/20 08:00	03/06/20 10:50	1
Cobalt	ND		2.5	0.15	mg/Kg		02/14/20 08:00	03/06/20 10:50	1
Iron	ND		5.0	4.1	mg/Kg		02/14/20 08:00	03/06/20 10:50	1
Lithium	ND		2.5	0.15	mg/Kg		02/14/20 08:00	03/06/20 10:50	1
Manganese	ND		0.75	0.052	mg/Kg		02/14/20 08:00	03/06/20 10:50	1
Molybdenum	ND		2.0	0.082	mg/Kg		02/14/20 08:00	03/06/20 10:50	1
Selenium	ND		0.50	0.17	mg/Kg		02/14/20 08:00	03/06/20 10:50	1

Lab Sample ID: LCS 140-37475/18-A
Matrix: Solid
Analysis Batch: 38107

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 37475

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	100		mg/Kg		100	75 - 125
Arsenic	5.00	5.24		mg/Kg		105	75 - 125
Barium	5.00	5.04		mg/Kg		101	75 - 125
Beryllium	2.50	2.53		mg/Kg		101	75 - 125
Cadmium	2.50	2.61		mg/Kg		105	75 - 125
Chromium	10.0	10.5		mg/Kg		105	75 - 125
Cobalt	5.00	5.13		mg/Kg		103	75 - 125
Iron	50.0	52.2		mg/Kg		104	75 - 125
Lithium	5.00	5.17		mg/Kg		103	75 - 125
Manganese	5.00	5.29		mg/Kg		106	75 - 125
Molybdenum	25.0	26.4		mg/Kg		106	75 - 125
Selenium	7.50	7.55		mg/Kg		101	75 - 125

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Lab Sample ID: LCS 140-37475/18-A
Matrix: Solid
Analysis Batch: 38133

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 37475

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	103		mg/Kg		103	75 - 125
Arsenic	5.00	5.34		mg/Kg		107	75 - 125
Barium	5.00	5.18		mg/Kg		104	75 - 125
Beryllium	2.50	2.67		mg/Kg		107	75 - 125
Cadmium	2.50	2.69		mg/Kg		108	75 - 125
Chromium	10.0	11.0		mg/Kg		110	75 - 125
Cobalt	5.00	5.39		mg/Kg		108	75 - 125
Iron	50.0	54.0		mg/Kg		108	75 - 125
Lithium	5.00	5.31		mg/Kg		106	75 - 125
Manganese	5.00	5.43		mg/Kg		109	75 - 125
Molybdenum	25.0	27.3		mg/Kg		109	75 - 125
Selenium	7.50	7.60		mg/Kg		101	75 - 125

Lab Sample ID: LCSD 140-37475/19-A
Matrix: Solid
Analysis Batch: 38107

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 37475

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.4		mg/Kg		98	75 - 125	2	30
Arsenic	5.00	5.19		mg/Kg		104	75 - 125	1	30
Barium	5.00	5.02		mg/Kg		100	75 - 125	0	30
Beryllium	2.50	2.54		mg/Kg		102	75 - 125	1	30
Cadmium	2.50	2.61		mg/Kg		105	75 - 125	0	30
Chromium	10.0	10.6		mg/Kg		106	75 - 125	1	30
Cobalt	5.00	5.16		mg/Kg		103	75 - 125	0	30
Iron	50.0	51.9		mg/Kg		104	75 - 125	0	30
Lithium	5.00	5.19		mg/Kg		104	75 - 125	0	30
Manganese	5.00	5.27		mg/Kg		105	75 - 125	0	30
Molybdenum	25.0	26.5		mg/Kg		106	75 - 125	0	30
Selenium	7.50	7.41		mg/Kg		99	75 - 125	2	30

Lab Sample ID: LCSD 140-37475/19-A
Matrix: Solid
Analysis Batch: 38133

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 37475

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	101		mg/Kg		101	75 - 125	2	30
Arsenic	5.00	5.28		mg/Kg		106	75 - 125	1	30
Barium	5.00	5.06		mg/Kg		101	75 - 125	2	30
Beryllium	2.50	2.61		mg/Kg		104	75 - 125	2	30
Cadmium	2.50	2.63		mg/Kg		105	75 - 125	2	30
Chromium	10.0	10.7		mg/Kg		107	75 - 125	2	30
Cobalt	5.00	5.27		mg/Kg		105	75 - 125	2	30
Iron	50.0	52.5		mg/Kg		105	75 - 125	3	30
Lithium	5.00	5.14		mg/Kg		103	75 - 125	3	30
Manganese	5.00	5.28		mg/Kg		106	75 - 125	3	30
Molybdenum	25.0	26.8		mg/Kg		107	75 - 125	2	30
Selenium	7.50	7.40		mg/Kg		99	75 - 125	3	30

QC Sample Results

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-37545/17-B ^4
Matrix: Solid
Analysis Batch: 37820

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 37615

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		02/19/20 08:00	02/24/20 14:09	4
Arsenic	ND		2.0	0.52	mg/Kg		02/19/20 08:00	02/24/20 14:09	4
Barium	ND		10	0.48	mg/Kg		02/19/20 08:00	02/24/20 14:09	4
Beryllium	ND		1.0	0.31	mg/Kg		02/19/20 08:00	02/24/20 14:09	4
Cadmium	ND		1.0	0.064	mg/Kg		02/19/20 08:00	02/24/20 14:09	4
Chromium	ND		2.0	0.28	mg/Kg		02/19/20 08:00	02/24/20 14:09	4
Cobalt	ND		10	0.18	mg/Kg		02/19/20 08:00	02/24/20 14:09	4
Iron	ND		20	12	mg/Kg		02/19/20 08:00	02/24/20 14:09	4
Lithium	ND		10	0.60	mg/Kg		02/19/20 08:00	02/24/20 14:09	4
Manganese	ND		3.0	0.12	mg/Kg		02/19/20 08:00	02/24/20 14:09	4
Molybdenum	ND		8.0	0.33	mg/Kg		02/19/20 08:00	02/24/20 14:09	4
Selenium	ND		2.0	0.68	mg/Kg		02/19/20 08:00	02/24/20 14:09	4

Lab Sample ID: LCS 140-37545/18-B ^5
Matrix: Solid
Analysis Batch: 37820

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 37615

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	106		mg/Kg		106	75 - 125
Arsenic	5.00	5.28		mg/Kg		106	75 - 125
Barium	5.00	4.91	J	mg/Kg		98	75 - 125
Beryllium	2.50	2.64		mg/Kg		105	75 - 125
Cadmium	2.50	2.49		mg/Kg		99	75 - 125
Chromium	10.0	10.3		mg/Kg		103	75 - 125
Cobalt	5.00	5.01	J	mg/Kg		100	75 - 125
Iron	50.0	51.1		mg/Kg		102	75 - 125
Lithium	5.00	5.10	J	mg/Kg		102	75 - 125
Manganese	5.00	5.16		mg/Kg		103	75 - 125
Molybdenum	25.0	25.0		mg/Kg		100	75 - 125
Selenium	7.50	7.62		mg/Kg		102	75 - 125

Lab Sample ID: LCSD 140-37545/19-B ^5
Matrix: Solid
Analysis Batch: 37820

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 37615

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	111		mg/Kg		111	75 - 125	5	30
Arsenic	5.00	5.44		mg/Kg		109	75 - 125	3	30
Barium	5.00	5.11	J	mg/Kg		102	75 - 125	4	30
Beryllium	2.50	2.72		mg/Kg		109	75 - 125	3	30
Cadmium	2.50	2.55		mg/Kg		102	75 - 125	2	30
Chromium	10.0	10.5		mg/Kg		105	75 - 125	3	30
Cobalt	5.00	5.10	J	mg/Kg		102	75 - 125	2	30
Iron	50.0	53.5		mg/Kg		107	75 - 125	5	30
Lithium	5.00	5.31	J	mg/Kg		106	75 - 125	4	30
Manganese	5.00	5.30		mg/Kg		106	75 - 125	3	30
Molybdenum	25.0	25.5		mg/Kg		102	75 - 125	2	30
Selenium	7.50	7.29		mg/Kg		97	75 - 125	4	30

QC Sample Results

Client: Golder Associates Inc. Job ID: 140-18228-1
Project/Site: GPC Plant McDonough (166849618)

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-37616/17-B ^3 **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Step 2**
Analysis Batch: 37865 **Prep Batch: 37673**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		02/20/20 08:00	02/25/20 10:34	3
Arsenic	ND		1.5	0.39	mg/Kg		02/20/20 08:00	02/25/20 10:34	3
Barium	ND		7.5	0.36	mg/Kg		02/20/20 08:00	02/25/20 10:34	3
Beryllium	ND		0.75	0.048	mg/Kg		02/20/20 08:00	02/25/20 10:34	3
Cadmium	ND		0.75	0.033	mg/Kg		02/20/20 08:00	02/25/20 10:34	3
Chromium	0.237	J	1.5	0.21	mg/Kg		02/20/20 08:00	02/25/20 10:34	3
Cobalt	ND		7.5	0.19	mg/Kg		02/20/20 08:00	02/25/20 10:34	3
Iron	ND		15	8.7	mg/Kg		02/20/20 08:00	02/25/20 10:34	3
Lithium	ND		7.5	0.45	mg/Kg		02/20/20 08:00	02/25/20 10:34	3
Manganese	ND		2.3	0.84	mg/Kg		02/20/20 08:00	02/25/20 10:34	3
Molybdenum	ND		6.0	0.25	mg/Kg		02/20/20 08:00	02/25/20 10:34	3
Selenium	ND		1.5	0.51	mg/Kg		02/20/20 08:00	02/25/20 10:34	3

Lab Sample ID: LCS 140-37616/18-B ^5 **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Step 2**
Analysis Batch: 37865 **Prep Batch: 37673**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	ND	*	mg/Kg		2	75 - 125
Arsenic	5.00	3.50	*	mg/Kg		70	75 - 125
Barium	5.00	2.20	J *	mg/Kg		44	75 - 125
Beryllium	2.50	1.28	J *	mg/Kg		51	75 - 125
Cadmium	2.50	2.34		mg/Kg		94	75 - 125
Chromium	10.0	7.61		mg/Kg		76	75 - 125
Cobalt	5.00	4.47	J	mg/Kg		89	75 - 125
Iron	50.0	ND	*	mg/Kg		3	75 - 125
Lithium	5.00	4.91	J	mg/Kg		98	75 - 125
Manganese	5.00	4.63		mg/Kg		93	75 - 125
Molybdenum	25.0	20.8		mg/Kg		83	75 - 125
Selenium	7.50	6.90		mg/Kg		92	75 - 125

Lab Sample ID: LCSD 140-37616/19-B ^5 **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Step 2**
Analysis Batch: 37865 **Prep Batch: 37673**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	ND	*	mg/Kg		6	75 - 125	108	30
Arsenic	5.00	3.41	*	mg/Kg		68	75 - 125	3	30
Barium	5.00	2.27	J *	mg/Kg		45	75 - 125	3	30
Beryllium	2.50	1.31	*	mg/Kg		53	75 - 125	3	30
Cadmium	2.50	2.40		mg/Kg		96	75 - 125	2	30
Chromium	10.0	7.63		mg/Kg		76	75 - 125	0	30
Cobalt	5.00	4.54	J	mg/Kg		91	75 - 125	1	30
Iron	50.0	ND	*	mg/Kg		3	75 - 125	30	30
Lithium	5.00	5.22	J	mg/Kg		104	75 - 125	6	30
Manganese	5.00	4.75		mg/Kg		95	75 - 125	2	30
Molybdenum	25.0	20.9		mg/Kg		84	75 - 125	0	30
Selenium	7.50	7.11		mg/Kg		95	75 - 125	3	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-37675/17-B
Matrix: Solid
Analysis Batch: 37865

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 37715

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	2.1	mg/Kg		02/21/20 08:00	02/25/20 12:45	1
Arsenic	ND		0.50	0.13	mg/Kg		02/21/20 08:00	02/25/20 12:45	1
Barium	0.155	J	2.5	0.12	mg/Kg		02/21/20 08:00	02/25/20 12:45	1
Beryllium	ND		0.25	0.015	mg/Kg		02/21/20 08:00	02/25/20 12:45	1
Cadmium	0.0720	J	0.25	0.011	mg/Kg		02/21/20 08:00	02/25/20 12:45	1
Chromium	ND		0.50	0.070	mg/Kg		02/21/20 08:00	02/25/20 12:45	1
Cobalt	ND		2.5	0.045	mg/Kg		02/21/20 08:00	02/25/20 12:45	1
Iron	ND		5.0	2.9	mg/Kg		02/21/20 08:00	02/25/20 12:45	1
Lithium	ND		2.5	0.15	mg/Kg		02/21/20 08:00	02/25/20 12:45	1
Manganese	0.0555	J	0.75	0.027	mg/Kg		02/21/20 08:00	02/25/20 12:45	1
Molybdenum	ND		2.0	0.082	mg/Kg		02/21/20 08:00	02/25/20 12:45	1
Selenium	0.188	J	0.50	0.17	mg/Kg		02/21/20 08:00	02/25/20 12:45	1

Lab Sample ID: LCS 140-37675/18-B
Matrix: Solid
Analysis Batch: 37865

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 37715

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	99.2		mg/Kg		99	75 - 125
Arsenic	5.00	4.93		mg/Kg		99	75 - 125
Barium	5.00	5.10		mg/Kg		102	75 - 125
Beryllium	2.50	2.63		mg/Kg		105	75 - 125
Cadmium	2.50	1.58	*	mg/Kg		63	75 - 125
Chromium	10.0	10.3		mg/Kg		103	75 - 125
Cobalt	5.00	4.94		mg/Kg		99	75 - 125
Iron	50.0	51.9		mg/Kg		104	75 - 125
Lithium	5.00	5.20		mg/Kg		104	75 - 125
Manganese	5.00	5.28		mg/Kg		106	75 - 125
Molybdenum	25.0	26.0		mg/Kg		104	75 - 125
Selenium	7.50	7.78		mg/Kg		104	75 - 125

Lab Sample ID: LCSD 140-37675/19-B
Matrix: Solid
Analysis Batch: 37865

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 37715

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	97.4		mg/Kg		97	75 - 125	2	30
Arsenic	5.00	4.93		mg/Kg		99	75 - 125	0	30
Barium	5.00	5.05		mg/Kg		101	75 - 125	1	30
Beryllium	2.50	2.63		mg/Kg		105	75 - 125	0	30
Cadmium	2.50	1.58	*	mg/Kg		63	75 - 125	0	30
Chromium	10.0	10.2		mg/Kg		102	75 - 125	1	30
Cobalt	5.00	4.91		mg/Kg		98	75 - 125	1	30
Iron	50.0	51.6		mg/Kg		103	75 - 125	1	30
Lithium	5.00	5.19		mg/Kg		104	75 - 125	0	30
Manganese	5.00	5.23		mg/Kg		105	75 - 125	1	30
Molybdenum	25.0	25.8		mg/Kg		103	75 - 125	1	30
Selenium	7.50	7.85		mg/Kg		105	75 - 125	1	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-37716/17-B
Matrix: Solid
Analysis Batch: 37910

Client Sample ID: Method Blank
Prep Type: Step 4
Prep Batch: 37755

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		02/24/20 08:00	02/26/20 11:22	1
Arsenic	ND		0.50	0.22	mg/Kg		02/24/20 08:00	02/26/20 11:22	1
Barium	ND		2.5	0.12	mg/Kg		02/24/20 08:00	02/26/20 11:22	1
Beryllium	ND		0.25	0.016	mg/Kg		02/24/20 08:00	02/26/20 11:22	1
Cadmium	ND		0.25	0.011	mg/Kg		02/24/20 08:00	02/26/20 11:22	1
Chromium	ND		0.50	0.070	mg/Kg		02/24/20 08:00	02/26/20 11:22	1
Cobalt	ND		2.5	0.053	mg/Kg		02/24/20 08:00	02/26/20 11:22	1
Iron	ND		5.0	2.9	mg/Kg		02/24/20 08:00	02/26/20 11:22	1
Lithium	ND		2.5	0.15	mg/Kg		02/24/20 08:00	02/26/20 11:22	1
Manganese	ND		0.75	0.13	mg/Kg		02/24/20 08:00	02/26/20 11:22	1
Molybdenum	ND		2.0	0.082	mg/Kg		02/24/20 08:00	02/26/20 11:22	1
Selenium	1.20		0.50	0.47	mg/Kg		02/24/20 08:00	02/26/20 11:22	1

Lab Sample ID: LCS 140-37716/18-B
Matrix: Solid
Analysis Batch: 37910

Client Sample ID: Lab Control Sample
Prep Type: Step 4
Prep Batch: 37755

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	94.7		mg/Kg		95	75 - 125
Arsenic	5.00	4.98		mg/Kg		100	75 - 125
Barium	5.00	4.80		mg/Kg		96	75 - 125
Beryllium	2.50	2.63		mg/Kg		105	75 - 125
Cadmium	2.50	2.52		mg/Kg		101	75 - 125
Chromium	10.0	10.0		mg/Kg		100	75 - 125
Cobalt	5.00	4.94		mg/Kg		99	75 - 125
Iron	50.0	49.5		mg/Kg		99	75 - 125
Lithium	5.00	4.97		mg/Kg		99	75 - 125
Manganese	5.00	5.03		mg/Kg		101	75 - 125
Molybdenum	25.0	25.3		mg/Kg		101	75 - 125
Selenium	7.50	0.629	*	mg/Kg		8	75 - 125

Lab Sample ID: LCSD 140-37716/19-B
Matrix: Solid
Analysis Batch: 37910

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 37755

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	97.4		mg/Kg		97	75 - 125	3	30
Arsenic	5.00	5.09		mg/Kg		102	75 - 125	2	30
Barium	5.00	4.87		mg/Kg		97	75 - 125	1	30
Beryllium	2.50	2.65		mg/Kg		106	75 - 125	1	30
Cadmium	2.50	2.53		mg/Kg		101	75 - 125	1	30
Chromium	10.0	10.2		mg/Kg		102	75 - 125	1	30
Cobalt	5.00	5.00		mg/Kg		100	75 - 125	1	30
Iron	50.0	49.5		mg/Kg		99	75 - 125	0	30
Lithium	5.00	5.01		mg/Kg		100	75 - 125	1	30
Manganese	5.00	5.05		mg/Kg		101	75 - 125	1	30
Molybdenum	25.0	26.1		mg/Kg		104	75 - 125	3	30
Selenium	7.50	0.921	*	mg/Kg		12	75 - 125	38	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-37756/17-B ^5
Matrix: Solid
Analysis Batch: 38037

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 37858

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		150	24	mg/Kg		02/26/20 08:00	03/03/20 12:03	5
Arsenic	ND		7.5	1.9	mg/Kg		02/26/20 08:00	03/03/20 12:03	5
Barium	ND		38	1.8	mg/Kg		02/26/20 08:00	03/03/20 12:03	5
Beryllium	ND		3.8	0.32	mg/Kg		02/26/20 08:00	03/03/20 12:03	5
Cadmium	ND		3.8	0.16	mg/Kg		02/26/20 08:00	03/03/20 12:03	5
Chromium	ND		7.5	1.1	mg/Kg		02/26/20 08:00	03/03/20 12:03	5
Cobalt	ND		38	0.60	mg/Kg		02/26/20 08:00	03/03/20 12:03	5
Iron	ND		75	44	mg/Kg		02/26/20 08:00	03/03/20 12:03	5
Lithium	7.27	J	38	2.2	mg/Kg		02/26/20 08:00	03/03/20 12:03	5
Manganese	ND		11	1.9	mg/Kg		02/26/20 08:00	03/03/20 12:03	5
Molybdenum	ND		30	1.3	mg/Kg		02/26/20 08:00	03/03/20 12:03	5
Selenium	ND		7.5	2.6	mg/Kg		02/26/20 08:00	03/03/20 12:03	5

Lab Sample ID: LCS 140-37756/18-B ^5
Matrix: Solid
Analysis Batch: 38037

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 37858

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	300	ND	*	mg/Kg		-0.7	75 - 125
Arsenic	15.0	11.0	*	mg/Kg		73	75 - 125
Barium	15.0	8.18	J *	mg/Kg		55	75 - 125
Beryllium	7.50	3.92	*	mg/Kg		52	75 - 125
Cadmium	7.50	8.34		mg/Kg		111	75 - 125
Chromium	30.0	33.4		mg/Kg		111	75 - 125
Cobalt	15.0	1.72	J *	mg/Kg		11	75 - 125
Iron	150	ND	*	mg/Kg		2	75 - 125
Lithium	15.0	20.8	J *	mg/Kg		138	75 - 125
Manganese	15.0	ND	*	mg/Kg		6	75 - 125
Molybdenum	75.0	60.1		mg/Kg		80	75 - 125
Selenium	22.5	25.7		mg/Kg		114	75 - 125

Lab Sample ID: LCSD 140-37756/19-B ^5
Matrix: Solid
Analysis Batch: 38037

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 37858

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	300	ND	*	mg/Kg		-2	75 - 125	102	30
Arsenic	15.0	11.8		mg/Kg		79	75 - 125	7	30
Barium	15.0	8.59	J *	mg/Kg		57	75 - 125	5	30
Beryllium	7.50	4.13	*	mg/Kg		55	75 - 125	5	30
Cadmium	7.50	8.63		mg/Kg		115	75 - 125	3	30
Chromium	30.0	34.4		mg/Kg		115	75 - 125	3	30
Cobalt	15.0	1.91	J *	mg/Kg		13	75 - 125	10	30
Iron	150	ND	*	mg/Kg		4	75 - 125	61	30
Lithium	15.0	21.9	J *	mg/Kg		146	75 - 125	5	30
Manganese	15.0	ND	*	mg/Kg		8	75 - 125	37	30
Molybdenum	75.0	60.9		mg/Kg		81	75 - 125	1	30
Selenium	22.5	26.6		mg/Kg		118	75 - 125	3	30

QC Sample Results

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-37859/17-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Step 6
Analysis Batch: 38037
Prep Batch: 37859

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		02/26/20 08:00	03/03/20 14:15	1
Arsenic	ND		0.50	0.15	mg/Kg		02/26/20 08:00	03/03/20 14:15	1
Barium	ND		2.5	0.12	mg/Kg		02/26/20 08:00	03/03/20 14:15	1
Beryllium	ND		0.25	0.012	mg/Kg		02/26/20 08:00	03/03/20 14:15	1
Cadmium	ND		0.25	0.011	mg/Kg		02/26/20 08:00	03/03/20 14:15	1
Chromium	ND		0.50	0.070	mg/Kg		02/26/20 08:00	03/03/20 14:15	1
Cobalt	ND		2.5	0.046	mg/Kg		02/26/20 08:00	03/03/20 14:15	1
Iron	ND		5.0	2.9	mg/Kg		02/26/20 08:00	03/03/20 14:15	1
Lithium	ND		2.5	0.15	mg/Kg		02/26/20 08:00	03/03/20 14:15	1
Manganese	ND		0.75	0.25	mg/Kg		02/26/20 08:00	03/03/20 14:15	1
Molybdenum	ND		2.0	0.099	mg/Kg		02/26/20 08:00	03/03/20 14:15	1
Selenium	ND		0.50	0.17	mg/Kg		02/26/20 08:00	03/03/20 14:15	1

Lab Sample ID: LCS 140-37859/18-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Step 6
Analysis Batch: 38037
Prep Batch: 37859

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	87.8		mg/Kg		88	75 - 125
Arsenic	5.00	4.82		mg/Kg		96	75 - 125
Barium	5.00	4.73		mg/Kg		95	75 - 125
Beryllium	2.50	2.51		mg/Kg		101	75 - 125
Cadmium	2.50	2.45		mg/Kg		98	75 - 125
Chromium	10.0	9.65		mg/Kg		97	75 - 125
Cobalt	5.00	4.75		mg/Kg		95	75 - 125
Iron	50.0	44.8		mg/Kg		90	75 - 125
Lithium	5.00	4.98		mg/Kg		100	75 - 125
Manganese	5.00	4.88		mg/Kg		98	75 - 125
Molybdenum	25.0	24.4		mg/Kg		97	75 - 125
Selenium	7.50	7.18		mg/Kg		96	75 - 125

Lab Sample ID: LCSD 140-37859/19-A
Client Sample ID: Lab Control Sample Dup
Matrix: Solid
Prep Type: Step 6
Analysis Batch: 38037
Prep Batch: 37859

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	93.6		mg/Kg		94	75 - 125	6	30
Arsenic	5.00	5.12		mg/Kg		102	75 - 125	6	30
Barium	5.00	5.01		mg/Kg		100	75 - 125	6	30
Beryllium	2.50	2.67		mg/Kg		107	75 - 125	6	30
Cadmium	2.50	2.61		mg/Kg		104	75 - 125	6	30
Chromium	10.0	10.2		mg/Kg		102	75 - 125	6	30
Cobalt	5.00	5.06		mg/Kg		101	75 - 125	6	30
Iron	50.0	47.7		mg/Kg		95	75 - 125	6	30
Lithium	5.00	5.25		mg/Kg		105	75 - 125	5	30
Manganese	5.00	5.11		mg/Kg		102	75 - 125	5	30
Molybdenum	25.0	25.5		mg/Kg		102	75 - 125	5	30
Selenium	7.50	7.62		mg/Kg		102	75 - 125	6	30

QC Sample Results

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-37903/17-A
Matrix: Solid
Analysis Batch: 38070

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 37903

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		02/27/20 08:00	03/04/20 11:18	1
Arsenic	0.138	J	0.50	0.13	mg/Kg		02/27/20 08:00	03/04/20 11:18	1
Barium	ND		2.5	0.12	mg/Kg		02/27/20 08:00	03/04/20 11:18	1
Beryllium	ND		0.25	0.0075	mg/Kg		02/27/20 08:00	03/04/20 11:18	1
Cadmium	ND		0.25	0.011	mg/Kg		02/27/20 08:00	03/04/20 11:18	1
Chromium	ND		0.50	0.070	mg/Kg		02/27/20 08:00	03/04/20 11:18	1
Cobalt	ND		2.5	0.15	mg/Kg		02/27/20 08:00	03/04/20 11:18	1
Iron	ND		5.0	4.1	mg/Kg		02/27/20 08:00	03/04/20 11:18	1
Lithium	ND		2.5	0.15	mg/Kg		02/27/20 08:00	03/04/20 11:18	1
Manganese	ND		0.75	0.052	mg/Kg		02/27/20 08:00	03/04/20 11:18	1
Molybdenum	ND		2.0	0.082	mg/Kg		02/27/20 08:00	03/04/20 11:18	1
Selenium	ND		0.50	0.17	mg/Kg		02/27/20 08:00	03/04/20 11:18	1

Lab Sample ID: LCS 140-37903/18-A
Matrix: Solid
Analysis Batch: 38070

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 37903

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	98.3		mg/Kg		98	75 - 125
Arsenic	5.00	5.27		mg/Kg		105	75 - 125
Barium	5.00	4.99		mg/Kg		100	75 - 125
Beryllium	2.50	2.57		mg/Kg		103	75 - 125
Cadmium	2.50	2.62		mg/Kg		105	75 - 125
Chromium	10.0	10.6		mg/Kg		106	75 - 125
Cobalt	5.00	5.21		mg/Kg		104	75 - 125
Iron	50.0	52.0		mg/Kg		104	75 - 125
Lithium	5.00	5.13		mg/Kg		103	75 - 125
Manganese	5.00	5.22		mg/Kg		104	75 - 125
Molybdenum	25.0	26.4		mg/Kg		106	75 - 125
Selenium	7.50	7.56		mg/Kg		101	75 - 125

Lab Sample ID: LCSD 140-37903/19-A
Matrix: Solid
Analysis Batch: 38070

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 37903

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	96.8		mg/Kg		97	75 - 125	2	30
Arsenic	5.00	5.14		mg/Kg		103	75 - 125	3	30
Barium	5.00	4.90		mg/Kg		98	75 - 125	2	30
Beryllium	2.50	2.52		mg/Kg		101	75 - 125	2	30
Cadmium	2.50	2.57		mg/Kg		103	75 - 125	2	30
Chromium	10.0	10.3		mg/Kg		103	75 - 125	2	30
Cobalt	5.00	5.09		mg/Kg		102	75 - 125	2	30
Iron	50.0	50.9		mg/Kg		102	75 - 125	2	30
Lithium	5.00	4.99		mg/Kg		100	75 - 125	3	30
Manganese	5.00	5.10		mg/Kg		102	75 - 125	2	30
Molybdenum	25.0	26.0		mg/Kg		104	75 - 125	2	30
Selenium	7.50	7.38		mg/Kg		98	75 - 125	3	30

Metals

Prep Batch: 37475

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Total/NA	Solid	Total	
140-18228-2	DGWC-20 (34-39)	Total/NA	Solid	Total	
140-18228-3	DGWA-53 (25.7-26.9)	Total/NA	Solid	Total	
140-18228-4	DGWC-68A (24-29)	Total/NA	Solid	Total	
140-18228-5	DGWC-69 (19-24)	Total/NA	Solid	Total	
MB 140-37475/17-A	Method Blank	Total/NA	Solid	Total	
LCS 140-37475/18-A	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-37475/19-A	Lab Control Sample Dup	Total/NA	Solid	Total	

SEP Batch: 37545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 1	Solid	Exchangeable	
140-18228-2	DGWC-20 (34-39)	Step 1	Solid	Exchangeable	
140-18228-3	DGWA-53 (25.7-26.9)	Step 1	Solid	Exchangeable	
140-18228-4	DGWC-68A (24-29)	Step 1	Solid	Exchangeable	
140-18228-5	DGWC-69 (19-24)	Step 1	Solid	Exchangeable	
MB 140-37545/17-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-37545/18-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-37545/19-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	

Prep Batch: 37615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 1	Solid	3010A	37545
140-18228-2	DGWC-20 (34-39)	Step 1	Solid	3010A	37545
140-18228-3	DGWA-53 (25.7-26.9)	Step 1	Solid	3010A	37545
140-18228-4	DGWC-68A (24-29)	Step 1	Solid	3010A	37545
140-18228-5	DGWC-69 (19-24)	Step 1	Solid	3010A	37545
MB 140-37545/17-B ^4	Method Blank	Step 1	Solid	3010A	37545
LCS 140-37545/18-B ^5	Lab Control Sample	Step 1	Solid	3010A	37545
LCSD 140-37545/19-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	37545

SEP Batch: 37616

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 2	Solid	Carbonate	
140-18228-2	DGWC-20 (34-39)	Step 2	Solid	Carbonate	
140-18228-3	DGWA-53 (25.7-26.9)	Step 2	Solid	Carbonate	
140-18228-4	DGWC-68A (24-29)	Step 2	Solid	Carbonate	
140-18228-5	DGWC-69 (19-24)	Step 2	Solid	Carbonate	
MB 140-37616/17-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-37616/18-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-37616/19-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	

Prep Batch: 37673

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 2	Solid	3010A	37616
140-18228-2	DGWC-20 (34-39)	Step 2	Solid	3010A	37616
140-18228-3	DGWA-53 (25.7-26.9)	Step 2	Solid	3010A	37616
140-18228-4	DGWC-68A (24-29)	Step 2	Solid	3010A	37616
140-18228-5	DGWC-69 (19-24)	Step 2	Solid	3010A	37616
MB 140-37616/17-B ^3	Method Blank	Step 2	Solid	3010A	37616
LCS 140-37616/18-B ^5	Lab Control Sample	Step 2	Solid	3010A	37616

Metals (Continued)

Prep Batch: 37673 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 140-37616/19-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	37616

SEP Batch: 37675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 3	Solid	Non-Crystalline	
140-18228-2	DGWC-20 (34-39)	Step 3	Solid	Non-Crystalline	
140-18228-3	DGWA-53 (25.7-26.9)	Step 3	Solid	Non-Crystalline	
140-18228-4	DGWC-68A (24-29)	Step 3	Solid	Non-Crystalline	
140-18228-5	DGWC-69 (19-24)	Step 3	Solid	Non-Crystalline	
MB 140-37675/17-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-37675/18-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-37675/19-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	

Prep Batch: 37715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 3	Solid	3010A	37675
140-18228-2	DGWC-20 (34-39)	Step 3	Solid	3010A	37675
140-18228-3	DGWA-53 (25.7-26.9)	Step 3	Solid	3010A	37675
140-18228-4	DGWC-68A (24-29)	Step 3	Solid	3010A	37675
140-18228-5	DGWC-69 (19-24)	Step 3	Solid	3010A	37675
MB 140-37675/17-B	Method Blank	Step 3	Solid	3010A	37675
LCS 140-37675/18-B	Lab Control Sample	Step 3	Solid	3010A	37675
LCSD 140-37675/19-B	Lab Control Sample Dup	Step 3	Solid	3010A	37675

SEP Batch: 37716

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 4	Solid	Metal Hydroxide	
140-18228-2	DGWC-20 (34-39)	Step 4	Solid	Metal Hydroxide	
140-18228-3	DGWA-53 (25.7-26.9)	Step 4	Solid	Metal Hydroxide	
140-18228-4	DGWC-68A (24-29)	Step 4	Solid	Metal Hydroxide	
140-18228-5	DGWC-69 (19-24)	Step 4	Solid	Metal Hydroxide	
MB 140-37716/17-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-37716/18-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-37716/19-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	

Prep Batch: 37755

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 4	Solid	3010A	37716
140-18228-2	DGWC-20 (34-39)	Step 4	Solid	3010A	37716
140-18228-3	DGWA-53 (25.7-26.9)	Step 4	Solid	3010A	37716
140-18228-4	DGWC-68A (24-29)	Step 4	Solid	3010A	37716
140-18228-5	DGWC-69 (19-24)	Step 4	Solid	3010A	37716
MB 140-37716/17-B	Method Blank	Step 4	Solid	3010A	37716
LCS 140-37716/18-B	Lab Control Sample	Step 4	Solid	3010A	37716
LCSD 140-37716/19-B	Lab Control Sample Dup	Step 4	Solid	3010A	37716

SEP Batch: 37756

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 5	Solid	Organic-Bound	
140-18228-2	DGWC-20 (34-39)	Step 5	Solid	Organic-Bound	
140-18228-3	DGWA-53 (25.7-26.9)	Step 5	Solid	Organic-Bound	

Metals (Continued)

SEP Batch: 37756 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-4	DGWC-68A (24-29)	Step 5	Solid	Organic-Bound	
140-18228-5	DGWC-69 (19-24)	Step 5	Solid	Organic-Bound	
MB 140-37756/17-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-37756/18-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-37756/19-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	

Analysis Batch: 37820

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 1	Solid	6010B SEP	37615
140-18228-2	DGWC-20 (34-39)	Step 1	Solid	6010B SEP	37615
140-18228-3	DGWA-53 (25.7-26.9)	Step 1	Solid	6010B SEP	37615
140-18228-4	DGWC-68A (24-29)	Step 1	Solid	6010B SEP	37615
140-18228-5	DGWC-69 (19-24)	Step 1	Solid	6010B SEP	37615
MB 140-37545/17-B ^4	Method Blank	Step 1	Solid	6010B SEP	37615
LCS 140-37545/18-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	37615
LCSD 140-37545/19-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	37615

Prep Batch: 37858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 5	Solid	3010A	37756
140-18228-2	DGWC-20 (34-39)	Step 5	Solid	3010A	37756
140-18228-3	DGWA-53 (25.7-26.9)	Step 5	Solid	3010A	37756
140-18228-4	DGWC-68A (24-29)	Step 5	Solid	3010A	37756
140-18228-5	DGWC-69 (19-24)	Step 5	Solid	3010A	37756
MB 140-37756/17-B ^5	Method Blank	Step 5	Solid	3010A	37756
LCS 140-37756/18-B ^5	Lab Control Sample	Step 5	Solid	3010A	37756
LCSD 140-37756/19-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	37756

SEP Batch: 37859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 6	Solid	Acid/Sulfide	
140-18228-2	DGWC-20 (34-39)	Step 6	Solid	Acid/Sulfide	
140-18228-3	DGWA-53 (25.7-26.9)	Step 6	Solid	Acid/Sulfide	
140-18228-4	DGWC-68A (24-29)	Step 6	Solid	Acid/Sulfide	
140-18228-5	DGWC-69 (19-24)	Step 6	Solid	Acid/Sulfide	
MB 140-37859/17-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-37859/18-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-37859/19-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	

Analysis Batch: 37865

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 2	Solid	6010B SEP	37673
140-18228-1	DGWC-19 (34-39)	Step 3	Solid	6010B SEP	37715
140-18228-2	DGWC-20 (34-39)	Step 2	Solid	6010B SEP	37673
140-18228-2	DGWC-20 (34-39)	Step 3	Solid	6010B SEP	37715
140-18228-3	DGWA-53 (25.7-26.9)	Step 2	Solid	6010B SEP	37673
140-18228-3	DGWA-53 (25.7-26.9)	Step 3	Solid	6010B SEP	37715
140-18228-4	DGWC-68A (24-29)	Step 2	Solid	6010B SEP	37673
140-18228-4	DGWC-68A (24-29)	Step 3	Solid	6010B SEP	37715
140-18228-5	DGWC-69 (19-24)	Step 2	Solid	6010B SEP	37673
140-18228-5	DGWC-69 (19-24)	Step 3	Solid	6010B SEP	37715

Metals (Continued)

Analysis Batch: 37865 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-5	DGWC-69 (19-24)	Step 3	Solid	6010B SEP	37715
MB 140-37616/17-B ^3	Method Blank	Step 2	Solid	6010B SEP	37673
MB 140-37675/17-B	Method Blank	Step 3	Solid	6010B SEP	37715
LCS 140-37616/18-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	37673
LCS 140-37675/18-B	Lab Control Sample	Step 3	Solid	6010B SEP	37715
LCSD 140-37616/19-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	37673
LCSD 140-37675/19-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	37715

Prep Batch: 37903

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 7	Solid	Residual	
140-18228-2	DGWC-20 (34-39)	Step 7	Solid	Residual	
140-18228-3	DGWA-53 (25.7-26.9)	Step 7	Solid	Residual	
140-18228-4	DGWC-68A (24-29)	Step 7	Solid	Residual	
140-18228-5	DGWC-69 (19-24)	Step 7	Solid	Residual	
MB 140-37903/17-A	Method Blank	Step 7	Solid	Residual	
LCS 140-37903/18-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-37903/19-A	Lab Control Sample Dup	Step 7	Solid	Residual	

Analysis Batch: 37910

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 4	Solid	6010B SEP	37755
140-18228-2	DGWC-20 (34-39)	Step 4	Solid	6010B SEP	37755
140-18228-3	DGWA-53 (25.7-26.9)	Step 4	Solid	6010B SEP	37755
140-18228-4	DGWC-68A (24-29)	Step 4	Solid	6010B SEP	37755
140-18228-5	DGWC-69 (19-24)	Step 4	Solid	6010B SEP	37755
MB 140-37716/17-B	Method Blank	Step 4	Solid	6010B SEP	37755
LCS 140-37716/18-B	Lab Control Sample	Step 4	Solid	6010B SEP	37755
LCSD 140-37716/19-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	37755

Analysis Batch: 38037

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 5	Solid	6010B SEP	37858
140-18228-1	DGWC-19 (34-39)	Step 6	Solid	6010B SEP	37859
140-18228-2	DGWC-20 (34-39)	Step 5	Solid	6010B SEP	37858
140-18228-2	DGWC-20 (34-39)	Step 6	Solid	6010B SEP	37859
140-18228-3	DGWA-53 (25.7-26.9)	Step 5	Solid	6010B SEP	37858
140-18228-3	DGWA-53 (25.7-26.9)	Step 6	Solid	6010B SEP	37859
140-18228-4	DGWC-68A (24-29)	Step 5	Solid	6010B SEP	37858
140-18228-4	DGWC-68A (24-29)	Step 6	Solid	6010B SEP	37859
140-18228-5	DGWC-69 (19-24)	Step 5	Solid	6010B SEP	37858
140-18228-5	DGWC-69 (19-24)	Step 6	Solid	6010B SEP	37859
MB 140-37756/17-B ^5	Method Blank	Step 5	Solid	6010B SEP	37858
MB 140-37859/17-A	Method Blank	Step 6	Solid	6010B SEP	37859
LCS 140-37756/18-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	37858
LCS 140-37859/18-A	Lab Control Sample	Step 6	Solid	6010B SEP	37859
LCSD 140-37756/19-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	37858
LCSD 140-37859/19-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	37859

QC Association Summary

Metals

Analysis Batch: 38070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Step 7	Solid	6010B SEP	37903
140-18228-1	DGWC-19 (34-39)	Step 7	Solid	6010B SEP	37903
140-18228-1	DGWC-19 (34-39)	Step 7	Solid	6010B SEP	37903
140-18228-2	DGWC-20 (34-39)	Step 7	Solid	6010B SEP	37903
140-18228-2	DGWC-20 (34-39)	Step 7	Solid	6010B SEP	37903
140-18228-2	DGWC-20 (34-39)	Step 7	Solid	6010B SEP	37903
140-18228-3	DGWA-53 (25.7-26.9)	Step 7	Solid	6010B SEP	37903
140-18228-3	DGWA-53 (25.7-26.9)	Step 7	Solid	6010B SEP	37903
140-18228-4	DGWC-68A (24-29)	Step 7	Solid	6010B SEP	37903
140-18228-4	DGWC-68A (24-29)	Step 7	Solid	6010B SEP	37903
140-18228-4	DGWC-68A (24-29)	Step 7	Solid	6010B SEP	37903
140-18228-5	DGWC-69 (19-24)	Step 7	Solid	6010B SEP	37903
140-18228-5	DGWC-69 (19-24)	Step 7	Solid	6010B SEP	37903
MB 140-37903/17-A	Method Blank	Step 7	Solid	6010B SEP	37903
LCS 140-37903/18-A	Lab Control Sample	Step 7	Solid	6010B SEP	37903
LCSD 140-37903/19-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	37903

Analysis Batch: 38107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Total/NA	Solid	6010B	37475
140-18228-2	DGWC-20 (34-39)	Total/NA	Solid	6010B	37475
140-18228-3	DGWA-53 (25.7-26.9)	Total/NA	Solid	6010B	37475
140-18228-4	DGWC-68A (24-29)	Total/NA	Solid	6010B	37475
140-18228-5	DGWC-69 (19-24)	Total/NA	Solid	6010B	37475
MB 140-37475/17-A	Method Blank	Total/NA	Solid	6010B	37475
LCS 140-37475/18-A	Lab Control Sample	Total/NA	Solid	6010B	37475
LCSD 140-37475/19-A	Lab Control Sample Dup	Total/NA	Solid	6010B	37475

Analysis Batch: 38133

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Total/NA	Solid	6010B	37475
140-18228-1	DGWC-19 (34-39)	Total/NA	Solid	6010B	37475
140-18228-2	DGWC-20 (34-39)	Total/NA	Solid	6010B	37475
140-18228-2	DGWC-20 (34-39)	Total/NA	Solid	6010B	37475
140-18228-3	DGWA-53 (25.7-26.9)	Total/NA	Solid	6010B	37475
140-18228-4	DGWC-68A (24-29)	Total/NA	Solid	6010B	37475
140-18228-4	DGWC-68A (24-29)	Total/NA	Solid	6010B	37475
140-18228-5	DGWC-69 (19-24)	Total/NA	Solid	6010B	37475
140-18228-5	DGWC-69 (19-24)	Total/NA	Solid	6010B	37475
MB 140-37475/17-A	Method Blank	Total/NA	Solid	6010B	37475
LCS 140-37475/18-A	Lab Control Sample	Total/NA	Solid	6010B	37475
LCSD 140-37475/19-A	Lab Control Sample Dup	Total/NA	Solid	6010B	37475

Analysis Batch: 38266

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Sum of Steps 1-7	Solid	6010B SEP	
140-18228-2	DGWC-20 (34-39)	Sum of Steps 1-7	Solid	6010B SEP	
140-18228-3	DGWA-53 (25.7-26.9)	Sum of Steps 1-7	Solid	6010B SEP	
140-18228-4	DGWC-68A (24-29)	Sum of Steps 1-7	Solid	6010B SEP	
140-18228-5	DGWC-69 (19-24)	Sum of Steps 1-7	Solid	6010B SEP	

QC Association Summary

Client: Golder Associates Inc.
Job ID: 140-18228-1
Project/Site: GPC Plant McDonough (166849618)

General Chemistry

Analysis Batch: 37662

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18228-1	DGWC-19 (34-39)	Total/NA	Solid	Moisture	
140-18228-2	DGWC-20 (34-39)	Total/NA	Solid	Moisture	
140-18228-3	DGWA-53 (25.7-26.9)	Total/NA	Solid	Moisture	
140-18228-4	DGWC-68A (24-29)	Total/NA	Solid	Moisture	
140-18228-5	DGWC-69 (19-24)	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: GPC Plant McDonough (166849618)

Job ID: 140-18228-1

Client Sample ID: DGWC-19 (34-39)

Date Collected: 02/05/20 00:00
Date Received: 02/12/20 09:50

Lab Sample ID: 140-18228-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			38107	03/05/20 12:22	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			38133	03/06/20 12:20	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			38133	03/06/20 13:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	37545	02/18/20 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	37615	02/19/20 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			37820	02/24/20 15:41	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	37616	02/19/20 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	37673	02/20/20 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			37865	02/25/20 12:08	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	37675	02/20/20 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	37715	02/21/20 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			37865	02/25/20 14:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	37716	02/21/20 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	37755	02/24/20 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			37910	02/26/20 12:53	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	37756	02/24/20 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	37858	02/26/20 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			38037	03/03/20 13:39	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	37859	02/26/20 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			38037	03/03/20 15:43	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			38070	03/04/20 12:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			38070	03/04/20 14:44	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			38070	03/04/20 16:01	KNC	TAL KNX
	Instrument ID: DUO									
Sum of Steps 1-7	Analysis	6010B SEP		1			38266	03/12/20 09:36	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			37662	02/19/20 11:57	BKD	TAL KNX
	Instrument ID: W3									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: GPC Plant McDonough (166849618)

Job ID: 140-18228-1

Client Sample ID: DGWC-20 (34-39)

Date Collected: 02/05/20 00:00
Date Received: 02/12/20 09:50

Lab Sample ID: 140-18228-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			38107	03/05/20 12:28	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			38133	03/06/20 12:25	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			38133	03/06/20 13:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	37545	02/18/20 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	37615	02/19/20 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			37820	02/24/20 15:46	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	37616	02/19/20 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	37673	02/20/20 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			37865	02/25/20 12:13	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	37675	02/20/20 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	37715	02/21/20 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			37865	02/25/20 14:18	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	37716	02/21/20 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	37755	02/24/20 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			37910	02/26/20 12:58	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	37756	02/24/20 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	37858	02/26/20 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			38037	03/03/20 13:44	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	37859	02/26/20 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			38037	03/03/20 15:48	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			38070	03/04/20 13:01	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			38070	03/04/20 14:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			38070	03/04/20 16:06	KNC	TAL KNX
	Instrument ID: DUO									
Sum of Steps 1-7	Analysis	6010B SEP		1			38266	03/12/20 09:36	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			37662	02/19/20 11:57	BKD	TAL KNX
	Instrument ID: W3									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: GPC Plant McDonough (166849618)

Job ID: 140-18228-1

Client Sample ID: DGWA-53 (25.7-26.9)

Date Collected: 02/05/20 00:00
Date Received: 02/12/20 09:50

Lab Sample ID: 140-18228-3

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			38107	03/05/20 12:34	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			38133	03/06/20 12:30	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	37545	02/18/20 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	37615	02/19/20 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			37820	02/24/20 15:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	37616	02/19/20 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	37673	02/20/20 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			37865	02/25/20 12:19	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	37675	02/20/20 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	37715	02/21/20 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			37865	02/25/20 14:23	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	37716	02/21/20 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	37755	02/24/20 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			37910	02/26/20 13:03	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	37756	02/24/20 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	37858	02/26/20 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			38037	03/03/20 13:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	37859	02/26/20 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			38037	03/03/20 15:53	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			38070	03/04/20 13:07	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			38070	03/04/20 14:54	KNC	TAL KNX
	Instrument ID: DUO									
Sum of Steps 1-7	Analysis	6010B SEP		1			38266	03/12/20 09:36	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			37662	02/19/20 11:57	BKD	TAL KNX
	Instrument ID: W3									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: GPC Plant McDonough (166849618)

Job ID: 140-18228-1

Client Sample ID: DGWC-68A (24-29)
Date Collected: 02/05/20 00:00
Date Received: 02/12/20 09:50

Lab Sample ID: 140-18228-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			38107	03/05/20 12:40	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			38133	03/06/20 12:35	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			38133	03/06/20 14:02	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	37545	02/18/20 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	37615	02/19/20 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			37820	02/24/20 15:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	37616	02/19/20 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	37673	02/20/20 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			37865	02/25/20 12:24	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	37675	02/20/20 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	37715	02/21/20 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			37865	02/25/20 14:44	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	37716	02/21/20 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	37755	02/24/20 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			37910	02/26/20 13:08	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	37756	02/24/20 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	37858	02/26/20 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			38037	03/03/20 13:55	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	37859	02/26/20 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			38037	03/03/20 15:58	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			38070	03/04/20 13:13	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			38070	03/04/20 14:59	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			38070	03/04/20 16:21	KNC	TAL KNX
	Instrument ID: DUO									
Sum of Steps 1-7	Analysis	6010B SEP		1			38266	03/12/20 09:36	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			37662	02/19/20 11:57	BKD	TAL KNX
	Instrument ID: W3									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: GPC Plant McDonough (166849618)

Job ID: 140-18228-1

Client Sample ID: DGWC-69 (19-24)

Date Collected: 02/05/20 00:00
Date Received: 02/12/20 09:50

Lab Sample ID: 140-18228-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			38107	03/05/20 12:55	KNC	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			38133	03/06/20 12:51	KNC	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			38133	03/06/20 14:07	KNC	TAL KNX
	Instrument ID:	DUO								
Step 1	SEP	Exchangeable			5.000 g	25 mL	37545	02/18/20 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	37615	02/19/20 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			37820	02/24/20 16:12	KNC	TAL KNX
	Instrument ID:	DUO								
Step 2	SEP	Carbonate			5.000 g	25 mL	37616	02/19/20 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	37673	02/20/20 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			37865	02/25/20 12:39	KNC	TAL KNX
	Instrument ID:	DUO								
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	37675	02/20/20 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	37715	02/21/20 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			37865	02/25/20 14:49	KNC	TAL KNX
	Instrument ID:	DUO								
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	37675	02/20/20 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	37715	02/21/20 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		2			37865	02/25/20 15:11	KNC	TAL KNX
	Instrument ID:	DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	37716	02/21/20 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	37755	02/24/20 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			37910	02/26/20 13:23	KNC	TAL KNX
	Instrument ID:	DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	37756	02/24/20 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	37858	02/26/20 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			38037	03/03/20 14:10	KNC	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	37859	02/26/20 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			38037	03/03/20 16:15	KNC	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			38070	03/04/20 13:28	KNC	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			38070	03/04/20 15:04	KNC	TAL KNX
	Instrument ID:	DUO								
Sum of Steps 1-7	Analysis	6010B SEP		1			38266	03/12/20 09:36	DKW	TAL KNX
	Instrument ID:	NOEQUIP								
Total/NA	Analysis	Moisture		1			37662	02/19/20 11:57	BKD	TAL KNX
	Instrument ID:	W3								

Lab Chronicle

Client Sample ID: Method Blank
Lab Sample ID: MB 140-37475/17-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			38107	03/05/20 10:40	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			38133	03/06/20 10:50	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-37545/17-B ^4

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	37545	02/18/20 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	37615	02/19/20 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			37820	02/24/20 14:09	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-37616/17-B ^3

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	37616	02/19/20 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	37673	02/20/20 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			37865	02/25/20 10:34	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-37675/17-B

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	37675	02/20/20 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	37715	02/21/20 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			37865	02/25/20 12:45	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-37716/17-B

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	37716	02/21/20 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	37755	02/24/20 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			37910	02/26/20 11:22	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client Sample ID: Method Blank

Lab Sample ID: MB 140-37756/17-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	37756	02/24/20 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	37858	02/26/20 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			38037	03/03/20 12:03	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-37859/17-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	37859	02/26/20 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			38037	03/03/20 14:15	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-37903/17-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			38070	03/04/20 11:18	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-37475/18-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			38107	03/05/20 10:46	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			38133	03/06/20 10:55	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-37545/18-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	37545	02/18/20 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	37615	02/19/20 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			37820	02/24/20 14:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-37616/18-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	37616	02/19/20 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	37673	02/20/20 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			37865	02/25/20 10:44	KNC	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-37675/18-B

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	37675	02/20/20 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	37715	02/21/20 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			37865	02/25/20 12:55	KNC	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-37716/18-B

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	37716	02/21/20 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	37755	02/24/20 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			37910	02/26/20 11:33	KNC	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-37756/18-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	37756	02/24/20 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	37858	02/26/20 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			38037	03/03/20 12:14	KNC	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-37859/18-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	37859	02/26/20 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			38037	03/03/20 14:21	KNC	TAL KNX
	Instrument ID:	DUO								

Lab Chronicle

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-37903/18-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			38070	03/04/20 11:23	KNC	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-37475/19-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			38107	03/05/20 10:51	KNC	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	37475	02/14/20 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			38133	03/06/20 11:00	KNC	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-37545/19-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	37545	02/18/20 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	37615	02/19/20 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			37820	02/24/20 14:24	KNC	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-37616/19-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	37616	02/19/20 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	37673	02/20/20 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			37865	02/25/20 10:50	KNC	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-37675/19-B

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	37675	02/20/20 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	37715	02/21/20 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			37865	02/25/20 13:00	KNC	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-37716/19-B

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	37716	02/21/20 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	37755	02/24/20 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			37910	02/26/20 11:37	KNC	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-37756/19-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	37756	02/24/20 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	37858	02/26/20 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			38037	03/03/20 12:19	KNC	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-37859/19-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	37859	02/26/20 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			38037	03/03/20 14:26	KNC	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-37903/19-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	37903	02/27/20 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			38070	03/04/20 11:28	KNC	TAL KNX
	Instrument ID:	DUO								

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Method Summary

Method	Method Description	Protocol	Laboratory
6010B	SEP Metals (ICP) - Total	SW846	TAL KNX
6010B SEP	SEP Metals (ICP)	SW846	TAL KNX
Moisture	Percent Moisture	EPA	TAL KNX
3010A	Preparation, Total Metals	SW846	TAL KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	TAL KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	TAL KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	TAL KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	TAL KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	TAL KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	TAL KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	TAL KNX
Total	Preparation, Total Material	TAL-KNOX	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Laboratory: Eurofins TestAmerica, Knoxville

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	TNI0189	01-02-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
6010B	Total	Solid	Aluminum
6010B	Total	Solid	Arsenic
6010B	Total	Solid	Barium
6010B	Total	Solid	Beryllium
6010B	Total	Solid	Cadmium
6010B	Total	Solid	Chromium
6010B	Total	Solid	Cobalt
6010B	Total	Solid	Iron
6010B	Total	Solid	Lithium
6010B	Total	Solid	Manganese
6010B	Total	Solid	Molybdenum
6010B	Total	Solid	Selenium
6010B SEP		Solid	Aluminum
6010B SEP		Solid	Arsenic
6010B SEP		Solid	Barium
6010B SEP		Solid	Beryllium
6010B SEP		Solid	Cadmium
6010B SEP		Solid	Chromium
6010B SEP		Solid	Cobalt
6010B SEP		Solid	Iron
6010B SEP		Solid	Lithium
6010B SEP		Solid	Manganese
6010B SEP		Solid	Molybdenum
6010B SEP		Solid	Selenium
6010B SEP	3010A	Solid	Aluminum
6010B SEP	3010A	Solid	Arsenic
6010B SEP	3010A	Solid	Barium
6010B SEP	3010A	Solid	Beryllium
6010B SEP	3010A	Solid	Cadmium
6010B SEP	3010A	Solid	Chromium
6010B SEP	3010A	Solid	Cobalt
6010B SEP	3010A	Solid	Iron
6010B SEP	3010A	Solid	Lithium
6010B SEP	3010A	Solid	Manganese
6010B SEP	3010A	Solid	Molybdenum
6010B SEP	3010A	Solid	Selenium
6010B SEP	Acid/Sulfide	Solid	Aluminum
6010B SEP	Acid/Sulfide	Solid	Arsenic
6010B SEP	Acid/Sulfide	Solid	Barium
6010B SEP	Acid/Sulfide	Solid	Beryllium
6010B SEP	Acid/Sulfide	Solid	Cadmium
6010B SEP	Acid/Sulfide	Solid	Chromium
6010B SEP	Acid/Sulfide	Solid	Cobalt
6010B SEP	Acid/Sulfide	Solid	Iron
6010B SEP	Acid/Sulfide	Solid	Lithium

Accreditation/Certification Summary

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	TNI0189	01-02-21

6010B SEP	Acid/Sulfide	Solid	Manganese
6010B SEP	Acid/Sulfide	Solid	Molybdenum
6010B SEP	Acid/Sulfide	Solid	Selenium
6010B SEP	Residual	Solid	Aluminum
6010B SEP	Residual	Solid	Arsenic
6010B SEP	Residual	Solid	Barium
6010B SEP	Residual	Solid	Beryllium
6010B SEP	Residual	Solid	Cadmium
6010B SEP	Residual	Solid	Chromium
6010B SEP	Residual	Solid	Cobalt
6010B SEP	Residual	Solid	Iron
6010B SEP	Residual	Solid	Lithium
6010B SEP	Residual	Solid	Manganese
6010B SEP	Residual	Solid	Molybdenum
6010B SEP	Residual	Solid	Selenium
Moisture		Solid	Percent Moisture

Eurofins TestAmerica, Knoxville

5815 Middlebrook Pike

Knoxville, TN 37921-5947
phone 865.291.3000 fax 865.584.4315

Chain of Custody Record
Sample Origin: State of Georgia

eurofins | Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	**Project Manager: James Jones**		TALS Project #:
Golder Associates	**Email: james_jones@golder.com**	**Site Contact: Karim Minkara** / **Date:**	COC No:
5170 Peachtree Road, Bldg 100, Suite 300	**Tel/Fax: 615-586-1402**	**Lab Contact: Deb Carey Coursey** / **Carrier:**	1 of 1 COC
Atlanta, GA 30341	**Analysis Turnaround Time**		[1] Sampler:
(770) 496-1893 Phone	☐ CALENDAR DAYS ☐ WORKING DAYS		[1] **Refer to note below.**
	TAT if different from Below		**For Lab Use Only:**
Project Name: GPC Plant McDonough	☐ 2 weeks		Walk-in Client:
Site:	☐ 1 week		Lab Sampling:
P O # 166849618	☐ 2 days ☐ 1 day		Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Sequential Extraction (SWP-846/6020)	Sample Specific Notes:
DGWC-19 (34-39)	2/5/2020		G	Soil	1			X	
DGWC-20 (34-39)	2/5/2020		G	Soil	1			X	
DGWA-53 (25.7-26.9)	2/5/2020		G	Rock	1			X	
DGWC-68A (24-29)	2/5/2020		G	Soil	1			X	
DGWC-69 (19-24)	2/5/2020		G	Soil	1			X	
CUSTODY SEALS INTACT									
RECEIVED AT RT 2.1/CT2.1°C									
SKB 2-12-20									
1 COOLER FEDX# 1516 9323 0289 SO									

140-18228 Chain of Custody

[1] I attest to the validity and authenticity of this (these) sample(s). I am aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and su…

Signature:__________ Date__________

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other__________

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☑ Return to Client ☐ Disposal by Lab ☐ Archive for__________ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No

Custody Seal No.:

Cooler Temp. (°C): Obs'd:__________ Corr'd:__________ Therm ID No.:__________

Relinquished by:	Company: Golder 1330	Date/Time: 2/11/20	Received by:	Company: 2/11/20 1330	Date/Time: ETA
Relinquished by:	Company: 2/11/20 1600	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: ETA KNX	Date/Time: 2-12-20 09:50

140056494 7.3

Form No. CA-C-WI-004, Rev. 1.22, dated 12/3/2019

Loc: 140
18228

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	**If No, what was the problem?**	**Comments/Actions Taken**
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**	10
2. Were ambient air containers received intact?			✓	☐ Checked in lab	
3. The coolers/containers custody seal if present, is it intact?	✓			☐ Yes ☐ NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : 5c68 Correction factor: 0.0	✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**	
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**	
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**	
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**	
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**	
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**	**Labeling Verified by:** **Date:**
10. Was the sampler identified on the COC?		✓		☑ **Sampler Not Listed on COC**	
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**	**pH test strip lot number:**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**	
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**	
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**	
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**	
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**	
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**	
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**	
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info	

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: ______ PM Instructions: ______

Sample Receiving Associate: ______ Date: 2-12-20

QA026R32.doc, 062719

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ANALYTICAL REPORT

Eurofins Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-27231-1
Client Project/Site: Plant McDonough NES Well Installation

For:
Golder Associates Inc.
5170 Peachtree Road
Building 100, Suite 300
Atlanta, Georgia 30341

Attn: Brian Steele

Ryan Henry

Authorized for release by:
5/31/2022 4:28:23 PM

Ryan Henry, Project Manager I
(865)291-3000
WilliamR.Henry@et.eurofinsus.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Qualifiers

Metals

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
L	A negative instrument reading had an absolute value greater than the reporting limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 140-27231-1

Laboratory: Eurofins Knoxville

Narrative

Job Narrative
140-27231-1

Receipt
The samples were received on 4/25/2022 at 9:30am and arrived in good condition. The temperature of the cooler at receipt was 22.8º C.

Receipt Exceptions
Sample bags were received with water in them when returned from the North Canton lab. Water came from the loose ice used to return the samples. Samples 2, 3, 7 and 10 were impacted.

Metals
7 Step Sequential Extraction Procedure

These soil samples were prepared and analyzed using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0008, “7 Step Sequential Extraction Procedure”. SW-846 Method 6010B as incorporated in Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

- Step 1 - Exchangeable Fraction: A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate (MgSO4), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 2 - Carbonate Fraction: The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 3 - Non-crystalline Materials Fraction: The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 4 - Metal Hydroxide Fraction: The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 5 - Organic-bound Fraction: The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 6 - Acid/Sulfide Fraction: The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO3-H2O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 7 - Residual Fraction: A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Results were calculated using the following equation:

Result, µg/g or mg/Kg, dry weight = $(C \times V \times V1 \times D) / (W \times S \times V2)$

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL
W = Wet weight of sample, g

Job ID: 140-27231-1 (Continued)

Laboratory: Eurofins Knoxville (Continued)

S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

Method 6010B SEP: LCSD percent RPD was outside of the control limits for Mn. This prep method shows historically poor recovery for this analyte per SOP.

(LCSD 140-61517/15-B ^5)

Method 6010B SEP: The serial dilution performed for the following sample associated with batch 140-61994 was outside control limits. Sample matrix effects suspected: DGWC-121-38-40' (140-27231-6)

Method 6010B SEP: The following sample was diluted due to the presence of titanium which interferes with Cobalt: B-113D-19-20' (140-27231-1). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: Due to sample matrix effect on the internal standard (ISTD), a dilution was required for the following sample: B-48-23-24' (140-27231-5).

Method 6010B SEP: The following sample (ICV) was analyzed twice by mistake of the analyst. The data have been rejected for the second ICV as the ICV cannot be reanalyzed per SOP. Sample results to be reported from the first ICV analyzed in analytical batch.

(ICV 140-61994/5)

Method 6010B SEP: Due to sample matrix effect on the internal standard (ISTD), a dilution was required for the following sample: B-48-23-24' (140-27231-5).

Method 6010B SEP: The following samples were diluted due to the presence of Silicon which interferes with Arsenic and Cobalt: B-113D-19-20' (140-27231-1), DGWC-121-38-40' (140-27231-6), DGWC-121-49-50' (140-27231-7), B-122D-39-40' (140-27231-8), B-123D-27-28' (140-27231-9) and B-123D-145' (140-27231-10). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: The following samples were diluted due to the presence of Titanium which interferes with Cobalt: B-113D-19-20' (140-27231-1), B-104D-55-56' (140-27231-2), B-115D-75-76' (140-27231-3), B-47-11-12' (140-27231-4), B-48-23-24' (140-27231-5), DGWC-121-38-40' (140-27231-6), DGWC-121-49-50' (140-27231-7), B-122D-39-40' (140-27231-8), B-123D-27-28' (140-27231-9) and B-123D-145' (140-27231-10). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: The following samples were diluted due to the nature of the sample matrix: B-113D-19-20' (140-27231-1), B-104D-55-56' (140-27231-2), B-115D-75-76' (140-27231-3), B-47-11-12' (140-27231-4), B-48-23-24' (140-27231-5), DGWC-121-38-40' (140-27231-6), DGWC-121-49-50' (140-27231-7), B-122D-39-40' (140-27231-8), B-123D-27-28' (140-27231-9) and B-123D-145' (140-27231-10). Elevated reporting limits (RLs) are provided for Aluminum.

Method 6010B: The serial dilution performed for the following sample associated with batch 140-62091 was outside control limits for Cobalt, Iron, and Manganese. Sample matrix effects are suspected: DGWC-121-38-40' (140-27231-6)

Method 6010B: The following samples were diluted due to the nature of the sample matrix: B-113D-19-20' (140-27231-1), B-104D-55-56' (140-27231-2), B-115D-75-76' (140-27231-3), B-47-11-12' (140-27231-4), B-48-23-24' (140-27231-5), DGWC-121-38-40' (140-27231-6), DGWC-121-49-50' (140-27231-7), B-122D-39-40' (140-27231-8), B-123D-27-28' (140-27231-9) and B-123D-145' (140-27231-10). Elevated reporting limits (RLs) are provided for Aluminum.

Job ID: 140-27231-1 (Continued)

Laboratory: Eurofins Knoxville (Continued)

Method 6010B: The following samples were diluted to bring the concentration of target analyte (Iron) within the calibration range: B-113D-19-20' (140-27231-1), B-47-11-12' (140-27231-4), DGWC-121-38-40' (140-27231-6), DGWC-121-49-50' (140-27231-7) and B-123D-27-28' (140-27231-9). Elevated reporting limits (RLs) are provided.

Method 6010B: The following samples were diluted due to the presence of Iron which interferes with Arsenic: B-113D-19-20' (140-27231-1), B-47-11-12' (140-27231-4), DGWC-121-38-40' (140-27231-6), DGWC-121-49-50' (140-27231-7) and B-123D-27-28' (140-27231-9). Elevated reporting limits (RLs) are provided.

Method 6010B: The following samples were diluted due to the presence of Titanium which interferes with Cobalt: B-113D-19-20' (140-27231-1), B-104D-55-56' (140-27231-2), B-115D-75-76' (140-27231-3), B-47-11-12' (140-27231-4), DGWC-121-38-40' (140-27231-6), DGWC-121-49-50' (140-27231-7), B-122D-39-40' (140-27231-8), B-123D-27-28' (140-27231-9) and B-123D-145' (140-27231-10). Elevated reporting limits (RLs) are provided.

Method 6010B: The following samples were diluted due to the presence of Silicon which interferes with Arsenic and Cobalt: B-115D-75-76' (140-27231-3), DGWC-121-49-50' (140-27231-7) and B-123D-145' (140-27231-10). Elevated reporting limits (RLs) are provided.

Method 6010B: Due to sample matrix effect on the internal standard (ISTD), a dilution was required for the following samples: B-104D-55-56' (140-27231-2), B-115D-75-76' (140-27231-3), B-48-23-24' (140-27231-5), DGWC-121-38-40' (140-27231-6), DGWC-121-49-50' (140-27231-7), B-122D-39-40' (140-27231-8) and B-123D-145' (140-27231-10).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Golder Associates Inc.

Job ID: 140-27231-1

Project/Site: Plant McDonough NES Well Installation

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-27231-1	B-113D-19-20'	Solid	04/19/22 14:00	04/25/22 09:30
140-27231-2	B-104D-55-56'	Solid	04/19/22 14:00	04/25/22 09:30
140-27231-3	B-115D-75-76'	Solid	04/19/22 14:00	04/25/22 09:30
140-27231-4	B-47-11-12'	Solid	04/19/22 14:00	04/25/22 09:30
140-27231-5	B-48-23-24'	Solid	04/19/22 14:00	04/25/22 09:30
140-27231-6	DGWC-121-38-40'	Solid	04/19/22 14:00	04/25/22 09:30
140-27231-7	DGWC-121-49-50'	Solid	04/19/22 14:00	04/25/22 09:30
140-27231-8	B-122D-39-40'	Solid	04/19/22 14:00	04/25/22 09:30
140-27231-9	B-123D-27-28'	Solid	04/19/22 14:00	04/25/22 09:30
140-27231-10	B-123D-145'	Solid	04/19/22 14:00	04/25/22 09:30

Client Sample Results

Client: Golder Associates Inc.
Project/Site: Plant McDonough NES Well Installation

Job ID: 140-27231-1

Client Sample ID: B-113D-19-20'

Date Collected: 04/19/22 14:00
Date Received: 04/25/22 09:30

Lab Sample ID: 140-27231-1

Matrix: Solid
Percent Solids: 98.7

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		41	6.5	mg/Kg	☼	05/05/22 08:00	05/09/22 11:47	4
Arsenic	ND		2.0	0.53	mg/Kg	☼	05/05/22 08:00	05/09/22 11:47	4
Cobalt	ND		10	0.18	mg/Kg	☼	05/05/22 08:00	05/09/22 11:47	4
Iron	ND		20	12	mg/Kg	☼	05/05/22 08:00	05/09/22 11:47	4
Lithium	ND		10	0.61	mg/Kg	☼	05/05/22 08:00	05/09/22 11:47	4
Manganese	**5.1**		3.0	0.13	mg/Kg	☼	05/05/22 08:00	05/09/22 11:47	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**5.3**	**J**	30	4.9	mg/Kg	☼	05/06/22 08:00	05/09/22 13:01	3
Arsenic	ND		1.5	0.39	mg/Kg	☼	05/06/22 08:00	05/09/22 13:01	3
Cobalt	ND		7.6	0.19	mg/Kg	☼	05/06/22 08:00	05/09/22 13:01	3
Iron	ND		15	8.8	mg/Kg	☼	05/06/22 08:00	05/09/22 13:01	3
Lithium	ND		7.6	0.46	mg/Kg	☼	05/06/22 08:00	05/09/22 13:01	3
Manganese	**5.9**		2.3	0.85	mg/Kg	☼	05/06/22 08:00	05/09/22 13:01	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**150**		10	2.1	mg/Kg	☼	05/09/22 08:00	05/13/22 11:51	1
Arsenic	ND		0.51	0.13	mg/Kg	☼	05/09/22 08:00	05/13/22 11:51	1
Cobalt	**2.1**	**J**	2.5	0.046	mg/Kg	☼	05/09/22 08:00	05/13/22 11:51	1
Iron	**260**		5.1	2.9	mg/Kg	☼	05/09/22 08:00	05/13/22 11:51	1
Lithium	**1.9**	**J**	2.5	0.15	mg/Kg	☼	05/09/22 08:00	05/13/22 11:51	1
Manganese	**700**	**B**	0.76	0.027	mg/Kg	☼	05/09/22 08:00	05/13/22 11:51	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1400**		10	1.6	mg/Kg	☼	05/11/22 08:00	05/13/22 13:06	1
Arsenic	**0.38**	**J B**	0.51	0.22	mg/Kg	☼	05/11/22 08:00	05/13/22 13:06	1
Cobalt	**1.2**	**J**	2.5	0.054	mg/Kg	☼	05/11/22 08:00	05/13/22 13:06	1
Iron	**5900**		5.1	2.9	mg/Kg	☼	05/11/22 08:00	05/13/22 13:06	1
Lithium	**1.3**	**J**	2.5	0.15	mg/Kg	☼	05/11/22 08:00	05/13/22 13:06	1
Manganese	**240**		0.76	0.13	mg/Kg	☼	05/11/22 08:00	05/13/22 13:06	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**160**		150	24	mg/Kg	☼	05/19/22 08:00	05/20/22 12:28	5
Arsenic	ND		7.6	1.9	mg/Kg	☼	05/19/22 08:00	05/20/22 12:28	5
Cobalt	ND		38	0.61	mg/Kg	☼	05/19/22 08:00	05/20/22 12:28	5
Iron	ND		76	45	mg/Kg	☼	05/19/22 08:00	05/20/22 12:28	5
Lithium	ND		38	2.2	mg/Kg	☼	05/19/22 08:00	05/20/22 12:28	5
Manganese	**2.0**	**J *1**	11	1.9	mg/Kg	☼	05/19/22 08:00	05/20/22 12:28	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**15000**		10	1.6	mg/Kg	☼	05/20/22 10:08	05/24/22 10:48	1
Arsenic	ND	L	0.51	0.15	mg/Kg	☼	05/20/22 10:08	05/24/22 10:48	1
Cobalt	**10**		5.1	0.093	mg/Kg	☼	05/20/22 10:08	05/24/22 14:00	2
Iron	**19000**		5.1	2.9	mg/Kg	☼	05/20/22 10:08	05/24/22 10:48	1
Lithium	**9.1**		2.5	0.15	mg/Kg	☼	05/20/22 10:08	05/24/22 10:48	1
Manganese	**100**		0.76	0.25	mg/Kg	☼	05/20/22 10:08	05/24/22 10:48	1

Client Sample ID: B-113D-19-20' Lab Sample ID: 140-27231-1

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30 **Percent Solids: 98.7**

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**20000**		100	16	mg/Kg	☼	05/23/22 08:00	05/26/22 10:46	10
Arsenic	ND		1.5	0.39	mg/Kg	☼	05/23/22 08:00	05/26/22 13:55	3
Cobalt	**1.8**	**J**	7.6	0.079	mg/Kg	☼	05/23/22 08:00	05/26/22 13:55	3
Iron	**9000**		5.1	4.2	mg/Kg	☼	05/23/22 08:00	05/26/22 12:14	1
Lithium	**5.3**		2.5	0.15	mg/Kg	☼	05/23/22 08:00	05/26/22 12:14	1
Manganese	**120**		0.76	0.11	mg/Kg	☼	05/23/22 08:00	05/26/22 12:14	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**37000**		10	1.6	mg/Kg			05/31/22 15:33	1
Arsenic	**0.38**	**J**	0.50	0.13	mg/Kg			05/31/22 15:33	1
Cobalt	**15**		2.5	0.023	mg/Kg			05/31/22 15:33	1
Iron	**35000**		5.0	4.1	mg/Kg			05/31/22 15:33	1
Lithium	**18**		2.5	0.15	mg/Kg			05/31/22 15:33	1
Manganese	**1200**		0.75	0.052	mg/Kg			05/31/22 15:33	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**47000**		100	16	mg/Kg	☼	05/04/22 08:00	05/27/22 10:23	10
Arsenic	ND		2.5	0.66	mg/Kg	☼	05/04/22 08:00	05/27/22 13:38	5
Cobalt	**16**		13	0.13	mg/Kg	☼	05/04/22 08:00	05/27/22 13:38	5
Iron	**37000**		25	21	mg/Kg	☼	05/04/22 08:00	05/27/22 13:38	5
Lithium	**19**		2.5	0.15	mg/Kg	☼	05/04/22 08:00	05/27/22 12:03	1
Manganese	**970**		0.76	0.11	mg/Kg	☼	05/04/22 08:00	05/27/22 12:03	1

Client Sample Results

Client: Golder Associates Inc. Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: B-104D-55-56' Lab Sample ID: 140-27231-2

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		05/05/22 08:00	05/09/22 12:32	4
Arsenic	ND		2.0	0.52	mg/Kg		05/05/22 08:00	05/09/22 12:32	4
Cobalt	ND		10	0.18	mg/Kg		05/05/22 08:00	05/09/22 12:32	4
Iron	ND		20	12	mg/Kg		05/05/22 08:00	05/09/22 12:32	4
Lithium	ND		10	0.60	mg/Kg		05/05/22 08:00	05/09/22 12:32	4
Manganese	**1.1**	**J**	3.0	0.12	mg/Kg		05/05/22 08:00	05/09/22 12:32	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**18**	**J**	30	4.8	mg/Kg		05/06/22 08:00	05/09/22 13:56	3
Arsenic	**0.42**	**J**	1.5	0.39	mg/Kg		05/06/22 08:00	05/09/22 13:56	3
Cobalt	ND		7.5	0.19	mg/Kg		05/06/22 08:00	05/09/22 13:56	3
Iron	**76**		15	8.7	mg/Kg		05/06/22 08:00	05/09/22 13:56	3
Lithium	**0.47**	**J**	7.5	0.45	mg/Kg		05/06/22 08:00	05/09/22 13:56	3
Manganese	**6.3**		2.3	0.84	mg/Kg		05/06/22 08:00	05/09/22 13:56	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**60**		10	2.1	mg/Kg		05/09/22 08:00	05/13/22 12:37	1
Arsenic	ND		0.50	0.13	mg/Kg		05/09/22 08:00	05/13/22 12:37	1
Cobalt	ND		2.5	0.045	mg/Kg		05/09/22 08:00	05/13/22 12:37	1
Iron	**180**		5.0	2.9	mg/Kg		05/09/22 08:00	05/13/22 12:37	1
Lithium	**0.15**	**J**	2.5	0.15	mg/Kg		05/09/22 08:00	05/13/22 12:37	1
Manganese	**2.8**	**B**	0.75	0.027	mg/Kg		05/09/22 08:00	05/13/22 12:37	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**800**		10	1.6	mg/Kg		05/11/22 08:00	05/13/22 14:00	1
Arsenic	**0.79**	**B**	0.50	0.22	mg/Kg		05/11/22 08:00	05/13/22 14:00	1
Cobalt	**0.30**	**J**	2.5	0.053	mg/Kg		05/11/22 08:00	05/13/22 14:00	1
Iron	**1800**		5.0	2.9	mg/Kg		05/11/22 08:00	05/13/22 14:00	1
Lithium	**1.8**	**J**	2.5	0.15	mg/Kg		05/11/22 08:00	05/13/22 14:00	1
Manganese	**14**		0.75	0.13	mg/Kg		05/11/22 08:00	05/13/22 14:00	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**110**	**J**	150	24	mg/Kg		05/19/22 08:00	05/20/22 13:23	5
Arsenic	ND		7.5	1.9	mg/Kg		05/19/22 08:00	05/20/22 13:23	5
Cobalt	ND		38	0.60	mg/Kg		05/19/22 08:00	05/20/22 13:23	5
Iron	ND		75	44	mg/Kg		05/19/22 08:00	05/20/22 13:23	5
Lithium	ND		38	2.2	mg/Kg		05/19/22 08:00	05/20/22 13:23	5
Manganese	ND	*1	11	1.9	mg/Kg		05/19/22 08:00	05/20/22 13:23	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**7500**		10	1.6	mg/Kg		05/20/22 10:08	05/24/22 11:44	1
Arsenic	ND	L	0.50	0.15	mg/Kg		05/20/22 10:08	05/24/22 11:44	1
Cobalt	**6.9**		2.5	0.046	mg/Kg		05/20/22 10:08	05/24/22 11:44	1
Iron	**15000**		5.0	2.9	mg/Kg		05/20/22 10:08	05/24/22 11:44	1
Lithium	**16**		2.5	0.15	mg/Kg		05/20/22 10:08	05/24/22 11:44	1
Manganese	**94**		0.75	0.25	mg/Kg		05/20/22 10:08	05/24/22 11:44	1

Client Sample ID: B-104D-55-56'
Lab Sample ID: 140-27231-2
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**23000**		100	16	mg/Kg		05/23/22 08:00	05/26/22 11:40	10
Arsenic	ND	L	0.50	0.13	mg/Kg		05/23/22 08:00	05/26/22 13:11	1
Cobalt	**4.4**	**J**	13	0.13	mg/Kg		05/23/22 08:00	05/26/22 14:48	5
Iron	**17000**		5.0	4.1	mg/Kg		05/23/22 08:00	05/26/22 13:11	1
Lithium	**14**		2.5	0.15	mg/Kg		05/23/22 08:00	05/26/22 13:11	1
Manganese	**450**		0.75	0.11	mg/Kg		05/23/22 08:00	05/26/22 13:11	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**31000**		10	1.6	mg/Kg			05/31/22 15:33	1
Arsenic	**1.2**		0.50	0.13	mg/Kg			05/31/22 15:33	1
Cobalt	**12**		2.5	0.023	mg/Kg			05/31/22 15:33	1
Iron	**34000**		5.0	4.1	mg/Kg			05/31/22 15:33	1
Lithium	**33**		2.5	0.15	mg/Kg			05/31/22 15:33	1
Manganese	**560**		0.75	0.052	mg/Kg			05/31/22 15:33	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**35000**		100	16	mg/Kg		05/04/22 08:00	05/27/22 11:15	10
Arsenic	ND		1.5	0.39	mg/Kg		05/04/22 08:00	05/27/22 14:33	3
Cobalt	**8.5**		7.5	0.078	mg/Kg		05/04/22 08:00	05/27/22 14:33	3
Iron	**26000**		15	12	mg/Kg		05/04/22 08:00	05/27/22 14:33	3
Lithium	**28**		7.5	0.45	mg/Kg		05/04/22 08:00	05/27/22 14:33	3
Manganese	**360**		2.3	0.33	mg/Kg		05/04/22 08:00	05/27/22 14:33	3

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	**DONE**				NONE			04/28/22 07:25	1

Client Sample Results

Client: Golder Associates Inc.
Project/Site: Plant McDonough NES Well Installation

Job ID: 140-27231-1

Client Sample ID: B-115D-75-76'

Date Collected: 04/19/22 14:00
Date Received: 04/25/22 09:30

Lab Sample ID: 140-27231-3

Matrix: Solid

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		05/05/22 08:00	05/09/22 12:46	4
Arsenic	ND		2.0	0.52	mg/Kg		05/05/22 08:00	05/09/22 12:46	4
Cobalt	ND		10	0.18	mg/Kg		05/05/22 08:00	05/09/22 12:46	4
Iron	ND		20	12	mg/Kg		05/05/22 08:00	05/09/22 12:46	4
Lithium	ND		10	0.60	mg/Kg		05/05/22 08:00	05/09/22 12:46	4
Manganese	**0.40**	**J**	3.0	0.12	mg/Kg		05/05/22 08:00	05/09/22 12:46	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**4.9**	**J**	30	4.8	mg/Kg		05/06/22 08:00	05/09/22 14:04	3
Arsenic	ND		1.5	0.39	mg/Kg		05/06/22 08:00	05/09/22 14:04	3
Cobalt	ND		7.5	0.19	mg/Kg		05/06/22 08:00	05/09/22 14:04	3
Iron	**15**		15	8.7	mg/Kg		05/06/22 08:00	05/09/22 14:04	3
Lithium	ND		7.5	0.45	mg/Kg		05/06/22 08:00	05/09/22 14:04	3
Manganese	**1.8**	**J**	2.3	0.84	mg/Kg		05/06/22 08:00	05/09/22 14:04	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**20**		10	2.1	mg/Kg		05/09/22 08:00	05/13/22 12:51	1
Arsenic	ND		0.50	0.13	mg/Kg		05/09/22 08:00	05/13/22 12:51	1
Cobalt	**0.091**	**J**	2.5	0.045	mg/Kg		05/09/22 08:00	05/13/22 12:51	1
Iron	**51**		5.0	2.9	mg/Kg		05/09/22 08:00	05/13/22 12:51	1
Lithium	ND		2.5	0.15	mg/Kg		05/09/22 08:00	05/13/22 12:51	1
Manganese	**1.3**	**B**	0.75	0.027	mg/Kg		05/09/22 08:00	05/13/22 12:51	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**740**		10	1.6	mg/Kg		05/11/22 08:00	05/13/22 14:05	1
Arsenic	**0.77**	**B**	0.50	0.22	mg/Kg		05/11/22 08:00	05/13/22 14:05	1
Cobalt	**0.43**	**J**	2.5	0.053	mg/Kg		05/11/22 08:00	05/13/22 14:05	1
Iron	**1600**		5.0	2.9	mg/Kg		05/11/22 08:00	05/13/22 14:05	1
Lithium	**1.6**	**J**	2.5	0.15	mg/Kg		05/11/22 08:00	05/13/22 14:05	1
Manganese	**12**		0.75	0.13	mg/Kg		05/11/22 08:00	05/13/22 14:05	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**120**	**J**	150	24	mg/Kg		05/19/22 08:00	05/20/22 13:28	5
Arsenic	ND		7.5	1.9	mg/Kg		05/19/22 08:00	05/20/22 13:28	5
Cobalt	ND		38	0.60	mg/Kg		05/19/22 08:00	05/20/22 13:28	5
Iron	ND		75	44	mg/Kg		05/19/22 08:00	05/20/22 13:28	5
Lithium	ND		38	2.2	mg/Kg		05/19/22 08:00	05/20/22 13:28	5
Manganese	ND	*1	11	1.9	mg/Kg		05/19/22 08:00	05/20/22 13:28	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**6000**		10	1.6	mg/Kg		05/20/22 10:08	05/24/22 11:49	1
Arsenic	ND		0.50	0.15	mg/Kg		05/20/22 10:08	05/24/22 11:49	1
Cobalt	**5.9**		2.5	0.046	mg/Kg		05/20/22 10:08	05/24/22 11:49	1
Iron	**12000**		5.0	2.9	mg/Kg		05/20/22 10:08	05/24/22 11:49	1
Lithium	**12**		2.5	0.15	mg/Kg		05/20/22 10:08	05/24/22 11:49	1
Manganese	**67**		0.75	0.25	mg/Kg		05/20/22 10:08	05/24/22 11:49	1

Client Sample Results

Client: Golder Associates Inc. Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: B-115D-75-76' Lab Sample ID: 140-27231-3

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**22000**		100	16	mg/Kg		05/23/22 08:00	05/26/22 11:45	10
Arsenic	ND	L	0.50	0.13	mg/Kg		05/23/22 08:00	05/26/22 13:16	1
Cobalt	**4.3**	**J**	13	0.13	mg/Kg		05/23/22 08:00	05/26/22 14:52	5
Iron	**15000**		5.0	4.1	mg/Kg		05/23/22 08:00	05/26/22 13:16	1
Lithium	**10**		2.5	0.15	mg/Kg		05/23/22 08:00	05/26/22 13:16	1
Manganese	**320**		0.75	0.11	mg/Kg		05/23/22 08:00	05/26/22 13:16	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**29000**		10	1.6	mg/Kg			05/31/22 15:33	1
Arsenic	**0.77**		0.50	0.13	mg/Kg			05/31/22 15:33	1
Cobalt	**11**		2.5	0.023	mg/Kg			05/31/22 15:33	1
Iron	**29000**		5.0	4.1	mg/Kg			05/31/22 15:33	1
Lithium	**24**		2.5	0.15	mg/Kg			05/31/22 15:33	1
Manganese	**410**		0.75	0.052	mg/Kg			05/31/22 15:33	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**36000**		100	16	mg/Kg		05/04/22 08:00	05/27/22 11:20	10
Arsenic	ND		2.5	0.65	mg/Kg		05/04/22 08:00	05/27/22 14:38	5
Cobalt	**14**		13	0.13	mg/Kg		05/04/22 08:00	05/27/22 14:38	5
Iron	**43000**		25	21	mg/Kg		05/04/22 08:00	05/27/22 14:38	5
Lithium	**44**		13	0.75	mg/Kg		05/04/22 08:00	05/27/22 14:38	5
Manganese	**240**		0.75	0.11	mg/Kg		05/04/22 08:00	05/27/22 13:09	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	**DONE**				NONE			04/28/22 07:25	1

Client Sample Results

Client: Golder Associates Inc. Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: B-47-11-12' Lab Sample ID: 140-27231-4

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30 **Percent Solids: 99.2**

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**12**	**J**	40	6.5	mg/Kg	☼	05/05/22 08:00	05/09/22 11:52	4
Arsenic	ND		2.0	0.52	mg/Kg	☼	05/05/22 08:00	05/09/22 11:52	4
Cobalt	ND		10	0.18	mg/Kg	☼	05/05/22 08:00	05/09/22 11:52	4
Iron	ND		20	12	mg/Kg	☼	05/05/22 08:00	05/09/22 11:52	4
Lithium	ND		10	0.60	mg/Kg	☼	05/05/22 08:00	05/09/22 11:52	4
Manganese	**2.5**	**J**	3.0	0.13	mg/Kg	☼	05/05/22 08:00	05/09/22 11:52	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**28**	**J**	30	4.8	mg/Kg	☼	05/06/22 08:00	05/09/22 13:06	3
Arsenic	ND		1.5	0.39	mg/Kg	☼	05/06/22 08:00	05/09/22 13:06	3
Cobalt	ND		7.6	0.19	mg/Kg	☼	05/06/22 08:00	05/09/22 13:06	3
Iron	**21**		15	8.8	mg/Kg	☼	05/06/22 08:00	05/09/22 13:06	3
Lithium	**0.69**	**J**	7.6	0.45	mg/Kg	☼	05/06/22 08:00	05/09/22 13:06	3
Manganese	ND		2.3	0.85	mg/Kg	☼	05/06/22 08:00	05/09/22 13:06	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**300**		10	2.1	mg/Kg	☼	05/09/22 08:00	05/13/22 11:56	1
Arsenic	**0.21**	**J**	0.50	0.13	mg/Kg	☼	05/09/22 08:00	05/13/22 11:56	1
Cobalt	**0.22**	**J**	2.5	0.045	mg/Kg	☼	05/09/22 08:00	05/13/22 11:56	1
Iron	**1300**		5.0	2.9	mg/Kg	☼	05/09/22 08:00	05/13/22 11:56	1
Lithium	**0.33**	**J**	2.5	0.15	mg/Kg	☼	05/09/22 08:00	05/13/22 11:56	1
Manganese	**9.1**	**B**	0.76	0.027	mg/Kg	☼	05/09/22 08:00	05/13/22 11:56	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2000**		10	1.6	mg/Kg	☼	05/11/22 08:00	05/13/22 13:11	1
Arsenic	**0.58**	**B**	0.50	0.22	mg/Kg	☼	05/11/22 08:00	05/13/22 13:11	1
Cobalt	**0.91**	**J**	2.5	0.053	mg/Kg	☼	05/11/22 08:00	05/13/22 13:11	1
Iron	**10000**		5.0	2.9	mg/Kg	☼	05/11/22 08:00	05/13/22 13:11	1
Lithium	**3.9**		2.5	0.15	mg/Kg	☼	05/11/22 08:00	05/13/22 13:11	1
Manganese	**8.2**		0.76	0.13	mg/Kg	☼	05/11/22 08:00	05/13/22 13:11	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**190**		150	24	mg/Kg	☼	05/19/22 08:00	05/20/22 12:33	5
Arsenic	ND		7.6	1.9	mg/Kg	☼	05/19/22 08:00	05/20/22 12:33	5
Cobalt	ND		38	0.60	mg/Kg	☼	05/19/22 08:00	05/20/22 12:33	5
Iron	ND		76	44	mg/Kg	☼	05/19/22 08:00	05/20/22 12:33	5
Lithium	**4.2**	**J**	38	2.2	mg/Kg	☼	05/19/22 08:00	05/20/22 12:33	5
Manganese	ND	*1	11	1.9	mg/Kg	☼	05/19/22 08:00	05/20/22 12:33	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**17000**		10	1.6	mg/Kg	☼	05/20/22 10:08	05/24/22 10:53	1
Arsenic	**0.48**	**J**	0.50	0.15	mg/Kg	☼	05/20/22 10:08	05/24/22 10:53	1
Cobalt	**4.1**		2.5	0.046	mg/Kg	☼	05/20/22 10:08	05/24/22 10:53	1
Iron	**25000**		5.0	2.9	mg/Kg	☼	05/20/22 10:08	05/24/22 10:53	1
Lithium	**28**		2.5	0.15	mg/Kg	☼	05/20/22 10:08	05/24/22 10:53	1
Manganese	**48**		0.76	0.25	mg/Kg	☼	05/20/22 10:08	05/24/22 10:53	1

Client Sample Results

Client: Golder Associates Inc.
Project/Site: Plant McDonough NES Well Installation

Job ID: 140-27231-1

Client Sample ID: B-47-11-12'

Date Collected: 04/19/22 14:00
Date Received: 04/25/22 09:30

Lab Sample ID: 140-27231-4

Matrix: Solid
Percent Solids: 99.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**29000**		100	16	mg/Kg	☼	05/23/22 08:00	05/26/22 10:51	10
Arsenic	ND		0.50	0.13	mg/Kg	☼	05/23/22 08:00	05/26/22 12:29	1
Cobalt	**1.4**	**J**	13	0.13	mg/Kg	☼	05/23/22 08:00	05/26/22 14:00	5
Iron	**11000**		5.0	4.1	mg/Kg	☼	05/23/22 08:00	05/26/22 12:29	1
Lithium	**13**		2.5	0.15	mg/Kg	☼	05/23/22 08:00	05/26/22 12:29	1
Manganese	**110**		0.76	0.11	mg/Kg	☼	05/23/22 08:00	05/26/22 12:29	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**49000**		10	1.6	mg/Kg			05/31/22 15:33	1
Arsenic	**1.3**		0.50	0.13	mg/Kg			05/31/22 15:33	1
Cobalt	**6.6**		2.5	0.023	mg/Kg			05/31/22 15:33	1
Iron	**47000**		5.0	4.1	mg/Kg			05/31/22 15:33	1
Lithium	**49**		2.5	0.15	mg/Kg			05/31/22 15:33	1
Manganese	**180**		0.75	0.052	mg/Kg			05/31/22 15:33	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**63000**		100	16	mg/Kg	☼	05/04/22 08:00	05/27/22 10:27	10
Arsenic	ND		2.5	0.66	mg/Kg	☼	05/04/22 08:00	05/27/22 13:42	5
Cobalt	**8.6**	**J**	25	0.26	mg/Kg	☼	05/04/22 08:00	05/27/22 10:27	10
Iron	**54000**		25	21	mg/Kg	☼	05/04/22 08:00	05/27/22 13:42	5
Lithium	**44**		2.5	0.15	mg/Kg	☼	05/04/22 08:00	05/27/22 12:09	1
Manganese	**130**		0.76	0.11	mg/Kg	☼	05/04/22 08:00	05/27/22 12:09	1

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Client Sample ID: B-48-23-24'

Lab Sample ID: 140-27231-5

Date Collected: 04/19/22 14:00

Matrix: Solid

Date Received: 04/25/22 09:30

Percent Solids: 99.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg	☼	05/05/22 08:00	05/09/22 11:57	4
Arsenic	ND		2.0	0.52	mg/Kg	☼	05/05/22 08:00	05/09/22 11:57	4
Cobalt	ND		10	0.18	mg/Kg	☼	05/05/22 08:00	05/09/22 11:57	4
Iron	ND		20	12	mg/Kg	☼	05/05/22 08:00	05/09/22 11:57	4
Lithium	ND		10	0.60	mg/Kg	☼	05/05/22 08:00	05/09/22 11:57	4
Manganese	**39**		3.0	0.12	mg/Kg	☼	05/05/22 08:00	05/09/22 11:57	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**23**	**J**	30	4.8	mg/Kg	☼	05/06/22 08:00	05/09/22 13:11	3
Arsenic	ND		1.5	0.39	mg/Kg	☼	05/06/22 08:00	05/09/22 13:11	3
Cobalt	**0.28**	**J**	7.5	0.19	mg/Kg	☼	05/06/22 08:00	05/09/22 13:11	3
Iron	**22**		15	8.8	mg/Kg	☼	05/06/22 08:00	05/09/22 13:11	3
Lithium	**0.52**	**J**	7.5	0.45	mg/Kg	☼	05/06/22 08:00	05/09/22 13:11	3
Manganese	**13**		2.3	0.85	mg/Kg	☼	05/06/22 08:00	05/09/22 13:11	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**320**		10	2.1	mg/Kg	☼	05/09/22 08:00	05/13/22 12:01	1
Arsenic	**0.30**	**J**	0.50	0.13	mg/Kg	☼	05/09/22 08:00	05/13/22 12:01	1
Cobalt	**0.53**	**J**	2.5	0.045	mg/Kg	☼	05/09/22 08:00	05/13/22 12:01	1
Iron	**590**		5.0	2.9	mg/Kg	☼	05/09/22 08:00	05/13/22 12:01	1
Lithium	**0.32**	**J**	2.5	0.15	mg/Kg	☼	05/09/22 08:00	05/13/22 12:01	1
Manganese	**18**	**B**	0.75	0.027	mg/Kg	☼	05/09/22 08:00	05/13/22 12:01	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2000**		10	1.6	mg/Kg	☼	05/11/22 08:00	05/13/22 13:16	1
Arsenic	**0.79**	**B**	0.50	0.22	mg/Kg	☼	05/11/22 08:00	05/13/22 13:16	1
Cobalt	**1.7**	**J**	2.5	0.053	mg/Kg	☼	05/11/22 08:00	05/13/22 13:16	1
Iron	**6200**		5.0	2.9	mg/Kg	☼	05/11/22 08:00	05/13/22 13:16	1
Lithium	**4.2**		2.5	0.15	mg/Kg	☼	05/11/22 08:00	05/13/22 13:16	1
Manganese	**61**		0.75	0.13	mg/Kg	☼	05/11/22 08:00	05/13/22 13:16	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**88**	**J**	150	24	mg/Kg	☼	05/19/22 08:00	05/20/22 12:38	5
Arsenic	ND		7.5	1.9	mg/Kg	☼	05/19/22 08:00	05/20/22 12:38	5
Cobalt	ND		38	0.60	mg/Kg	☼	05/19/22 08:00	05/20/22 12:38	5
Iron	ND		75	44	mg/Kg	☼	05/19/22 08:00	05/20/22 12:38	5
Lithium	**4.2**	**J**	38	2.2	mg/Kg	☼	05/19/22 08:00	05/20/22 12:38	5
Manganese	ND	*1	11	1.9	mg/Kg	☼	05/19/22 08:00	05/20/22 12:38	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**12000**		30	4.8	mg/Kg	☼	05/20/22 10:08	05/24/22 16:12	3
Arsenic	**2.1**		1.5	0.45	mg/Kg	☼	05/20/22 10:08	05/24/22 16:12	3
Cobalt	**2.5**	**J**	7.5	0.14	mg/Kg	☼	05/20/22 10:08	05/24/22 16:12	3
Iron	**17000**		15	8.8	mg/Kg	☼	05/20/22 10:08	05/24/22 16:12	3
Lithium	**17**		7.5	0.45	mg/Kg	☼	05/20/22 10:08	05/24/22 16:12	3
Manganese	**200**		2.3	0.75	mg/Kg	☼	05/20/22 10:08	05/24/22 16:12	3

Client Sample ID: B-48-23-24'

Lab Sample ID: 140-27231-5
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30
Percent Solids: 99.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**23000**		100	16	mg/Kg	☼	05/23/22 08:00	05/26/22 10:55	10
Arsenic	ND		0.50	0.13	mg/Kg	☼	05/23/22 08:00	05/26/22 12:34	1
Cobalt	**0.46**	**J**	13	0.13	mg/Kg	☼	05/23/22 08:00	05/26/22 14:04	5
Iron	**4700**		5.0	4.1	mg/Kg	☼	05/23/22 08:00	05/26/22 12:34	1
Lithium	**3.4**		2.5	0.15	mg/Kg	☼	05/23/22 08:00	05/26/22 12:34	1
Manganese	**380**		0.75	0.11	mg/Kg	☼	05/23/22 08:00	05/26/22 12:34	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**37000**		10	1.6	mg/Kg			05/31/22 15:33	1
Arsenic	**3.2**		0.50	0.13	mg/Kg			05/31/22 15:33	1
Cobalt	**5.4**		2.5	0.023	mg/Kg			05/31/22 15:33	1
Iron	**28000**		5.0	4.1	mg/Kg			05/31/22 15:33	1
Lithium	**29**		2.5	0.15	mg/Kg			05/31/22 15:33	1
Manganese	**710**		0.75	0.052	mg/Kg			05/31/22 15:33	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**61000**		100	16	mg/Kg	☼	05/04/22 08:00	05/27/22 10:32	10
Arsenic	**2.4**	**J**	2.5	0.65	mg/Kg	☼	05/04/22 08:00	05/27/22 14:58	5
Cobalt	**5.1**	**J**	13	0.13	mg/Kg	☼	05/04/22 08:00	05/27/22 14:58	5
Iron	**31000**		25	21	mg/Kg	☼	05/04/22 08:00	05/27/22 14:58	5
Lithium	**29**		13	0.75	mg/Kg	☼	05/04/22 08:00	05/27/22 14:58	5
Manganese	**740**		3.8	0.55	mg/Kg	☼	05/04/22 08:00	05/27/22 14:58	5

Client Sample Results

Client Sample ID: DGWC-121-38-40'

Date Collected: 04/19/22 14:00
Date Received: 04/25/22 09:30

Lab Sample ID: 140-27231-6

Matrix: Solid
Percent Solids: 82.1

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		49	7.8	mg/Kg	☼	05/05/22 08:00	05/09/22 12:02	4
Arsenic	ND		2.4	0.63	mg/Kg	☼	05/05/22 08:00	05/09/22 12:02	4
Cobalt	ND		12	0.22	mg/Kg	☼	05/05/22 08:00	05/09/22 12:02	4
Iron	ND		24	14	mg/Kg	☼	05/05/22 08:00	05/09/22 12:02	4
Lithium	ND		12	0.73	mg/Kg	☼	05/05/22 08:00	05/09/22 12:02	4
Manganese	**3.7**		3.7	0.15	mg/Kg	☼	05/05/22 08:00	05/09/22 12:02	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11**	**J**	37	5.8	mg/Kg	☼	05/06/22 08:00	05/09/22 13:16	3
Arsenic	ND		1.8	0.47	mg/Kg	☼	05/06/22 08:00	05/09/22 13:16	3
Cobalt	ND		9.1	0.23	mg/Kg	☼	05/06/22 08:00	05/09/22 13:16	3
Iron	ND		18	11	mg/Kg	☼	05/06/22 08:00	05/09/22 13:16	3
Lithium	ND		9.1	0.55	mg/Kg	☼	05/06/22 08:00	05/09/22 13:16	3
Manganese	**5.2**		2.7	1.0	mg/Kg	☼	05/06/22 08:00	05/09/22 13:16	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**100**		12	2.6	mg/Kg	☼	05/09/22 08:00	05/13/22 12:06	1
Arsenic	ND		0.61	0.16	mg/Kg	☼	05/09/22 08:00	05/13/22 12:06	1
Cobalt	**5.8**		3.0	0.055	mg/Kg	☼	05/09/22 08:00	05/13/22 12:06	1
Iron	**240**		6.1	3.5	mg/Kg	☼	05/09/22 08:00	05/13/22 12:06	1
Lithium	**0.65**	**J**	3.0	0.18	mg/Kg	☼	05/09/22 08:00	05/13/22 12:06	1
Manganese	**440**	**B**	0.91	0.033	mg/Kg	☼	05/09/22 08:00	05/13/22 12:06	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1500**		12	1.9	mg/Kg	☼	05/11/22 08:00	05/13/22 13:21	1
Arsenic	**0.54**	**J B**	0.61	0.27	mg/Kg	☼	05/11/22 08:00	05/13/22 13:21	1
Cobalt	**2.4**	**J**	3.0	0.065	mg/Kg	☼	05/11/22 08:00	05/13/22 13:21	1
Iron	**7400**		6.1	3.5	mg/Kg	☼	05/11/22 08:00	05/13/22 13:21	1
Lithium	**2.3**	**J**	3.0	0.18	mg/Kg	☼	05/11/22 08:00	05/13/22 13:21	1
Manganese	**130**		0.91	0.16	mg/Kg	☼	05/11/22 08:00	05/13/22 13:21	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**110**	**J**	180	29	mg/Kg	☼	05/19/22 08:00	05/20/22 12:43	5
Arsenic	ND		9.1	2.3	mg/Kg	☼	05/19/22 08:00	05/20/22 12:43	5
Cobalt	ND		46	0.73	mg/Kg	☼	05/19/22 08:00	05/20/22 12:43	5
Iron	ND		91	54	mg/Kg	☼	05/19/22 08:00	05/20/22 12:43	5
Lithium	ND		46	2.7	mg/Kg	☼	05/19/22 08:00	05/20/22 12:43	5
Manganese	ND	*1	14	2.3	mg/Kg	☼	05/19/22 08:00	05/20/22 12:43	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**8400**		12	1.9	mg/Kg	☼	05/20/22 10:08	05/24/22 11:03	1
Arsenic	ND		0.61	0.18	mg/Kg	☼	05/20/22 10:08	05/24/22 11:03	1
Cobalt	**6.9**		3.0	0.056	mg/Kg	☼	05/20/22 10:08	05/24/22 11:03	1
Iron	**21000**		6.1	3.5	mg/Kg	☼	05/20/22 10:08	05/24/22 11:03	1
Lithium	**9.6**		3.0	0.18	mg/Kg	☼	05/20/22 10:08	05/24/22 11:03	1
Manganese	**52**		0.91	0.30	mg/Kg	☼	05/20/22 10:08	05/24/22 11:03	1

Client Sample Results

Client: Golder Associates Inc. Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: DGWC-121-38-40' Lab Sample ID: 140-27231-6

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30 **Percent Solids: 82.1**

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**36000**		120	19	mg/Kg	☼	05/23/22 08:00	05/26/22 11:00	10
Arsenic	ND		3.0	0.79	mg/Kg	☼	05/23/22 08:00	05/26/22 14:09	5
Cobalt	**2.4**	**J**	15	0.16	mg/Kg	☼	05/23/22 08:00	05/26/22 14:09	5
Iron	**14000**		6.1	5.0	mg/Kg	☼	05/23/22 08:00	05/26/22 12:40	1
Lithium	**7.7**		3.0	0.18	mg/Kg	☼	05/23/22 08:00	05/26/22 12:40	1
Manganese	**200**		0.91	0.13	mg/Kg	☼	05/23/22 08:00	05/26/22 12:40	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**46000**		10	1.6	mg/Kg			05/31/22 15:33	1
Arsenic	**0.54**		0.50	0.13	mg/Kg			05/31/22 15:33	1
Cobalt	**18**		2.5	0.023	mg/Kg			05/31/22 15:33	1
Iron	**42000**		5.0	4.1	mg/Kg			05/31/22 15:33	1
Lithium	**20**		2.5	0.15	mg/Kg			05/31/22 15:33	1
Manganese	**830**		0.75	0.052	mg/Kg			05/31/22 15:33	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**64000**		120	19	mg/Kg	☼	05/04/22 08:00	05/27/22 10:37	10
Arsenic	ND		3.0	0.79	mg/Kg	☼	05/04/22 08:00	05/27/22 13:53	5
Cobalt	**18**		15	0.16	mg/Kg	☼	05/04/22 08:00	05/27/22 13:53	5
Iron	**50000**		30	25	mg/Kg	☼	05/04/22 08:00	05/27/22 13:53	5
Lithium	**24**		15	0.91	mg/Kg	☼	05/04/22 08:00	05/27/22 13:53	5
Manganese	**610**		0.91	0.13	mg/Kg	☼	05/04/22 08:00	05/27/22 12:20	1

Client Sample Results

Client: Golder Associates Inc. Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: DGWC-121-49-50' Lab Sample ID: 140-27231-7

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		05/05/22 08:00	05/09/22 12:51	4
Arsenic	ND		2.0	0.52	mg/Kg		05/05/22 08:00	05/09/22 12:51	4
Cobalt	ND		10	0.18	mg/Kg		05/05/22 08:00	05/09/22 12:51	4
Iron	ND		20	12	mg/Kg		05/05/22 08:00	05/09/22 12:51	4
Lithium	ND		10	0.60	mg/Kg		05/05/22 08:00	05/09/22 12:51	4
Manganese	**0.84**	**J**	3.0	0.12	mg/Kg		05/05/22 08:00	05/09/22 12:51	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		05/06/22 08:00	05/09/22 14:09	3
Arsenic	ND		1.5	0.39	mg/Kg		05/06/22 08:00	05/09/22 14:09	3
Cobalt	ND		7.5	0.19	mg/Kg		05/06/22 08:00	05/09/22 14:09	3
Iron	ND		15	8.7	mg/Kg		05/06/22 08:00	05/09/22 14:09	3
Lithium	ND		7.5	0.45	mg/Kg		05/06/22 08:00	05/09/22 14:09	3
Manganese	**3.6**		2.3	0.84	mg/Kg		05/06/22 08:00	05/09/22 14:09	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**33**		10	2.1	mg/Kg		05/09/22 08:00	05/13/22 12:56	1
Arsenic	ND		0.50	0.13	mg/Kg		05/09/22 08:00	05/13/22 12:56	1
Cobalt	**1.0**	**J**	2.5	0.045	mg/Kg		05/09/22 08:00	05/13/22 12:56	1
Iron	**62**		5.0	2.9	mg/Kg		05/09/22 08:00	05/13/22 12:56	1
Lithium	**0.18**	**J**	2.5	0.15	mg/Kg		05/09/22 08:00	05/13/22 12:56	1
Manganese	**78**	**B**	0.75	0.027	mg/Kg		05/09/22 08:00	05/13/22 12:56	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**570**		10	1.6	mg/Kg		05/11/22 08:00	05/13/22 14:09	1
Arsenic	**0.56**	**B**	0.50	0.22	mg/Kg		05/11/22 08:00	05/13/22 14:09	1
Cobalt	**0.98**	**J**	2.5	0.053	mg/Kg		05/11/22 08:00	05/13/22 14:09	1
Iron	**3100**		5.0	2.9	mg/Kg		05/11/22 08:00	05/13/22 14:09	1
Lithium	**1.1**	**J**	2.5	0.15	mg/Kg		05/11/22 08:00	05/13/22 14:09	1
Manganese	**42**		0.75	0.13	mg/Kg		05/11/22 08:00	05/13/22 14:09	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**91**	**J**	150	24	mg/Kg		05/19/22 08:00	05/20/22 13:33	5
Arsenic	ND		7.5	1.9	mg/Kg		05/19/22 08:00	05/20/22 13:33	5
Cobalt	ND		38	0.60	mg/Kg		05/19/22 08:00	05/20/22 13:33	5
Iron	ND		75	44	mg/Kg		05/19/22 08:00	05/20/22 13:33	5
Lithium	ND		38	2.2	mg/Kg		05/19/22 08:00	05/20/22 13:33	5
Manganese	ND	*1	11	1.9	mg/Kg		05/19/22 08:00	05/20/22 13:33	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**7700**		10	1.6	mg/Kg		05/20/22 10:08	05/24/22 11:54	1
Arsenic	ND	L	0.50	0.15	mg/Kg		05/20/22 10:08	05/24/22 11:54	1
Cobalt	**7.6**		2.5	0.046	mg/Kg		05/20/22 10:08	05/24/22 11:54	1
Iron	**17000**		5.0	2.9	mg/Kg		05/20/22 10:08	05/24/22 11:54	1
Lithium	**9.7**		2.5	0.15	mg/Kg		05/20/22 10:08	05/24/22 11:54	1
Manganese	**83**		0.75	0.25	mg/Kg		05/20/22 10:08	05/24/22 11:54	1

Client Sample ID: DGWC-121-49-50'

Lab Sample ID: 140-27231-7

Date Collected: 04/19/22 14:00

Matrix: Solid

Date Received: 04/25/22 09:30

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**36000**		100	16	mg/Kg		05/23/22 08:00	05/26/22 11:50	10
Arsenic	ND		2.5	0.65	mg/Kg		05/23/22 08:00	05/26/22 14:57	5
Cobalt	**4.0**	**J**	13	0.13	mg/Kg		05/23/22 08:00	05/26/22 14:57	5
Iron	**13000**		5.0	4.1	mg/Kg		05/23/22 08:00	05/26/22 13:32	1
Lithium	**6.3**		2.5	0.15	mg/Kg		05/23/22 08:00	05/26/22 13:32	1
Manganese	**290**		0.75	0.11	mg/Kg		05/23/22 08:00	05/26/22 13:32	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**45000**		10	1.6	mg/Kg			05/31/22 15:33	1
Arsenic	**0.56**		0.50	0.13	mg/Kg			05/31/22 15:33	1
Cobalt	**14**		2.5	0.023	mg/Kg			05/31/22 15:33	1
Iron	**33000**		5.0	4.1	mg/Kg			05/31/22 15:33	1
Lithium	**17**		2.5	0.15	mg/Kg			05/31/22 15:33	1
Manganese	**490**		0.75	0.052	mg/Kg			05/31/22 15:33	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**50000**		100	16	mg/Kg		05/04/22 08:00	05/27/22 11:24	10
Arsenic	ND		2.5	0.65	mg/Kg		05/04/22 08:00	05/27/22 14:43	5
Cobalt	**12**	**J**	13	0.13	mg/Kg		05/04/22 08:00	05/27/22 14:43	5
Iron	**36000**		25	21	mg/Kg		05/04/22 08:00	05/27/22 14:43	5
Lithium	**19**		13	0.75	mg/Kg		05/04/22 08:00	05/27/22 14:43	5
Manganese	**470**		0.75	0.11	mg/Kg		05/04/22 08:00	05/27/22 13:15	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	**DONE**				NONE			04/28/22 07:25	1

1
2
3
4
5
6
7
8
9
10
11
12
13

Client Sample ID: B-122D-39-40'

Date Collected: 04/19/22 14:00
Date Received: 04/25/22 09:30

Lab Sample ID: 140-27231-8

Matrix: Solid
Percent Solids: 74.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**15**	**J**	54	8.6	mg/Kg	☼	05/05/22 08:00	05/09/22 12:17	4
Arsenic	ND		2.7	0.70	mg/Kg	☼	05/05/22 08:00	05/09/22 12:17	4
Cobalt	**0.51**	**J**	13	0.24	mg/Kg	☼	05/05/22 08:00	05/09/22 12:17	4
Iron	ND		27	16	mg/Kg	☼	05/05/22 08:00	05/09/22 12:17	4
Lithium	ND		13	0.81	mg/Kg	☼	05/05/22 08:00	05/09/22 12:17	4
Manganese	**360**		4.0	0.17	mg/Kg	☼	05/05/22 08:00	05/09/22 12:17	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**77**		40	6.5	mg/Kg	☼	05/06/22 08:00	05/09/22 13:32	3
Arsenic	ND		2.0	0.53	mg/Kg	☼	05/06/22 08:00	05/09/22 13:32	3
Cobalt	**0.88**	**J**	10	0.25	mg/Kg	☼	05/06/22 08:00	05/09/22 13:32	3
Iron	**360**		20	12	mg/Kg	☼	05/06/22 08:00	05/09/22 13:32	3
Lithium	ND		10	0.61	mg/Kg	☼	05/06/22 08:00	05/09/22 13:32	3
Manganese	**81**		3.0	1.1	mg/Kg	☼	05/06/22 08:00	05/09/22 13:32	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**820**		13	2.8	mg/Kg	☼	05/09/22 08:00	05/13/22 12:22	1
Arsenic	**0.87**		0.67	0.18	mg/Kg	☼	05/09/22 08:00	05/13/22 12:22	1
Cobalt	**2.9**	**J**	3.4	0.061	mg/Kg	☼	05/09/22 08:00	05/13/22 12:22	1
Iron	**5100**		6.7	3.9	mg/Kg	☼	05/09/22 08:00	05/13/22 12:22	1
Lithium	ND		3.4	0.20	mg/Kg	☼	05/09/22 08:00	05/13/22 12:22	1
Manganese	**260**	**B**	1.0	0.036	mg/Kg	☼	05/09/22 08:00	05/13/22 12:22	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**6600**		13	2.2	mg/Kg	☼	05/11/22 08:00	05/13/22 13:35	1
Arsenic	**0.98**	**B**	0.67	0.30	mg/Kg	☼	05/11/22 08:00	05/13/22 13:35	1
Cobalt	**5.5**		3.4	0.071	mg/Kg	☼	05/11/22 08:00	05/13/22 13:35	1
Iron	**13000**		6.7	3.9	mg/Kg	☼	05/11/22 08:00	05/13/22 13:35	1
Lithium	**2.6**	**J**	3.4	0.20	mg/Kg	☼	05/11/22 08:00	05/13/22 13:35	1
Manganese	**810**		1.0	0.18	mg/Kg	☼	05/11/22 08:00	05/13/22 13:35	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**960**		200	32	mg/Kg	☼	05/19/22 08:00	05/20/22 13:08	5
Arsenic	ND		10	2.6	mg/Kg	☼	05/19/22 08:00	05/20/22 13:08	5
Cobalt	**1.1**	**J**	51	0.81	mg/Kg	☼	05/19/22 08:00	05/20/22 13:08	5
Iron	**120**		100	59	mg/Kg	☼	05/19/22 08:00	05/20/22 13:08	5
Lithium	ND		51	3.0	mg/Kg	☼	05/19/22 08:00	05/20/22 13:08	5
Manganese	**100**	***1**	15	2.5	mg/Kg	☼	05/19/22 08:00	05/20/22 13:08	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**21000**		13	2.2	mg/Kg	☼	05/20/22 10:08	05/24/22 11:19	1
Arsenic	**0.31**	**J**	0.67	0.20	mg/Kg	☼	05/20/22 10:08	05/24/22 11:19	1
Cobalt	**4.3**		3.4	0.062	mg/Kg	☼	05/20/22 10:08	05/24/22 11:19	1
Iron	**15000**		6.7	3.9	mg/Kg	☼	05/20/22 10:08	05/24/22 11:19	1
Lithium	**10**		3.4	0.20	mg/Kg	☼	05/20/22 10:08	05/24/22 11:19	1
Manganese	**100**		1.0	0.34	mg/Kg	☼	05/20/22 10:08	05/24/22 11:19	1

Client Sample Results

Client Sample ID: B-122D-39-40' Lab Sample ID: 140-27231-8

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30 **Percent Solids: 74.2**

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**48000**		130	22	mg/Kg	☼	05/23/22 08:00	05/26/22 11:16	10
Arsenic	**0.88**	**J B**	3.4	0.88	mg/Kg	☼	05/23/22 08:00	05/26/22 14:23	5
Cobalt	**4.1**	**J**	17	0.18	mg/Kg	☼	05/23/22 08:00	05/26/22 14:23	5
Iron	**8300**		6.7	5.5	mg/Kg	☼	05/23/22 08:00	05/26/22 12:55	1
Lithium	**11**		3.4	0.20	mg/Kg	☼	05/23/22 08:00	05/26/22 12:55	1
Manganese	**120**		1.0	0.15	mg/Kg	☼	05/23/22 08:00	05/26/22 12:55	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**78000**		10	1.6	mg/Kg			05/31/22 15:33	1
Arsenic	**3.0**		0.50	0.13	mg/Kg			05/31/22 15:33	1
Cobalt	**19**		2.5	0.023	mg/Kg			05/31/22 15:33	1
Iron	**42000**		5.0	4.1	mg/Kg			05/31/22 15:33	1
Lithium	**24**		2.5	0.15	mg/Kg			05/31/22 15:33	1
Manganese	**1800**		0.75	0.052	mg/Kg			05/31/22 15:33	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**80000**		130	22	mg/Kg	☼	05/04/22 08:00	05/27/22 11:01	10
Arsenic	**1.9**		0.67	0.18	mg/Kg	☼	05/04/22 08:00	05/27/22 12:37	1
Cobalt	**19**		17	0.18	mg/Kg	☼	05/04/22 08:00	05/27/22 14:17	5
Iron	**44000**		34	28	mg/Kg	☼	05/04/22 08:00	05/27/22 14:17	5
Lithium	**25**		17	1.0	mg/Kg	☼	05/04/22 08:00	05/27/22 14:17	5
Manganese	**1100**		1.0	0.15	mg/Kg	☼	05/04/22 08:00	05/27/22 12:37	1

Client Sample Results

Client: Golder Associates Inc. — Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: B-123D-27-28'

Lab Sample ID: 140-27231-9
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30
Percent Solids: 96.5

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**94**		41	6.6	mg/Kg	☼	05/05/22 08:00	05/09/22 12:22	4
Arsenic	ND		2.1	0.54	mg/Kg	☼	05/05/22 08:00	05/09/22 12:22	4
Cobalt	**0.39**	**J**	10	0.19	mg/Kg	☼	05/05/22 08:00	05/09/22 12:22	4
Iron	ND		21	12	mg/Kg	☼	05/05/22 08:00	05/09/22 12:22	4
Lithium	ND		10	0.62	mg/Kg	☼	05/05/22 08:00	05/09/22 12:22	4
Manganese	**15**		3.1	0.13	mg/Kg	☼	05/05/22 08:00	05/09/22 12:22	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**41**		31	5.0	mg/Kg	☼	05/06/22 08:00	05/09/22 13:46	3
Arsenic	ND		1.6	0.40	mg/Kg	☼	05/06/22 08:00	05/09/22 13:46	3
Cobalt	ND		7.8	0.20	mg/Kg	☼	05/06/22 08:00	05/09/22 13:46	3
Iron	ND		16	9.0	mg/Kg	☼	05/06/22 08:00	05/09/22 13:46	3
Lithium	ND		7.8	0.47	mg/Kg	☼	05/06/22 08:00	05/09/22 13:46	3
Manganese	**1.7**	**J**	2.3	0.87	mg/Kg	☼	05/06/22 08:00	05/09/22 13:46	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**180**		10	2.2	mg/Kg	☼	05/09/22 08:00	05/13/22 12:27	1
Arsenic	ND		0.52	0.13	mg/Kg	☼	05/09/22 08:00	05/13/22 12:27	1
Cobalt	**0.11**	**J**	2.6	0.047	mg/Kg	☼	05/09/22 08:00	05/13/22 12:27	1
Iron	**300**		5.2	3.0	mg/Kg	☼	05/09/22 08:00	05/13/22 12:27	1
Lithium	ND		2.6	0.16	mg/Kg	☼	05/09/22 08:00	05/13/22 12:27	1
Manganese	**2.5**	**B**	0.78	0.028	mg/Kg	☼	05/09/22 08:00	05/13/22 12:27	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2200**		10	1.7	mg/Kg	☼	05/11/22 08:00	05/13/22 13:50	1
Arsenic	**0.87**	**B**	0.52	0.23	mg/Kg	☼	05/11/22 08:00	05/13/22 13:50	1
Cobalt	**1.1**	**J**	2.6	0.055	mg/Kg	☼	05/11/22 08:00	05/13/22 13:50	1
Iron	**7500**		5.2	3.0	mg/Kg	☼	05/11/22 08:00	05/13/22 13:50	1
Lithium	**3.2**		2.6	0.16	mg/Kg	☼	05/11/22 08:00	05/13/22 13:50	1
Manganese	**25**		0.78	0.13	mg/Kg	☼	05/11/22 08:00	05/13/22 13:50	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**560**		160	24	mg/Kg	☼	05/19/22 08:00	05/20/22 13:13	5
Arsenic	ND		7.8	2.0	mg/Kg	☼	05/19/22 08:00	05/20/22 13:13	5
Cobalt	ND		39	0.62	mg/Kg	☼	05/19/22 08:00	05/20/22 13:13	5
Iron	ND		78	46	mg/Kg	☼	05/19/22 08:00	05/20/22 13:13	5
Lithium	ND		39	2.3	mg/Kg	☼	05/19/22 08:00	05/20/22 13:13	5
Manganese	ND	*1	12	1.9	mg/Kg	☼	05/19/22 08:00	05/20/22 13:13	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**15000**		10	1.7	mg/Kg	☼	05/20/22 10:08	05/24/22 11:34	1
Arsenic	**0.32**	**J**	0.52	0.16	mg/Kg	☼	05/20/22 10:08	05/24/22 11:34	1
Cobalt	**2.6**		2.6	0.048	mg/Kg	☼	05/20/22 10:08	05/24/22 11:34	1
Iron	**12000**		5.2	3.0	mg/Kg	☼	05/20/22 10:08	05/24/22 11:34	1
Lithium	**14**		2.6	0.16	mg/Kg	☼	05/20/22 10:08	05/24/22 11:34	1
Manganese	**110**		0.78	0.26	mg/Kg	☼	05/20/22 10:08	05/24/22 11:34	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: B-123D-27-28'

Lab Sample ID: 140-27231-9
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30
Percent Solids: 96.5

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**31000**		100	17	mg/Kg	☼	05/23/22 08:00	05/26/22 11:31	10
Arsenic	ND		1.0	0.27	mg/Kg	☼	05/23/22 08:00	05/26/22 14:28	2
Cobalt	**2.0**	**J**	5.2	0.054	mg/Kg	☼	05/23/22 08:00	05/26/22 14:28	2
Iron	**4400**		5.2	4.3	mg/Kg	☼	05/23/22 08:00	05/26/22 13:01	1
Lithium	**8.3**		2.6	0.16	mg/Kg	☼	05/23/22 08:00	05/26/22 13:01	1
Manganese	**49**		0.78	0.11	mg/Kg	☼	05/23/22 08:00	05/26/22 13:01	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**49000**		10	1.6	mg/Kg			05/31/22 15:33	1
Arsenic	**1.2**		0.50	0.13	mg/Kg			05/31/22 15:33	1
Cobalt	**6.2**		2.5	0.023	mg/Kg			05/31/22 15:33	1
Iron	**24000**		5.0	4.1	mg/Kg			05/31/22 15:33	1
Lithium	**25**		2.5	0.15	mg/Kg			05/31/22 15:33	1
Manganese	**200**		0.75	0.052	mg/Kg			05/31/22 15:33	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**96000**		100	17	mg/Kg	☼	05/04/22 08:00	05/27/22 11:06	10
Arsenic	**1.8**	**J**	2.6	0.67	mg/Kg	☼	05/04/22 08:00	05/27/22 14:21	5
Cobalt	**7.8**	**J**	13	0.13	mg/Kg	☼	05/04/22 08:00	05/27/22 14:21	5
Iron	**38000**		26	21	mg/Kg	☼	05/04/22 08:00	05/27/22 14:21	5
Lithium	**32**		2.6	0.16	mg/Kg	☼	05/04/22 08:00	05/27/22 12:42	1
Manganese	**240**		0.78	0.11	mg/Kg	☼	05/04/22 08:00	05/27/22 12:42	1

Client Sample Results

Client Sample ID: B-123D-145'

Date Collected: 04/19/22 14:00
Date Received: 04/25/22 09:30

Lab Sample ID: 140-27231-10

Matrix: Solid

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		05/05/22 08:00	05/09/22 12:56	4
Arsenic	ND		2.0	0.52	mg/Kg		05/05/22 08:00	05/09/22 12:56	4
Cobalt	ND		10	0.18	mg/Kg		05/05/22 08:00	05/09/22 12:56	4
Iron	ND		20	12	mg/Kg		05/05/22 08:00	05/09/22 12:56	4
Lithium	ND		10	0.60	mg/Kg		05/05/22 08:00	05/09/22 12:56	4
Manganese	**0.43**	**J**	3.0	0.12	mg/Kg		05/05/22 08:00	05/09/22 12:56	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		05/06/22 08:00	05/09/22 14:14	3
Arsenic	ND		1.5	0.39	mg/Kg		05/06/22 08:00	05/09/22 14:14	3
Cobalt	ND		7.5	0.19	mg/Kg		05/06/22 08:00	05/09/22 14:14	3
Iron	**21**		15	8.7	mg/Kg		05/06/22 08:00	05/09/22 14:14	3
Lithium	ND		7.5	0.45	mg/Kg		05/06/22 08:00	05/09/22 14:14	3
Manganese	**9.2**		2.3	0.84	mg/Kg		05/06/22 08:00	05/09/22 14:14	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**16**		10	2.1	mg/Kg		05/09/22 08:00	05/13/22 13:01	1
Arsenic	ND		0.50	0.13	mg/Kg		05/09/22 08:00	05/13/22 13:01	1
Cobalt	ND		2.5	0.045	mg/Kg		05/09/22 08:00	05/13/22 13:01	1
Iron	**42**		5.0	2.9	mg/Kg		05/09/22 08:00	05/13/22 13:01	1
Lithium	ND		2.5	0.15	mg/Kg		05/09/22 08:00	05/13/22 13:01	1
Manganese	**2.3**	**B**	0.75	0.027	mg/Kg		05/09/22 08:00	05/13/22 13:01	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**760**		10	1.6	mg/Kg		05/11/22 08:00	05/13/22 14:14	1
Arsenic	**0.61**	**B**	0.50	0.22	mg/Kg		05/11/22 08:00	05/13/22 14:14	1
Cobalt	**0.22**	**J**	2.5	0.053	mg/Kg		05/11/22 08:00	05/13/22 14:14	1
Iron	**1700**		5.0	2.9	mg/Kg		05/11/22 08:00	05/13/22 14:14	1
Lithium	**2.0**	**J**	2.5	0.15	mg/Kg		05/11/22 08:00	05/13/22 14:14	1
Manganese	**18**		0.75	0.13	mg/Kg		05/11/22 08:00	05/13/22 14:14	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**120**	**J**	150	24	mg/Kg		05/19/22 08:00	05/20/22 13:38	5
Arsenic	ND		7.5	1.9	mg/Kg		05/19/22 08:00	05/20/22 13:38	5
Cobalt	ND		38	0.60	mg/Kg		05/19/22 08:00	05/20/22 13:38	5
Iron	ND		75	44	mg/Kg		05/19/22 08:00	05/20/22 13:38	5
Lithium	ND		38	2.2	mg/Kg		05/19/22 08:00	05/20/22 13:38	5
Manganese	ND	*1	11	1.9	mg/Kg		05/19/22 08:00	05/20/22 13:38	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**4600**		10	1.6	mg/Kg		05/20/22 10:08	05/24/22 11:59	1
Arsenic	ND	L	0.50	0.15	mg/Kg		05/20/22 10:08	05/24/22 11:59	1
Cobalt	**2.7**		2.5	0.046	mg/Kg		05/20/22 10:08	05/24/22 11:59	1
Iron	**10000**		5.0	2.9	mg/Kg		05/20/22 10:08	05/24/22 11:59	1
Lithium	**12**		2.5	0.15	mg/Kg		05/20/22 10:08	05/24/22 11:59	1
Manganese	**84**		0.75	0.25	mg/Kg		05/20/22 10:08	05/24/22 11:59	1

Client Sample ID: B-123D-145'

Lab Sample ID: 140-27231-10

Date Collected: 04/19/22 14:00

Matrix: Solid

Date Received: 04/25/22 09:30

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**28000**		100	16	mg/Kg		05/23/22 08:00	05/26/22 11:55	10
Arsenic	ND		2.5	0.65	mg/Kg		05/23/22 08:00	05/26/22 15:02	5
Cobalt	**2.7**	**J**	13	0.13	mg/Kg		05/23/22 08:00	05/26/22 15:02	5
Iron	**14000**		5.0	4.1	mg/Kg		05/23/22 08:00	05/26/22 13:37	1
Lithium	**12**		2.5	0.15	mg/Kg		05/23/22 08:00	05/26/22 13:37	1
Manganese	**340**		0.75	0.11	mg/Kg		05/23/22 08:00	05/26/22 13:37	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**34000**		10	1.6	mg/Kg			05/31/22 15:33	1
Arsenic	**0.61**		0.50	0.13	mg/Kg			05/31/22 15:33	1
Cobalt	**5.6**		2.5	0.023	mg/Kg			05/31/22 15:33	1
Iron	**26000**		5.0	4.1	mg/Kg			05/31/22 15:33	1
Lithium	**25**		2.5	0.15	mg/Kg			05/31/22 15:33	1
Manganese	**460**		0.75	0.052	mg/Kg			05/31/22 15:33	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**35000**		100	16	mg/Kg		05/04/22 08:00	05/27/22 11:29	10
Arsenic	ND		1.5	0.39	mg/Kg		05/04/22 08:00	05/27/22 14:48	3
Cobalt	**4.9**	**J**	7.5	0.078	mg/Kg		05/04/22 08:00	05/27/22 14:48	3
Iron	**27000**		15	12	mg/Kg		05/04/22 08:00	05/27/22 14:48	3
Lithium	**29**		7.5	0.45	mg/Kg		05/04/22 08:00	05/27/22 14:48	3
Manganese	**410**		0.75	0.11	mg/Kg		05/04/22 08:00	05/27/22 13:20	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	**DONE**				NONE			04/28/22 07:25	1

Default Detection Limits

Client: Golder Associates Inc.
Project/Site: Plant McDonough NES Well Installation

Job ID: 140-27231-1

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Prep: 3010A

SEP: Exchangeable

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Prep: 3010A

SEP: Carbonate

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Aluminum	10	2.1	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.22	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Aluminum	30	4.7	mg/Kg
Arsenic	1.5	0.38	mg/Kg
Cobalt	7.5	0.12	mg/Kg
Iron	15	8.8	mg/Kg
Lithium	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.15	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.11	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.11	mg/Kg

QC Sample Results

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-61285/14-A
Matrix: Solid
Analysis Batch: 62091

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 61285

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		05/04/22 08:00	05/27/22 11:34	1
Arsenic	ND		0.50	0.13	mg/Kg		05/04/22 08:00	05/27/22 11:34	1
Cobalt	ND		2.5	0.026	mg/Kg		05/04/22 08:00	05/27/22 11:34	1
Iron	ND		5.0	4.1	mg/Kg		05/04/22 08:00	05/27/22 11:34	1
Lithium	ND		2.5	0.15	mg/Kg		05/04/22 08:00	05/27/22 11:34	1
Manganese	ND		0.75	0.11	mg/Kg		05/04/22 08:00	05/27/22 11:34	1

Lab Sample ID: LCS 140-61285/15-A
Matrix: Solid
Analysis Batch: 62091

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 61285

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	104		mg/Kg		104	80 - 120
Arsenic	5.00	5.22		mg/Kg		104	80 - 120
Cobalt	5.00	5.32		mg/Kg		106	80 - 125
Iron	50.0	55.0		mg/Kg		110	80 - 120
Lithium	5.00	5.30		mg/Kg		106	80 - 120
Manganese	5.00	5.38		mg/Kg		108	80 - 120

Lab Sample ID: LCSD 140-61285/16-A
Matrix: Solid
Analysis Batch: 62091

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 61285

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	102		mg/Kg		102	80 - 120	1	30
Arsenic	5.00	5.18		mg/Kg		104	80 - 120	1	30
Cobalt	5.00	5.22		mg/Kg		104	80 - 125	2	30
Iron	50.0	53.5		mg/Kg		107	80 - 120	3	30
Lithium	5.00	5.21		mg/Kg		104	80 - 120	2	30
Manganese	5.00	5.27		mg/Kg		105	80 - 120	2	30

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Analysis Batch: 62091

Client Sample ID: DGWC-121-38-40'
Prep Type: Total/NA
Prep Batch: 61285

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	64000		66600		mg/Kg	☼	4	30

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Analysis Batch: 62091

Client Sample ID: DGWC-121-38-40'
Prep Type: Total/NA
Prep Batch: 61285

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Manganese	610		657		mg/Kg	☼	8	30

QC Sample Results

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Analysis Batch: 62091

Client Sample ID: DGWC-121-38-40'
Prep Type: Total/NA
Prep Batch: 61285

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Arsenic	ND			ND		mg/Kg	☼			NC	30
Cobalt	18			18.6		mg/Kg	☼			4	30
Iron	50000			52100		mg/Kg	☼			4	30
Lithium	24			24.4		mg/Kg	☼			3	30

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-61288/13-B ^4
Matrix: Solid
Analysis Batch: 61514

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 61349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		05/05/22 08:00	05/09/22 11:03	4
Arsenic	ND		2.0	0.52	mg/Kg		05/05/22 08:00	05/09/22 11:03	4
Cobalt	ND		10	0.18	mg/Kg		05/05/22 08:00	05/09/22 11:03	4
Iron	ND		20	12	mg/Kg		05/05/22 08:00	05/09/22 11:03	4
Lithium	ND		10	0.60	mg/Kg		05/05/22 08:00	05/09/22 11:03	4
Manganese	ND		3.0	0.12	mg/Kg		05/05/22 08:00	05/09/22 11:03	4

Lab Sample ID: LCS 140-61288/14-B ^5
Matrix: Solid
Analysis Batch: 61514

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 61349

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Aluminum			100	97.8		mg/Kg		98	80 - 120		
Arsenic			5.00	5.03		mg/Kg		101	80 - 120		
Cobalt			5.00	5.13	J	mg/Kg		103	80 - 120		
Iron			50.0	50.8		mg/Kg		102	80 - 120		
Lithium			5.00	5.22	J	mg/Kg		104	80 - 120		
Manganese			5.00	5.25		mg/Kg		105	80 - 120		

Lab Sample ID: LCSD 140-61288/15-B ^5
Matrix: Solid
Analysis Batch: 61514

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 61349

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum			100	94.7		mg/Kg		95	80 - 120	3	30
Arsenic			5.00	5.01		mg/Kg		100	80 - 120	0	30
Cobalt			5.00	5.04	J	mg/Kg		101	80 - 120	2	30
Iron			50.0	49.8		mg/Kg		100	80 - 120	2	30
Lithium			5.00	5.16	J	mg/Kg		103	80 - 120	1	30
Manganese			5.00	5.14		mg/Kg		103	80 - 120	2	30

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Analysis Batch: 61514

Client Sample ID: DGWC-121-38-40'
Prep Type: Step 1
Prep Batch: 61349

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	ND			ND		mg/Kg	☼			NC	30
Arsenic	ND			ND		mg/Kg	☼			NC	30

QC Sample Results

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Analysis Batch: 61514

Client Sample ID: DGWC-121-38-40'
Prep Type: Step 1
Prep Batch: 61349

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cobalt	ND		ND		mg/Kg	☼	NC	30
Iron	ND		ND		mg/Kg	☼	NC	30
Lithium	ND		ND		mg/Kg	☼	NC	30
Manganese	3.7		3.52	J	mg/Kg	☼	5	30

Lab Sample ID: MB 140-61360/13-B ^3
Matrix: Solid
Analysis Batch: 61514

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 61418

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		05/06/22 08:00	05/09/22 11:18	3
Arsenic	ND		1.5	0.39	mg/Kg		05/06/22 08:00	05/09/22 11:18	3
Cobalt	ND		7.5	0.19	mg/Kg		05/06/22 08:00	05/09/22 11:18	3
Iron	ND		15	8.7	mg/Kg		05/06/22 08:00	05/09/22 11:18	3
Lithium	ND		7.5	0.45	mg/Kg		05/06/22 08:00	05/09/22 11:18	3
Manganese	ND		2.3	0.84	mg/Kg		05/06/22 08:00	05/09/22 11:18	3

Lab Sample ID: LCS 140-61360/14-B ^5
Matrix: Solid
Analysis Batch: 61514

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 61418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	ND		mg/Kg		-1	
Arsenic	5.00	4.09		mg/Kg		82	60 - 120
Cobalt	5.00	4.72	J	mg/Kg		94	80 - 120
Iron	50.0	ND		mg/Kg		2	
Lithium	5.00	4.97	J	mg/Kg		99	80 - 120
Manganese	5.00	4.73		mg/Kg		95	80 - 120

Lab Sample ID: LCSD 140-61360/15-B ^5
Matrix: Solid
Analysis Batch: 61514

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 61418

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	ND		mg/Kg		-6		119	
Arsenic	5.00	3.93		mg/Kg		79	60 - 120	4	30
Cobalt	5.00	4.71	J	mg/Kg		94	80 - 120	0	30
Iron	50.0	ND		mg/Kg		1		44	
Lithium	5.00	5.10	J	mg/Kg		102	80 - 120	3	30
Manganese	5.00	4.78		mg/Kg		96	80 - 120	1	30

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Analysis Batch: 61514

Client Sample ID: DGWC-121-38-40'
Prep Type: Step 2
Prep Batch: 61418

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	11	J	7.83	J	mg/Kg	☼	32	
Arsenic	ND		ND		mg/Kg	☼	NC	30
Cobalt	ND		ND		mg/Kg	☼	NC	30
Iron	ND		ND		mg/Kg	☼	NC	

QC Sample Results

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Analysis Batch: 61514

Client Sample ID: DGWC-121-38-40'
Prep Type: Step 2
Prep Batch: 61418

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Lithium	ND			ND		mg/Kg	☼			NC	30
Manganese	5.2			4.91		mg/Kg	☼			7	30

Lab Sample ID: MB 140-61419/13-B
Matrix: Solid
Analysis Batch: 61682

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 61466

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	2.1	mg/Kg		05/09/22 08:00	05/13/22 11:08	1
Arsenic	ND		0.50	0.13	mg/Kg		05/09/22 08:00	05/13/22 11:08	1
Cobalt	ND		2.5	0.045	mg/Kg		05/09/22 08:00	05/13/22 11:08	1
Iron	ND		5.0	2.9	mg/Kg		05/09/22 08:00	05/13/22 11:08	1
Lithium	ND		2.5	0.15	mg/Kg		05/09/22 08:00	05/13/22 11:08	1
Manganese	0.0880	J	0.75	0.027	mg/Kg		05/09/22 08:00	05/13/22 11:08	1

Lab Sample ID: LCS 140-61419/14-B
Matrix: Solid
Analysis Batch: 61682

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 61466

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Aluminum			100	98.3		mg/Kg		98	80 - 120		
Arsenic			5.00	4.92		mg/Kg		98	80 - 120		
Cobalt			5.00	5.11		mg/Kg		102	80 - 120		
Iron			50.0	51.2		mg/Kg		102	80 - 120		
Lithium			5.00	4.98		mg/Kg		100	80 - 120		
Manganese			5.00	5.09		mg/Kg		102	80 - 120		

Lab Sample ID: LCSD 140-61419/15-B
Matrix: Solid
Analysis Batch: 61682

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 61466

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum			100	98.2		mg/Kg		98	80 - 120	0	30
Arsenic			5.00	5.02		mg/Kg		100	80 - 120	2	30
Cobalt			5.00	5.20		mg/Kg		104	80 - 120	2	30
Iron			50.0	52.1		mg/Kg		104	80 - 120	2	30
Lithium			5.00	5.06		mg/Kg		101	80 - 120	2	30
Manganese			5.00	5.19		mg/Kg		104	80 - 120	2	30

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Analysis Batch: 61682

Client Sample ID: DGWC-121-38-40'
Prep Type: Step 3
Prep Batch: 61466

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	100			94.8		mg/Kg	☼			8	30
Arsenic	ND			ND		mg/Kg	☼			NC	30
Cobalt	5.8			5.10		mg/Kg	☼			12	30
Iron	240			225		mg/Kg	☼			8	30
Lithium	0.65	J		0.603	J	mg/Kg	☼			8	30
Manganese	440	B		421		mg/Kg	☼			4	30

1 2 3 4 5 6 7 8 9 10 11 12 13

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-61467/13-B **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Step 4**
Analysis Batch: 61682 **Prep Batch: 61516**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		05/11/22 08:00	05/13/22 11:22	1
Arsenic	0.411	J	0.50	0.22	mg/Kg		05/11/22 08:00	05/13/22 11:22	1
Cobalt	ND		2.5	0.053	mg/Kg		05/11/22 08:00	05/13/22 11:22	1
Iron	ND		5.0	2.9	mg/Kg		05/11/22 08:00	05/13/22 11:22	1
Lithium	ND		2.5	0.15	mg/Kg		05/11/22 08:00	05/13/22 11:22	1
Manganese	ND		0.75	0.13	mg/Kg		05/11/22 08:00	05/13/22 11:22	1

Lab Sample ID: LCS 140-61467/14-B **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Step 4**
Analysis Batch: 61682 **Prep Batch: 61516**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Aluminum			100	102		mg/Kg		102	80 - 120		
Arsenic			5.00	6.04		mg/Kg		121	80 - 130		
Cobalt			5.00	5.46		mg/Kg		109	80 - 120		
Iron			50.0	52.5		mg/Kg		105	80 - 120		
Lithium			5.00	5.20		mg/Kg		104	80 - 120		
Manganese			5.00	5.24		mg/Kg		105	80 - 120		

Lab Sample ID: LCSD 140-61467/15-B **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Step 4**
Analysis Batch: 61682 **Prep Batch: 61516**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum			100	101		mg/Kg		101	80 - 120	0	30
Arsenic			5.00	5.95		mg/Kg		119	80 - 130	1	30
Cobalt			5.00	5.49		mg/Kg		110	80 - 120	0	30
Iron			50.0	53.1		mg/Kg		106	80 - 120	1	30
Lithium			5.00	5.19		mg/Kg		104	80 - 120	0	30
Manganese			5.00	5.31		mg/Kg		106	80 - 120	1	30

Lab Sample ID: 140-27231-6 DU **Client Sample ID: DGWC-121-38-40'**
Matrix: Solid **Prep Type: Step 4**
Analysis Batch: 61682 **Prep Batch: 61516**

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	1500			1470		mg/Kg	☼			0.5	30
Arsenic	0.54	J B		0.601	J	mg/Kg	☼			10	30
Cobalt	2.4	J		2.33	J	mg/Kg	☼			4	30
Iron	7400			7670		mg/Kg	☼			4	30
Lithium	2.3	J		2.27	J	mg/Kg	☼			0.2	30
Manganese	130			130		mg/Kg	☼			1	30

Lab Sample ID: MB 140-61517/13-B ^5 **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Step 5**
Analysis Batch: 61895 **Prep Batch: 61816**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		150	24	mg/Kg		05/19/22 08:00	05/20/22 12:13	5

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-61517/13-B ^5
Matrix: Solid
Analysis Batch: 61895

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 61816

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		7.5	1.9	mg/Kg		05/19/22 08:00	05/20/22 12:13	5
Cobalt	ND		38	0.60	mg/Kg		05/19/22 08:00	05/20/22 12:13	5
Iron	ND		75	44	mg/Kg		05/19/22 08:00	05/20/22 12:13	5
Lithium	ND		38	2.2	mg/Kg		05/19/22 08:00	05/20/22 12:13	5
Manganese	ND		11	1.9	mg/Kg		05/19/22 08:00	05/20/22 12:13	5

Lab Sample ID: LCS 140-61517/14-B ^5
Matrix: Solid
Analysis Batch: 61895

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 61816

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	300	ND		mg/Kg		5	
Arsenic	15.0	10.0		mg/Kg		67	60 - 100
Cobalt	15.0	0.795	J	mg/Kg		5	1 - 60
Iron	150	ND		mg/Kg		-0.9	
Lithium	15.0	16.5	J	mg/Kg		110	80 - 150
Manganese	15.0	ND		mg/Kg		5	1 - 60

Lab Sample ID: LCSD 140-61517/15-B ^5
Matrix: Solid
Analysis Batch: 61895

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 61816

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	300	ND		mg/Kg		7		33	
Arsenic	15.0	10.4		mg/Kg		69	60 - 100	4	30
Cobalt	15.0	0.960	J	mg/Kg		6	1 - 60	19	30
Iron	150	ND		mg/Kg		0.8		9514	
Lithium	15.0	16.9	J	mg/Kg		112	80 - 150	2	30
Manganese	15.0	ND	*1	mg/Kg		3	1 - 60	45	30

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Analysis Batch: 61895

Client Sample ID: DGWC-121-38-40'
Prep Type: Step 5
Prep Batch: 61816

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	110	J	115	J	mg/Kg	☼	5	
Arsenic	ND		ND		mg/Kg	☼	NC	30
Cobalt	ND		ND		mg/Kg	☼	NC	30
Iron	ND		ND		mg/Kg	☼	NC	
Lithium	ND		ND		mg/Kg	☼	NC	30
Manganese	ND	*1	ND	*1	mg/Kg	☼	NC	30

Lab Sample ID: MB 140-61884/13-A
Matrix: Solid
Analysis Batch: 61994

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 61884

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		05/20/22 10:08	05/24/22 10:34	1
Arsenic	ND		0.50	0.15	mg/Kg		05/20/22 10:08	05/24/22 10:34	1
Cobalt	ND		2.5	0.046	mg/Kg		05/20/22 10:08	05/24/22 10:34	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-61884/13-A
Matrix: Solid
Analysis Batch: 61994

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 61884

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		5.0	2.9	mg/Kg		05/20/22 10:08	05/24/22 10:34	1
Lithium	ND		2.5	0.15	mg/Kg		05/20/22 10:08	05/24/22 10:34	1
Manganese	ND		0.75	0.25	mg/Kg		05/20/22 10:08	05/24/22 10:34	1

Lab Sample ID: MB 140-61884/13-A
Matrix: Solid
Analysis Batch: 61999

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 61884

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		05/20/22 10:08	05/24/22 15:56	1
Arsenic	ND		0.50	0.15	mg/Kg		05/20/22 10:08	05/24/22 15:56	1
Cobalt	ND		2.5	0.046	mg/Kg		05/20/22 10:08	05/24/22 15:56	1
Iron	ND		5.0	2.9	mg/Kg		05/20/22 10:08	05/24/22 15:56	1
Lithium	ND		2.5	0.15	mg/Kg		05/20/22 10:08	05/24/22 15:56	1
Manganese	ND		0.75	0.25	mg/Kg		05/20/22 10:08	05/24/22 15:56	1

Lab Sample ID: LCS 140-61884/14-A
Matrix: Solid
Analysis Batch: 61994

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 61884

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	98.6		mg/Kg		99	80 - 120
Arsenic	5.00	5.05		mg/Kg		101	80 - 120
Cobalt	5.00	5.04		mg/Kg		101	80 - 120
Iron	50.0	51.0		mg/Kg		102	80 - 120
Lithium	5.00	4.95		mg/Kg		99	80 - 120
Manganese	5.00	5.09		mg/Kg		102	80 - 120

Lab Sample ID: LCS 140-61884/14-A
Matrix: Solid
Analysis Batch: 61999

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 61884

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	95.9		mg/Kg		96	80 - 120
Arsenic	5.00	5.01		mg/Kg		100	80 - 120
Cobalt	5.00	5.01		mg/Kg		100	80 - 120
Iron	50.0	49.7		mg/Kg		99	80 - 120
Lithium	5.00	4.93		mg/Kg		99	80 - 120
Manganese	5.00	4.94		mg/Kg		99	80 - 120

Lab Sample ID: LCSD 140-61884/15-A
Matrix: Solid
Analysis Batch: 61994

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 6
Prep Batch: 61884

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	100		mg/Kg		100	80 - 120	2	30
Arsenic	5.00	5.12		mg/Kg		102	80 - 120	1	30
Cobalt	5.00	5.12		mg/Kg		102	80 - 120	2	30
Iron	50.0	50.4		mg/Kg		101	80 - 120	1	30
Lithium	5.00	5.09		mg/Kg		102	80 - 120	3	30

QC Sample Results

Client: Golder Associates Inc.
Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-61884/15-A
Client Sample ID: Lab Control Sample Dup
Matrix: Solid
Prep Type: Step 6
Analysis Batch: 61994
Prep Batch: 61884

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Manganese			5.00	5.11		mg/Kg		102	80 - 120	0	30

Lab Sample ID: LCSD 140-61884/15-A
Client Sample ID: Lab Control Sample Dup
Matrix: Solid
Prep Type: Step 6
Analysis Batch: 61999
Prep Batch: 61884

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum			100	99.0		mg/Kg		99	80 - 120	3	30
Arsenic			5.00	5.08		mg/Kg		102	80 - 120	1	30
Cobalt			5.00	5.15		mg/Kg		103	80 - 120	3	30
Iron			50.0	51.1		mg/Kg		102	80 - 120	3	30
Lithium			5.00	5.12		mg/Kg		102	80 - 120	4	30
Manganese			5.00	5.08		mg/Kg		102	80 - 120	3	30

Lab Sample ID: 140-27231-6 DU
Client Sample ID: DGWC-121-38-40'
Matrix: Solid
Prep Type: Step 6
Analysis Batch: 61994
Prep Batch: 61884

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	8400			8600		mg/Kg	☼			3	30
Arsenic	ND			ND	L	mg/Kg	☼			NC	30
Cobalt	6.9			8.21		mg/Kg	☼			17	30
Iron	21000			22000		mg/Kg	☼			6	30
Lithium	9.6			9.80		mg/Kg	☼			3	30
Manganese	52			54.6		mg/Kg	☼			5	30

Lab Sample ID: MB 140-61893/13-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Step 7
Analysis Batch: 62067
Prep Batch: 61893

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1.60	J	10	1.6	mg/Kg		05/23/22 08:00	05/26/22 11:59	1
Arsenic	0.190	J	0.50	0.13	mg/Kg		05/23/22 08:00	05/26/22 11:59	1
Cobalt	ND		2.5	0.026	mg/Kg		05/23/22 08:00	05/26/22 11:59	1
Iron	ND		5.0	4.1	mg/Kg		05/23/22 08:00	05/26/22 11:59	1
Lithium	ND		2.5	0.15	mg/Kg		05/23/22 08:00	05/26/22 11:59	1
Manganese	ND		0.75	0.11	mg/Kg		05/23/22 08:00	05/26/22 11:59	1

Lab Sample ID: LCS 140-61893/14-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Step 7
Analysis Batch: 62067
Prep Batch: 61893

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum			100	100		mg/Kg		100	80 - 120
Arsenic			5.00	5.01		mg/Kg		100	80 - 120
Cobalt			5.00	5.06		mg/Kg		101	80 - 125
Iron			50.0	51.4		mg/Kg		103	80 - 120
Lithium			5.00	5.03		mg/Kg		101	80 - 120
Manganese			5.00	5.08		mg/Kg		102	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-61893/15-A
Matrix: Solid
Analysis Batch: 62067

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 61893

			Spike	LCSD	LCSD				%Rec		RPD
Analyte			**Added**	**Result**	**Qualifier**	**Unit**	**D**	**%Rec**	**Limits**	**RPD**	**Limit**
Aluminum			100	98.9		mg/Kg		99	80 - 120	1	30
Arsenic			5.00	5.12		mg/Kg		102	80 - 120	2	30
Cobalt			5.00	5.18		mg/Kg		104	80 - 125	2	30
Iron			50.0	52.0		mg/Kg		104	80 - 120	1	30
Lithium			5.00	5.13		mg/Kg		103	80 - 120	2	30
Manganese			5.00	5.18		mg/Kg		104	80 - 120	2	30

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Analysis Batch: 62067

Client Sample ID: DGWC-121-38-40'
Prep Type: Step 7
Prep Batch: 61893

	Sample	Sample		DU	DU						RPD
Analyte	**Result**	**Qualifier**		**Result**	**Qualifier**	**Unit**	**D**			**RPD**	**Limit**
Aluminum	36000			46200		mg/Kg	☼			24	30

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Analysis Batch: 62067

Client Sample ID: DGWC-121-38-40'
Prep Type: Step 7
Prep Batch: 61893

	Sample	Sample		DU	DU						RPD
Analyte	**Result**	**Qualifier**		**Result**	**Qualifier**	**Unit**	**D**			**RPD**	**Limit**
Iron	14000			12900		mg/Kg	☼			7	30
Lithium	7.7			7.37		mg/Kg	☼			5	30
Manganese	200			214		mg/Kg	☼			6	30

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Analysis Batch: 62067

Client Sample ID: DGWC-121-38-40'
Prep Type: Step 7
Prep Batch: 61893

	Sample	Sample		DU	DU						RPD
Analyte	**Result**	**Qualifier**		**Result**	**Qualifier**	**Unit**	**D**			**RPD**	**Limit**
Arsenic	ND			ND		mg/Kg	☼			NC	30
Cobalt	2.4	J		3.04	J	mg/Kg	☼			24	30

QC Association Summary

Metals

Prep Batch: 61285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Total/NA	Solid	Total	
140-27231-2	B-104D-55-56'	Total/NA	Solid	Total	
140-27231-3	B-115D-75-76'	Total/NA	Solid	Total	
140-27231-4	B-47-11-12'	Total/NA	Solid	Total	
140-27231-5	B-48-23-24'	Total/NA	Solid	Total	
140-27231-6	DGWC-121-38-40'	Total/NA	Solid	Total	
140-27231-7	DGWC-121-49-50'	Total/NA	Solid	Total	
140-27231-8	B-122D-39-40'	Total/NA	Solid	Total	
140-27231-9	B-123D-27-28'	Total/NA	Solid	Total	
140-27231-10	B-123D-145'	Total/NA	Solid	Total	
MB 140-61285/14-A	Method Blank	Total/NA	Solid	Total	
LCS 140-61285/15-A	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-61285/16-A	Lab Control Sample Dup	Total/NA	Solid	Total	
140-27231-6 DU	DGWC-121-38-40'	Total/NA	Solid	Total	

SEP Batch: 61288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 1	Solid	Exchangeable	
140-27231-2	B-104D-55-56'	Step 1	Solid	Exchangeable	
140-27231-3	B-115D-75-76'	Step 1	Solid	Exchangeable	
140-27231-4	B-47-11-12'	Step 1	Solid	Exchangeable	
140-27231-5	B-48-23-24'	Step 1	Solid	Exchangeable	
140-27231-6	DGWC-121-38-40'	Step 1	Solid	Exchangeable	
140-27231-7	DGWC-121-49-50'	Step 1	Solid	Exchangeable	
140-27231-8	B-122D-39-40'	Step 1	Solid	Exchangeable	
140-27231-9	B-123D-27-28'	Step 1	Solid	Exchangeable	
140-27231-10	B-123D-145'	Step 1	Solid	Exchangeable	
MB 140-61288/13-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-61288/14-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-61288/15-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	
140-27231-6 DU	DGWC-121-38-40'	Step 1	Solid	Exchangeable	

Prep Batch: 61349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 1	Solid	3010A	61288
140-27231-2	B-104D-55-56'	Step 1	Solid	3010A	61288
140-27231-3	B-115D-75-76'	Step 1	Solid	3010A	61288
140-27231-4	B-47-11-12'	Step 1	Solid	3010A	61288
140-27231-5	B-48-23-24'	Step 1	Solid	3010A	61288
140-27231-6	DGWC-121-38-40'	Step 1	Solid	3010A	61288
140-27231-7	DGWC-121-49-50'	Step 1	Solid	3010A	61288
140-27231-8	B-122D-39-40'	Step 1	Solid	3010A	61288
140-27231-9	B-123D-27-28'	Step 1	Solid	3010A	61288
140-27231-10	B-123D-145'	Step 1	Solid	3010A	61288
MB 140-61288/13-B ^4	Method Blank	Step 1	Solid	3010A	61288
LCS 140-61288/14-B ^5	Lab Control Sample	Step 1	Solid	3010A	61288
LCSD 140-61288/15-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	61288
140-27231-6 DU	DGWC-121-38-40'	Step 1	Solid	3010A	61288

Metals

SEP Batch: 61360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 2	Solid	Carbonate	
140-27231-2	B-104D-55-56'	Step 2	Solid	Carbonate	
140-27231-3	B-115D-75-76'	Step 2	Solid	Carbonate	
140-27231-4	B-47-11-12'	Step 2	Solid	Carbonate	
140-27231-5	B-48-23-24'	Step 2	Solid	Carbonate	
140-27231-6	DGWC-121-38-40'	Step 2	Solid	Carbonate	
140-27231-7	DGWC-121-49-50'	Step 2	Solid	Carbonate	
140-27231-8	B-122D-39-40'	Step 2	Solid	Carbonate	
140-27231-9	B-123D-27-28'	Step 2	Solid	Carbonate	
140-27231-10	B-123D-145'	Step 2	Solid	Carbonate	
MB 140-61360/13-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-61360/14-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-61360/15-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	
140-27231-6 DU	DGWC-121-38-40'	Step 2	Solid	Carbonate	

Prep Batch: 61418

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 2	Solid	3010A	61360
140-27231-2	B-104D-55-56'	Step 2	Solid	3010A	61360
140-27231-3	B-115D-75-76'	Step 2	Solid	3010A	61360
140-27231-4	B-47-11-12'	Step 2	Solid	3010A	61360
140-27231-5	B-48-23-24'	Step 2	Solid	3010A	61360
140-27231-6	DGWC-121-38-40'	Step 2	Solid	3010A	61360
140-27231-7	DGWC-121-49-50'	Step 2	Solid	3010A	61360
140-27231-8	B-122D-39-40'	Step 2	Solid	3010A	61360
140-27231-9	B-123D-27-28'	Step 2	Solid	3010A	61360
140-27231-10	B-123D-145'	Step 2	Solid	3010A	61360
MB 140-61360/13-B ^3	Method Blank	Step 2	Solid	3010A	61360
LCS 140-61360/14-B ^5	Lab Control Sample	Step 2	Solid	3010A	61360
LCSD 140-61360/15-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	61360
140-27231-6 DU	DGWC-121-38-40'	Step 2	Solid	3010A	61360

SEP Batch: 61419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 3	Solid	Non-Crystalline	
140-27231-2	B-104D-55-56'	Step 3	Solid	Non-Crystalline	
140-27231-3	B-115D-75-76'	Step 3	Solid	Non-Crystalline	
140-27231-4	B-47-11-12'	Step 3	Solid	Non-Crystalline	
140-27231-5	B-48-23-24'	Step 3	Solid	Non-Crystalline	
140-27231-6	DGWC-121-38-40'	Step 3	Solid	Non-Crystalline	
140-27231-7	DGWC-121-49-50'	Step 3	Solid	Non-Crystalline	
140-27231-8	B-122D-39-40'	Step 3	Solid	Non-Crystalline	
140-27231-9	B-123D-27-28'	Step 3	Solid	Non-Crystalline	
140-27231-10	B-123D-145'	Step 3	Solid	Non-Crystalline	
MB 140-61419/13-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-61419/14-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-61419/15-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	
140-27231-6 DU	DGWC-121-38-40'	Step 3	Solid	Non-Crystalline	

Metals

Prep Batch: 61466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 3	Solid	3010A	61419
140-27231-2	B-104D-55-56'	Step 3	Solid	3010A	61419
140-27231-3	B-115D-75-76'	Step 3	Solid	3010A	61419
140-27231-4	B-47-11-12'	Step 3	Solid	3010A	61419
140-27231-5	B-48-23-24'	Step 3	Solid	3010A	61419
140-27231-6	DGWC-121-38-40'	Step 3	Solid	3010A	61419
140-27231-7	DGWC-121-49-50'	Step 3	Solid	3010A	61419
140-27231-8	B-122D-39-40'	Step 3	Solid	3010A	61419
140-27231-9	B-123D-27-28'	Step 3	Solid	3010A	61419
140-27231-10	B-123D-145'	Step 3	Solid	3010A	61419
MB 140-61419/13-B	Method Blank	Step 3	Solid	3010A	61419
LCS 140-61419/14-B	Lab Control Sample	Step 3	Solid	3010A	61419
LCSD 140-61419/15-B	Lab Control Sample Dup	Step 3	Solid	3010A	61419
140-27231-6 DU	DGWC-121-38-40'	Step 3	Solid	3010A	61419

SEP Batch: 61467

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 4	Solid	Metal Hydroxide	
140-27231-2	B-104D-55-56'	Step 4	Solid	Metal Hydroxide	
140-27231-3	B-115D-75-76'	Step 4	Solid	Metal Hydroxide	
140-27231-4	B-47-11-12'	Step 4	Solid	Metal Hydroxide	
140-27231-5	B-48-23-24'	Step 4	Solid	Metal Hydroxide	
140-27231-6	DGWC-121-38-40'	Step 4	Solid	Metal Hydroxide	
140-27231-7	DGWC-121-49-50'	Step 4	Solid	Metal Hydroxide	
140-27231-8	B-122D-39-40'	Step 4	Solid	Metal Hydroxide	
140-27231-9	B-123D-27-28'	Step 4	Solid	Metal Hydroxide	
140-27231-10	B-123D-145'	Step 4	Solid	Metal Hydroxide	
MB 140-61467/13-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-61467/14-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-61467/15-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	
140-27231-6 DU	DGWC-121-38-40'	Step 4	Solid	Metal Hydroxide	

Analysis Batch: 61514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 1	Solid	6010B SEP	61349
140-27231-1	B-113D-19-20'	Step 2	Solid	6010B SEP	61418
140-27231-2	B-104D-55-56'	Step 1	Solid	6010B SEP	61349
140-27231-2	B-104D-55-56'	Step 2	Solid	6010B SEP	61418
140-27231-3	B-115D-75-76'	Step 1	Solid	6010B SEP	61349
140-27231-3	B-115D-75-76'	Step 2	Solid	6010B SEP	61418
140-27231-4	B-47-11-12'	Step 1	Solid	6010B SEP	61349
140-27231-4	B-47-11-12'	Step 2	Solid	6010B SEP	61418
140-27231-5	B-48-23-24'	Step 1	Solid	6010B SEP	61349
140-27231-5	B-48-23-24'	Step 2	Solid	6010B SEP	61418
140-27231-6	DGWC-121-38-40'	Step 1	Solid	6010B SEP	61349
140-27231-6	DGWC-121-38-40'	Step 2	Solid	6010B SEP	61418
140-27231-7	DGWC-121-49-50'	Step 1	Solid	6010B SEP	61349
140-27231-7	DGWC-121-49-50'	Step 2	Solid	6010B SEP	61418
140-27231-8	B-122D-39-40'	Step 1	Solid	6010B SEP	61349
140-27231-8	B-122D-39-40'	Step 2	Solid	6010B SEP	61418
140-27231-9	B-123D-27-28'	Step 1	Solid	6010B SEP	61349

Metals (Continued)

Analysis Batch: 61514 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-9	B-123D-27-28'	Step 2	Solid	6010B SEP	61418
140-27231-10	B-123D-145'	Step 1	Solid	6010B SEP	61349
140-27231-10	B-123D-145'	Step 2	Solid	6010B SEP	61418
MB 140-61288/13-B ^4	Method Blank	Step 1	Solid	6010B SEP	61349
MB 140-61360/13-B ^3	Method Blank	Step 2	Solid	6010B SEP	61418
LCS 140-61288/14-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	61349
LCS 140-61360/14-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	61418
LCSD 140-61288/15-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	61349
LCSD 140-61360/15-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	61418
140-27231-6 DU	DGWC-121-38-40'	Step 1	Solid	6010B SEP	61349
140-27231-6 DU	DGWC-121-38-40'	Step 2	Solid	6010B SEP	61418

Prep Batch: 61516

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 4	Solid	3010A	61467
140-27231-2	B-104D-55-56'	Step 4	Solid	3010A	61467
140-27231-3	B-115D-75-76'	Step 4	Solid	3010A	61467
140-27231-4	B-47-11-12'	Step 4	Solid	3010A	61467
140-27231-5	B-48-23-24'	Step 4	Solid	3010A	61467
140-27231-6	DGWC-121-38-40'	Step 4	Solid	3010A	61467
140-27231-7	DGWC-121-49-50'	Step 4	Solid	3010A	61467
140-27231-8	B-122D-39-40'	Step 4	Solid	3010A	61467
140-27231-9	B-123D-27-28'	Step 4	Solid	3010A	61467
140-27231-10	B-123D-145'	Step 4	Solid	3010A	61467
MB 140-61467/13-B	Method Blank	Step 4	Solid	3010A	61467
LCS 140-61467/14-B	Lab Control Sample	Step 4	Solid	3010A	61467
LCSD 140-61467/15-B	Lab Control Sample Dup	Step 4	Solid	3010A	61467
140-27231-6 DU	DGWC-121-38-40'	Step 4	Solid	3010A	61467

SEP Batch: 61517

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 5	Solid	Organic-Bound	
140-27231-2	B-104D-55-56'	Step 5	Solid	Organic-Bound	
140-27231-3	B-115D-75-76'	Step 5	Solid	Organic-Bound	
140-27231-4	B-47-11-12'	Step 5	Solid	Organic-Bound	
140-27231-5	B-48-23-24'	Step 5	Solid	Organic-Bound	
140-27231-6	DGWC-121-38-40'	Step 5	Solid	Organic-Bound	
140-27231-7	DGWC-121-49-50'	Step 5	Solid	Organic-Bound	
140-27231-8	B-122D-39-40'	Step 5	Solid	Organic-Bound	
140-27231-9	B-123D-27-28'	Step 5	Solid	Organic-Bound	
140-27231-10	B-123D-145'	Step 5	Solid	Organic-Bound	
MB 140-61517/13-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-61517/14-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-61517/15-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	
140-27231-6 DU	DGWC-121-38-40'	Step 5	Solid	Organic-Bound	

Analysis Batch: 61682

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 3	Solid	6010B SEP	61466
140-27231-1	B-113D-19-20'	Step 4	Solid	6010B SEP	61516
140-27231-2	B-104D-55-56'	Step 3	Solid	6010B SEP	61466

Metals (Continued)

Analysis Batch: 61682 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-2	B-104D-55-56'	Step 4	Solid	6010B SEP	61516
140-27231-3	B-115D-75-76'	Step 3	Solid	6010B SEP	61466
140-27231-3	B-115D-75-76'	Step 4	Solid	6010B SEP	61516
140-27231-4	B-47-11-12'	Step 3	Solid	6010B SEP	61466
140-27231-4	B-47-11-12'	Step 4	Solid	6010B SEP	61516
140-27231-5	B-48-23-24'	Step 3	Solid	6010B SEP	61466
140-27231-5	B-48-23-24'	Step 4	Solid	6010B SEP	61516
140-27231-6	DGWC-121-38-40'	Step 3	Solid	6010B SEP	61466
140-27231-6	DGWC-121-38-40'	Step 4	Solid	6010B SEP	61516
140-27231-7	DGWC-121-49-50'	Step 3	Solid	6010B SEP	61466
140-27231-7	DGWC-121-49-50'	Step 4	Solid	6010B SEP	61516
140-27231-8	B-122D-39-40'	Step 3	Solid	6010B SEP	61466
140-27231-8	B-122D-39-40'	Step 4	Solid	6010B SEP	61516
140-27231-9	B-123D-27-28'	Step 3	Solid	6010B SEP	61466
140-27231-9	B-123D-27-28'	Step 4	Solid	6010B SEP	61516
140-27231-10	B-123D-145'	Step 3	Solid	6010B SEP	61466
140-27231-10	B-123D-145'	Step 4	Solid	6010B SEP	61516
MB 140-61419/13-B	Method Blank	Step 3	Solid	6010B SEP	61466
MB 140-61467/13-B	Method Blank	Step 4	Solid	6010B SEP	61516
LCS 140-61419/14-B	Lab Control Sample	Step 3	Solid	6010B SEP	61466
LCS 140-61467/14-B	Lab Control Sample	Step 4	Solid	6010B SEP	61516
LCSD 140-61419/15-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	61466
LCSD 140-61467/15-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	61516
140-27231-6 DU	DGWC-121-38-40'	Step 3	Solid	6010B SEP	61466
140-27231-6 DU	DGWC-121-38-40'	Step 4	Solid	6010B SEP	61516

Prep Batch: 61816

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 5	Solid	3010A	61517
140-27231-2	B-104D-55-56'	Step 5	Solid	3010A	61517
140-27231-3	B-115D-75-76'	Step 5	Solid	3010A	61517
140-27231-4	B-47-11-12'	Step 5	Solid	3010A	61517
140-27231-5	B-48-23-24'	Step 5	Solid	3010A	61517
140-27231-6	DGWC-121-38-40'	Step 5	Solid	3010A	61517
140-27231-7	DGWC-121-49-50'	Step 5	Solid	3010A	61517
140-27231-8	B-122D-39-40'	Step 5	Solid	3010A	61517
140-27231-9	B-123D-27-28'	Step 5	Solid	3010A	61517
140-27231-10	B-123D-145'	Step 5	Solid	3010A	61517
MB 140-61517/13-B ^5	Method Blank	Step 5	Solid	3010A	61517
LCS 140-61517/14-B ^5	Lab Control Sample	Step 5	Solid	3010A	61517
LCSD 140-61517/15-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	61517
140-27231-6 DU	DGWC-121-38-40'	Step 5	Solid	3010A	61517

SEP Batch: 61884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 6	Solid	Acid/Sulfide	
140-27231-2	B-104D-55-56'	Step 6	Solid	Acid/Sulfide	
140-27231-3	B-115D-75-76'	Step 6	Solid	Acid/Sulfide	
140-27231-4	B-47-11-12'	Step 6	Solid	Acid/Sulfide	
140-27231-5	B-48-23-24'	Step 6	Solid	Acid/Sulfide	
140-27231-6	DGWC-121-38-40'	Step 6	Solid	Acid/Sulfide	

Metals (Continued)

SEP Batch: 61884 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-7	DGWC-121-49-50'	Step 6	Solid	Acid/Sulfide	
140-27231-8	B-122D-39-40'	Step 6	Solid	Acid/Sulfide	
140-27231-9	B-123D-27-28'	Step 6	Solid	Acid/Sulfide	
140-27231-10	B-123D-145'	Step 6	Solid	Acid/Sulfide	
MB 140-61884/13-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-61884/14-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-61884/15-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	
140-27231-6 DU	DGWC-121-38-40'	Step 6	Solid	Acid/Sulfide	

Prep Batch: 61893

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 7	Solid	Residual	
140-27231-2	B-104D-55-56'	Step 7	Solid	Residual	
140-27231-3	B-115D-75-76'	Step 7	Solid	Residual	
140-27231-4	B-47-11-12'	Step 7	Solid	Residual	
140-27231-5	B-48-23-24'	Step 7	Solid	Residual	
140-27231-6	DGWC-121-38-40'	Step 7	Solid	Residual	
140-27231-7	DGWC-121-49-50'	Step 7	Solid	Residual	
140-27231-8	B-122D-39-40'	Step 7	Solid	Residual	
140-27231-9	B-123D-27-28'	Step 7	Solid	Residual	
140-27231-10	B-123D-145'	Step 7	Solid	Residual	
MB 140-61893/13-A	Method Blank	Step 7	Solid	Residual	
LCS 140-61893/14-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-61893/15-A	Lab Control Sample Dup	Step 7	Solid	Residual	
140-27231-6 DU	DGWC-121-38-40'	Step 7	Solid	Residual	

Analysis Batch: 61895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 5	Solid	6010B SEP	61816
140-27231-2	B-104D-55-56'	Step 5	Solid	6010B SEP	61816
140-27231-3	B-115D-75-76'	Step 5	Solid	6010B SEP	61816
140-27231-4	B-47-11-12'	Step 5	Solid	6010B SEP	61816
140-27231-5	B-48-23-24'	Step 5	Solid	6010B SEP	61816
140-27231-6	DGWC-121-38-40'	Step 5	Solid	6010B SEP	61816
140-27231-7	DGWC-121-49-50'	Step 5	Solid	6010B SEP	61816
140-27231-8	B-122D-39-40'	Step 5	Solid	6010B SEP	61816
140-27231-9	B-123D-27-28'	Step 5	Solid	6010B SEP	61816
140-27231-10	B-123D-145'	Step 5	Solid	6010B SEP	61816
MB 140-61517/13-B ^5	Method Blank	Step 5	Solid	6010B SEP	61816
LCS 140-61517/14-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	61816
LCSD 140-61517/15-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	61816
140-27231-6 DU	DGWC-121-38-40'	Step 5	Solid	6010B SEP	61816

Analysis Batch: 61994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 6	Solid	6010B SEP	61884
140-27231-1	B-113D-19-20'	Step 6	Solid	6010B SEP	61884
140-27231-2	B-104D-55-56'	Step 6	Solid	6010B SEP	61884
140-27231-3	B-115D-75-76'	Step 6	Solid	6010B SEP	61884
140-27231-4	B-47-11-12'	Step 6	Solid	6010B SEP	61884
140-27231-6	DGWC-121-38-40'	Step 6	Solid	6010B SEP	61884

Metals (Continued)

Analysis Batch: 61994 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-7	DGWC-121-49-50'	Step 6	Solid	6010B SEP	61884
140-27231-8	B-122D-39-40'	Step 6	Solid	6010B SEP	61884
140-27231-9	B-123D-27-28'	Step 6	Solid	6010B SEP	61884
140-27231-10	B-123D-145'	Step 6	Solid	6010B SEP	61884
MB 140-61884/13-A	Method Blank	Step 6	Solid	6010B SEP	61884
LCS 140-61884/14-A	Lab Control Sample	Step 6	Solid	6010B SEP	61884
LCSD 140-61884/15-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	61884
140-27231-6 DU	DGWC-121-38-40'	Step 6	Solid	6010B SEP	61884

Analysis Batch: 61999

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-5	B-48-23-24'	Step 6	Solid	6010B SEP	61884
MB 140-61884/13-A	Method Blank	Step 6	Solid	6010B SEP	61884
LCS 140-61884/14-A	Lab Control Sample	Step 6	Solid	6010B SEP	61884
LCSD 140-61884/15-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	61884

Analysis Batch: 62067

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Step 7	Solid	6010B SEP	61893
140-27231-1	B-113D-19-20'	Step 7	Solid	6010B SEP	61893
140-27231-1	B-113D-19-20'	Step 7	Solid	6010B SEP	61893
140-27231-2	B-104D-55-56'	Step 7	Solid	6010B SEP	61893
140-27231-2	B-104D-55-56'	Step 7	Solid	6010B SEP	61893
140-27231-2	B-104D-55-56'	Step 7	Solid	6010B SEP	61893
140-27231-3	B-115D-75-76'	Step 7	Solid	6010B SEP	61893
140-27231-3	B-115D-75-76'	Step 7	Solid	6010B SEP	61893
140-27231-3	B-115D-75-76'	Step 7	Solid	6010B SEP	61893
140-27231-4	B-47-11-12'	Step 7	Solid	6010B SEP	61893
140-27231-4	B-47-11-12'	Step 7	Solid	6010B SEP	61893
140-27231-4	B-47-11-12'	Step 7	Solid	6010B SEP	61893
140-27231-5	B-48-23-24'	Step 7	Solid	6010B SEP	61893
140-27231-5	B-48-23-24'	Step 7	Solid	6010B SEP	61893
140-27231-5	B-48-23-24'	Step 7	Solid	6010B SEP	61893
140-27231-6	DGWC-121-38-40'	Step 7	Solid	6010B SEP	61893
140-27231-6	DGWC-121-38-40'	Step 7	Solid	6010B SEP	61893
140-27231-6	DGWC-121-38-40'	Step 7	Solid	6010B SEP	61893
140-27231-7	DGWC-121-49-50'	Step 7	Solid	6010B SEP	61893
140-27231-7	DGWC-121-49-50'	Step 7	Solid	6010B SEP	61893
140-27231-7	DGWC-121-49-50'	Step 7	Solid	6010B SEP	61893
140-27231-8	B-122D-39-40'	Step 7	Solid	6010B SEP	61893
140-27231-8	B-122D-39-40'	Step 7	Solid	6010B SEP	61893
140-27231-8	B-122D-39-40'	Step 7	Solid	6010B SEP	61893
140-27231-9	B-123D-27-28'	Step 7	Solid	6010B SEP	61893
140-27231-9	B-123D-27-28'	Step 7	Solid	6010B SEP	61893
140-27231-9	B-123D-27-28'	Step 7	Solid	6010B SEP	61893
140-27231-10	B-123D-145'	Step 7	Solid	6010B SEP	61893
140-27231-10	B-123D-145'	Step 7	Solid	6010B SEP	61893
140-27231-10	B-123D-145'	Step 7	Solid	6010B SEP	61893
MB 140-61893/13-A	Method Blank	Step 7	Solid	6010B SEP	61893
LCS 140-61893/14-A	Lab Control Sample	Step 7	Solid	6010B SEP	61893
LCSD 140-61893/15-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	61893

Metals (Continued)

Analysis Batch: 62067 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-6 DU	DGWC-121-38-40'	Step 7	Solid	6010B SEP	61893
140-27231-6 DU	DGWC-121-38-40'	Step 7	Solid	6010B SEP	61893
140-27231-6 DU	DGWC-121-38-40'	Step 7	Solid	6010B SEP	61893

Analysis Batch: 62091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Total/NA	Solid	6010B	61285
140-27231-1	B-113D-19-20'	Total/NA	Solid	6010B	61285
140-27231-1	B-113D-19-20'	Total/NA	Solid	6010B	61285
140-27231-2	B-104D-55-56'	Total/NA	Solid	6010B	61285
140-27231-2	B-104D-55-56'	Total/NA	Solid	6010B	61285
140-27231-3	B-115D-75-76'	Total/NA	Solid	6010B	61285
140-27231-3	B-115D-75-76'	Total/NA	Solid	6010B	61285
140-27231-3	B-115D-75-76'	Total/NA	Solid	6010B	61285
140-27231-4	B-47-11-12'	Total/NA	Solid	6010B	61285
140-27231-4	B-47-11-12'	Total/NA	Solid	6010B	61285
140-27231-4	B-47-11-12'	Total/NA	Solid	6010B	61285
140-27231-5	B-48-23-24'	Total/NA	Solid	6010B	61285
140-27231-5	B-48-23-24'	Total/NA	Solid	6010B	61285
140-27231-6	DGWC-121-38-40'	Total/NA	Solid	6010B	61285
140-27231-6	DGWC-121-38-40'	Total/NA	Solid	6010B	61285
140-27231-6	DGWC-121-38-40'	Total/NA	Solid	6010B	61285
140-27231-7	DGWC-121-49-50'	Total/NA	Solid	6010B	61285
140-27231-7	DGWC-121-49-50'	Total/NA	Solid	6010B	61285
140-27231-7	DGWC-121-49-50'	Total/NA	Solid	6010B	61285
140-27231-8	B-122D-39-40'	Total/NA	Solid	6010B	61285
140-27231-8	B-122D-39-40'	Total/NA	Solid	6010B	61285
140-27231-8	B-122D-39-40'	Total/NA	Solid	6010B	61285
140-27231-9	B-123D-27-28'	Total/NA	Solid	6010B	61285
140-27231-9	B-123D-27-28'	Total/NA	Solid	6010B	61285
140-27231-9	B-123D-27-28'	Total/NA	Solid	6010B	61285
140-27231-10	B-123D-145'	Total/NA	Solid	6010B	61285
140-27231-10	B-123D-145'	Total/NA	Solid	6010B	61285
140-27231-10	B-123D-145'	Total/NA	Solid	6010B	61285
MB 140-61285/14-A	Method Blank	Total/NA	Solid	6010B	61285
LCS 140-61285/15-A	Lab Control Sample	Total/NA	Solid	6010B	61285
LCSD 140-61285/16-A	Lab Control Sample Dup	Total/NA	Solid	6010B	61285
140-27231-6 DU	DGWC-121-38-40'	Total/NA	Solid	6010B	61285
140-27231-6 DU	DGWC-121-38-40'	Total/NA	Solid	6010B	61285
140-27231-6 DU	DGWC-121-38-40'	Total/NA	Solid	6010B	61285

Analysis Batch: 62131

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Sum of Steps 1-7	Solid	6010B SEP	
140-27231-2	B-104D-55-56'	Sum of Steps 1-7	Solid	6010B SEP	
140-27231-3	B-115D-75-76'	Sum of Steps 1-7	Solid	6010B SEP	
140-27231-4	B-47-11-12'	Sum of Steps 1-7	Solid	6010B SEP	
140-27231-5	B-48-23-24'	Sum of Steps 1-7	Solid	6010B SEP	
140-27231-6	DGWC-121-38-40'	Sum of Steps 1-7	Solid	6010B SEP	
140-27231-7	DGWC-121-49-50'	Sum of Steps 1-7	Solid	6010B SEP	
140-27231-8	B-122D-39-40'	Sum of Steps 1-7	Solid	6010B SEP	

Metals (Continued)

Analysis Batch: 62131 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-9	B-123D-27-28'	Sum of Steps 1-7	Solid	6010B SEP	
140-27231-10	B-123D-145'	Sum of Steps 1-7	Solid	6010B SEP	

General Chemistry

Analysis Batch: 61060

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-1	B-113D-19-20'	Total/NA	Solid	Moisture	
140-27231-4	B-47-11-12'	Total/NA	Solid	Moisture	
140-27231-5	B-48-23-24'	Total/NA	Solid	Moisture	
140-27231-6	DGWC-121-38-40'	Total/NA	Solid	Moisture	
140-27231-8	B-122D-39-40'	Total/NA	Solid	Moisture	
140-27231-9	B-123D-27-28'	Total/NA	Solid	Moisture	

Organic Prep

Analysis Batch: 524310

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27231-2	B-104D-55-56'	Total/NA	Solid	Part Size Red	
140-27231-3	B-115D-75-76'	Total/NA	Solid	Part Size Red	
140-27231-7	DGWC-121-49-50'	Total/NA	Solid	Part Size Red	
140-27231-10	B-123D-145'	Total/NA	Solid	Part Size Red	

Client Sample ID: B-113D-19-20'
Lab Sample ID: 140-27231-1
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62131	05/31/22 15:33	KNC	TAL KNX
	Instrument ID:	NOEQUIP								
Total/NA	Analysis	Moisture		1			61060	04/26/22 11:45	ACW	TAL KNX
	Instrument ID:	NOEQUIP								

Client Sample ID: B-113D-19-20'
Lab Sample ID: 140-27231-1
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30
Percent Solids: 98.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62091	05/27/22 10:23	JGT	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62091	05/27/22 12:03	JGT	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			62091	05/27/22 13:38	JGT	TAL KNX
	Instrument ID:	DUO								
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			61514	05/09/22 11:47	JGT	TAL KNX
	Instrument ID:	DUO								
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			61514	05/09/22 13:01	JGT	TAL KNX
	Instrument ID:	DUO								
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 11:51	JGT	TAL KNX
	Instrument ID:	DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 13:06	JGT	TAL KNX
	Instrument ID:	DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 12:28	JGT	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 10:48	JGT	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		2			61994	05/24/22 14:00	JGT	TAL KNX
	Instrument ID:	DUO								

Lab Chronicle

Client: Golder Associates Inc. Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: B-113D-19-20' Lab Sample ID: 140-27231-1

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30 **Percent Solids: 98.7**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62067	05/26/22 10:46	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 12:14	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		3			62067	05/26/22 13:55	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: B-104D-55-56' Lab Sample ID: 140-27231-2

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62091	05/27/22 11:15	JGT	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		3			62091	05/27/22 14:33	JGT	TAL KNX
	Instrument ID:	DUO								
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			61514	05/09/22 12:32	JGT	TAL KNX
	Instrument ID:	DUO								
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			61514	05/09/22 13:56	JGT	TAL KNX
	Instrument ID:	DUO								
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 12:37	JGT	TAL KNX
	Instrument ID:	DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 14:00	JGT	TAL KNX
	Instrument ID:	DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 13:23	JGT	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 11:44	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: B-104D-55-56'

Lab Sample ID: 140-27231-2

Date Collected: 04/19/22 14:00

Matrix: Solid

Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62067	05/26/22 11:40	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 13:11	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			62067	05/26/22 14:48	JGT	TAL KNX
	Instrument ID: DUO									
Sum of Steps 1-7	Analysis	6010B SEP		1			62131	05/31/22 15:33	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Part Size Red		1			524310	04/28/22 07:25	POP	TAL CAN
	Instrument ID: NOEQUIP									

Client Sample ID: B-115D-75-76'

Lab Sample ID: 140-27231-3

Date Collected: 04/19/22 14:00

Matrix: Solid

Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62091	05/27/22 11:20	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62091	05/27/22 13:09	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			62091	05/27/22 14:38	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			61514	05/09/22 12:46	JGT	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			61514	05/09/22 14:04	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 12:51	JGT	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 14:05	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

1 2 3 4 5 6 7 8 9 10 11 12 13

Client Sample ID: B-115D-75-76'

Lab Sample ID: 140-27231-3
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 13:28	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 11:49	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62067	05/26/22 11:45	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 13:16	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			62067	05/26/22 14:52	JGT	TAL KNX
	Instrument ID: DUO									
Sum of Steps 1-7	Analysis	6010B SEP		1			62131	05/31/22 15:33	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Part Size Red		1			524310	04/28/22 07:25	POP	TAL CAN
	Instrument ID: NOEQUIP									

Client Sample ID: B-47-11-12'

Lab Sample ID: 140-27231-4
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62131	05/31/22 15:33	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			61060	04/26/22 11:45	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: B-47-11-12'

Lab Sample ID: 140-27231-4
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30
Percent Solids: 99.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62091	05/27/22 10:27	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62091	05/27/22 12:09	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			62091	05/27/22 13:42	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc. Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: B-47-11-12' Lab Sample ID: 140-27231-4

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30 **Percent Solids: 99.2**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			61514	05/09/22 11:52	JGT	TAL KNX
	Instrument ID:	DUO								
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			61514	05/09/22 13:06	JGT	TAL KNX
	Instrument ID:	DUO								
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 11:56	JGT	TAL KNX
	Instrument ID:	DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 13:11	JGT	TAL KNX
	Instrument ID:	DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 12:33	JGT	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 10:53	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62067	05/26/22 10:51	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 12:29	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			62067	05/26/22 14:00	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: B-48-23-24' Lab Sample ID: 140-27231-5

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62131	05/31/22 15:33	KNC	TAL KNX
	Instrument ID:	NOEQUIP								
Total/NA	Analysis	Moisture		1			61060	04/26/22 11:45	ACW	TAL KNX
	Instrument ID:	NOEQUIP								

Client Sample ID: B-48-23-24'

Lab Sample ID: 140-27231-5
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30
Percent Solids: 99.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62091	05/27/22 10:32	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			62091	05/27/22 14:58	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			61514	05/09/22 11:57	JGT	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			61514	05/09/22 13:11	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 12:01	JGT	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 13:16	JGT	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 12:38	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		3			61999	05/24/22 16:12	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62067	05/26/22 10:55	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 12:34	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			62067	05/26/22 14:04	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: DGWC-121-38-40'

Lab Sample ID: 140-27231-6
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62131	05/31/22 15:33	KNC	TAL KNX
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Golder Associates Inc. Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: DGWC-121-38-40' **Lab Sample ID: 140-27231-6**
Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			61060	04/26/22 11:45	ACW	TAL KNX

Client Sample ID: DGWC-121-38-40' **Lab Sample ID: 140-27231-6**
Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30 **Percent Solids: 82.1**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62091	05/27/22 10:37	JGT	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62091	05/27/22 12:20	JGT	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			62091	05/27/22 13:53	JGT	TAL KNX
	Instrument ID:	DUO								
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			61514	05/09/22 12:02	JGT	TAL KNX
	Instrument ID:	DUO								
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			61514	05/09/22 13:16	JGT	TAL KNX
	Instrument ID:	DUO								
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 12:06	JGT	TAL KNX
	Instrument ID:	DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 13:21	JGT	TAL KNX
	Instrument ID:	DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 12:43	JGT	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 11:03	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62067	05/26/22 11:00	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 12:40	JGT	TAL KNX
	Instrument ID:	DUO								

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: DGWC-121-38-40'

Lab Sample ID: 140-27231-6
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30
Percent Solids: 82.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			62067	05/26/22 14:09	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: DGWC-121-49-50'

Lab Sample ID: 140-27231-7
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62091	05/27/22 11:24	JGT	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62091	05/27/22 13:15	JGT	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			62091	05/27/22 14:43	JGT	TAL KNX
	Instrument ID:	DUO								
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			61514	05/09/22 12:51	JGT	TAL KNX
	Instrument ID:	DUO								
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			61514	05/09/22 14:09	JGT	TAL KNX
	Instrument ID:	DUO								
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 12:56	JGT	TAL KNX
	Instrument ID:	DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 14:09	JGT	TAL KNX
	Instrument ID:	DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 13:33	JGT	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 11:54	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62067	05/26/22 11:50	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: DGWC-121-49-50' Lab Sample ID: 140-27231-7

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 13:32	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			62067	05/26/22 14:57	JGT	TAL KNX
	Instrument ID: DUO									
Sum of Steps 1-7	Analysis	6010B SEP		1			62131	05/31/22 15:33	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Part Size Red		1			524310	04/28/22 07:25	POP	TAL CAN
	Instrument ID: NOEQUIP									

Client Sample ID: B-122D-39-40' Lab Sample ID: 140-27231-8

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62131	05/31/22 15:33	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			61060	04/26/22 11:45	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: B-122D-39-40' Lab Sample ID: 140-27231-8

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30 **Percent Solids: 74.2**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62091	05/27/22 11:01	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62091	05/27/22 12:37	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			62091	05/27/22 14:17	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			61514	05/09/22 12:17	JGT	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			61514	05/09/22 13:32	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Plant McDonough NES Well Installation
Job ID: 140-27231-1

Client Sample ID: B-122D-39-40'
Lab Sample ID: 140-27231-8
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30
Percent Solids: 74.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 12:22	JGT	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 13:35	JGT	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 13:08	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 11:19	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62067	05/26/22 11:16	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 12:55	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			62067	05/26/22 14:23	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: B-123D-27-28'
Lab Sample ID: 140-27231-9
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62131	05/31/22 15:33	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			61060	04/26/22 11:45	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: B-123D-27-28'
Lab Sample ID: 140-27231-9
Date Collected: 04/19/22 14:00
Matrix: Solid
Date Received: 04/25/22 09:30
Percent Solids: 96.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62091	05/27/22 11:06	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62091	05/27/22 12:42	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc. Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: B-123D-27-28' Lab Sample ID: 140-27231-9

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30 **Percent Solids: 96.5**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			62091	05/27/22 14:21	JGT	TAL KNX
	Instrument ID:	DUO								
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			61514	05/09/22 12:22	JGT	TAL KNX
	Instrument ID:	DUO								
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			61514	05/09/22 13:46	JGT	TAL KNX
	Instrument ID:	DUO								
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 12:27	JGT	TAL KNX
	Instrument ID:	DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 13:50	JGT	TAL KNX
	Instrument ID:	DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 13:13	JGT	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 11:34	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62067	05/26/22 11:31	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 13:01	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			62067	05/26/22 14:28	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: B-123D-145' Lab Sample ID: 140-27231-10

Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62091	05/27/22 11:29	JGT	TAL KNX
	Instrument ID:	DUO								

Lab Chronicle

Client: Golder Associates Inc. Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Client Sample ID: B-123D-145' **Lab Sample ID: 140-27231-10**
Date Collected: 04/19/22 14:00 **Matrix: Solid**
Date Received: 04/25/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62091	05/27/22 13:20	JGT	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		3			62091	05/27/22 14:48	JGT	TAL KNX
	Instrument ID:	DUO								
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			61514	05/09/22 12:56	JGT	TAL KNX
	Instrument ID:	DUO								
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			61514	05/09/22 14:14	JGT	TAL KNX
	Instrument ID:	DUO								
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 13:01	JGT	TAL KNX
	Instrument ID:	DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 14:14	JGT	TAL KNX
	Instrument ID:	DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 13:38	JGT	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 11:59	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62067	05/26/22 11:55	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 13:37	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			62067	05/26/22 15:02	JGT	TAL KNX
	Instrument ID:	DUO								
Sum of Steps 1-7	Analysis	6010B SEP		1			62131	05/31/22 15:33	KNC	TAL KNX
	Instrument ID:	NOEQUIP								
Total/NA	Analysis	Part Size Red		1			524310	04/28/22 07:25	POP	TAL CAN
	Instrument ID:	NOEQUIP								

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Plant McDonough NES Well Installation

Job ID: 140-27231-1

Client Sample ID: Method Blank

Lab Sample ID: MB 140-61285/14-A

Date Collected: N/A
Date Received: N/A
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62091	05/27/22 11:34	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Method Blank

Lab Sample ID: MB 140-61288/13-B ^4

Date Collected: N/A
Date Received: N/A
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			61514	05/09/22 11:03	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Method Blank

Lab Sample ID: MB 140-61360/13-B ^3

Date Collected: N/A
Date Received: N/A
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			61514	05/09/22 11:18	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Method Blank

Lab Sample ID: MB 140-61419/13-B

Date Collected: N/A
Date Received: N/A
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 11:08	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Method Blank

Lab Sample ID: MB 140-61467/13-B

Date Collected: N/A
Date Received: N/A
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 11:22	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Method Blank

Lab Sample ID: MB 140-61517/13-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 12:13	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-61884/13-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 10:34	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61999	05/24/22 15:56	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-61893/13-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 11:59	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-61285/15-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62091	05/27/22 11:39	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-61288/14-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			61514	05/09/22 11:08	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Plant McDonough NES Well Installation

Job ID: 140-27231-1

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-61360/14-B ^5

Date Collected: N/A
Date Received: N/A

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			61514	05/09/22 11:23	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-61419/14-B

Date Collected: N/A
Date Received: N/A

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 11:13	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-61467/14-B

Date Collected: N/A
Date Received: N/A

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 11:27	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-61517/14-B ^5

Date Collected: N/A
Date Received: N/A

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 12:18	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-61884/14-A

Date Collected: N/A
Date Received: N/A

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 10:39	JGT	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61999	05/24/22 16:03	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-61893/14-A

Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 12:04	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-61285/16-A

Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62091	05/27/22 11:44	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-61288/15-B ^5

Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			61514	05/09/22 11:13	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-61360/15-B ^5

Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			61514	05/09/22 11:28	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-61419/15-B

Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 11:18	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-61467/15-B

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 11:32	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-61517/15-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 12:23	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-61884/15-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 10:43	JGT	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61999	05/24/22 16:08	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-61893/15-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 12:09	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: DGWC-121-38-40'
Lab Sample ID: 140-27231-6 DU

Date Collected: 04/19/22 14:00

Matrix: Solid

Date Received: 04/25/22 09:30

Percent Solids: 82.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62091	05/27/22 10:46	JGT	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62091	05/27/22 12:31	JGT	TAL KNX
	Instrument ID:	DUO								

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Plant McDonough NES Well Installation

Job ID: 140-27231-1

Client Sample ID: DGWC-121-38-40'
Date Collected: 04/19/22 14:00
Date Received: 04/25/22 09:30

Lab Sample ID: 140-27231-6 DU
Matrix: Solid
Percent Solids: 82.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61285	05/04/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			62091	05/27/22 14:02	JGT	TAL KNX
	Instrument ID:	DUO								
Step 1	SEP	Exchangeable			5.000 g	25 mL	61288	05/04/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	61349	05/05/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			61514	05/09/22 12:12	JGT	TAL KNX
	Instrument ID:	DUO								
Step 2	SEP	Carbonate			5.000 g	25 mL	61360	05/05/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	61418	05/06/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			61514	05/09/22 13:27	JGT	TAL KNX
	Instrument ID:	DUO								
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	61419	05/06/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	61466	05/09/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			61682	05/13/22 12:16	JGT	TAL KNX
	Instrument ID:	DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	61467	05/09/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	61516	05/11/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			61682	05/13/22 13:30	JGT	TAL KNX
	Instrument ID:	DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	61517	05/17/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	61816	05/19/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			61895	05/20/22 12:53	JGT	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	61884	05/20/22 10:08	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			61994	05/24/22 11:14	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62067	05/26/22 11:12	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62067	05/26/22 12:50	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	61893	05/23/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			62067	05/26/22 14:19	JGT	TAL KNX
	Instrument ID:	DUO								

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396
TAL KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Golder Associates Inc.
Project/Site: Plant McDonough NES Well Installation

Job ID: 140-27231-1

Laboratory: Eurofins Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-25
ANAB	Dept. of Energy	L2311.01	02-13-25
ANAB	ISO/IEC 17025	L2311	02-13-25
Arkansas DEQ	State	88-0688	06-17-22
California	State	2423	06-30-22
Colorado	State	TN00009	02-28-23
Connecticut	State	PH-0223	09-30-23
Florida	NELAP	E87177	06-30-22
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-22
Kansas	NELAP	E-10349	10-31-22
Kentucky (DW)	State	90101	12-31-22
Louisiana	NELAP	83979	06-30-22
Louisiana (DW)	State	LA019	12-31-22
Maryland	State	277	03-31-23
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-22
New Hampshire	NELAP	299919	01-17-23
New Jersey	NELAP	TN001	06-30-22
New York	NELAP	10781	03-31-23
North Carolina (DW)	State	21705	07-31-22
North Carolina (WW/SW)	State	64	12-31-22
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-22
Oregon	NELAP	TNI0189	12-31-22
Pennsylvania	NELAP	68-00576	12-31-22
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-22
Virginia	NELAP	460176	09-14-22
Washington	State	C593	01-19-23
West Virginia (DW)	State	9955C	12-31-22
West Virginia DEP	State	345	04-30-23
Wisconsin	State	998044300	08-31-22

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (WW)	State	KY98016	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Golder Associates Inc. Job ID: 140-27231-1
Project/Site: Plant McDonough NES Well Installation

Laboratory: Eurofins Canton (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	05-24-22
Oregon	NELAP	4062	05-24-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	05-02-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Method Summary

Client: Golder Associates Inc.
Project/Site: Plant McDonough NES Well Installation

Job ID: 140-27231-1

Method	Method Description	Protocol	Laboratory
6010B	SEP Metals (ICP) - Total	SW846	TAL KNX
6010B SEP	SEP Metals (ICP)	SW846	TAL KNX
Moisture	Percent Moisture	EPA	TAL KNX
Part Size Red	Particle Size Reduction Preparation	None	TAL CAN
3010A	Preparation, Total Metals	SW846	TAL KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	TAL KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	TAL KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	TAL KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	TAL KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	TAL KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	TAL KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	TAL KNX
Total	Preparation, Total Material	TAL-KNOX	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency
None = None
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396
TAL KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Eurofins Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing America

Client Information
Client Contact: Brian Steele
Company: Golder Associates Inc.
Address: 5170 Peachtree Road Building 100, Suite 300
City: Atlanta
State, Zip: GA, 30341
Phone:
Email: Brian_Steele@golder.com , Dawn Prell@Golder.com
Project Name: Plant McDonough NES Well Installation
Site:

Sampler: Connor Mikilitus
Phone:
PWSID:
Due Date Requested:
TAT Requested (days):
Compliance Project: ∆ Yes ∆ No
PO #: Purchase Order not required
WO #:
Project #: 14006633
SSOW#:

Lab PM: Henry, Ryan
E-Mail: williamr.henry@eurofinset.com

Carrier Tracking No(s):
State of Origin:

COC No: 140-10715-3099.1
Page: Page 1 of 1
Job #:

Analysis Requested

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010B_SEP - SEP; Aluminum, Arsenic, Cobalt, Iron, Lithium, Manganese	Total Metals	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N			
B-113D - 19-20'	4/19/22	1400	Grab	S			X	X		
B-104D-55-56'	4/19/22	1400					X	X		
B-115D - 75-76'	4/19/22	1400					X	X		
B-47 - 11-12'	4/19/22	1400					X	X		
B-48 - 23-24'	4/19/22	1400					X	X		
DGWC-121 - 38-40'	4/19/22	1400					X	X		
DGWC-121 -49-50'	4/19/22	1400					X	X		
B-122D - 39-40'	4/19/22	1400					X	X		
B-123D - 27'-28'	4/19/22	1400					X	X		
B-123D - 145'	4/19/22	1400					X	X		

140-27231 Chain of Custody

Rec @ ambient 22.3°C NT 22.2°C CT
Custody Seal intact
1 cooler Rn 04.25.22
Fedex# 7766 3116 1997

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ______ Months

Deliverable Requested: I, II, III, IV, Other (specify)
Special Instructions/QC Requirements:

Empty Kit Relinquished by:
Date:
Time:
Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Connor Mikilitus	4/19/22 1700	Golder		04.25.22 9:30	ETAKNX

Custody Seals Intact: ∆ Yes ∆ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

Loc: 140

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number: 27231

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?	✓			☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC.71 Correction factor: -0.01°C	✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?	✓			☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:	
Lot Number:	
Exp Date:	
Analyst:	
Date:	
Time:	

Project #: 14006633 PM Instructions:

Sample Receiving Associate: Date: 04.25.22

QA026R32.doc, 062719

Eurofins Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

14.3/14.3
(ro20)

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Henry, Ryan	Carrier Tracking No(s):	COC No: 140-11107.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: WilliamR.Henry@et.eurofinsus.com	State of Origin: Georgia	Page: Page 1 of 1
Company: Eurofins Environment Testing North Centr		Accreditations Required (See note): NELAP - Oregon		Job #: 140-27231-1
Address: 180 S. Van Buren Avenue,	Due Date Requested: 5/30/2022	**Analysis Requested**		**Preservation Codes:**
City: Barberton	TAT Requested (days):			
State, Zip: OH, 44203				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Plant McDonough NES Well Installation	Project #: 14006633			
Site:	SSOW#:			

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PSR	Total Number of containers	Special Instructions/Note: E011
			Preservation Code:						
B-104D-55-56' (140-27231-2)	4/19/22	14:00 Eastern		Solid			X	1	
B-115D-75-76' (140-27231-3)	4/19/22	14:00 Eastern		Solid			X	1	
DGWC-121-49-50' (140-27231-7)	4/19/22	14:00 Eastern		Solid			X	1	
B-123D-145' (140-27231-10)	4/19/22	14:00 Eastern		Solid			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ______ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)
Primary Deliverable Rank: 2
Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
	4-26-22 09:30	EnvKnx		4-27-22 930	ETA

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # :

Client ETA Knoxville Site Name

Cooler unpacked by: Justin H

Cooler Received on 4-27-22 Opened on 4-27-22

FedEx: 1st Grd [✓ Exp] UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: [✓ Bubble Wrap] Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water [✓ None]

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF **0.0** °C) Observed Cooler Temp. 14.3 °C Corrected Cooler Temp. 14.3 °C
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 [✓ Yes] No
   -Were the seals on the outside of the cooler(s) signed & dated? [✓ Yes] No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes [✓ No]
   -Were tamper/custody seals intact and uncompromised? [✓ Yes] No NA
3. Shippers' packing slip attached to the cooler(s)? [✓ Yes] No
4. Did custody papers accompany the sample(s)? [✓ Yes] No
5. Were the custody papers relinquished & signed in the appropriate place? [✓ Yes] No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes [✓ No]
7. Did all bottles arrive in good condition (Unbroken)? [✓ Yes] No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? [✓ Yes] No
9. For each sample, does the COC specify preservatives (Y/[✓ N]), # of containers ([✓ Y]/N), and sample type of grab/comp(Y/[✓ N])?
10. Were correct bottle(s) used for the test(s) indicated? [✓ Yes] No
11. Sufficient quantity received to perform indicated analyses? [✓ Yes] No
12. Are these work share samples and all listed on the COC? [✓ Yes] No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC157842**
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

APPENDIX E

Treatability Testing Results

APPENDIX D: TREATABILITY STUDIES

COBALT AND ARSENIC TREATABILITY STUDIES

Based on the identified geochemical process described above, Golder, in collaboration with Terra Systems Inc (TSI), conducted laboratory testing to evaluate the potential for using in-situ remedial technologies at the Site. The bench-scale treatability tests (referred to as Round 1 Jar Tests) were performed to assist in identifying potentially applicable in situ remedial technologies at the Site. Round 1 Jar Tests combined several doses of potential in-situ reagents with Site groundwater, in the absence of aquifer solids, to screen potential technologies. These tests were incubated for 30 days with frequent sampling to monitor progress. Testing completed for AP-1 was specific to arsenic at DGWC-69 and cobalt at DGWC-40, but other key CCR constituents were also included. The bench-scale treatability study investigated six reagents: potassium bicarbonate, sodium bicarbonate, calcium oxide, iron oxide, ferrous sulfide, and zero valent iron (ZVI), with an understanding that one of the following technologies could potentially be used for in-situ remediation of arsenic and/or cobalt:

- Precipitation at elevated pH
- Oxidation with iron oxide
- Reduction with ferrous sulfide
- Oxidation and precipitation with calcium oxide
- Direct sorption/precipitation onto ZVI.

The treatment study demonstrated that the following treatments were effective at reducing arsenic and cobalt concentrations:

- Arsenic – Arsenic was treated to below an MCL of 0.010 mg/l using all treatment media, though sodium bicarbonate was most effective (by % reduction), with calcium oxide, ferric oxide, and ferrous sulfide meeting MCLs but less effectively.
- Cobalt – over 50% reduction using potassium or sodium bicarbonate, but unable to meet Site GWPS of 0.032 mg/L.
- Elevating pH using sodium bicarbonate to facilitate precipitation reactions appears to be a preliminary effective sequestration mechanism for arsenic and cobalt.

Direct sorption/precipitation onto ZVI was least effective, resulting in limited removal of arsenic and cobalt.

Terra Systems
INCORPORATED

July 20, 2022

Todd Rees, PhD, PE
Senior Program Leader

Golder Associates Inc.
Amherst, MA., Montrose, CO.

TERRA SYSTEMS, INC. FINAL REPORT FOR GOLDER/WSP FOR COAL COMBUSTION RESIDUE AT PLANT MCDONOUGH ATKINSON ASH POND 1, 2, 3, AND 4 TREATABILITY STUDY VERSION 6

1.0 INTRODUCTION

Coal combustion residue landfill may generate acidic conditions which allow metals such as arsenic (As), beryllium (Be), cobalt (Co), lithium (Li), molybdenum (Mo), and selenium (Se) to accumulate to levels above regulatory limits. This bench-scale treatability evaluated neutralization/precipitation with potassium bicarbonate, sodium bicarbonate, and calcium oxide and precipitation/adsorption with zero valent iron (ZVI), ferrous oxide, and ferrous sulfide for five groundwaters from Georgia Power Company (Georgia Power) Plant McDonough-Atkinson Ash Pond 1 (AP-1) which has arsenic and molybdenum in two groundwaters (DGWC-69 and DGWC-68A) and cobalt in DGWC-40. Plant McDonough-Atkinson Ash Pond 2, Ash Pond 3 and Ash Pond 4 (AP-2 and 3/4) has arsenic, beryllium, cobalt, lithium, and selenium in two groundwaters (DGWC-48 and DGWC-20). The Georgia Groundwater Protection Standards (GA GWPS) is 0.010 mg/L for arsenic, 0.0040 mg/L for beryllium, 0.032 mg/L for cobalt, 0.10 mg/L for lithium, 0.10 mg/L for molybdenum, and 0.050 mg/L for selenium.

2.0 BENCH-SCALE STUDY SCOPE

The objective of the bench-scale study is to evaluate the appropriate in situ remediation technology for several metals including arsenic, cobalt, beryllium, lithium, molybdenum, and selenium:

- Identify the feasibility of in-situ remediation.
- Determine the design parameters including reagent dosage and demand.

The bench-scale treatability study will investigate six reagents: potassium bicarbonate, sodium bicarbonate, calcium oxide, iron oxide, ferrous sulfide, and zero valent iron.

2.1 Reagent Selection

The bench-scale treatability study assumes that one of the following technologies can be used for in-situ remediation of the metals:

- elevated pH precipitation
- oxidation with iron oxide
- reduction with ferrous sulfide
- oxidation and precipitation with calcium oxide
- direct sorption/precipitation onto the ZVI.

All reagents used for the bench-scale test were commercially available products. The reagent usages and their dosages could be adjusted according to the results of the activities and observations during the execution of the bench-scale treatability study. The following provides more detail on each of the reagents proposed for the bench-scale treatability testing:

- Potassium Bicarbonate: Potassium bicarbonate can increase the pH up to about 8.2 SU. Four loadings of LC Carlsen potassium bicarbonate were evaluated in the tests to determine the precipitation of arsenic and molybdenum in two groundwaters from AP-1 (DGWC-69 and DGWC-68A); four loadings of potassium bicarbonate to address cobalt from one groundwater in AP-1 DGWC-40; and four loadings of potassium bicarbonate to address arsenic, beryllium, cobalt, lithium, and selenium in AP 234 (DGWC-48 and DGWC-20).

- Sodium Bicarbonate: Sodium bicarbonate can increase the pH up to about 8.3 SU. Four loadings of Genesis sodium bicarbonate were evaluated in the tests to determine precipitation of cobalt from one groundwater in AP-1 (DGWC-69 and DGWC-68A); and four loadings of sodium bicarbonate to address arsenic, beryllium, cobalt, lithium, and selenium in AP 234 (DGWC-48 and DGWC-20.

- ZVI: ZVI can enhance precipitation of cobalt and can sorb this metal. A commercially available product of submicron ZVI (Ferox Nanostar) from Hepure (Flemington NJ) and Nanoiron s.r.o (Zudicgivue, Czech Republic) were evaluated. Three loadings of ZVI were evaluated in the tests to determine the precipitation/sorption of arsenic and molybdenum will be evaluated in the groundwater from AP-1 DGWC-69 and DGWC-68A; determine precipitation of cobalt from one groundwater in AP-1 (DGWC-40); and to address arsenic, beryllium, cobalt, lithium, and selenium in AP-234.

- Calcium oxide. Calcium oxide is prepared by heating limestone. In water, it will form calcium hydroxide. Calcium hydroxide has a solubility of about 1.6 g/L and a pH of 12.5 SU. Three loadings of Sigma Aldrich >98% calcium oxide were evaluated for the precipitation of arsenic and molybdenum in two groundwaters from AP-1 (DGWC-69 and DGWC-68A).

- Ferric oxide. Ferric oxide (Fe_2O_3) is insoluble in water and has a pH of 6-8. Three loadings of Sigma Aldrich ferric oxide (<5 µm, 96%) were evaluated for the precipitation of arsenic and molybdenum in two groundwaters from AP-1 (DGWC-69 and DGWC-68A).

- Ferrous sulfide. Ferrous sulfide (FeS) is insoluble in water and has a pH of 9.5-12.5. Three loadings of Sigma Aldrich ferrous sulfide technical grade were evaluated for the precipitation of arsenic and molybdenum in two groundwaters from AP-1 (DGWC-69 and DGWC-68A).

2.2 Bench-scale Groundwater Collection

Groundwater samples were collected from the five locations. With 1 L reaction vessels for each treatment, about 5 gallons of each of the five groundwaters were required. The samples were delivered to the TSI under a chain of custody. Samples from DGWC-20, DGWC-48, DGWC-68A, DGWC-19, DGWC-47 and DGWC-69 were delivered to TSI on 1/28/22 and stored in refrigerators. The samples from DGWC-20, DGWC-48, and DGWC-69 were transferred to 1.3-

gallon jugs while purging with nitrogen gas. The sample from AP-1 DCWC-68A was received in 1-gallon jugs. Golder/WSP decided not to test the DGWC-19 and DGWC-47 groundwaters. The groundwater sample from AP-1 DGWC-40 was received on 2/10/22.

2.3 Baseline characterization

At the beginning of the bench-scale treatability test, the baseline characterization was performed to verify contaminant concentrations in the samples. The groundwater samples were homogenized to the extent possible. The homogenized groundwater samples were analyzed for total cobalt, arsenic, molybdenum, beryllium, lithium, selenium, iron, potassium, manganese, magnesium, and sodium (metals chosen based upon site characteristics); dissolved arsenic, beryllium, cobalt, molybdenum, lithium, and selenium (based upon site characteristics); dissolved organic carbon (DOC), and sulfate, by the Eurofins Lancaster Laboratories and for pH, ORP, dissolved oxygen (DO), bicarbonate alkalinity, total hardness, ferrous iron, and sulfide by TSI using calibrated meters and Hach procedures.

2.4 Titration Tests

Alkaline titrations were conducted to determine the potassium bicarbonate and sodium bicarbonate testing dosages. An alkaline titration test was completed to determine the pH resulting from 0, 1, 2, 5, and 10 g/L additions of potassium bicarbonate and sodium bicarbonate reagent dosages. The total suspended solids (TSS) were determined by weighing the 0.2 μm nylon filter before filtering the samples and after filtration and drying in a 105 ^{o}C oven. The weight of the TSS collected was divided by the volume of groundwater that passed through the filters.

2.5 Reagent Screening

The purpose of this step was to select the most appropriate reagent for each of the nine groundwater samples.

The reagent dosages were determined from the baseline characterization and titration. For each sample, a total of 12 to 13 reactors were set up for each site. The studies were prepared in an anerobic chamber with a 92% nitrogen, 5% carbon dioxide, and 3% hydrogen atmosphere to maintain the redox state of the groundwater.

AP-1 (Arsenic and Molybdenum) DGWC-69 and DGWC-68A

- Control
- Potassium Bicarbonate: 3 dosages (2, 5, and 10 g/L)
- Calcium Oxide: 3 dosages (1, 2, and 5 g/L)
- Ferric Oxide: 3 Dosages (0.5, 1.0, and 2.0 g/L)
- Ferrous Sulfide: 3 Dosages (0.5, 1.0, and 2.0 g/L)

AP-1 (Cobalt) DGWC-40

- Control
- Potassium Bicarbonate: 4 dosages (1, 2, 5, and 10 g/L)
- Sodium Bicarbonate: 4 dosages (1, 2, 5, and 10 g/L)
- ZVI: 3 Dosages (0.5, 1.0, and 1.5 g/L)

AP-2 and 3/4 (Arsenic, Beryllium, Cobalt, Lithium, and Selenium) DGWC-48 and DGWC-20

- Control
- Potassium Bicarbonate: 4 dosages (1, 2, 5, and 10 g/L)
- Sodium Bicarbonate: 4 dosages (1, 2, 5, and 10 g/L)
- ZVI: 3 Dosages (0.5, 1.0, and 1.5 g/L)

All containers were mixed and turned periodically for seven days. Groundwater samples (the supernatants in the reactors) were analyzed for:

- total arsenic, beryllium, cobalt, molybdenum, and selenium (based upon contaminants of concern for each site);
- total lithium for DGWC-48 and DGWC-20
- total iron, potassium, manganese, magnesium, and sodium
- dissolved arsenic, beryllium, cobalt, lithium, molybdenum, and selenium (based upon contaminants of concern for each site). The samples were filtered through 0.2 µm nylon filters and the filtrates were divided into bottles for DOC and metals.
- dissolved lithium for DGWC-48 and DGWC-20
- dissolved organic carbon (DOC)
- sulfate

Eurofins Lancaster Laboratories of Lancaster PA conducted the metals, DOC, and sulfate analyses. The pH, ORP, dissolved oxygen (DO), bicarbonate alkalinity, total hardness, ferrous iron, and sulfide were conducted by TSI using calibrated meters and Hach procedures. The estimated sample volumes for the initial characterization, screening, and rebound tests are shown in Table 1. The volumes were adjusted to account for required dilutions and volumes of water available.

3.0 AP-1

3.1 AP-1 Initial Characterization Results

Table 2 has the results of the field parameters, Hach tests, metals, DOC, and sulfate results for the three groundwater samples in AP-1.

AP-1 DGWC-69. The pH ranged from 6.4 to 7.3 with a moderate bicarbonate alkalinity of 60 mg/L CaCO3. There was a positive ORP (167 mV) and moderately high dissolved oxygen (9.8 mg/L). The TSS was 8.4 mg/L with a hardness 40 mg/L, 0.01 mg/L ferrous iron, and no sulfide. The pH increased from 6.4 to 7.8 SU with 1 g/L sodium bicarbonate and increased to 8.3 with 10 g/L. The pH increased from 7.1 to 8.2 SU with 1 g/L potassium bicarbonate and to 8.4 with 10 g/L. This groundwater has low 6 mg/L sulfate and 1.5 mg/L DOC. Total arsenic was 0.022 mg/L and dissolved arsenic was 0.020 mg/L; both exceeded the GA GWPS. Molybdenum was detected but below 0.006 mg/L and was below the GA GWPS. The groundwater contained 0.13 mg/L total iron, 2.3 mg/L total magnesium, 0.027 mg/L total manganese, 2.4 mg/L potassium, and 9.5 mg/L sodium.

AP-1 DGWC-68A. The pH ranged from 6.3 to 6.8 with a moderate bicarbonate alkalinity of 200 mg/L CaCO3. There was a positive ORP (224 mV) and moderately high dissolved oxygen (10.8 mg/L). The TSS was 13.8 mg/L with a hardness 120 mg/L, 0.01 mg/L ferrous iron, and no sulfide. The pH increased from 6.8 to 7.5 SU with 1 g/L sodium bicarbonate and increased to 8.2 with 10 g/L. The pH increased from 6.6 to 7.2 SU with 1 g/L potassium bicarbonate and to 8.2 with 10 g/L. This groundwater has moderate 78 mg/L sulfate and 1.1 mg/L DOC. Total arsenic and dissolved arsenic not detected. Molybdenum was relatively high with 0.22 g/L total and 0.20 mg/L dissolved; both exceeded the GA GWPS of 0.10 mg/L. The groundwater contained 0.049 mg/L total iron, 18 mg/L total magnesium, 0.096 mg/L total manganese, 3.8 mg/L potassium, and 11 mg/L sodium.

AP-1 DGWC-40. The initial pH was 4.8 with a bicarbonate alkalinity of 5 mg/L CaCO3. There was a positive ORP (226 mV) and moderate dissolved oxygen (5.5 mg/L). The TSS was 0.8 mg/L with a hardness of 240 mg/L, 0.28 mg/L ferrous iron, and no sulfide. The pH increased from 4.8 to 6.9 SU with 1 g/L sodium bicarbonate and increased to 8.0 with 10 g/L. The pH increased from 4.8 to 6.9 SU with 1 g/L potassium bicarbonate and to 7.9 with 10 g/L. This groundwater has moderate 190 mg/L sulfate and no detectable DOC. Total cobalt was detected at 0.039 mg/L and dissolved cobalt at 0.038 mg/L; both were slightly above the GA GWPS of 0.032 mg/L. The groundwater contained 0.039 mg/L total iron, 19 mg/L total magnesium, 3.4 mg/L total manganese, 6.1 mg/L potassium, and 19 mg/L sodium.

3.2 AP-1 Testing Results

Well DGWC-69 Summary. Table 3 has the field parameters and ELLE results for this groundwater.

On Day 0, the control pH was 6.6 and increased to 7.7 for the 2 g/L loading of potassium bicarbonate. The highest dosage of 10g/L potassium buffers had a pH of 8.5 on Day 0. On Day 7, the pH for the potassium bicarbonate treatments ranged from 7.8 to 8.4, 11.9 to 12.1 for the calcium oxide treatments, from 7.1 to 8.7 for the iron oxide, and from 6.2 to 6.8 for the ferrous sulfide treatments. The ORPS were positive (except for the CaO treatments where the very high pHs caused negative ORPs) and ranged from -76 to 247 mV. DO ranged from 4.4 to 8.0 mg/L. The total suspended solids ranged from 0 to 2,673 mg/L. The treatments with 5 g/L KHCO3, 1-5 g/L CaO, 0.5-2 g/L Fe2O3, and 0.5-2.0 FeS had elevated TSS. Bicarbonate alkalinity was moderate in the control (35 mg/L as CaCO3) and increased with bicarbonate additions. Phenolphthalein alkalinity was very high in the CaO treatments due to the extreme pHs. The hardness ranged from 40 to 1,820 mg/L as CaCO3. Only 1 and 2 g/L FeS treatments had a little ferrous iron. Sulfide was low (0.01 to 0.35 mg/L).

Sulfate ranged from 8.4 to 25 mg/L. Little DOC was detected; the higher dosages of buffer had the most, 2.1 and 4.9 mg/L. Total arsenic ranged from 0.0065 to 0.025 mg/L with the following treatments below the GA GWPS: 1 and 2 g/L FeS. Dissolved arsenic ranged from 0.00074 to 0.024 mg/L with the following treatments below the GA GWSP: 1 g/L CaO, 2 g/L CaO, 5 g/L CaO, 0.5 g/L Fe2O3, 1 g/L Fe2O3, 2 g/L Fe2O3, 0.5 g/L FeS, 1.0 g/L FeS, and 2 g/L FeS. Total molybdenum ranged from 0.0034 to 0.010 mg/L; all were below the GA GWPS. Dissolved molybdenum ranged from 0.00017 to 0.0057 mg/L with dissolved molybdenum below the GA GWPS in all treatments. Iron increased in almost all treatments except for the KHCO3 treatments. Total magnesium did not change much except for the CaO treatments. Total manganese increased in all treatments. Potassium increased with the increasing loadings of potassium bicarbonate. Sodium ranged from 9.1 to 19 mg/L.

The CaO, Fe2O3, and FeS treatments showed significant reductions in dissolved arsenic with all of these treatments reducing dissolved arsenic below the GA GWPS. The Fe2O3 and the highest dosage of FeS reduced the dissolved molybdenum by more 50% and all treatments including the control were below the GA GWPS for molybdenum of 0.10 mg/L.

Well DGWC-68A Summary. Table 4 has the field parameters and ELLE results for this groundwater. On Day 0, the control pH was 6.6 and increased to 7.7 for the 2 g/L loading of potassium bicarbonate. The highest dosage of 10g/L potassium buffers had a pH of 8.5 on Day 7. The pH drifted down slightly over the 7-day incubation period. By Day 7, the pHs ranged from 11.6 to 11.9 for the calcium oxide treatments, from 6.7 to 8.1 for the iron oxide, and from 6.4 to 6.5 for the ferrous sulfide treatments. The ORPS were positive (except for the CaO treatments where the very high pHs caused negative ORPs) and ranged from -38 to 277 mV. DO ranged from 3.5 to 9.1 mg/L. The total suspended solids ranged from 0.9 to 2,530 mg/L. The treatments with 1-5 g/L CaO, 0.5-2 g/L Fe2O3, and 0.5-2.0 FeS had elevated TSS. Bicarbonate alkalinity was moderate in the control (180 mg/L as CaCO3) and increased with bicarbonate additions. Phenolphthalein alkalinity was very high in the CaO treatments due to the extreme pHs. The hardness ranged from 120 to 1,700 mg/L as CaCO3. None of the treatments had much ferrous iron. Sulfide was low (0.01 to 0.10 mg/L).

Sulfate ranged from 33 to 54 mg/L. Little DOC was detected; the highest dosage of buffer had the most, 7.8 mg/L. Total arsenic ranged from <0.00068 to 0.0024 mg/L with all treatments below the GA GWPS. Dissolved arsenic was not detected. Total molybdenum ranged from 0.026 to 0.21 mg/L. Dissolved molybdenum ranged from 0.031 to 0.21 mg/L with all measurements higher than the Control Day 0. The following treatments were less than the GA GWPS for dissolved molybdenum on Day 7: 1 g/L Fe2O3, 2 g/L Fe2O3, and 2 g/L FeS. Iron increased in almost all treatments except for the KHCO3 treatments. Total magnesium ranged from 10 to 30 mg/L and was highest in the CaO treatments. Total manganese increased in all treatments. Potassium increased with the increasing loadings of potassium bicarbonate. Sodium ranged from 9.1 to 19 mg/L.

Arsenic was below detection limits except for total arsenic in the 5 g/L CaO and 0.5 to 2.0 g/L Fe2O3 treatments. The higher dosages of Fe2O3 and the highest dosage of FeS reduced the dissolved molybdenum to below the GA GWPS.

Well DGWC-40 Summary. Table 5 has the field parameters and ELLE results for this groundwater. The control pH was 4.8 on Day 0 and increased to between 6.8 and 6.9 for the lowest loading of potassium and sodium bicarbonate with the highest dosage of buffers having pHs of 8.0 to 8.1. The pHs were generally slightly lower (-1.1 to 0.5 SU). The pHs in the ZVI treatments ranged from 5.7 to 6.1 SU on Day 7. The ORPS were positive (except for the highest ZVI loading) and ranged from -335 to 256 mV. DO ranged from 1.4 to 5.4 mg/L. There were not much total suspended solids (0 to 8.2 mg/L) except in the treatments with ZVI (likely due to carryover of the ZVI). Bicarbonate alkalinity was low in the control and increased with potassium and sodium bicarbonate additions. The hardness ranged from 180 to 240 mg/L. Only the control (0.14 mg/L) and the ZVI treatments (0.11 to 9.0 mg/L) had much ferrous iron. Sulfide was low (0.02 to 0.17 mg/L).

Sulfate ranged from 210 to 230 mg/L. Little DOC was detected (0.52 to 3.2 mg/L). Total Co ranged from 0.035 to 0.044 mg/L with the GA GWPS of 0.032 mg/L for cobalt. Only the 1.5 g/L ZVI showed 34.2% reduction to below the GA GWPS. Iron increased in almost all treatments from the IC but the most iron was found in the ZVI treatments. Magnesium ranged from 18 to 20 mg/L and manganese from 3.1 to 4.0; neither of these metals were impacted by the bicarbonate or ZVI treatments. Potassium and sodium increased with the increasing loadings of potassium and sodium bicarbonate.

Only the 1.5 g/L ZVI treatment showed removal of dissolved cobalt to below the GA GWPS with a 34.2% reduction.

3.3 AP-1 Conclusions

Table 6 summarizes the percent removals from the initial characterization samples or the Control Day 0 for the dissolved metals of concern across the various groundwaters. Compounds highlighted in green were reduced to below the GA GWPS by the treatments.

Arsenic. In the AP-1 DGWC-69 all treatments with calcium oxide, ferric oxide, and ferrous sulfide reduced dissolved arsenic to below the GA GWPS but not the potassium bicarbonate treatments. The AP-1 DGWC-68A had no detectable dissolved arsenic.

Cobalt. The GA GWPS for cobalt is 0.032 mg/L. Only the 1.5 g/L ZVI treatment reduced dissolved Co in the AP-1 DGWC-40 groundwater to below the GA GWPS.

Molybdenum. All of the treatments, including the control, were below the GA GWPS for molybdenum in the DGWC-69 groundwater treatments. Ferrous oxide at 1 and 2 g/L loadings and the highest loading of ferrous sulfide was effective in reducing dissolved Mo in the DGWC-68A groundwater to below the GA GWPS.

Overall Conclusions. The calcium oxide, ferric oxide, and ferrous sulfide reduced arsenic to below the GA GWPS in the DGWC-69 groundwater. Only the highest loading of ZVI reduced cobalt in the AP-1 DGWC-40 groundwater to below the GA GWPS. The higher dosages of ferric oxide and ferrous sulfide were effective for dissolved molybdenum in the DGWC-68A groundwater. The AP-1 DGWC-69 groundwater did not have dissolved arsenic above the GA GWPS.

4.0 AP-2 and 3/4

4.1 AP-2 and 3/4 Initial Characterization Results

Table 7 has the results of the field parameters, Hach tests, metals, DOC, and sulfate results for the two groundwater samples in AP-2 and 3/4.

Well DGWC-48. The pH ranged from 4.0 to 4.5 with no bicarbonate alkalinity. There was a positive ORP (338 mV) and moderately high dissolved oxygen (11.2 mg/L). The TSS was 0 mg/L with a hardness 20 mg/L, 2.52 mg/L ferrous iron, and no sulfide. The pH increased from 4.5 to 7.5 SU with 1 g/L sodium bicarbonate and increased to 8.2 with 10 g/L. The pH increased from 4.0 to 7.1 SU with 1 g/L potassium bicarbonate and to 8.2 with 10 g/L. This groundwater has high 520 mg/L sulfate and only 0.97 mg/L DOC. Total arsenic and dissolved arsenic were non-detect. Beryllium ranged from 0.0079 to 0.0086 mg/L which were above the GA GWPS. Cobalt was found at 0.33 to 0.35 mg/L above the GA GWPS of 0.032 mg/L. Lithium was found at 0.10 to 0.11 mg/L above the GA GWPS of 0.040 mg/L. No selenium was detected. The groundwater contained 3.9 mg/L total iron, 16 mg/L total magnesium, 13 mg/L total manganese, 14 mg/L potassium, and 23 mg/L sodium.

Well DGWC-20. The pH ranged from 4.4 to 5.0 with little bicarbonate alkalinity of <5 mg/L CaCO3. There was a positive ORP (423 mV) and moderately high dissolved oxygen (9.6 mg/L). The TSS was 6.6 mg/L with no hardness, 0.07 mg/L ferrous iron, and no sulfide. The pH increased from 5.0 to 7.3 SU with 1 g/L sodium bicarbonate and increased to 8.1 with 10 g/L. The pH increased from 4.5 to 7.0 SU with 1 g/L potassium bicarbonate and to 8.1 with 10 g/L. This groundwater has moderate 190 mg/L sulfate and no detectable DOC. Total cobalt was detected at 0.039 mg/L and dissolved cobalt at 0.038 mg/L. The groundwater was slightly hard with 0.039 mg/L total iron, 19 mg/L total magnesium, 3.4 mg/L total manganese, 6.1 mg/L potassium, and 19 mg/L sodium. has high 490 mg/L sulfate and only 0.71 mg/L DOC. Total arsenic and dissolved arsenic were 0.014 to 0.016 mg/L; above the GA GWPS. Beryllium ranged from 0.0073 to 0.0083 mg/L ; above the GA GWPS. Cobalt was found at 0.96 to 1.0 mg/L; above the GA GWPS. Lithium and selenium were not detected. The groundwater contained 0.12 mg/L total iron, 26 mg/L total magnesium, 42 mg/L total manganese, 14 mg/L potassium, and 24 mg/L sodium.

4.2 AP-2 and 3/4 Testing Results

Well DGWC-48 Summary. Table 8 has the field parameters and ELLE results for this groundwater. On Day 0, the control pH was 4.2 and increased to 6.9 for the lowest 1 g/L loading of potassium bicarbonate and to 7.1 for the lowest 1 g/L loading of sodium bicarbonate. The highest dosage of buffers had pHs of 7.9-8.0 on Day 7. The pH in the ZVI treatments on Day 7 ranged 5.0 to 6.4 SU. The ORPS on Day 7 were positive and ranged from 59 to 351 mV. DO ranged from 3.4 to 8.8 mg/L. The total suspended solids ranged from 11 to 150 mg/L. The treatments with 10 g/L KHCO3, 10 g/L NaHCO3 and ZVI had elevated TSS. Bicarbonate alkalinity was low in the control and ZVI treatments (5-10 mg/L CaCO3) and increased with bicarbonate additions. The hardness ranged from <20 to 220 mg/L with higher readings at the higher buffer loadings. Only control, 10 g/L sodium bicarbonate and the ZVI treatments had mor than 0.15 mg/L ferrous iron. Sulfide was low (0.02 to 0.09 mg/L).

Sulfate ranged from 330 to 400 mg/L. Little DOC was detected (0.79 to 11 mg/L); the highest dosage of buffer had the most, 9.0 and 11 mg/L. Total and dissolved arsenic were not detected except total arsenic in in the treatments with ZVI; dissolved As were well below the GA GWPS in all treatments. Total beryllium ranged from 0.0050 to 0.0073 mg/L; all samples were above the GA GWPS of 0.004 mg/L. Dissolved beryllium ranged from 0.00085 to 0.0071 mg/L with only the Control and ZVI treatments exceeding the GA GWPS. Total cobalt was moderate ranging from 0.17 to 0.34 mg/L. The following treatments showed more than 50% reductions in dissolved Co: 10 g/L KHCO3 and 10 g/L NaHCO3 with the no treatments decreasing the cobalt concentrations to below the GA GWPS. Total lithium ranged from 0.11 to 0.12 mg/L and dissolved lithium from 0.099 to 0.13 mg/L. None of the treatments reduced dissolved Li below the GA GWPS. Selenate and selenite were spiked into the AP-2 and 3/4 DGWC-48 groundwater. On Day 7, total Se ranged from 0.17 to 0.52 mg/L and dissolved selenium of 0.14 to 0.46 mg/L. No treatment reached the GA GWPS of 0.050 mg/L. Iron decreased in almost all treatments from the IC except for the ZVI treatments. Total magnesium did not change much ranging from 15 to 16 mg/L. Total manganese ranged from 5.3 to 14 mg/L and was reduced by >50% only in the 10 g/L NaHCO3 treatments. Potassium and sodium increased with the increasing loadings of potassium and sodium bicarbonate.,

The 1-10 g/L of both the potassium and sodium bicarbonate treatments showed significant (>50%) reductions in dissolved beryllium to below the GA GWPS. No treatment resulted in decreases in dissolved cobalt to below the GA GWPS. None of the treatments reduced the dissolved lithium to below the GA GWPS. Only the highest loading of 1.5 g/L ZVI removed more than 50% of the dissolved selenium from the spiked Control, but no treatment reached the GA GWPS for dissolved selenium. Arsenic was below the GA GWPS in all treatments.

Well DGWC-20 Summary. Table 9 has the field parameters and ELLE results for this groundwater. The total cobalt, selenium, iron, magnesium, manganese, potassium, and sodium in the 2 g/L KHCO3 treatment are low with the dissolved cobalt and selenium being considerably higher. The 5 and 10 g/L KHCO3 treatments were reanalyzed and the tables have been updated.

The control pH at Day 0 was 4.5 SU and increased to 6.8 for the lowest loading of potassium bicarbonate and to 7.7 for the lowest loading of sodium bicarbonate. The highest dosage of buffers had pHs of 7.6-7.7 on Day 7. The ORPS were positive and ranged from 163 to 297 mV. DO ranged from 6.7 to 7.8 mg/L. The total suspended solids ranged from 2.6 to 460 mg/L. The treatments with 10 g/L KHCO3, 5 g/L NaHCO3, 10 g/L NaHCO3 and 1.5 g/L ZVI had elevated TSS above 100 mg/L. Bicarbonate alkalinity was low in the control and increased with bicarbonate additions. The hardness ranged from <20 to 460 mg/L. Little ferrous iron was detected (0.03 to 0.45 mg/L). Sulfide was low (0 to 0.02 mg/L).

Sulfate ranged from 480 to 600 mg/L. Little DOC was detected; the highest dosage of buffer had the most, 4.8 and 10 mg/L. Total arsenic ranged from <0.00068 to 0.036 mg/L with the 2 g/L KHCO3 treatment having no detectable arsenic. Dissolved arsenic ranged from <0.00070 to 0.019 mg/L with the 1, 2, 5, and 10 g/L KHCO3, and 1 and 2 g/L NaHCO3 treatments having no detectable dissolved arsenic and the 5 and 10 g/L NaHCO3 treatments also having dissolved arsenic below the GA GWPS. Total beryllium ranged from <0.00012 to 0.0011 mg/L; the 2 g/L KHCO3 treatment was below the GA GWPS. Dissolved beryllium ranged from 0.00022 to 0.0099 mg/L with all KHCO3 and NaHCO3 treatments below the GA GWPS. Total cobalt was moderate and ranged from <0.00016 to 1.1 mg/L but none of the treatments reached the GA GWPS. The following treatments showed more than 50% reductions in dissolved Co: 5 g/L KHCO3, 10 g/L KHCO3, 5 g/L NaHCO3, and 10 g/L NaHCO3 but none met the GA GWPS. Total lithium was not detected. Dissolved Li ranged from 0.014 to 0.023 mg/L in the KHCO3 and NaHCO3 treatments and were higher than the control. Lithium was below the GA GWPS in all treatments. Selenate and selenite were spiked into the AP-2 and 3/4 DGWC-20 groundwater. Total Se ranged from <0.00028 to 0.50 mg/L and dissolved Se from 0.22 to 0.49 mg/L. Only the 2 g/L KHCO3 treatment met the GA GWPS for selenium. No treatments reduced the dissolved Se to the GA GWPS however the ZVI treatments did show lower dissolved Se to 0.26 to 0.30 mg/L. Total iron increased in many treatments especially for the ZVI treatments. Total magnesium did not change much except for the 2 g/L KHCO3 treatment. Total manganese was reduced by >50% in the 2 g/L KHCO3, 5 g/L KHCO3, 5 g/L NaHCO3, and 10 g/L NaHCO3 treatments. Potassium and sodium increased with the increasing loadings of potassium and sodium bicarbonate.,

The 1-10 g/L of both the potassium and sodium bicarbonate treatments showed significant reductions in dissolved arsenic and dissolved beryllium. The higher dosages of 5-10 g/L KHCO3 and 5-10 g/L NaHCO3 reduced the dissolved cobalt by more than 50% but not to below the GA GWPS. Total lithium was not detected and dissolved lithium was low. Only the ZVI treatments seemed to impact the dissolved selenium and then by only 25 to 35% reductions with no treatment reaching the GA GWPS.

4.3 AP-2 and 3/4 Conclusions

Table 10 summarizes the percent removals from the initial characterization samples or the Control Day 0 for the dissolved metals of concern across the various treatments and groundwaters. Compounds highlighted in green were reduced to below the GA GWPS by the treatments. Compounds highlighted in yellow were reduced by more than 50%. Lithium was not detected in the AP-2 and 3/4 DGWC-20 IC groundwater; the percent removals highlighted in gray were based upon the dissolved lithium detection limit in the IC samples.

Arsenic. Dissolved As was not detected in AP-2 and 3/4 well DGWC-48. Dissolved As in well DGWC-20 was reduced to below the GA GWPS in all potassium and sodium bicarbonate treatments.

Beryllium. In the AP-2 and 3/4 DGWC-48 and 20 groundwaters, all potassium and sodium bicarbonate levels reduced dissolved Be to below the GA GWPS but the ZVI treatments did not.

Cobalt. The GA GWPS for cobalt is 0.032 mg/L. No treatment reduced the dissolved cobalt to below the GA GWPS in either the AP234 DGWC-48 or DGWC-20 groundwaters.

Lithium. None of the treatments were effective against dissolved lithium in the AP-2 and 3/4 DGWC-48 groundwater. There were only trace levels of dissolved lithium in the AP-2 and 3/4 DGWC-20 groundwater.

Selenium. Selenium was not detected in either the AP-2 and 3/4 DGWC-48 or DGWC-20 initial characterization samples. These groundwaters were spiked with a mixture of sodium selenite (Se^{4+}) and sodium selenate (Se^{6+}) to concentrations of 0.32 to 0.40. mg/L. None of the treatments reduced dissolved Se to below the GA GWPS. Only the highest (1.5 g/L) ZVI reduced dissolved Se from the Control 0 by more than 50% in the AP-2 and 3/4 DGWC-48 groundwater and no treatment reached the 50% threshold in the AP-2 and 3/4 DGWC-20 groundwater.

Overall Conclusions. Addition of relatively high dosages of potassium or sodium bicarbonate buffers were generally able to reach the GA GWPS for arsenic sand beryllium and reduce cobalt. Lithium was not effectively treated in the AP-2 and 3/4 DGWC-48 groundwaters. Only the highest dosage of ZVI appeared to reduce selenium by more than 50% in one of the two groundwaters with selenium and no treatment reached the GA GWPS of 0.050 mg/L.

Please let me know if you have any questions about this final report.

Sincerely,
TERRA SYSTEMS, INC.

Michael D Lee, PhD.

Michael D. Lee, Ph.D.
Vice-President Research and Development

Table 1
Estimated Sample Volumes and Preservatives

Analysis	Matrix	Volume mL per bottle	Preservative
Total As, Be, Co, Mo, Se, Fe, K, Mn, Mg, and Na (metals based upon contaminants at each site)	Aqueous	200	HNO_3
Total Li (AP 234 only)	Aqueous	200	HNO_3
Filtered As, Be, Co, Mo, and Se (metals based upon contaminants at each site)	Aqueous	200	HNO_3
Filtered Li (AP 234 only)	Aqueous	200	HNO_3
DOC	Aqueous	45	H_3PO_4
Sulfate	Aqueous	50	None
Total		895	

Table 2
Plant McDonough AP-1 Initial Characterization Field and Hach Parameters

Field Parameters					
Well		GA GWPS	AP-1 DGWC-69	AP-1 DGWC-68A	AP-1 DGWC-40
pH	SU		7.3	6.3	
ORP	mV		167	224	226
DO	mg/L		9.8	10.8	5.5
TSS	mg/L		8.4	13.8	0.8
Bicarbonate Alkalinity as CaCO3	mg/L		60	200	5
Hardness as CaCO3	mg/L		40	120	240
Ferrous Iron	mg/L		0.01	0.01	0.28
Sulfide	mg/L		0	0	0
Sodium Hydroxide Titrations					
g/L NaHCO3	pH				
0			6.4	6.8	4.8
1			7.8	7.5	6.9
2			8.1	7.8	7.3
5			8.2	8.1	7.7
10			8.3	8.2	8.0
Potassium Hydroxide Titrations					
g/L KHCO3					
0			7.1	6.6	4.8
1			8.2	7.2	6.9
2			8.4	7.6	7.2
5			8.4	8.0	7.7
10			8.4	8.2	7.9
Sulfate	mg/L		6	78	190
Dissolved Organic Carbon	mg/L		1.5	1.1	<0.5
Total Arsenic	mg/L	0.010	**0.022**	<0.00068	
Dissolved Arsenic	mg/L	0.010	**0.020**	<0.00068	
Total Cobalt	mg/L	0.032			**0.039**
Dissolved Cobalt	mg/L	0.032			**0.038**
Total Molybdenum	mg/L	0.10	0.0048	**0.22**	
Dissolved Molybdenum	mg/L	0.10	0.0058	**0.20**	
Total Iron	mg/L		0.13	0.049 J	0.039 J
Total Magnesium	mg/L		2.3	18	19
Total Manganese	mg/L		0.027	0.096	3.4
Total Potassium	mg/L		2.4	3.8	6.1
Total Sodium	mg/L		9.5	11	19

0.010 GA GWPS = Georgia Groundwater Performance Standard

Table 3
AP-1 DGWC-69 Treatability Results

		GA GWPS	IC	Control	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	1 g/L CaO	2 g/L CaO	5 g/L CaO	0.5 g/L Fe2O3	1.0 g/L Fe2O3	2.0 g/L Fe2O3	0.5 g/L FeS	1.0 g/L FeS	2.0 g/L FeS
Day				0	0	0	0	0	0	0	0	0	0	0	0	0
pH	SU			6.6	7.7	8.3	8.5	12.2	12.2	12.0	7.8	7.9	7.1	7.0	6.7	6.9
Day				7	7	7	7	7	7	7	7	7	7	7	7	7
pH	SU		7.3	6.8	7.8	8.1	8.4	11.9	12.0	12.1	8.7	7.7	7.1	6.8	6.5	6.2
ORP	mV		167	191	200	200	206	-76	-75	-60	168	214	233	247	214	108
DO	mg/L		9.8	7.1	7.0	5.7	6.4	7.7	6.6	5.4	6.9	8.0	6.9	4.9	5.2	4.4
TSS	mg/L		8.4	0	1.7	286	12	330	712	2673	265	397	945	234	763	1415
Phenolphthalein Alkalinity as CaCO3	mg/L							1180	9440	11800						
Bicarbonate Alkalinity as CaCO3	mg/L		60	35	1180	2360	4720	13580	50600	<5900	40	200	120	50	60	40
Hardness as CaCO3	mg/L		40	40	40	40	40	200	1480	1820	60	80	60	60	40	40
Ferrous Iron	mg/L		0.01	<0.01	<0.01	<0.01	<0.01	0.05	0.04	<0.01	<0.02	<0.05	<0.05	<0.02	0.35	0.90
Sulfide	mg/L		0	0.03	0.03	0.03	0.05	0.03	0.01	0.06	0.04	0.05	0.02	0.12	0.35	0.15
ELLE Results																
Sulfate	mg/L		6	8.4	9.6	16	18	8.6	16	<15	9.0	9.4	10	11	14	25
Dissolved Organic Carbon	mg/L		1.5	0.68	1.4	2.1	4.9	2.6	0.73	0.79	0.66	1.3	0.93	1.2	0.88	1.4
Total Arsenic	mg/L	0.010	**0.022**	**0.023**	**0.024**	**0.025**	**0.021**	**0.018**	**0.023**	**0.016**	**0.020**	**0.023**	**0.021**	**0.013**	0.0065	0.0086
Dissolved Arsenic	mg/L	0.010	**0.020**	**0.019**	**0.021**	**0.024**	**0.023**	<0.00070	<0.00070	<0.00070	<0.00070	0.0014	<0.00070	0.0018	0.00074	0.0010
Total Molybdenum	mg/L	0.10	0.0048	0.0050	0.0050	0.0053	0.0051	0.0053	0.0051	0.0054	0.0080	0.0096	0.0092	0.0043	0.0035	0.0034
Dissolved Molybdenum	mg/L	0.10	0.0058	0.0050	0.0049	0.0050	0.0049	0.0057	0.0047	0.0040	0.00025	0.0013	0.00017	0.0045	0.0035	0.0024
Total Iron	mg/L		0.13	<0.020	0.070	0.052	0.055	**0.41**	**0.83**	1.2	**190**	**280**	**440**	**16**	**18**	**180**
Total Magnesium	mg/L		2.3	2.1	2.2	2.2	2.1	3.4	6.3	12	2.2	2.4	2.3	2.2	2.1	2.8
Total Manganese	mg/L		0.027	0.0092	0.049	0.049	0.073	0.087	0.047	0.084	0.11	0.14	0.20	0.11	0.097	0.23
Total Potassium	mg/L		2.4	2.5	740	2000	3800	3.7	3.7	3.9	4.4	2.6	2.6	2.7	2.2	2.3
Total Sodium	mg/L		9.5	9.1	12	15	19	12	12	10	9.4	9.9	15	11	9.1	11

0.010 GA GWPS = Georgia Groundwater Performance Standard

0.039	J value. Compound detected above method detection limit but below method calibration limit.
28	Compound detected in blank

Table 4
AP-1 DGWC-68A Treatability Results

		GA GWPS	IC	Control	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	1 g/L CaO	2 g/L CaO	5 g/L CaO	0.5 g/L Fe2O3	1.0 g/L Fe2O3	2.0 g/L Fe2O3	0.5 g/L FeS	1.0 g/L FeS	2.0 g/L FeS
Day				0	0	0	0	0	0	0	0	0	0	0	0	0
pH	SU			6.6	7.7	8.3	8.5	12.2	12.2	12.0	7.8	7.9	7.1	7.0	6.7	6.9
Day				7	7	7	7	7	7	7	7	7	7	7	7	7
pH	SU		6.3	6.5	7.4	6.5	8.0	11.6	11.7	11.9	8.1	6.9	6.7	6.5	6.4	6.4
ORP	mV		224	249	240	268	251	4	-8	-38	243	258	259	277	266	215
DO	mg/L		10.8	9.1	8.4	7.7	7.9	9.0	8.6	8.2	9.1	8.5	8.6	5.8	4.2	3.5
TSS	mg/L		13.8	0.9	1.8	8.3	21	694	758	2530	133	357	236	152	388	248
Phenolphthalein Alkalinity as CaCO3	mg/L							7080	4720	11800						
Bicarbonate Alkalinity as CaCO3	mg/L		200	180	940	480	4240	<2360	<4720	<11800	240	240	240	240	200	160
Hardness as CaCO3	mg/L		120	220	220	220	120	800	1660	1700	220	220	220	220	200	200
Ferrous Iron	mg/L		0.01	0.12	0.13	0.15	0.01	0.02	0.06	0.03	0.04	0.06	0.06	0.06	0.04	0.06
Sulfide	mg/L		0	0.02	0.01	0.02	<0.01	0.02	<0.01	0.04	0.03	<0.01	<0.01	0.02	0.01	0.10
ELLE Results																
Sulfate	mg/L		78	39	40	37	49	34	34	33	38	38	40	40	45	54
Dissolved Organic Carbon	mg/L		1.1	0.94	1.2	0.89	7.8	1.2	0.82	1.0	0.80	0.92	0.77	0.88	0.78	0.83
Total Arsenic	mg/L	0.010	<0.00068	<0.00068	<0.00068	<0.00068	<0.00068	<0.00068	<0.00068	0.0012	0.0013	0.0024	0.0023	<0.00068	<0.00068	<0.00068
Dissolved Arsenic	mg/L	0.010	<0.00068	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070
Total Molybdenum	mg/L	0.10	0.0048	**0.21**	**0.21**	**0.21**	**0.19**	**0.19**	**0.20**	**0.19**	**0.12**	0.099	0.026	**0.17**	**0.12**	0.088
Dissolved Molybdenum	mg/L	0.10	0.0058	**0.21**	**0.20**	**0.20**	**0.20**	**0.19**	**0.18**	**0.17**	**0.11**	0.079	0.031	**0.17**	**0.12**	0.097
Total Iron	mg/L		0.13	0.041	0.090	0.14	0.22	0.20	**0.59**	**1.6**	**44**	**110**	**78**	**44**	**86**	680
Total Magnesium	mg/L		2.3	18	17	18	18	10	21	30	19	19	19	19	19	20
Total Manganese	mg/L		0.027	0.083	0.084	0.088	0.039	0.055	0.11	0.17	0.10	0.12	0.10	0.18	0.25	0.66
Total Potassium	mg/L		2.4	4.0	810	4.2	3800	4.7	3.8	5.1	4.3	4.2	4.0	3.9	4.0	4.0
Total Sodium	mg/L		9.5	9.9	11	10	19	9.1	17	10	10	10	9.9	9.7	9.7	9.6

0.010 GA GWPS = Georgia Groundwater Performance Standard

0.039 J value. Compound detected above method detection limit but below method calibration limit.

28 Compound detected in blank

Table 5
AP-1 DGWC-40 Treatability Results

		GA GWPS	IC	Control	1 g/L KHCO3	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	1 g/L NaHCO3	2 g/L NaHCO3	5 g/L NaHCO3	10 g/L NaHCO3	0.5 g/L ZVI	1.0 g/L ZVI	1.5 g/L ZVI
Day				0	0	0	0	0	0	0	0	0	0	0	0
pH	SU			4.8	6.9	7.2	7.7	8.1	6.8	6.6	7.2	8.0	5.6	6.4	5.1
Day				7	7	7	7	7	7	7	7	7	7	7	7
pH	SU		4.6	4.6	6.5	7.1	7.7	8.0	6.3	7.7	7.3	7.9	6.1	5.7	6.0
ORP	mV		226	256	239	230	230	227	183	164	185	175	241	147	-335
DO	mg/L		5.5	4.9	4.2	4.9	4.8	4.8	5.0	5.3	4.9	4.5	5.4	4.3	1.4
TSS	mg/L		0.8	2.8	1.3	6.2	7.5	4.1	0	3.6	4.2	8.2	17	59	102
Bicarbonate Alkalinity as CaCO3	mg/L		5	0	420	600	1900	4180	640	2440	1140	4940	5	15	35
Hardness as CaCO3	mg/L		240	240	200	200	220	200	200	200	200	180	200	220	200
Ferrous Iron	mg/L		0.28	0.14	0.1	<0.01	0.05	0.07	0.08	0.04	<0.01	0.08	0.11	1.43	9.0
Sulfide	mg/L		0	0.02	0.05	0.05	0.05	0.15	0.03	0.07	0.05	0.17	0.05	0.05	0.05
ELLE Results															
Sulfate	mg/L		190	210	210	210	210	210	220	220	210	230	210	220	210
DOC	mg/L		<0.5	<0.5	2.1	0.96	1.3	3.2	0.9	1.7	1.0	1.9	0.52	0.56	<0.5
Total Cobalt	mg/L	0.032	**0.039**	**0.039**	**0.038**	**0.042**	**0.039**	**0.039**	**0.039**	**0.040**	**0.039**	**0.038**	**0.044**	**0.040**	**0.035**
Dissolved Cobalt	mg/L	0.032	**0.038**	**0.042**	**0.037**	**0.038**	**0.037**	**0.036**	**0.037**	**0.039**	**0.037**	**0.034**	**0.038**	**0.037**	**0.025**
Total Iron	mg/L		0.039	<0.023	0.2	0.096	0.086	0.25	0.14	0.059	0.15	0.44	20	54	100
Total Magnesium	mg/L		19	19	19	19	20	18	19	20	19	19	20	18	18
Total Manganese	mg/L		3.4	3.5	3.4	3.8	3.6	3.4	3.4	3.3	3.5	3.1	4	3.6	3.5
Total Potassium	mg/L		6.1	6.0	350	710	1900	3700	5.9	8.0	8.2	6.9	6.4	6.2	7.3
Total Sodium	mg/L		19	20	22	21	26	28	250	1400	590	2900	20	21	19

0.010 GA GWPS = Georgia Groundwater Performance Standard

28	Compound detected in blank

Table 6
AP-1 Percent Removal from Initial Characterization for Dissolved Metals

Well	Dis Metal	GA GWPS	IC/Con 0 Conc mg/L	% Rem from	Control	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	1 g/L CaO	2 g/L CaO	5 g/L CaO	0.5 g/L Fe2O3	1.0 g/L Fe2O3	2.0 g/L Fe2O3	0.5 g/L FeS	1.0 g/L FeS	2.0 g/L FeS
DGWC-69	As	0.010	**0.020**	% Rem from IC	5.0	-5.0	-20.0	-15.0	>96.5	>96.5	>96.5	>96.5	93.0	>96.5	91.0	96.3	95
	Mo	0.10	0.0058	% Rem from IC	13.8	15.5	13.8	15.5	1.7	19.0	31.0	95.7	77.6	97.1	22.4	39.7	58.6
DGWC-68A	As	0.010	<0.00068	% Rem from IC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Mo	0.10	0.0058/0.21	% Rem from Con 0	0.0	4.8	4.8	4.8	9.5	14.3	19.0	47.6	62.4	85.2	19.0	42.9	53.8
Well	**Dis Metal**	**GA GWPS**	**IC/Con 0 Conc mg/L**	**% Rem from IC**	**Control**	**1 g/L KHCO3**	**2 g/L KHCO3**	**5 g/L KHCO3**	**10 g/L KHCO3**	**1 g/L NaHCO3**	**2 g/L NaHCO3**	**5 g/L NaHCO3**	**10 g/L NaHCO3**	**0.5 g/L ZVI**	**1.0 g/L ZVI**	**1.5 g/L ZVI**	
DGWC-40	Co	0.032	**0.038**	% Rem from IC	-10.5	2.6	0.0	2.6	5.3	2.6	-2.6	2.6	10.5	0.0	2.6	34.2	

🟩 >96.5	Dissolved metal reduced to below GA GWPS
🟨 95.7	Dissolved metal reduced by more than 50%

Table 7
Plant McDonough AP-2 and 3/4 Initial Characterization Field and Hach Parameters

Well		GA GWPS	AP-2 and 3/4 DGWC-48	AP-2 and 3/4 DGWC-20
pH	SU		4.0	4.4
ORP	mV		388	423
DO	mg/L		11.2	9.6
TSS	mg/L		0	6.6
Bicarbonate Alkalinity as CaCO3	mg/L		0	<5
Hardness as CaCO3	mg/L		20	0
Ferrous Iron	mg/L		2.52	0.07
Sulfide	mg/L		0	0
Sodium Hydroxide Titrations				
g/L NaHCO3	pH			
0			4.5	5.0
1			7.5	7.3
2			7.8	7.7
5			8.1	8.0
10			8.2	8.1
Potassium Hydroxide Titrations				
g/L KHCO3				
0			4.0	4.5
1			7.1	7.0
2			7.6	7.4
5			8.0	7.9
10			8.2	8.1
Sulfate	mg/L		520	490
Dissolved Organic Carbon	mg/L		0.97 J	0.71 J
Total Arsenic	mg/L	0.010	<0.00068	**0.014**
Dissolved Arsenic	mg/L	0.010	<0.00068	**0.016**
Total Beryllium	mg/L	0.004	**0.0073**	**0.0079**
Dissolved Beryllium	mg/L	0.004	**0.0083**	**0.0086**
Total Cobalt	mg/L	0.032	**0.35**	**1.00**
Dissolved Cobalt	mg/L	0.032	**0.33**	**0.96**
Total Lithium	mg/L	0.040	**0.11**	<0.055
Dissolved Lithium	mg/L	0.040	**0.10**	<0.055
Total Selenium	mg/L	0.050	<0.00028	<0.00028
Dissolved Selenium	mg/L	0.050	<0.00028	<0.00028
Total Iron	mg/L		3.9	0.12
Total Magnesium	mg/L		16	26
Total Manganese	mg/L		13	42
Total Potassium	mg/L		14	14
Total Sodium	mg/L		23	24

0.010 GA GWPS = Georgia Groundwater Performance Standard

Table 8
AP-2 and 3/4 DGWC-48 Treatability Results

		GA GWPS	IC	Control	1 g/L KHCO3	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	1 g/L NaHCO3	2 g/L NaHCO3	5 g/L NaHCO3	10 g/L NaHCO3	0.5 g/L ZVI	1.0 g/L ZVI	1.5 g/L ZVI
Day				0	0	0	0	0	0	0	0	0	0	0	0
pH	SU			4.2	6.9	7.3	7.8	8.1	7.1	7.4	7.8	8.0	5.6	6.5	5.4
Day				7	7	7	7	7	7	7	7	7	7	7	7
pH	SU		4.0	5.8	6.9	7.3	7.8	8.0	7.2	7.4	7.7	7.9	6.4	5.1	5
ORP	mV		388	351	247	237	213	210	192	166	160	165	160	112	59
DO	mg/L		11.2	8.8	8.2	8.3	7.5	8.2	8.8	7.4	8.5	7.9	5.5	7.4	3.4
TSS	mg/L		0	97	12	13	12	118	16	11	27	120	22	67	150
Bicarbonate Alkalinity as CaCO3	mg/L		0	5	480	940	2120	4340	600	1180	2760	5300	10	5	5
Hardness as CaCO3	mg/L		20	<20	<20	<20	160	220	<20	<20	220	110	20	<20	220
Ferrous Iron	mg/L		2.52	0.32	0.12	0.04	<0.02	0.02	0.04	<0.02	0.02	0.10	0.15	<0.10	0.75
Sulfide	mg/L		0	0.01	0.04	0.05	0.03	0.03	0.04	0.07	0.02	0.02	0.04	0.06	0.09
ELLE Results															
Sulfate	mg/L		520	380	350	350	360	380	350	360	340	330	400	400	370
DOC	mg/L		0.97	1.1	1.1	1.4	1.8	9.0	1.2	1.5	2.4	11	0.81	0.85	0.79
Total Arsenic	mg/L	0.010	<0.00068	<0.00068	<0.00068	<0.00068	<0.00068	<0.00068	<0.00068	<0.00068	<0.00068	<0.0014	0.00085	0.0060	**0.0011**
Dissolved Arsenic	mg/L	0.010	<0.00068	<0.00070	<0.00070	<0.00070	<0.00070	<0.00068	<0.00070	<0.00070	<0.00070	<0.00068	<0.00070	<0.00070	<0.00070
Total Beryllium	mg/L	0.0040	**0.0073**	**0.0073**	**0.0072**	**0.0065**	**0.0073**	**0.0054**	**0.0060**	**0.0064**	**0.0060**	**0.0050**	**0.0067**	**0.0064**	**0.0052**
Dissolved Beryllium	mg/L	0.0040	**0.0083**	**0.0071**	0.0012	0.0017	0.0015	0.00085	0.0015	0.0023	0.0023	0.0026	**0.0068**	**0.0057**	**0.0046**
Total Cobalt	mg/L	0.032	**0.35**	**0.34**	**0.33**	**0.33**	**0.32**	**0.24**	**0.33**	**0.33**	**0.27**	**0.17**	**0.33**	**0.34**	**0.28**
Dissolved Cobalt	mg/L	0.032	**0.33**	**0.35**	**0.33**	**0.33**	**0.32**	**0.12**	**0.32**	**0.31**	**0.20**	**0.14**	**0.31**	**0.34**	**0.28**
Total Lithium	mg/L	0.040	**0.11**	**0.11**	**0.12**	**0.12**	**0.12**	**0.12**	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.12**
Dissolved Lithium	mg/L	0.040	**0.10**	**0.099**	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.12**	**0.13**	**0.11**	**0.10**	**0.10**	**0.11**
Total Selenium	mg/L	0.050	<0.00028	**0.39**	**0.50**	**0.45**	**0.45**	**0.52**	**0.45**	**0.50**	**0.51**	**0.46**	**0.22**	**0.31**	**0.17**
Dissolved Selenium	mg/L	0.050	<0.00028	**0.32**	**0.42**	**0.42**	**0.44**	**0.42**	**0.45**	**0.45**	**0.46**	**0.44**	**0.18**	**0.24**	**0.14**
Total Iron	mg/L		3.9	0.43	1.5	0.84	1.2	0.83	0.64	0.87	0.72	0.44	11	120	19
Total Magnesium	mg/L		16	16	15	15	15	15	15	15	15	15	16	16	15
Total Manganese	mg/L		13	13	12	12	12	8.7	12	12	8.2	5.3	14	13	13
Total Potassium	mg/L		14	14	370	760	1900	4600	16	15	14	17	14	14	13
Total Sodium	mg/L		23	23	22	24	27	32	280	560	1200	3200	23	23	21

0.010 GA GWPS = Georgia Groundwater Performance Standard

0.039	J value. Compound detected above method detection limit but below method calibration limit.
28	Compound detected in blank

Table 9
AP-2 and 3/4 DGWC-20 Treatability Results

		GA GWPS	IC	Control	1 g/L KHCO3	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	1 g/L NaHCO3	2 g/L NaHCO3	5 g/L NaHCO3	10 g/L NaHCO3	0.5 g/L ZVI	1.0 g/L ZVI	1.5 g/L ZVI
Day				0	0	0	0	0	0	0	0	0	0	0	0
pH	SU			4.5	6.8	7.3	7.8	8.0	7.7	7.3	7.7	7.9	6.4	6.3	5.2
Day				7	7	7	7	7	7	7	7	7	7	7	7
pH	SU		4.4	5.3	6.7	7.2	7.4	7.7	6.9	7.2	7.4	7.6	6.2	4.7	4.3
ORP	mV		423	297	290	280	278	269	222	200	205	207	164	163	185
DO	mg/L		9.6	7.8	7.2	7.3	7.2	6.9	7.0	7.1	6.7	6.8	7.5	7.3	6.8
TSS	mg/L		6.6	2.6	11	29	94	243	12	5.2	384	808	74	116	103
Bicarbonate Alkalinity as CaCO3	mg/L		<5	10	400	820	2120	4720	590	940	4720	5900	5	5	5
Hardness as CaCO3	mg/L		<20	<20	<20	<20	220	220	<20	340	460	230	<20	<20	<20
Ferrous Iron	mg/L		0.07	0.14	0.16	0.13	0.07	0.04	0.03	0.05	0.09	0.09	0.12	0.08	0.45
Sulfide	mg/L		0	0	0	0	0	0	0.01	0.02	0.01	0.02	0	0	0.01
ELLE Results															
Sulfate	mg/L		490	480	500	510	510	580	500	510	520	600	510	500	500
Dissolved Organic Carbon	mg/L		0.71	0.50	1.3	1.4	2.0	4.8	1.3	1.5	3.2	10	0.91	0.81	0.71
Total Arsenic	mg/L	0.010	**0.014**	**0.016**	**0.023**	<0.00068	**0.022**	**0.017**	**0.021**	**0.036**	**0.014**	0.0080	**0.026**	**0.027**	**0.032**
Dissolved Arsenic	mg/L	0.010	**0.016**	**0.018**	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	0.0011	0.00077	**0.019**	**0.018**	**0.017**
Total Beryllium	mg/L	0.004	**0.0079**	**0.0071**	**0.0070**	<0.00012	**0.0073**	**0.0071**	**0.0064**	**0.011**	**0.0048**	**0.0041**	**0.0070**	**0.0070**	**0.0065**
Dissolved Beryllium	mg/L	0.004	**0.0086**	**0.0080**	0.00053	0.00037	0.00026	0.00022	0.00045	0.00022	0.00045	0.00025	**0.0072**	**0.0099**	**0.0068**
Total Cobalt	mg/L	0.032	**1.00**	**1.0**	**1.0**	<0.00016	**0.69**	**0.69**	**1.0**	**1.1**	**0.51**	**0.43**	**1.0**	**1.0**	**0.98**
Dissolved Cobalt	mg/L	0.032	**0.96**	**1.1**	**0.96**	**0.90**	**0.44**	**0.24**	**0.92**	**0.90**	**0.38**	**0.23**	**1.1**	**1.0**	**1.0**
Total Lithium	mg/L	0.040	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055
Dissolved Lithium	mg/L	0.040	<0.055	<0.057	0.015	0.015	0.016	0.023	0.014	0.017	0.018	0.019	<0.057	<0.057	<0.057
Total Selenium	mg/L	0.050	<0.00028	**0.40**	**0.45**	<0.00028	**0.45**	**0.44**	**0.47**	**0.50**	**0.44**	**0.46**	**0.30**	**0.29**	**0.26**
Dissolved Selenium	mg/L	0.050	<0.00028	**0.38**	**0.45**	**0.46**	**0.40**	**0.45**	**0.45**	**0.49**	**0.45**	**0.47**	**0.27**	**0.24**	**0.22**
Total Iron	mg/L		0.12	0.082	0.19	<0.020	0.14	0.21	0.16	0.31	0.12	0.087	**43**	**90**	**200**
Total Magnesium	mg/L		26	29	25	<0.016	27	25	25	26	25	26	25	26	25
Total Manganese	mg/L		42	38	37	<0.00095	18	26	37	38	9.8	12	37	37	37
Total Potassium	mg/L		14	15	420	<0.065	2000	3800	16	15	16	19	14	14	14
Total Sodium	mg/L		24	24	23	<0.090	26	33	310	600	1500	2700	22	22	22

0.010 GA GWPS = Georgia Groundwater Performance Standard

0.039	J value. Compound detected above method detection limit but below method calibration limit.
28	Compound detected in blank

Table 10
AP-2 and 3/4 Percent Removal from Initial Characterization for Dissolved Metals

		GA GWPS	IC (mg/L)														
DGWC-48	As	0.010	<0.00068	% Rem from IC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Be	0.0040	**0.0083**	% Rem from IC	14.5	85.5	79.5	81.9	89.8	81.9	72.3	72.3	68.7	18.1	31.3	44.6	
	Co	0.032	0.33	% Rem from IC	-6.1	0.0	0.0	3.0	63.6	3.0	6.1	39.4	57.6	6.1	-3.0	15.2	
	Li	0.040	0.10	% Rem from IC	1.0	-10.0	-10.0	-10.0	-10.0	-10.0	-20.0	-30.0	-10.0	0.0	0.0	-10.0	
	Se	0.050	<0.00028/**0.32**	% Rem from Con 0	0.0	-31.3	-31.3	-37.5	-31.3	-40.6	-40.6	-43.8	-37.5	43.8	25.0	56.3	
DGWC-20	As	0.010	**0.016**	% Rem from IC	-12.5	>95.6	>95.6	>95.6	>95.6	>95.6	>95.6	93.1	95.2	-18.8	-12.5	-6.3	
	Be	0.0040	**0.0086**	% Rem from IC	7.0	93.8	95.7	97.0	97.4	94.8	97.4	94.8	97.1	16.3	-15.1	20.9	
	Co	0.032	0.96	% Rem from IC	-14.6	0.0	6.2	54.2	75.0	4.2	6.2	60.4	76.0	-14.6	-4.2	-4.2	
	Li	0.040	<0.055	% Rem from IC		72.7	72.7	70.9	58.2	74.5	69.1	67.3	65.5				
	Se	0.050	<0.00028/**0.38**	% Rem from Con 0	0.0	-18.4	-21.1	-5.3	-18.4	-18.4	-28.9	-18.4	-23.7	28.9	36.8	42.1	

NA	Not applicable
>96.5	Dissolved metal reduced to below GA GWPS
95.7	Dissolved metal reduced by more than 50%
72.7	Percent removal from detection method limit

Terra Systems
INCORPORATED

October 21, 2022

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TERRA SYSTEMS, INC. DRAFT REPORT FOR GOLDER/WSP FOR COAL COMBUSTION RESIDUE AT PLANT MCDONOUGH ATKINSON ASH POND 1, 2, 3, AND 4 PHASE II TREATABILITY STUDY VERSION 1

1.0 INTRODUCTION

Coal combustion residue landfill may generate acidic conditions which allow metals such as arsenic (As), beryllium (Be), cobalt (Co), lithium (Li), molybdenum (Mo), and selenium (Se) to accumulate to levels above regulatory limits. This bench-scale treatability evaluated neutralization/precipitation with potassium bicarbonate, sodium bicarbonate, ferrous oxide, and ferrous sulfide solution for three groundwaters and soils from Georgia Power Company (Georgia Power) Plant McDonough-Atkinson Ash Pond 1 (AP-1) which has arsenic and molybdenum in two groundwaters (DGWC-69 and DGWC-68A) and cobalt in DGWC-40. Plant McDonough-Atkinson Ash Pond 2, Ash Pond 3 and Ash Pond 4 (AP-2 and 3/4) has arsenic, beryllium, cobalt, lithium, and selenium in two groundwaters (DGWC-48 and DGWC-20). The treatability test from AP-2 and 3/4 used only groundwater. The Georgia Groundwater Protection Standards (GA GWPS) are 0.010 mg/L for arsenic, 0.0040 mg/L for beryllium, 0.032 mg/L for cobalt, 0.10 mg/L for lithium, 0.10 mg/L for molybdenum, and 0.050 mg/L for selenium.

2.0 BENCH-SCALE STUDY SCOPE

The objective of the bench-scale study is to evaluate the appropriate in situ remediation technology for several metals including arsenic, cobalt, beryllium, lithium, molybdenum, and selenium:

- Identify the feasibility of in-situ remediation.
- Determine the design parameters including reagent dosage and demand.

The bench-scale treatability study investigated four reagents: potassium bicarbonate, sodium bicarbonate, iron oxide, and Redox Solutions ferrous sulfide solution (Ferroblack H).

2.1 Reagent Selection

The bench-scale treatability study assumes that one of the following technologies can be used for in-situ remediation of the metals:

- elevated pH precipitation
- oxidation with iron oxide
- reduction with a ferrous sulfide solution

All reagents used for the bench-scale test were commercially available products. The reagent usages and their dosages could be adjusted according to the results of the activities and observations during the execution of the bench-scale treatability study. The following provides more detail on each of the reagents proposed for the bench-scale treatability testing:

- Potassium Bicarbonate (KHCO3): Potassium bicarbonate can increase the pH up to about 8.2 SU. Three loadings of LC Carlsen potassium bicarbonate were evaluated in the tests to determine the precipitation of arsenic and molybdenum in two groundwaters and associated soils from Plant AP-1 (DGWC-69 and DGWC-68A); three loadings of potassium bicarbonate to address cobalt from one groundwater and associated soil in Plant AP-1 DGWC-40; and three loadings of potassium bicarbonate to address arsenic, beryllium, and cobalt in groundwater from Plant AP 234 (DGWC-48 and DGWC-20).

- Sodium Bicarbonate (NaHCO3): Sodium bicarbonate can increase the pH up to about 8.3 SU. Three loadings of Genesis sodium bicarbonate were evaluated in the tests to determine the precipitation of arsenic and molybdenum in two groundwaters and associated soils from Plant AP-1 (DGWC-69 and DGWC-68A); three loadings of sodium bicarbonate to address cobalt from one groundwater and associated soil in Plant AP-1 DGWC-40; and three loadings of sodium bicarbonate to address arsenic, beryllium, and cobalt in groundwater from Plant AP 234 (DGWC-48 and DGWC-20).

- Ferric oxide. Ferric oxide (Fe_2O_3) is insoluble in water and has a pH of 6-8. Three loadings of Sigma Aldrich ferric oxide (<5 µm, 96%) were evaluated for the precipitation of arsenic and molybdenum in two groundwaters and associated soils from Plant AP-1 (DGWC-69 and DGWC-68A); three loadings of ferric oxide to address cobalt from one groundwater and associated soil in Plant AP-1 DGWC-40; and three loadings of ferric oxide to address arsenic, beryllium, and cobalt in groundwater from Plant AP 234 (DGWC-48 and DGWC-20).

- Ferroblack H (FeB). Ferrous sulfide (FeS) is insoluble in water and has a pH of 9.5-12.5. Three loadings of Redox Solutions Ferroblack H ferrous sulfide solution were evaluated for the precipitation of arsenic and molybdenum in two groundwaters and associated soils from Plant AP-1 (DGWC-69 and DGWC-68A); three loadings of FeB to address cobalt from one groundwater and associated soil in Plant AP-1 DGWC-40; and three loadings of FeB to address arsenic, beryllium, and cobalt in groundwater from Plant AP 2 and 3/4 (DGWC-48 and DGWC-20).

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2.2 Bench-scale Groundwater and Soil Collection

Groundwater samples were collected from the five locations (Plant AP-1 DGWC-69, DGWC-68A, and DGWC-40 and Plant AP234 DGWC-48 and DGWC-20). Soil samples were collected from Plant AP-1 DGWC-69, DGWC-68A, and DGWC-40. With 1 L reaction vessels for each treatment, about 3-5 gallons of each of the five groundwaters were required. The samples were delivered to the TSI under a chain of custody. Groundwater samples from AP-2 and 3/4 DGWC-20 and DGWC-48, AP-1 DGWC-68A, DGWC-69, and DGWC-40 were delivered to TSI on 6/24/22 and stored in refrigerators. The14.4 kg soil sample from AP-1 DGWC-69 was received on 6/28/22. The 14.6-14.8 kg soil samples from AP-1 DGWC-68A and DGWC-40 were initially lost by Federal Express. They were recovered by Terra Systems, Inc. (TSI) on 7/7/22.

2.3 Baseline characterization

At the beginning of the bench-scale treatability test, the baseline characterization was performed to verify contaminant concentrations in the samples. The groundwater samples were homogenized to the extent possible. The homogenized groundwater samples were analyzed for total cobalt, arsenic, molybdenum, beryllium, lithium, selenium, iron, potassium, manganese, magnesium, and sodium (metals chosen based upon site characteristics); dissolved arsenic, beryllium, cobalt, molybdenum, lithium, and selenium (based upon site characteristics); dissolved organic carbon (DOC), and sulfate, by the Eurofins Lancaster Laboratories Environmental (ELLE) and for pH, ORP, dissolved oxygen (DO), bicarbonate alkalinity, total hardness, ferrous iron, and sulfide by TSI using calibrated meters and Hach procedures.

2.4 Titration Tests

Alkaline titrations were conducted to determine the potassium bicarbonate and sodium bicarbonate testing dosages. An alkaline titration test was completed to determine the pH resulting from 0, 1, 2, 5, and 10 g/L additions of potassium bicarbonate and sodium bicarbonate reagent dosages. The aqueous total suspended solids (TSS) were determined by weighing the 0.2 µm nylon filter before filtering the samples and after filtration and drying in a 105 °C oven. The weight of the TSS collected was divided by the volume of groundwater that passed through the filters.

2.5 Reagent Screening

The purpose of this step was to select the most appropriate reagent for each of the nine groundwater samples.

The reagent dosages were determined from the baseline characterization and titration. For each sample, a total of 13 reactors were set up for each site.

AP-1 (Arsenic and Molybdenum) DGWC-69 and DGWC-68A with 713-812 g groundwater and 417-580 g soil

- Control
- Potassium Bicarbonate: 3 dosages (2, 5, and 10 g/L)
- Sodium Bicarbonate: 3 dosages (2, 5, and 10 g/L)
- Ferric Oxide: 3 Dosages (0.5, 1.0, and 2.0 g/L)
- Ferroblack H: 3 Dosages (10, 20, and 30 g/L)

Plant AP-1 (Cobalt) DGWC-40 with 580 g soil and 705-781 g groundwater

- Control
- Potassium Bicarbonate: 3 dosages (2, 5, and 10 g/L)
- Sodium Bicarbonate: 3 dosages (2, 5, and 10 g/L)
- Ferric Oxide: 3 Dosages (0.5, 1.0, and 2.0 g/L)
- Ferroblack H: 3 Dosages (10, 20, and 30 g/L)

Plant AP-2 and 3/4 (Arsenic, Beryllium, Cobalt, Lithium, and Selenium) DGWC-49 and DGWC-20 with only 1,032 to 1,069 g groundwater

- Control
- Potassium Bicarbonate: 3 dosages (2, 5, and 10 g/L)
- Sodium Bicarbonate: 3 dosages (2, 5, and 10 g/L)
- Ferric Oxide: 3 Dosages (0.5, 1.0, and 2.0 g/L)

- Ferroblack H: 3 Dosages (10, 20, and 30 g/L)

All containers were mixed and turned periodically for seven days. Groundwater samples (the supernatants in the reactors) were analyzed for:

- total arsenic, beryllium, cobalt, molybdenum, and selenium (based upon contaminants of concern for each site);
- total iron, potassium, manganese, magnesium, and sodium
- dissolved arsenic, beryllium, cobalt, molybdenum, and selenium (based upon contaminants of concern for each site). The aqueous samples were filtered through 0.2 μm nylon filters and the filtrates were divided into bottles for DOC and metals.
- dissolved organic carbon (DOC)
- sulfate

ELLE conducted the metals, DOC, and sulfate analyses. The pH, ORP, dissolved oxygen (DO), bicarbonate alkalinity, total hardness, ferrous iron, and sulfide were conducted by TSI using calibrated meters and Hach procedures. The estimated sample volumes for the initial characterization, and screening tests are shown in Table 1. The volumes were adjusted to account for required dilutions and volumes of water available.

3.0 PLANT AP-1

3.1 Plant AP-1 Initial Characterization Results

Table 2 has the initial characterization results of the field parameters, Hach tests, metals, DOC, and sulfate results for the three groundwater samples in AP-1.

3.1.1 AP-1 DGWC-69. The groundwater pH was 7.4 with a moderate bicarbonate alkalinity of 60 mg/L CaCO3. There was a positive ORP (244 mV) and moderate dissolved oxygen (6.1 mg/L). The TSS was 6.6 mg/L with a hardness 60 mg/L, 0.08 mg/L ferrous iron, and 0.01 mg/L sulfide. With 100 g soil and 150 g of the AP1 DGWC-69 groundwater (40% soil, 60% groundwater), the pH increased from 7.3 to 7.5 SU with 1 g/L sodium bicarbonate and increased to 8.1 with 10 g/L. The pH of 100 g soil and 150 g groundwater increased from 6.3 to 7.3 SU with 1 g/L potassium bicarbonate and to 8.0 with 10 g/L. This groundwater has low 10 mg/L sulfate and 0.59 mg/L DOC. Total arsenic was 0.026 mg/L and dissolved arsenic was 0.052 mg/L; both exceeded the GA GWPS. There is not a clear explanation as to why the dissolved arsenic was higher than the total arsenic. Total and dissolved molybdenum was detected 0.0053 to 0.0055 mg/L and were below the GA GWPS. The groundwater contained <0.2 mg/L total iron, 2.6 mg/L total magnesium, 0.0036 mg/L total manganese, 2.4 mg/L potassium, and 9.7 mg/L sodium. The soil pH was 6.7 with a density of 1.56 g/cm^3, field holding capacity of 0.15 g/g, and soil dry weight of 93.0%. The soil contained 3.1 mg/kg total arsenic, 0.68 mg/kg total molybdenum, 9,600 mg/kg total iron, 3,000 mg/kg total magnesium, 250 mg/kg total manganese, 3,900 mg/kg potassium, 96 mg/kg sodium, and a moisture content of 19.7%.

3.1.2 AP-1 DGWC-68A. The groundwater pH was 6.8 with a moderate bicarbonate alkalinity of 180 mg/L CaCO3. There was a positive ORP (215 mV) and moderate dissolved oxygen (3.0 mg/L). The TSS was 0 mg/L with a hardness 240 mg/L, 0.01 mg/L ferrous iron, and no sulfide. The pH of 100 g soil and 150 g groundwater increased from 6.8 to 7.5 1U with 1 g/L sodium bicarbonate and increased to 7.8 with 10 g/L. The pH increased from 6.7 to 7.1 SU with 1 g/L potassium bicarbonate and to 7.6 with 10 g/L. This groundwater has moderate 40 mg/L sulfate and 0.71 mg/L DOC. Total arsenic was not detected and dissolved arsenic was 0.014 mg/L; above the

GA GWPS. Molybdenum concentrations were relatively high with 0.20 mg/L total and 0.20 mg/L dissolved; both exceeded the GA GWPS of 0.10 mg/L. The groundwater contained 0.029 mg/L total iron, 18 mg/L total magnesium, 0.072 mg/L total manganese, 3.8 mg/L potassium, and 9.6 mg/L sodium. The soil pH was 7.2 with a density of 1.58 g/cm^3, field holding capacity of 0.29 g/g, and soil dry weight of 88.3%. The soil contained 1.0 mg/kg total arsenic, 7.4 mg/kg total molybdenum, 35,000 mg/kg total iron, 11,000 mg/kg total magnesium, 530 mg/kg total manganese, 12,000 mg/kg potassium, 110 mg/kg sodium, and a moisture content of 12.9%.

3.1.3 AP-1 DGWC-40. The initial groundwater pH was 5.3 SU with a bicarbonate alkalinity of 20 mg/L CaCO3. There was a positive ORP (240 mV) and moderate dissolved oxygen (4.2 mg/L). The TSS was 4.3 mg/L with a hardness of 20 mg/L, 0.03 mg/L ferrous iron, and 0.01 mg/L sulfide. The pH of 100 g soil and 150 g groundwater increased from 5.2 to 6.4 SU with 1 g/L sodium bicarbonate and increased to 7.4 with 10 g/L. The pH of 100 g soil and 150 g groundwater increased from 4.4 to 5.8 SU with 1 g/L potassium bicarbonate and to 7.3 with 10 g/L. This groundwater has moderate 230 mg/L sulfate and no detectable DOC. Total cobalt was detected at 0.040 mg/L and dissolved cobalt at 0.039 mg/L; both were slightly above the GA GWPS of 0.032 mg/L. The groundwater contained <0.020 mg/L total iron, 19 mg/L total magnesium, 3.3 mg/L total manganese, 5.8 mg/L potassium, and 19 mg/L sodium. The soil pH was 5.6 with a density of 1.69 g/cm^3, field holding capacity of 0.23 g/g, and soil dry weight of 84.5%.The soil contained 13 mg/kg total cobalt, 49,000 mg/kg total iron, 9,500 mg/kg total magnesium, 460 mg/kg total manganese, 13,000 mg/kg potassium, 40 mg/kg sodium, and a moisture content of 14.9%.

3.2 Plant AP-1 Testing Results

3.2.1 Well DGWC-69 Summary. Table 3 has the field parameters and ELLE results for the DGWC-69 groundwater. The control treatment received 417 g soil and 798 g groundwater. Potassium bicarbonate or sodium bicarbonate solutions were prepared with between 796 and 812 g groundwater and 1.6 to 8.0 g of buffer. The 580 g soil were added to the bottles and bottles filled with between 749 to 812 g of the solutions. The bicarbonate concentrations ranged from 2.0 to 9.8 g/L. The ferric oxide was added directly to the bottles and concentrations ranged from 0.5, 0.9. and 2.0 g/L. The Ferroblack H treatments received 8.0 to 22.5 g of the ferrous sulfide suspension resulting in 10.6, 20.3, and 30.1 g/L solutions.

On Day 7, the control pH was 6.5. With 2 g/L potassium bicarbonate, the pH increased to 7.2 and the highest dosage of 10 g/L potassium buffers had a pH of 7.7 on Day 7. On Day 7, the pH for the sodium bicarbonate treatments ranged from 7.4 to 8.0, from 6.4 to 6.7 for the iron oxide, and from 8.0 to 9.6 for the Ferroblack H treatments. The ORPS were positive and ranged from 48 to 198 mV. DO ranged from 1.9 to 6.9 mg/L with lower DO of 1.9 to .4.6 mg/L in the Ferroblack H treatments. Bicarbonate alkalinity was moderate in the control (80 mg/L as CaCO3) and increased with bicarbonate additions to a maximum of 5,200 mg/L as $CaCO_3$. The hardness ranged from 60 to 460 mg/L as CaCO3. Ferrous iron ranged from 0.65 to 3.35 with levels above 1.0 mg/L in the 2 g/L KHCO3, 5 g/L KHCO3, 10 g/L KHCO3, 5 g/L NaHCO3, 10 g/L FeB, 20 g/L FeB, and 30 g/L FeB. Sulfide was low (0.01 to 0.20 mg/L).

Sulfate ranged from 12 to 30 mg/L. Little DOC was detected (2 to 7.7 mg/L); the higher dosages of buffer had the most, 6.8 and 7.7 mg/L. Total arsenic ranged from 0.0042 to 0.084 mg/L with the following treatments below the GA GWPS of 0.010 mg/L: Control, 0.5 g/L Fe2O3, 1.0 g/L Fe2O3, and 2 g/L Fe2O3. Dissolved arsenic ranged from 0.0040 to 0.088 mg/L with the following treatments below the GA GWSP: Control, 0.5 g/L Fe2O3, 1.0 g/L Fe2O3, 2 g/L Fe2O3, and 10 g/L FeB. Total molybdenum ranged from 0.018 to 0.17 mg/L; all were below the GA GWPS except the 20 and 30 g/L FeB treatments. Dissolved molybdenum ranged from 0.019 to 1.8 mg/L with dissolved molybdenum below the GA GWPS in all treatments except the 20 and 30 g/L FeB treatments. Total iron increased in all treatments; possibly as it leached from the soil. Total magnesium increased with the higher magnesium concentrations in the KHCO3 and NaHCO3 treatments. Total manganese increased in all treatments. Potassium increased with the increasing loadings of potassium bicarbonate and were slightly elevated in the other treatments. Sodium ranged from 19 to 2,200 mg/L with the highest levels in the $NaHCO_3$ treatments.

The Control, 0.5 g/L Fe2O3, 1.0 g/L g/L Fe2O3, 2.0 g/L Fe2O3, and the 10 g/L FeB treatments showed significant reductions in dissolved arsenic with all of these treatments reducing dissolved arsenic below the GA GWPS. The dissolved molybdenum concentrations were below the GA GWPS for molybdenum of 0.10 mg/L for all treatments except the 20 and 30 g/L FeB. The higher loadings of FeB may have created a reducing environment where molybdenum leached from the soil .

3.2.2 Well DGWC-68A Summary. Table 4 has the field parameters and ELLE results for DGWC-68A groundwater. The control treatment received 580 g soil and 738 g groundwater. Potassium bicarbonate or sodium bicarbonate solutions were prepared with between 792 and 798 g groundwater and 1.6 to 8.0 g of buffer. The 580 g soil were added to the bottles and bottles filled with between 722 to 789 g of the solutions. The bicarbonate concentrations ranged from 2.0 to 10 g/L. The ferric oxide was added directly to the bottles and concentrations ranged from 0.5, 1.1. and 2.0 g/L. The Ferroblack H treatments received 8.0 to 22.5 g of the ferrous sulfide suspension resulting in 10.3, 20.6, and 28.3 g/L solutions.

On Day 7, the control pH was 6.6. With 2 g/L potassium bicarbonate, the pH increased to 6.9 and the highest dosage of 10 g/L potassium buffers had a pH of 7.1 on Day 7. On Day 7, the pH for the sodium bicarbonate treatments was 7.1 in all three loadings, from 6.6 to 6.7 for the iron oxide, and from 7.0 to 8.7 for the Ferroblack H treatments. The ORPS were positive and ranged from 5 to 288 mV with the Ferroblack H treatments being lower. DO ranged from 2.1 to 6.3 mg/L with lower DO of 2.1 to 2.7 mg/L in the Ferroblack H treatments. Bicarbonate alkalinity was moderate in the control (180 mg/L as CaCO3) and increased with bicarbonate additions to a maximum of 4,200 mg/L as $CaCO_3$. The hardness ranged from 200 to 710 mg/L as CaCO3. Ferrous iron ranged from 0.65 to 4.0 with levels above 1.0 mg/L in the 5 g/L KHCO3, 10 g/L KHCO3, 2 g/L NaHCO3, 5 g/L NaHCO3, 10 g/L FeB, 20 g/L FeB, and 30 g/L FeB. Sulfide was low (0 to 0.19 mg/L).

Sulfate ranged from 31 to 44 mg/L. Little DOC was detected (1.6 to 11 mg/L); the higher dosage of FeB had the most, 11 mg/L. Total arsenic ranged from 0.00094 to 0.0064 mg/L with all treatments below the GA GWPS of 0.010 mg/L. Dissolved arsenic ranged from 0.0024 to 0.072 mg/L with the following treatments below the GA GWSP: Control, 5 g/L KHCO3, and 2 g/L NaHCO3. Why the dissolved arsenic is higher than total arsenic is unclear. Total molybdenum ranged from 0.28 to 1.1 mg/L; only the 20 g/L FeB was below the GA GWPS. Dissolved molybdenum ranged from 0.28 to 1.2 mg/L with no treatments below the GA GWPS. Dissolved molybdenum increased from the initial characterization sample presumably as molybdenum dissolved from the soil. The lowest dissolved molybdenum concentrations were in the ferric oxide treatments (0.28 to 0.41 mg/L). Total iron increased in all treatments; possibly as it leached from the soil. Total magnesium increased except in the Control and 0.5 g/L to 2 g/L Fe2O3 treatments. Total manganese increased in all treatments. Potassium increased with the increasing loadings of potassium bicarbonate and were slightly elevated in the other treatments. Sodium ranged from 19 to 2,200 mg/L with the highest levels in the $NaHCO_3$ treatments.

The Control, 5 g/L KHCO3, and 2 g/L NaHCO3 treatments showed significant reductions in dissolved arsenic with these treatments reducing dissolved arsenic below the GA GWPS. None of treatments reduced dissolved molybdenum below the GA GWPS with the ferric oxide treatments showing the lowest levels.

3.2.3 Well DGWC-40 Summary. Table 5 has the field parameters and ELLE results for the DGWC-40 groundwater. The control treatment received 580 g soil and 780 g groundwater. Potassium bicarbonate or sodium bicarbonate solutions were prepared with between 792 and 798 g groundwater and 1.6 to 8.0 g of buffer. The 580 g soil were added to the bottles and bottles filled with between 705 to 781 g of the solutions. The bicarbonate concentrations ranged from 2.0 to 10 g/L. The ferric oxide was added directly to the bottles and concentrations ranged from 0.5, 1.0, and 2.1 g/L. The Ferroblack H treatments received 7.5 to 22.5 g of the ferrous sulfide suspension resulting in 9.6, 20.8, and 30.6 g/L solutions.

On Day 7, the control pH was 5.5. With 2 g/L potassium bicarbonate, the pH increased to 6.3 and the highest dosage of 10 g/L potassium buffers had a pH of 7.0 on Day 7. On Day 7, the pH for the sodium bicarbonate treatments ranged from 6.5 to 7.2 in all three loadings, from 5.5 to 6.3 for the iron oxide, and from 6.1 to 6.6 for the Ferroblack H treatments. The ORPS were positive and ranged from 5 to 245 mV with the Ferroblack H treatments being lower. DO ranged from 2.7 to 6.6 mg/L with lower DO of 2.7 to 3.1 mg/L in the Ferroblack H treatments. Bicarbonate alkalinity was low in the control (20 mg/L as CaCO3) and increased with bicarbonate additions to a maximum of 420 mg/L as $CaCO_3$. The hardness ranged from <20 to 420 mg/L as CaCO3. Ferrous iron ranged from 0.05 to 6.6 with levels above 1.0 mg/L in the 5 g/L NaHCO3, 10 g/L NaHCO3, 0.5 g/L Fe2O3, 1.0 g/L Fe2O3, 10 g/L FeB, and 20 g/L FeB treatments. Sulfide was low (0.01 to 0.18 mg/L).

Sulfate ranged from 200 to 260 mg/L. Little DOC was detected (1.4 to 3.6 mg/L. Total cobalt ranged from 0.0033 to 0.085 mg/L with the following treatments below the GA GWPS of 0.032 mg/L: 2 g/L NaHCO3, 5 g/L NaHCO3, 10 g/L NaHCO3, 20 g/L FeB, and 30 g/L FeB. Dissolved cobalt ranged from 0.0022 to 0.082 mg/L with the following treatments below the GA GWPS: 2 g/L KHCO3, 5 g/L KHCO3, 10 g/L KHCO3, 2 g/L NaHCO3, 5 g/L NaHCO3, 10 g/L NaHCO3, 10 g/L FeB, 20 g/L FeB, and 30 g/L FeB. Total iron increased in all treatments; possibly as it leached from the soil. Total magnesium increased except in the Control, 2 g/L NaHCO3, 0.5 g/L Fe2O3, 1.0 g/L Fe2O3, and 2 g/L Fe2O3 treatments. Total manganese increased in all treatments except the NaHCO3 treatments. Potassium increased with the increasing loadings of potassium bicarbonate and were slightly elevated in the other treatments. Sodium ranged from 19 to 2,200 mg/L with the highest levels in the $NaHCO_3$ treatments.

The 2 g/L KHCO3, 5 g/L KHCO3, 10 g/L KHCO3, 2 g/L NaHCO3, 5 g/L NaHCO3, 10 g/L NaHCO3, 10 g/L FeB, 20 g/L FeB, and 30 g/L FeB treatments showed significant reductions in dissolved cobalt with these treatments reducing dissolved cobalt below the GA GWPS.

3.3 AP-1 Conclusions

Table 6 summarizes the percent removals from the initial characterization samples or the Control Day 0 for the dissolved metals of concern across the various groundwaters. Compounds highlighted in green were reduced to below the GA GWPS by the treatments.

Arsenic. In the AP-1 DGWC-69 groundwater and soil, the control, all ferric oxide treatments, and the 10 g/L FeB treatments reduced dissolved arsenic to below the GA GWPS but not the sodium or potassium bicarbonate and high Ferroblack treatments. The AP-1 DGWC-68A treatments with dissolved arsenic below the GA GWPS were Control, 5 g/L KHCO3, 2 g/L NaHCO3, and 20 g/L FeB.

Cobalt. The GA GWPS for cobalt is 0.032 mg/L. All of the potassium and sodium bicarbonate treatments plus the Ferroblack treatments reduced dissolved Co in the AP-1 DGWC-40 groundwater and soil to below the GA GWPS.

Molybdenum. All of the treatments, including the control, were below the GA GWPS for molybdenum in the DGWC-69 groundwater treatments. None of the treatments reduced dissolved molybdenum below the GA GWPS in DGWC-68A. The ferric oxide treatments had the lowest dissolved molybdenum levels of 0.28 to 0.41 mg/L.

Overall Conclusions. The control, 0.5 to 10 g/L ferric oxide, and 10 g/L reduced dissolved arsenic to below the GA GWPS in the DGWC-69 soil groundwater. The control, 5 g/L KHCO3, 2 g/L NaHCO3, and 20 g/L Ferroblack reduced arsenic in the DGWC-68A soil and groundwater below the GA GWPS. All the bicarbonate and Ferroblack treatments reduced dissolved cobalt in the AP-1 DGWC-40 groundwater to below the GA GWPS. The dissolved molybdenum in the DGWC-69 soil and groundwater were below the GA GWPS in all treatments. None of the treatments met the molybdenum GA GWPS in the AP-1 DGWC-68A soil and groundwater treatments although the ferric oxide reduced dissolved molybdenum the most. There was no single treatment that met the GWPS for dissolved arsenic and molybdenum in the DGWC-69 and DGWC-68A groundwater and soils and for cobalt in the DGWC-40.

4.0 PLANT AP-2 and 3/4

4.1 Plant AP-2 and 3/4 Initial Characterization Results

Table 7 has the initial characterization results of the field parameters, Hach tests, metals, DOC, and sulfate results for the two groundwater samples in AP-2 and 3/4.

4.1.1 Well DGWC-48. The control treatment received 1,056 g groundwater. Potassium bicarbonate or sodium bicarbonate solutions were prepared with between 1,047 and 1,059 g groundwater and 2.1 to 10.5 g of buffer. The bicarbonate concentrations ranged from 2.0 to 9.9 g/L. The ferric oxide was added directly to the bottles and concentrations ranged from 0.5, 1.0, and 2.0 g/L. The Ferroblack H treatments received 10.5 to 31.5 g of the ferrous sulfide suspension resulting in 9.9, 19.7, and 29.5 g/L solutions.

The pH ranged from 4.2 to 4.8 with only 20 mg/L bicarbonate alkalinity as CaCO3. There was a positive ORP (265 mV) and moderate dissolved oxygen (4.1 mg/L). The TSS was 5.6 mg/L with a hardness <20 mg/L, 0.56 mg/L ferrous iron, and no sulfide. The pH increased from 4.2 to 7.5 SU with 1 g/L sodium bicarbonate and increased to 7.9 with 10 g/L. The pH increased from 4.3 to 6.6 SU with 1 g/L potassium bicarbonate and to 8.3 with 10 g/L. This groundwater has high 300 mg/L sulfate and <0.5 mg/L DOC. Total arsenic was non-detect and dissolved arsenic was 0.035 mg/L. Total and dissolved Beryllium were 0.0031 mg/L which were below the GA GWPS. Total cobalt was found at 0.040 mg/L and dissolved cobalt at 0.042 mg/L above the GA GWPS of 0.032 mg/L. Lithium was not detected (<0.011 mg/L). No selenium was detected. Lithium and selenium were not monitored in the subsequent testing. The groundwater contained <0.020 mg/L total iron, 19 mg/L total magnesium, 3.3 mg/L total manganese, 5.8 mg/L potassium, and 19 mg/L sodium.

4.1.2 Well DGWC-20. The control treatment received 1,064 g groundwater. Potassium bicarbonate or sodium bicarbonate solutions were prepared with between 1,054 and 1,058 g groundwater and 2.1 to 10.5 g of buffer. The bicarbonate concentrations ranged from 2.0 to 9.9 g/L. The ferric oxide was added directly to the bottles and concentrations ranged from 0.5, 1.0, and 2.0 g/L. The Ferroblack H treatments received 10.5 to 31.5 g of the ferrous sulfide suspension resulting in 9.9, 19.8, and 29.6 g/L solutions.

The pH ranged from 4.5 to 6.3 with little bicarbonate alkalinity of 20 mg/L CaCO3. There was a positive ORP (232 mV) and moderate dissolved oxygen (3.8 mg/L). The TSS was 3.0 mg/L with 20 mg/L hardness, 0.06 mg/L ferrous iron, and no sulfide. The pH increased from 5.5 to 6.9 SU with 1 g/L sodium bicarbonate and increased to 8.0 with 10 g/L. The pH increased from 4.5 to 6.8 SU with 1 g/L potassium bicarbonate and to 7.9 with 10 g/L. This groundwater has moderate 560 mg/L sulfate and 3.4 mg/L DOC. Total arsenic was 0.022 mg/L and dissolved arsenic was <0.16 mg/L. Total beryllium was detected at 0.0082 mg/L and dissolved beryllium at <0.010 mg/L; both exceed the GA GWPS of 0.0040. Total cobalt was detected at 1.2 mg/L and dissolved cobalt at 1.0 mg/L, both exceed the GA GWPS of 0.032 mg/L. Total and dissolved lithium and selenium were not detected. Lithium and selenium were not monitored in the subsequent testing. The groundwater was slightly hard with 0.039 mg/L total iron, 27 mg/L total magnesium, 41 mg/L total manganese, 15 mg/L potassium, and 22 mg/L sodium.

4.2 Plant AP-2 and 3/4 Testing Results

4.2.1 Well DGWC-48 Summary. Table 8 has the field parameters and ELLE results for this groundwater. On Day 0, the control pH was 5.0 and increased to 7.2 for the lowest 2 g/L loading of potassium bicarbonate and to 7.4 for the lowest 2 g/L loading of sodium bicarbonate. The highest dosage of buffers had pHs of 7.9-8.0 on Day 7. The pH in the Fe2O3 treatments on Day 7 ranged 4.8 to 5.1 SU and increased to between 7.0 to 10.7 for the FeB treatments. The ORPS on Day 7 were positive except for the 30 g/L FeB and ranged from -58 to 289 mV. DO ranged from 2.2 to 5.5 mg/L. The total suspended solids ranged from 0 to 86 mg/L with >10 mg/L TSS found in the 5 g/L KHCO3, 1.0 g/L Fe2O3, 2.0 g/L Fe2O3, 10 g/L FeB, and 30 g/L FeB. Bicarbonate alkalinity was low in the control, Fe2O3, and FeB treatments (<20-80 mg/L CaCO3) and increased with bicarbonate additions. The hardness ranged from 20 to 232 mg/L with higher readings at the higher buffer loadings. Only the control, 10 g/L sodium bicarbonate, and the FeB treatments had mor than 0.15 mg/L ferrous iron. Sulfide was low (0.01 to 0.10 mg/L).

Sulfate ranged from 310 to 340 mg/L. Little DOC was detected (0.56 to 19 mg/L); the highest dosage of buffer had the most, 6.3 and 19 mg/L. Total arsenic were not detected except in the treatments with 10 g/L KHCO3, 5 g/L NaHCO3, 1.0 g/L Fe2O3, 2.0 g/L Fe2O3, and the 30 g/L FeB. Total As was below the GA GWPS. Dissolved As were above the GA GWPS except in the 2 g/L NaHCO3, 2 g/L Fe2O3, 10 g/L FeB, and 20 g/L FeB treatments. It is not clear why dissolved arsenic would be higher than total arsenic. Total beryllium ranged from 0.0050 to 0.0072 mg/L; all samples were above the GA GWPS of 0.004 mg/L except the 10 g/L KHC03, 5 g/L NaHCO3, 1- g/L NaHCO3, and all three of the FeB treatments. Dissolved beryllium ranged from <0.00012 to 0.0081 mg/L with 2-10 g/L potassium bicarbonate, 5-10 g/L sodium bicarbonate, and the 10 to 30 g/L FeB treatments below the GA GWPS. Total cobalt was moderate ranging from 0.031 to 0.34 mg/L with only the 30 g/L FeB treatment below the GA GWPS. Dissolved cobalt ranged from 0.00022 to 0.36 mg/L with the 10-30 g/L FeB below the GA GWPS. Total iron ranged from 0.027 to 110 g/L (2 g/L Fe2O3). Total magnesium did not change much ranging from 1.3 to 16 mg/L. Total manganese ranged from 0.38 to 14 mg/L and was reduced by >50% only in the 10 g/L

NaHCO3 treatment. Potassium and sodium increased with the increasing loadings of potassium and sodium bicarbonate.

The only treatments that reduced dissolved arsenic to below the GA GWPS were the 2 g/L NaHCO3, 2.0 g/L Fe2O3, 10 g/L FeB, and 20 g/L FeB. The 2-10 g/L of the potassium bicarbonate, 5-10 g/L sodium bicarbonate, and 10, 20, and 30 g/L FeB treatments reduced dissolved beryllium to below the GA GWPS. Only the 10, 20, and 30 g/L FeB treatments resulted in decreases in dissolved cobalt to below the GA GWPS.

4.2.2 Well DGWC-20 Summary. Table 9 has the field parameters and ELLE results for this groundwater.

The control pH at Day 0 was 3.9 SU and increased to 7.1 for the lowest loading of potassium bicarbonate and to 7.0 for the lowest loading of sodium bicarbonate. The highest dosage of buffers had pHs of7.7 on Day 7. The ORPS were positive and ranged from 78 to 410 mV with the lowest ORP in the 30 g/L FeB treatment. DO ranged from 2.6 to 6.3 mg/L. The total suspended solids ranged from 0.8 to 520 mg/L. The treatments with 10 g/L KHCO3, 10 g/L NaHCO3, 2 g/L Fe2O3, 10 g/L FeB, and 30 g/L FeB had elevated TSS above 10 mg/L. Bicarbonate alkalinity was low in the control and increased with bicarbonate additions. The hardness ranged from <20 to 350 mg/L. Little ferrous iron was detected (0.03 to 0.12 mg/L). Sulfide was low (<0.01 to 0.01 mg/L).

Sulfate ranged from 470 to 580 mg/L. Little DOC was detected; the highest dosage of KHCO3 buffer had the most, 6.8 mg/L. Total arsenic ranged from 0.0015 to 0.025 mg/L with the 5 g/L NaHCO3 and 10, 20, and 30 g/L FeB treatment having total arsenic below the GA GWPS. Dissolved arsenic ranged from 0.0014 to 0.044 mg/L with the 2 and 5 g/L KHCO3, 2, 5, and 10 g/L NaHCO3, and the 10, 20, and 30 g/L FeB treatments having dissolved arsenic below the GA GWPS. Total beryllium ranged from 0.00057 to 0.013 mg/L; the 5 g/L NaHCO3 and 10, 20, and 30 g/L FeB treatments were below the GA GWPS. Dissolved beryllium ranged from 0.00023 to 0.0091 mg/L with all KHCO3, NaHCO3, and FeB treatments below the GA GWPS. Total cobalt ranged from 0.12 to 1.2 mg/L but none of the treatments reached the GA GWPS. Dissolved cobalt ranged from <0.00012 to 1.1 mg/L and only the 20 and 30 g/L FeB treatments reached the GA GWPS. Total iron increased in many treatments especially for the Fe2O3 and FeB treatments. Total magnesium ranged from 3.3 to 26.0 mg/L with the FeB treatments having the least magnesium. Total manganese ranged from 4.2 to 45 mg/L. Potassium and sodium increased with the increasing loadings of potassium and sodium bicarbonate.,

The 2-10 g/L of potassium bicarbonate, 2-10 g/L sodium bicarbonate, and 10-30 g/L FeB treatments reduced dissolved arsenic and dissolved beryllium to the GA GWPS. Only the 20 and 30 g/L FeB reduced the dissolved cobalt to below the GA GWPS.

4.3 AP-2 and 3/4 Conclusions

Table 10 summarizes the percent removals from the initial characterization samples or the Control Day 0 for the dissolved metals of concern across the various treatments and groundwaters. Compounds highlighted in green were reduced to below the GA GWPS by the treatments.

Arsenic. The following treatments reduced dissolved arsenic in AP-2 and 3/4 well DGWC-48 to below the GA GWPS: 2 g/L NaHCO3, 2 g/L Fe2O3, 10 g/L FeB, and 20 g/L FeB. Dissolved As in well DGWC-20 was reduced to below the GA GWPS in all potassium and sodium bicarbonate and Ferroblack treatments.

Beryllium. In the AP-2 and 3/4 DGWC-48 and 20 groundwaters, most of the potassium and sodium bicarbonate and the Ferroblack treatments reduced dissolved Be levels to below the GA GWPS but the Fe2O3 treatments did not.

Cobalt. The GA GWPS for cobalt is 0.032 mg/L. The higher Ferroblack treatments reduced cobalt to below the GA GWPS in both wells.

Overall Conclusions. Addition of relatively high dosages of potassium or sodium bicarbonate buffers were generally able to reach the GA GWPS for arsenic and beryllium but not cobalt. The Ferroblack treatments were able to reduce the arsenic, beryllium, and cobalt to below the GA GWPS.

Please let me know if you have any questions about this draft report.

Sincerely,
TERRA SYSTEMS, INC.

Michael D Lee, PhD.

Michael D. Lee, Ph.D.
Vice-President Research and Development

Table 1
Estimated Sample Volumes and Preservatives

Analysis	Matrix	Volume mL per bottle	Preservative
Total As, Be, Co, Mo, Se, Fe, K, Mn, Mg, and Na (metals based upon contaminants at each site)	Aqueous	200	HNO_3
Total Li (AP 234 only)	Aqueous	200	HNO_3
Filtered As, Be, Co, Mo, and Se (metals based upon contaminants at each site)	Aqueous	200	HNO_3
Filtered Li (AP 234 only)	Aqueous	200	HNO_3
DOC	Aqueous	45	H_3PO_4
Sulfate	Aqueous	50	None
Total		895	

Table 2
Plant McDonough AP-1 Initial Characterization Field and Hach Parameters

Well		**GA GWPS**	**AP-1 DGWC-69**	**AP-1 DGWC-68A**	**AP-1 DGWC-40**
pH	SU		7.4	6.8	5.3
ORP	mV		244	215	240
DO	mg/L		6.1	3.0	4.2
TSS	mg/L		6.6	0	4.3
Bicarbonate Alkalinity as CaCO3	mg/L		60	180	20
Hardness as CaCO3	mg/L		60	240	20
Ferrous Iron	mg/L		0.08	0.01	0.03
Sulfide	mg/L		0.01	0	0.01
Soil pH	SU		6.7	7.2	5.6
Soil Density	g/cm^3		1.56	1.58	1.69
Soil Field Holding Capacity	g/g		0.15	0.29	0.23
Soil Dry Weight	%		93.0	88.3	84.5
Sodium Hydroxide Titrations					
Groundwater	g		150.1	150	150.1
Soil	g		100	100	100
g/L NaHCO3	pH				
0			7.3	6.8	5.2
1			7.5	7.1	6.4
2			7.7	7.3	6.8
5			7.9	7.7	7.2
10			8.1	7.8	7.4
Potassium Hydroxide Titrations					
Groundwater	g		151.8	150	153.6
Soil	g		100	100	100
g/L KHCO3					
0			6.3	6.7	4.4
1			7.3	7.1	5.8
2			7.5	7.2	6.2
5			7.7	7.4	6.8
10			8.0	7.6	7.3
Sulfate	mg/L		10	40	230
Dissolved Organic Carbon	mg/L		0.59	0.71	<0.5
Total Arsenic	mg/L	0.010	**0.026**	<0.00068	
Dissolved Arsenic	mg/L	0.010	**0.052**	**0.014**	
Total Cobalt	mg/L	0.032			**0.040**
Dissolved Cobalt	mg/L	0.032			**0.039**
Total Molybdenum	mg/L	0.10	0.0055	**0.20**	
Dissolved Molybdenum	mg/L	0.10	0.0053	**0.20**	
Total Iron	mg/L		<0.020	0.029	<0.020
Total Magnesium	mg/L		2.6	18	19
Total Manganese	mg/L		0.0036	0.072	3.3
Total Potassium	mg/L		2.4	3.8	5.8
Total Sodium	mg/L		9.7	9.6	19
Soils					
Total Arsenic	mg/kg		3.1	1.0	
Total Cobalt	mg/kg				13
Total Molybdenum	mg/kg		0.68	7.4	
Total Iron	mg/kg		9600	35000	49000
Total Magnesium	mg/kg		3000	11000	9500
Total Manganese	mg/kg		250	530	460
Total Potassium	mg/kg		3900	12000	13000
Total Sodium	mg/kg		96	110	40
Moisture	%		19.7	12.9	14.9

0.010 GA GWPS = Georgia Groundwater Performance Standard

Table 3
AP-1 DGWC-69 Treatability Results

		GA GWPS	IC	Control	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	2 g/L NaHCO3	5 g/L NaHCO3	10 g/L NaHCO3	0.5 g/L Fe2O3	1.0 g/L Fe2O3	2.0 g/L Fe2O3	10 g/L FeB	20 g/L FeB	30 g/L FeB
Soil	g			417	580	580	580	580	580	580	580	580	580	580	580	580
Groundwater	g			798.4	798.4	796	792	798.4	796	811.7						
Product	g			0	1.6	4.0	8	1.6	4	8	0.375	0.752	1.6	8	15	22.5
Solution	g				750.2	749.2	766.2	750.0	754	811.7	800.6	810.4	807.1	747.7	724.5	725.3
Product Concentration	g/L			0	2.0	5.0	10.0	2.0	5.0	9.8	0.5	0.9	2.0	10.6	20.3	30.1
Day				7	7	7	7	7	7	7	7	7	7	7	7	7
pH	SU		7.4	6.5	7.2	7.5	7.7	7.4	8.0	7.8	6.6	6.4	6.7	8.0	9.4	9.6
ORP	mV		244	194	198	192	175	168	150	181	160	188	191	48	56	113
DO	mg/L		6.1	6.0	6.9	6.5	4.6	6.0	6.6	6.2	6.1	6.2	6.4	1.9	2.6	4.6
TSS	mg/L		6.6													
Bicarbonate Alkalinity as CaCO3	mg/L		60	80	700	2100	4100	1200	4200	5200	80	60	60	100	120	120
Hardness as CaCO3	mg/L		60	60	220	460	230	100	230	230	110	110	110	110	60	60
Ferrous Iron	mg/L		0.08	0.75	2.75	1.5	2.05	0.65	3.35	0.95	0.9	0.85	2.3	1.65	2.0	1.5
Sulfide	mg/L		0.01	0.06	0.12	0.2	0.12	0.03	0.01	0.01	0.073	0.05	0.07	0.04	0.05	0.01
ELLE Results																
Sulfate	mg/L		10	12	15	15	16	16	16	16	14	16	15	20	22	30
Dissolved Organic Carbon	mg/L		0.59	2.7	4.2	5.5	6.8	4.0	4.9	7.7	2.6	2.8	2.4	4.3	2.0	5.0
Total Arsenic	mg/L	0.010	**0.026**	0.0067	**0.020**	**0.032**	**0.047**	**0.026**	**0.056**	**0.084**	0.0058	0.0046	0.0042	**0.012**	**0.011**	**0.027**
Dissolved Arsenic	mg/L	0.010	**0.052**	0.0061	**0.015**	**0.035**	**0.047**	**0.036**	**0.055**	**0.088**	0.0063	0.0045	0.0040	0.0077	**0.012**	**0.030**
Total Molybdenum	mg/L	0.10	0.0055	0.037	0.070	0.084	0.089	0.079	0.087	0.092	0.030	0.026	0.018	0.091	**0.13**	**0.17**
Dissolved Molybdenum	mg/L	0.10	0.0053	0.037	0.069	0.083	0.093	0.089	0.097	0.096	0.034	0.027	0.019	0.089	**0.13**	**0.18**
Total Iron	mg/L		<0.02	0.42	5.4	2.0	0.57	2.7	3.7	0.81	0.50	0.74	0.63	7.6	1.8	14
Total Magnesium	mg/L		2.6	1.2	18	20	20	7.7	12	13	3.3	3.6	3.5	7.2	3.4	4.0
Total Manganese	mg/L		0.0036	1.2	2.6	2.0	1.2	1.2	1.5	0.83	0.94	1.0	0.98	0.87	0.17	0.40
Total Potassium	mg/L		2.4	5.8	470	1700	3100	9.7	12	15	5.3	6.3	6.0	9.6	8.1	13
Total Sodium	mg/L		9.7	19	28	31	34	550	1100	2200	19	21	21	400	770	1400

0.010 GA GWPS = Georgia Groundwater Performance Standard

0.039	J value. Compound detected above method detection limit but below method calibration limit.
28	Compound detected in blank

Table 4
AP-1 DGWC-68A Treatability Results

		GA GWPS	IC	Control	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	2 g/L NaHCO3	5 g/L NaHCO3	10 g/L NaHCO3	0.5 g/L Fe2O3	1.0 g/L Fe2O3	2.0 g/L Fe2O3	10 g/L FeS	20 g/L FeS	30 g/L FeS
Soil	g			580	580	580	580	580	580	580	580	580	580	580	580	580
Groundwater	g			737.9	798.4	796	792	798.4	796	792						
Product	g			0	1.6	4.0	8	1.6	4	8	0.375	0.8	1.5	7.5	15	22.5
Solution	g				721.9	732.4	789	738.6	738.3	786.7	785.2	735.8	740.2	721.6	713.1	771.4
Product Concentration	g/L			0	2.0	5.0	10.0	2.0	5.0	10.0	0.5	1.1	2.0	10.3	20.6	28.3
Day				7	7	7	7	7	7	7	7	7	7	7	7	7
pH	SU		6.8	6.6	6.9	6.8	7.1	7.1	7.1	7.1	6.7	6.6	6.6	7.0	8.7	7.9
ORP	mV		215	228	213	219	215	201	169	143	201	185	183	123	5	22
DO	mg/L		3.0	5.9	5.4	5.1	4.9	6.0	5.9	4.6	5.3	5.6	6.3	2.3	2.7	2.1
TSS	mg/L		0													
Bicarbonate Alkalinity as CaCO3	mg/L		180	180	700	1600	4200	930	1400	4100	350	230	230	230	350	230
Hardness as CaCO3	mg/L		240	200	570	710	470	340	470	340	230	230	230	340	460	460
Ferrous Iron	mg/L		0.01	0.9	0.9	1.65	4.4	3.15	3.85	2.15	0.75	0.65	1.5	2.25	1.75	3.00
Sulfide	mg/L		0	0.11	0.13	0.19	<0.02	<0.01	0.01	<0.01	0	<0.02	0.07	0.09	<0.01	<0.01
ELLE Results																
Sulfate	mg/L		40	31	32	35	36	38	41	42	33	35	36	44	44	38
Dissolved Organic Carbon	mg/L		0.71	1.8	2.1	2.7	3.3	2.5	3.9	4.5	3.1	1.6	1.7	1.7	1.9	11
Total Arsenic	mg/L	0.010	<0.00068	0.0019	0.0022	0.0032	0.0061	0.0034	0.0045	0.0064	0.0020	0.0020	0.0012	0.0014	0.00094	0.0018
Dissolved Arsenic	mg/L	0.010	**0.014**	0.0033	**0.058**	0.0024	**0.072**	0.0030	**0.066**	**0.030**	**0.047**	**0.023**	**0.016**	**0.013**	0.0052	**0.012**
Total Molybdenum	mg/L	0.10	**0.20**	**0.40**	**0.66**	**0.65**	**0.67**	**0.85**	**1.0**	**1.1**	**0.38**	**0.34**	**0.28**	**0.62**	**0.85**	**0.88**
Dissolved Molybdenum	mg/L	0.10	**0.20**	**0.39**	**0.67**	**0.67**	**0.69**	**0.88**	**1.0**	**1.2**	**0.41**	**0.35**	**0.28**	**0.68**	**0.84**	**0.86**
Total Iron	mg/L		0.029	0.69	0.59	0.57	13	1.7	1.0	1.8	0.71	4.3	1.4	6.4	4.1	1.8
Total Magnesium	mg/L		18	16	44	55	70	25	34	40	15	16	16	25	35	33
Total Manganese	mg/L		0.072	1.1	1.1	0.18	0.62	0.80	0.41	0.16	0.96	1.0	0.83	6.0	5.4	4.5
Total Potassium	mg/L		3.8	6.0	170	1000	2800	9.4	11	14	6.0	7.4	5.8	9.4	10	11
Total Sodium	mg/L		9.6	12	17	19	23	380	1100	16000	11	11	11	310	640	1100

0.010 GA GWPS = Georgia Groundwater Performance Standard

0.039	J value. Compound detected above method detection limit but below method calibration limit.
28	Compound detected in blank

Table 5
AP-1 DGWC-40 Treatability Results

		GA GWPS	IC	Control	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	2 g/L NaHCO3	5 g/L NaHCO3	10 g/L NaHCO3	0.5 g/L Fe2O3	1.0 g/L Fe2O3	2.0 g/L Fe2O3	10 g/L FeS	20 g/L FeS	30 g/L FeS
Soil	g			580	580	580	580	580	580	580	580	580	580	580	580	580
Groundwater	g			779.5	798.4	796	792	798.4	796	792						
Product	g			0	1.6	4.0	8	1.6	4	8	0.375	0.75	1.5	7.5	15	22.5
Solution	g				713.5	781.1	779.9	719.3	722	740	713.7	729.2	721.4	774	705.3	713.8
Product Concentration	g/L			0	2.0	5.0	10.0	2.0	5.0	10.0	0.5	1.0	2.1	9.6	20.8	30.6
Day				7	7	7	7	7	7	7	7	7	7	7	7	7
pH	SU		5.3	5.5	6.3	6.7	7.0	6.5	6.9	7.2	6.2	6.3	5.5	6.1	6.4	6.6
ORP	mV		240	217	232	224	226	161	153	156	164	245	211	56	21	5
DO	mg/L		4.2	5.6	5.7	5.3	5.1	5.8	5.4	5.2	6.1	6.1	6.6	2.9	3.1	2.7
TSS	mg/L		4.3													
Bicarbonate Alkalinity as CaCO3	mg/L		20	20	480	1200	2800	700	2800	4100	40	20	20	40	60	60
Hardness as CaCO3	mg/L		20	<20	<20	60	420	200	340	230	<20	20	40	20	<20	<20
Ferrous Iron	mg/L		0.03	0.35	0.05	0.25	0.7	0.85	1.08	2.0	1.15	1.25	<0.05	1.75	6.6	0.90
Sulfide	mg/L		0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	<0.01	<0.01	0.18	0.02
ELLE Results																
Sulfate	mg/L		230	200	220	240	250	250	260	250	210	200	200	220	220	230
Dissolved Organic Carbon	mg/L		<0.5	1.4	3.6	1.9	2.4	1.6	3.5	2.3	1.6	1.4	1.4	1.6	1.5	1.7
Total Cobalt	mg/L	0.032	**0.040**	**0.085**	0.018	0.011	0.012	0.0073	0.0044	0.0033	**0.073**	**0.070**	**0.074**	0.013	0.0053	0.0046
Dissolved Cobalt	mg/L	0.032	**0.039**	**0.082**	0.015	0.0092	0.0087	0.0058	0.0029	0.0022	**0.071**	**0.069**	**0.073**	0.012	0.0061	0.0041
Total Iron	mg/L		<0.020	1.0	2.1	0.83	3.0	1.1	1.5	1.4	3.0	1.2	1.5	3.0	3.3	3.5
Total Magnesium	mg/L		19	18	37	56	73	18	29	44	19	18	18	25	29	31
Total Manganese	mg/L		3.3	4.7	5.4	5.6	4.9	2.5	2.4	2.3	4.4	4.2	4.1	9.6	8.0	6.3
Total Potassium	mg/L		5.8	13	290	1100	2500	12	15	19	13	12	11	13	15	18
Total Sodium	mg/L		19	21	29	27	35	410	980	2200	20	21	19	320	710	1100

0.010 GA GWPS = Georgia Groundwater Performance Standard

0.039 J value. Compound detected above method detection limit but below method calibration limit.

28 Compound detected in blank

Table 6

AP-1 Percent Removal from Initial Characterization for Dissolved Metals

Soil + GW	Metal	GA GWPS mg/L		Control	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	2 g/L NaHCO3	5 g/L NaHCO3	10 g/L NaHCO3	0.5 g/L Fe2O3	1.0 g/L Fe2O3	2.0 g/L Fe2O3	10 g/L FeS	20 g/L FeS	30 g/L FeS
AP1 DGWC-69	Dis As	0.010	% Rem	88.3	71.2	32.7	9.6	30.8	-5.8	-69.2	87.9	91.3	92.3	85.2	76.9	42.3
	Dis Mo	0.10	% Rem	-598.1	-1201.9	-1466.0	-1654.7	-1579.2	-1730.2	-1711.3	-541.5	-409.4	-258.5	-1579.2	-2352.8	-3296.2
AP1 DGWC-68A	Dis As	0.010	% Rem	76.4	-314.3	82.9	-414.3	78.6	-371.4	-114.3	-235.7	-64.3	-14.3	7.1	62.9	14.3
	Dis Mo	0.10	% Rem	-95.0	-235.0	-235.0	-245.0	-340.0	-235.0	-500.0	-90.0	-75.0	-40.0	-240.0	-320.0	-330.0
AP1 DGWC-40	Dis Co	0.032	% Rem	-110.3	61.5	76.4	77.7	85.1	92.6	94.4	-82.1	-76.9	-87.2	69.2	84.4	89.5

Table 7
Plant McDonough AP-2 and 3/4 Initial Characterization Field and Hach Parameters

Well		**GA GWPS**	**AP-2 and 3/4 DGWC-48**	**AP-2 and 3/4 DGWC-20**
GW pH	SU		4.8	6.3
GW ORP	mV		265	232
GW DO	mg/L		4.1	3.8
GW TSS	mg/L		5.6	3.0
GW Bicarbonate Alkalinity	mg/L		20	20
GW Hardness as CaCO3	mg/L		<20	20
GW Ferrous Iron	mg/L		0.56	0.06
GW Sulfide	mg/L		0	0
Sodium Hydroxide Titrations				
Groundwater	g		100	100
g/L NaHCO3	pH			
0			4.2	5.5
1			7.1	6.9
2			7.5	7.3
5			7.9	7.8
10			7.9	8.0
Potassium Hydroxide Titrations				
Groundwater	g		100	100
g/L KHCO3				
0			4.3	4.5
1			6.6	6.8
2			7.2	7.2
5			7.8	7.7
10			8.3	7.9
ELLE Results				
Sulfate	mg/L		330	560
Dissolved Organic Carbon	mg/L		<0.5	3.4
Total Arsenic	mg/L	0.010	<0.00068	**0.022**
Dissolved Arsenic	mg/L	0.010	**0.035**	**<0.16**
Total Beryllium	mg/L	0.0040	0.0031	**0.0082**
Dissolved Beryllium	mg/L	0.0040	0.0031	**<0.010**
Total Cobalt	mg/L	0.032	**0.040**	**1.20**
Dissolved Cobalt	mg/L	0.032	**0.042**	**1.0**
Total Lithium	mg/L	0.040	<0.011	<0.011
Dissolved Lithium	mg/L	0.040	<0.011	<0.011
Total Selenium	mg/L	0.050	<0.00028	<0.00028
Dissolved Selenium	mg/L	0.050	<0.016	<0.16
Total Iron	mg/L		<0.020	0.039
Total Magnesium	mg/L		19	27
Total Manganese	mg/L		3.3	41
Total Potassium	mg/L		5.8	15
Total Sodium	mg/L		19	22

0.010 GA GWPS = Georgia Groundwater Performance Standard

Table 8
AP-2 and 3/4 DGWC-48 Treatability Results

		GA GWPS	IC	Control	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	2 g/L NaHCO3	5 g/L NaHCO3	10 g/L NaHCO3	0.5 g/L Fe2O3	1.0 g/L Fe2O3	2.0 g/L Fe2O3	10 g/L FeB	20 g/L FeB	30 g/L FeB
Groundwater	g			1056.4	1052.7	1059.4	1047.1	1058.7	1057.4	1058.9	1056.3	1054.6	1053.4	1047	1042.6	1034.5
Product	g			0	2.1	5.25	10.5	2.1	5.25	10.5	0.525	1.05	2.1	10.5	21	31.5
Product Concentration	g/L			0	2.0	4.9	9.9	2.0	4.9	9.8	0.5	1.0	2.0	9.9	19.7	29.5
Day				7	7	7	7	7	7	7	7	7	7	7	7	7
pH	SU		4.8	5.0	7.2	7.7	8.0	7.4	7.8	7.9	5.1	4.8	5.1	7.0	8.7	10.7
ORP	mV		265	289	251	241	235	186	158	150	224	259	254	219	15	-58
DO	mg/L		4.1	4.4	4.8	4.8	4.9	4.7	4.8	5.5	5.0	4.8	4.7	2.2	2.8	2.9
TSS	mg/L		5.6	2.8	1.9	14.1	5.9	7.2	0	1.5	0	22	11.8	86	6.2	18.4
Bicarbonate Alkalinity as CaCO3	mg/L		20	<20	1000	2700	6800	1300	3200	8000	20	20	20	80	60	140
Hardness as CaCO3	mg/L		<20	20	20	120	232	<20	58	120	20	20	20	40	80	40
Ferrous Iron	mg/L		0.56	0.05	0.05	<0.05	<0.05	<0.05	0.05	0.15	0.25	0.05	<0.05	0.55	1.35	1.95
Sulfide	mg/L		0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.1
ELLE Results																
Sulfate	mg/L		330	310	330	320	330	330	330	340	330	330	330	330	310	310
Dissolved Organic Carbon	mg/L		<0.5	1.1	2.0	2.8	19	2.1	3.8	6.3	1.5	1.3	1.7	0.56	1.7	2.3
Total Arsenic	mg/L	0.010	<0.00068	<0.00068	<0.00068	<0.00068	0.0024	<0.00068	0.00078	<0.00068	<0.00068	0.0014	0.0031	<0.00068	<0.00068	0.00070
Dissolved Arsenic	mg/L	0.010	**0.035**	**0.13**	**0.15**	**0.017**	**0.042**	0.0088	**0.047**	**0.025**	**0.042**	**0.030**	0.0095	0.0093	0.0079	**0.014**
Total Beryllium	mg/L	0.0040	0.0031	**0.0069**	**0.0047**	**0.0054**	0.0024	**0.0066**	0.0037	0.0014	**0.0072**	**0.0066**	**0.0052**	0.0016	0.00089	0.00050
Dissolved Beryllium	mg/L	0.0040	0.0031	**0.0077**	0.0020	0.0032	0.0017	**0.0040**	0.0030	0.0012	**0.0081**	**0.0070**	**0.0059**	<0.00012	<0.00012	<0.00012
Total Cobalt	mg/L	0.032	**0.040**	**0.34**	**0.32**	**0.31**	**0.17**	**0.34**	**0.30**	**0.059**	**0.33**	**0.34**	**0.34**	**0.081**	**0.053**	0.031
Dissolved Cobalt	mg/L	0.032	**0.042**	**0.36**	**0.31**	**0.30**	**0.16**	**0.33**	**0.28**	**0.058**	**0.35**	**0.34**	**0.33**	0.0015	0.00041	0.00022
Total Lithium	mg/L	0.040	<0.011													
Dissolved Lithium	mg/L	0.040	<0.011													
Total Selenium	mg/L	0.050	<0.00028													
Dissolved Selenium	mg/L	0.050	<0.016													
Total Iron	mg/L		<0.020	0.19	0.17	0.19	0.10	0.15	0.15	0.027	5.1	33	110	87	95	81
Total Magnesium	mg/L		19	15	15	15	15	15	14	14	15	16	16	13	4.3	1.3
Total Manganese	mg/L		3.3	12	12	10	4.1	12	11	0.38	12	11	14	5.2	2.5	1.8
Total Potassium	mg/L		5.8	14	760	1900	3800	14	13	13	14	14	14	14	14	14
Total Potassium	mg/L		5.8	14	760	1900	3800	14	13	13	14	14	14	14	14	14
Total Sodium	mg/L		19	22	24	27	30	540	1400	2600	22	22	24	450	890	1500

0.010 GA GWPS = Georgia Groundwater Performance Standard

0.039 J value. Compound detected above method detection limit but below method calibration limit.

Table 9
AP-2 and 3/4 DGWC-20 Treatability Results

			IC	Control	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	2 g/L NaHCO3	5 g/L NaHCO3	10 g/L NaHCO3	0.5 g/L Fe2O3	1.0 g/L Fe2O3	2.0 g/L Fe2O3	10 g/L FeS	20 g/L FeS	30 g/L FeS
Groundwater	g			1064.3	1059.3	1057.4	1058.5	1058	1054.8	1053.5	1068.9	1061.1	1054.7	1051.1	1040.9	1032.3
Product	g			0	2.1	5.25	10.5	2.1	5.25	10.5	0.525	1.05	2.1	10.5	21	31.5
Product Concentration	g/L	GA GWPS		0	2.0	4.9	9.8	2.0	5.0	9.9	0.5	1.0	2.0	9.9	19.8	29.6
Day				7	7	7	7	7	7	7	7	7	7	7	7	7
pH	SU		6.3	3.9	7.1	7.4	7.7	7.0	7.4	7.7	5.1	3.4	2.8	5.3	7.9	8.6
ORP	mV		232	275	215	219	223	189	153	145	210	347	410	204	139	78
DO	mg/L		3.8	5.5	5.6	5.8	6.3	5.4	5.8	5.5	5.4	5.4	5.6	3.3	2.6	3.0
TSS	mg/L		3.0	7.4	2.8	6.3	52	0.8	4.1	14.1	13.2	6.3	21.9	13.6	6.8	14.8
Bicarbonate Alkalinity as CaCO3	mg/L		20	20	1100	2300	5700	1100	3400	6800	20	20	20	80	100	80
Hardness as CaCO3	mg/L		20	<20	<20	350	230	60	350	230	<20	20	20	<20	20	160
Ferrous Iron	mg/L		0.06	0.08	<0.03	<0.03	0.12	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	<0.03
Sulfide	mg/L		0	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
ELLE Results																
Sulfate	mg/L		560	530	540	540	540	540	550	540	550	470	480	490	520	580
Dissolved Organic Carbon	mg/L		3.4	1.5	1.8	3.4	6.8	2.3	2.5	2.5	0.99	0.85	1.0	1.2	1.5	1.7
Total Arsenic	mg/L	0.010	**0.022**	**0.019**	**0.014**	**0.022**	**0.025**	**0.013**	0.0015	**0.012**	**0.019**	**0.021**	**0.021**	0.0057	0.0032	0.0028
Dissolved Arsenic	mg/L	0.010	**<0.16**	**0.044**	0.0039	0.0082	**0.010**	0.0038	0.0054	0.0068	**0.025**	**0.028**	**0.025**	0.0038	0.0023	0.0014
Total Beryllium	mg/L	0.0040	**0.0082**	**0.0071**	**0.0043**	**0.013**	**0.010**	**0.0045**	0.00057	**0.0048**	**0.0084**	**0.0068**	**0.0071**	0.0019	0.00086	0.00059
Dissolved Beryllium	mg/L	0.0040	**<0.010**	**0.0080**	0.00040	0.00059	0.00034	0.00033	0.00023	0.00035	**0.0078**	**0.0080**	**0.0091**	<0.00012	<0.00012	<0.00012
Total Cobalt	mg/L	0.032	**1.20**	**1.0**	**1.0**	**0.56**	**0.60**	**1.0**	**0.36**	**0.32**	**1.1**	**1.2**	**1.2**	**0.26**	**0.15**	**0.12**
Dissolved Cobalt	mg/L	0.032	**1.0**	**1.1**	**0.94**	**0.49**	**0.27**	**0.97**	**0.36**	**0.25**	**1.1**	**1.0**	**1.1**	**0.039**	0.0020	0.00045
Total Lithium	mg/L	0.040	<0.011													
Dissolved Lithium	mg/L	0.040	<0.011													
Total Selenium	mg/L	0.050	<0.00028													
Dissolved Selenium	mg/L	0.050	<0.16													
Total Iron	mg/L		0.039	0.048	0.45	0.058	1.4	0.073	0.064	0.15	0.55	15	58	90	85	100
Total Magnesium	mg/L		27	26	25	25	25	24	24	26	25	25	25	23	15	3.3
Total Manganese	mg/L		41	37	39	7.7	17	38	4.2	4.3	40	45	44	31	7.3	4.5
Total Potassium	mg/L		15	15	770	1800	3800	15	15	14	15	15	15	15	15	15
Total Sodium	mg/L		22	22	24	26	29	500	1200	2700	22	22	22	460	950	1500

0.010 GA GWPS = Georgia Groundwater Performance Standard

0.039 J value. Compound detected above method detection limit but below method calibration limit.

Table 10
AP-2 and 3/4 Percent Removal from Initial Characterization for Dissolved Metals

GW	Metal	GA GWPS mg/L		Control	2 g/L KHCO3	5 g/L KHCO3	10 g/L KHCO3	2 g/L NaHCO3	5 g/L NaHCO3	10 g/L NaHCO3	0.5 g/L Fe2O3	1.0 g/L Fe2O3	2.0 g/L Fe2O3	10 g/L FeS	20 g/L FeS	30 g/L FeS
AP234 DGWC-48	Dis As	0.010	% Rem	-271.4	-328.6	51.4	-20.0	74.9	-34.3	28.6	-20.0	14.3	72.9	73.4	77.4	60.0
	Dis Be	0.0040	% Rem	-148.4	35.5	-3.2	45.2	-29.0	3.2	61.3	-161.3	-125.8	-90.3	>96.2	>96.2	>96.2
	Dis Co	0.032	% Rem	-757.1	-638.1	-614.3	-281.0	-685.7	-566.7	-38.1	-733.3	-709.5	-685.7	96.4	99.0	99.5
AP234 DGWC-20	Dis As	0.010	% Rem	**0.0**	**91.1**	**81.4**	**77.3**	**91.4**	**87.7**	**84.5**	**43.2**	**36.4**	**43.2**	**91.4**	**94.8**	**96.8**
	Dis Be	0.0040	% Rem	**0.0**	**95.0**	**92.6**	**95.8**	**95.9**	**97.1**	**95.6**	**2.5**	**0.0**	**-13.8**	**>98.5**	**>98.5**	**>98.5**
	Dis Co	0.032	% Rem	-10.0	6.0	51.0	73.0	3.0	64.0	75.0	-10.0	0.0	-10.0	96.1	99.8	99.96

APPENDIX F

Multi-Variate Statistical Analyses

APPENDIX E: MULTIVARIATE STATISTICAL ANALYSIS

Groundwater

To further evaluate the factors affecting groundwater quality at AP-1, correlation analysis of groundwater data was conducted (Figure 31). Results of that evaluation indicate that groundwater concentrations of arsenic and cobalt do not show a statistically significant (p<0.05) relationship with concentrations of the CCR indicators boron, chloride, or sulfate considered to originate from the ash ponds (non-shaded boxes on Figure 29). Instead, groundwater cobalt concentrations show a statistically significant inverse relationship with pH (red box) while correlation between arsenic and any other groundwater parameters is absent. This supports the hypothesis presented in this report that pH is likely the controlling factor for groundwater cobalt concentrations in the AP-1 well network.

Additional statistical evaluation was conducted using Principal Component Analysis (PCA) to determine potential patterns in the groundwater data. PCA is a multivariate statistical technique used for reducing the dimensionality of large datasets and increasing interpretability, but at the same time minimizing information loss contained in the dataset (Jolliffe and Cadima 2016). By using PCA, the numbers of variables in a dataset, can be reduced to identify those factors showing the most variability in the dataset, and to visualize the data in a format that facilitates data interpretation. For this PCA analysis the primary parameters controlling were variable.

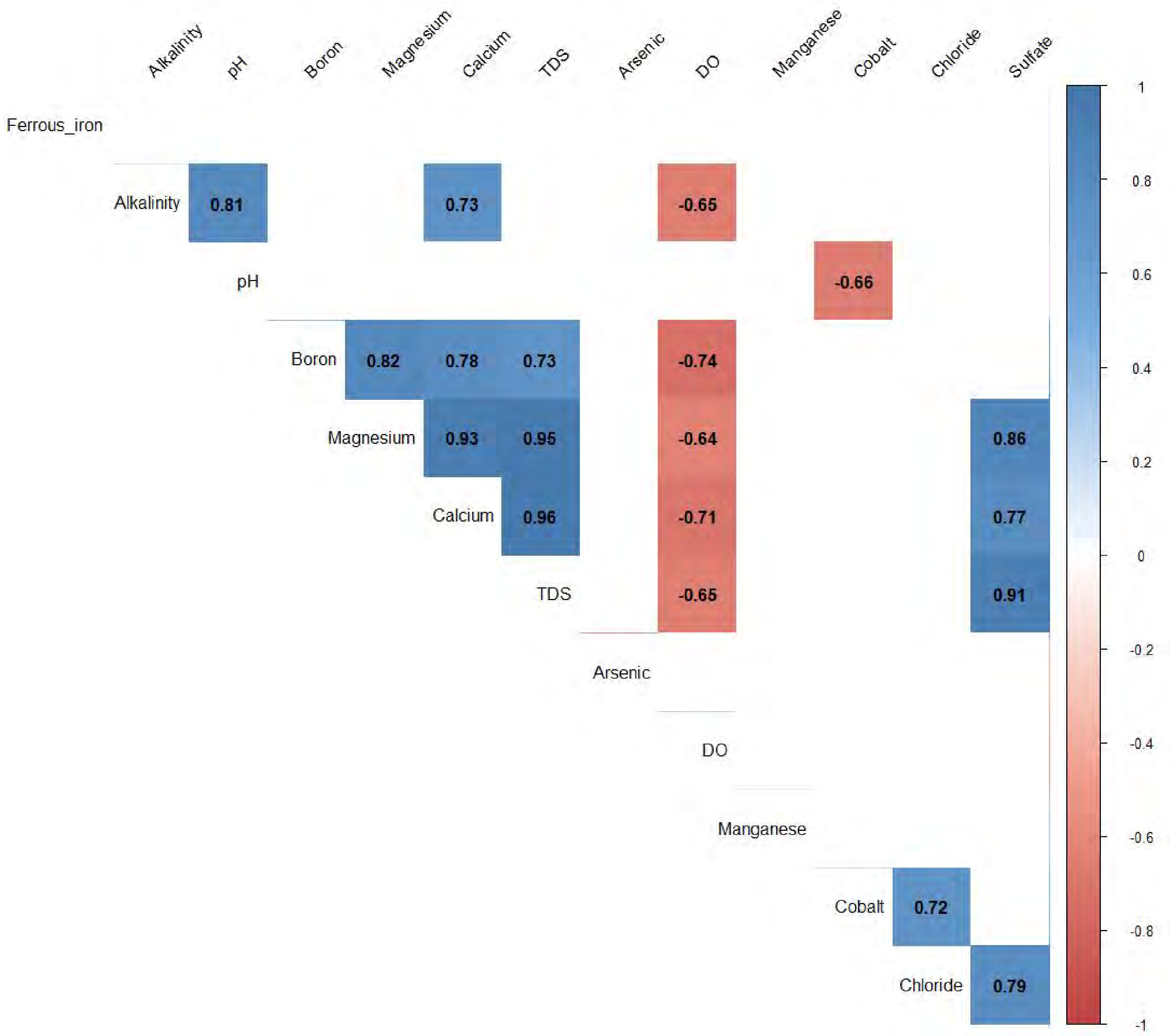
The results of the PCA analysis indicate that well DGWC-40 is geochemically different than the other monitoring wells in the AP-1 monitoring network in both two-dimensional and three-dimensional space (Figure 30). Both upgradient and downgradient wells at AP-1 generally group as would be appropriate, with the exception of DGWC-40. Additionally, DGWC-69 is most similar to background wells DGWA-53, DGWA-70, and DGWA-71, consistent with their major ion chemistry as described in Section 3.1.2 (Figure 10).

Solids

Further evaluation of site mineralogy using PCA was also conducted to better understand the overburden and bedrock materials in the vicinity of AP-1. The results of that analysis are presented in Figure 31. The two and three-dimensional PCAs show some groupings of the different monitoring well locations based on the mineralogical compositions of the major hydrogeologic units. Again, DGWC-69 is most similar to that of background wells (DGWA-53 and DGWA-71), suggesting a distinct influence of the similar underlying geology on groundwater quality at DGWC-69 (Section 3.1.2). DGWA-70A, a background well screened in overburden/saprolite, is geologically much different than the other background wells, which likely explains the variability in groundwater composition within the background well network of AP-1 identified by the groundwater PCA (Figure 30). This inherent geochemical variability due to site geology likely translates to downgradient wells as well.

References:

Jolliffe, I. and Cadima, J., 2016. Principal component analysis: a review and recent developments. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 374(2065), p.20150202.



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

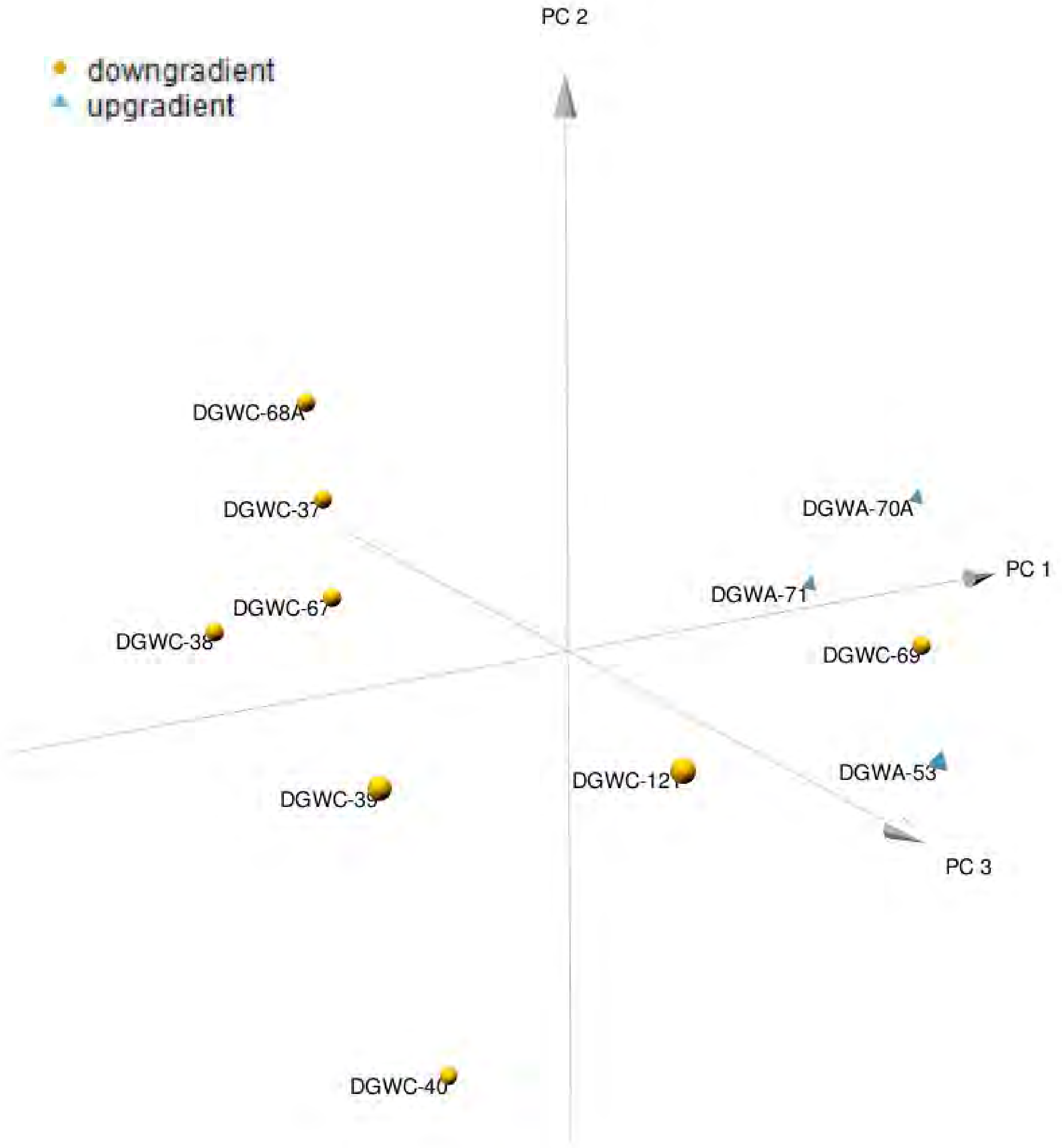
CONSULTANT

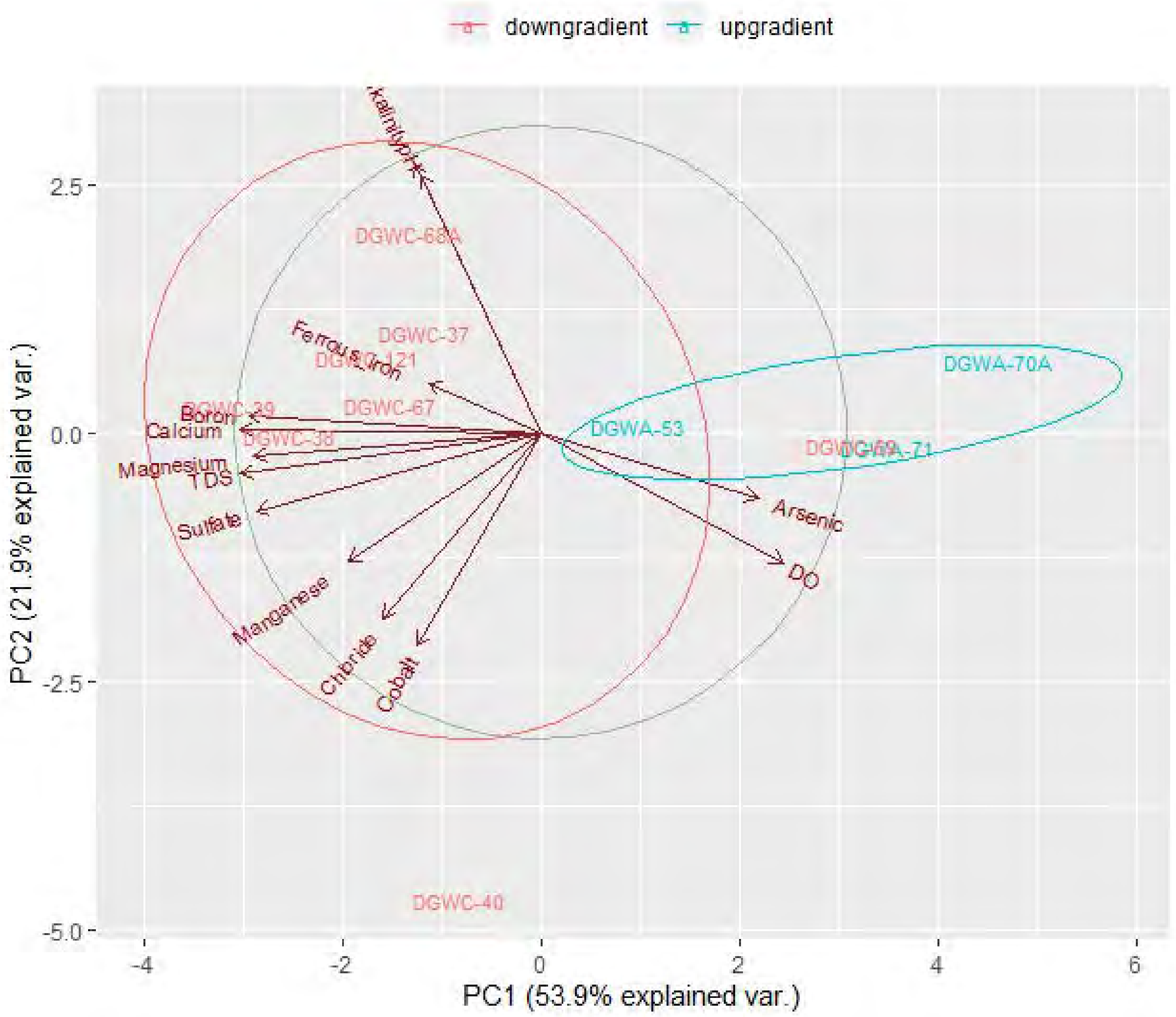
wsp

YYYY-MM-DD	2022-09-18
DESIGNED	PJN
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

TITLE
AP-1 MONITOR WELL NETWORK CORRELATION PLOT (where p <0.05)

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	29





GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

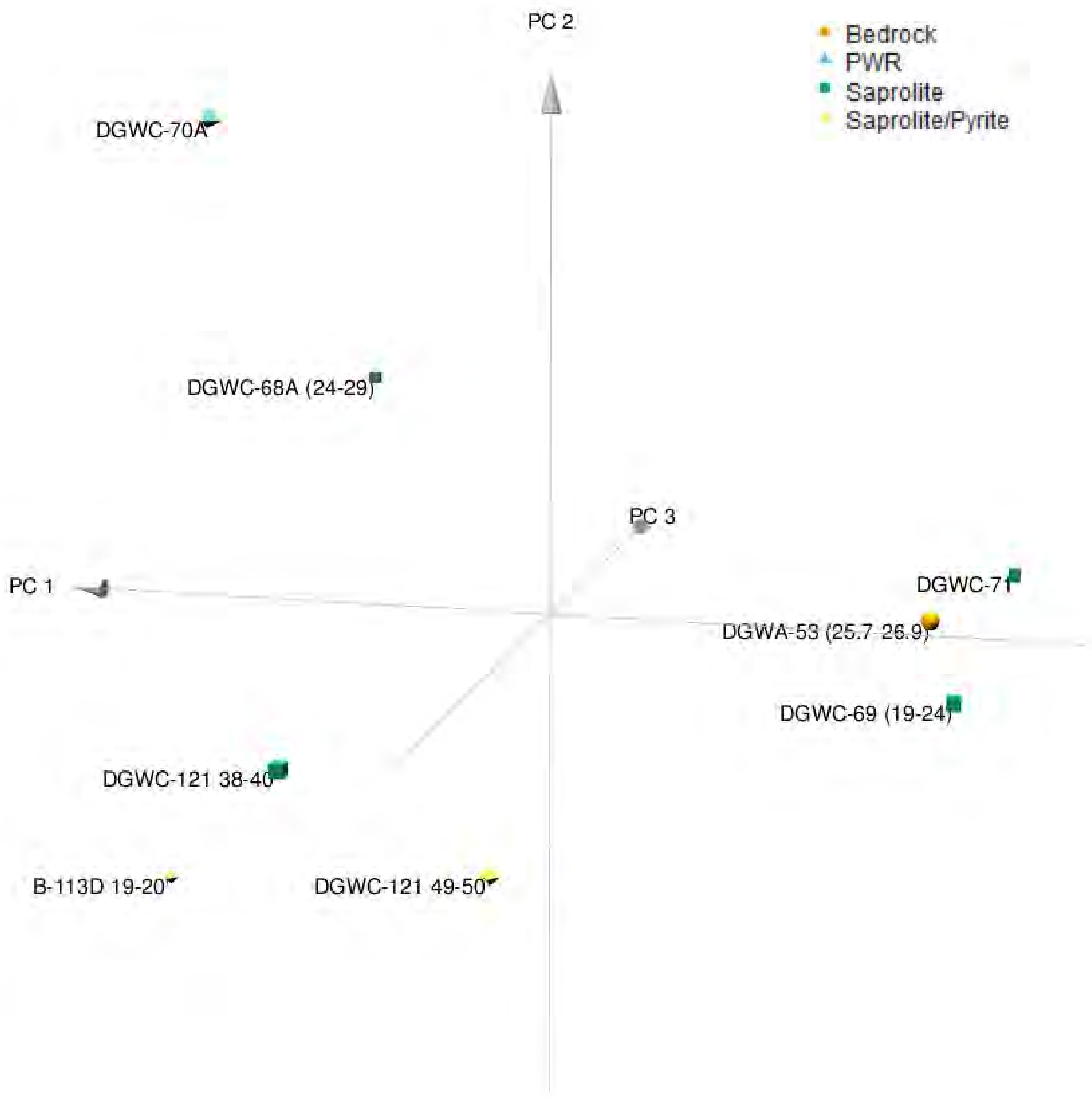
CONSULTANT

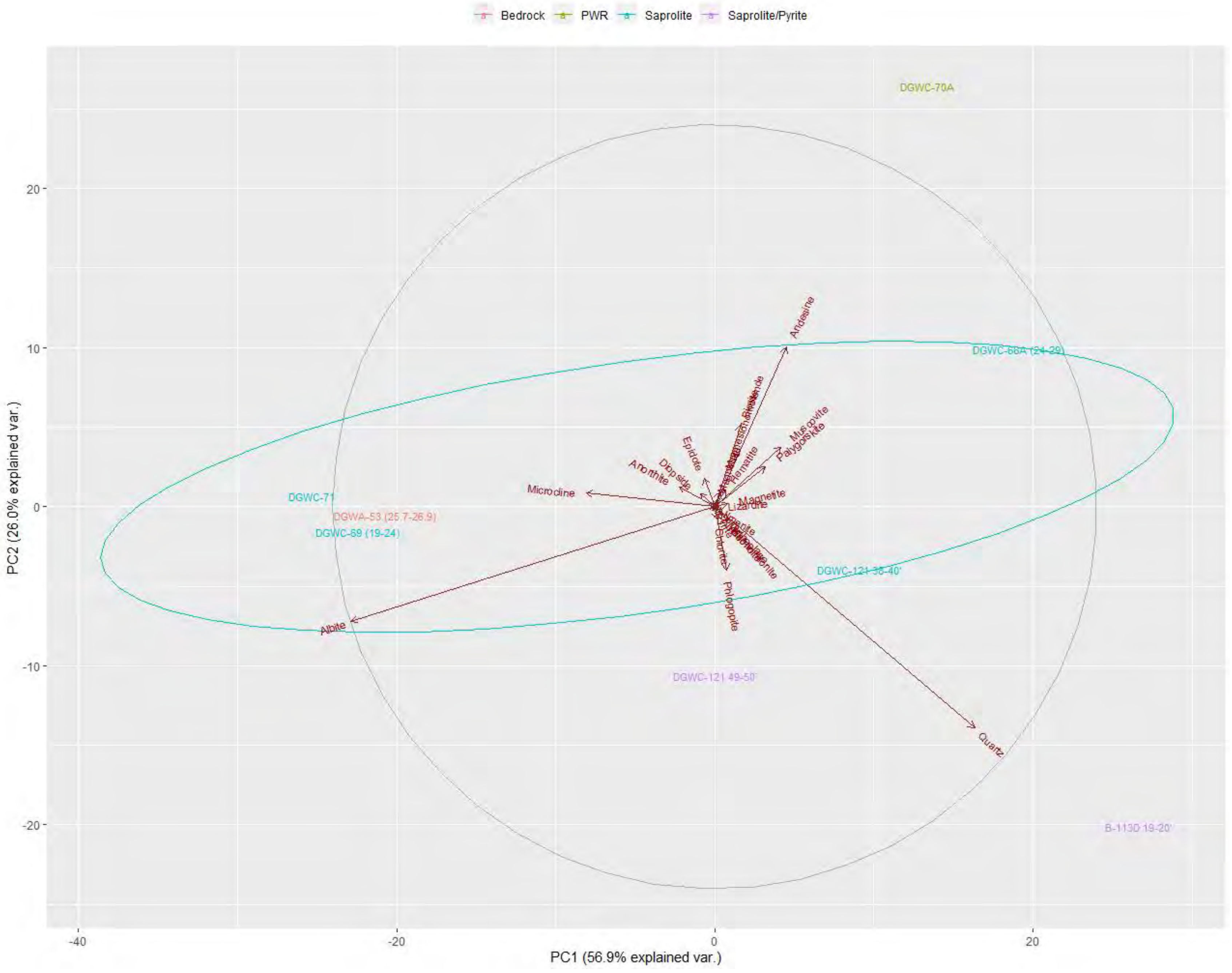
wsp

YYYY-MM-DD	2022-09-18
DESIGNED	CW
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

TITLE
AP-1 GROUNDWATER MONITORING NETWORK
PCA 2D AND 3D

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	30





GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL CONCEPTUAL SITE MODEL

CONSULTANT

wsp

YYYY-MM-DD	2022-09-18
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

TITLE
AP-1 2D AND 3D MINERALOGY PCA EVALUATION

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	31

APPENDIX B

Geochemical Modeling Report

APPENDIX C

Geochemical Modeling

Plant McDonough-Atkinson Ash Pond 1, and Ash Pond 2 and 3/4

Submitted to:

Georgia Power

241 Ralph McGill Boulevard
Atlanta, GA, 30341

Submitted by:

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August 31, 2023

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1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (US EPA) coal combustion residuals (CCR) Rule [40 Code of Federal Regulations (CFR) 257 Subpart D] and the Georgia (GA) Environmental Protection Division (EPD) Rules for Solid Waste Management 391-3-4.10, this *Geochemical Modeling Report (GMR) for* McDonough-Atkinson Ash Pond 1, and Ash Pond 2 and AP-3/4 (AP-1, AP-2 and 3/4) was completed as a record of geochemical modeling to simulate various conditions across the site. Data summarized in this report are intended to support remedy selection and modeling was conducted under the auspices of the Georgia EPD Fate and Transport where applicable (GA EPD 2016). The geochemical data used in this report are summarized in the Geochemical Conceptual Site Models (GCSM) that were completed for AP-1 (WSP 2023a) and AP-2 and 3/4 (WSP 2023b). The geochemical data in those reports were obtained as part of the Assessment of Corrective Measures (ACM) for AP-1, and AP-2 and 3/4.

The general approach to geochemical modeling is as follows:

- Develop a model that describes, explains, and accounts for current conditions at which Statistically Significant Level (SSL) of an Appendix IV CCR parameter exists; and
- Evaluate potential corrective measures, their effectiveness, and calculate an estimated time for the constituent concentrations exhibiting SSLs to be reduced to below the Groundwater Protection Standard (GWPS) along the model transects.

The data used in the models were collected at the site from 2016 to September 2022. Any additional groundwater or aquifer solids data collected subsequently is not included in the modeling.

The two potential corrective measures relied on in this report to meet the respective GWPS at each transect is Monitored Natural Attenuation (MNA) or MNA with in-situ chemical injections or ISI. The US EPA describes the objective of MNA as a 4-phased process as follows (US EPA 2007a, 2007b, 2015):

- **Phase I:** Demonstration that the groundwater plume is not expanding.
- **Phase II:** Determination that the mechanism and rate of the attenuation process are sufficient.
- **Phase III:** Determination that the capacity of the aquifer is sufficient to attenuate the mass of contaminant within the plume and the stability of the immobilized contaminant is sufficient to resist remobilization.
- **Phase IV:** Design of a performance monitoring program based on an understanding of the mechanism of the attenuation process, and establishment of contingency remedies tailored to site-specific characteristics.

Using this modeling approach, only tiers I and II and the capacity component of Tier III are evaluated. Additional geochemical modeling for the stability of constituents once immobilized for Tier III will be evaluated concurrent with planned pre-design investigations and incorporated into the *Corrective Action Monitoring Plan (CAMP)*.

2.0 BACKGROUND INFORMATION

Plant McDonough-Atkinson (Plant McDonough, Site), formerly a coal-fired power generating facility, was converted to a natural gas combined-cycle power generating facility in 2011. Located approximately seven miles northwest of Atlanta in southeast Cobb County (5551 South Cobb Dr SE, Smyrna, GA 30080), the property comprises approximately 390 acres and is bounded on the southeast by the Chattahoochee River.

2.1 Site Description

Four CCR surface impoundments have received CCR at Plant McDonough: Ash Pond 1 (AP-1), Ash Pond 2 (AP-2), Ash Pond 3 (AP-3) and Ash Pond 4 (AP-4). A notification of intent to close AP-1 was certified on December 7, 2015. AP-2 has been certified closed by removal as of March 30, 2020. CCR from AP-2 has been placed within the AP-3 footprint. AP-3 and AP-4 have historically operated together and are being closed as a Combined Unit (AP-3/4). AP-4 has been consolidated within the AP-3 footprint and closed in place. Final closure of AP-3/4 is substantially complete and is anticipated in 2023.

2.2 Geologic and Hydrogeologic Setting

Geologic and hydrogeologic conditions for this Site are described in detail in the *Hydrogeological Assessment Report* (HAR; WSP 2023c, 2023d). Key elements of the HAR are summarized on cross sections through the SSL well locations in the site GCSMs (WSP 2023a, 2023b). The geological setting of the site can be described as below:

Residual soils, primarily clayey/sandy silt, sandy silt with clay, and silty sand occur as blankets of variable thickness overlying bedrock across most of the site. Saprolitic soils and/or saprolitic rock also range in thickness across the site but are generally encountered at or near ground surface. Saprolitic rock is considered to include transitionally weathered rock (TWR) or partially weathered rock (PWR). Material overlying the top of the rock surface, including residual soils, saprolite, and TWR or PWR, is collectively referred to as “overburden.”

Bedrock beneath the overburden north of the faulted intrusive contact is primarily characterized by Ordovician-age felsic sphene-epidote-biotite-quartz-feldspar gneiss (OZli) with well-developed foliation and an augen texture reflecting historical movement/deformation near fault and shear zones of the inactive Brevard fault zone. Bedrock beneath the overburden south of the faulted intrusive contact is primarily characterized by interlayered Ordovician age phyllonite, button schist with well-developed shear foliation, fine-grained mylonite with poorly developed foliation, and very fine-grained mylonitic biotite gneiss with well-developed shear foliation (OZbs). The contact has had substantial movement as indicated by the presence of porphyroclastic-feldspars with sigmoidal-tails.

A regional, unconfined aquifer system is present at the site, consisting of regolith, TWR, and shallow bedrock. Preferential groundwater flow is anticipated to take place along lineaments and discontinuities. This unconfined, surficial aquifer system is recharged primarily through precipitation and subsequent infiltration, and flow is generally controlled by topography and surface water drainage and occurs mainly through intergranular pore spaces. The saturated soils in the regolith function as the principal storage reservoir for groundwater in bedrock.

Bedrock groundwater occurs in a fracture network that is largely dependent on rock type, degree of differential weathering, topography, and area of catchment. Groundwater flow in the underlying bedrock takes place primarily along discontinuities such as compositional layering, foliation, joints, and fractures. Fracture porosity is minimal compared to the regolith, and thus, groundwater flow is determined by how well the fractures are inter-connected. Further, fractures within the bedrock at the site are not well connected and the predominant groundwater flow at the site occurs in the overburden and upper bedrock at the site. Based on site-specific examples and supporting data, as presented in the HAR, fractures within the bedrock are limited and decrease in number and groundwater production with depth. Groundwater flow primarily occurs in the overburden, TWR, and PWR. Therefore, bedrock transport has been excluded from the modeling activities summarized below.

2.3 Summary of SSLs

Analytical results from routine monitoring events have been statistically analyzed in accordance with the Site's certified statistical analysis method. Statistical analyses at the site have indicated statistically significant levels (SSLs) of varying Appendix IV constituents above the groundwater protection standards (GWPS). Table 1 presents those Appendix IV constituents that have been modeled for evaluation of corrective measures.

Table 1: Appendix IV Constituents Modeled for Evaluation of Corrective Measures

Appendix IV Constituent	**SSLs[1]**
Arsenic	DGWC-9, DGWC-69
Beryllium	DGWC-5, DGWC-9, DGWC-10, DGWC-47, DGWC-48, B-92, B-93
Cobalt	DGWC-8, DGWC-9, DGWC-10, DGWC-19, DGWC-20, DGWC-40, DGWC-47, DGWC-48, B-56, B-63, B-92, B-93, B-104D
Lithium	DGWC-47, DGWC-48, B-115D, B-120D
Molybdenum[2]	DGWC-68A
Selenium[3]	DGWC-9
Radium 226+228[4]	B-104D, B-109D

Note:

[1] An SSL is determined by comparing the confidence interval to the GWPS. Under current EPD rules, the GWPS is: (i) the MCL or RSL, or (ii) background levels for constituents where the background level is higher than the MCL or RSL.

[2] Molybdenum ASD previously submitted and accepted.

[3] Selenium is no longer an SSL. However, because the upper confidence limit remains above the GWPS, Georgia Power will continue to evaluate corrective measures alternatives.

[4] Radium is not modeled as part of this evaluation because of a pending ASD.

3.0 APPROACH

This section presents a description of the approach WSP used to evaluate the fate and transport of respective constituents from Section 2.3 along transects shown in Figure 1. Both the physical and the chemical attributes of the system were parameterized. To assess the physical system, WSP used Darcy’s Law (GA EPD 2016) to calculate groundwater velocity and ultimately, travel times of conservative and attenuated aqueous constituents. To assess the geochemical system, WSP used geochemical modeling techniques to determine the geochemical conditions affecting fate and transport of each constituent in the groundwater system. Details on the specific methodologies are provided in the following sections. Details of groundwater modeling are presented in the site closure groundwater modeling reports (Golder 2020, 2021).

3.1 Representative Transects

Transects were developed for each SSL location that extend generally to either the nature and extent well location or the extent of delineation based on groundwater flow direction. The specific location of each transect and length are shown in Figure 1a and Figure 1b and described in Table 2. However, where transects overlap or are in close proximity, a generalized transect was developed that accounted for all of the SSLs at similar locations and are represented by the names of the multiple wells. Where this occurred, a representative maximum value for constituent's SSL was used along the transect. The modeling approach for each transect is be summarized as follows:

AP-1

- DGWC-69 (Transect 1): The proposed transect runs from DGWC-69 to the unnamed creek. This model will address the arsenic SSL. Pre-closure (2016), recent conditions and predicted post closure groundwater flow are consistently towards the unnamed tributary at this location.
- DGWC-40 (Transect 2): A single transect runs south from DGWC-40 and terminates at the B-62/B-100 area. This model will address the cobalt SSL. Pre-closure (2016) and predicted post closure groundwater flow are consistently towards the Chattahoochee River at this location.

AP-2 and 3/4

- DGWC-5/B-92/B-93 (Transect 3): The proposed transect runs from DGWC-5 through B-92/B-93 to near well B-98 and is generally side gradient. This model addresses the beryllium and cobalt SSLs at wells DGWC-5, B-92 and B-93 since the wells are in close proximity using current condition values that are similar for the three wells. Pre-closure (2016) groundwater flow in this area was outward from AP-3/4 to the northwest along a flow line between DGWC-5 towards B-98. Recent groundwater flow from September 2022, used in the initial condition model, has changed directions, but has not fully reversed toward AP-2 and 3/4. Post closure, the groundwater model predicts that the flow direction will reverse to the southwest, inwards toward the AP-2, 3/4.
- DGWC-8 (Transect 4): The transect runs from DGWC-8 to the site property line. Pre-closure (2016) groundwater flow in this area was outward from AP-3/4 to the northeast along a flow line between DGWC-8 towards the permit boundary. As closure activities have progressed, the groundwater flow direction has reversed towards the AP-3/4. This transect will address the cobalt SSL. Notably, cobalt was below the GWPS (as of the last four sampling events).
- DGWC-9/B-56 (Transect 5): The transect runs from a point in-between DGWC-9 and B-56 outward towards the property boundary. Pre-closure (2016) groundwater flow in this area was outward from AP-3/4 to the northeast towards the permit boundary. As closure activities have progressed, the groundwater flow direction has reversed towards the AP-3/4. This model addresses the arsenic, beryllium, cobalt, and selenium SSLs in this transect.
- DGWC-10 (Transect 6): The transect begins at B-66 and runs west towards DGWC-10. Pre-closure (2016) groundwater flow in this area was outward from AP-3/4 to the northeast towards the permit boundary. B-66 is used as the source of background groundwater for this transect based on the current groundwater flow conditions (2022). This model will address the beryllium and cobalt SSLs in this transect.
- DGWC-19/ 20/ B-63 (Transect 7): The transect runs from a point between DGWC-19 and DGWC-20 south toward DGWC-47, through B-63, and terminate at the B-77 area. Pre-closure (2016) and predicted post closure groundwater flow are consistently towards the Chattahoochee River at this location. This model will address the cobalt SSL in this transect.

- DGWC-47/48/B-104D (Transect 8): The transect runs from between DGWC-47 and DGWC-48, through B-104D south toward the B-76 area. Pre-closure (2016) and predicted post closure groundwater flow are consistently towards the Chattahoochee River at this location. This model will address the beryllium, cobalt, and lithium SSLs in this transect.

3.2 Groundwater Velocity (Darcy’s Law Calculation)

To estimate the travel time from each SSL well of a constituent along a specific transect (as described in Table 2), Darcy’s Law was used to calculate groundwater velocity, using the hydraulic gradient from the groundwater elevation contour map (and groundwater model for post-closure predictions), and hydraulic conductivity for the subsurface geologic materials from site specific data (WSP 2023c, d). The form of Darcy’s Law that was used is as follows:

$$V = Ki/\eta$$

where:

V = groundwater velocity (ft/day)

K = hydraulic conductivity (ft/day)

i = hydraulic gradient (ft/ft)

η = effective porosity (dimensionless)

For the hydraulic conductivity, a site-specific value, as presented in the HAR, of 7.7E-4 feet per day (cm/sec) was used (WSP, 2023). The representative value from the HAR, as opposed to transect specific values, were used for simplicity, based on data availability, and the comparative analysis objective of the models. The hydraulic gradient (feet per foot [ft/ft]) was dependent on the transect start and ending locations. The resulting hydraulic gradient and groundwater velocity for each transect pre-closure are shown in Table 2. Where gradients show a negative value, it indicates that flow is currently modeled as inward, towards the current well where an SSL was identified (DGWC-8 and DGWC-10) at AP-2, 3/4.

Post-closure changes to gradients, velocities, and in some cases changes to flow direction are described in Table 3. Groundwater modeling of a post-closure condition indicated that in some cases, it is predicted that the current groundwater direction will reverse (Golder, 2020). This is only predicted to occur at one transect, DGWC-5/B-93. In that case, where the gradient reverses, the velocity of groundwater also substantially decreases.

Groundwater velocity was calculated using the following equation based on variables supplied in Table 2 and Table 3:

$$Vs=(K*dh/dl)/n_e$$

where:

Vs = groundwater seepage velocity

K=bulk hydraulic conductivity value along transport flow path

dh/dl = average hydraulic gradient along transport flow path

n_e = effective porosity

Table 2. Pre-Closure Velocities and Transect Descriptions Based on September 2022 Potentiometric Surface

Flow Path Start	Groundwater Elevation	Δ h	Δ l	Hydraulic Gradient	Average Hydraulic Conductivity, K	Assumed Effective Porosity	Average Linear Groundwater Velocity		Transect Termination
	(feet NAVD)	(m)	(m)	Δh/ Δ l	(Centimeter per second)	n_e	(m per day)	(m per year)	
ASH POND 1 (AP-1)									
Transect 1: DGWC-69	757.45 750.002	2.27	20	0.114	0.00077	0.2	0.38	138	Ends at small stream
Transect 2: DGWC-40	760.17 743.661	5.03	169	0.030	0.00077	0.2	0.10	36	Ends at B-100
ASH POND 2, 3, 4 (AP-2 and 3/4)									
Transect 3: DGWC-5 / B-92/ B-93	780.26 779.87	0.12	29	0.004	0.00077	0.2	0.01	5	Ends near B-98
Transect 4: DGWC-8	786.86 788.40	-0.47	20	-0.023	0.00077	0.2	-0.08	-28	Ends at property line
Transect 5: DGWC-9 / B-56	794.31 795.49	-0.36	10	-0.036	0.00077	0.2	-0.12	-43	Ends at property line
Transect 6: DGWC-10	791.8 794.45	-0.81	26	-0.031	0.00077	0.2	-0.10	-38	Ends at B-66
Transect 7: DGWC-19 / DGWC-20 / B-63	799.23 745.99	16.23	345	0.047	0.00077	0.2	0.16	57	Ends at B-77
Transect 8: DGWC-47 / DGWC-48/ B-104D	773.65 744.63	8.85	233	0.038	0.00077	0.2	0.13	46	Ends at B-76

Notes:
Δ h Change in potentiometric head
Δ l Change in transect length
(n_e) Effective porosity (Golder 2020, 2021)
(-) where shown, the groundwater flow direction is reversed, flowing from the transect end to the transect start
Gradients were calculated based on interpolated data from the post closure model.

Table 3. Post Closure Velocities and Transect Descriptions Based on Groundwater Modeling

Flow Path Start	Groundwater Elevation	Δ h	Δ l	Hydraulic Gradient	Average Hydraulic Conductivity, K	Assumed Effective Porosity	Average Linear Groundwater Velocity		Transect Termination
	(feet NAVD)	(m)	(m)	Δh/ Δ l	(Centimeter per second)	n_e	(m per day)	(m per year)	
ASH POND 1 (AP-1)									
Transect 1: DGWC-69	757.17 756.17	0.30	20	0.015	0.00077	0.2	0.05	19	Ends at small stream
Transect 2: DGWC-40	758.758 746.778	3.65	169	0.022	0.00077	0.2	0.07	26	Ends at B-100
ASH POND 2, 3, 4 (AP-2 and 3/4)									
Transect 3: DGWC-5 / B-92/ B-93	781.44 781.588	-0.05	29	-0.002	0.00077	0.2	-0.01	-1.9	Ends near B-98
Transect 4: DGWC-8	790.995 792.817	-0.56	20	-0.028	0.00077	0.2	-0.09	-34	Ends at property line
Transect 5: DGWC-9 / B-56	790.344 791.189	-0.26	10	-0.026	0.00077	0.2	-0.09	-31	Ends at property line
Transect 6: DGWC-10	784.701 787	-0.70	26	-0.027	0.00077	0.2	-0.09	-33	Ends at B-66
Transect 7: DGWC-19 / DGWC-20 / B-63	797.079 747.907	14.99	345	0.043	0.00077	0.2	0.14	53	Ends at B-77

Flow Path Start	Groundwater Elevation	Δ h	Δ l	Hydraulic Gradient	Average Hydraulic Conductivity, K	Assumed Effective Porosity	Average Linear Groundwater Velocity		Transect Termination
	(feet NAVD)	(m)	(m)	Δh/ Δ l	(Centimeter per second)	n_e	(m per day)	(m per year)	
Transect 8: DGWC-47 / DGWC-48/ B-104D	776.055 745.859	9.20	233	0.040	0.00077	0.2	0.13	48	Ends at B-76

Notes:
Δ h Change in potentiometric head
Δ l Change in transect length
(ne) Effective porosity (Golder 2020, 2021)
(-) where shown, the groundwater flow direction is reversed, flowing from the transect end to the transect start

3.3 Geochemical Data

The data presented in the GCSM prepared for AP-1 (WSP 2023a), and AP-2, 3/4 (WSP 2023b) include groundwater, porewater, and aquifer solids data collected and analyzed between 2016 and 2022. Based on results of solids testing, the subsurface stratigraphy was divided into the following lithologies or hydrostragraphic units:

- Saprolite/Overburden
- Partially Weathered Rock/Transitionally Weathered Rock (used interchangeably as PWR/TWR)
- Gneiss and Biotite Gneiss (collectively referred to as Bedrock)

Based on data presented in the GCSM, each of the constituents exhibiting SSLs can be generally described as follows:

Arsenic

- SSLs of arsenic at DGWC-69 have exceeded the GWPS since October 2017. The current trend, though positive (Slope = +0.0019) is not statistically significant. The concentrations of arsenic at DGWC-69 lack correlation with other CCR indicator parameters (WSP 2023c, WSP 2023d). However, the presence of boron, a key CCR indicator is noted. The concentration of arsenic at DGWC-69 is 100 times lower than that of porewater, generally reflecting the attenuation of arsenic at this location, assuming the source of arsenic is AP-1. However, due to the reducing nature of groundwater inflow from AP-1, attenuation at DGWC-69 may not be as effective. Alternatively, and less likely, the arsenic in DGWC-69 may be derived from naturally occurring arsenic present in the subsurface.
- Downgradient of DGWC-69, arsenic is attenuating, likely through sorption by a combination of iron, aluminum, and manganese oxides based on SEP data and other groundwater processes such as mixing, to below the GWPS at downgradient delineation locations.
- The arsenic levels at DGWC-9 have exceeded the GWPS since September 2016 and have been highly variable. The concentration of arsenic at DGWC-9 is 100 times lower than that of porewater, as of September 2022 sampling event. The SSL of arsenic is closely related to the low pH of groundwater at this well with the acidic conditions considered the likely cause for the SSL. The low pH of groundwater could be due to natural processes (e.g., the oxidation of pyrite identified in overburden at AP-2 and 3/4) that may be the result of changes to groundwater flow or infiltration due to the presence of the unit.

Generally, arsenic is attenuating where pH is circumneutral, including locations downgradient from where the acidic conditions are observed.

Beryllium

- The beryllium concentrations resulting in SSLs at wells DGWC-5, DGWC-9, DGWC-10, DGWC-47, DWC-48, and B-93 are due to low-pH conditions (pH <5.0 as of September 2022) at these wells, leading to the mobilization of beryllium from aquifer solids into groundwater. Based on the circumneutral (pH 6-9) porewater pH in AP-2 and 3/4, the low beryllium concentration in porewater, and the lack of consistency in CCR indicators in groundwater at these wells, it is unlikely that AP-2 and 3/4 is the cause of the low-pH conditions. At these wells, under the current acidic conditions, beryllium levels are unlikely to decline below the GWPS unless groundwater pH is corrected.
- Downgradient of each of these locations exhibiting a beryllium SSL, beryllium is attenuating. This is evidenced by the geochemical characteristics of aquifer solids as well as the lack of beryllium at downgradient assessment monitoring wells.

Cobalt

- The cobalt concentrations resulting in an SSL at DGWC-40 is the result of localized, low pH conditions leading to the mobilization/non-attenuation of cobalt from aquifer solids.
- Downgradient of DGWC-40, cobalt is being attenuated, likely through adsorption on aluminum, iron, or manganese oxides, based on SEP data and geochemical modeling.
- The SSLs of cobalt in the monitoring network at wells DGWC-8, DGWC-9, DGWC-10, DGWC-19, DGWC-20, DGWC-47, DGWC-48, B-56, B-63, B-92, B-93 are also likely due to low pH conditions of groundwater at these wells, causing a lack of attenuation of cobalt (all wells have a pH <5.0, except B-63 had a pH of 5.46 as of September 2022).
- Generally, downgradient of the cobalt SSL locations, cobalt is attenuating, as evidenced by the geochemical characteristics of aquifer solids as well as the absence of GWPS exceedances for cobalt at nature and extent wells.

Lithium

- The SSLs of lithium at DGWC-47, DGWC-48, and B-104D are stable or decreasing. The source of lithium at these wells is inconclusive based on the current site data. However, SEP testing confirms that there is a potential natural source of lithium and that its attenuation is occurring (WSP 2023a, WSP 2023b). Lithium levels at these wells are unlikely to decrease to below the GWPS under current conditions. However, downgradient of the locations with SSLs, lithium attenuates.

Selenium

- The selenium level at DGWC-9 has been above its GWPS eleven times since September 2016 and is highly variable. The selenium trends appear to be similar to those of arsenic and are closely related to the low pH of groundwater at this well.
- Downgradient of DGWC-9, selenium is attenuating.

3.4 Reactive Transport Modeling

The geochemical modeling code PHREEQC V.3.7 was used to support the work presented in this report. PHREEQC V.3.7 is a general-purpose geochemical and reactive transport modeling computer code developed by the US Geological Survey for reactions in water and between water and rocks and sediments (Parkhurst and Appelo 2013). Reactions available for simulation include aqueous equilibria, mineral dissolution and precipitation, ion exchange, surface complexation, solid solutions, gas-water equilibrium, and kinetic biogeochemical reactions. The Minteq v.4 database (2016) was used as a basis for Thermodynamic Database (TDB; Allison et al., 1991).

The potential for mineral precipitation was assessed in PHREEQC using a saturation index (SI) calculated as follows:

$$SI = \log (IAP/Ksp)$$

The saturation index is the ratio of the ion activity product (IAP) of a mineral to the solubility product (Ksp). An SI value greater than zero indicates that the water is supersaturated with respect to a particular mineral phase and, therefore, precipitation of the mineral may occur. An evaluation of precipitation kinetics is then required to determine whether the supersaturated mineral will indeed form. An SI value less than zero indicates the water is undersaturated with respect to a particular mineral phase. An SI value close to zero indicates equilibrium conditions exist between the mineral and the solution. SI values between -0.5 and 0.5 are referred to as ‘at equilibrium’ in this report to account for uncertainties related to the analytical results as well as the thermodynamic database.

1-Dimensional reactive transport using PHREEQC can be completed by setting up transects in which PHREEQC then shifts (moves) water from one cell to the next simulating reactive groundwater transport. Reactive transport in PHREEQC using the TRANSPORT keyword that uses the advective-dispersive transport capabilities of PHREEQC that are derived from a 1-D advective-dispersive transport simulation, presented by Appelo and Postma (2010). The 1-D column is a series of cells each of which has the same pore volume. The length of each cell is defined and the time step of the simulation gives the time necessary for a pore volume of water to pass through each cell to the next. In the cases here, with a known groundwater velocity, transect length, and the number time steps, the cell length and number of cells is calculated. The total number of shifts is based on total simulation time.

For initial condition scenarios to match the current observed groundwater conditions at wells, models are allowed to run varying time frames, ranging from 15 to 50 years. The variation is a result of the following: the timeframe when ash was first added to units, the amount of ash added over time (e.g., the timing ash placement varied across the site), and variations to groundwater flux rates and in some cases complete flow reversal. Therefore, the number of years used to develop the initial conditions does not reflect the true history of the unit or site but is used to achieve measured current conditions.

At each shift, advection is simulated by moving the solution to the next cell in order where it mixes and is exposed to the mineral surfaces in the cell. Also, during the shift, the first cell is also refilled with the initial solution and at the last cell, the solution flows out of the column. When a column is reversed due to a change in groundwater flow direction, the model works in the opposite manner. Here, we used a flux-flux type boundary condition, so the dispersion steps follow the advective shift. After each advective shift and dispersion step the chemical equilibria is calculated in our model. This process is then repeated until the simulation ending time is reached. Modeling using PHREEQC imposes geochemical controls on water quality, reflecting processes such as the attenuation or mobilization of species through precipitation and dissolution of mineral phases or through sorption and desorption to and from mineral surfaces. Both processes are governed predominantly by pH and redox conditions in solution which, in turn, may be affected by equilibrium with atmospheric gases. For this modeling effort, all reactions were assumed to be at equilibrium and reaction kinetics were not considered. A summary of model setup parameters for the initial conditions models is provided in Table 4.

Table 4. Details of Current Condition Model Setup

Transect ID	**1**	**2**	**3**	**4**
Wells Included	DGWC-69	DGWC-40	DGWC-5, B-92, B-93	DGWC-8
Total Time (years)	25	20	50	30
Transect Length (m)	20	169	29	30
Number of Cells	10	17	15	10
Cell Size (m)	2	10	2	2
Number of Shifts	1725	72	125	420

Transect ID	**5**	**6**	**7**	**8**
Wells Included	B-56, DGWC-9	DGWC-10	DGWC-19, DGWC-20, B-63	DGWC-47, DGWC-48, B-104D,
Total Time (years)	40	20	15	138
Transect Length (m)	10	26	345	233
Number of Cells	20	26	43	23
Cell Size (m)	0.5	1	8	10
Number of Shifts	3440	760	107	2

3.4.1 Reactive Surface Calculations

Surface complexation can be described using a mechanistic model to account for adsorption onto metal oxide surfaces. The theory is based on Dzombak and Morel (1990) and Karamalidis and Dzombak (2010) utilizing iron (hydrous ferric oxide [Hfo]) as ferrihydrite $Fe(OH)_3$ and aluminum (hydrous aluminum oxide [Hao]) as gibbsite $Al(OH)_{3(am)}$ as adsorbing surfaces based on their concentrations measured in representative solids. Surface site densities are then calculated from these values using formulas for Hfo and Hao, based on Dzombak and Morel (1990) and Karamalidis and Dzombak (2010), respectively. Surface sites are allowed and assumed to obtain equilibrium with ambient groundwater to establish a pre-loaded background condition. The surface complexation model for ferrihydrite includes both strong sites (Hfo_strong) and weak sites (Hfo_weak), which are treated as different surface site in PHREEQC based on the Dzombak and Morel (1990) model. For in-situ injection modeling, additional “clean” or newly created ferrihydrite or gibbsite are allowed to precipitate in the model cells that the injections occur using an equilibrium phase block.

To determine adsorption sites for surface complexation, the mass of iron and aluminum in sediment/soil samples can be converted using methods described by Dzombak and Morel (1990) and Karamalidis and Dzombak (2010). This is used in combination with the calculation methodology of Appelo and Postma (2010) to determine the specific quantity of sites on each mineral surface type as well as the amount of each mineral available to participate in the reactions. Briefly, the methodology assumes the number of surface sites (sites) equals the product of the moles of iron ([Fe]) and moles of surface sites per moles of iron ([sites]/[Fe]) (i.e., sites = [Fe] x [sites]/[Fe] or 5.5×10^{-4} mol = 2.75×10^{-3} mol iron x 0.2 mol sites/mol iron). For the amount of ferrihydrite available for sorption, the Appelo and Postma methodology assumes the mass of ferrihydrite (M_{HFO}) in grams (g) available equals the product of [Fe] and the molecular weight of ferrihydrite (MW_{HFO}) (i.e., M_{HFO} = [Fe] x MW_{HFO}; or 0.24 g = 2.75×10^{-3} mol x 88.85 g/mol). The same approach was used for aluminum also. Aluminum, based on Karamalidis and Dzombak (2010) only has a single adsorption site type, at 0.41 mol sites/mol aluminum and a molecular weight of 78 g/mol of $Al(OH)_3$.

Because the quantity of reactive surface sites is dependent on the amount of total iron and aluminum in the soil, the amount of Hfo and Hao present is important to the model. The values for ferrihydrite and gibbsite used for the calculations are based on data presented in the appropriate GCSM (WSP 2023a, b), where Step 3 and 4 of Sequential Extraction Procedure (SEP). To represent the range of concentrations at the site, the minimum, maximum, and geometric mean of iron in the 3rd and 4th fraction of SEP was used to represent iron and aluminum available for attenuation. Current conditions modeling which was used for model calibration determined the density of surface sites for each transect (Table 5).

The geochemical thermodynamic database Minteq v.4 is a widely accepted database compiled from numerous sources by the United States Environmental Protection Agency (USEPA). However, the Minteq v.4 database does not include partitioning coefficients for metals on gibbsite developed by Karamalidis and Dzombak (2010), iron adsorption constants on carbonate (Van Green et al., 1994), or weak site iron constants (Liger et al., 1999). Due to the need for these constants to model the attenuation of SSLs on gibbsite surfaces, they were included at the beginning of each model simulation to supplement the standard Minteq v.4 database.

Table 5. Site-wide Surface Sites

Site	Moles of Adsorption Sites	Mass (g/kg soil)
Minimum Surfaces		
Hfo_Weak Sites	3.90E-03	1.73E+00
Hfo_Strong Sites	9.76E-05	1.73E+00
Hao	9.16E-03	1.74E+00
Geomean Surfaces		
Hfo_Weak Sites	1.54E-02	6.85E+00
Hfo_Strong Sites	3.86E-04	6.85E+00
Hao	2.39E-02	4.55E+00
Maximum Surfaces		
Hfo_Weak Sites	6.8E-02	2.88E+01
Hfo_Strong Sites	1.62E-03	2.88E+01
Hao	1.13E-01	2.15E+01
SEP Total Concentrations (m/kg)		
	Fe	Al
Min	1090	603

Site	Moles of Adsorption Sites	Mass (g/kg soil)
Geomean	4306.24	1575.32
Max	18100	7420

3.4.2 Modeling Assumptions

The following assumptions were made in describing the geochemical system:

- Groundwater SSLs concentrations from the September 2022 sampling events were used to evaluate time to compliance. Where more than one well is included in a transect, the highest values of the constituent of interest across the transect was used.
- Groundwater "total" values were used rather than dissolved due to the lack of dissolved data for the site. Sample results used in the model had turbidity values less than 10 NTU.
- Where groundwater acidification was needed to match current conditions, oxygenated groundwater was equilibrated with pyrite as a proxy to drop groundwater pH. While pyrite was identified at the site, it is understood that the pyrite is just a proxy mechanism and other processes causing groundwater acidification that are not known are likely.
- Model calibration and sensitivity analysis occurs during the current conditions model design phase. Calibration evaluated the concentration of the respective SSL at the start and end of the transect.
- Time step is based on groundwater velocity and transect lengths.
- All reactions occur at thermodynamic equilibrium (i.e., no kinetics or other time-dependent expressions are necessary to describe the chemical reactions).
- All sorption reactions occur on Hfo and Hao, in naturally occurring in the form of metal (hydr)oxide minerals. Where ISI is described, additional Hfo and Hao is formed in those cells by allowing precipitation of additional mineral surfaces. In addition, other aquifer materials such as clays may play a role in metal attenuation but are not included in this modelling effort.
- The attenuation modeling accounts for competitive adsorption from major cations, anions (specifically including sulfate and carbonate), and metal species where thermodynamic data were available from Dzombak and Morel (1990) and Karamalidis and Dzombak (2010).
- All chemical reactions in the system are described using the equilibrium constants published by the USEPA Minteq v.4 thermodynamic database (Allison et al. 1991) as well as the additional thermodynamic data included in files from Karamalidis and Dzombak (2010).
- Dispersivity was set to maintain a Peclet number of <2.0 and generally set to between one half to one cell length.

4.0 RESULTS

The section presents the results of predictive modeling and modeling of observed current aquifer conditions, the potential success of MNA, and in some cases, ISI when MNA was identified to potentially take longer to bring SSL's to below the respective GWPS in a reasonable timeframe. Results of modeling are summarized in Table 6. Specific details of each model and transect are summarized in Sections 4.1 through 4.8.

Phase 1 (Current conditions Models/ Model Calibration): Geochemical models are not calibrated using methods consistent with groundwater flow models. Instead, geochemical models typically use site-specific groundwater and aquifer solids data as the input condition, and calibration other than adsorptive surfaces is not needed. These model results are speciation of measured data, or a calculated saturation index of measured data. In other cases, models created a current condition for the pH and levels of constituents and are within 10% of actual measured groundwater data. Thus, the result of a geochemical model reflects the state of the geochemical system relative to the equilibrium conditions at the site, dependent on underlying thermodynamic data included in the TDB. Current conditions models were developed using either a mixture of porewater and background water as the source for the SSL at the well (DGWC-69), or equilibration of groundwater with various measured geological materials (described in detail in Section 4.1). Where transects account for multiple wells at the starting locations, groundwater from the different wells was mixed to create a representative groundwater chemistry. Current condition modeling approach was chosen based on flow conditions in each modeled area. The current conditions modeling generally reproduced the observed groundwater values measured on site. These models consider a range of surface complexation (SCM; Section 3.3.1) based on site-specific measured values and identified mineralogy (WSP 2023).

To generate initial conditions, a mixing and mineral equilibrium approach for model calibration and sensitivity analysis was applied to recreate current conditions rather than by inputting measured groundwater data. This approach ensures we fully understand the fundamental geochemical processes controlling groundwater quality at each transect prior to running any predictive models**.** Background groundwater was oxidized and allowed to equilibrate with a set amount of pyrite to reach observed groundwater pH's. The acidified groundwater is then allowed to equilibrate with adsorptive surfaces that are preloaded with metals (equilibrated with background groundwater) allowing the desorption of those metals into the dissolved phase. This approach mimics natural acidification of groundwater, releasing attenuated metals into solution.

Phase 2 or 3 Models (MNA or ISI): Phase 2 or 3 models simulate changes to the transect based on the closure condition and in many cases the potential application of ISI at various locations along the transects. Changes to transect groundwater velocity and in some cases flow directions are included in the phase 2 and 3 models (Tables 2 and 3). Where a phase 2 model that simulated MNA did not predict the SSL to decrease to below the respective GWPS within 8 years, an ISI approach was developed in a phase 3 model. These models simulated the minimal amount of ISI to decrease the groundwater SSL concentrations to below the GWPS in 8 years or less. Materials used for ISI included the simulated injection of potassium bicarbonate (where pH was acidic leading to low metal attenuation), or additions of attenuation materials, including iron oxides and aluminum oxides. When the injection of metal attenuation surfaces was simulated, they were allowed to precipitate in the cells in which they were injected as new surfaces. The addition of potassium bicarbonate was simulated in the model by setting up a "reaction" block in the model and the groundwater at the upgradient location, or solution to be injected, was reacted with a set amount (specified for each application below) of potassium bicarbonate. In-situ Injection was modeled for a conceptual understanding only and the next phase of remedy application will be to evaluate the practical approach to field injections at the site.

For models where in-situ injection was simulated, new adsorption surfaces are added using an equilibrium phase block. By only setting new surfaces in the specific blocks where injection occurs, the preloaded surfaces from the current condition models are not overwritten in the rest of the transect. ISI simulations are in a 1D geochemical model and cannot account for chemical loading, rate of injection, or injection rates run for the duration of the model simulation.

Timeframes specified are based on the proposed remedy and completion of site closure. For instance, as summarized in Table 6, the MNA timeframe starts when closure is complete and groundwater velocity has changed, or in some cases reversed. For DGWC-69, the MNA timeframe starts following installation of the subsurface barrier wall. For DGWC-40, and all other models impacted by AP-2,3/4 closure activities, The model begins once water levels drop below the bottom of CCR. The timeframe for ISI construction and implementation was not included. In some case, ISI was modeled to be needed in multiple zones along the transect mostly due to the length of the transect (DGWC-47/48, DGWC-19/20), or due to slow groundwater velocity during the post closure condition (DGWC-5/B-92/B-93).

Table 6. Summary of Reactive Transport Modeling Transects

Transect Number	Wells	Corrective Measures Alternative 1 [MNA] Timeframe	Corrective Measures Alternative 1 MNA Model	Corrective Measures Alternative 2	Corrective Measures Alternative 2 Model	Corrective Measures Alternative 2 Timeframe
1	DGWC-69 (AP-1)	50 years	--	ISI	DGWC-69 P3	<5 years
2	DGWC-40 (AP-1)	--	--	ISI	DGWC-40 P3	<5 years
3	DGWC-5/B-92/B-93 (AP-2 and 3/4)	6 years	--	ISI	DGWC-5 P3	<5 years
4	DGWC-8 (AP-2 and 3/4)	0 years*	DGWC-8 P2	--	--	--
5	DGWC-9/B-56 (AP-2 and 3/4)	<5 years	DGWC-9 P2	--	--	--
6	DGWC-10 (AP-2 and 3/4)	<5 years	DGWC-10 P2	--	--	--
7	DGWC-19/20/B-63 (AP-2 and 3/4)	>10 years	--	ISI	DGWC-19 P3	<8 years
8	DGWC-47/48/B-104D/B-115D (AP-2 and 3/4)	>10 years	--	ISI	DGWC-48 P3	<6 years

Note: “--” Where no information is presented, that transect does not included a model for the case specified (e.g., where MNA or ISI was not applicable or is not appropriate, the model is not included).
*: Indicates currently below GWPS for SSL of cobalt at this well.

4.1 T1: DGWC-69 (AP-1: Arsenic)

Phase 1 Model Current Conditions: This transect begins at well DGWC-69 and terminates at the un-named creek to the southwest (Figure 1). To create the initial conditions measured on site, the 20-meter transect was divided into 10 cells measuring 2-meters each. The initial groundwater velocity was calculated to be 138-meters per year and the model was run for a total of 25 years. As this is the current conditions model, no closure enhancement technologies were applied (e.g., subsurface barrier wall).

Porewater from AP-1 (AP-1B-3) was mixed with the background water (DGWA-70A; nearest background well) at a ratio of 1% porewater 99% background to match the current conditions at the well. After mixing, ferrihydrite, gypsum, and calcite were allowed to precipitate out of solution to obtain equilibrium. Adsorption sites of ferrihydrite and gibbsite were allocated based on the sitewide geometric mean of SEP results (Table 5).

The target concentration for the SSL of arsenic at well DGWC-69 was 0.024 mg/L and the resulting initial concentration achieved was 0.023 mg/L (Figure 2a).

Phase 3 Model: In-situ Injection Results: In addition to barrier wall emplacement, groundwater was reacted with 1 millimole (mmol) of iron oxide (Fe_2O_3) before allowing the precipitation of ferrihydrite, gypsum, and calcite. One mmol/L of iron oxide was injected in the first 3 cells (6m) of the transect to simulate the precipitation of additional iron adsorption surfaces, enhancing the adsorption of arsenic.

Based on this simulation, arsenic concentrations should decrease to below the GWPS within 5 years when employing In-Situ Injections (Figure 2b).

4.2 T2: DGWC-40 (AP-1: Cobalt)

Phase 1 Model (Current Conditions): This transect begins at well DGWC-40 and terminates at well B-100 to the southeast (Figure 1). To create the initial conditions measured on site, the 169-meter transect was divided into 17 cells measuring 10-meters each. The initial groundwater velocity was calculated to be 36-meters per year and the model was run for a total of 20 years. Background groundwater (DGWC-53; nearest background well) was exposed to 0.7 mmol/L pyrite, oxygen, and 0.0003 mmol/L cobalt sulfide [CoS (alpha)] to achieve the proper levels of acidification observed at DGWC-40. The acidified source water was then transported down the transect. Precipitation of ferrihydrite, gypsum, and calcite were allowed. Adsorption sites of ferrihydrite and gibbsite were allocated based on the sitewide geometric mean of SEP results (Table 5).

A target pH of 4.4 was achieved (Figure 3a) and a target concentration of cobalt at well DGWC-40 was 0.037 mg/L and the resulting initial concentration achieved was 0.031 mg/L (Figure 3b).

Phase 3 Model (In-situ Injection Results): To model ISI after closure at well DGWC-40, a post closure groundwater velocity was calculated to be 26-meters per year. Post-closure conditions assume that groundwater levels in AP-3/4 have dropped below the base of CCR, as predicted by groundwater flow modeling. An injection of 5 mmol/L of potassium bicarbonate ($KHCO_3$) was added to the source groundwater to simulate source zone treatment and an injection of 5 mmol/L of potassium bicarbonate is simulated in the first cell of the transect (10-meter). This led to a pH correction to a circumneutral range at the well and in the transect (Figure 3c) and decreasing cobalt concentrations (Figure 3d).

Based on this simulation, cobalt concentrations should decrease below the GWPS within 5 years with ISI.

4.3 T3: DGWC-5, B-92, B-93, and B-98 (AP-2, 3/4: Beryllium, Cobalt)

Phase 1 (Current Conditions): This transect begins at well DGWC-5 and terminates at well B-98 (Figure 1). To create the initial conditions measured on site, the 29-meter transect was divided into 15 cells measuring 2-meters each. The initial groundwater velocity was calculated to be 5-meters per year and the model was run for a total of 50 years. The source groundwater (B-92) was transported downgradient, allowing ferrihydrite, gypsum, and calcite to precipitate. Adsorption sites of ferrihydrite and gibbsite were allocated based on the minimum of SEP results specific to well B-93 to calibrate current conditions (Table 7).

The target concentration for the SSL of beryllium at wells DGWC-5/B-92/B-93 was 0.012 – 0.017 mg/L and the resulting initial concentration achieved was 0.018 mg/L (Figure 4a) while the target concentration for the SSL of cobalt was 0.063-0.073 mg/L and the resulting initial concentration achieved was 0.073 mg/L (Figure 4c)

Phase 3 (In-Situ Injection Results): To model ISI after closure at well DGWC-5, a post closure groundwater velocity was modeled to be 1.9-meters per year in the opposite direction. Post-closure conditions assume that groundwater levels in AP-2, 3/4 have dropped below the base of CCR, as predicted by groundwater flow modeling. The source water was switched to groundwater from well B-98 given the change of gradient direction. The groundwater is then reacted with 5 mmol/L of potassium bicarbonate ($KHCO_3$) to simulate upgradient source zone treatment with an injection of 5 mmol/L of potassium bicarbonate is simulated in the first 5 cells of the transect (10-meter) as well as cells 8-11 (8-meter).

Based on this simulation, beryllium and cobalt concentrations should decrease below the GWPS within 4 years (Figure 4e and 4f).

Table 7. Transect 3 Surface Sites

Site	Moles of Adsorption Sites	Mass (g)
Hfo_wOH	6.30E-03	2.80E+00
Hao_sOH	1.58E-04	2.80E+00
SEP Total Concentrations (mg/kg)		
Fe	1760	
Al	2140	

4.4 T4: DGWC-8 (AP-2, 3/4: Cobalt)

Phase 1 (Current Conditions): This transect begins at well DGWC-8 and terminates at the property line to the northeast (Figure 1). To create the initial conditions, the 20-meter transect was divided into 10 cells measuring 2-meters each. The initial groundwater velocity was modeled to be 28-meters per year and the model was run for a total of 30 years. Background groundwater (DGWA-53) was used and allowed to equilibrate with additional iron and aluminum adsorption surfaces. Then, source water (B-66) was exposed to 1.35 mmol pyrite per one L solution and equilibrated with atmospheric oxygen to achieve the proper levels of acidification and cobalt at the target well. Ferrihydrite, gypsum, and calcite were allowed to precipitate along the transect. The acidified source water was then transported down the transect. Adsorption sites of ferrihydrite were allocated based on the sitewide geometric mean of SEP results (Table 5). The target pH at well DGWC-8 was 5.2 and a concentration for the SSL of cobalt at well DGWC-8 was 0.0046 mg/L. The resulting initial pH achieved was 5.15 and the initial cobalt concentration achieved was 0.0065 mg/L (Figure 5a and b, respectively).

Phase 2 (MNA Results): To model natural attenuation after closure at well DGWC-8, a post closure groundwater velocity was calculated to be 34-meters per year and groundwater was transported down the transect (Figure 5c and d). Post-closure conditions assume that groundwater levels in AP-3/4 have dropped below the base of CCR, as predicted by groundwater flow modeling.

Cobalt concentrations at this well are below the GWPS as of September 2022.

4.5 T5: DGWC-9 and B-56 (AP-2, 3/4: Arsenic, Beryllium, Cobalt, Selenium)

Phase 1 (Current Conditions): This transect begins between well DGWC-9 and B-56 and terminates at the property line to the northeast (Figure 1). To create the initial conditions for this transect, the 10-meter transect was divided into 20 cells measuring 0.5-meters each. The initial groundwater velocity was calculated to be 43-meters per year and the model was run for a total of 40 years. Ferrihydrite, gypsum, and calcite were allowed to precipitate along the transect. Groundwater DGWC-9 was transported down the transect and adsorption sites of ferrihydrite and gibbsite were allocated based on the sitewide geometric mean of SEP results (Table 5).

The initial concentrations for the SSLs of arsenic, beryllium, cobalt, and selenium at transect 5 matched those at DGWC-9 of 0.016 mg/L, 0.0047 mg/L, 0.25 mg/L, and 0.048 mg/L, respectively (Figure 6a-e).

Phase 2 (MNA Results): To model natural attenuation after closure of AP-2 and 3/4 at wells DGWC-9 and B-56, a post closure groundwater velocity was calculated to be 31-meters per year.

All SSLs are predicted to decrease to below their respective GWPS within 5 years (Figure 7a through 7e).

4.6 T6: DGWC-10 (AP-2: Beryllium, Cobalt)

Phase 1 (Current Conditions): This transect begins at well DGWC-10 and terminates at well B-66 (Figure 1). To create the initial conditions measured on site, the 26-meter transect was divided into 26 cells measuring 1-meter each. The initial groundwater velocity was modeled to be 38-meters per year and the model was run for a total of 20 years. Background groundwater (B-66) was exposed to 0.04 mmol/L pyrite, oxygen, and 7.1 mmol/L beryllium sulfide (BeS) to achieve the proper levels of acidification, beryllium, and cobalt seen at site. The acidified source water was then transported down the transect. Ferrihydrite, gypsum, and calcite were allowed to precipitate along the transect. Adsorption sites of ferrihydrite were allocated based on the based on the minimum of SEP results specific to area well B-82 to calibrate current conditions (Table 8). The target pH of 5.2 was achieved, and concentrations for the SSLs of beryllium and cobalt at well DGWC-10 were 0.0066 mg/L and 0.055 mg/L respectively while the resulting initial concentrations achieved were 0.006 mg/L and 0.1688 mg/L (Figure 8a through c).

Phase 2 (MNA Results): To model natural attenuation after closure at well DGWC-10, a post closure groundwater velocity was calculated to decrease to 33-meters per year. Post-closure conditions assume that groundwater levels in AP-3/4 have dropped below the base of CCR, as predicted by groundwater flow modeling.

All SSLs fall below their respective GWPS within 5 years (Figures 8d through f).

Table 8. Transect 6 Surface Sites

Site	Moles of Adsorption Sites	Mass (g)
Hfo_wOH	2.27E-02	1.01E+01
Hfo_sOH	5.68E-04	1.01E+01
Hao_sOH	2.10E-02	3.99E+00
SEP Total Concentrations (mg/kg)		
Fe	6340	
Al	1380	

4.7 T7: DGWC-19, DGWC-20, and B-63 (AP-2, 3/4: Cobalt)

Phase 1 (Current Conditions): This transect begins between wells DGWC-19 and DGWC-20 and terminates at well B-77 and considers B-122D (Figure 1). To create the initial conditions measured on site, the 345-meter transect was divided into 43 cells measuring 8-meters each. The initial groundwater velocity was calculated to be 57-meters per year and the model was run for a total of 15 years. Groundwater from DGWC-20 was mixed with groundwater from DGWC-19 at a ratio of 40%:60%, then that mixture was mixed with background water (DGWA-71) again at a ratio of 40%:60%. Ferrihydrite, gypsum, and calcite were allowed to precipitate along the transect. Adsorption sites of ferrihydrite were allocated based on the minimum of SEP results specific to nearby well B-122D (Table 9).

A pH of 5.4 was obtained at the beginning of the transect (target pH range of 4.6-4.8) while the rest of the transect obtained a value pH 6.3 (target value 6.1), and the concentration for the SSL of cobalt at wells DGWC-19, 20 and B-63 ranged from 0.05-0.75 mg/L. Based on a mix of DGWC-19 and DGWC-20, the resulting initial concentration achieved was 0.30 mg/L (Figures 9a and 9b).

Phase 3 (In-situ Injection Results): To model ISI after closure at well DGWC-19, 20, and B-63, a post-closure groundwater velocity was calculated to be 53-meters per year and the source water becomes groundwater from well DGWC-71 as porewater mixing no longer occurs following the completion of closure activities. Post-closure conditions assume that groundwater levels in AP-3/4 have dropped below the base of CCR, as predicted by groundwater flow modeling. The DGWA-71 groundwater is then reacted with 1 mmol/L aluminum hydroxide ($Al(OH)_2^+$), 0.001 mmol/L of iron oxide (Fe_2O_3), and 5 mmol/L potassium bicarbonate ($KHCO_3$), before allowing ferrihydrite and gibbsite to precipitate. There is also an injection of 1 mmol/L aluminum hydroxide ($Al(OH)_2^+$), 0.001 mmol/L of iron oxide (Fe_2O_3), and 5 mmol/L potassium bicarbonate ($KHCO_3$) in the first 6 cells (48-meters) of the transect to allow the precipitation of additional iron and aluminum adsorption surfaces, enhancing the adsorption of cobalt.

Results of this simulation include groundwater pH being corrected to circumneutral and cobalt is reduced below the GWPS after 7 years (Figures 9c and 9d).

Table 9. Transect 7 Surface Sites

Site	Moles of Adsorption Sites	Mass (g)
Hfo_wOH	6.48E-02	2.88E+01
Hao_sOH	1.62E-03	2.88E+01

Site	Moles of Adsorption Sites	Mass (g)
SEP Total Concentrations (mg/kg)		
Fe	18100	
Al	7420	

4.8 T8: DGWC-47, DGWC-48, and B-104D, B-115D (AP-2, 3/4: Beryllium, Cobalt, Lithium)

Phase 1 (Current Conditions): This transect begins between wells DGWC-47 and DGWC-48 and terminates at well B-76 (Figure 1). To create the initial conditions measured on site, the 233-meter transect was divided into 23 cells measuring 10-meters each. The initial groundwater velocity was calculated to be 46-meters per year and the model was run for a total of 30 years. Groundwater from well DGWC-48 was transported down the transect and equilibrated with 1.5 mmol/L beryllium sulfide (BeS) and ferrihydrite, gypsum, and calcite were allowed to precipitate. Adsorption sites of ferrihydrite and gibbsite were then allocated based on the minimum of SEP results specific to B-104D (Table 10).

The target pH of 4.3 was obtained and target concentrations for the SSLs of beryllium, cobalt, and lithium at wells DGWC-47, DGWC-48, B-104D, and B-115D ranged from 0.007-0.009 mg/L (beryllium), 0.21-0.31 mg/L (cobalt), and 0.04-0.099 mg/L (lithium) and the resulting initial concentrations achieved were 0.09 mg/L, 0.31 mg/L, and 0.099 mg/L (Figures 10a through 10d). In the model, beryllium levels were higher than observed because, in order to achieve the correct cobalt concentration at the site measured pH, excess beryllium was released in the model.

Phase 3 (In-situ Injection Results): Due to the proximity of this transect to that of wells DGWC-19, 20, and B-63, the ISI at that transect is anticipated to affect this transect. To properly simulate that interaction, the resulting groundwater from transect DGWC-19, 20, and B-63 was used as the source water after closure of the ash pond in the injection scenario. Therefore, this transect uses a sequential treatment approach in the phase 3 model.

The difference between the initial conditions for the Phase 1 and Phase 3 models of this transect come from the sequential treatment approach which addresses the potential for downgradient effects from remediation of upgradient transects. This leads to a differing initial condition for the Phase 3 model for transect 8 due to the effects of treatment at transect 7.

After closure, a post closure groundwater velocity was calculated to be 48-meters per year and the source water was changed to the resulting groundwater of the transect from DGWC-19/20. Post-closure conditions assume that groundwater levels in AP-3/4 have dropped below the base of CCR, as predicted by groundwater flow modeling. The groundwater is then further reacted with 1 mmol/L aluminum hydroxide ($Al(OH)_2^+$), 1 mmol/L of iron oxide (Fe_2O_3), and 1 mmol/L potassium carbonate ($KHCO_3$),to simulate source zone treatment, before allowing ferrihydrite and gibbsite to precipitate. There is then an injection of 1 mmol/L aluminum hydroxide ($Al(OH)_2^+$), 0.001 mmol/L of iron oxide (Fe_2O_3), and 5 mmol/L potassium bicarbonate ($KHCO_3$) in the first 4 cells (40-meters) of the transect, cells 9-12 (40-meters), as well as cells 19-22 (40-meters) to enhance the precipitation by adding additional iron and aluminum adsorption surfaces downgradient. These downgradient injections are needed because of the length of the transect to bolster adsorption processes for beryllium, cobalt, and lithium in order to meet the GWPS within the desired timeframe.

Based on this simulation, all SSLs are reduced below their respective GWPS within 6 years (Figure 11a-d).

Table 10. Transect 8 Surface Sites

Site	Moles of Adsorption Sites	Mass (g)
Hfo_wOH	7.09E-03	3.15E+00
Hfo_sOH	1.77E-04	3.15E+00
Hao_sOH	1.31E-02	2.49E+00
SEP Total Concentrations (mg/kg)		
Fe	1980	
Al	860	

The SSL for lithium at well B-120D was not addressed in this report due to lack of data at this location as well as the recency of notification of an SSL at the well. In order to adequately model remediation of lithium at this location it would require the creation of a new model transect and additional aquifer material characterization.

5.0 CLOSING

Based on the results of modeling described in Section 4.1 through 4.8 and summarized in Table 6, it is concluded that a combination of MNA and ISI is effective to meet GWPS's for each constituent within the timeframes specified in Table 6. However, it should be noted that the timeframes specified in Table 6 are based on closure being complete and implementation of ISI. Time for pre-design investigation, permitting of ISI and time until implementation has not been included.

Generally, where model transects have groundwater with circumneutral pH, except at DGWC-69, MNA is predicted to be successful within 5 years. At DGWC-69, even with circumneutral pH, modeling predicts that sorption capacity for arsenic is exceeded, and additional capacity is needed in the form of ISI. Where transects are currently acidic and the change in groundwater flow direction or velocity is not able to correct the pH along the transect, ISI can be successful and is predicted to decrease the time to achieve the GWPS.

6.0 REFERENCES

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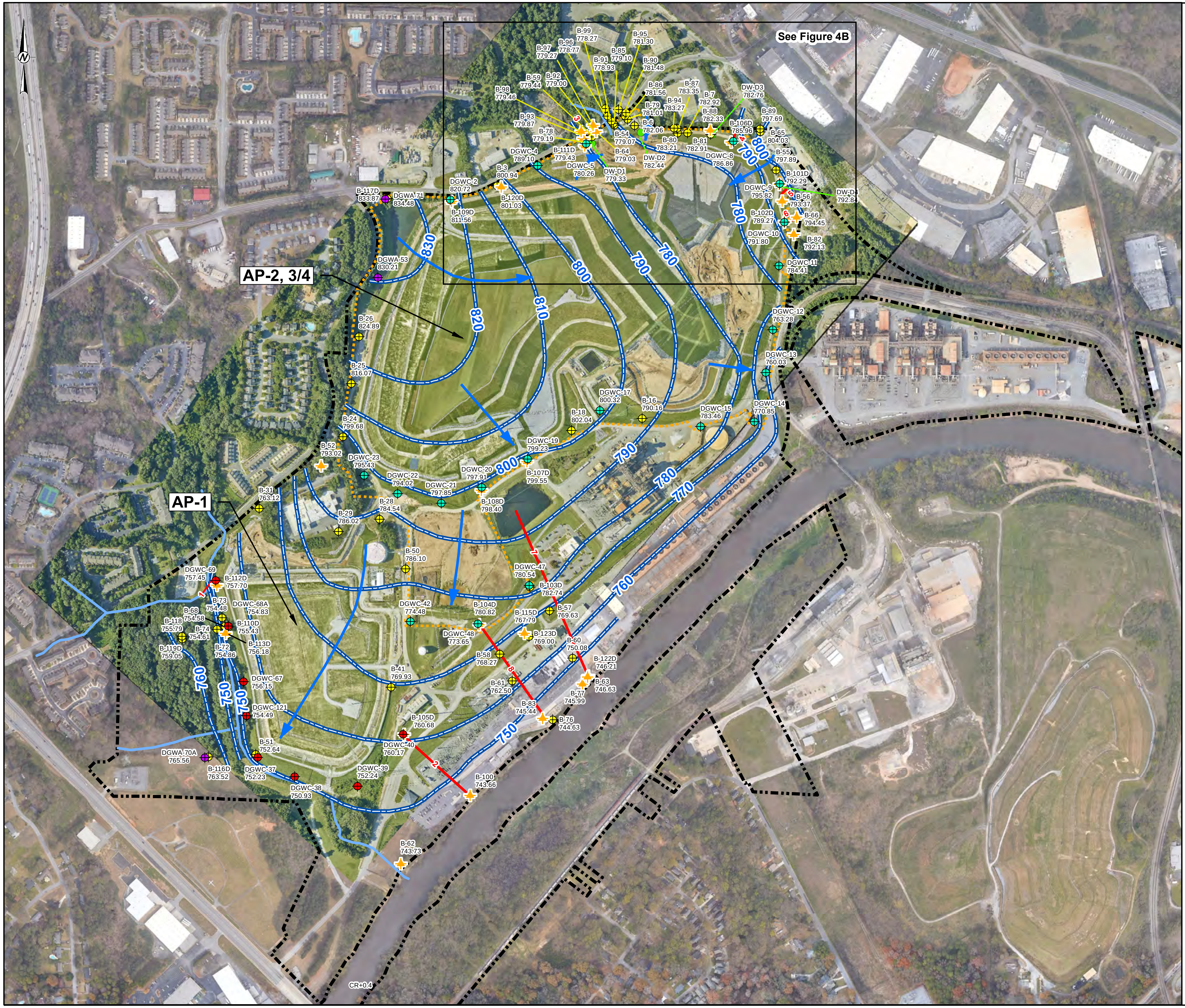
Signature Page

WSP USA Inc

Cole Mayer
Assistant Consultant, Geochemist

PJ Nolan, Ph.D.
Technical Principal, Geochemist

Figures



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1 IN= 600 FT

LEGEND

⊕ AP-1 MONITORING WELL

⊕ AP-2,3/4 MONITORING WELL

⊕ UPGRADIENT WELL

✦ ASSESSMENT MONITORING WELLS

⊕ PIEZOMETER

● DEWATERING WELL

— TRANSECTS

→ APPROXIMATE GROUNDWATER FLOW DIRECTION

═ GROUNDWATER SURFACE CONTOUR (FT-NAVD88)

— SURFACE WATER STREAM

┅ PERMIT BOUNDARY

━·· PROPERTY BOUNDARY

— EXISTING TOPOGRAPHY 10-FOOT CONTOUR

— EXISTING TOPOGRAPHY 2-FOOT CONTOUR

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

2. GROUNDWATER ELEVATION MEAUSREMENTS OBTAINED SEPTEMBER 6, 2022 BY WSP GOLDER.

3. GROUNDWATER ELEVATIONS DISPLAYED IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM (FT NAVD88).

4. WELLS AND PIEZOMETERS THAT CONTAIN A "D" DESIGNATION FOLLOWING THE NUMBER ARE DEEP WELLS AND ELEVATIONS ARE NOT USED FOR CONTOURING.

5. NM = NOT MEASURED.

REFERENCE

1. AERIAL IMAGE DATED NOVEMBER 2019 FROM GOOGLE EARTH AND AUGUST 31, 2022 PROVIDED BY GPC.

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

3. MONITORING WELL/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY METRO ENGINEERING AND SURVEYING COMPANY IN AUGUST 2020 WITH ADDITIONAL SURVEY PROVIDED IN JANUARY 2021 AND MAY 2021.

CLIENT

GEORGIA POWER COMPANY PLANT
MCDONOUGH-ATKINSON

Georgia Power

PROJECT

GEOCHEMICAL MODELING REPORT

TITLE

TRANSECT LOCATIONS AND POTENTIOMETRIC SURFACE MAP (SEPTEMBER 2022)

CONSULTANT

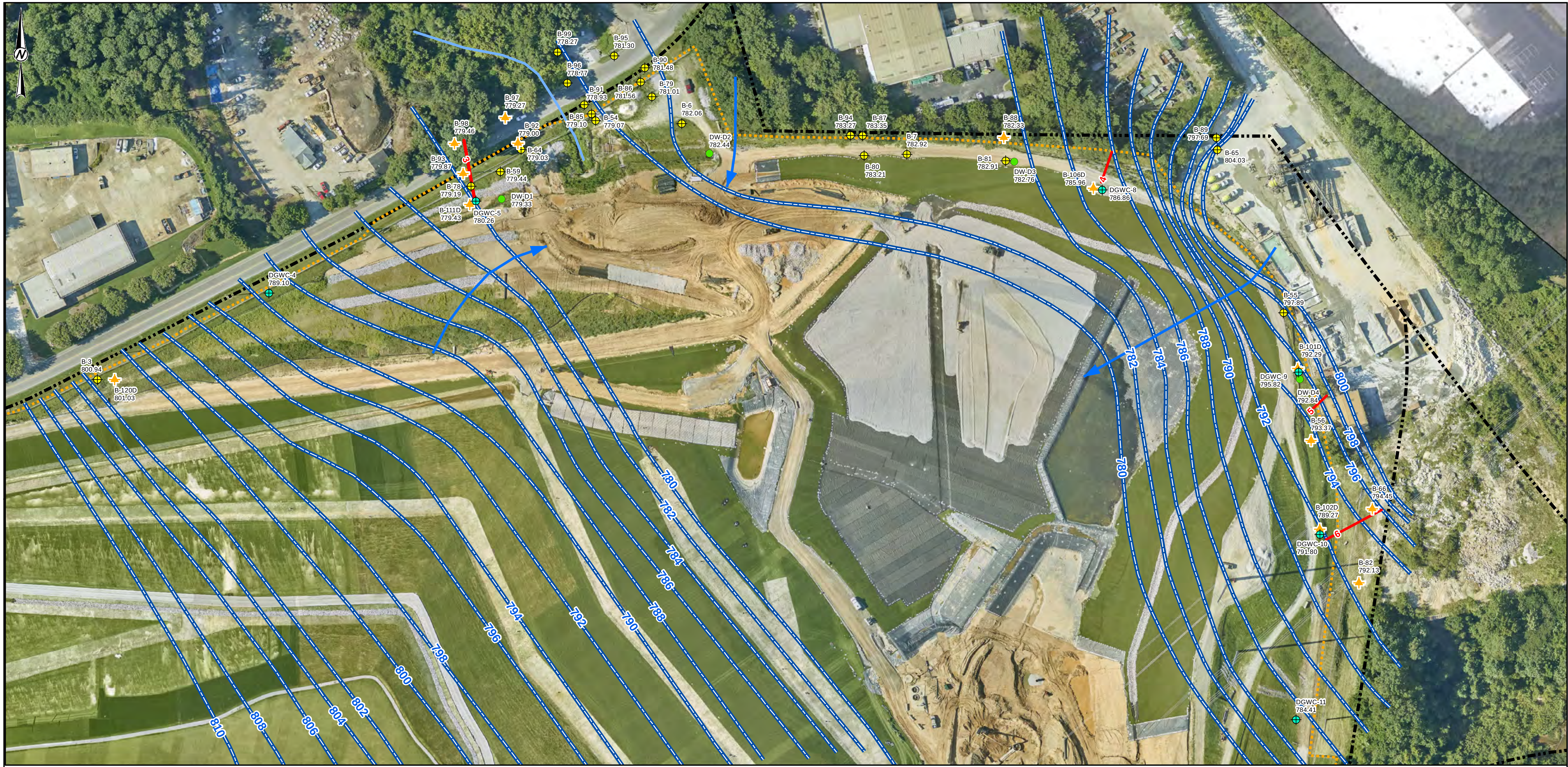
wsp

YYYY-MM-DD	2022-10-07
PREPARED	SEB
DESIGN	SEB
CHECKED	DLP
REVIEWED/APPROVED	RPK

PROJECT No.	Rev.	FIGURE
166849622	0	1a

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

1 in



LEGEND

- AP-1 MONITORING WELL
- AP-2,3/4 MONITORING WELL
- UPGRADIENT WELL
- ASSESSMENT MONITORING WELLS
- PIEZOMETER
- DEWATERING WELL
- TRANSECTS
- GROUNDWATER SURFACE CONTOUR (FT-NAVD88)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- SURFACE WATER STREAM
- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- EXISTING TOPOGRAPHY 10-FOOT CONTOUR
- EXISTING TOPOGRAPHY 2-FOOT CONTOUR

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

2. GROUNDWATER ELEVATION MEAUSREMENTS OBTAINED SEPTEMBER 6, 2022 BY WSP GOLDER.

3. GROUNDWATER ELEVATIONS DISPLAYED IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM (FT NAVD88).

4. WELLS AND PIEZOMETERS THAT CONTAIN A "D" DESIGNATION FOLLOWING THE NUMBER ARE DEEP WELLS AND ELEVATIONS ARE NOT USED FOR CONTOURING.

REFERENCE

1. AERIAL IMAGE DATED NOVEMBER 2019 FROM GOOGLE EARTH AND AUGUST 31, 2022 PROVIDED BY GPC.

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

3. MONITORING WELL/PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY METRO ENGINEERING AND SURVEYING COMPANY IN AUGUST 2020 WITH ADDITIONAL SURVEY PROVIDED IN JANUARY 2021 AND MAY 2021.

0 140 280

1"=140 FT FEET

CLIENT

GEORGIA POWER COMPANY PLANT MCDONOUGH-ATKINSON

Georgia Power

PROJECT

GEOCHEMICAL MODELING REPORT

TITLE

(INSET) TRANSECT LOCATIONS AND POTENTIOMETRIC SURFACE MAP (SEPTEMBER 2022)

CONSULTANT

wsp

YYYY-MM-DD	2022-10-25
PREPARED	SEB
DESIGN	SEB
CHECKED	DLP
REVIEW/APPROVED	RPK

PROJECT NO.	CONTROL	REV.	FIGURE
166849622		0	**1B**

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

1 in

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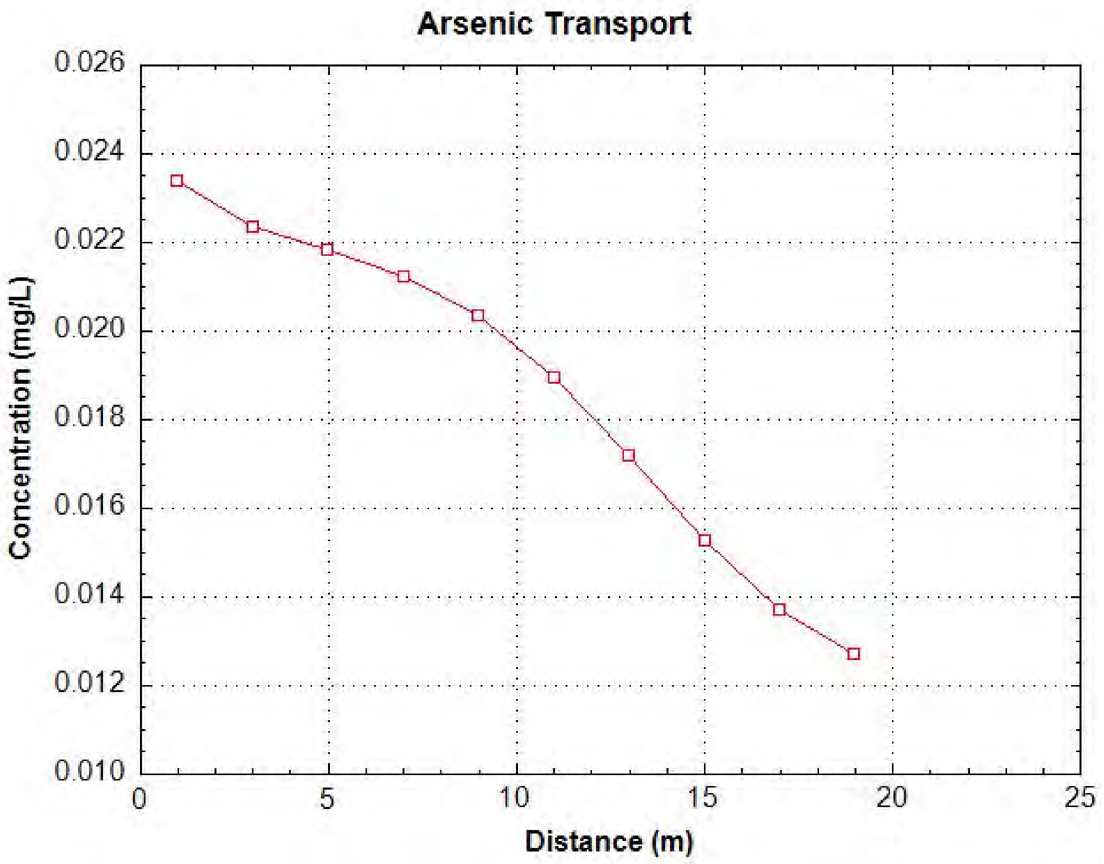

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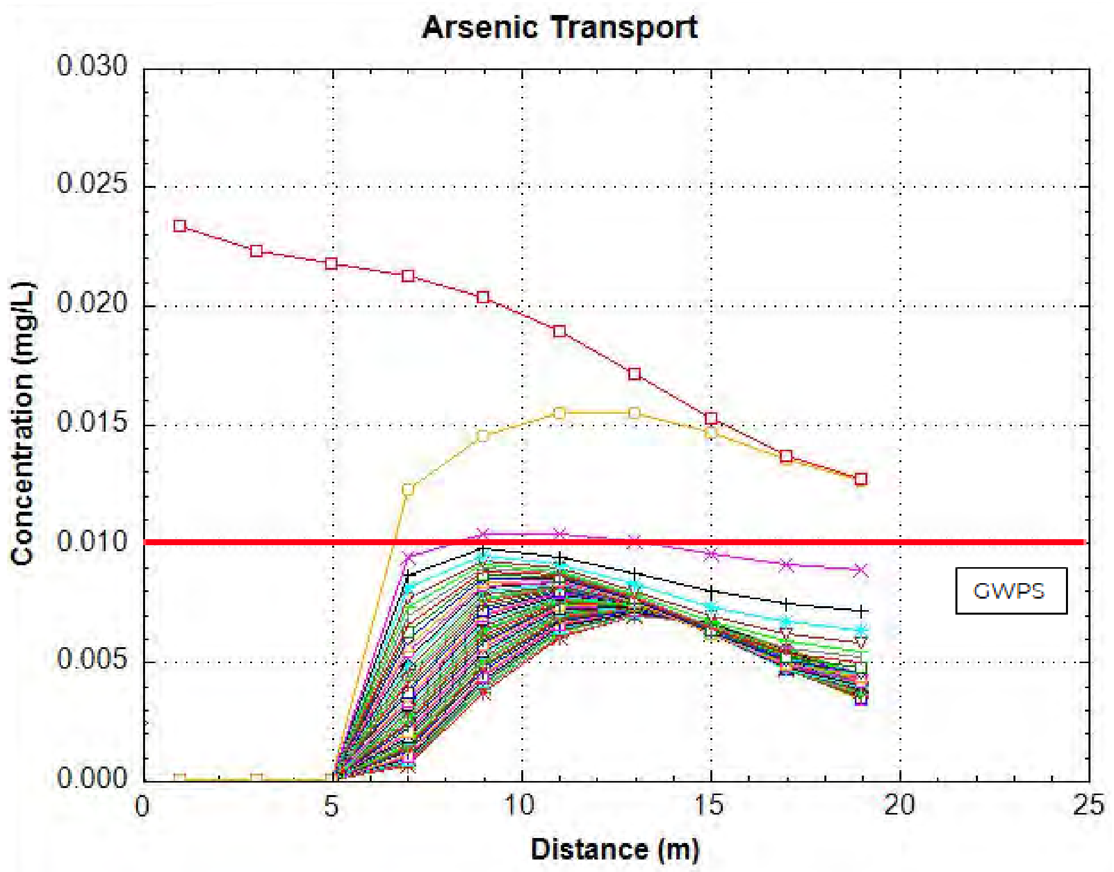


Red (□'s)	Initial Conditions	Brown (▿'s)	6 years
Blue (△'s)	1 year	Green	7 years
Gold (□'s)	2 years	Gray (I's)	8 years
Pink (X's)	3 years	Red	9 years
Black (+'s)	4 years	Green (□'s)	10 years
Sky Blue (*'s)	5 years	Blue (◇'s)	11 years

GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL MODELING

CONSULTANT

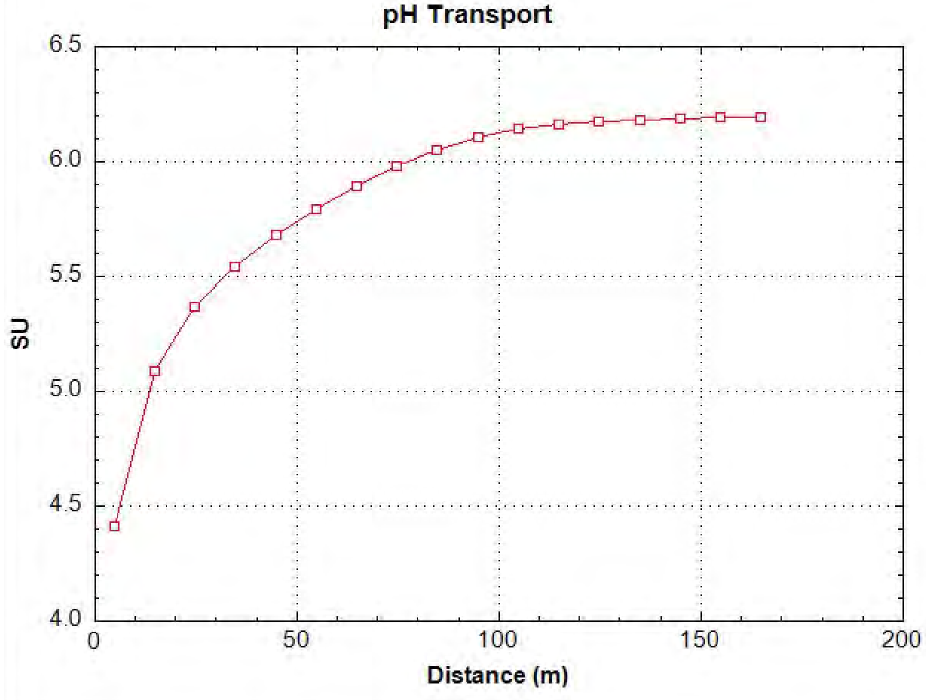
YYYY-MM-DD	2023-03-17
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

TITLE
TRANSECT 1

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	2

DRAFT- ATTORNEY-CLIENT PRIVILEGED

A) Initial Conditions



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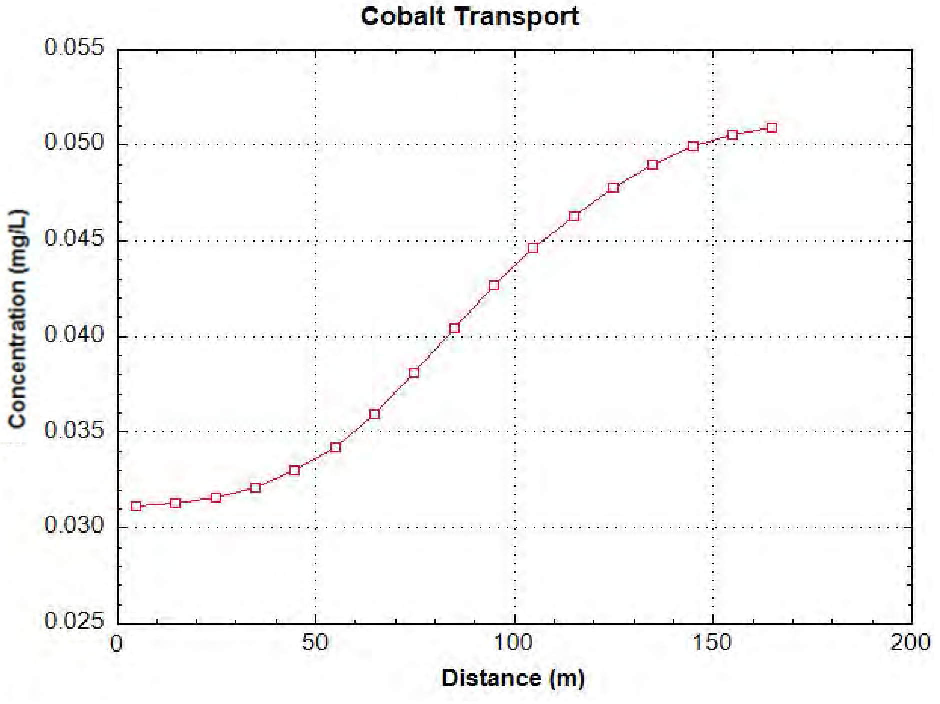
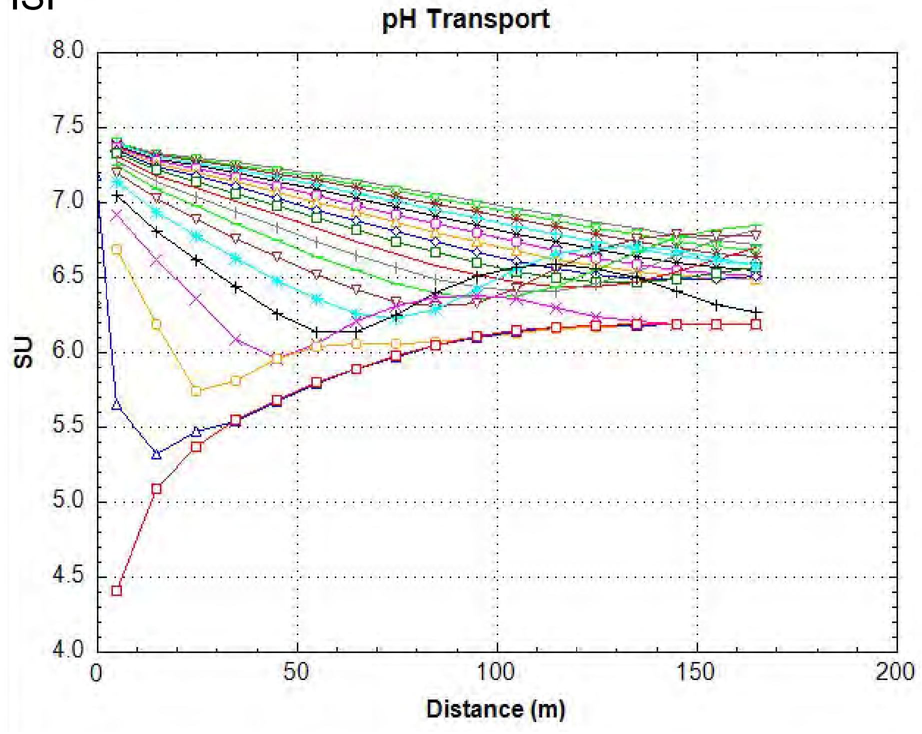
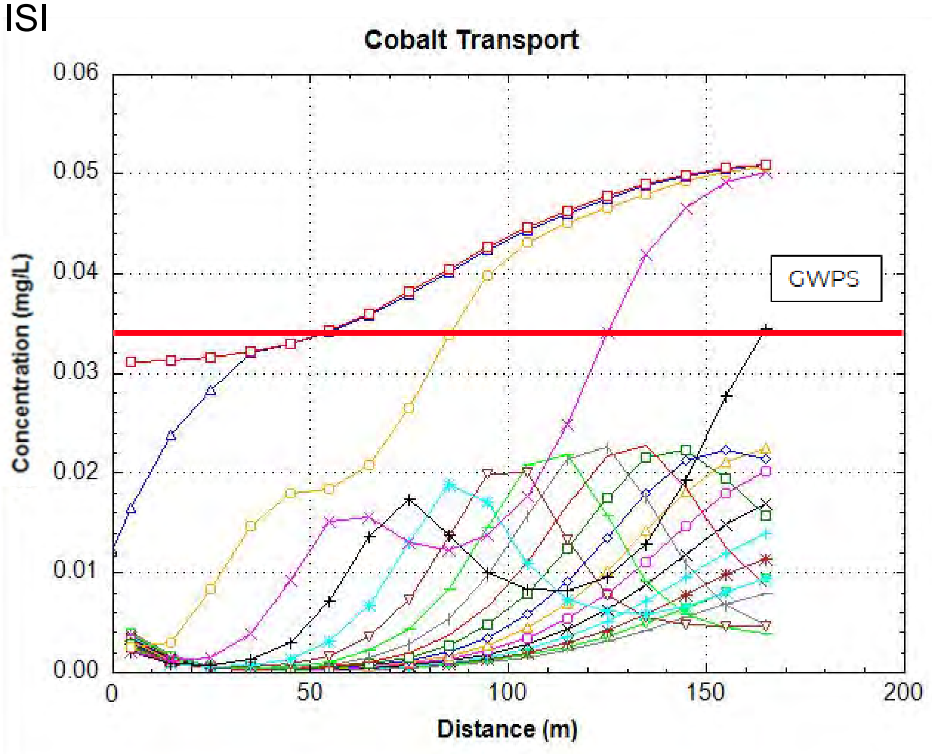


C) ISI



Red (□'s)	Initial Conditions
Blue (△'s)	1 year
Gold (□'s)	2 years
Pink (X's)	3 years
Black (+'s)	4 years
Sky Blue (*'s)	5 years
Brown (▽'s)	6 years
Green	7 years
Gray (I's)	8 years
Red	9 years
Green (□'s)	10 years
Blue (◇'s)	11 years

D) ISI



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL MODELING

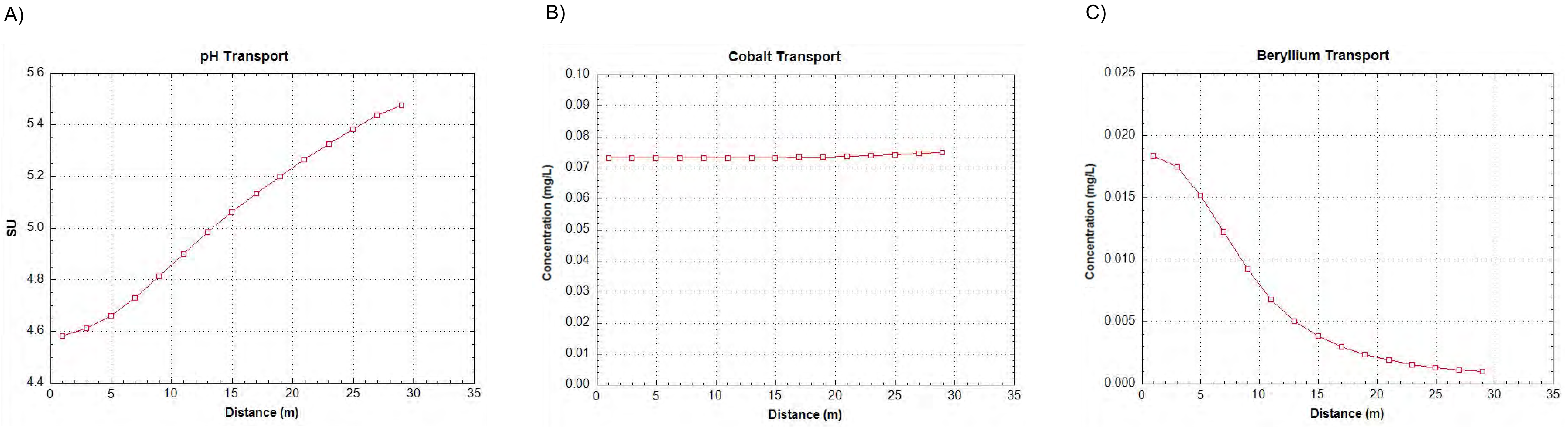
CONSULTANT

YYYY-MM-DD	2023-03-17
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

TITLE
TRANSECT 2

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	3

DRAFT- ATTORNEY-CLIENT PRIVILEGED



Red (▫'s)	Initial Conditions	Brown (▿'s)	6 years
Blue (▵'s)	1 year	Green	7 years
Gold (▫'s)	2 years	Gray (I's)	8 years
Pink (X's)	3 years	Red	9 years
Black (+'s)	4 years	Green (▫'s)	10 years
Sky Blue (*'s)	5 years	Blue (◇'s)	11 years

DRAFT- ATTORNEY-CLIENT PRIVILEGED

GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL MODELING

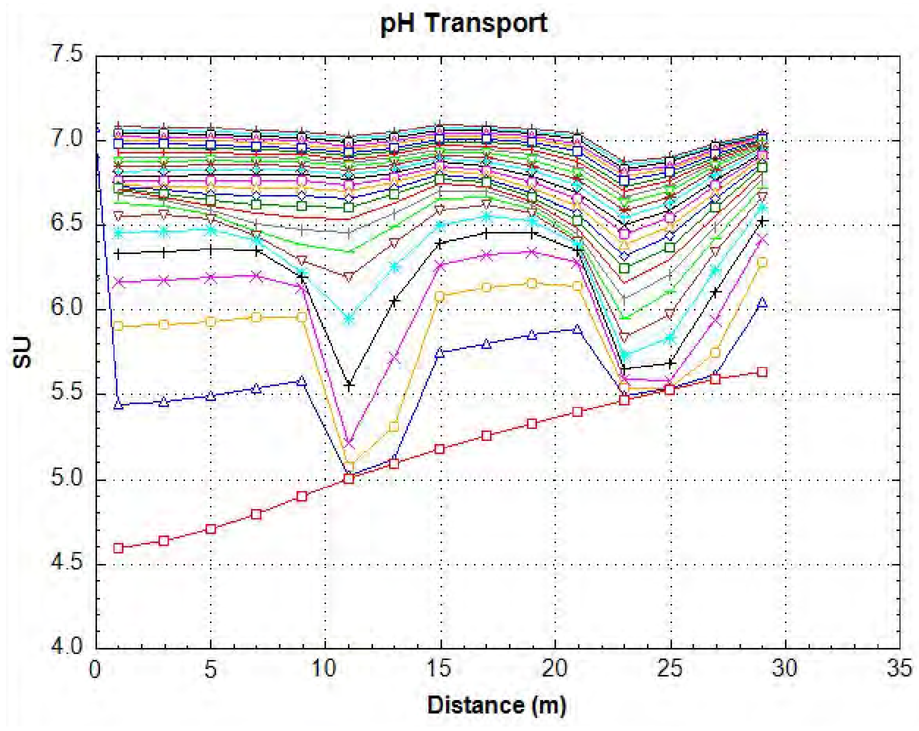
CONSULTANT

YYYY-MM-DD	2023-03-17
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

TITLE
TRANSECT 3 (INITIAL)

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	4 a-c

D)



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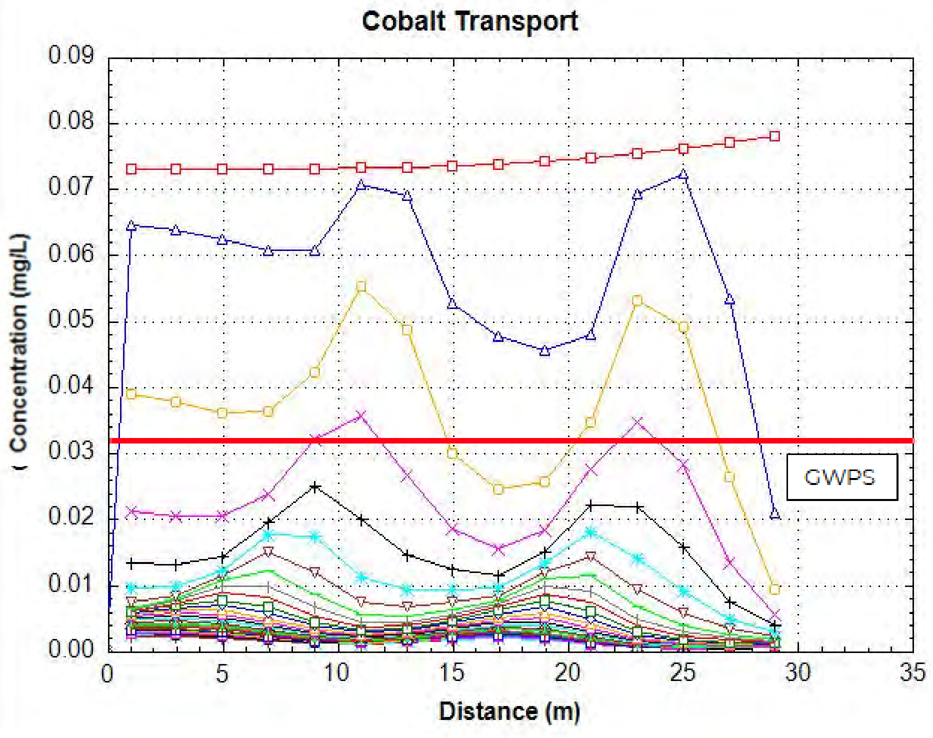

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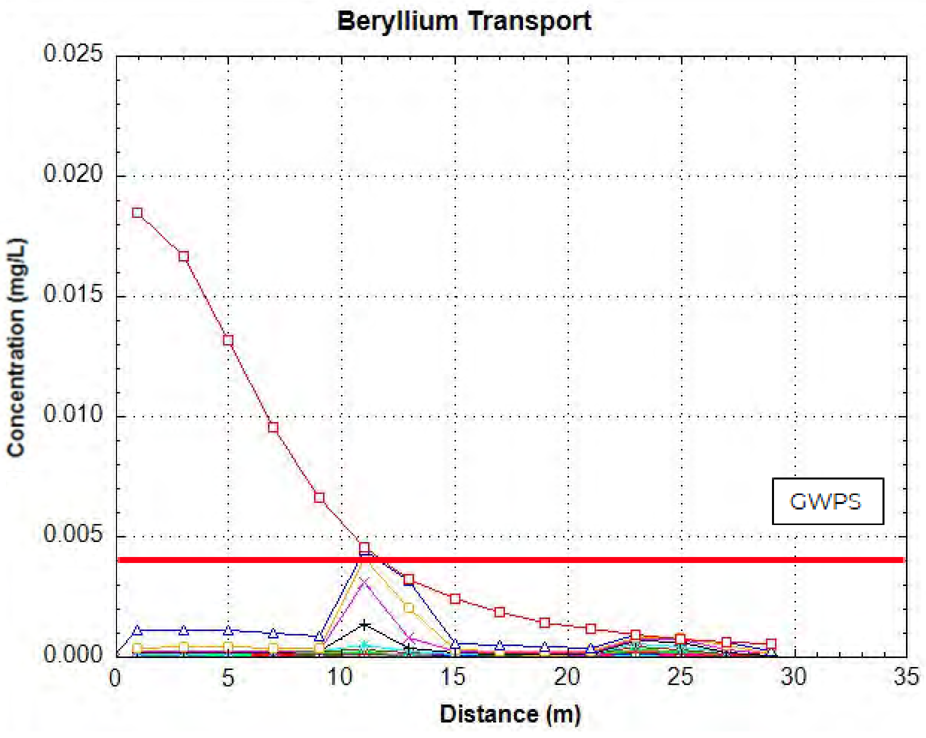


Red (▫'s)	Initial Conditions	Brown (▿'s)	6 years
Blue (▵'s)	1 year	Green	7 years
Gold (▫'s)	2 years	Gray (I's)	8 years
Pink (X's)	3 years	Red	9 years
Black (+'s)	4 years	Green (▫'s)	10 years
Sky Blue (*'s)	5 years	Blue (◇'s)	11 years

DRAFT- ATTORNEY-CLIENT PRIVILEGED

GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL MODELING

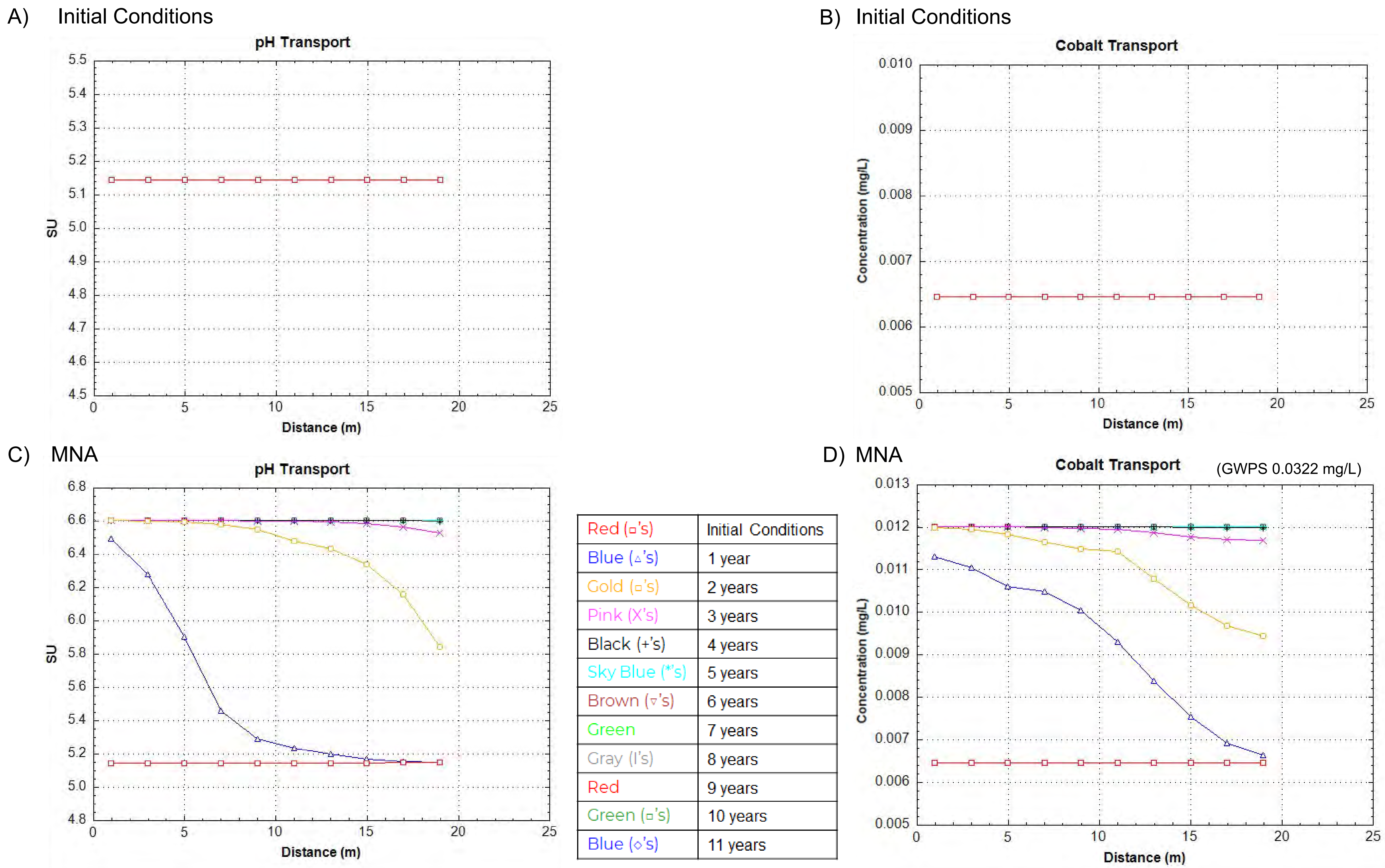
CONSULTANT

wsp

YYYY-MM-DD	2023-03-17
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

TITLE
TRANSECT 3 (IN-SITU INJECTIONS)

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	4 d-f



Red (□'s)	Initial Conditions
Blue (▵'s)	1 year
Gold (□'s)	2 years
Pink (X's)	3 years
Black (+'s)	4 years
Sky Blue (*'s)	5 years
Brown (▿'s)	6 years
Green	7 years
Gray (I's)	8 years
Red	9 years
Green (□'s)	10 years
Blue (◇'s)	11 years

GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL MODELING

CONSULTANT

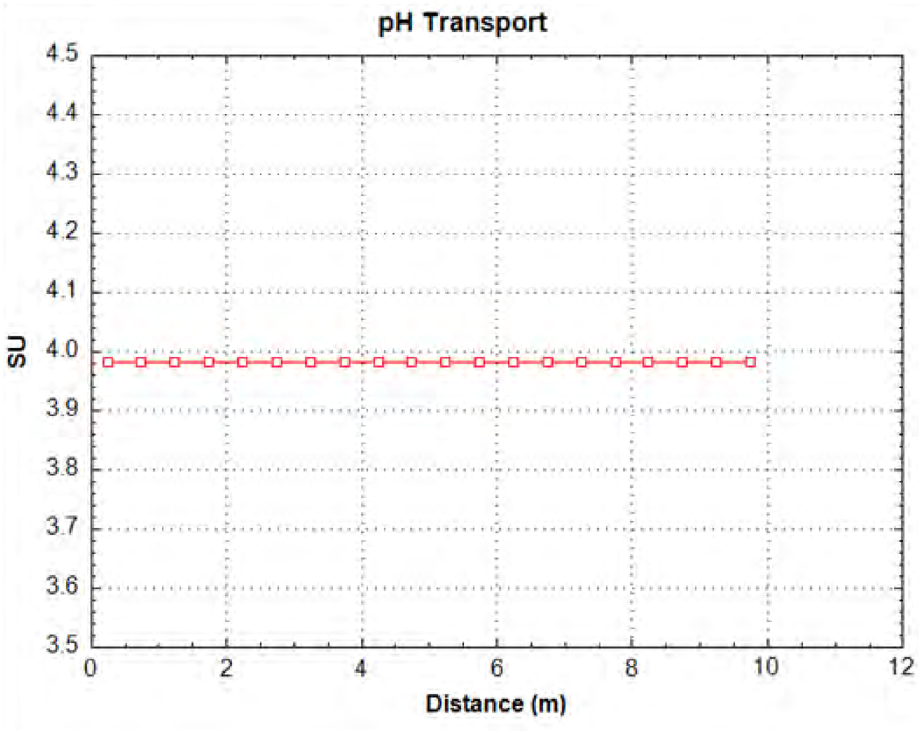
YYYY-MM-DD 2023-03-17
DESIGNED CM
PREPARED CM
REVIEWED PJN
APPROVED XXX

TITLE
TRANSECT 4

PROJECT NO. GL166849621
CONTROL
REV. A
FIGURE 5

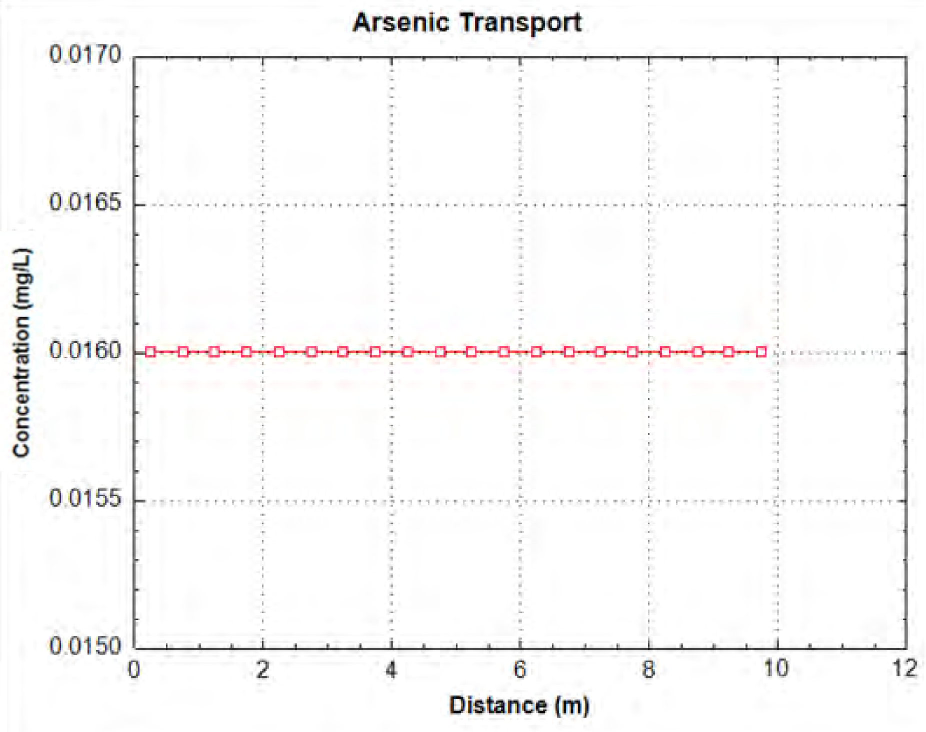
DRAFT- ATTORNEY-CLIENT PRIVILEGED

A)



Red (□'s)	Initial Conditions	Brown (▽'s)	6 years
Blue (△'s)	1 year	Green	7 years
Gold (□'s)	2 years	Gray (I's)	8 years
Pink (X's)	3 years	Red	9 years
Black (+'s)	4 years	Green (□'s)	10 years
Sky Blue (*'s)	5 years	Blue (◇'s)	11 years

B)



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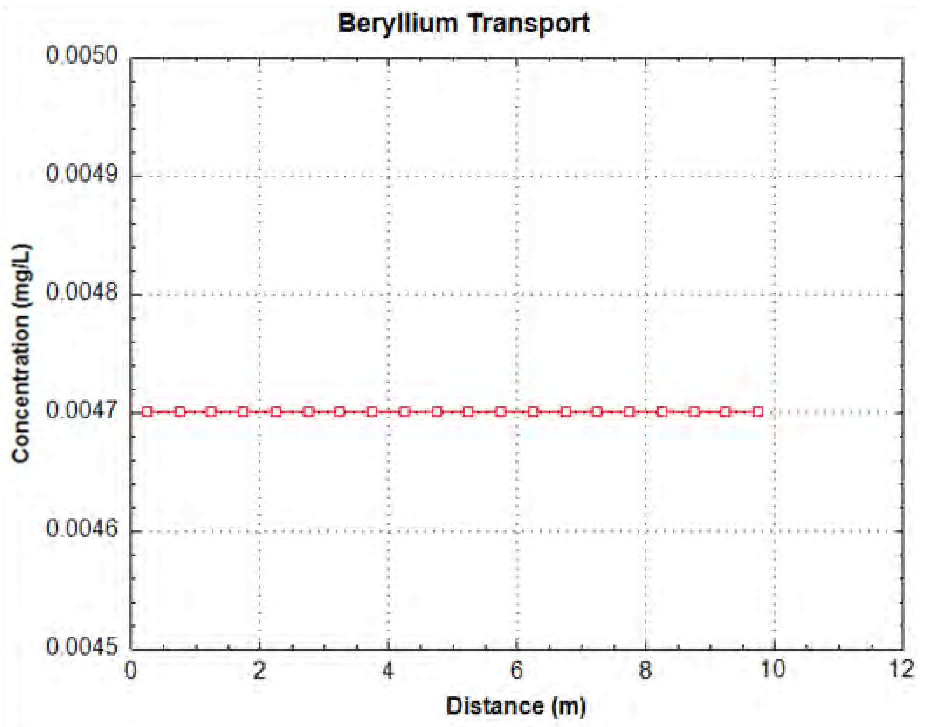

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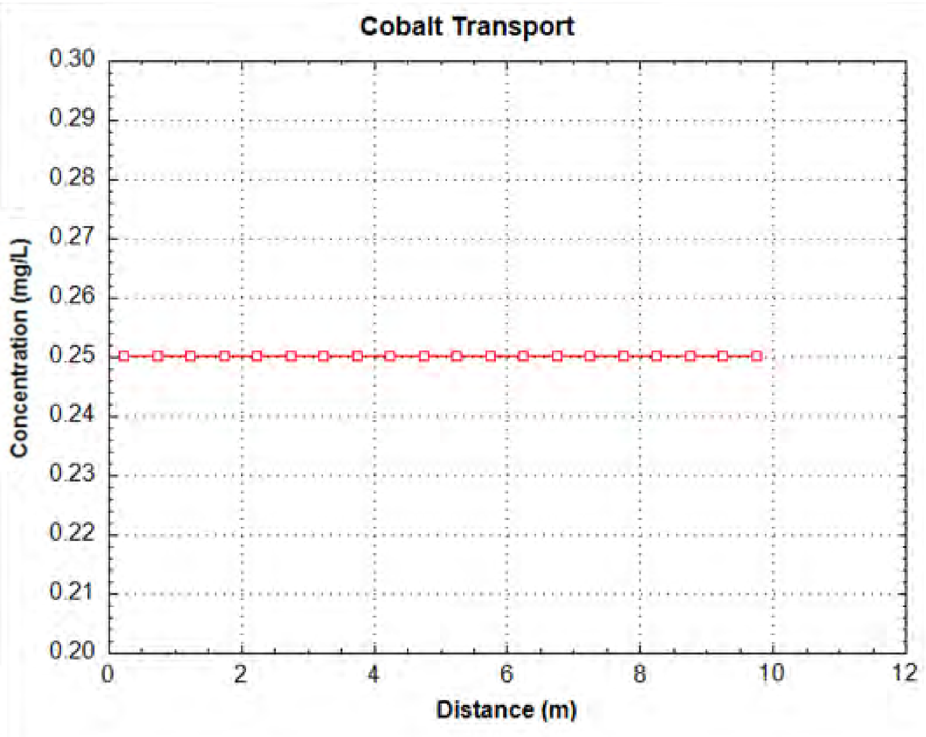

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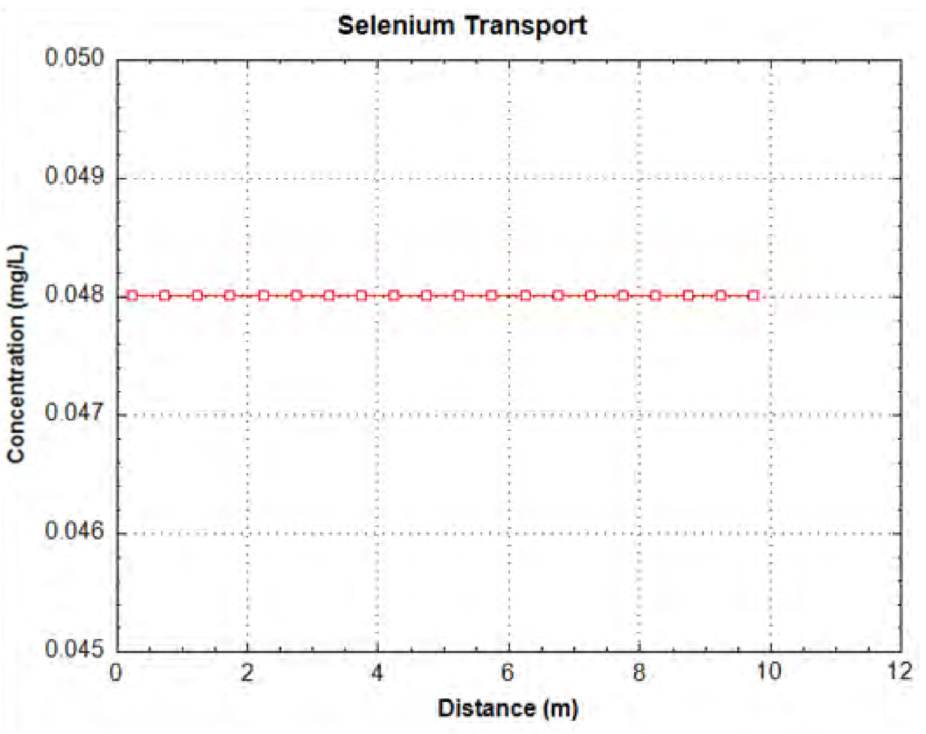


GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL MODELING

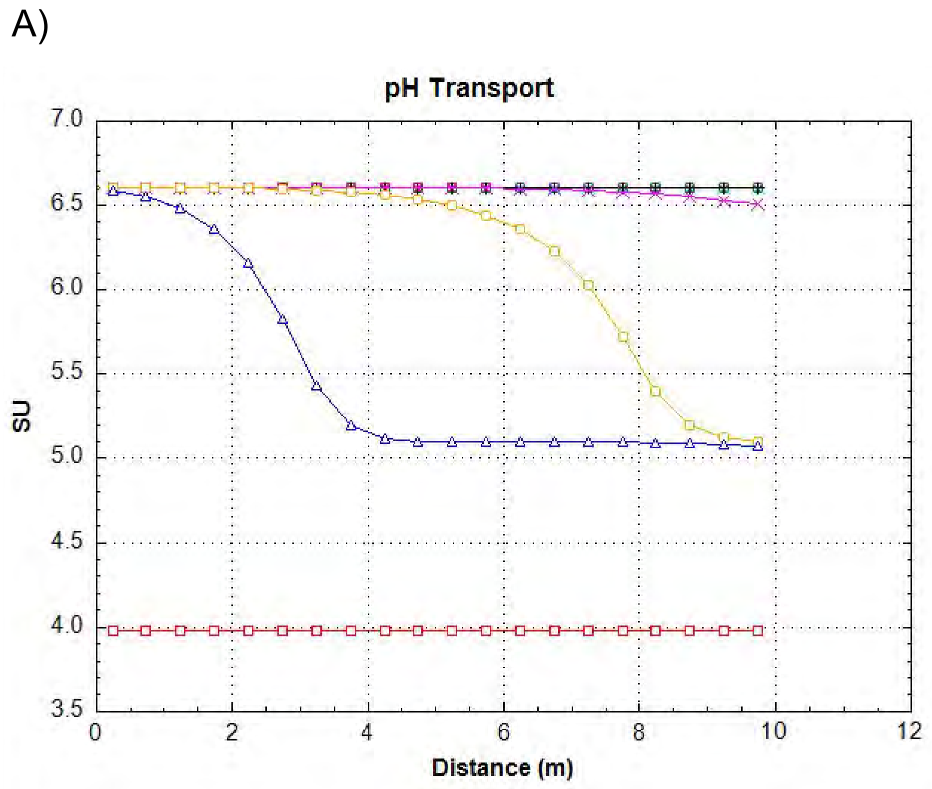
CONSULTANT

YYYY-MM-DD	2023-03-17
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

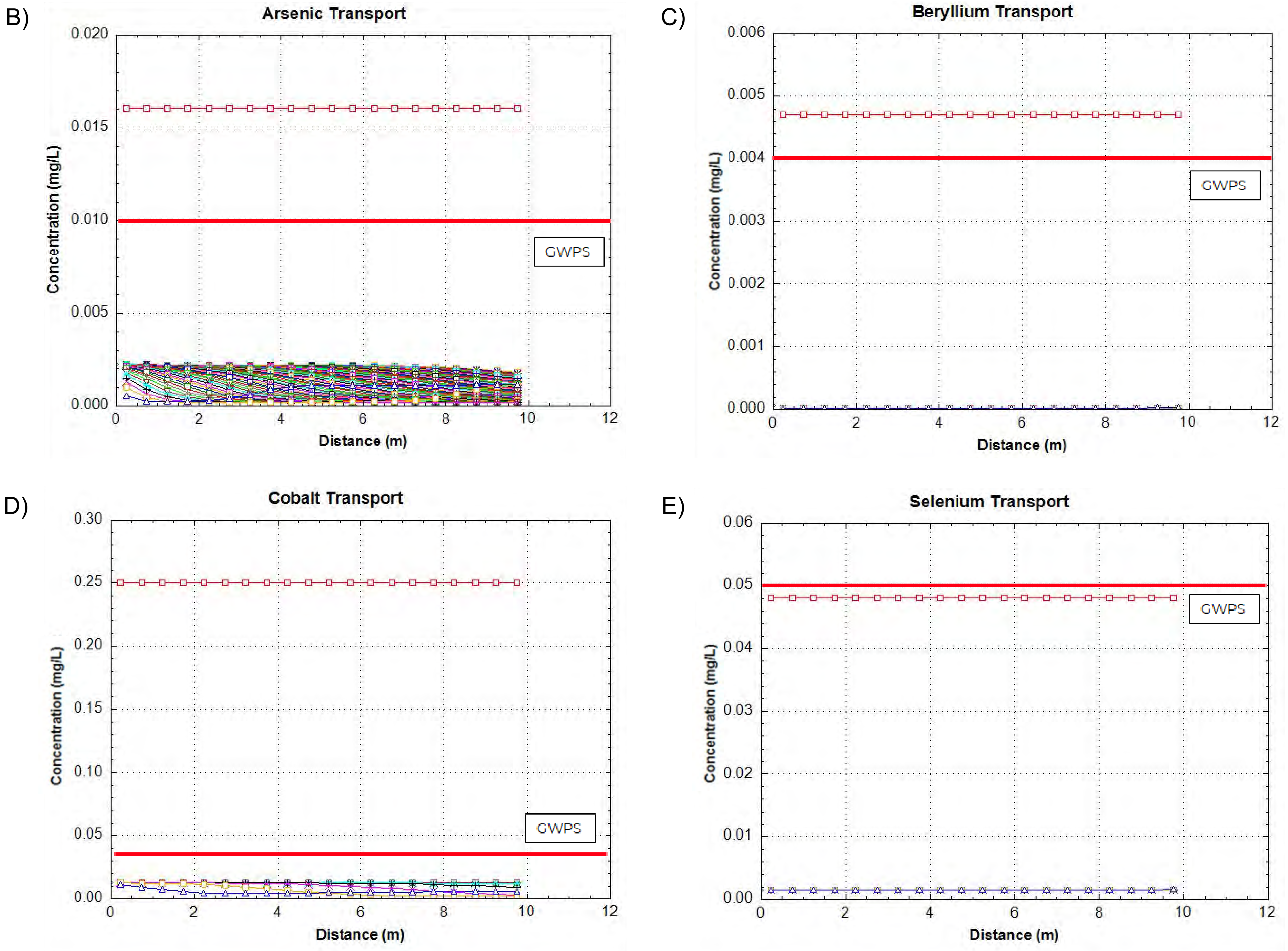
TITLE
TRANSECT 5 (INITIAL)

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	6

DRAFT- ATTORNEY-CLIENT PRIVILEGED



Red (▫'s)	Initial Conditions	Brown (▿'s)	6 years
Blue (▵'s)	1 year	Green	7 years
Gold (▫'s)	2 years	Gray (I's)	8 years
Pink (X's)	3 years	Red	9 years
Black (+'s)	4 years	Green (▫'s)	10 years
Sky Blue (*'s)	5 years	Blue (◇'s)	11 years



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL MODELING

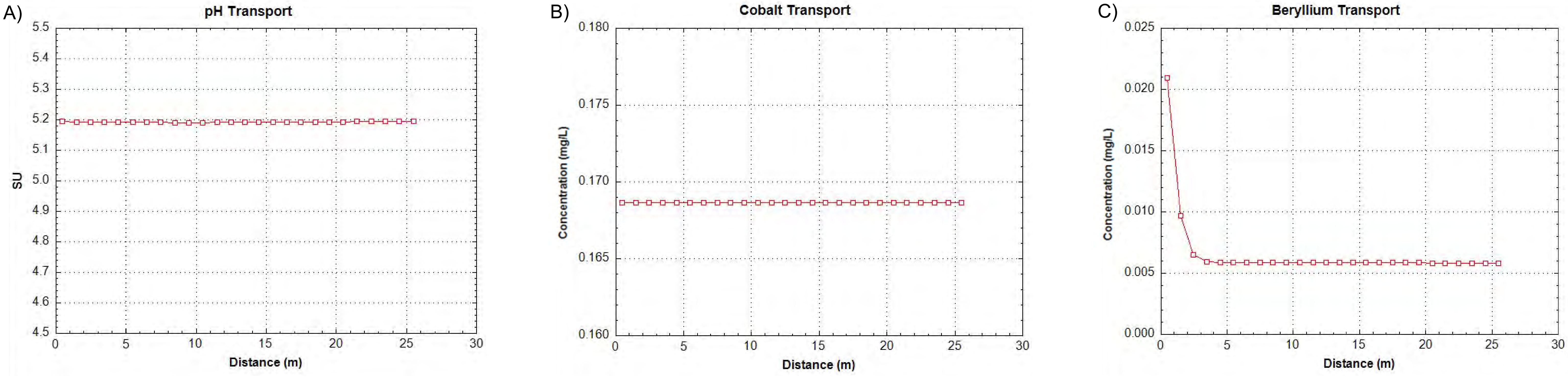
CONSULTANT

YYYY-MM-DD	2023-03-17
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

TITLE
TRANSECT 5 (MNA)

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	7

DRAFT- ATTORNEY-CLIENT PRIVILEGED



Red (▫'s)	Initial Conditions	Brown (▿'s)	6 years
Blue (▵'s)	1 year	Green	7 years
Gold (▫'s)	2 years	Gray (l's)	8 years
Pink (X's)	3 years	Red	9 years
Black (+'s)	4 years	Green (▫'s)	10 years
Sky Blue (*'s)	5 years	Blue (◇'s)	11 years

DRAFT- ATTORNEY-CLIENT PRIVILEGED

GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL MODELING

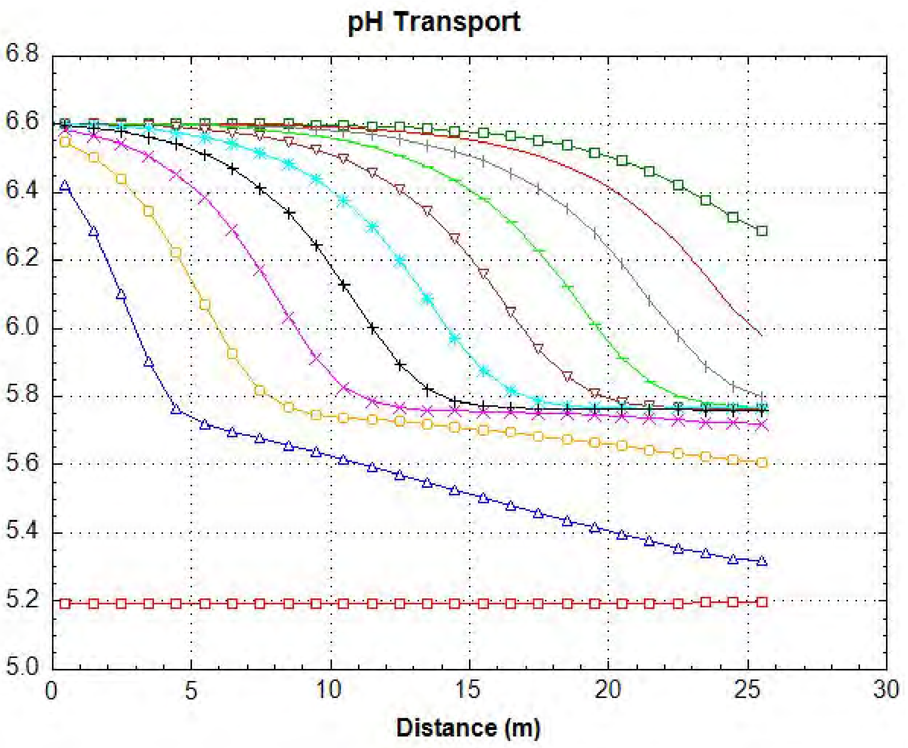
CONSULTANT

YYYY-MM-DD	2023-03-17
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

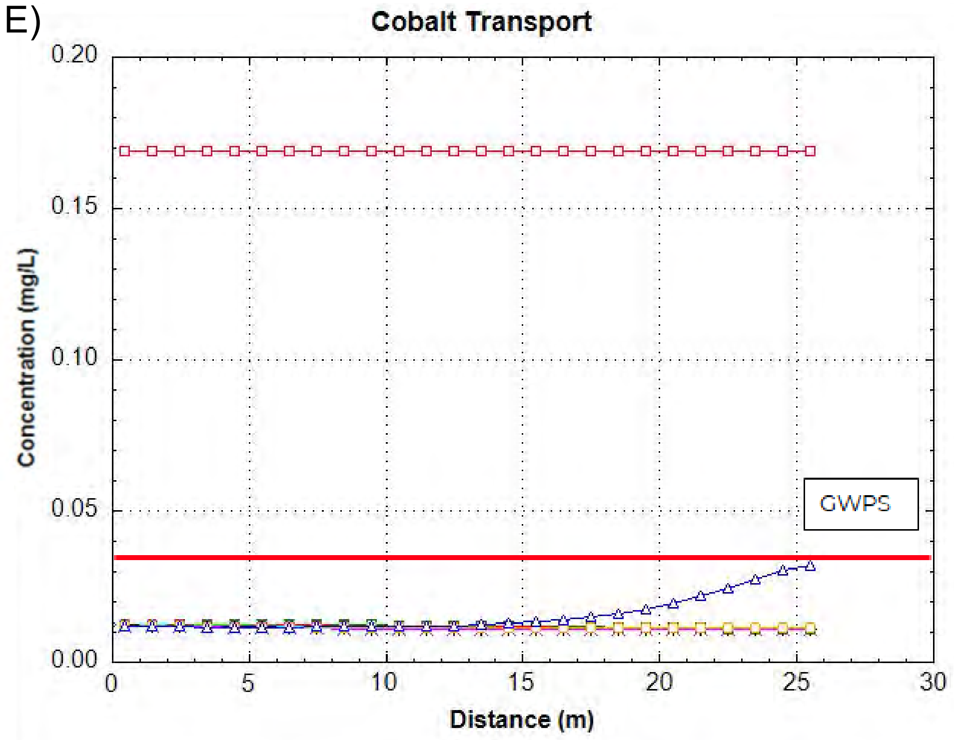
TITLE
TRANSECT 6 (INITIAL)

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	8 a-c

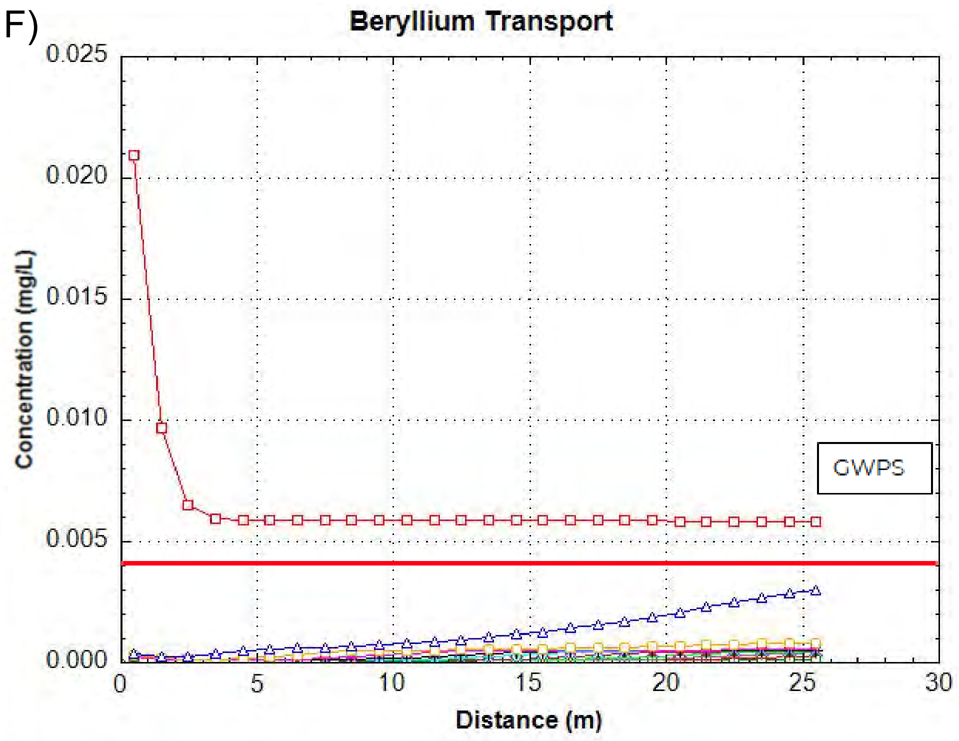
D)


pH Transport

E)


Cobalt Transport

F)


Beryllium Transport

Red (□'s)	Initial Conditions	Brown (▿'s)	6 years
Blue (▵'s)	1 year	Green	7 years
Gold (□'s)	2 years	Gray (I's)	8 years
Pink (X's)	3 years	Red	9 years
Black (+'s)	4 years	Green (□'s)	10 years
Sky Blue (*'s)	5 years	Blue (◇'s)	11 years

DRAFT- ATTORNEY-CLIENT PRIVILEGED

GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL MODELING

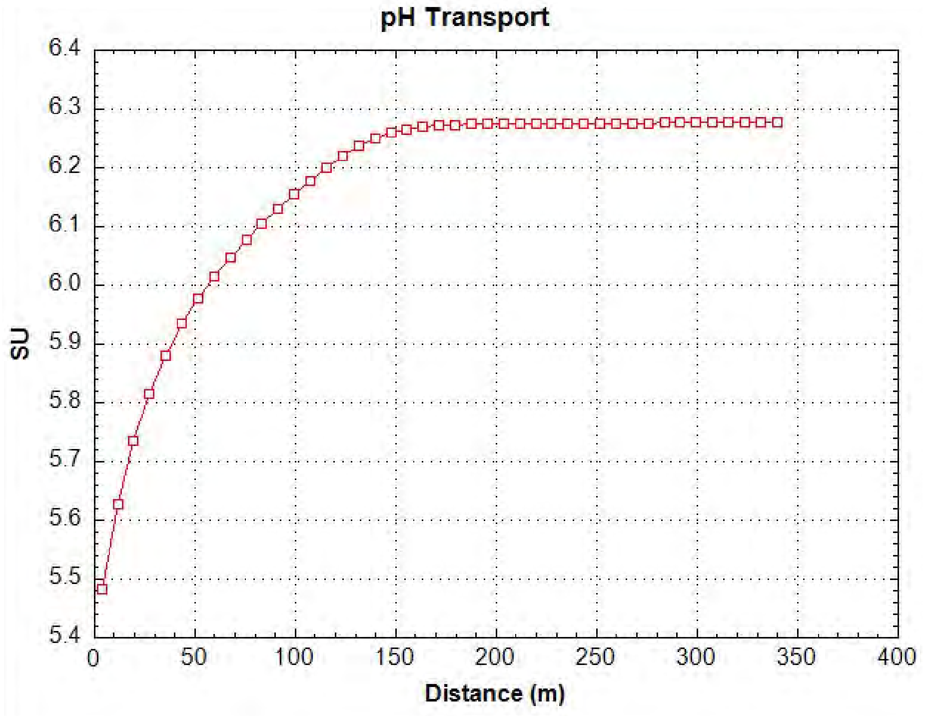
CONSULTANT

YYYY-MM-DD	2023-03-17
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

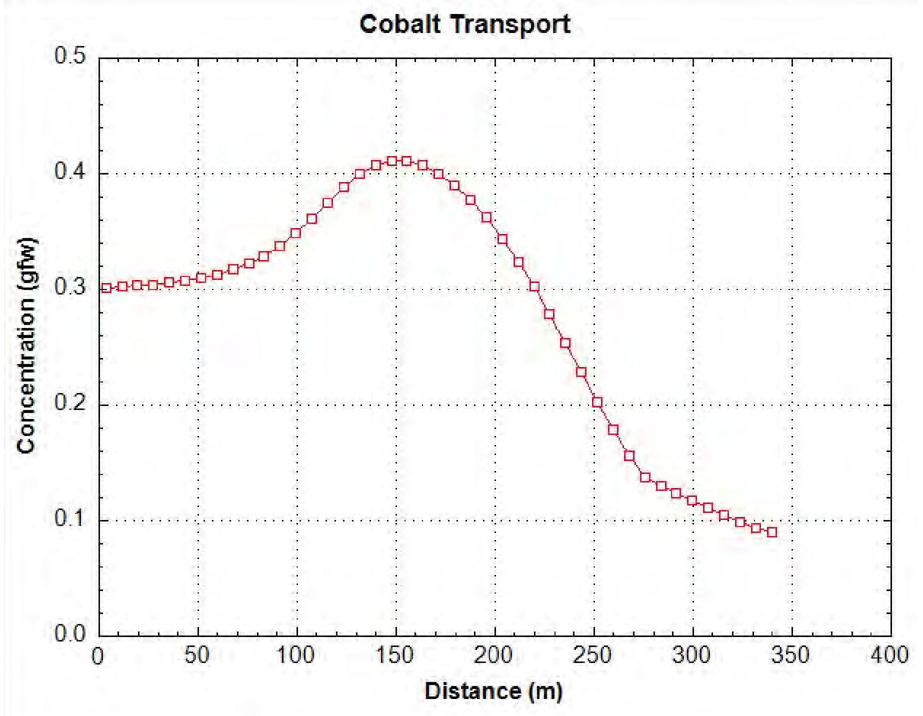
TITLE
TRANSECT 6 (MNA)

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	8 d-f

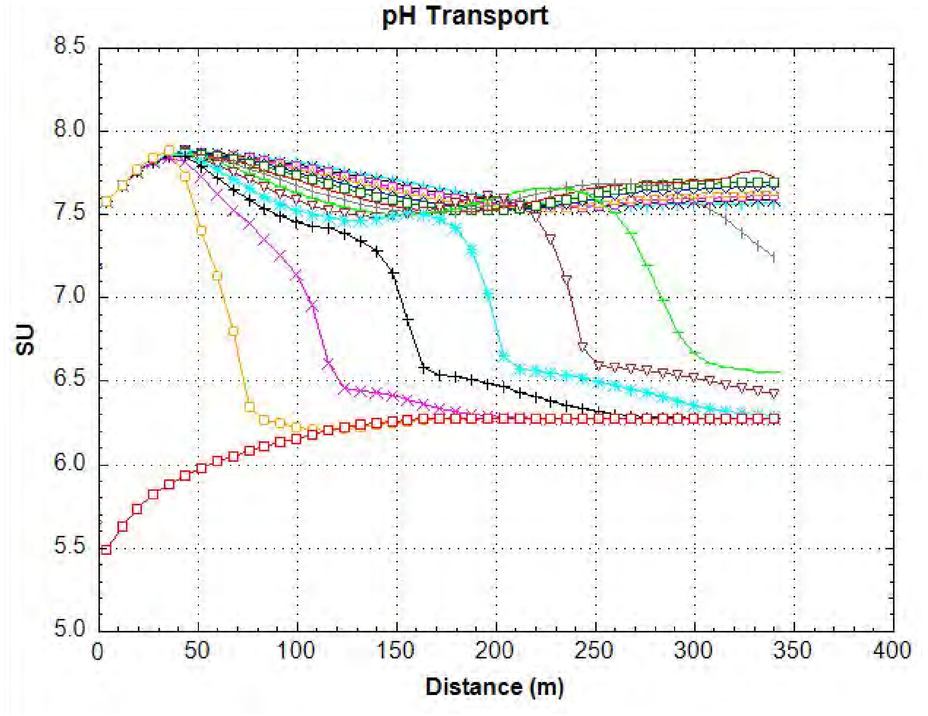
A) Initial Conditions



B) Initial Conditions

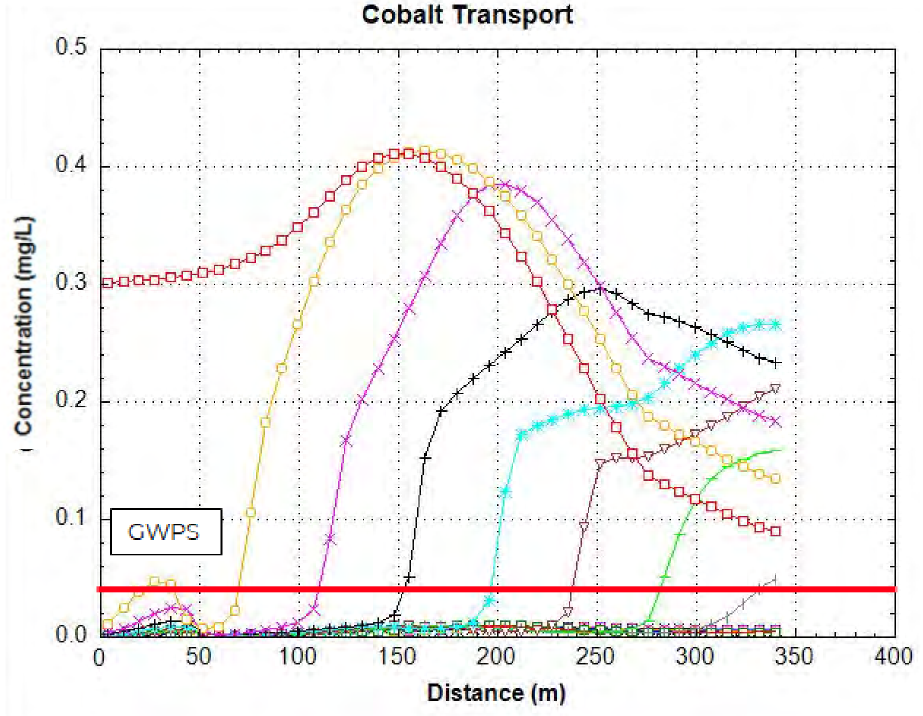


C) In-situ Injections



Red (□'s)	Initial Conditions
Blue (▵'s)	1 year
Gold (□'s)	2 years
Pink (X's)	3 years
Black (+'s)	4 years
Sky Blue (*'s)	5 years
Brown (▿'s)	6 years
Green	7 years
Gray (I's)	8 years
Red	9 years
Green (□'s)	10 years
Blue (◇'s)	11 years

D) In-situ Injections



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL MODELING

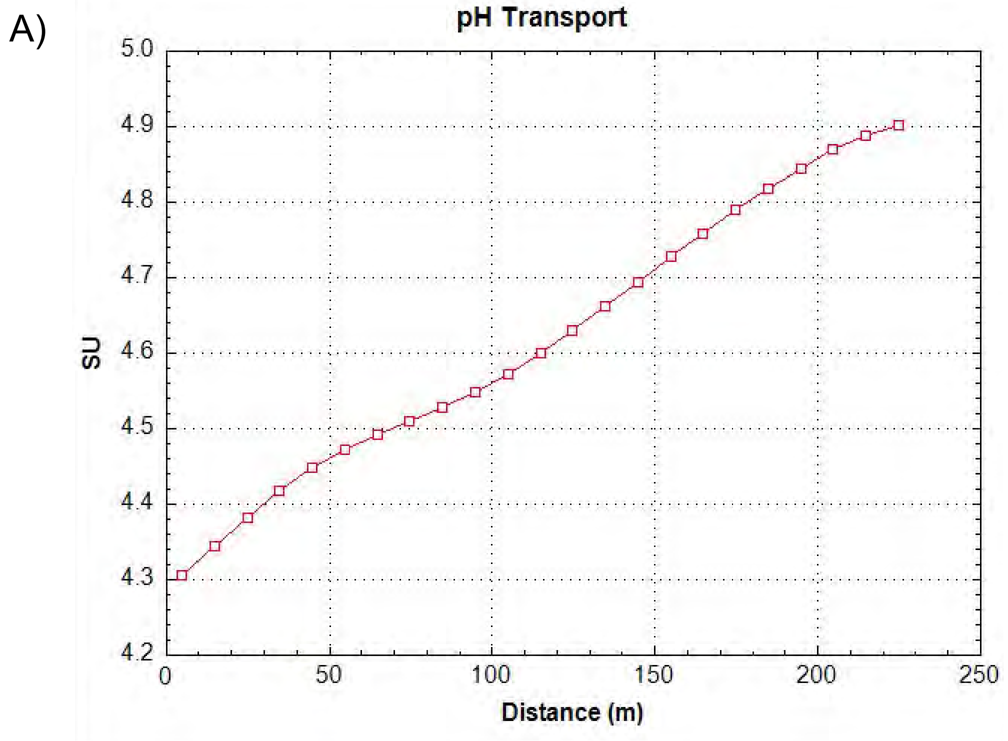
CONSULTANT

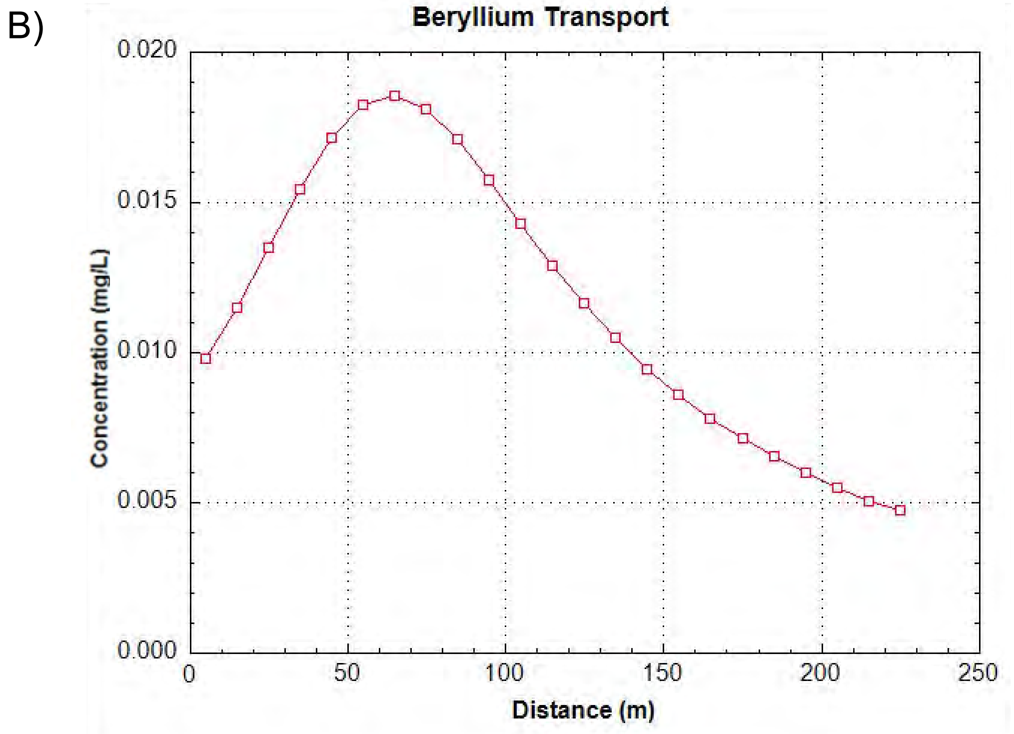
YYYY-MM-DD	2023-03-17
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

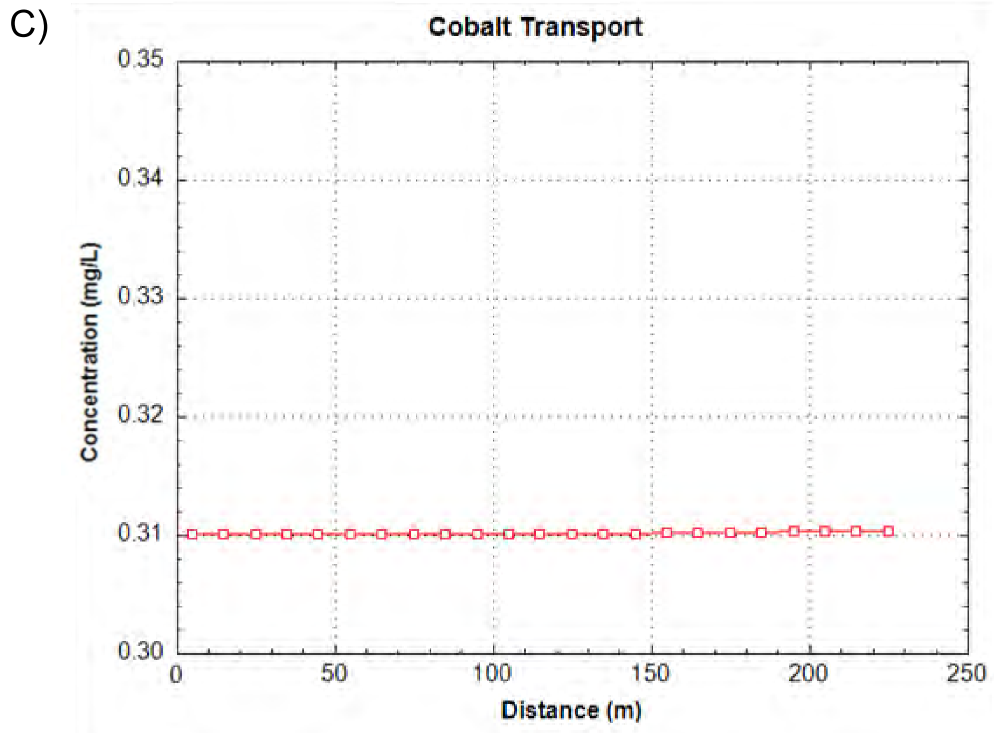
TITLE
TRANSECT 7

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	9

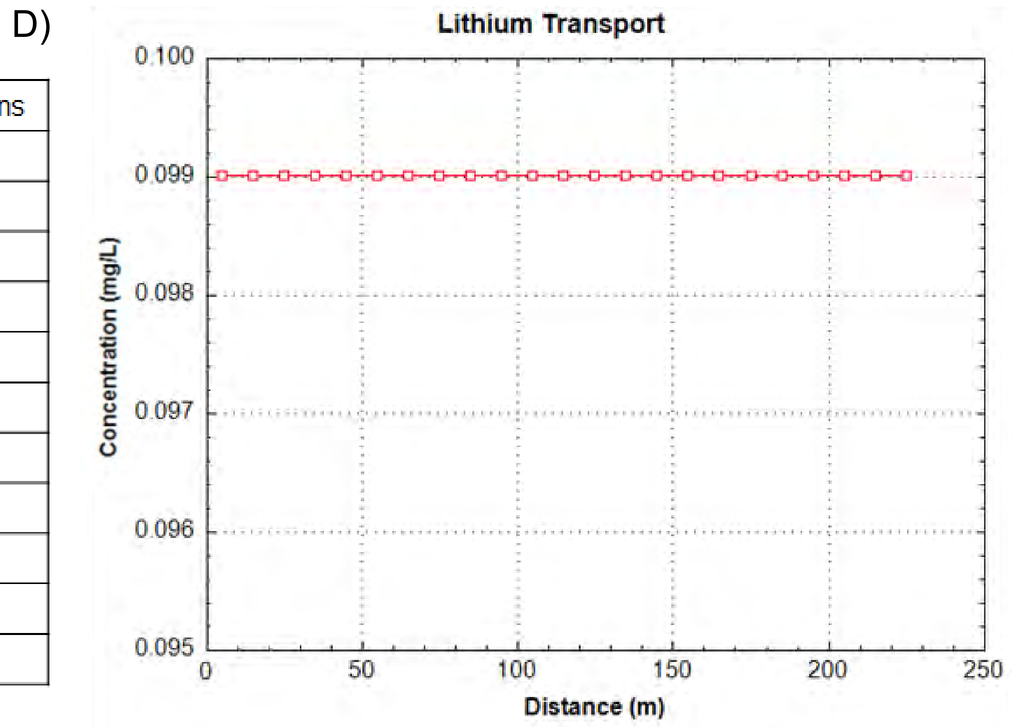
DRAFT- ATTORNEY-CLIENT PRIVILEGED







Red (□'s)	Initial Conditions
Blue (△'s)	1 year
Gold (□'s)	2 years
Pink (X's)	3 years
Black (+'s)	4 years
Sky Blue (*'s)	5 years
Brown (▽'s)	6 years
Green	7 years
Gray (I's)	8 years
Red	9 years
Green (□'s)	10 years
Blue (◇'s)	11 years



GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL MODELING

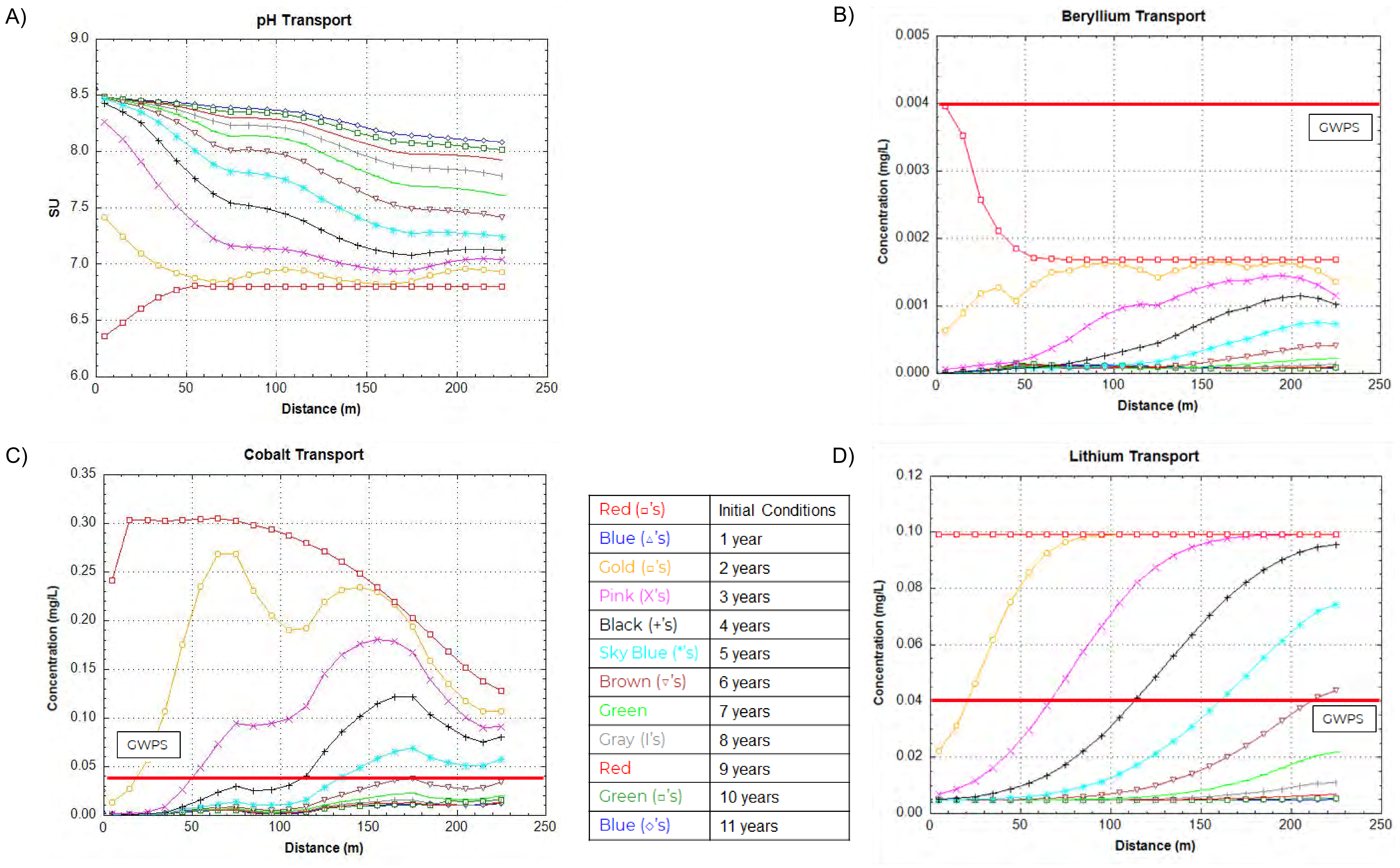
CONSULTANT

YYYY-MM-DD	2023-03-17
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

TITLE
TRANSECT 8 (INITIAL)

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	10

DRAFT- ATTORNEY-CLIENT PRIVILEGED



Red (□'s)	Initial Conditions
Blue (▵'s)	1 year
Gold (□'s)	2 years
Pink (X's)	3 years
Black (+'s)	4 years
Sky Blue (*'s)	5 years
Brown (▿'s)	6 years
Green	7 years
Gray (I's)	8 years
Red	9 years
Green (□'s)	10 years
Blue (◇'s)	11 years

GEORGIA POWER COMPANY
PLANT MCDONOUGH-ATKINSON

PROJECT
GEOCHEMICAL MODELING

CONSULTANT

YYYY-MM-DD	2023-03-17
DESIGNED	CM
PREPARED	CM
REVIEWED	PJN
APPROVED	XXX

TITLE
TRANSECT 8 (IN-SITU INJECTIONS)

PROJECT NO.	CONTROL	REV.	FIGURE
GL166849621		A	11

DRAFT- ATTORNEY-CLIENT PRIVILEGED

APPENDIX A

Geochemical Modeling Input and Results Files

Model files will be provided to GA EPD in separate submission on or before October 31, 2023.

wsp.com

APPENDIX C

Risk Evaluation Report

RISK EVALUATION REPORT

PLANT MCDONOUGH
ASH POND 1
COBB COUNTY, GEORGIA

Prepared for

Georgia Power
241 Ralph McGill Boulevard
Atlanta, Georgia 30308

Prepared by

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1075 Big Shanty Road NW, #100
Kennesaw, Georgia 30144

August 31, 2023

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LIST OF ACRONYMS AND ABBREVIATIONS

AP	Ash Pond
CCR	Coal Combustion Residual
CEM	Conceptual Exposure Model
CFR	Code of Federal Regulations
COI	Constituent of Interest
COPI	Constituent of Potential Interest
EPC	Exposure Point Concentration
EPD	[Georgia] Environmental Protection Division
GWPS	Groundwater Protection Standard
HUC	Hydrologic Unit Code
ISWQC	In-stream Water Quality Criteria
MCL	Maximum Contaminant Level
NAWQC	National Ambient Water Quality Criteria
HSRA	Hazardous Site Response Act
mg/L	Milligrams per liter
ProUCL	ProUCL software version 5.2
PWR	partially weathered rock
RRS	Risk Reduction Standards
RSL	Regional Screening Level
SPT	Standard Penetration Test
SSL	Statistically Significant Level
UCL	95 Percent Upper Confidence Limit of the Arithmetic Mean
USEPA	United States Environmental Protection Agency
VRP	Voluntary Remediation Program

EXECUTIVE SUMMARY

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

Georgia Power is closing AP-1 in place and the unit is currently capped and undergoing closure construction activities (WSP, 2023a), in accordance with the Federal CCR Rule, 40 Code of Federal Regulations (CFR) Part 257 Subpart D - Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments[1] and the State CCR Rule, Georgia Environmental Protection Division (EPD) Coal Combustion Residuals, Rule 391-3-4-.10. A permanent cover was installed and a fully encompassing subsurface barrier wall and adjacent associated closure system upgrades are being installed (Golder, 2021; WSP, 2023a). Semi-annual groundwater monitoring and reporting are ongoing per Federal and State CCR Rules.

This report presents the results of a human health risk evaluation for CCR constituents that exhibit statistically significant levels (SSLs) in groundwater at the site (arsenic and cobalt) and the supporting human health and ecological risk evaluation for the adjacent downgradient surface water bodies, an engineered stream channel (referred to as an unnamed tributary) and the Chattahoochee River[2]. 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

---

[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. An alternative source demonstration (ASD) was prepared for molybdenum, one of the SSL-related constituents identified at AP-1, in accordance with 40 CFR §257.94 and approved by Georgia EPD. The ASD demonstrates that concentrations of molybdenum in DGWC-68A are due to natural variation in groundwater quality. Therefore, molybdenum was not included in the risk evaluation.

standards (GWPS) established for AP-1 according to the Federal and State CCR Rules, arsenic and cobalt were previously identified as both federal and state SSL-related constituents (WSP, 2023a). The risk evaluation relies on recent (2016 through February 2023) groundwater data collected by Georgia Power in compliance with the Federal and State CCR Rules.

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

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

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

1 INTRODUCTION

This report summarizes a risk evaluation of AP-1, located at Georgia Power Plant McDonough in Cobb County, Georgia (**Figure 1**). AP-1 is being closed in place with an engineered cover system in accordance with the Federal CCR Rule (USEPA, 2020a) and the State CCR Rule (EPD, 2022a).

This risk evaluation provides additional technical review of the human health and environmental protectiveness associated with the closure of AP-1 with respect to constituent concentrations in groundwater identified at SSLs above GWPS. The evaluation relies on a conservative, health-protective approach that is consistent with the risk approaches outlined in Voluntary Remediation Program (VRP) (Georgia Voluntary Remediation Act, OCGA §12-8-100) (EPD, 2009) and USEPA Regional Screening Levels (RSLs) User's Guide (USEPA, 2022a). This evaluation also incorporated principles and assumptions consistent with the Federal and State CCR Rules.

This risk evaluation includes the development of a site-specific CEM and a stepwise risk screening process for identified SSL-related constituents for AP-1. Arsenic and cobalt were previously identified as SSL-related constituents in DGWC-69 and DGWC-40, respectively, (**Figure 2**) using the GWPS established for AP-1 according to the Federal and State CCR Rules (WSP, 2023a). Based on the results of the risk evaluation for these SSL-related constituents, a site-specific recommended path forward is provided.

Molybdenum was also identified as a SSL-related constituent in well DGWC-68A. In accordance with 40 CFR §257.94, an ASD for molybdenum was prepared for DGWC-68A (Golder, 2022), and Georgia EPD approved this ASD on March 3, 2023. This ASD demonstrates that concentrations of molybdenum detected in DGWC-68A are not associated with AP-1 but are instead due to natural variation in groundwater quality. Accordingly, molybdenum was not included in the risk evaluation described herein.

The remainder of the report is organized as follows:

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

- ***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 downgradient surface water bodies.

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

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

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

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

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

A CEM representing the site-specific processes and conditions that are relevant to the potential migration of groundwater and potential exposure to SSL-related constituents has been developed based on a review and compilation of information previously presented in Plant McDonough AP-1 documents, including the *2022 Semi-Annual Groundwater Monitoring and Corrective Action Report* for AP-1 (WSP, 2023a) and the *Hydrogeologic Assessment Report – Plant McDonough- Atkinson AP-1* (WSP, 2023b). The CEM includes a conservative evaluation of potential exposure pathways and potential human and ecological receptors.

2.1 Site Description

Plant McDonough is located approximately seven miles northwest of Atlanta in southeast Cobb County. The site occupies approximately 390 acres and is bounded on the southeast by the Chattahoochee River and on the southwest by an unnamed tributary of the Chattahoochee River (**Figure 1**). Plant McDonough was once a coal-fired power generating facility but was converted to natural gas combined-cycle power generating facility in 2011(WSP, 2023a). Four CCR surface impoundments are located at Plant McDonough: AP-1, AP-2, AP-3, and AP-4. This report documents the risk evaluation performed for AP-1.

AP-1 is being closed in place. CCR grading and consolidation began in February 2016 and was completed in March 2017. The final cover system consists of a Subtitle D compliant engineered turf system for the closure cap, designed to meet or exceed Federal CCR Rule requirements of 40 CFR §257.102(d)(3)(ii)) (USEPA, 2020a; Golder, 2021).

Semi-annual groundwater monitoring and reporting for AP-1 is performed in accordance with the monitoring program requirements of Georgia EPD Solid Waste Management Program, Rule 391-3-4. In accordance with 40 CFR §257.91, a groundwater monitoring network was installed at AP-1 in the uppermost aquifer to monitor groundwater quality both upgradient and downgradient of AP-1. The AP-1 certified monitoring well network consists of 3 upgradient monitoring wells and 8 downgradient monitoring wells. Additionally, piezometers were installed for assessment monitoring, water level measurements and/or non-routine sample collection. The locations of the certified compliance well network and the piezometers are provided on **Figure 2**.

2.1.1 Topography and Surface Hydrology

The site is located within the Piedmont Physiographic Province of central Georgia, which is characterized by gently rolling hills and narrow valleys, with locally pronounced linear ridges. Overall, the property slopes gently south towards the Chattahoochee River (WSP, 2023a).

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

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

2.1.2 Geology and Hydrogeology

The geologic and hydrogeologic characteristics of the site have been extensively evaluated and compiled in previous reports. The following presents a brief summary of this information from the *2022 Semi-Annual Groundwater Monitoring and Corrective Action Report* (WSP, 2023a):

> *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 under gone 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). Where TWR is a*

> *qualitative description, 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, 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 (i.e., TWR/PWR) to competent bedrock and is the primary groundwater flow path. The overburden has an average horizontal hydraulic conductivity of 10^{-4} centimeters per second (cm/s) and groundwater flow 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 considered part of the upper aquifer. The overlying silt/clay-rich overburden may act to retard recharge into the bedrock aquifer system. In addition, deeper bedrock is unweathered with few discontinuities (e.g., fractures) available to store or transmit groundwater.*

The potentiometric surface elevation contours for September 2022 are presented in **Figure 3**. The general direction of groundwater flow across AP-1 is west-southwest.

2.2 Potential Transport Pathways

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

2.2.1 Groundwater

Pertinent information regarding groundwater transport from the *Hydrogeologic Assessment Report– Plant McDonough-Atkinson Ash Pond 1* (WSP, 2023b) is presented below and is largely consistent with historical observations from 2015 through 2022:

> *Localized groundwater flow directions within this aquifer are influenced by topographic and top of rock variations on site. As illustrated on the*

> *Geologic Cross-Section Schematics shown on Sheets GW-3a through GW-3j and the September 6, 2022, Potentiometric Surface shown on Sheet GW-7, 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 discussed in Section 3.2, the top of rock surface also generally follows topography and likely controls groundwater flow direction in the uppermost aquifer. Local complexities in groundwater flow within this aquifer are influenced by topographic and related top of rock variations on site. The groundwater flow pattern interpreted using the September 2022 elevation data is consistent with previous observations.*

Current information based on the September 2022 groundwater elevation data indicates groundwater flow is south and west of the Ash Pond.

2.2.2 Surface Water

Based on available potentiometric data, groundwater was assumed to flow toward the downgradient surface water bodies. An unnamed tributary flows to the south, parallel and adjacent to the western and southern boundary of AP-1, and into the Chattahoochee River. The Chattahoochee River flows to the south/southwest (**Figure 2**). In addition, for the purposes of this evaluation, the Chattahoochee River is assumed to represent a regional hydraulic discharge boundary for groundwater flow in the upper aquifer from the nearby region.

2.3 Potential Exposure Pathways and Receptors

The exposure pathways for groundwater and surface water were assumed to be complete as a conservative measure for the purposes of this risk evaluation and 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, 2023a). Beyond the Chattahoochee River to the southeast, land use is predominantly zoned Industrial with some Residential land use beyond (Fulton County, 2023).

- 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 are more conservative than industrial and construction worker screening levels.

- Off-site resident: The groundwater exposure pathway for hypothetical off-site residential receptors was assumed potentially complete. An off-site well survey of potential groundwater wells within a three-mile radius of AP-1 was conducted and consisted of reviewing Federal, State, and County records and online sources, in addition to conducting a windshield survey of the area (Newfields, 2020). The off-site well survey results are included as **Appendix A**. Results of the survey are presented on **Figure 5**. Combining well information from all sources with parcel data, 48 possible wells were identified; 18 may be active or former drinking water wells. None of these wells are located downgradient of the site as the Chattahoochee River is assumed to represent a regional hydraulic discharge boundary for groundwater flow in the upper aquifer from the nearby region. The Code of Ordinances for Cobb County, Georgia indicates that "the water distribution system of any building in which plumbing fixtures are installed shall be connected to a public water supply, if public water is available" (Cobb County, 2023b); therefore, the wells identified during the water well survey are not considered likely to be active drinking water wells.

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

A potable water well survey within a two-mile radius of AP-1 was conducted in January 2023 with the results provided and discussed in the *Semi-Annual Remedy Selection and Design Progress Report* included as Appendix E in the *2022 Semi-Annual Groundwater Monitoring and Corrective Action Report* (WSP, 2023a). The survey incorporated records from federal, state, and county sources. Cobb County Environmental Health Department responded that they did not have records of approved water wells within a two-mile radius of AP-1. The findings from the other sources are consistent with the 2020 well survey in that no downgradient potable water wells or surface water intakes were identified within two-miles of AP-1.

As a conservative measure, potential off-site residential exposure to SSL-related constituents was evaluated using on-site groundwater wells around the perimeter and downgradient of AP-1. This comparison makes the conservative assumption that on-site groundwater may potentially migrate to off-site drinking water wells, through advective transport in groundwater without any attenuation within the aquifer media through factors such as dilution, dispersion, or adsorption. The risk evaluation screening conservatively assumed that hypothetical off-site residential receptors could be exposed to the concentrations of SSL-related constituents in groundwater through its use as a potable water supply by ingestion and dermal contact with groundwater.

- Off-site recreational surface water receptors: The surface water exposure pathway for recreational receptors was assumed potentially complete. Routes of exposure include ingestion of aquatic organisms (mainly fish) and potential incidental ingestion and dermal contact with surface water by adult and child recreational receptors. (i.e., unnamed tributary and Chattahoochee River). Evaluation of SSL-related constituents in on-site groundwater monitoring wells indicates arsenic was delineated on-site below its groundwater human health screening value; while cobalt was delineated in groundwater through use of site surface water data.

- Off-site ecological surface water receptors: The surface water exposure pathway for potential off-site ecological receptors was assumed complete. Potential routes of exposure include direct contact to surface water by aquatic receptors as well as ingestion. Evaluation of arsenic concentrations in surface water compared to its ecological surface water screening value indicates arsenic is below the screening value.

3 RISK EVALUATION SCREENING

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

The initial risk evaluation screening was performed for the potential groundwater exposure pathway by comparing the concentrations of on-site groundwater wells determined to have SSL-related constituents to appropriate health-protective screening criteria or background. These criteria included the risk reduction standards (RRS) established in accordance with the Hazardous Site Response Act (HSRA) for drinking water and site-specific background for the protection of human health. If the maximum concentration of a SSL-related constituent exceeded the screening criterion, the constituent was identified as a COPI for further evaluation in the refined risk evaluation. The methodology and screening criteria used were identified in accordance with regulatory guidance and standard risk assessment practices using an approach designed to conservatively estimate possible exposures and risks, providing an additional level of confidence in the conclusions. The methodology is summarized in **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 February 2023 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 included DGWC-69 for arsenic and DGWC-40 for cobalt. Data for these SSL-related constituents from the wells listed above were screened against relevant health-protective screening criteria or background.

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

3.1.2 Background Groundwater Quality

Statistical analysis of groundwater monitoring data is performed at Plant McDonough pursuant to §257.93-95 following the professional engineer-certified Statistical Analysis Method Certification (Rev 01, amended January 2020) (Golder, 2020) and the Unified Guidance (USEPA, 2009) for AP-1; background values are routinely updated under the program. Three monitoring wells in the certified monitoring well network are designated as upgradient or background locations, including DGWA-53, DGWA-70A, and DGWA-71. Statistical analyses were performed on the groundwater data using Sanitas groundwater statistical software, as described in the *2022 Semi-Annual Groundwater Monitoring & Corrective Action Report* (WSP, 2023a), as presented below:

> *Statistical analysis for assessment monitoring is performed by comparing confidence intervals against groundwater protection standards (GWPS). Parametric tolerance limits are 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 GA EPD Rule 391-3-4-.10(6)(a).*

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

3.2 Groundwater Screening Evaluation

The process of screening SSL-related constituents in groundwater against human health screening levels for groundwater is discussed below and presented in **Figure 6**. The HSRA RRS evaluated under the VRP approach presented herein included Type 1 and Type 2 standards for residential receptors. The Hazardous Site Response Act, Rule 391-3-19.07(1) notes that "*[a]ll risk reduction standards will, when implemented, provide adequate* *protection of human health and the environment*". In addition, Rule 391-3-19.07(3) notes a corrective action, if needed, may be considered complete when "*a site meets any or a combination of the applicable risk reduction standards described in Rule 391-3-19-.07*".

- In accordance with standard practice and methodologies approved by Georgia EPD, the screening level hierarchy for the SSL-related constituents as follows: The higher of the Type 1 and Type 2 RRS for hypothetical off-site residential exposures, which are considered protective of human health for those constituents regulated under HSRA. The Type 1 RRS was used for arsenic. The calculation of risk-based groundwater RRS for residential receptors is presented in **Appendix C**.

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

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

Table 1 presents the maximum detected concentration of each SSL-related constituent, which was used to represent potential off-site groundwater quality for comparison to the selected screening levels for hypothetical off-site residential receptors (health- or background-based). The maximum detected arsenic concentration of 0.164 mg/L and cobalt concentration of 0.055 mg/L exceeded their respective screening levels of 0.010 mg/L and 0.032 mg/L. Due to these exceedances, both arsenic and cobalt were identified as COPIs, and were retained for further evaluation in the refined risk evaluation.

3.3 Alternate Source Demonstration

In accordance with 40 CFR §257.94, an ASD for molybdenum for DGWC-68A was submitted on July 29, 2022 (Golder, 2022) and approved by Georgia EPD on March 3, 2023. There are multiple lines of evidence that support the conclusion that the SSL of molybdenum present in the monitoring well is attributable to natural variation in groundwater quality and is not attributable to CCR storage or a release from the former AP-1. The ASD demonstrates that concentrations of molybdenum in groundwater are naturally occurring; and Georgia EPD has concurred with the ASD. Accordingly, molybdenum was determined to not be a risk related to AP-1 and need not be carried forward through the remainder of the assessment.

4 REFINED RISK EVALUATION

A refined risk evaluation was conducted for the groundwater COPIs (i.e., arsenic and cobalt) 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 purpose of characterizing potential risk to human receptors. If the EPC is greater than the respective screening level, then the constituent is identified as having the potential for risk that warrants additional evaluation (e.g., performing a surface water evaluation). Arsenic and cobalt were evaluated in the adjacent downgradient surface water bodies (i.e., unnamed tributary and Chattahoochee River) because they were identified as groundwater COIs in the refined groundwater risk evaluation.

4.1 Refined Groundwater Risk Evaluation

Potential risk associated with exposure to arsenic and cobalt by hypothetical off-site residential receptors was refined using the methodology described in the HSRA and VRP guidance (EPD, 2018a; 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 February 2023 from the on-site wells that were identified to have SSL-related constituents (DGWC-40 and DGWC-69) and downgradient piezometers that represent groundwater flow in the same hydraulically downgradient direction were used to evaluate hypothetical off-site residential exposure. The downgradient groundwater monitoring wells and piezometers included in the refined risk evaluation are depicted with yellow well labels on **Figure 2**.

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 and cobalt) 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 5.2 software (ProUCL) (USEPA, 2022b) and user's guide (USEPA, 2022c). For the refined risk evaluation, the UCLs for the COPIs in groundwater were calculated for the following specific datasets:

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

Other assumptions made in the calculations of the UCLs include:

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

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

Table 2 summarizes the groundwater EPCs selected for the COPIs of arsenic and cobalt. 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 and cobalt. 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 and cobalt to evaluate the trends in concentrations over time. The tests were conducted using the USEPA ProUCL 5.2 software (USEPA, 2022b).

The Mann-Kendall and Theil-Sen test results are presented on time series graphs in **Appendix D-4** and indicated insufficient statistical evidence of a significant trend in cobalt concentrations over time at DGWC-40 and a statistically significant increasing trend was observed for arsenic in DGWC-69.

4.1.3 Refined Groundwater Risk Evaluation Results

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

4.1.3.1 Cobalt

Cobalt was detected in 17 out of 18 groundwater samples collected from well DGWC-40 at concentrations that exceeded the groundwater background value. For the refined risk evaluation, the following EPCs were calculated for cobalt using the monitoring wells shown in **Appendices D-1** and **D-2a**:

- Data from DGWC-40 were used to determine if the UCL complied with the screening level (EPC Step 1 in **Appendix D-1**).
- Data from DGWC-40 and its associated downgradient piezometers B-62 and B-100 were combined to represent groundwater exposure in the same hydraulically downgradient direction (EPC Step 2 in **Appendix D-1**).
- Data from B-62 and B-100 were used to represent groundwater exposure using the piezometer that is the farthest hydraulically downgradient of well DGWC-40 (EPC Step 3 in **Appendix D-1**).

The UCL for the combined dataset from B-62 and B-100 (EPC Step 3) of 0.036 mg/L exceeded the background value of 0.032 mg/L. The distance from DGWC-40 to the nearest property boundary within the potential groundwater flow direction is approximately 600 feet, which is adjacent to the Chattahoochee River.

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

4.1.3.2 Arsenic

Arsenic was detected in 17 out of 20 groundwater samples collected from well DGWC-69 at concentrations that exceeded the site-specific screening level. For the refined risk evaluation, the following EPCs were calculated for arsenic using the monitoring wells/piezometers shown in **Appendices D-1** and **D-2b**:

- Data from DGWC-69 were used to determine if the UCL complied with the screening level (EPC Step 1 in **Appendix D-1**).
- Only data from DGWC-69 were used due to the absence of downgradient piezometers that represent groundwater exposure in the same hydraulically downgradient direction (EPC Steps 2 and 3 in **Appendix D-1**).

The UCL for DGWC-69 of 0.047 mg/L exceeded the site-specific screening level of 0.010 mg/L. The unnamed tributary is immediately downgradient from DGWC-69.

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

4.2 Surface Water Risk Evaluation

A surface water screening evaluation was conducted for the unnamed tributary and Chattahoochee River for the groundwater COIs (arsenic and cobalt) 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. Potential routes of human exposure include ingestion of aquatic organisms (mainly fish) and potential incidental ingestion and dermal contact with surface water by adult and child recreational receptors. Potential routes of exposure for ecological receptors include direct contact to surface water and ingestion.

Surface water screening was performed using surface water data for the constituents identified as groundwater COIs. The surface water screening process for the COIs identified in groundwater (arsenic and cobalt) 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 (arsenic and cobalt). Surface water data for arsenic included 7 sampling events for Plant McDonough from September 2019 to February 2023 at two locations in the Chattahoochee River and four locations in the unnamed tributary. One of the locations in the unnamed tributary (UT01_US) is upstream of AP-1 and was used as the background surface water location.

Surface water data for cobalt included 7 sampling events for Plant McDonough from November 2020 to February 2023 at four locations in the Chattahoochee River. One of these locations in the Chattahoochee River (CR-0.5) is upstream of the site and 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 COI were selected from the following order of hierarchy:

- Georgia In-Stream Water Quality Criteria (ISWQC) for human health (EPD, 2022b), when available.

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

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

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

For arsenic, the Georgia ISWQC screening level was used. For cobalt, 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, 2022b) and NAWQC (USEPA, 2015). The use of drinking water screening levels for surface water exposure is a conservative approach likely to overestimate risk as use of unnamed tributary and Chattahoochee River surface water downgradient of the site as a source of potable drinking water is an incomplete exposure pathway.

The surface water human health screening levels were compared to the maximum detected concentrations of arsenic and cobalt in surface water, as shown in **Table 4**. Arsenic was detected in 1 out of 26 surface water samples at concentrations that were an order of magnitude lower than the screening level of 0.05 mg/L. Cobalt was not detected in any of the 16 surface water samples collected. Therefore, neither arsenic or cobalt were retained as 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, 2022b), 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.

For arsenic, the chronic freshwater Georgia ISWQC for ecological receptors (EPD, 2022b) was used as the screening value. Cobalt does not have a chronic freshwater Georgia ISWQC for ecological receptors (EPD, 2022b), and therefore, the USEPA Region 4 chronic freshwater screening level (USEPA, 2018) was used in the surface water ecological screening for aquatic ecological receptors.

The ecological surface water screening levels were compared to the maximum detected concentrations of arsenic and cobalt in surface water, as shown in **Table 5**. Arsenic was detected in 1 out of 26 surface water samples at a concentration that is two orders of magnitude lower than the screening level of 0.15 mg/L. Cobalt was not detected in any of the 16 surface water samples collected. Therefore, neither arsenic or cobalt were 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 and cobalt were reported at concentrations above the corresponding groundwater screening values. However, the results of the refined groundwater and surface water risk evaluations indicate the following:

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

- Unnamed tributary and Chattahoochee River surface water concentrations of arsenic and cobalt were below health-protective surface water screening criteria for human and ecological receptors. Therefore, arsenic and cobalt 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 used, further risk evaluation for groundwater and surface water is not warranted. Compliance monitoring under the Federal and State CCR Rules will continue as will surface water monitoring of the unnamed tributary for arsenic and of the Chattahoochee River for cobalt.

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

- In the surface water screening, the higher of the residential groundwater screening levels was used for cobalt because of the lack of human health surface water screening levels within the Georgia ISWQC for human health (EPD, 2022b) and NAWQC (USEPA, 2015). The use of drinking water screening levels for surface water screening is a conservative approach likely to overestimate exposure as use of downgradient surface water from the unnamed tributary and Chattahoochee River as a source of potable drinking water is an incomplete exposure pathway.

Exposure Uncertainties:

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

- The constituents included in the risk evaluation occur naturally in the site geologic setting. Although background concentrations were evaluated and used in the screening process, contributions to exposure and risk were assumed to be entirely CCR-related and natural background sources were not quantified. Thus, SSL-related exposures were likely overestimated.

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

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

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

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

Toxicity Uncertainties:

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

6 CONCLUSIONS

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

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

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TABLES

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

CCR Rule Designation	Constituent	CAS No.	Detection Frequency[1]	Exceedance Frequency[2]	Maximum Concentration (mg/L)	Screening Level (mg/L)	Source	Site-Specific Background (mg/L)	COPI? (Y/N)	Rationale[3]
Appendix IV	Arsenic	7440-38-2	20 / 20	19 / 20	0.164	0.010	Type 1 RRS	0.005	Y	ASL
	Cobalt	7440-48-4	18 / 18	17 / 18	0.055	0.032	Background[4]	0.032	Y	ASL

Notes:

[1] Evaluation includes 2016 - February 2023 groundwater analytical data from downgradient wells DGWC-40 (cobalt) and DGWC-69 (arsenic).
[2] Exceedance frequency is for the specific constituent that exceeds the first screening value in the hierarchy of screening values.
[3] Rationale for classification of constituent as a COPI or exclusion as a COPI:
ASL = Above respective screening level
BSL = Equal to or below respective screening level
[4] For constituents with site-specific background concentrations greater than applicable screening values, the site-specific background value was used as the screening value.

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

Prepared by/Date: JHG 03/28/23
Checked by/Date: IMR 03/29/23

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

Exposure Unit	CCR Rule Designation	Constituent	CAS No.	Detection Frequency	Maximum Concentration (mg/L)	95% UCL (mg/L)	Recommended UCL Method	Selected EPC[1] (mg/L)
AP-1	Appendix IV	Arsenic	7440-38-2	20 / 20	0.16	0.047	95% Student's-t UCL	0.047
		Cobalt	7440-48-4	9 / 18	0.087	0.036	95% KM (t) UCL	0.036

Notes:

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

[2] NA = Not available. 95% UCL not calculated because dataset had fewer than 5 values or all samples were non-detect.

Definitions:

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

Prepared by/Date: JHG 03/28/23
Checked by/Date: IMR 03/30/23

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

Exposure Unit	CCR Rule Designation	Constituent	CAS No.	Detection Frequency	Exceedance Frequency[1]	Selected EPC[2] (mg/L)	Screening Level (mg/L)	Source	Site-Specific Background (mg/L)	COI? (Y/N)	Rationale[3]
AP-1	Appendix IV	Arsenic	7440-38-2	20 / 20	17 / 20	0.047	0.010	Type 1 RRS	0.005	Y	ASL
		Cobalt	7440-48-4	9 / 18	6 / 18	0.036	0.032	Background[4]	0.032	Y	ASL

Notes:

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

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

[3] Rationale for classification of constituent as a COI or exclusion as a COI:
ASL = Above respective screening level
BSL = Below respective screening level

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

Definitions:

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

Prepared by/Date: JHG 03/28/23
Checked by/Date: IMR 03/30/23

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

CCR Rule Designation	Constituents	CAS No.	Detection Frequency	Exceedance Frequency[2]	Maximum Concentration (mg/L)	Screening Level (mg/L)	Source[3, 4]	Site-Specific Background (mg/L)	COPI? (Y/N)	Rationale[5]
Appendix IV	Arsenic	7440-38-2	1 / 26	0 / 26	0.0015	0.05	GA ISWQC	ND (0.005)	N	BSL
	Cobalt	7440-48-4	0 / 16	0 / 16	ND (0.01)	0.006	Type 2 RRS	ND (0.005)	N	ND

Notes:

[1] Arsenic surface water data includes data from 2019-2023 for UT01_US (upstream or background location) and data from 2019-2023 for the downstream locations including UT02, UT03, UT01_DS, CR+0.2, and CR+0.4. Cobalt surface water data includes data from 2020-2023 for CR-0.5 (upstream or backgound location) and data from 2020-2023 for CR+0.2, CR+.04, and CR-0.1.

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

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

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

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

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

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

Definitions:

CAS = Chemical Abstract Service
CCR = Coal Combustion Residuals
COPI = Constituent of Potential Interest
EPA = United States Environmental Protection Agency
GA ISWQC = Georgia Instream Water Quality Criteria
HSRA = Georgia Hazardous Site Response Act
mg/L = milligrams per Liter
NRWQC = National Recommended Water Quality Criteria
RRS = Risk Reduction Standard
RSL = Regional Screening Level

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

Prepared by/Date: JHG 03/29/23
Checked by/Date: IMR 03/30/23

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

CCR Rule Designation	Constituents	CAS No.	Detection Frequency	Exceedance Frequency[2]	Maximum Concentration (mg/L)	Screening Level (mg/L)	Hardness Dependent? (Y/N)	Source[3]	Site-Specific Background (mg/L)	COPI (Y/N)	Rationale[4]
Appendix IV	Arsenic	7440-38-2	1 / 26	0 / 26	0.0015	0.15	N	GA ISWQC	ND (0.005)	N	BSL
	Cobalt	7440-48-4	0 / 16	0 / 16	ND (0.01)	0.019	N	EPA Reg. 4	ND (0.005)	N	ND

Notes:

[1] Arsenic surface water data includes data from 2019-2023 for UT01_US (upstream or background location) and data from 2019-2023 for the downstream locations including UT02, UT03, UT01_DS, CR+0.2, and CR+0.4. Cobalt surface water data includes data from 2020-2023 for CR-0.5 (upstream or backgound location) and data from 2020-2023 for CR+0.2, CR+.04, and CR-0.1.

[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 valu

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

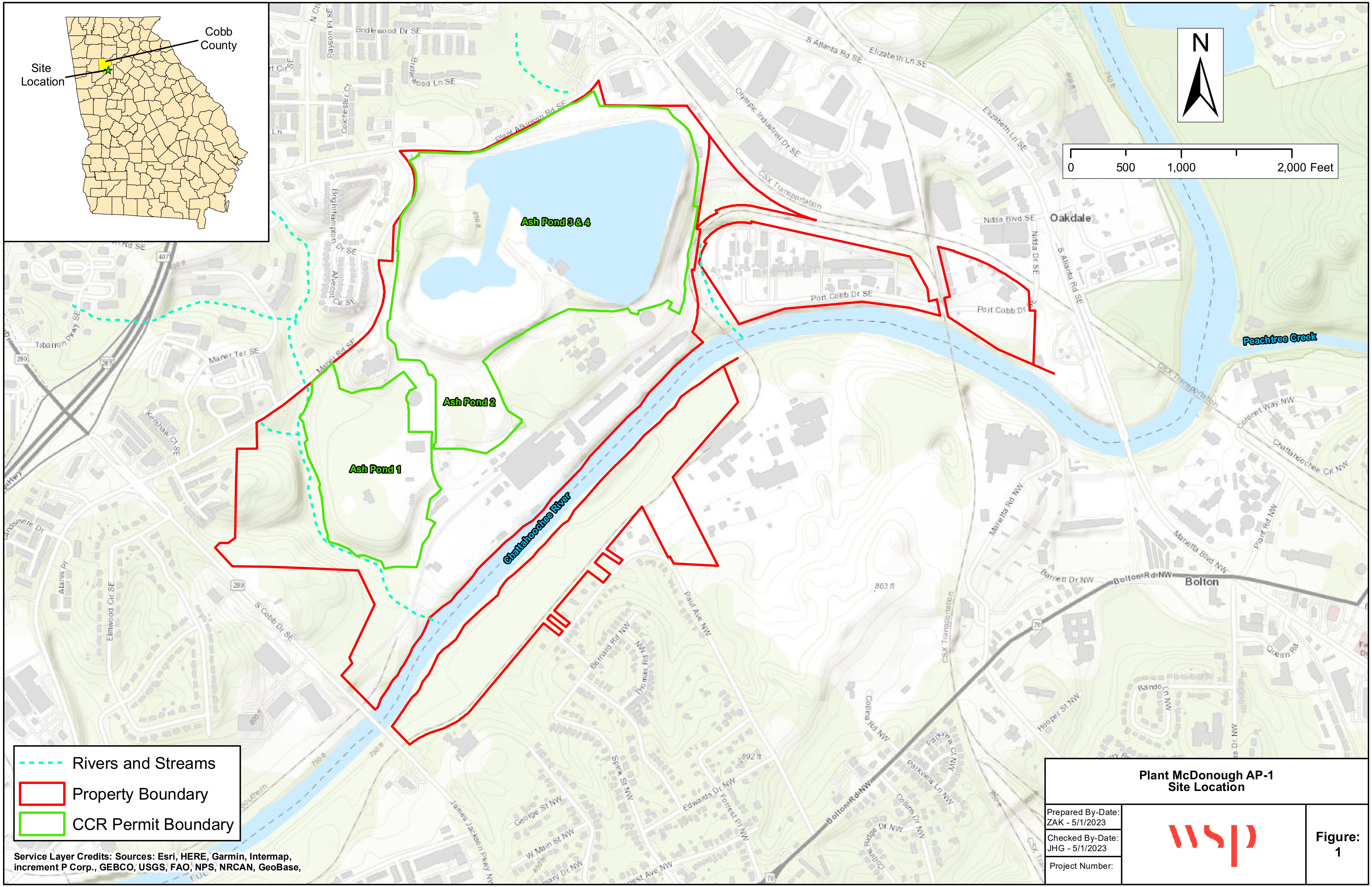
[4] Rationale for classification of constituent as a COPI or exclusion as a COPI:
- ASL = Above respective screening level
- BSL = Below respective screening level

Prepared by/Date: JHG 03/29/23
Checked by/Date: IMR 03/30/23

Definitions:

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

FIGURES



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

Plant McDonough AP-1
Site Location

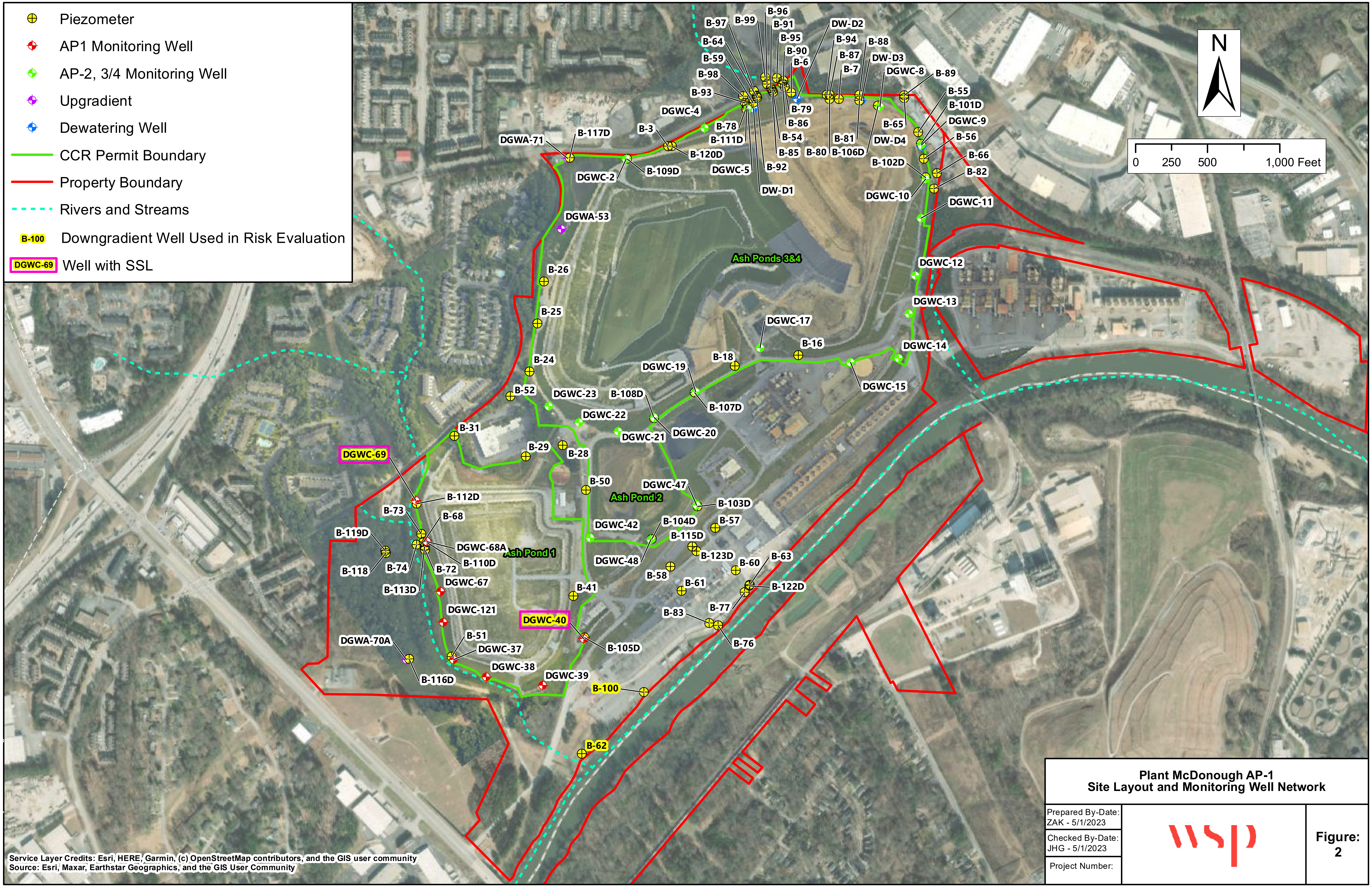
Prepared By-Date:
ZAK - 5/1/2023

Checked By-Date:
JHG - 5/1/2023

Project Number:

wsp

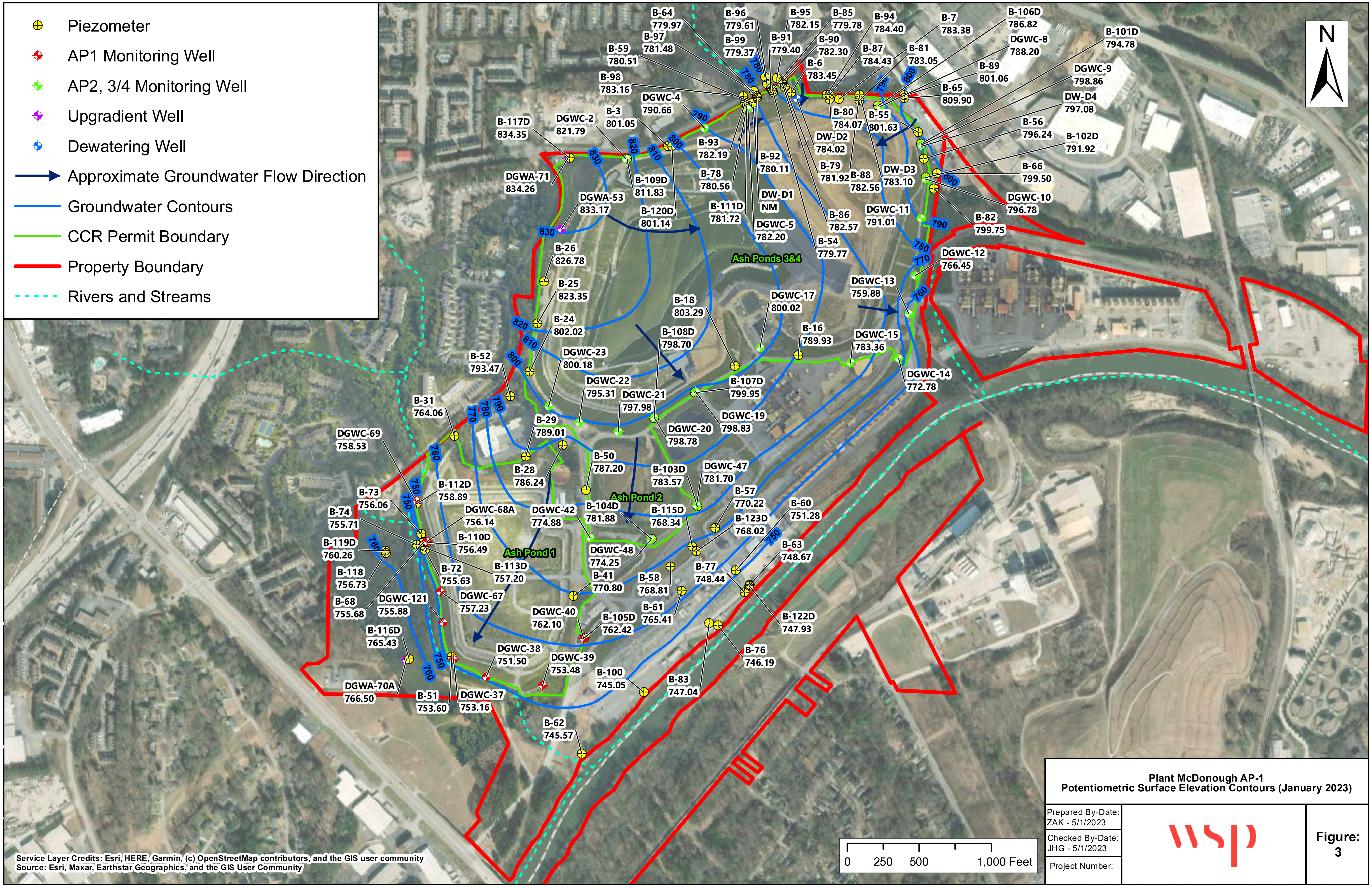
Figure:
1



Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Plant McDonough AP-1
Site Layout and Monitoring Well Network

Prepared By-Date: ZAK - 5/1/2023	wsp	Figure: 2
Checked By-Date: JHG - 5/1/2023		
Project Number:		



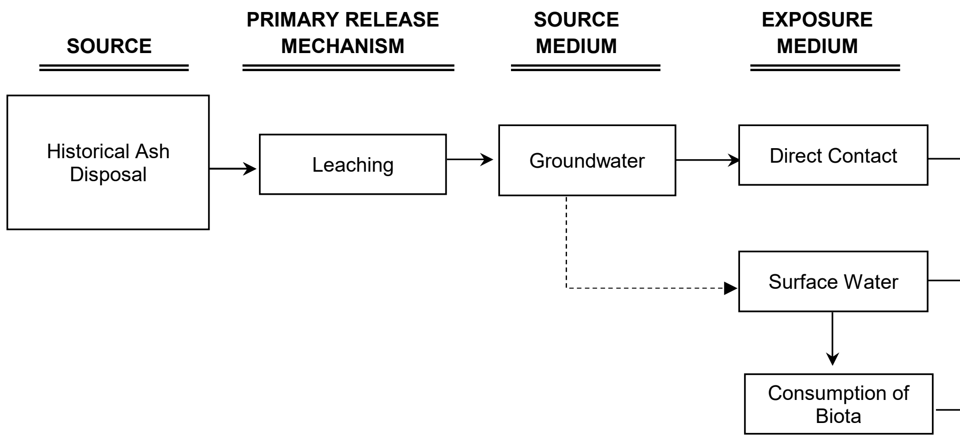
Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Plant McDonough AP-1
Potentiometric Surface Elevation Contours (January 2023)

Prepared By-Date: ZAK - 5/1/2023
Checked By-Date: JHG - 5/1/2023
Project Number:

wsp

Figure: 3



		HUMAN HEALTH AND ECOLOGICAL RISK EVALUATION RECEPTORS										
		HUMAN										ECOLOGICAL
		Current				Future						Current / Future
		On-Site	Off-Site			On-Site			Off-Site			Off-Site
EXPOSURE MEDIUM	EXPOSURE ROUTE	Worker[1]	Worker[2]	Child and Adult Resident	Child and Adult Recreational	Worker[1]	Child Resident	Adult Resident	Worker[2]	Child and Adult Resident	Child and Adult Recreational	Aquatic Receptors[3]
Direct Contact	Ingestion		○	●					○	●		
	Dermal Contact		○	●					○	●		
Surface Water	Ingestion				●						●	●
	Dermal Contact				●						●	●
Consumption of Biota	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 to receptors, which are evaluated quantitatively.

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

Footnotes

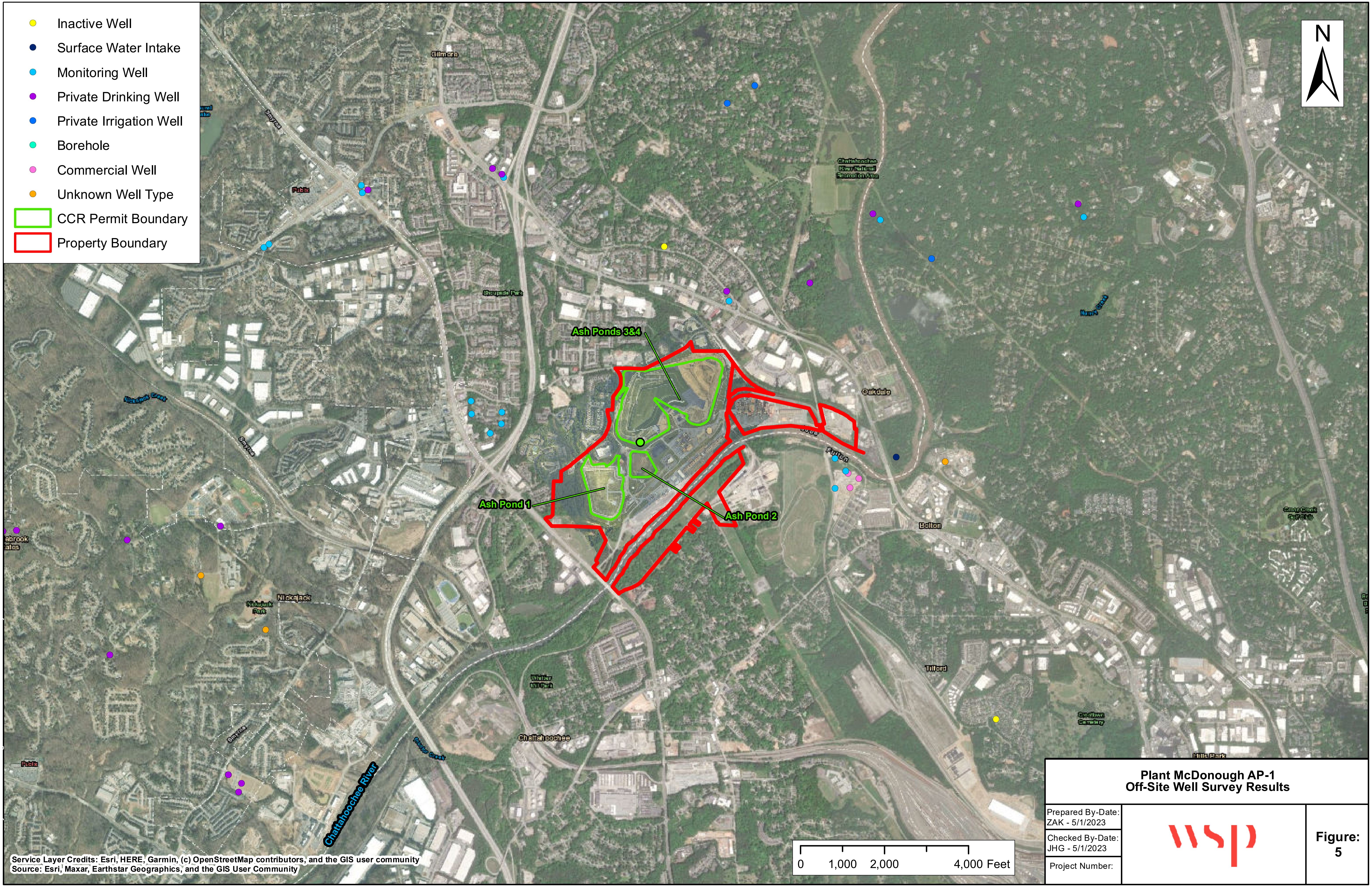
1. Industrial worker was considered incomplete because there are no wells on-site that are classified for use as potable wells. On-site construction workers would be expected to have little to no direct contact with on-site groundwater due to safety procedures outlined in their site-specific health and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

Plant McDonough AP-1
Conceptual Exposure Model

Figure 4

Project Number

Prepared by/Date: JHG 03/27/23
Checked by/Date: IMR 03/27/23



Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Plant McDonough AP-1
Off-Site Well Survey Results

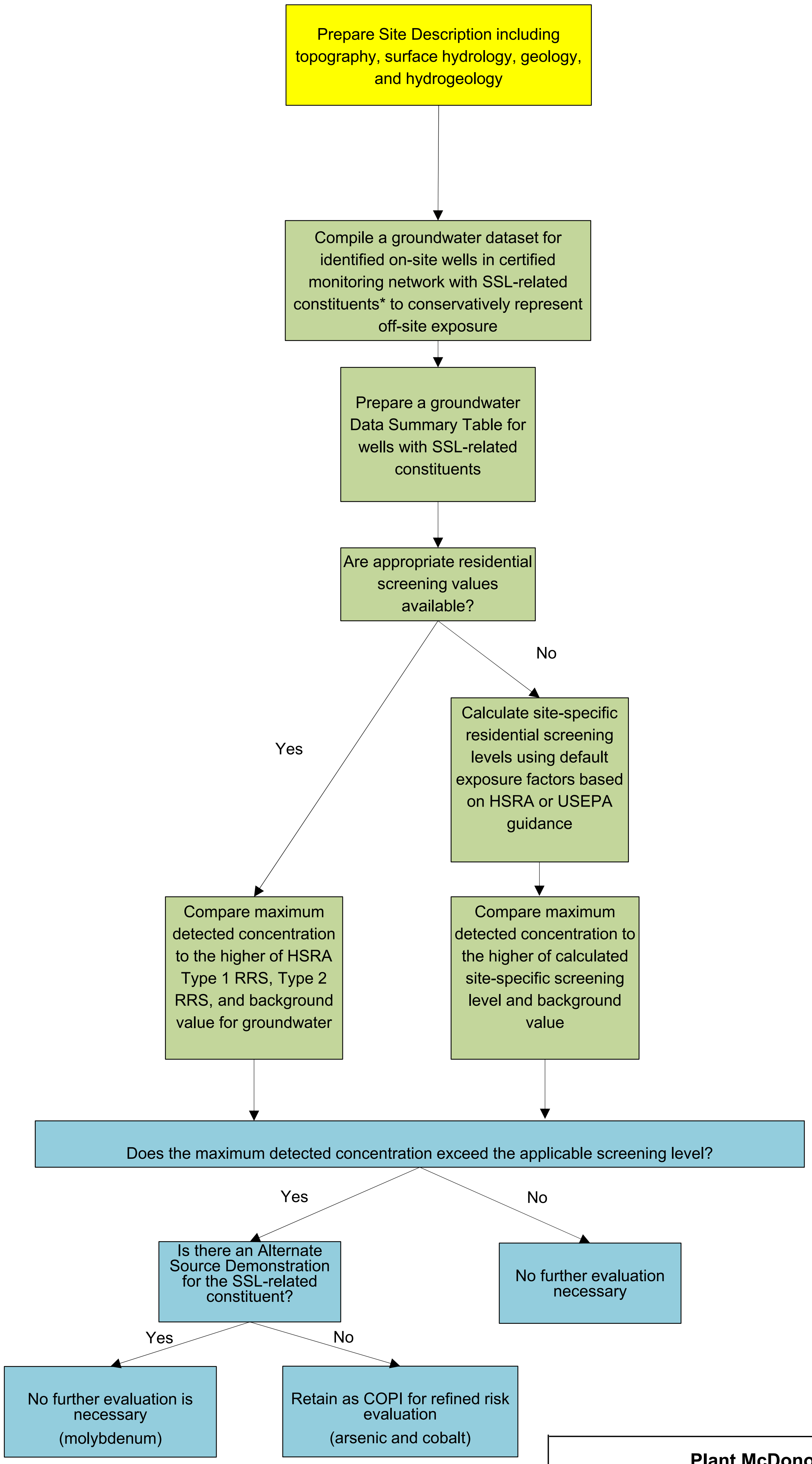
Prepared By-Date:
ZAK - 5/1/2023

Checked By-Date:
JHG - 5/1/2023

Project Number:

Figure:
5

Groundwater Risk Screening Approach for AP-1



Notes:

* Initial screen evaluates AP-1 wells with SSL-related constituents: arsenic (DGWC-69); cobalt (DGWC-40).
SSL = Statistically Significant Level
COPI = Constituent of Potential Interest
HSRA = Hazardous Site Response Act
RRS = Risk Reduction Standard
USEPA = United States Environmental Protection Agency

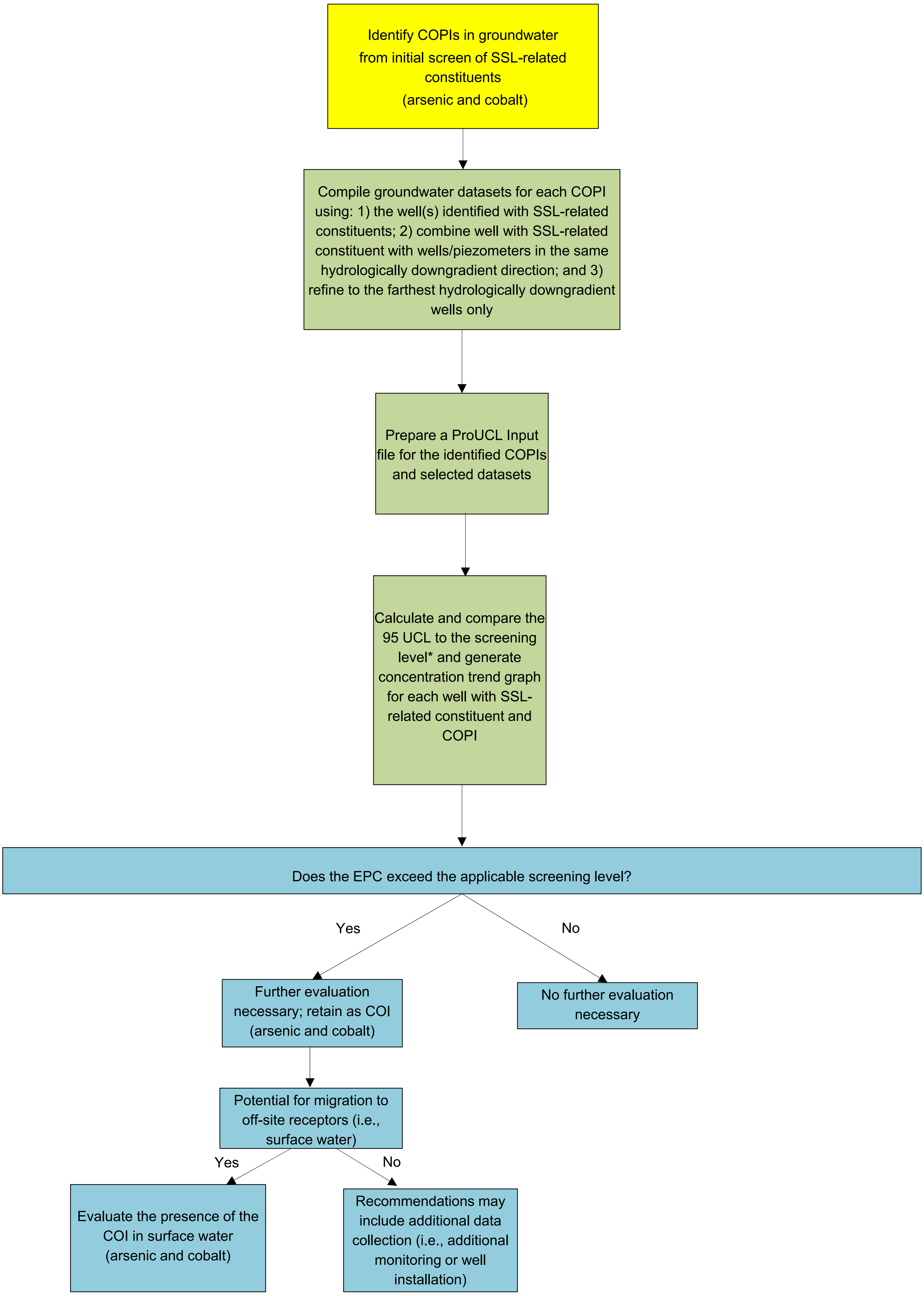
Plant McDonough AP-1
Groundwater Risk Screening Approach for AP-1

Figure 6

Project Number

Prepared by/Date: JHG 03/27/23
Checked by/Date: IMR 03/27/23

Refined Groundwater Risk Evaluation Approach for AP-1



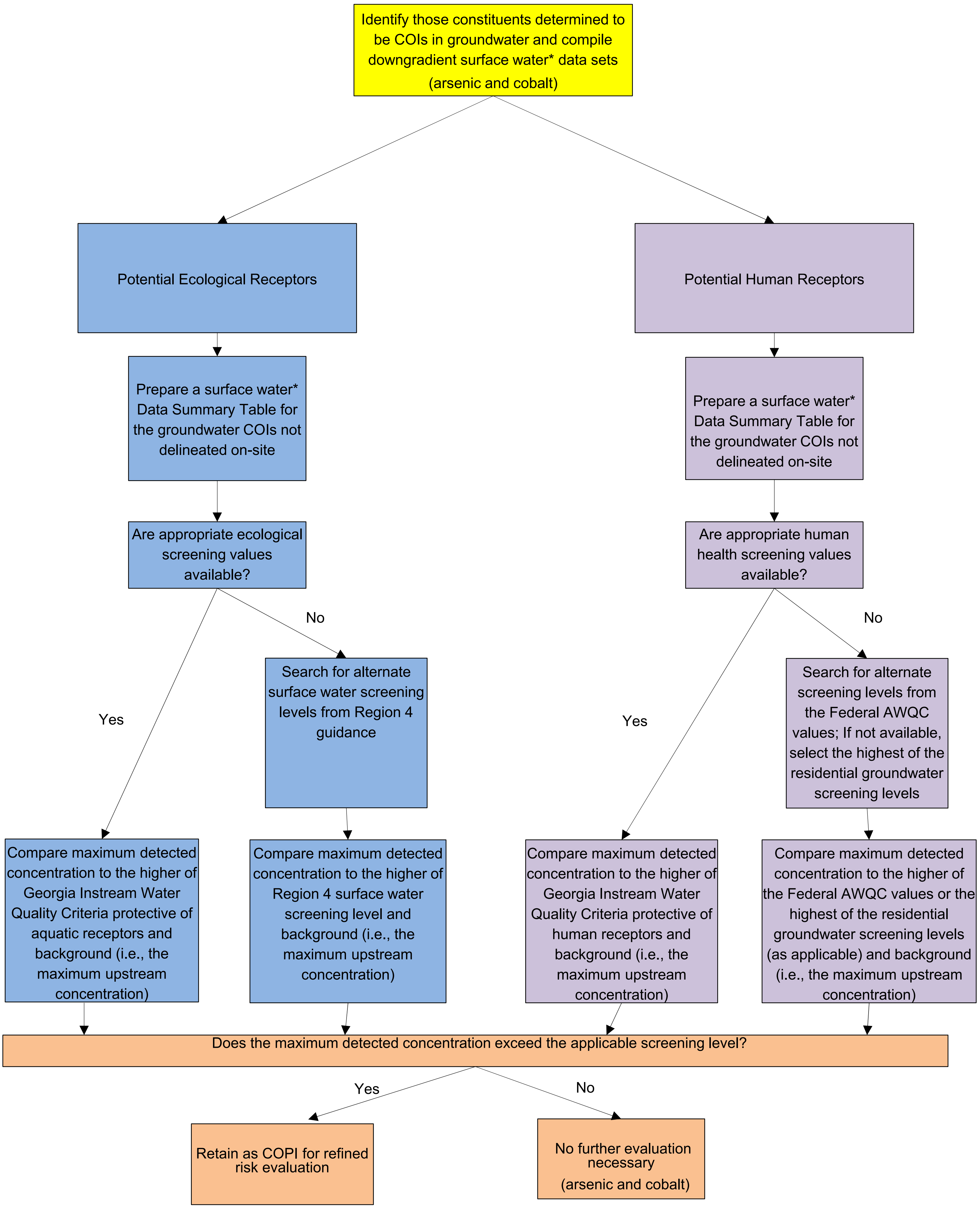
Notes:
*If the 95 UCL exceeds the maximum concentration, use the maximum as the EPC.
SSL = Statistically Significant Level
COPI = Constituent of Potential Interest
EPC = Exposure Point Concentration
UCL = Upper Confidence Limit
COI = Constituent of Interest

Plant McDonough AP-1
Refined Groundwater Risk Evaluation
Approach for AP-1

Figure 7

Project Number	Prepared by/Date: JHG 03/27/23 Checked by/Date: IMR 03/27/23

Surface Water Risk Screening Approach for AP-1



* Surface water data for arsenic collected from one upstream background location and three downstream locations in the unnamed tributary west of AP-1, and two downstream locations in the Chattahoochee River. Surface water data for cobalt collected at one upstream background location and three downstream locations in the Chattahoochee River.

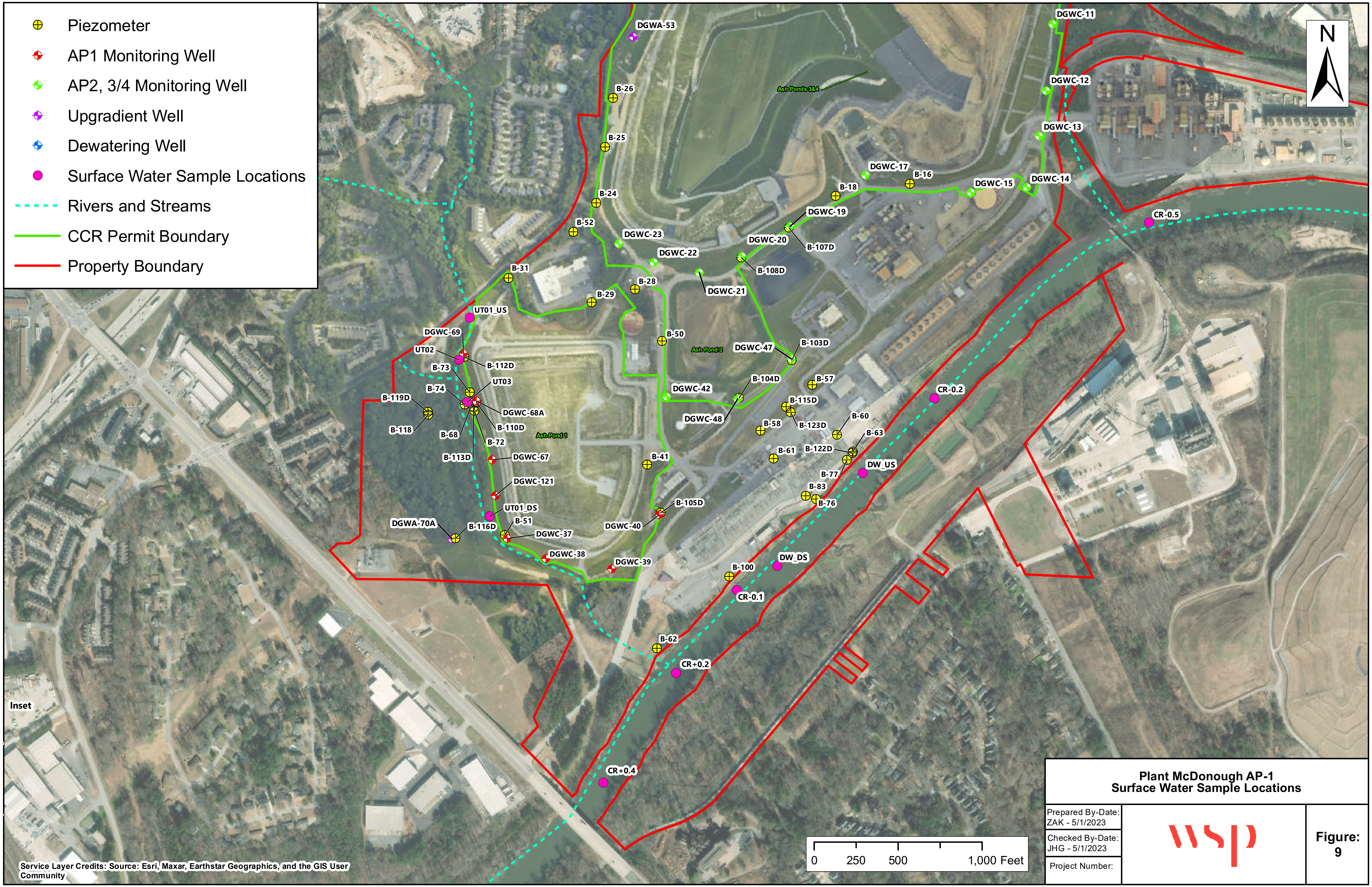
SSL = Statistically Significant Level
AWQC = Ambient Water Quality Criteria
COI = Constituent of Interest
COPI = Constituent of Potential Interest

Plant McDonough AP-1
Surface Water Risk Screening Approach for AP-1

Figure 8

Project Number

Prepared by/Date: JHG 03/27/23
Checked by/Date: RMB 03/27/23



Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Plant McDonough AP-1
Surface Water Sample Locations

Prepared By-Date:
ZAK - 5/1/2023

Checked By-Date:
JHG - 5/1/2023

Project Number:

Figure:
9

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

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

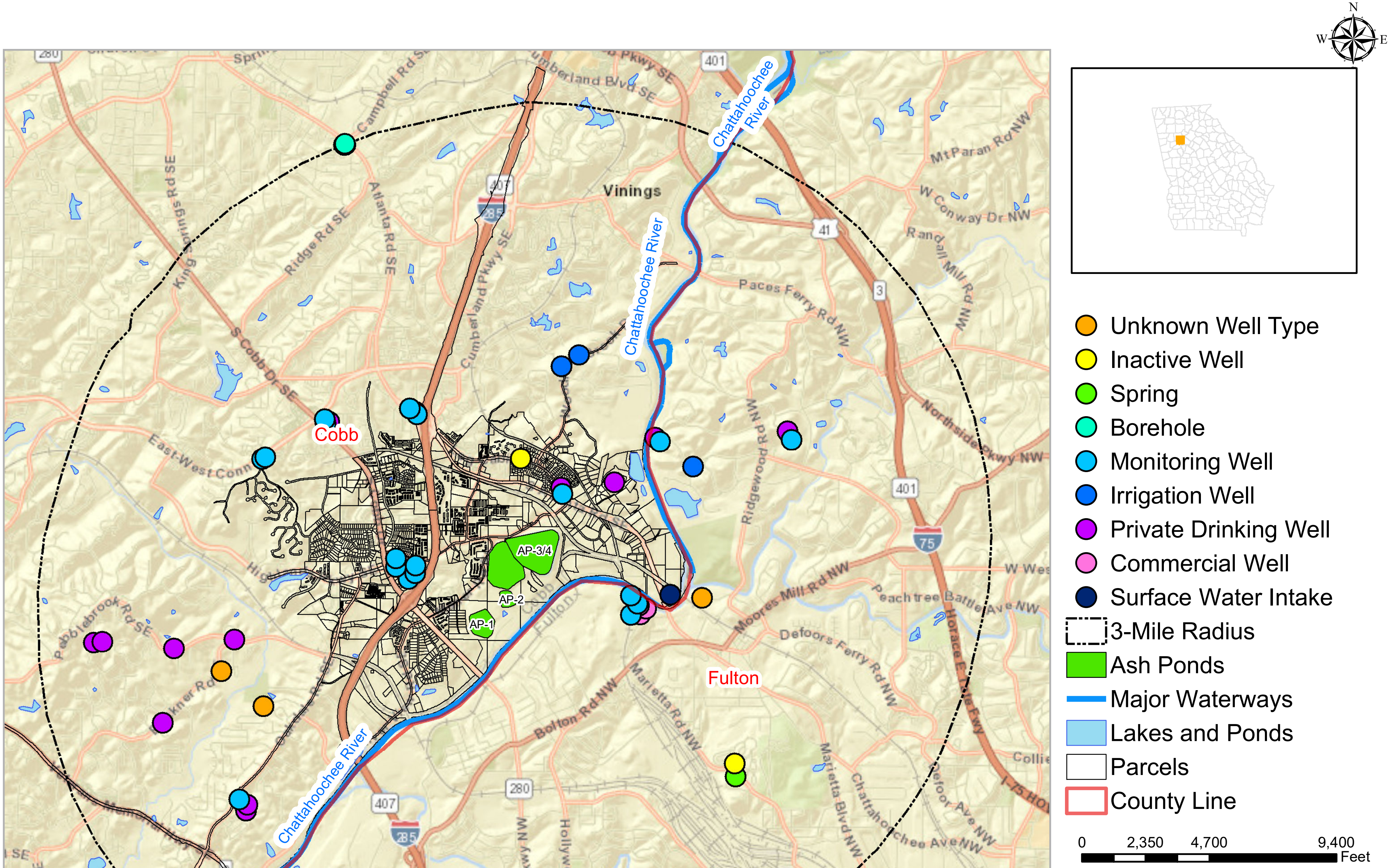
greenhouse. NewFields personnel were unable to locate most of the USGS monitoring wells at the locations listed in the database. NewFields also visited the location of the USGS-identified surface water intake, which is the drinking water treatment plant for the City of Atlanta. Identified wells and the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



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

APPENDIX B
Data Used in Risk Evaluation

Appendix B-1
McDonough AP-1 Risk Evaluation Report
Site Groundwater Data (2016-2023) for Evaluation of SSLs[1]
McDonough AP-1
Plant McDonough, Smyrna County, GA

Well	Date	CAS	Constituent	Units	Obs	Flag	MDL	RL
DGWC-40	09/02/16	7440-48-4	Cobalt	mg/L	0.0382		0.0005	0.01
DGWC-40	12/08/16	7440-48-4	Cobalt	mg/L	0.0318		0.0005	0.01
DGWC-40	03/30/17	7440-48-4	Cobalt	mg/L	0.0364		0.0005	0.01
DGWC-40	07/13/17	7440-48-4	Cobalt	mg/L	0.0394		0.0003	0.01
DGWC-40	10/26/17	7440-48-4	Cobalt	mg/L	0.0371		0.0003	0.01
DGWC-40	03/02/18	7440-48-4	Cobalt	mg/L	0.0425		0.00052	0.01
DGWC-40	07/12/18	7440-48-4	Cobalt	mg/L	0.044		0.00052	0.01
DGWC-40	11/08/18	7440-48-4	Cobalt	mg/L	0.036		0.00052	0.01
DGWC-40	08/28/19	7440-48-4	Cobalt	mg/L	0.044		0.0003	0.005
DGWC-40	10/18/19	7440-48-4	Cobalt	mg/L	0.043		0.0003	0.005
DGWC-40	03/04/20	7440-48-4	Cobalt	mg/L	0.055		0.0003	0.005
DGWC-40	08/13/20	7440-48-4	Cobalt	mg/L	0.044		0.00038	0.00038
DGWC-40	09/23/20	7440-48-4	Cobalt	mg/L	0.046		0.00038	0.00038
DGWC-40	03/08/21	7440-48-4	Cobalt	mg/L	0.039		0.00038	0.00038
DGWC-40	09/14/21	7440-48-4	Cobalt	mg/L	0.05		0.00039	0.00039
DGWC-40	01/19/22	7440-48-4	Cobalt	mg/L	0.042		0.00039	0.005
DGWC-40	09/07/22	7440-48-4	Cobalt	mg/L	0.037		0.00039	0.005
DGWC-40	02/01/23	7440-48-4	Cobalt	mg/L	0.035		0.00039	0.005
B-100	07/23/20	7440-48-4	Cobalt	mg/L	0.086		0.00038	0.00038
B-100	08/03/20	7440-48-4	Cobalt	mg/L	0.087		0.00038	0.00038
B-100	08/17/20	7440-48-4	Cobalt	mg/L	0.077		0.00038	0.00038
B-100	09/25/20	7440-48-4	Cobalt	mg/L	0.034		0.00038	0.00038
B-100	03/08/21	7440-48-4	Cobalt	mg/L	0.029		0.00038	0.00038
B-100	09/13/21	7440-48-4	Cobalt	mg/L	0.035		0.00039	0.00039
B-100	01/21/22	7440-48-4	Cobalt	mg/L	0.034		0.00039	0.005
B-100	09/08/22	7440-48-4	Cobalt	mg/L	0.028		0.00039	0.005
B-100	02/02/23	7440-48-4	Cobalt	mg/L		U	0.00039	0.005
B-62	01/30/19	7440-48-4	Cobalt	mg/L		U	0.00052	0.01
B-62	10/21/19	7440-48-4	Cobalt	mg/L	0.00031	J	0.0003	0.005
B-62	08/13/20	7440-48-4	Cobalt	mg/L		U	0.00038	0.00038
B-62	09/24/20	7440-48-4	Cobalt	mg/L		U	0.00038	0.00038
B-62	03/12/21	7440-48-4	Cobalt	mg/L		U	0.0019	0.0019
B-62	09/09/21	7440-48-4	Cobalt	mg/L		U	0.00039	0.00039
B-62	01/20/22	7440-48-4	Cobalt	mg/L		U	0.00039	0.005
B-62	09/09/22	7440-48-4	Cobalt	mg/L		U	0.00039	0.005
B-62	02/02/23	7440-48-4	Cobalt	mg/L		U	0.00039	0.005
DGWC-69	03/31/17	7440-38-2	Arsenic	mg/L	0.0239		0.0004	0.005
DGWC-69	04/12/17	7440-38-2	Arsenic	mg/L	0.0077		0.0004	0.005
DGWC-69	05/12/17	7440-38-2	Arsenic	mg/L	0.0097		0.0004	0.005
DGWC-69	06/16/17	7440-38-2	Arsenic	mg/L	0.0113		0.0005	0.005
DGWC-69	07/13/17	7440-38-2	Arsenic	mg/L	0.0029	J	0.0005	0.005
DGWC-69	10/26/17	7440-38-2	Arsenic	mg/L	0.114		0.0005	0.005
DGWC-69	11/15/17	7440-38-2	Arsenic	mg/L	0.164		0.0005	0.005
DGWC-69	03/02/18	7440-38-2	Arsenic	mg/L	0.0127		0.00057	0.005
DGWC-69	07/13/18	7440-38-2	Arsenic	mg/L	0.017		0.00057	0.005
DGWC-69	11/08/18	7440-38-2	Arsenic	mg/L	0.02		0.00057	0.005
DGWC-69	08/28/19	7440-38-2	Arsenic	mg/L	0.025		0.00035	0.005
DGWC-69	10/16/19	7440-38-2	Arsenic	mg/L	0.023		0.00035	0.005
DGWC-69	03/09/20	7440-38-2	Arsenic	mg/L	0.029		0.00035	0.005
DGWC-69	08/13/20	7440-38-2	Arsenic	mg/L	0.029		0.00078	0.00078
DGWC-69	09/23/20	7440-38-2	Arsenic	mg/L	0.032		0.00078	0.00078
DGWC-69	03/10/21	7440-38-2	Arsenic	mg/L	0.028		0.00078	0.00078
DGWC-69	09/16/21	7440-38-2	Arsenic	mg/L	0.023		0.0011	0.0011
DGWC-69	01/25/22	7440-38-2	Arsenic	mg/L	0.028		0.0011	0.005
DGWC-69	09/07/22	7440-38-2	Arsenic	mg/L	0.024		0.0022	0.005
DGWC-69	02/01/23	7440-38-2	Arsenic	mg/L	0.021		0.0022	0.005

Notes:

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

MDL - method detection limit
mg/L - milligrams per liter
RL - reporting limit
J - indicates an estimated value; the substance was detected between the laboratory MDL and PQL.
U - not detected above laboratory MDL

Appendix B-2
McDonough AP-1 Risk Evaluation Report
Surface Water Data (2019-2023)
McDonough AP-1
Plant McDonough, Cobb County, GA

Sample Designation	Well ID	Sample Date	Parameter	Result	Unit	MDL	RL	Lab Qualifier
Downgradient	CR+0.2	02/02/21	Arsenic		mg/L	0.00078	0.005	U
Downgradient	CR+0.2	03/09/21	Arsenic		mg/L	0.00078	0.005	U
Downgradient	CR+0.4	02/02/21	Arsenic		mg/L	0.00078	0.005	U
Downgradient	CR+0.4	03/09/21	Arsenic		mg/L	0.00078	0.005	U
Downgradient	CR+0.4	10/27/22	Arsenic		mg/L	0.0022	0.005	U
Downgradient	CR+0.4	02/07/23	Arsenic		mg/L	0.0022	0.005	U
Downgradient	UT01_DS	09/17/19	Arsenic	0.0015	mg/L	0.00035	0.005	J
Downgradient	UT01_DS	02/02/21	Arsenic		mg/L	0.00078	0.005	U
Downgradient	UT01_DS	03/09/21	Arsenic		mg/L	0.00078	0.005	U
Downgradient	UT01_DS	09/07/21	Arsenic		mg/L	0.0011	0.005	U
Downgradient	UT01_DS	01/25/22	Arsenic		mg/L	0.0011	0.005	U
Downgradient	UT01_DS	10/27/22	Arsenic		mg/L	0.0022	0.005	U
Downgradient	UT01_DS	02/07/23	Arsenic		mg/L	0.0022	0.005	U
Background	UT01_US	09/17/19	Arsenic		mg/L	0.00035	0.005	U
Background	UT01_US	02/02/21	Arsenic		mg/L	0.00078	0.005	U
Background	UT01_US	03/09/21	Arsenic		mg/L	0.00078	0.005	U
Background	UT01_US	09/07/21	Arsenic		mg/L	0.0011	0.005	U
Background	UT01_US	01/25/22	Arsenic		mg/L	0.0011	0.005	U
Background	UT01_US	10/27/22	Arsenic		mg/L	0.0022	0.005	U
Background	UT01_US	02/07/23	Arsenic		mg/L	0.0022	0.005	U
Downgradient	UT02	09/17/19	Arsenic		mg/L	0.00035	0.005	U
Downgradient	UT02	02/02/21	Arsenic		mg/L	0.00078	0.005	U
Downgradient	UT02	03/09/21	Arsenic		mg/L	0.00078	0.005	U
Downgradient	UT02	09/07/21	Arsenic		mg/L	0.0011	0.005	U
Downgradient	UT02	01/25/22	Arsenic		mg/L	0.0011	0.005	U
Downgradient	UT02	10/27/22	Arsenic		mg/L	0.0022	0.005	U
Downgradient	UT02	02/07/23	Arsenic		mg/L	0.0022	0.005	U
Downgradient	UT03	02/02/21	Arsenic		mg/L	0.00078	0.005	U
Downgradient	UT03	03/09/21	Arsenic		mg/L	0.00078	0.005	U
Downgradient	UT03	09/07/21	Arsenic		mg/L	0.0011	0.005	U
Downgradient	UT03	01/25/22	Arsenic		mg/L	0.0011	0.005	U
Downgradient	UT03	10/27/22	Arsenic		mg/L	0.0022	0.005	U
Downgradient	UT03	02/07/23	Arsenic		mg/L	0.0022	0.005	U

Prepared by/Date: JHG 03/30/23
Checked by/Date: IMR 04/03/23

Appendix B-2
McDonough AP-1 Risk Evaluation Report
Surface Water Data (2019-2023)
McDonough AP-1
Plant McDonough, Cobb County, GA

Sample Designation	Well ID	Sample Date	Parameter	Result	Unit	MDL	RL	Lab Qualifier
Downgradient	CR+0.2	11/10/20	Cobalt		mg/L	0.00038	0.005	U
Downgradient	CR+0.2	02/02/21	Cobalt		mg/L	0.00038	0.005	U
Downgradient	CR+0.2	03/09/21	Cobalt		mg/L	0.00038	0.005	U
Downgradient	CR+0.2	10/27/22	Cobalt		mg/L	0.00039	0.005	U
Downgradient	CR+0.2	02/07/23	Cobalt		mg/L	0.00039	0.005	U
Downgradient	CR+0.4	11/10/20	Cobalt		mg/L	0.00038	0.005	U
Downgradient	CR+0.4	02/02/21	Cobalt		mg/L	0.00038	0.005	U
Downgradient	CR+0.4	03/09/21	Cobalt		mg/L	0.00038	0.005	U
Downgradient	CR+0.4	10/27/22	Cobalt		mg/L	0.00039	0.005	U
Downgradient	CR+0.4	02/07/23	Cobalt		mg/L	0.00039	0.005	U
Downgradient	CR-0.1	02/02/21	Cobalt		mg/L	0.00038	0.005	U
Downgradient	CR-0.1	03/09/21	Cobalt		mg/L	0.00038	0.005	U
Downgradient	CR-0.1	09/07/21	Cobalt		mg/L	0.00039	0.005	U
Downgradient	CR-0.1	01/25/22	Cobalt		mg/L	0.00039	0.005	U
Downgradient	CR-0.1	10/27/22	Cobalt		mg/L	0.00039	0.005	U
Downgradient	CR-0.1	02/07/23	Cobalt		mg/L	0.00039	0.005	U
Background	CR-0.5	11/10/20	Cobalt		mg/L	0.00038	0.005	U
Background	CR-0.5	02/02/21	Cobalt		mg/L	0.00038	0.005	U
Background	CR-0.5	03/09/21	Cobalt		mg/L	0.00038	0.005	U
Background	CR-0.5	09/07/21	Cobalt		mg/L	0.00039	0.005	U
Background	CR-0.5	01/25/22	Cobalt		mg/L	0.00039	0.005	U
Background	CR-0.5	10/27/22	Cobalt		mg/L	0.00039	0.005	U
Background	CR-0.5	02/07/23	Cobalt		mg/L	0.00039	0.005	U

Notes:

J - indicates an estimated value; the substance was detected between the laboratory MDL and PQL.
U - not detected above laboratory MDL
MDL - method detection limit
mg/L - milligrams per liter
NA - not available
ND - not detected above the laboratory MDL
RL - reporting limit

Prepared by/Date: JHG 03/30/23
Checked by/Date: IMR 04/03/23

APPENDIX C

USEPA RSL Calculator Generated Residential Screening Levels

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

Variable	Resident Tap Water Default Value	Site-Specific Value
BW$_{0-2}$ (mutagenic body weight) kg	15	15
BW$_{2-6}$ (mutagenic body weight) kg	15	15
BW$_{6-16}$ (mutagenic body weight) kg	80	80
BW$_{16-26}$ (mutagenic body weight) kg	80	80
BW$_{res-a}$ (body weight - adult) kg	80	80
BW$_{res-c}$ (body weight - child) kg	15	15
DFW$_{res-adj}$ (age-adjusted dermal factor) cm^2-event/kg	2610650	2610650
DFWM$_{res-adj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	8191633	8191633
ED$_{res}$ (exposure duration - resident) years	26	26
ED$_{0-2}$ (mutagenic exposure duration first phase) years	2	2
ED$_{2-6}$ (mutagenic exposure duration second phase) years	4	4
ED$_{6-16}$ (mutagenic exposure duration third phase) years	10	10
ED$_{16-26}$ (mutagenic exposure duration fourth phase) years	10	10
ED$_{res-a}$ (exposure duration - adult) years	20	20
ED$_{res-c}$ (exposure duration - child) years	6	6
EF$_{res}$ (exposure frequency) days/year	350	350
EF$_{0-2}$ (mutagenic exposure frequency first phase) days/year	350	350
EF$_{2-6}$ (mutagenic exposure frequency second phase) days/year	350	350
EF$_{6-16}$ (mutagenic exposure frequency third phase) days/year	350	350
EF$_{16-26}$ (mutagenic exposure frequency fourth phase) days/year	350	350
EF$_{res-a}$ (exposure frequency - adult) days/year	350	350
EF$_{res-c}$ (exposure frequency - child) days/year	350	350
ET$_{res}$ (exposure time) hours/day	24	24
ET$_{event-res-adj}$ (age-adjusted exposure time) hours/event	0.67077	0.67077
ET$_{event-res-madj}$ (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET$_{0-2}$ (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET$_{2-6}$ (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET$_{6-16}$ (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET$_{16-26}$ (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71
ET$_{res-a}$ (dermal exposure time - adult) hours/event	0.71	0.71
ET$_{res-c}$ (dermal exposure time - child) hours/event	0.54	0.54
ET$_{0-2}$ (mutagenic inhalation exposure time first phase) hours/day	24	24
ET$_{2-6}$ (mutagenic inhalation exposure time second phase) hours/day	24	24
ET$_{6-16}$ (mutagenic inhalation exposure time third phase) hours/day	24	24
ET$_{16-26}$ (mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET$_{res-a}$ (inhalation exposure time - adult) hours/day	24	24
ET$_{res-c}$ (inhalation exposure time - child) hours/day	24	24
EV$_{0-2}$ (mutagenic events) per day	1	1
EV$_{2-6}$ (mutagenic events) per day	1	1
EV$_{6-16}$ (mutagenic events) per day	1	1
EV$_{16-26}$ (mutagenic events) per day	1	1
EV$_{res-a}$ (events - adult) per day	1	1
EV$_{res-c}$ (events - child) per day	1	1
THQ (target hazard quotient) unitless	0.1	1
IFW$_{res-adj}$ (adjusted intake factor) L/kg	327.95	327.95
IFWM$_{res-adj}$ (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW$_{0-2}$ (mutagenic water intake rate) L/day	0.78	0.78
IRW$_{2-6}$ (mutagenic water intake rate) L/day	0.78	0.78
IRW$_{6-16}$ (mutagenic water intake rate) L/day	2.5	2.5
IRW$_{16-26}$ (mutagenic water intake rate) L/day	2.5	2.5
IRW$_{res-a}$ (water intake rate - adult) L/day	2.5	2.5
IRW$_{res-c}$ (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m^3	0.5	0.5
LT (lifetime) years	70	70
SA$_{0-2}$ (mutagenic skin surface area) cm^2	6365	6365
SA$_{2-6}$ (mutagenic skin surface area) cm^2	6365	6365
SA$_{6-16}$ (mutagenic skin surface area) cm^2	19652	19652
SA$_{16-26}$ (mutagenic skin surface area) cm^2	19652	19652
SA$_{res-a}$ (skin surface area - adult) cm^2	19652	19652
SA$_{res-c}$ (skin surface area - child) cm^2	6365	6365
l$_{sc}$ (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	0.000001	0.00001

Output generated 28MAR2023:09:40:07

Appendix C-2
Site-specific
Based Regional

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = OW; 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_oRef	IUR (ug/m^3)$^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS	K_p (cm/hr)	MW	B (unitless)
Cobalt	7440-48-4	No	No	Inorganics	-		9.00E-03	P	3.00E-04	P	6.00E-06	P	1.00E+00	4.00E-04	5.89E+01	1.18E-03

Output generated 28MAR2023:09:40:07

Appendix C-2
Site-specific
Based Regional

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = OW; 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	t^{*}(hr)	τ_{event}(hr/event)	FA (unitless)	In EPD?	$DA_{event\ (ca)}$	$DA_{event\ (nc\ child)}$	$DA_{event\ (nc\ adult)}$	MCL (ug/L)
Cobalt	7440-48-4	No	No	Inorganics	5.40E-01	2.25E-01	1.00E+00	Yes	-	7.37E-04	1.27E-03	-

Output generated 28MAR2023:09:40:07

Prepared by/Date: JHG 03/28/23
Checked by/Date: IMR 03/30/23

Appendix C-2
Site-specific
Based Regional

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = OW; 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 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)	Ingestion SL Child THQ=1 (ug/L)	Dermal SL Child THQ=1 (ug/L)	Inhalation SL Child THQ=1 (ug/L)
Cobalt	7440-48-4	No	No	Inorganics	-	-	-	-	6.02E+00	3.41E+03	-

Output generated 28MAR2023:09:40:07

Prepared by/Date: JHG 03/28/23
Checked by/Date: IMR 03/30/23

Appendix C-2
Site-specific
Based Regional

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = OW; 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	Noncarcinogenic SL Child THI=1 (ug/L)	Ingestion SL Adult THQ=1 (ug/L)	Dermal SL Adult THQ=1 (ug/L)	Inhalation SL Adult THQ=1 (ug/L)	Noncarcinogenic SL Adult THI=1 (ug/L)	Screening Level (ug/L)
Cobalt	7440-48-4	No	No	Inorganics	6.01E+00	1.00E+01	4.48E+03	-	9.99E+00	6.01E+00 nc

Output generated 28MAR2023:09:40:07

Prepared by/Date: JHG 03/28/23
Checked by/Date: IMR 03/30/23

APPENDIX D

Support for Refined Risk Evaluation

Appendix D-1

Exposure Point Concentration Calculation Results

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

CCR Rule Designation	Constituent	Well IDs Included	Maximum Concentration (mg/L)	Detection Frequency	Exceedance Frequency	EPC Step 1	EPC Step 2	EPC Step 3
						Individual Target Well(s) 2016-2023 (mg/L)	Target Well(s) & Downgradient Well(s) 2016-2023 (mg/L)	Farthest Downgradient Well(s) 2016-2023 (mg/L)
Appendix IV	Cobalt	DGWC-40	0.055	18 / 18	17 / 18	0.044		
		DGWC-40 B-62 B-100	0.087	27 / 36	23 / 36		0.039	
		B-62 B-100	0.087	9 / 18	6 / 18			0.036
	Arsenic	DGWC-69	0.16	20 / 20	19 / 20	0.047		
		DGWC-69	0.16	20 / 20	19 / 20		0.047	
		DGWC-69	0.16	20 / 20	19 / 20			0.047

Notes:

Highlighted value is the EPC selected for the refined screening.

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

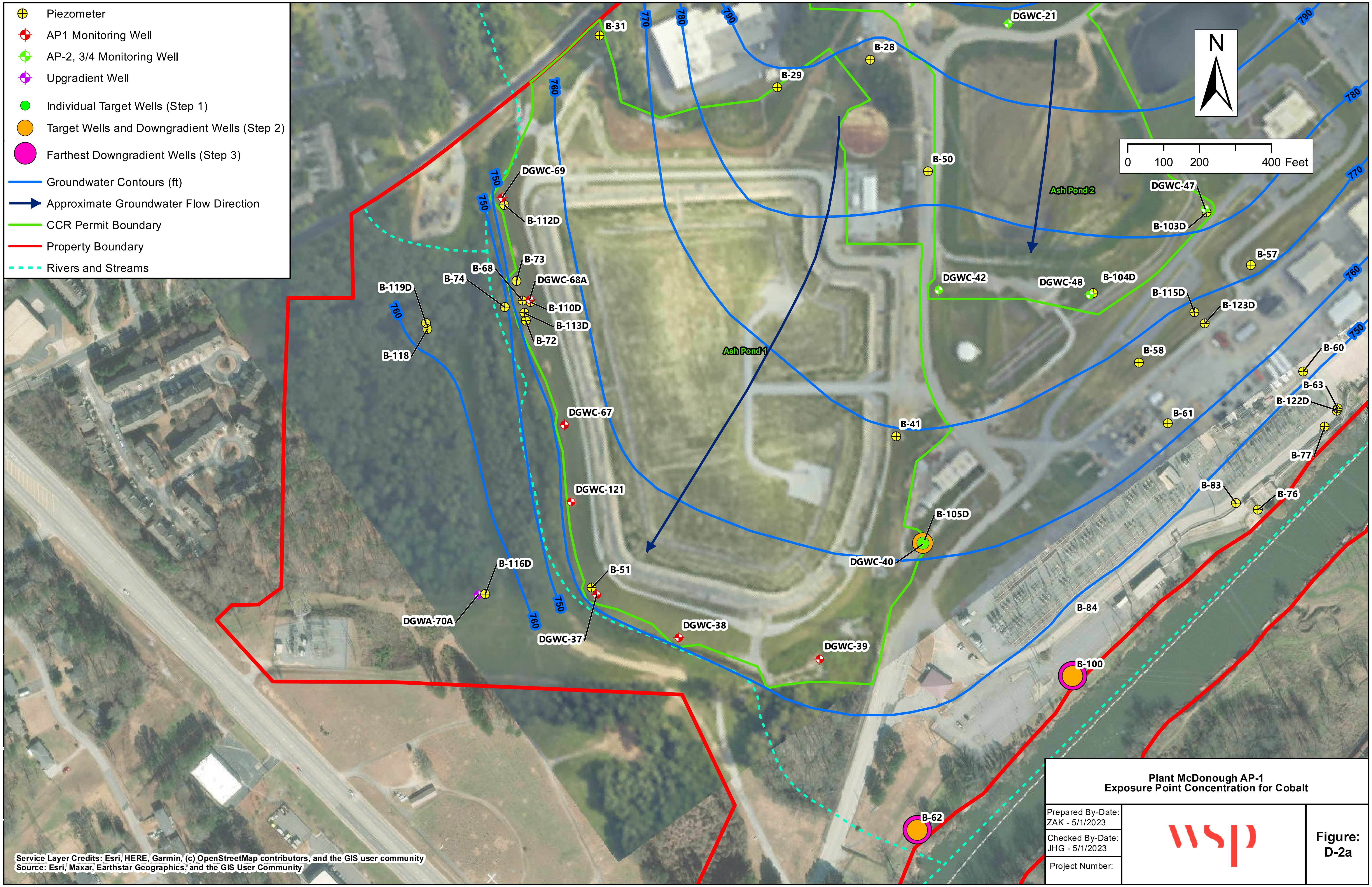
Definitions:

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

Prepared by/Date: JHG 03/28/23
Checked by/Date: IMR 03/30/23

Appendix D-2

Exposure Point Concentration Figures



Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

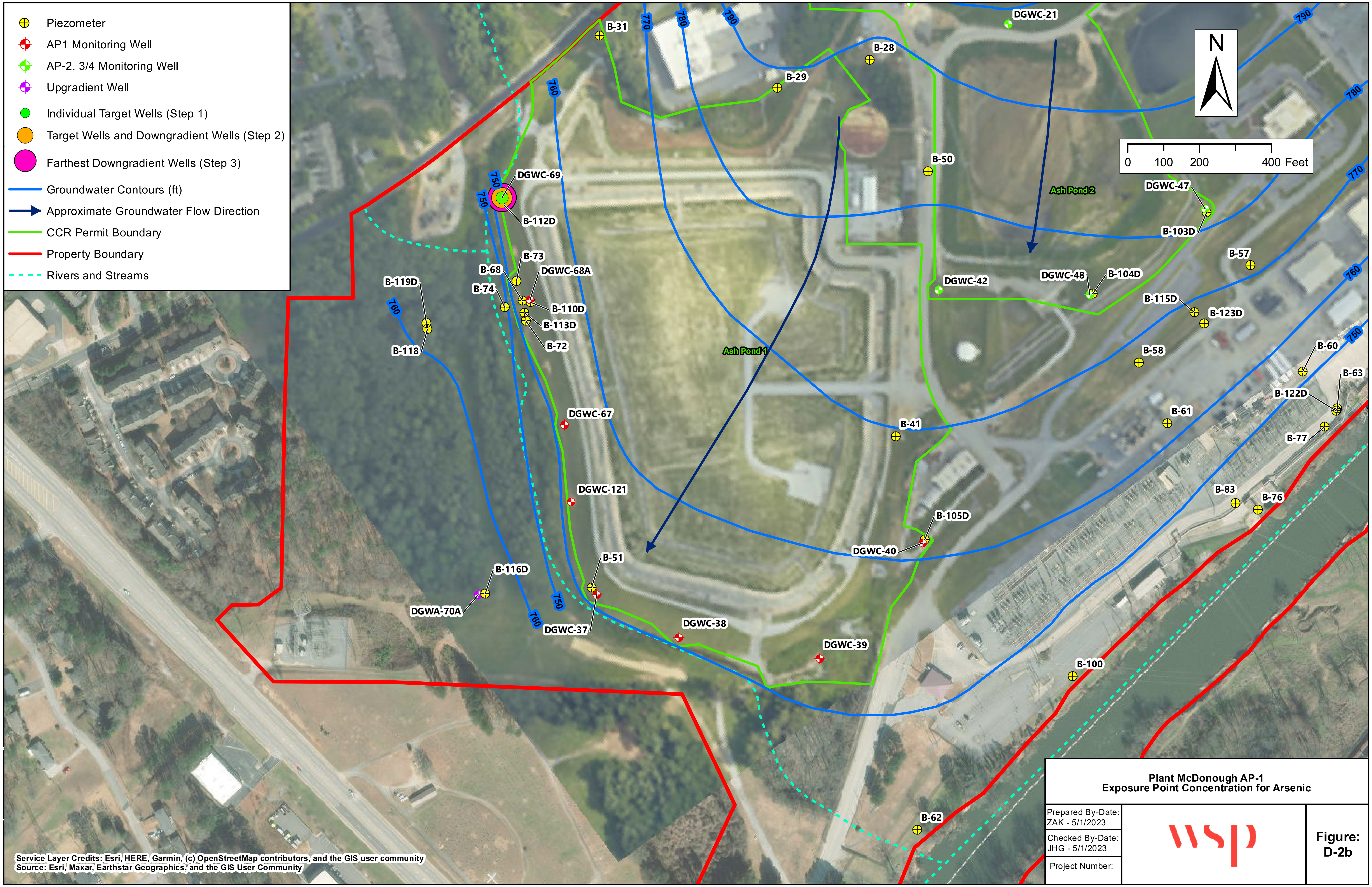
Plant McDonough AP-1
Exposure Point Concentration for Cobalt

Prepared By-Date:
ZAK - 5/1/2023

Checked By-Date:
JHG - 5/1/2023

Project Number:

Figure:
D-2a



Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Plant McDonough AP-1
Exposure Point Concentration for Arsenic

Prepared By-Date:
ZAK - 5/1/2023

Checked By-Date:
JHG - 5/1/2023

Project Number:

Figure:
D-2b

Appendix D-3

ProUCL Input/Output Files

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

Step 1

Well(1)	Date(1)	Cobalt1	D_Cobalt1
DGWC-40	09/02/16	0.0382	1
DGWC-40	12/08/16	0.0318	1
DGWC-40	03/30/17	0.0364	1
DGWC-40	07/13/17	0.0394	1
DGWC-40	10/26/17	0.0371	1
DGWC-40	03/02/18	0.0425	1
DGWC-40	07/12/18	0.044	1
DGWC-40	11/08/18	0.036	1
DGWC-40	08/28/19	0.044	1
DGWC-40	10/18/19	0.043	1
DGWC-40	03/04/20	0.055	1
DGWC-40	08/13/20	0.044	1
DGWC-40	09/23/20	0.046	1
DGWC-40	03/08/21	0.039	1
DGWC-40	09/14/21	0.05	1
DGWC-40	01/19/22	0.042	1
DGWC-40	09/07/22	0.037	1
DGWC-40	02/01/23	0.035	1

Step 2

Well(2)	Date(2)	Cobalt2	D_Cobalt2
B-100	07/23/20	0.086	1
B-100	08/03/20	0.087	1
B-100	08/17/20	0.077	1
B-100	09/25/20	0.034	1
B-100	03/08/21	0.029	1
B-100	09/13/21	0.035	1
B-100	01/21/22	0.034	1
B-100	09/08/22	0.028	1
B-100	02/02/23	0.00039	0
B-62	01/30/19	0.00052	0
B-62	10/21/19	0.00031	1
B-62	08/13/20	0.00038	0
B-62	09/24/20	0.00038	0
B-62	03/12/21	0.0019	0
B-62	09/09/21	0.00039	0
B-62	01/20/22	0.005	0
B-62	09/09/22	0.00039	0
B-62	02/02/23	0.00039	0
DGWC-40	09/02/16	0.0382	1
DGWC-40	12/08/16	0.0318	1
DGWC-40	03/30/17	0.0364	1
DGWC-40	07/13/17	0.0394	1
DGWC-40	10/26/17	0.0371	1
DGWC-40	03/02/18	0.0425	1
DGWC-40	07/12/18	0.044	1
DGWC-40	11/08/18	0.036	1
DGWC-40	08/28/19	0.044	1
DGWC-40	10/18/19	0.043	1
DGWC-40	03/04/20	0.055	1
DGWC-40	08/13/20	0.044	1
DGWC-40	09/23/20	0.046	1
DGWC-40	03/08/21	0.039	1
DGWC-40	09/14/21	0.05	1
DGWC-40	01/19/22	0.042	1
DGWC-40	09/07/22	0.037	1
DGWC-40	02/01/23	0.035	1

Step 3

Well(3)	Date(3)	Cobalt3	D_Cobalt3
B-100	07/23/20	0.086	1
B-100	08/03/20	0.087	1
B-100	08/17/20	0.077	1
B-100	09/25/20	0.034	1
B-100	03/08/21	0.029	1
B-100	09/13/21	0.035	1
B-100	01/21/22	0.034	1
B-100	09/08/22	0.028	1
B-100	02/02/23	0.00039	0
B-62	01/30/19	0.00052	0
B-62	10/21/19	0.00031	1
B-62	08/13/20	0.00038	0
B-62	09/24/20	0.00038	0
B-62	03/12/21	0.0019	0
B-62	09/09/21	0.00039	0
B-62	01/20/22	0.005	0
B-62	09/09/22	0.00039	0
B-62	02/02/23	0.00039	0

Prepared by/Date: JHG 03/24/2023
Checked by/Date: IMR 03/30/23

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

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

```
                              UCL Statistics for Data Sets with Non-Detects

          User Selected Options
      Date/Time of Computation   ProUCL 5.2 3/27/2023 12:10:02 PM
                     From File   Pro UCL inputs MCD_a.xls
                Full Precision   OFF
        Confidence Coefficient   95%
 Number of Bootstrap Operations   2000


Cobalt1

                                          General Statistics
          Total Number of Observations   18              Number of Distinct Observations   16
                                                         Number of Missing Observations    0
                               Minimum   0.0318                                     Mean   0.0411
                               Maximum   0.055                                    Median   0.0407
                                    SD   0.00568                       Std. Error of Mean   0.00134
              Coefficient of Variation   0.138                                  Skewness   0.758

                                          Normal GOF Test
             Shapiro Wilk Test Statistic   0.953                  Shapiro Wilk GOF Test
           1% Shapiro Wilk Critical Value  0.858        Data appear Normal at 1% Significance Level
               Lilliefors Test Statistic   0.14                    Lilliefors GOF Test
            1% Lilliefors Critical Value   0.235        Data appear Normal at 1% Significance Level
                                 Data appear Normal at 1% Significance Level

                                       Assuming Normal Distribution
          95% Normal UCL                                   95% UCLs (Adjusted for Skewness)
                      95% Student's-t UCL   0.0435             95% Adjusted-CLT UCL (Chen-1995)   0.0436
                                                               95% Modified-t UCL (Johnson-1978)   0.0435

                                          Gamma GOF Test
                       A-D Test Statistic   0.28                Anderson-Darling Gamma GOF Test
                     5% A-D Critical Value  0.738     Detected data appear Gamma Distributed at 5% Significance Level
                       K-S Test Statistic   0.121             Kolmogorov-Smirnov Gamma GOF Test
                     5% K-S Critical Value  0.203     Detected data appear Gamma Distributed at 5% Significance Level
                         Detected data appear Gamma Distributed at 5% Significance Level

                                          Gamma Statistics
                              k hat (MLE)   57.79                       k star (bias corrected MLE)   48.19
                          Theta hat (MLE)   7.1183E-4               Theta star (bias corrected MLE)   8.5354E-4
```

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

```
                  nu hat (MLE)   2080                         nu star (bias corrected)   1735
      MLE Mean (bias corrected)    0.0411                       MLE Sd (bias corrected)    0.00593
                                                      Approximate Chi Square Value (0.05)   1639
    Adjusted Level of Significance    0.0357                     Adjusted Chi Square Value   1630

                               Assuming Gamma Distribution
     95% Approximate Gamma UCL    0.0435                          95% Adjusted Gamma UCL    0.0438

                                    Lognormal GOF Test
       Shapiro Wilk Test Statistic    0.975              Shapiro Wilk Lognormal GOF Test
    10% Shapiro Wilk Critical Value   0.914      Data appear Lognormal at 10% Significance Level
          Lilliefors Test Statistic   0.119               Lilliefors Lognormal GOF Test
     10% Lilliefors Critical Value    0.185      Data appear Lognormal at 10% Significance Level
                        Data appear Lognormal at 10% Significance Level

                                   Lognormal Statistics
        Minimum of Logged Data   -3.448                                 Mean of logged Data   -3.2
        Maximum of Logged Data   -2.9                                     SD of logged Data    0.135

                              Assuming Lognormal Distribution
                    95% H-UCL    0.0436                          90% Chebyshev (MVUE) UCL    0.0451
     95% Chebyshev (MVUE) UCL    0.0468                        97.5% Chebyshev (MVUE) UCL    0.0493
     99% Chebyshev (MVUE) UCL    0.0541

                         Nonparametric Distribution Free UCL Statistics
                          Data appear to follow a Discernible Distribution

                              Nonparametric Distribution Free UCLs
                   95% CLT UCL    0.0433                          95% BCA Bootstrap UCL    0.0434
     95% Standard Bootstrap UCL   0.0433                          95% Bootstrap-t UCL      0.0438
        95% Hall's Bootstrap UCL  0.0441                     95% Percentile Bootstrap UCL  0.0433
    90% Chebyshev(Mean, Sd) UCL   0.0451                    95% Chebyshev(Mean, Sd) UCL    0.047
  97.5% Chebyshev(Mean, Sd) UCL   0.0495                    99% Chebyshev(Mean, Sd) UCL    0.0545

                                    Suggested UCL to Use
             95% Student's-t UCL    0.0435

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

Cobalt2
```

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

General Statistics

Total Number of Observations	36	Number of Distinct Observations	28
Number of Detects	27	Number of Non-Detects	9
Number of Distinct Detects	23	Number of Distinct Non-Detects	5
Minimum Detect	3.1000E-4	Minimum Non-Detect	3.8000E-4
Maximum Detect	0.087	Maximum Non-Detect	0.005
Variance Detects	3.0837E-4	Percent Non-Detects	25%
Mean Detects	0.0426	SD Detects	0.0176
Median Detects	0.039	CV Detects	0.412
Skewness Detects	0.968	Kurtosis Detects	2.821
Mean of Logged Detects	-3.347	SD of Logged Detects	0.989

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.823	**Shapiro Wilk GOF Test**
1% Shapiro Wilk Critical Value	0.894	Detected Data Not Normal at 1% Significance Level
Lilliefors Test Statistic	0.246	**Lilliefors GOF Test**
1% Lilliefors Critical Value	0.194	Detected Data Not Normal at 1% Significance Level

Detected Data Not Normal at 1% Significance Level

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

KM Mean	0.032	KM Standard Error of Mean	0.00401
90KM SD	0.0236	95% KM (BCA) UCL	0.0381
95% KM (t) UCL	0.0388	95% KM (Percentile Bootstrap) UCL	0.0382
95% KM (z) UCL	0.0386	95% KM Bootstrap t UCL	0.039
90% KM Chebyshev UCL	0.0441	95% KM Chebyshev UCL	0.0495
97.5% KM Chebyshev UCL	0.0571	99% KM Chebyshev UCL	0.072

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.229	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.753	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.291	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.17	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)	2.769	k star (bias corrected MLE)	2.486
Theta hat (MLE)	0.0154	Theta star (bias corrected MLE)	0.0171
nu hat (MLE)	149.5	nu star (bias corrected)	134.3
Mean (detects)	0.0426		

Gamma ROS Statistics using Imputed Non-Detects

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

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	3.1000E-4	Mean	0.0362
Maximum	0.087	Median	0.0362
SD	0.0189	CV	0.524
k hat (MLE)	2.484	k star (bias corrected MLE)	2.296
Theta hat (MLE)	0.0146	Theta star (bias corrected MLE)	0.0158
nu hat (MLE)	178.9	nu star (bias corrected)	165.3
Adjusted Level of Significance (β)	0.0428		
Approximate Chi Square Value (165.29, α)	136.6	Adjusted Chi Square Value (165.29, β)	135.4
95% Gamma Approximate UCL	0.0438	95% Gamma Adjusted UCL	0.0442

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.032	SD (KM)	0.0236
Variance (KM)	5.5834E-4	SE of Mean (KM)	0.00401
k hat (KM)	1.839	k star (KM)	1.704
nu hat (KM)	132.4	nu star (KM)	122.7
theta hat (KM)	0.0174	theta star (KM)	0.0188
80% gamma percentile (KM)	0.0489	90% gamma percentile (KM)	0.0647
95% gamma percentile (KM)	0.08	99% gamma percentile (KM)	0.114

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (122.69, α)	98.11	Adjusted Chi Square Value (122.69, β)	97.12
95% KM Approximate Gamma UCL	0.0401	95% KM Adjusted Gamma UCL	0.0405

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.45	**Shapiro Wilk GOF Test**
10% Shapiro Wilk Critical Value	0.935	Detected Data Not Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.371	**Lilliefors GOF Test**
10% Lilliefors Critical Value	0.153	Detected Data Not Lognormal at 10% Significance Level

Detected Data Not Lognormal at 10% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0343	Mean in Log Scale	-3.685
SD in Original Scale	0.0211	SD in Log Scale	1.044
95% t UCL (assumes normality of ROS data)	0.0402	95% Percentile Bootstrap UCL	0.04
95% BCA Bootstrap UCL	0.04	95% Bootstrap t UCL	0.0407
95% H-UCL (Log ROS)	0.0665		

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

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.53	KM Geo Mean	0.0108
KM SD (logged)	2.215	95% Critical H Value (KM-Log)	4.032
KM Standard Error of Mean (logged)	0.376	95% H-UCL (KM -Log)	0.567
KM SD (logged)	2.215	95% Critical H Value (KM-Log)	4.032
KM Standard Error of Mean (logged)	0.376		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0321	Mean in Log Scale	-4.524
SD in Original Scale	0.0239	SD in Log Scale	2.281
95% t UCL (Assumes normality)	0.0388	95% H-Stat UCL	0.719

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

Suggested UCL to Use

95% KM (t) 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 using results from simulation studies.
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Cobalt3

General Statistics

Total Number of Observations	18	Number of Distinct Observations	13
Number of Detects	9	Number of Non-Detects	9
Number of Distinct Detects	8	Number of Distinct Non-Detects	5
Minimum Detect	3.1000E-4	Minimum Non-Detect	3.8000E-4
Maximum Detect	0.087	Maximum Non-Detect	0.005
Variance Detects	9.1876E-4	Percent Non-Detects	50%
Mean Detects	0.0456	SD Detects	0.0303
Median Detects	0.034	CV Detects	0.665
Skewness Detects	0.351	Kurtosis Detects	-1.08
Mean of Logged Detects	-3.641	SD of Logged Detects	1.73

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.859	**Shapiro Wilk GOF Test**
1% Shapiro Wilk Critical Value	0.764	Detected Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.303	**Lilliefors GOF Test**

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

```
                1% Lilliefors Critical Value      0.316            Detected Data appear Normal at 1% Significance Level
                        Detected Data appear Normal at 1% Significance Level
                        Note GOF tests may be unreliable for small sample sizes

             Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs
                                 KM Mean      0.023                          KM Standard Error of Mean    0.00759
                                 90KM SD      0.0303                               95% KM (BCA) UCL    0.0354
                          95% KM (t) UCL      0.0361             95% KM (Percentile Bootstrap) UCL    0.0357
                          95% KM (z) UCL      0.0354                          95% KM Bootstrap t UCL    0.0396
                   90% KM Chebyshev UCL      0.0457                            95% KM Chebyshev UCL    0.056
                 97.5% KM Chebyshev UCL      0.0703                            99% KM Chebyshev UCL    0.0984

                               Gamma GOF Tests on Detected Observations Only
                       A-D Test Statistic     0.99                       Anderson-Darling GOF Test
                    5% A-D Critical Value     0.743      Detected Data Not Gamma Distributed at 5% Significance Level
                       K-S Test Statistic     0.342                      Kolmogorov-Smirnov GOF
                    5% K-S Critical Value     0.287      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)      1.039                     k star (bias corrected MLE)    0.767
                         Theta hat (MLE)      0.0439                Theta star (bias corrected MLE)    0.0594
                            nu hat (MLE)      18.71                       nu star (bias corrected)    13.8
                          Mean (detects)      0.0456

                               Gamma ROS Statistics using Imputed Non-Detects
              GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
   GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
                        For such situations, GROS method may yield incorrect values of UCLs and BTVs
                                   This is especially true when the sample size is small.
       For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates
                                 Minimum  3.1000E-4                                           Mean    0.0279
                                 Maximum      0.087                                         Median    0.0109
                                      SD      0.0276                                            CV    0.991
                             k hat (MLE)      1.071                     k star (bias corrected MLE)    0.93
                         Theta hat (MLE)      0.026                 Theta star (bias corrected MLE)    0.03
                            nu hat (MLE)      38.57                       nu star (bias corrected)    33.47
          Adjusted Level of Significance (β)  0.0357
       Approximate Chi Square Value (33.47, α)  21.25             Adjusted Chi Square Value (33.47, β)    20.31
                 95% Gamma Approximate UCL    0.044                          95% Gamma Adjusted UCL    0.046

                              Estimates of Gamma Parameters using KM Estimates
```

Prepared by/Date: JHG 03/27/23
Checked by/Date IMR 03/29/23

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

Mean (KM)	0.023	SD (KM)	0.0303
Variance (KM)	9.2091E-4	SE of Mean (KM)	0.00759
k hat (KM)	0.572	k star (KM)	0.514
nu hat (KM)	20.59	nu star (KM)	18.49
theta hat (KM)	0.0401	theta star (KM)	0.0447
80% gamma percentile (KM)	0.0377	90% gamma percentile (KM)	0.0617
95% gamma percentile (KM)	0.0873	99% gamma percentile (KM)	0.15

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (18.49, α)	9.747	Adjusted Chi Square Value (18.49, β)	9.141
95% KM Approximate Gamma UCL	0.0435	95% KM Adjusted Gamma UCL	0.0464

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.629	Shapiro Wilk GOF Test
10% Shapiro Wilk Critical Value	0.859	Detected Data Not Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.404	Lilliefors GOF Test
10% Lilliefors Critical Value	0.252	Detected Data Not Lognormal at 10% Significance Level

Detected Data Not Lognormal at 10% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0236	Mean in Log Scale	-5.161
SD in Original Scale	0.0308	SD in Log Scale	2.029
95% t UCL (assumes normality of ROS data)	0.0362	95% Percentile Bootstrap UCL	0.0357
95% BCA Bootstrap UCL	0.0378	95% Bootstrap t UCL	0.0404
95% H-UCL (Log ROS)	0.385		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-5.86	KM Geo Mean	0.00285
KM SD (logged)	2.501	95% Critical H Value (KM-Log)	5.237
KM Standard Error of Mean (logged)	0.625	95% H-UCL (KM -Log)	1.558
KM SD (logged)	2.501	95% Critical H Value (KM-Log)	5.237
KM Standard Error of Mean (logged)	0.625		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0231	Mean in Log Scale	-5.849
SD in Original Scale	0.0311	SD in Log Scale	2.642
95% t UCL (Assumes normality)	0.0358	95% H-Stat UCL	3.211

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

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 1% Significance Level

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

Suggested UCL to Use

95% KM (t) UCL	0.0361

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

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

Step 1

Well(1)	Date(1)	As1	D_As1
DGWC-69	03/31/17	0.0239	1
DGWC-69	04/12/17	0.0077	1
DGWC-69	05/12/17	0.0097	1
DGWC-69	06/16/17	0.0113	1
DGWC-69	07/13/17	0.0029	1
DGWC-69	10/26/17	0.114	1
DGWC-69	11/15/17	0.164	1
DGWC-69	03/02/18	0.0127	1
DGWC-69	07/13/18	0.017	1
DGWC-69	11/08/18	0.02	1
DGWC-69	08/28/19	0.025	1
DGWC-69	10/16/19	0.023	1
DGWC-69	03/09/20	0.029	1
DGWC-69	08/13/20	0.029	1
DGWC-69	09/23/20	0.032	1
DGWC-69	03/10/21	0.028	1
DGWC-69	09/16/21	0.023	1
DGWC-69	01/25/22	0.028	1
DGWC-69	09/07/22	0.024	1
DGWC-69	02/01/23	0.021	1

Step 2

Well(2)	Date(2)	As2	D_As2
DGWC-69	03/31/17	0.0239	1
DGWC-69	04/12/17	0.0077	1
DGWC-69	05/12/17	0.0097	1
DGWC-69	06/16/17	0.0113	1
DGWC-69	07/13/17	0.0029	1
DGWC-69	10/26/17	0.114	1
DGWC-69	11/15/17	0.164	1
DGWC-69	03/02/18	0.0127	1
DGWC-69	07/13/18	0.017	1
DGWC-69	11/08/18	0.02	1
DGWC-69	08/28/19	0.025	1
DGWC-69	10/16/19	0.023	1
DGWC-69	03/09/20	0.029	1
DGWC-69	08/13/20	0.029	1
DGWC-69	09/23/20	0.032	1
DGWC-69	03/10/21	0.028	1
DGWC-69	09/16/21	0.023	1
DGWC-69	01/25/22	0.028	1
DGWC-69	09/07/22	0.024	1
DGWC-69	02/01/23	0.021	1

Step 3

Well(3)	Date(3)	As3	D_As3
DGWC-69	03/31/17	0.0239	1
DGWC-69	04/12/17	0.0077	1
DGWC-69	05/12/17	0.0097	1
DGWC-69	06/16/17	0.0113	1
DGWC-69	07/13/17	0.0029	1
DGWC-69	10/26/17	0.114	1
DGWC-69	11/15/17	0.164	1
DGWC-69	03/02/18	0.0127	1
DGWC-69	07/13/18	0.017	1
DGWC-69	11/08/18	0.02	1
DGWC-69	08/28/19	0.025	1
DGWC-69	10/16/19	0.023	1
DGWC-69	03/09/20	0.029	1
DGWC-69	08/13/20	0.029	1
DGWC-69	09/23/20	0.032	1
DGWC-69	03/10/21	0.028	1
DGWC-69	09/16/21	0.023	1
DGWC-69	01/25/22	0.028	1
DGWC-69	09/07/22	0.024	1
DGWC-69	02/01/23	0.021	1

Notes:

1) Concentrations in units of mg/L.

Prepared by/Date: JHG 3/24/2023
Checked by/Date: IMR 03/30/23

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

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.2 3/27/2023 12:09:37 PM
From File	Pro UCL inputs MCD.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Arsenic1

General Statistics

Total Number of Observations	20	Number of Distinct Observations	17
		Number of Missing Observations	0
Minimum	0.0029	Mean	0.0323
Maximum	0.164	Median	0.0235
SD	0.0382	Std. Error of Mean	0.00855
Coefficient of Variation	1.185	Skewness	2.883

Normal GOF Test

Shapiro Wilk Test Statistic	0.564	**Shapiro Wilk GOF Test**
1% Shapiro Wilk Critical Value	0.868	Data Not Normal at 1% Significance Level
Lilliefors Test Statistic	0.403	**Lilliefors GOF Test**
1% Lilliefors Critical Value	0.223	Data Not Normal at 1% Significance Level

Data Not Normal at 1% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.047	95% Adjusted-CLT UCL (Chen-1995)	0.0522
		95% Modified-t UCL (Johnson-1978)	0.048

Gamma GOF Test

A-D Test Statistic	1.576	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.293	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.198	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.44	k star (bias corrected MLE)	1.257
Theta hat (MLE)	0.0224	Theta star (bias corrected MLE)	0.0257
nu hat (MLE)	57.6	nu star (bias corrected)	50.29

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

MLE Mean (bias corrected)	0.0323	MLE Sd (bias corrected)	0.0288
		Approximate Chi Square Value (0.05)	35.01
Adjusted Level of Significance	0.038	Adjusted Chi Square Value	34

Assuming Gamma Distribution

95% Approximate Gamma UCL	0.0463	95% Adjusted Gamma UCL	0.0477

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.899	**Shapiro Wilk Lognormal GOF Test**
10% Shapiro Wilk Critical Value	0.92	Data Not Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.229	**Lilliefors Lognormal GOF Test**
10% Lilliefors Critical Value	0.176	Data Not Lognormal at 10% Significance Level

Data Not Lognormal at 10% Significance Level

Lognormal Statistics

Minimum of Logged Data	-5.843	Mean of logged Data	-3.82
Maximum of Logged Data	-1.808	SD of logged Data	0.855

Assuming Lognormal Distribution

95% H-UCL	0.0509	90% Chebyshev (MVUE) UCL	0.0502
95% Chebyshev (MVUE) UCL	0.059	97.5% Chebyshev (MVUE) UCL	0.0712
99% Chebyshev (MVUE) UCL	0.0951		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0463	95% BCA Bootstrap UCL	0.0551
95% Standard Bootstrap UCL	0.0464	95% Bootstrap-t UCL	0.0904
95% Hall's Bootstrap UCL	0.139	95% Percentile Bootstrap UCL	0.0485
90% Chebyshev(Mean, Sd) UCL	0.0579	95% Chebyshev(Mean, Sd) UCL	0.0695
97.5% Chebyshev(Mean, Sd) UCL	0.0856	99% Chebyshev(Mean, Sd) UCL	0.117

Suggested UCL to Use

95% Student's-t UCL	0.047

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.
Please verify the data were collected from random locations.
If the data were collected using judgmental or other non-random methods,
then contact a statistician to correctly calculate UCLs.

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 using results from simulation studies.

Prepared by/Date: JHG 03/27/23
Checked by/Date: IMR 03/29/23

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

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

Arsenic2

General Statistics

Total Number of Observations	20	Number of Distinct Observations	17
		Number of Missing Observations	0
Minimum	0.0029	Mean	0.0323
Maximum	0.164	Median	0.0235
SD	0.0382	Std. Error of Mean	0.00855
Coefficient of Variation	1.185	Skewness	2.883

Normal GOF Test

Shapiro Wilk Test Statistic	0.564	**Shapiro Wilk GOF Test**
1% Shapiro Wilk Critical Value	0.868	Data Not Normal at 1% Significance Level
Lilliefors Test Statistic	0.403	**Lilliefors GOF Test**
1% Lilliefors Critical Value	0.223	Data Not Normal at 1% Significance Level

Data Not Normal at 1% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.047	95% Adjusted-CLT UCL (Chen-1995)	0.0522
		95% Modified-t UCL (Johnson-1978)	0.048

Gamma GOF Test

A-D Test Statistic	1.576	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.293	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.198	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.44	k star (bias corrected MLE)	1.257
Theta hat (MLE)	0.0224	Theta star (bias corrected MLE)	0.0257
nu hat (MLE)	57.6	nu star (bias corrected)	50.29
MLE Mean (bias corrected)	0.0323	MLE Sd (bias corrected)	0.0288
		Approximate Chi Square Value (0.05)	35.01
Adjusted Level of Significance	0.038	Adjusted Chi Square Value	34

Assuming Gamma Distribution

95% Approximate Gamma UCL	0.0463	95% Adjusted Gamma UCL	0.0477

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

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.899	**Shapiro Wilk Lognormal GOF Test**
10% Shapiro Wilk Critical Value	0.92	Data Not Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.229	**Lilliefors Lognormal GOF Test**
10% Lilliefors Critical Value	0.176	Data Not Lognormal at 10% Significance Level

Data Not Lognormal at 10% Significance Level

Lognormal Statistics

Minimum of Logged Data	-5.843	Mean of logged Data	-3.82
Maximum of Logged Data	-1.808	SD of logged Data	0.855

Assuming Lognormal Distribution

95% H-UCL	0.0509	90% Chebyshev (MVUE) UCL	0.0502
95% Chebyshev (MVUE) UCL	0.059	97.5% Chebyshev (MVUE) UCL	0.0712
99% Chebyshev (MVUE) UCL	0.0951		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution

Nonparametric Distribution Free UCLs

95% CLT UCL	0.0463	95% BCA Bootstrap UCL	0.0551
95% Standard Bootstrap UCL	0.0464	95% Bootstrap-t UCL	0.0904
95% Hall's Bootstrap UCL	0.139	95% Percentile Bootstrap UCL	0.0485
90% Chebyshev(Mean, Sd) UCL	0.0579	95% Chebyshev(Mean, Sd) UCL	0.0695
97.5% Chebyshev(Mean, Sd) UCL	0.0856	99% Chebyshev(Mean, Sd) UCL	0.117

Suggested UCL to Use

95% Student's-t UCL	0.047

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.
Please verify the data were collected from random locations.
If the data were collected using judgmental or other non-random methods,
then contact a statistician to correctly calculate UCLs.

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

Arsenic3

General Statistics

Total Number of Observations	20	Number of Distinct Observations	17

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

		Number of Missing Observations	0
Minimum	0.0029	Mean	0.0323
Maximum	0.164	Median	0.0235
SD	0.0382	Std. Error of Mean	0.00855
Coefficient of Variation	1.185	Skewness	2.883

Normal GOF Test

Shapiro Wilk Test Statistic	0.564	**Shapiro Wilk GOF Test**
1% Shapiro Wilk Critical Value	0.868	Data Not Normal at 1% Significance Level
Lilliefors Test Statistic	0.403	**Lilliefors GOF Test**
1% Lilliefors Critical Value	0.223	Data Not Normal at 1% Significance Level

Data Not Normal at 1% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.047	95% Adjusted-CLT UCL (Chen-1995)	0.0522
		95% Modified-t UCL (Johnson-1978)	0.048

Gamma GOF Test

A-D Test Statistic	1.576	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.293	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.198	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.44	k star (bias corrected MLE)	1.257
Theta hat (MLE)	0.0224	Theta star (bias corrected MLE)	0.0257
nu hat (MLE)	57.6	nu star (bias corrected)	50.29
MLE Mean (bias corrected)	0.0323	MLE Sd (bias corrected)	0.0288
		Approximate Chi Square Value (0.05)	35.01
Adjusted Level of Significance	0.038	Adjusted Chi Square Value	34

Assuming Gamma Distribution

95% Approximate Gamma UCL	0.0463	95% Adjusted Gamma UCL	0.0477

Lognormal GOF Test

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10% Shapiro Wilk Critical Value	0.92	Data Not Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.229	**Lilliefors Lognormal GOF Test**
10% Lilliefors Critical Value	0.176	Data Not Lognormal at 10% Significance Level

Data Not Lognormal at 10% Significance Level

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

Lognormal Statistics

Minimum of Logged Data	-5.843	Mean of logged Data	-3.82
Maximum of Logged Data	-1.808	SD of logged Data	0.855

Assuming Lognormal Distribution

95% H-UCL	0.0509	90% Chebyshev (MVUE) UCL	0.0502
95% Chebyshev (MVUE) UCL	0.059	97.5% Chebyshev (MVUE) UCL	0.0712
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Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution

Nonparametric Distribution Free UCLs

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95% Standard Bootstrap UCL	0.0464	95% Bootstrap-t UCL	0.0904
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97.5% Chebyshev(Mean, Sd) UCL	0.0856	99% Chebyshev(Mean, Sd) UCL	0.117

Suggested UCL to Use

95% Student's-t UCL	0.047

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.
Please verify the data were collected from random locations.
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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.
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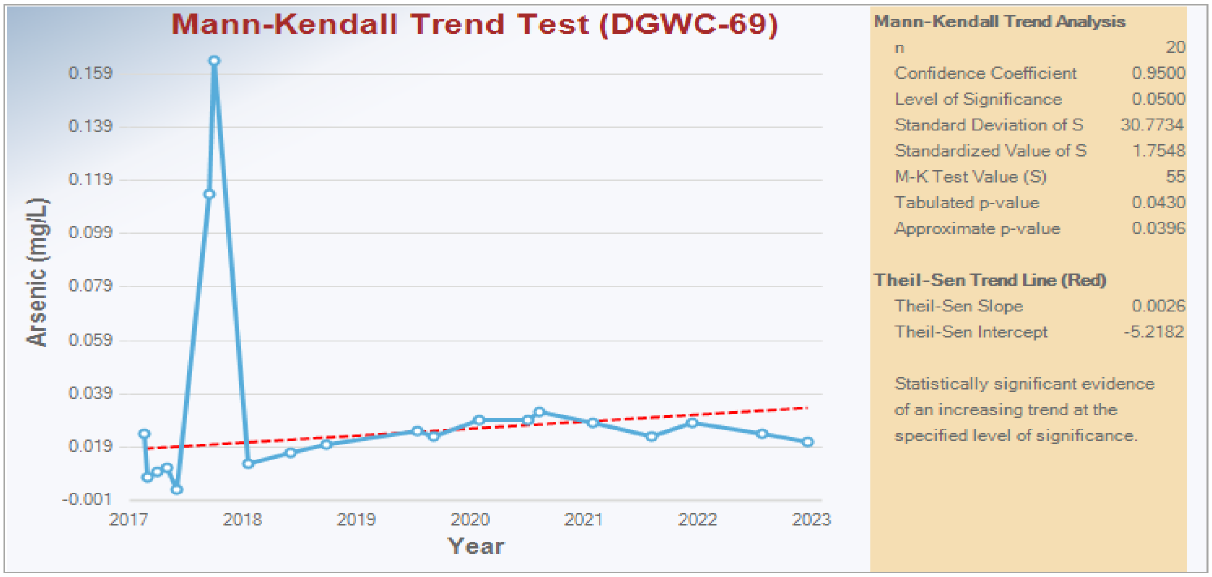
Prepared by/Date: JHG 03/27/23
Checked by/Date: IMR 03/29/23

Appendix D-4

Groundwater Trend Graphs

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



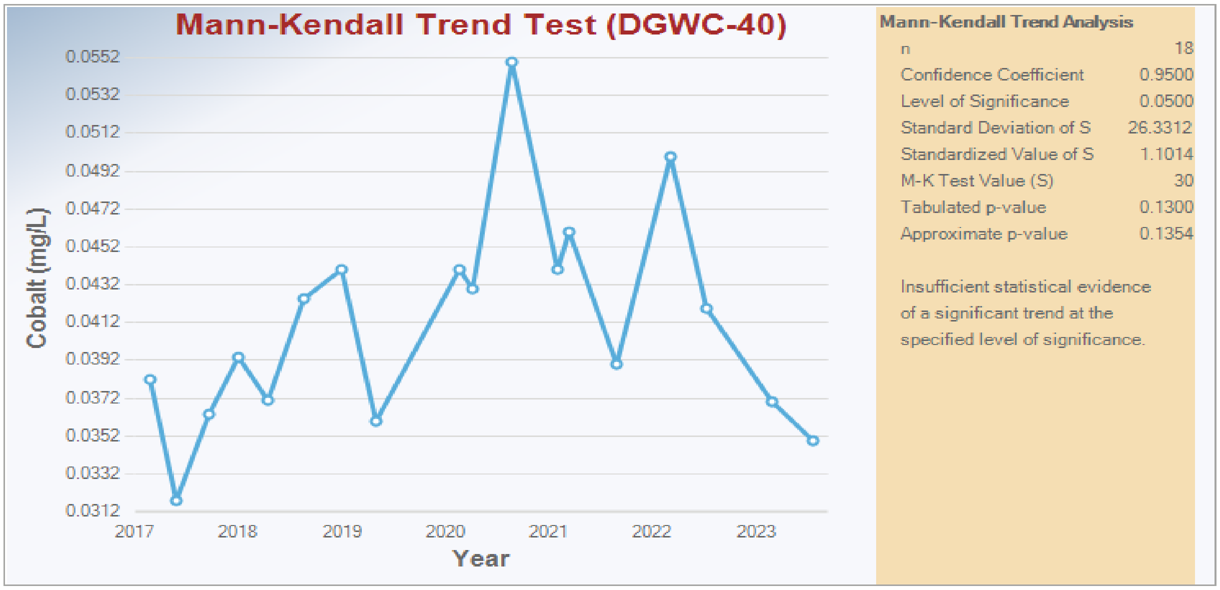
Mann-Kendall Trend Analysis

n	20
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	30.7734
Standardized Value of S	1.7548
M-K Test Value (S)	55
Tabulated p-value	0.0430
Approximate p-value	0.0396

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0026
Theil-Sen Intercept	-5.2182

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



Mann-Kendall Trend Analysis

n	18
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	26.3312
Standardized Value of S	1.1014
M-K Test Value (S)	30
Tabulated p-value	0.1300
Approximate p-value	0.1354

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

Note:
mg/L - milligrams per liter

Prepared by/Date: JWS 04/26/23
Checked by/Date: JHG 04/26/23

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