REPORT

Nature and Extent Study
East Pond

Bremo Power Station
Solid Waste Permit No. 618

Prepared for:

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EXECUTIVE SUMMARY

Golder Associates Inc. (Golder) has prepared this *Nature and Extent Study Report* on behalf of Dominion Energy Virginia (Dominion Energy) for the nature and extent study (NES) conducted for the East Pond at the Bremo Power Station (Station) in Bremo Bluff, Virginia. The purpose of the NES is to delineate the vertical and horizontal extent of constituent of concern (COC) concentrations in groundwater that exceed the Virginia Solid Waste Permit Groundwater Protection Standards (GPS) and the Federal Coal Combustion Residuals (CCR) Rule Groundwater Protection Standards (GWPS) in the vicinity of the East Pond.

On January 5, 2020, federal CCR GWPS exceedances for were documented at the East Pond in samples collected from monitoring wells MW-20S (molybdenum), MW-20D (lithium, molybdenum), MW-21 (cobalt), and MW-22 (cobalt). These exceedances triggered the need for an Assessment of Corrective Measures (ACM) for cobalt, lithium, and molybdenum under the CCR Rule. Subsequently, on May 14, 2020, Virginia Solid Waste Permit GPS and federal CCR GWPS exceedances were documented in the East Pond samples collected from monitoring wells MW-19 (boron), MW-20S (boron, cobalt, lithium, and molybdenum), MW-20D, (boron, lithium, and molybdenum), MW-21 (boron and cobalt), and MW-22 (boron and cobalt). These exceedances resulted in boron being added to the ACM triggered in January 2020. In response to the Virginia Solid Waste Permit GPS exceedances and consistent with the Virginia Solid Waste Management Regulations as well as the CCR Rule, this NES was prepared to support the required ACM.

To fulfill the requirements of the NES and to delineate the vertical and horizontal extent of the Virginia Solid Waste Permit GPS and federal CCR Rule GWPS exceedances in the vicinity of the East Pond, the following field program was completed:

- Sampling and evaluation of two additional groundwater observation wells in the vicinity of the East Pond, including one well between the point of compliance and the downgradient property line;
- Evaluation of routine groundwater monitoring data collected during the March 2020 Modified Assessment Monitoring Program; and
- Evaluation of routine surface water monitoring data provided by Dominion Energy from 10 surface water monitoring points along the James River, including 4 monitoring points immediately downgradient of the East Pond.

Using the information evaluated during this investigation, the NES delineates the inferred vertical and horizontal extents of boron concentrations in groundwater which exceed the Virginia Solid Waste Permit GPS (250 micrograms per liter [µg/L]), cobalt concentrations in groundwater which exceed the Virginia Solid Waste Permit GPS and federal GWPS (7.83 µg/L), lithium concentrations in groundwater which exceed the Virginia Solid Waste Permit GPS (25 µg/L) and federal GWPS (40 µg/L), and molybdenum concentrations in groundwater which exceed the Virginia Solid Waste Permit GPS (16.4 µg/L) and federal GWPS (100 µg/L).

Based on the information evaluated during this study, the inferred extent of the federal CCR Rule GWPS and Virginia Solid Waste Permit GPS exceeding lithium and molybdenum concentrations in groundwater is believed to be localized around the two compliance monitoring wells, MW-20S and MW-20D, which were the only groundwater monitoring locations at the East Pond with lithium federal CCR Rule GWPS and Virginia Solid Waste Permit GPS exceedances. Lithium concentrations at the remaining East Pond area wells ranged from an estimated concentration of 1.3 µg/L to 6.7 µg/L, and molybdenum concentrations at the remaining East Pond wells ranged from an estimated concentration of 1.7 µg/L to 7.6 µg/L, where detected. Concentrations of lithium and

molybdenum have decreased relative to maximum concentrations detected in 2018 during the excavation of CCR materials from the East Pond. The lithium concentrations observed at MW20S and MW-20D are thought to be related to a natural geological soil source, and the observed decrease in lithium concentrations is believed to be associated with transient geochemical conditions in the aquifer due to Station completed site work, including source removal from the East Pond and conversion of the pond to a stormwater management system.. While some of the molybdenum detected in groundwater at these wells may be related to a natural source, geochemical considerations indicate that there may be an additional source associated with the CCR material that was formerly in the East Pond or the CCR material that is currently in the North Pond. The additional source for the MW-20S and MW0-20D well pair is supported by geochemical modeling which suggest a strong similarity between the water quality in the MW-20S/MW-20D well pair and the North Pond pore water.

The inferred extent of the federal CCR Rule GWPS and Virginia Solid Waste Permit GPS exceeding cobalt concentrations generally extend along the southern berm of the East Pond from MW-20S to MW-22. The cobalt impacts among these wells appear localized along the berm within the near-surface aquifer. A natural vadose zone geological source combined with transient geochemical conditions resulting in the dissolution of iron oxyhydroxide minerals is likely contributing to cobalt concentrations in the vicinity of the East Pond. With the exception of MW-20S, wells with on-going cobalt federal CCR Rule GWPS and Virginia Solid Waste Permit GPS exceedances have reported decreases in cobalt concentrations since maximum concentrations were detected in 2018. The decreasing trends are expected to continue subsequent to the removal of the CCR materials from the East Pond as geochemical conditions revert to conditions that are conducive for iron oxyhydroxide mineral formation resulting in the removal of dissolved cobalt from the groundwater via a sorption attenuation mechanism.

Similar to cobalt, the inferred extent of federal CCR Rule GWPS and Virginia Solid Waste Permit GPS exceeding boron concentrations extends along the southern berm of the East Pond from MW-19 to MW-22, with the highest concentrations centered on the MW-20S/MW-20D couplet. Boron impacts from the East Pond area appear to extend northward and may overlap with impacts associated with the North Pond. Although a natural geologic source may be contributing to concentrations of boron detected in groundwater at the East Pond, based on a geochemical evaluation and historical monitoring results from North Pond source area pumping wells, North Pond CCR material pore water and/or former East Pond CCR material pore water may have contributed to the relatively higher groundwater concentrations observed at MW-20S and MW-20D.

An assessment of risk related to Virginia Solid Waste Permit GPS and federal CCR Rule GWPS exceedances in the vicinity of the East Pond identified potential non-cancer risk associated with current groundwater concentrations of cobalt, lithium, and molybdenum for either adults and children, or children only (molybdenum). However, access to the Station and downgradient (railroad) property is restricted to the public, and groundwater at the Station is not used as a potable water source. Because exposure pathways associated with groundwater are not complete at the East Pond, there is no actual unacceptable risk associated with Virginia Solid Waste Permit GPS and federal CCR Rule GWPS exceedances.

Although boron concentrations in the vicinity of the East Pond exceed the Virginia Solid Waste Permit GPS of 250 µg/L, neither current nor historical concentrations of boron exceed the Regional-Based Screening Level (RSL) for boron in drinking water of 4,000 µg/L, which is based on the conservative United States Environmental Protection Agency (USEPA) default exposure scenario for drinking water consumption and exposure. The Virginia Solid Waste Permit GPS for boron of 250 µg/L is not a risk-based concentration but is rather based on a laboratory quantitation limit (QL) concentration that is not reflective of actual risk.

Surface water samples collected from along the north shore of the James River (located 200 to 400 feet downgradient of East Pond and thought to be the point of exchange for groundwater flowing southwest across the Station) reported no detections of the constituents of concern (boron, cobalt, lithium, and molybdenum). These results indicate that impacted groundwater is not reaching surface water at concentrations that could pose a risk to human health or the environment.

Based on the results of this NES, and in consideration of the completion of CCR material removal from the East Pond in 2019, Dominion Energy has prepared an ACM Report under separate cover in which potential corrective actions are evaluated for the remediation of the observed impacts to groundwater as described herein.

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1.0 INTRODUCTION AND BACKGROUND

Golder Associates Inc. (Golder) prepared this *Nature and Extent Study Report* (Report) on behalf of Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy) for the East Pond at the Bremo Power Station (Station) in Bremo Bluff, Virginia. The East Pond is considered an inactive CCR surface impoundment under Title 40 Code of Federal Regulations (CFR) Part 257.50 *et seq*. (Disposal of CCR from Electric Utilities) as well as under the Commonwealth of Virginia adoption of 40 CFR Part 257 Subpart D by reference (Title 9 Virginia Administrative Code [VAC] Agency 20, Chapter 81-800 *et seq*. [9VAC20-81-800]). As an inactive CCR surface impoundment in the Commonwealth of Virginia, the East Pond is also subject to regulation under the Virginia Solid Waste Management Regulations (VSWMR). Consistent with these regulations, the Unit is operated by Dominion Energy under Solid Waste Permit (SWP) No. 618 issued by the DEQ on June 5, 2019.

This Report was prepared in response to federal and state Groundwater Protection Standard exceedances (federal CCR Rule GWPS and Virginia Solid Waste Permit GPS, respectively). Specifically, on January 5, 2020, federal CCR Rule GWPS exceedances were documented at the East Pond in samples collected from monitoring wells MW-20S (molybdenum), MW-20D (lithium, molybdenum), MW-21 (cobalt), and MW-22 (cobalt). Subsequently, on May 14, 2020, Virginia Solid Waste Permit GPS and/or federal CCR Rule GWPS exceedance were documented in the East Pond samples collected from monitoring wells MW-19 (boron), MW-20S (boron, cobalt, lithium, and molybdenum), MW-20D, (boron, lithium, and molybdenum), MW-21 (boron and cobalt), and MW-22 (boron and cobalt).

The Nature and Extent Study (NES) was completed to support the Assessment of Corrective Measures (ACM) required under Title 40 CFR Section 257.96 (40 CFR Part 257.96) of the Federal Disposal of Coal Combustion Residuals from Electric Utilities Rule (CCR Rule) following the documentation of federal GWPS exceedances. Specifically, once a federal CCR Rule GWPS exceedance has been documented for an Appendix IV constituent, the CCR Rule requires the initiation of an ACM within 90 days of documenting the federal CCR Rule GWPS exceedance unless a successful Alternative Source Demonstration (ASD) is completed. Consistent with the CCR Rule, the ACM must be completed within an additional 90 days unless a demonstration for additional time based on a site-specific condition or circumstances is completed. Pursuant to Part 257.96(a) of the CCR Rule, a demonstration of need for a 60-day extension was certified by a professional engineer and placed in the Station's operating record on June 17, 2020. A copy of the extension request will be included in the East Pond's annual groundwater monitoring and corrective action report consistent with the provisions of the CCR Rule.

Similarly, when a state GPS is exceeded, the Virginia Solid Waste Management Regulations (VSWMR) require initiation of the ACM, to include a NES, within 90 days of documenting the state GPS exceedance unless a successful ASD is completed. Similar to the CCR Rule, the facility operator has an additional 90 days to complete the ACM under the VSWMR unless a demonstration for additional time based on a site-specific condition or circumstances is approved by the DEQ.

Consistent with these requirements, this NES investigation was performed to develop an understanding of the nature and extent of constituent concentrations above the federal CCR Rule GWPS and/or Virginia Solid Waste Permit GPS as follows:

- Boron GPS in wells MW-19, MW-20S, MW-20D, MW-21, MW-22;
- Cobalt GWPS/GPS in wells MW-20S, MW-21, MW-22;
- Lithium GWPS/GPS in wells MW-20S, MW-20D; and

- Molybdenum GWPS/GPS in wells MW-20D, MW-20S.

The NES site assessment activities were completed between March 2020 and May 2020. This Report summarizes the NES activities and findings.

1.1 Site Setting and Background

As shown in Figure 1, a portion of the United States Geological Survey (USGS) 7½-minute topographic map of Arvonia, Virginia, the site vicinity has moderately steep topography in the upland areas bordering the Station. The local topography is dissected by drainage swales that have developed a mix of dendritic and trellis drainage patterns reflecting an underlying structure control. Both intermittent and perennial streams characterize surface flow in the vicinity of the Station, with broad ridges and hilltops serving as topographical highs (maximum elevations of roughly 450 feet above mean sea level [AMSL] to the north of the Station). A portion of the Station, including the former generation station and the East and West Ponds, is located within the James River floodplain where topographic elevations range from 200 to 230 feet AMSL.

As presented on the aerial photograph (Figure 2), the Station property consists of wooded, open, and developed land just north of the James River. The Station's northern, eastern, and western boundaries are bordered primarily by undeveloped parcels. The Station property is bordered to the south by a CSX rail line and the James River. Land use surrounding the Station is classified as "A-1 Agricultural" and consists of undeveloped wooded and agricultural properties within a rural residential setting. Other than a process water supply well that is located on Station property, there are no known water supply wells within the immediate vicinity of the Station boundary.

Power generation activities at the Station were initiated in the late 1930's. Ash from the power generation activities has historically been stored in the three on-site coal combustion residual (CCR) surface impoundments (North Pond, West Pond, and East Pond). In 2014, the Station converted from a coal-fired power plant to a natural gas-fired power plant. No newly generated CCR has been placed in these impoundments since the conversion to a gas-fired plant. The Station ceased power generation activities in 2018. Storage of existing CCR materials at the Station has been consolidated to the North Pond, with removal of CCR materials formerly stored in the West Pond to the North Pond having been completed in 2017, and removal of CCR materials from the East Pond to the North Pond completed in early 2019. DEQ documented their approval of closure by removal records and a DEQ site inspection of the visual removal of CCR material and over-excavation of 6 inches of soil (conducted March 14, 2019) in a letter dated October 1, 2019.

Historically, groundwater at the Station was monitored under Virginia Pollutant Discharge Elimination System (VPDES) Permit (Permit No. VA0004138). Background sampling activities for the CCR Rule for the East Pond was initiated in October 2017 following installation of additional monitoring wells. The background sampling activities were completed in February 2019. On June 5, 2019, SWP No. 618 was issued by DEQ with groundwater monitoring provisions for all three of the ponds at the Station. The Station operator currently monitors groundwater in accordance with the Modified Assessment Monitoring Program (AMP) as established in the SWP consistent with the AMP provisions in the CCR Rule.

As discussed previously, federal CCR Rule GWPS exceedances for cobalt, lithium, and molybdenum were documented on January 5, 2020, in samples collected from East Pond monitoring wells MW-20S, MW-20D, MW-21, and MW-22. Additionally, Virginia Solid Waste Permit GPS exceedances for boron, cobalt, lithium, and molybdenum were subsequently documented on May 14, 2020, at wells MW-19, MW-20S, MW-20, MW-21, and MW-22. The locations of the wells are shown on Figure 3.

1.2 Project Objectives and Report Structure

As stated above, an NES for the East Pond must be completed consistent with the CCR Rule timeframe as a result of the confirmed federal CCR Rule GWPS exceedances for cobalt, lithium, and molybdenum detected in samples collected from four monitoring wells at the East Pond. Additionally, an NES for boron must be completed consisted with the provisions in SWP No. 618. The purpose of the NES is to delineate the nature and extent of boron, cobalt, lithium, and molybdenum concentrations that exceed the Virginia Solid Waste Permit GPS and/or federal CCR Rule GWPS in groundwater. Based on the results of the NES, an ACM will be conducted to evaluate potential remedial options for the documented groundwater impacts.

Section 2.0 of this Report summarizes field activities completed as part of the NES. Section 3.0 summarizes the results of the field investigation. Section 4.0 presents the nature and extent of constituents of concern at the East Pond based on the results of the field investigation. Conclusions are presented in Section 5.0.

2.0 FIELD INVESTIGATION SUMMARY

Field investigations were completed between March 2020 and May 2020. Details for the completed activities are presented in the following sections.

2.1 Surface Water

To address the requirements set out in Permit Module XVIII, Dominion Energy submitted a *Surface Water Monitoring Plan* (SWMP) to the DEQ, dated August 2019 and revised May 2020 (EA Engineering, Science, and Technology, Inc., 2020). On March 13, 2020, in accordance with the SWMP as preliminarily approved by DEQ in January 2020, EnviroScience, Inc. (EnviroScience) collected 10 surface water samples along the north shore of the James River (EnviroScience, 2020). Similar samples were collected during the second quarter of 2020. Two of the surface water samples were collected upstream of the Station (JR-01 and JR-02), four were collected downgradient of the West Pond and upstream of the East Pond (BR-01 through BR-04), and four were collected downgradient of the East and North Ponds (BR-05 through BR-08). The surface water samples were collected as close to the shoreline as practicable and the total depth of the water column at each location ranged from approximately 0.1 to 0.7 meters (m).

The surface water samples were collected from downstream to upstream, from the middle of the water column adjacent to the shoreline and were field filtered with 0.45-micron disposable filters prior to being collected into laboratory-supplied containers (EnviroScience, 2020). Following collection, the samples were submitted to SGS North America, Inc (SGS) for analysis of the following constituents: antimony, arsenic, boron, cadmium, calcium, total chromium, chromium III, chromium VI, cobalt, copper, hardness, lead, lithium, magnesium, mercury, molybdenum, nickel, selenium, silver, thallium, and zinc.

Although this sampling was conducted independent of the NES, data generated as part of this routine surface water monitoring was evaluated as part of the assessment for the East Pond. A site map showing surface water monitoring locations in the vicinity of the East Pond is presented in Figure 3.

2.2 Comprehensive Groundwater Elevation Assessment

A comprehensive round of groundwater elevation measurements was collected on May 7, 2020, from monitoring and observation wells in the vicinity of the East Pond to support the evaluation of groundwater flow direction and horizontal and vertical groundwater gradients. A summary of groundwater elevations with available historical data is presented in Table 1. Discussion of groundwater flow and gradients is presented in Section 3.0.

2.3 Groundwater Sample Collection

Due to limited access between the point of compliance for the East Pond and the Station's property line (*i.e.*, close proximity of existing wells to the property boundary and steep terrain) no new wells were installed during the NES for the East Pond. To satisfy the requirement for delineation of groundwater impacts downgradient from the East Pond point of compliance samples were collected from previously installed observation wells located downgradient (vertically and horizontally) from the East Pond supplemented with the surface water sample results for the samples collected from the James River.

Specifically, to supplement the sampling results obtained during the routine semi-annual groundwater monitoring round conducted at the East Pond in March 2020, three additional groundwater samples were collected as part of the NES field program on May 7, 2020, from observation wells MW-22D and MW-VPDES (located along the pond's downgradient boundary), and the East Pond closure demonstration well MW-40 (located within the pond). The locations of these supplementary groundwater monitoring locations are depicted in Figure 3.

Additionally, although MW-40 is located within the pond boundary, it is not considered representative of "source" water conditions for the East Pond, because excavation of CCR materials was completed at the East Pond in early 2019. As such, no source water samples for the materials removed from the East Pond were collected as part of this field program. For comparison purposes, data for source water samples previously collected from the North Pond, located hydraulically upgradient from the East Pond, were used in this evaluation.

Groundwater samples were collected in accordance with the procedures in the Station's *Groundwater Monitoring Plan* using low-flow micropurge sampling techniques. Wells were sampled using a decontaminated non-dedicated bladder pump with disposable bladders. Prior to sampling MW-VPDES, an existing dedicated bladder pump of unknown age and condition was carefully removed from the well for later inspection. During the purge at each well location, periodic groundwater samples were collected for field analysis of dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, specific conductance, turbidity, and temperature. Water quality parameters were collected during purging and after sample collection using a field-calibrated water quality meter equipped with a flow-through cell. Groundwater field measurements are summarized on Field Data Sheets provided in Appendix A.

Groundwater samples were collected directly from the discharge tube on the pump into pre-labeled, laboratory supplied, pre-preserved sample containers. Following collection, the samples were placed in a cooler on ice under chain-of-custody control and couriered to Pace Analytical Services, Inc. (Pace) of Huntersville, North Carolina and Air, Water & Soil Laboratories, Inc. (AWS) of Richmond, Virginia (hexavalent chromium only). The two laboratories are Virginia Environmental Laboratory Accreditation Program (VELAP)-certified. The groundwater samples were submitted for analysis of the following constituents:

- Consistent with 257.95(g)(1)(iv) of the CCR Rule, groundwater samples were analyzed for Appendix III and Appendix IV constituents, including:
  - Metals (antimony, arsenic, barium, beryllium, boron, cadmium, calcium, total chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium) by SW-846 Methods 6010D and 6020B;
  - Mercury by SW-846 Method 7470A;
  - Total Dissolved Solids (TDS) by SM 2540C;
  - Anions (chloride, fluoride, and sulfate) by SW-846 9056A; and
  - Radium 226 & 228 by SW-846 9315 and 9320.
- Additionally, the groundwater sample collected at MW-40[1] was analyzed for the following constituents, including:
  - Metals (copper, nickel, silver, tin, vanadium, and zinc) by SW-846 Methods 6010D and 6020B;
  - Ammonia by USEPA Method 350.1;
  - Nitrate by USEPA Method 9056A;
  - Total Hardness by Standard Method 2340B;

[1] MW-40 had not been sampled prior to the NES; therefore, the full list of Solid Waste Permit monitoring parameters was collected to evaluate the overall water quality at that location compared to nearby wells as needed.

- Metals (iron and manganese) by SW-846 Methods 6020B; and
- Hexavalent chromium by Method 7196A.

Groundwater sampling locations, dates, and analyses performed are summarized in Table 2. Laboratory analytical reports are provided in Appendix B. Additionally, data generated during the routine East Pond groundwater monitoring events in March 2020 and January 2019 was evaluated as part of the NES for the East Pond. The January 2019 event included collection of common cations and anions not typically included in routine monitoring (*e.g.*, sodium, potassium, magnesium, and alkalinity) which are primarily of interest for evaluating groundwater geochemistry at the East Pond. A site map showing groundwater monitoring locations is presented in Figure 3.

2.4 Lineament Analysis

The USGS 7.5-minute topographic map of Arvonia, Virginia was used to identify apparent linear features based on the mapped topographic relief. These linear features are interpreted as being an expression of underlying geologic structures, such as faults, fractures, or joints, which may provide preferential pathways for groundwater flow and contaminant migration. The strikes of the linear features identified as part of this analysis were tabulated and used to construct a rose diagram summarizing the frequency of given orientations. The rose diagram is present as Exhibit 1 in Section 3.1 herein.

2.5 Data Validation

Laboratory analytical data associated with the supplemental groundwater sampling event conducted in May 2020 were validated in accordance with the following USEPA and Department of Energy (DOE) documents:

- National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017;
- US Department of Energy Evaluation of Radiochemical Data Usability, April 1997; and
- Sampling and Analysis Plan for US Department of Energy Office of Legacy Management Sites.

Laboratory analytical data reports associated with groundwater are included as Appendix B and the quality assurance and quality control (QA/QC) laboratory data review document is included in Appendix C. Supplemental groundwater data associated with the NES was accepted for use based on the QA/QC review; however, chloride, fluoride, and sulfate data associated with MW-40 was qualified as potentially biased high based on slightly elevated recoveries reported for laboratory quality control matrix spike (MS) and matrix spike duplicate (MSD) samples.

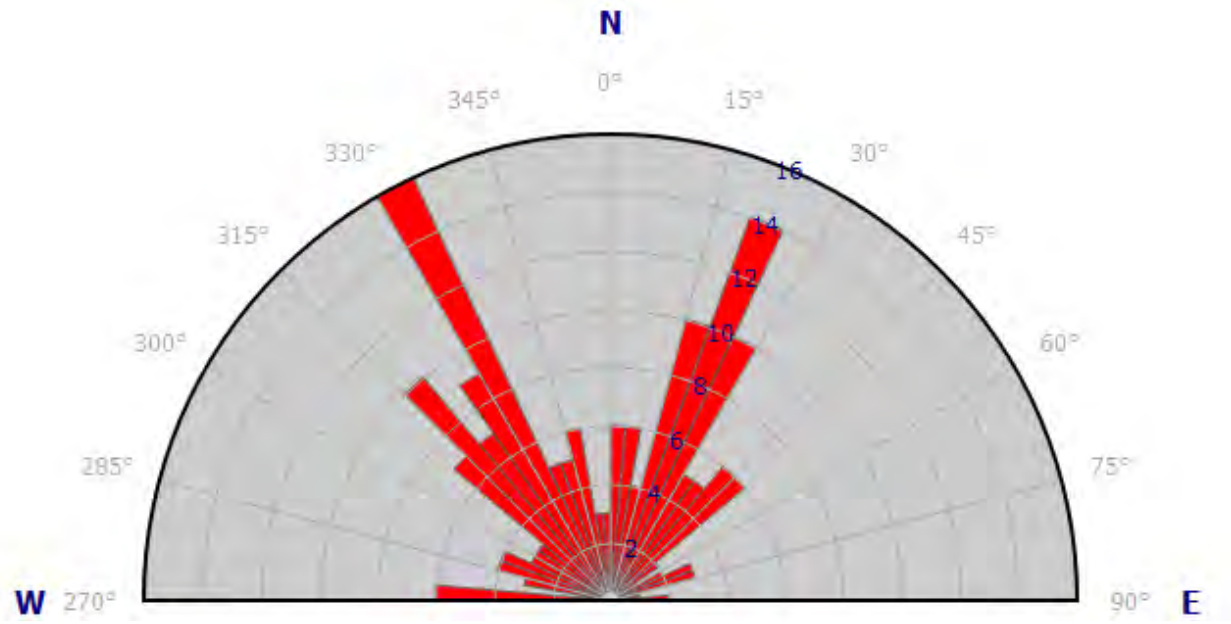
3.0 INVESTIGATION RESULTS

The following sections present an updated evaluation of the surface hydrology and hydrogeology in the vicinity of the East Pond, present the analytical results for the surface water and groundwater samples collected between March 2020 and May 2020, and provide a geochemical evaluation of groundwater in the vicinity of the East Pond.

3.1 Hydrogeology

The East Pond is located within the James River floodplain and near-surface geology is primarily mapped as alluvium materials. Previous investigations in the East Pond area have identified gneiss or biotite schist bedrock underlying the alluvium materials, consistent with bedrock mapped in upland areas in the site vicinity. Geophysical analysis of deep bedrock boreholes in the vicinity of the East Pond conducted in 2018 (Golder, 2019) found that fractures are predominantly oriented to the northeast, parallel to geological strike. Another set of fractures was identified oriented to the west-northwest (approximately perpendicular to geological strike). Fractures identified during geophysical analysis were typically moderately to steeply dipping, with a few horizontal or near-horizontal fractures. The steeply dipping fractures create some preferential flow parallel and perpendicular to geologic strike (*i.e.,* northeast-southwest and approximately east-west). The results of the lineament analysis performed as part of this NES are generally consistent with the previous geophysical analysis. As summarized in Exhibit 1 below, two sets of lineament orientations were identified: one predominantly to the north-northeast, and one to the north-northwest.

Exhibit 1: Lineament Analysis Rose Diagram



The Site Conceptual Model developed for the East Pond area is comprised of an upland recharge area and a hydrogeologic boundary associated with the James River to the southwest. The uppermost aquifer potentiometric surface transcends geologic boundaries, with the aquifer matrix ranging from alluvium associated with the James River, fractured or weathered bedrock (various), to saprolite upgradient of the East Pond. These different geological units are expected to impart variability to the uppermost aquifer hydraulic properties as well as geochemical conditions. The cross sections presented in Figures 9 through 12 depict the aquifer materials that East Pond area wells are screened in.

The water table surface in the vicinity of the East Pond generally mimics the surface topography with groundwater elevations ranging approximately from 225 ft above mean sea level (AMSL) along boundary of the North Pond to the north, to 200 ft AMSL along the boundary with the James River to the south. Potentiometric surface level data for nested wells in the East Pond area indicate that a slight upward gradient is present between lower bedrock and alluvium in the vicinity of MW-20S/MW-20D and a downward gradient in the vicinity of MW-22/MW-22D and MW-23/MW-23D. Historical static water level data for the East Pond are summarized in Table 1. The depth-to-water measurements collected on May 7, 2020, along with the surface water elevation in the East Pond, were used to prepare groundwater elevation contours which are depicted in Figure 4. As presented, the morphology of the water table surface and the apparent groundwater flow direction are consistent with previous interpretations, with groundwater flow primarily to the southwest.

Using the conceptual groundwater flow lines shown in Figure 4, which run northeast-southwest, average groundwater flow rates for the uppermost aquifer near the East Pond were calculated. The rate of transport for constituents of concern (boron, cobalt, lithium, and molybdenum) is discussed further in the following sections.

3.1.1 Horizontal Component of Flow

In the vicinity of the East Pond, the uppermost aquifer occurs within alluvial materials and a matrix comprised of partially weathered rock to competent fractured bedrock. The effective porosity of the alluvium is estimated at approximately 20%. The porosity of the bedrock is expected to range from a whole-rock porosity based primarily on secondary porosity (discontinuities) of approximately 1% to 5% or less on a megascopic to macroscopic scale to greater than 50% on a microscopic scale along discrete preferential flow pathways within the fractioned rock (*i.e.*, open fractures). On average, the effective porosity of the bedrock is estimated at 2.5% (Fetter, 1988). The horizontal component of flow was evaluated for flow paths in the vicinity of MW-20S and MW-22, as described below.

Using the groundwater contours presented in Figure 4, the average hydraulic gradient for the uppermost aquifer spanning from the southern boundary of the North Ash Pond to the James River was calculated using the equation below.

Area	Starting Head (ft AMSL)	Ending Head (ft AMSL)	Distance (ft)	Calculated Gradient (unitless)
East Pond – Near MW-20S	225	200	1,016	0.0246
East Pond – Near MW-22	225	200	655	0.0382

$$i_{gw} = \left({}^{h_L}/_{L}\right)$$

Where: $i_{gw} = gradient$
$h_L = head\ loss\ (elevation\ difference)$
$L = length\ (horizontal\ difference)$

Using the average hydraulic conductivities for alluvium materials and bedrock, and the horizontal hydraulic gradients calculated above, the average rate of groundwater flow (V_{gw}) in the uppermost aquifer beneath the East Pond was calculated using the equation below.

Area	Gradient (Unitless)	Effective Porosity	Hydraulic Conductivity (ft/s)	Groundwater Velocity (ft/year)
East Pond – Near MW-20S (Alluvium)	0.0246	0.20	1.11E-05	43
East Pond – Near MW-20S (Bedrock)	0.0246	0.025	1.53E-05	470
East Pond – Near MW-22 (Alluvium)	0.0382	0.20	1.11E-05	67
East Pond – Near MW-22 (Bedrock)	0.0382	0.025	1.53E-05	740

$$V_{gw} = K\, i_{gw}(^1/_{n_e})$$

Where:

$V_{gw} = groundwater\ velocity$
$K = hydraulic\ conductivity$
$i_{gw} = gradient$
$n_e = effective\ porosity$

The calculated groundwater velocities presented above are lower but of similar magnitude to velocities previously calculated in the vicinity of the East Pond (Golder, 2020a). The lower velocities are associated with the average flow rate being determined across the East Pond which is no longer being actively dewatered.

3.1.2 Vertical Gradient Evaluation

Using groundwater elevation data from May 2020, the vertical gradients within the aquifer were evaluated using various well pairs as presented below. The vertical gradients for these well pairs were calculated as shown below.

$$i_{gw} = \left(^{h_L}/_{L}\right)$$

Where:

$i_{gw} = gradient$
$h_L = head\ loss\ (elevation\ difference)$
$L = length\ (vertical\ difference - midpoint\ of\ well\ screens)$

Table 3: Vertical Gradient Summary

Well Pair	Shallow Groundwater Elevation (ft AMSL)	Deep Groundwater Elevation (ft AMSL)	Distance (ft)	Gradient (unitless)
MW-20S / MW-20D	206.89	206.92	42.6	-7.04E-04
MW-22 / MW-22D	206.50	206.33	69.3	2.45E-03
MW-23 / MW-23D	212.98	206.43	48.3	1.36E-01

Negative gradients indicate an upward gradient. As summarized in Table 3, gradients calculated for well pairs in the vicinity of the East Pond are primarily downward toward the east end of the pond, and slightly upward in the vicinity of MW-20S/MW-20D at the west end of the pond. The upward gradient at the western end of the East

Pond may reflect groundwater exchange at the James River immediately to the east consistent with the site conceptual model.

3.2 Surface Water Analytical Results

The results of surface water monitoring conducted by EnviroScience in March 2020 are summarized in Appendix D. The report concluded that constituents of concern (boron, cobalt, lithium, and molybdenum) were not detected at or above the method detection limit (MDL) at any of the surface water sampling locations in the James River. Therefore, there were no exceedances of the applicable Virginia Water Quality Standards (or equivalent exceedances of the Virginia Solid Waste Permit GPS / federal CCR Rule GWPS) in surface water samples collected in March 2020. The results of surface water monitoring are included on Figures 5 through 8.

3.3 Groundwater Analytical Results

Groundwater analytical results for supplementary samples collected during the NES field investigation are presented in Table 2. Historical monitoring data for constituents of concern (boron, cobalt, lithium, and molybdenum) at East Pond area wells is presented in Table 4. Key observations include:

- Boron was detected at concentrations exceeding the Virginia Solid Waste Permit GPS of 250 micrograms per liter (µg/L) at compliance wells MW-19, MW-20S, MW-20D, MW-21, and MW-22 during the first semi-annual monitoring event conducted in March 2020. Additionally, boron was detected exceeding the Virginia Solid Waste Permit GPS at MW-22D, MW-40 and MW-VPDES during the supplementary groundwater sampling event in May 2020. Concentrations of boron detected in groundwater in the vicinity of the East Pond during these two events ranged from 190 µg/L (MW-23) to 2,400 µg/L (MW-20S). These results are consistent with historical detections.
- Cobalt was detected at concentrations exceeding the federal CCR Rule GWPS and Virginia Solid Waste Permit GPS of 7.83 µg/L at compliance wells MW-20S, MW-21, and MW-22 during the first semi-annual monitoring event conducted in March 2020. Concentrations of cobalt detected in groundwater in the vicinity of the East Pond during these two events ranged from 0.20 µg/L (MW-40) to 27.2 µg/L (MW-22). These results are consistent with historical detections.
- Lithium was detected at concentrations exceeding the federal CCR Rule GWPS of 40 µg/L and the Virginia Solid Waste Permit GPS of 25 µg/L at compliance wells MW-20S and MW-20D. Concentrations of lithium detected in groundwater in the vicinity of the East Pond ranged from an estimated value of 1.3 µg/L (MW-19) to 330 µg/L (MW-20S). These results are consistent with recent historical detections.
- Molybdenum was detected at concentrations exceeding the federal CCR Rule GWPS of 100 µg/L and the Virginia Solid Waste Permit GPS of 16.4 µg/L at compliance wells MW-20S and MW-20D. Concentrations of molybdenum detected in groundwater in the vicinity of the East Pond ranged from an estimated concentration of 1.7 µg/L (MW-23) to 137 µg/L (MW-20S).

Boron results in groundwater are presented in Figures 5 and 9. Cobalt results in groundwater are presented in Figures 6 and 10. Lithium results in groundwater are presented in Figures 7 and 11. Molybdenum results in groundwater are presented in Figures 8 and 12.

3.4 Groundwater Geochemistry

Supplemental groundwater geochemistry parameters were collected during the routine monitoring event conducted at the East Pond in January 2019. This included the collection of common cations (sodium, potassium, calcium,

and magnesium) and anions (alkalinity as calcium carbonate, chloride, and sulfate). These supplementary sampling results for select East Pond wells are summarized in Table 5. Additionally, although source area samples from within the East Pond ash could not be collected in January 2019 (as excavation of the pond was nearing completion), concurrent geochemistry monitoring results for select North Pond pumping wells (installed in CCR materials) are also included in Table 5 for comparison.

To assist with the evaluation of geochemistry at the East Pond, a series of Stiff, Schoeller, scatter, and Piper diagrams were prepared using the common cations and anions summarized above. Stiff diagrams are graphical representations of chemical analyses that are used to display the major ion composition of individual water samples. Stiff diagrams appear as polygons, with cations plotting on the left, and anions plotting on the right. Stiff diagrams can be used to make rapid visual comparisons between different water samples, where samples that plot with similar polygonal shapes have similar geochemistry and may originate from the same source. Similarly, visual comparison of Stiff diagrams can identify samples with mixed sources based on the characteristic shapes of plots from distinct sources. Schoeller plots are line plots where cations and anions are plotted on the x-axis and concentrations are plotted on the y-axis and are useful for illustrating relative constituent ratios between samples that can be useful in identifying source waters. Scatter plots graphically illustrate the relationship between different cations and anions and can be useful for identifying mixing of source waters. Piper diagrams are graphical representations of water chemistry where ratios of cations (calcium, magnesium, and sodium plus potassium) and anions (chloride, sulfate, and carbonate plus bicarbonate) are plotted on separate ternary plots, which are then projected onto a diamond. Piper diagrams are useful for comparing the ionic composition of a large set of water samples.

Stiff diagrams for East Pond wells and upgradient wells (MW-11, MW-29S, and MW-29D) presented in Chart 1 were compared to Stiff diagrams for North Pond source area pumping wells (SDW-4 and SDW-7) presented in Chart 2. East Pond downgradient wells (particularly MW-20S and MW-20D) typically exhibit calcium carbonate dominated facies (with the exception of MW-19 and MW-23D), which is consistent with North Pond source area water results. Observation well MW-23D exhibits a sodium-carbonate facies similar to that observed in upgradient well MW-29D. These results suggest that groundwater at downgradient East Pond wells screened in the upper portion of the uppermost aquifer beneath the East Pond is geochemically similar to the North Pond source area.

To further evaluate this relationship, common cations and anions detected in the North Pond source area pumping wells, East Pond wells, and upgradient wells were plotted on a Schoeller plot. As illustrated in Chart 3, the results for MW-20S and MW-20D (highlighted as red triangles) closely mirror the results for the North Pond pumping wells (red circles), with the exception of the sulfate results. This suggests that MW-20S and MW-20D are potentially impacted by water from the North Pond source area. This is supported by the results of scatter plots presented in Charts 4 and 5, where MW-20S and MW-20D typically plot closest to the North Pond pumping wells, both when evaluating common cations and anions, and common cations and anions versus boron. Additionally, scatter plots in Charts 4 and 5 typically show that other East Pond wells (black triangles) plot closer to upgradient wells (blue squares), which may suggest that Virginia Solid Waste Permit GPS or CCR Rule GWPS exceedances (for boron and cobalt) at these locations are potentially related to natural sources rather than the North Pond source area.

The Piper diagram presenting results for select East Pond monitoring wells, upgradient wells, and North Pond source area wells is presented in Chart 6. As presented, and consistent with previous results, MW-20S and MW-20D plot close to the North Pond source area wells suggesting a similar source water for the MW-20S/D well nest and the North Pond pore water.

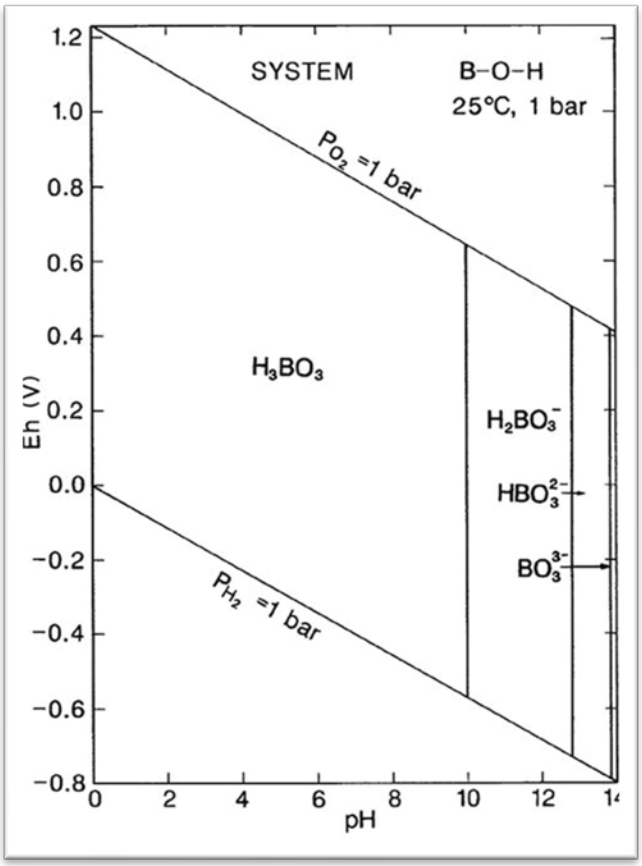
4.0 NATURE AND EXTENT OF CONSTITUENTS OF CONCERN

4.1 Boron

4.1.1 Nature of Boron

Boron is included as an Appendix III constituent in 40 CFR Part 257 because historically it has been detected at CCR disposal sites and has been identified as an inorganic parameter known to be a leading indicator of releases of contaminants associated with CCR (USEPA, 2015). Boron is a naturally occurring, non-metallic element found in rocks, soil, and water. Boron has an oxidation state of +3 and does not exist as a pure element in nature. Rather, it is combined with oxygen as borate minerals and various boron compounds such as boric acid, borax, and boron oxide. Under ambient conditions the boron compounds are found in crystalline form or as granules or amorphous powders. Borate minerals and other boron compounds are ubiquitous, and are found in high concentrations in marine deposits, sedimentary rocks, coal, shale, geothermal fluids, and naturally boron-rich mineral deposits and the soils derived from those mineral deposits (USEPA, 2008). Boron is widely distributed in nature at concentrations approaching 30 parts per million (ppm) in some geologic formations (Moore *et al.*, 1997). Boron concentrations in rocks range from 5 ppm in basalts to 100 ppm in shales, and the average concentration in the earth's crust is 10 ppm (Woods, 1994). Boron concentrations in freshwater normally range from <10 to 1,500 µg/L (Woods, 1994).

Boron may be released into the environment as a result of natural weathering of geologic formations, burning of coal in power plants, and by activities associated with chemical plants and manufacturing facilities. Fertilizers, herbicides, and industrial wastes are also among the sources of boron soil contamination (USEPA, 2008). Contamination of water can come directly from industrial wastewater and municipal sewage, as well as indirectly from air deposition and soil runoff (USEPA, 2008). Borates in detergents, soaps, and personal care products can also contribute to the presence of boron in the environment. Elemental boron is insoluble in water and boric acid and borax are only slightly soluble in water. Boron can be present in drinking water from both naturally occurring and man-made sources.



Boron speciation is controlled by acidity, with the noncharged species, boric acid, predominant at lower pH relative to the charged borate ion (Harkness, 2016). The borate ion is more likely to coprecipitate into secondary phases, and therefore, dissolved boron concentrations are lower at high pH (Harkness, 2016). As illustrated in the inset Eh-pH diagram (Brookins, 1988) under natural groundwater and surface water conditions (pH of 4 to 9 Standard Units and Eh of -0.1 to 0.4 volts) found in central Virginia, boron is found almost exclusively as boric acid in the natural environment.

A historical background study of naturally occurring boron in Virginia soils found concentrations in the Piedmont physiographic region ranging from below detection (*i.e.,* less than 20 milligrams per kilogram [mg/kg]) up to 30 mg/kg (Shacklette *et al.*, 1984). Additionally, a limited set of site-

specific soil samples collected in the vicinity of the North Pond (*i.e.,* immediately upgradient of the East Pond) in 2018 (Golder, 2019), and found boron was detected in two of twelve soil samples, at concentrations ranging from 3.2 to 5.7 mg/kg. Using standard soil-water partitioning calculations and concentrations of boron detected in site specific samples, expected groundwater concentrations of boron were estimated using the following relationship between soil and water concentrations:

$$K_d(L/kg) = {[Concentration\ in\ Soil\ (mg/kg)]}/{[Concentration\ in\ Water\ (mg/L)]}$$

Where K_d is the soil-water partitioning coefficient for boron (0.19 L/kg; Whelan *et al.,* 1996). Using the site-specific soil concentrations reported above (*i.e.*, 3.2 to 5.2 mg/kg), the predicted concentrations of boron in groundwater range from approximately 17,000 µg/L to 27,000 µg/L. These results suggest that even a relatively low concentration of boron in native soil at the East Pond could produce the groundwater concentrations observed in East Pond monitoring wells. However, boron is either not detected or detected at estimated concentrations in upgradient wells MW-11, MW-29S, and MW-29D (as summarized in Table 4). Furthermore, concentrations of boron observed at MW-20S and MW-20D are elevated compared to other East Pond wells, and are generally similar in magnitude to boron concentrations reported for pumping wells (SDW-4, SDW-7, and SDW-10) installed within CCR material at the North Pond (Golder, 2019). Boron concentrations at these North Pond pumping wells ranged from 1,520 µg/L to 2,380 µg/L in January 2019, compared to current concentrations of boron at MW-20S (2,400 µg/L) and MW-20D (2,100 µg/L). Although source area samples from the East Pond could not be collected (because the CCR materials were excavated prior to the NES), comparison to North Pond source area pumping wells suggests that groundwater at MW-20S and MW-20D is impacted by boron that has been leached from CCR materials.

4.1.2 Estimated Boron Migration Rate

To assist with understanding the fate and transport characteristics of the constituents of concern, Golder evaluated the expected groundwater retardation coefficients for the constituents of concern in the alluvial and saprolitic aquifer matrix materials using publicly available data and the following formula.

$$R = 1 + \frac{pKd}{ne} = \frac{(Velocity\ of\ Groundwater)}{(Velocity\ of\ Contaminant)}$$

Where:
- R = Retardation Coefficient
- p = media bulk density (kilograms per liter [kg/L])
- K_d = Soil-Water partitioning coefficient (liters per kilogram [L/kg])
- ne = effective porosity (unitless)

The results of the evaluation are summarized in the following table.

Constituent of Concern	K_d (L/kg) with Data Source	Bulk Density (kg/L)	Effective Porosity (unitless)	Retardation Coefficient (unitless)	Fraction of Groundwater Velocity
Boron (oxyanion)	0.19 (1)	2.6	0.2	3.5	28.8%

Note: Soil-water partitioning coefficients (K_d) estimated based on groundwater pH of 6 to 7.5 standard units and redox potential of 0 to 100 millivolts.

Data Sources:

1. Whelan, G., J.P. McDonald, and C. Sato. 1996. *Multimedia Environmental Pollutant Assessment System (MEPAS): Groundwater Pathway Formulations.* United States Department of Energy, Contract No. DE-AC06-76RLO 1830. Pacific Northwest National Laboratory, Operated by Battelle for the United States Department of Energy. June.

As presented, boron is expected to migrate as an oxyanion in groundwater at approximately 29% of the groundwater flow velocity. These results indicate that natural sorption processes are expected to significantly retard the constituent of concern migration rates relative to the advective groundwater flow rate.

4.1.3 Extent of Boron

A summary of the recent historical detections of boron in groundwater samples from the vicinity of the East Pond is presented in Table 4. Boron was detected at concentrations in exceedance of the Virginia Solid Waste Permit GPS (250 µg/L) for groundwater in samples collected from compliance wells MW-19, MW-20S, MW-20D, MW-21, and MW-22 in March 2020, and in observation wells MW-VPDES and MW-22D and closure demonstration well MW-40 in May 2020, consistent with assessment monitoring results from 2019. These wells generally span the length of the downgradient berm of the East Pond, from northwest to southeast, with MW-40 having been installed through the berm dividing the east and west sections of the pond. As noted previously, the most elevated groundwater results for boron are observed at MW-20S and MW-20D, with concentrations decreasing to the northwest and southeast.

As presented in Figure 5, the inferred horizontal extent of boron (delineated to the Virginia Solid Waste Permit GPS) was interpolated based on data from East Pond compliance and observation wells, recent North Pond monitoring well results immediately upgradient of the East Pond (Table 5, following), and surface water monitoring results. As previously described, boron was not detected in surface water downgradient of the East Pond, where groundwater flowing southwest across the Station is expected to migrate consistent with the upward vertical gradient calculated at MW-20S/MW-20D. However, as illustrated in Figure 5, boron was detected at concentrations along the downgradient property line which suggest that exceedances of the Virginia Solid Waste Permit GPS in groundwater likely extend offsite onto the adjacent railroad property to the south. As discussed in the following section, this potential offsite migration is unlikely to pose an unacceptable risk to potential receptors, as the exposure pathway is incomplete.

Table 6: North Pond Boron Reference Data – March 2020

Monitoring Well	MW-24	MW-25S	MW-25D	MW-33	MW-34	MW-35
Boron Concentration (µg/L)	200	27.0 J	35.0 J	230	1,200	430

Note: J = estimated concentration

As shown in Table 6 and Figure 5, two North Pond wells immediately upgradient of the East Pond also have Virginia Solid Waste Permit GPS exceedances of boron. These results, along with the historical North Pond source area boron results and the geochemical signature evaluation described in Section 3.4, suggest a likely source water impact at MW-20S and MW-20D related to North Pond CCR materials and/or previously stored CCR materials in the East Pond. Although the boron concentration at MW-40, which is located between the MW-20S/MW-20D couplet and MW-34, is relatively low compared to these wells, MW-40 is a shallow well located within the East Pond and groundwater quality at this location may be influenced by the unimpacted stormwater that is now accumulating

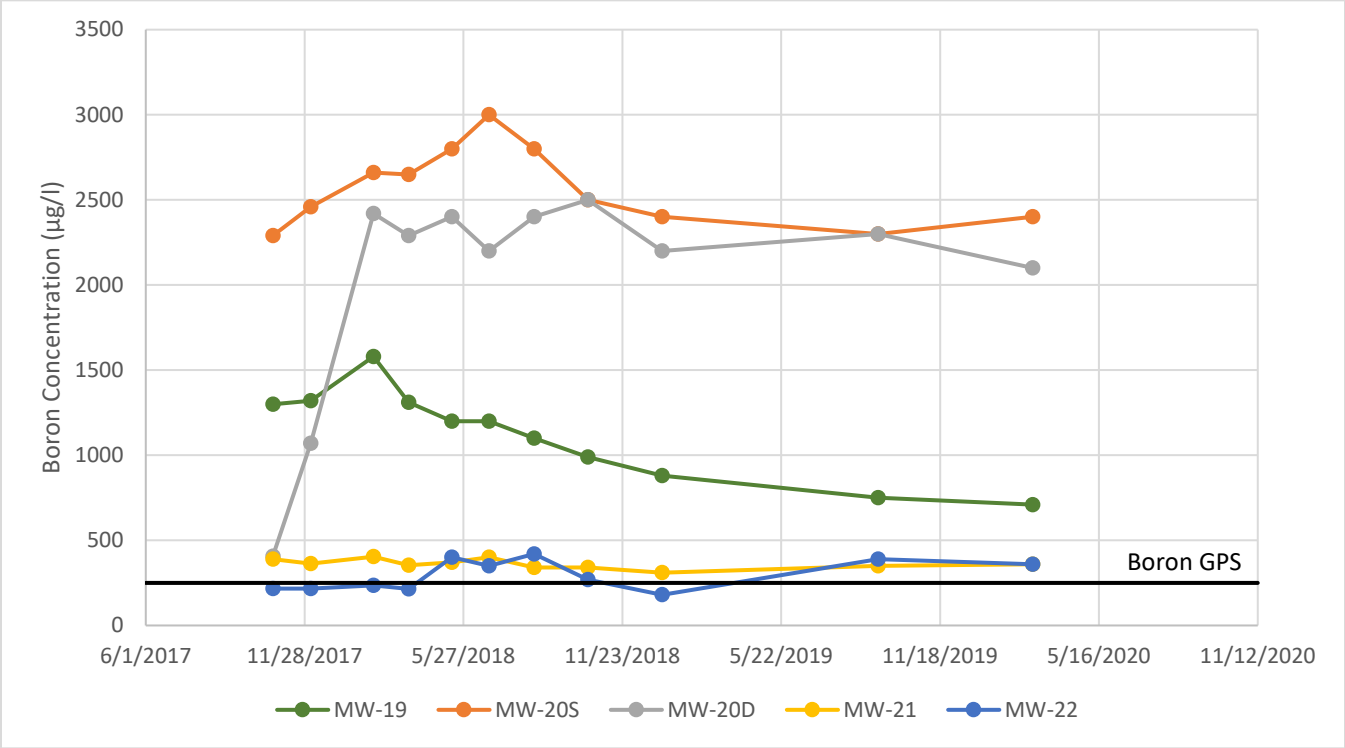
in the former East Pond. The locally elevated results at MW-20S and MW-20D compared to other downgradient East Pond wells may indicate that, consistent with the linear feature analysis presented in Section 3.1, northeast-southwest trending fractures intersected by these wells are providing a preferential pathway for groundwater flow from the North Pond area.

Figure 9 presents cross-sections A-A' and B-B', showing subsurface hydrogeologic conditions approximately parallel to groundwater flow direction (southwest) in the vicinity of the East Pond Wells. Additionally, cross-section C-C' shows hydrogeologic conditions approximately perpendicular to groundwater flow along the East Pond berm. The inferred vertical extent of boron (delineated to the Virginia Solid Waste Permit GPS) was interpolated with data from East Pond compliance wells and observation wells, surface water monitoring results, and vertical gradient estimates, which suggest an upward flow component in the vicinity of MW-20S/MW-20D. This interpretation is consistent with the Site Conceptual Model which indicates that the James River is a receiving stream system such that the vertical flow of groundwater within the aquifer beneath the river is upward, thus limiting the potential for additional lateral (trans river) migration or vertical (downward) migration of the boron oxyanion.

Based on interpolated and extrapolated contouring developed from surface water and groundwater data, vertical gradients, and the estimated migration rate of boron in groundwater, the inferred extent of the boron concentrations exceeding the Virginia Solid Waste Permit GPS in groundwater was delineated horizontally and vertically. Boron impacts are believed to be localized to the immediate vicinity of the East Pond, centered on MW-20S/MW-20D as shown on Figures 5 and 9. Boron impacts associated with the immediately upgradient North Pond may be contributing concentrations of boron detected at East Pond wells, particularly MW-20S and MW-20D.

Of interest, boron concentrations at impacted wells downgradient from the East Pond have generally been observed to decrease since maximum concentrations were reported during 2018 monitoring events, as summarized in Table 4 and depicted in Chart 7 (following). These observations are consistent with the removal of source material from the East Pond, which was completed in early 2019.

Chart 7: Boron Concentration Timeseries at East Pond Downgradient Monitoring Wells



4.1.4 Boron Risk Assessment

Large dose and acute overdose effects from boron can cause nausea, vomiting, diarrhea, redness of the skin, difficulty swallowing due to ulcers in the throat, and death (USEPA, 2008). Boron exposure can affect the stomach, intestines, liver, kidney and brain. The USEPA has determined that boron is a non-carcinogenic element that can result in acute and chronic human health impacts at high enough concentrations. Consistent with this finding, the USEPA has established a risk-based concentration for boron in drinking water. The USEPA refers to these risk-based concentrations as Regional-Based Screening Levels (RSLs). The RSL for boron in drinking water, based on the conservative USEPA default exposure scenario for drinking water consumption and exposure, is 4,000 µg/L. This concentration is based on a hazard quotient (HQ) of 1.0. USEPA has determined that a HQ of 1.0 or less is protective of human health when considering non-carcinogenic acute and chronic risks.

The Virginia Solid Waste Permit GPS for boron of 250 µg/L is not a risk-based concentration but is rather based on a laboratory quantitation limit (QL) concentration that is not reflective of actual risk as described above. The highest concentrations of boron at the East Pond have been detected at MW-20S and MW-20D, with a maximum concentration of 3,000 µg/L (June 2018), below the risk-based RSL value.

Evaluation of boron concentrations with the DEQ Virginia Unified Risk Assessment Model (VURAM) indicates that the calculated HQ for boron based on the maximum historical concentration observed at the East Pond (3,000 µg/L at MW-20S, June 2018) is 0.452 for an adult and 0.751 for a child. Both of these HQs are less than the USEPA target HQ of 1.0 for the protection of drinking water. The DEQ VURAM model is based on the same risk-based algorithms used by the USEPA to establish the RSLs. As described above, concentration of boron detected at the East Pond generally appear to be declining compared to maximum concentrations detected during 2018 monitoring

events, and the current maximum concentration of boron at the East Pond is 2,400 µg/L (MW-20S), well below the risk-based RSL of 4,000 µg/L. Furthermore, for risk to exist, three components must be present:

- Receptor(s), generally classified as either human or ecological;
- Pathway(s), or route(s) by which exposure occurs (*i.e.,* ingestion or dermal exposure to an impacted medium such as groundwater or surface water); and
- Constituent(s) of concern from which non-carcinogenic or carcinogenic risk may develop for a receptor following exposure.

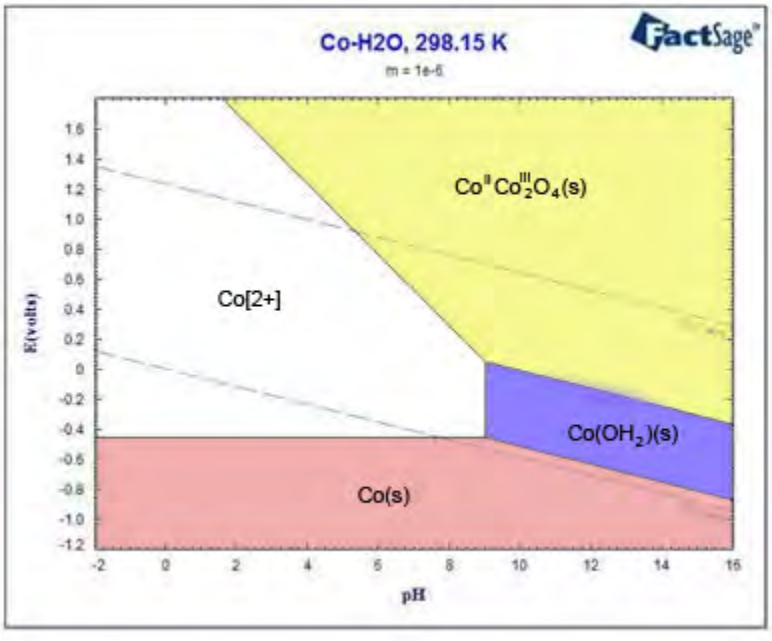
Boron is not detected in the James River above the MDL (*i.e.*, <63 µg/L), where groundwater exchange is ultimately expected to occur and where there is potential public access, therefore risk is not present with respect to surface water exposure due to the absence of the constituent of concern. Groundwater in the vicinity of the East Pond (and on the railroad property to the south) is not used as a potable water source and therefore the exposure pathway is incomplete and risk does not exist with respect to exposure to boron in groundwater. Therefore, it is concluded that no unacceptable risks exist for boron at the East Pond based on the USEPA's conservative drinking water exposure scenario assumptions.

4.2 Cobalt

4.2.1 Nature of Cobalt

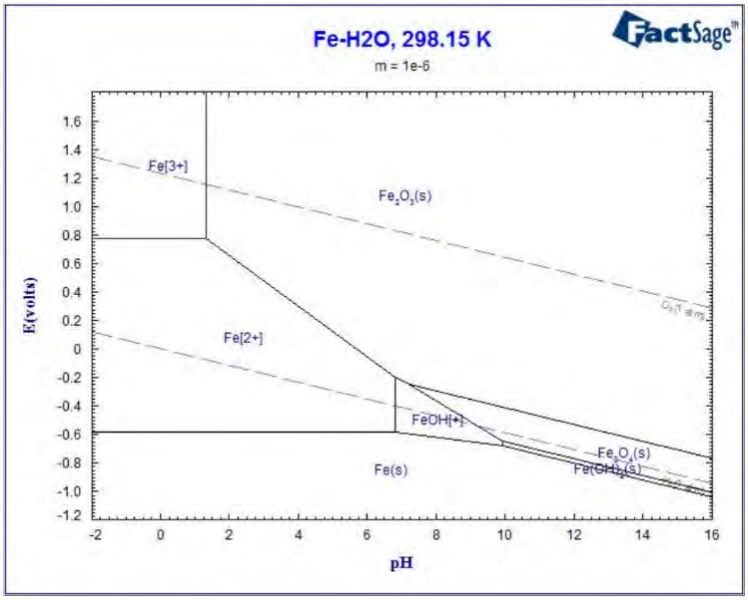
Cobalt is a naturally occurring metal found in soil and rock and is commonly associated with minerals and ores that contain copper and nickel. In addition to industrial uses, the Agency for Toxic Substances and Disease Registry (ATSDR) notes in the public health statement for cobalt that cobalt is an essential vitamin for plant and animal nutrient uptake. For most humans, food is the largest source of cobalt intake. Cobalt is a part of essential vitamin B_{12} (found in meat and dairy products) which is needed to maintain human health. The average person consumes approximately 11 micrograms of cobalt a day in their diet (ATSDR, April 2004).

The transport of metals, like cobalt, in groundwater is influenced by the interaction of several factors including complexation reactions in water, redox-related processes, pH, adsorption, and precipitation. Mineral surfaces generally strongly adsorb metal ions, although this adsorption is highly dependent upon the mineral assemblage of the soil and the composition of the groundwater. The transport of metals in groundwater can increase when metals are complexed with binding ligands, either naturally present or introduced as contamination (Herbert *et al*., 1993).



As illustrated in the inset Eh-pH diagram from FactSage™ for cobalt, under natural groundwater and surface water conditions found in Virginia (*i.e.,* pH of 4 to 9 Standard Units and Eh of -0.1 to 0.4 volts), cobalt is typically found almost exclusively in its divalent free ionic form in the natural environment. However, cobalt (and other

divalent metals) is known to strongly absorb to iron oxyhydroxide minerals that are naturally present in sedimentary aquifers, such as the alluvium and saprolite aquifers observed in the vicinity of the East Pond. As illustrated in the inset Eh-pH diagram from FactSage™ for iron, groundwater in central Virginia typically falls near the Ferrous and Ferric iron transition boundary. As such, even *de minimis* changes in groundwater quality (pH and Eh) associated with land-use changes or other activities can result in the dissolution (and corresponding release of absorbed cations) or precipitation (and corresponding absorption of divalent cations) of iron oxyhydroxide minerals. As described in Section 1.0, the East Pond underwent significant disturbance during removal of CCR materials (initiated around March 2017) and subsequent reconstruction of the pond (substantially complete in November 2019).



A historical background study of naturally occurring cobalt in Virginia soils found concentrations in the Piedmont physiographic region ranging from below detection (*i.e.,* less than 3 mg/kg) up to 30 mg/kg (Shacklette *et al*., 1984). More recently, an average cobalt concentration in soils in Virginia of 9.9 mg/kg with a standard deviation of 11.6 mg/kg (Smith *et al*., 2013) was established. Using standard soil-water partitioning calculations and published concentrations of cobalt in soil for Virginia, expected groundwater concentrations of cobalt were estimated using the following relationship between soil and water concentrations:

$$K_d(L/kg) = {[Concentration\ in\ Soil\ (mg/kg)]}/{[Concentration\ in\ Water\ (mg/L)]}$$

Where K_d is the soil-water partitioning coefficient for cobalt (37.15 L/kg; Buchter *et al.,* 1989). Using the using the upper and lower confidence limit concentrations of the Virginia soil data presented above (*i.e.*, 8.6 to 11.2 mg/kg), the predicted concentrations of cobalt in groundwater range from approximately 231 µg/L to 301 µg/L. These results suggest that even a relatively low concentration of cobalt in native soil at the East Pond, given the observed groundwater geochemistry and recent land-disturbing activities, could produce the observed cobalt groundwater concentrations. Therefore, it is probable that the cobalt detected in groundwater at the East Pond is associated with a natural geologic source.

4.2.2 Estimated Cobalt Migration Rate

To assist with understanding the fate and transport characteristics of the constituents of concern, Golder evaluated the expected groundwater retardation coefficients for the constituents of concern in the alluvial and saprolitic aquifer matrix materials using publicly available data and the following formula.

$$R = 1 + \frac{pKd}{ne} = \frac{(Velocity\ of\ Groundwater)}{(Velocity\ of\ Contaminant)}$$

Where: R = Retardation Coefficient

p = media bulk density (kilograms per liter [kg/L])
K_d = Soil-Water partitioning coefficient (liters per kilogram [L/kg])
ne = effective porosity (unitless)

The results of the evaluation are summarized in the following table.

Constituent of Concern	K_d (L/kg) with Data Source	Bulk Density (kg/L)	Effective Porosity (unitless)	Retardation Coefficient (unitless)	Fraction of Groundwater Velocity
Cobalt (divalent cation)	37.15 (1)	2.6	0.2	484.0	<1%

Note: Soil-water partitioning coefficients (K_d) estimated based on groundwater pH of 6 to 7.5 standard units and redox potential of 0 to 100 millivolts.

Data Sources:

1. Buchter, B., B. Davidoff, M.C. Amacher, C. Hinz, I.K. Iskandar, and H.M. Selim. 1989. Correlation of Freundlich Kd and n_e Retention Parameters with Soils and Elements. *Soil Science*. Vol. 148, No. 5. November.

As presented, cobalt is expected to migrate as a divalent cation at a rate of less than 1% of the groundwater flow velocity. These results indicate that natural sorption processes are expected to significantly retard the constituent of concern migration rates relative to the advective groundwater flow rate.

4.2.3 Extent of Cobalt

A summary of the recent historical detections of cobalt in groundwater samples from the vicinity of the East Pond is presented in Table 4. Cobalt was detected at concentrations in exceedance of the federal CCR Rule GWPS and Virginia Solid Waste Permit GPS of 7.83 µg/L for groundwater in samples collected from compliance wells MW-20S, MW-21, and MW-22 in March 2020, consistent with recent historical results. These wells are located from northwest to southeast along the downgradient berm of the East Pond. An evaluation of regional soil data, described above, suggests that some of the cobalt detected in groundwater in the vicinity of the East Pond may be attributed to a geological source, particularly given the recent and extensive earth-disturbing activities associated with removal of CCR materials from the East Pond.

As presented in Figure 6, the inferred horizontal extent of cobalt (delineated to the Virginia Solid Waste Permit GPS and CCR Rule GWPS) was interpolated based on data from East Pond compliance and observation wells, recent North Pond monitoring well results immediately upgradient of the East Pond (Table 7, following), and surface water monitoring results. As previously described, cobalt was not detected in surface water downgradient of the East Pond, where groundwater flowing southwest across the Station is expected to exchange with surface water consistent with the upward vertical gradient calculated at MW-20S/MW-20D. However, as illustrated in Figure 6, cobalt was detected at concentrations along the downgradient property line which suggest that exceedances of the Virginia Solid Waste Permit GPS and CCR Rule GWPS in groundwater likely extend offsite onto the adjacent railroad property to the south. As discussed in the following section, this potential offsite migration is unlikely to pose an unacceptable risk to potential receptors, as the exposure pathway is incomplete.

Table 7: North Pond Cobalt Reference Data – March 2020

Monitoring Well	MW-24	MW-25S	MW-25D	MW-33	MW-34	MW-35
Cobalt Concentration (µg/L)	12.1 (16.1)	1.3	0.82	0.13	<0.050	0.42

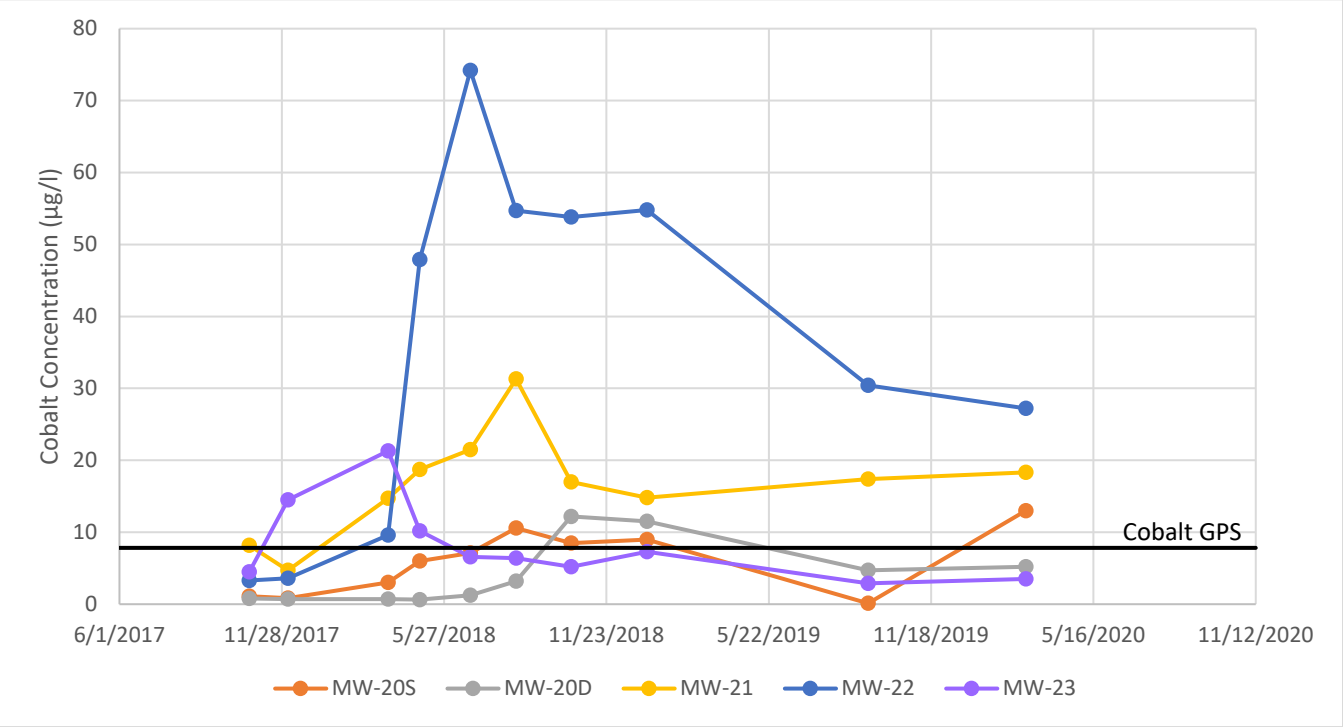
Note: Data in parentheses was collected in April 2020 as part of a verification sampling event.

Hydrogeologic cross-sections A-A' and B-B', showing subsurface hydrogeologic conditions approximately parallel to groundwater flow direction (southwest) in the vicinity of the East Pond, along with cobalt monitoring data, are presented in Figure 10. Additionally, cross section C-C' in Figure 10 shows hydrogeologic conditions approximately perpendicular to groundwater flow along the East Pond berm. The inferred vertical extent of cobalt in the vicinity of the East Pond is delineated by MW-20D and MW-22D, and the absence of cobalt in downgradient surface water monitoring results downgradient of impacted wells.

Based on interpolated contouring developed from surface water and groundwater data, vertical gradients, and the low (<1% of groundwater flow velocity) estimated cobalt migration rate in groundwater, the cobalt concentrations exceeding the federal CCR Rule GWPS / Virginia Solid Waste Permit GPS in groundwater are believed to be localized to the immediate vicinity of the East Pond berm, and are unlikely to extend significantly beyond the boundary of the former ash pond. This interpretation is consistent with the Site Conceptual Model which indicates that the James River is a receiving stream system such that the vertical flow of groundwater within the aquifer beneath the river is upward, thus limiting the potential for additional lateral (trans river) migration or vertical (downward) migration of the cobalt ion.

Additionally, cobalt concentrations at impacted wells in the East Pond area have generally been observed to decrease since maximum concentrations were reported during 2018 monitoring events, with the exception of MW-20S, which reported a new maximum cobalt concentration in March 2020 (13 µg/L) marginally higher than the previous maximum concentration reported in August 2018 (10.6 µg/L). Timeseries of cobalt data at East Pond area wells with current or historical Virginia Solid Waste Permit GPS exceedances are depicted in Chart 8 following. The observed trends likely reflect the variable geochemical conditions in the aquifer resulting from a combination of Station actions, including the removal of the CCR Materials from the East Pond, the conversion of the former East Pond to a stormwater management system, and on-going remedial actions associated with the North Pond, including installation of a rain cover and active CCR material dewatering. These variable conditions likely resulted in the dissolution of iron oxyhydroxide minerals and the release of the relatively immobile divalent cobalt ion to the groundwater. Based on the recent conversion of the East Pond to a stormwater management basin, it is expected that geochemical conditions favorable for formation of iron oxyhydroxide minerals will re-establish resulting in the removal of dissolved cobalt ions from the groundwater via mineral sorption processes.

Chart 8: Cobalt Concentration Timeseries at East Pond Downgradient Monitoring Wells



4.2.4 Cobalt Risk Assessment

Animal studies for acute doses of cobalt have shown extreme toxicity from inhalation exposure and moderate to high toxicity from oral exposure (ATSDR, 2004). Lower-level chronic exposure of cobalt in animals via food and drinking water resulted in effects on the heart, liver, kidneys, blood, and testes, as wells as effects on behavior. Sores were seen on the skin of guinea pigs following extended skin contact (ATSDR, 2004). Non-radioactive cobalt has not been found to cause cancer in humans or in animals following exposure in food or water (ATSDR, 2004). However, cancer has been shown in animals who breathed cobalt; based on animal data cobalt is possibly carcinogenic to humans (ATSDR, 2004).

An evaluation of cobalt concentrations with the DEQ VURAM indicates that the both the historical maximum concentration of cobalt detected in groundwater at the East Pond (74.2 µg/L, MW-22, May 2018), and the current maximum concentration as of March 2020 (27.2 µg/L, MW-22), result in exceedances of the default hazard index of 1 for both children and adults with respect to ingestion of groundwater, indicating potential non-cancer risk.

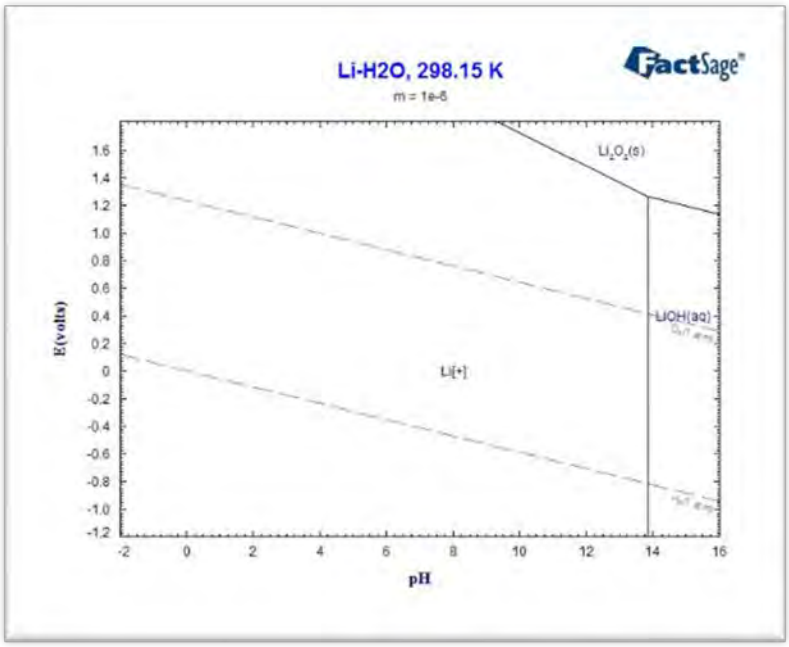
However, as previously discussed, the Station is a private industrial property (as is the railroad property between the East Pond and the James River) with restricted access to the public, and groundwater at the Station and at the railroad property to the south is not used as a potable water source. Therefore, complete exposure pathway(s) for cobalt in groundwater do not exist at the East Pond or immediate downgradient property, indicating that no risk is present. Furthermore, although the James River is nominally publicly accessible, cobalt was not detected above the MDL (*i.e.*, <0.2 µg/L) in the James River, indicating that the constituent of concern is not present at the reported MDL, and therefore risk is not present for this medium. Therefore, it is concluded that unacceptable risks do not exist for cobalt in groundwater at the East Pond.

4.3 Lithium

4.3.1 Nature of Lithium

Lithium is an alkali metal found naturally in the Earth's crust. Lithium in nature occurs predominantly in silicate minerals, and is a common accessory element in feldspar, biotite mica, amphibole, and clay minerals (Reeder, 2006). The abundance of lithium in soil can vary considerably; lithium content of a soil is influenced more by the conditions under which the soil was formed than by the content of the original parent rock (Yalamanchali, 2012). Lithium is used in batteries, glass and ceramic production, in lubricants used in high-temperature environments, and in pharmaceuticals (Yalamanchali, 2012).

As illustrated in the inset Eh-pH diagram from FactSage™ under natural groundwater and surface water conditions (pH of 4 to 9 Standard Units and Eh of -0.1 to 0.4 volts) found in central Virginia, lithium is found almost exclusively in its univalent free ionic form in the natural environment. When not dissolved in the water column, it is considered relatively immobile because its fluoride, carbonate, and phosphate compounds (*i.e.*, minerals) generally have low solubilities. Chemical and physical weathering of these minerals from igneous rocks and from secondary clay minerals, especially at low pH levels (Lyons and Welsh, 1997) will release the lithium ion into solution. As a result, lithium is found naturally occurring in groundwater (VDH, 2011).



Lithium is included as an Appendix IV constituent in 40 CFR Part 257 because it has historically been detected at CCR disposal sites at concentrations exceeding the USEPA's RSL for soil to groundwater, and because lithium has the potential to be toxic if consumed with certain drug types (USEPA, 2015).

A historical background study of naturally occurring lithium in Virginia soils found concentrations ranging from 6 to 100 mg/kg, with concentrations in the Piedmont physiographic region ranging from 6 up to 20 mg/kg (Shacklette *et al*., 1984). More recently (Smith *et al*., 2013) a Virginia background concentration of 23.9 mg/kg with a standard deviation of 18 mg/kg was established. This is higher than the range of concentrations (0.99 to 5.6 mg/kg) reported in a limited set of site-specific soil samples collected in the vicinity of the North Pond (*i.e.,* immediately upgradient of the East Pond) in 2018 (Golder, 2019). Using standard soil-water partitioning calculations and concentrations of lithium in site soil, expected groundwater concentrations of lithium were estimated using the following relationship between soil and water concentrations:

$$K_d(L/kg) = [Concentration\ in\ Soil\ (mg/kg)] \Big/ [Concentration\ in\ Water\ (mg/L)]$$

Where K_d is the soil-water partitioning coefficient for lithium (1.25 L/kg; Yalamanchali, 2012). Using the site-specific soil data presented above (*i.e.*, detected concentrations ranging from 0.99 to 5.6 mg/kg), the predicted concentrations of lithium in groundwater range from approximately 792 µg/L to 4,480 µg/L. An average soil

concentration of 0.41 mg/kg would provide a sufficient natural source for the observed groundwater concentrations at the site. Based on these results, the lithium detected in the impacted wells may in part be associated with a natural geologic source.

4.3.2 Estimated Lithium Migration Rate

To assist with understanding the fate and transport characteristics of the constituents of concern, Golder evaluated the expected groundwater retardation coefficients for the constituents of concern in the alluvial and saprolitic aquifer matrix materials using publicly available data and the following formula.

$$R = 1 + \frac{pKd}{ne} = \frac{(Velocity\ of\ Groundwater)}{(Velocity\ of\ Contaminant)}$$

Where:
R = Retardation Coefficient
p = media bulk density (kilograms per liter [kg/L])
K_d = Soil-Water partitioning coefficient (liters per kilogram [L/kg])
ne = effective porosity (unitless)

The results of the evaluation are summarized in the following table.

Constituent of Concern	K_d (L/kg) with Data Source	Bulk Density (kg/L)	Effective Porosity (unitless)	Retardation Coefficient (unitless)	Fraction of Groundwater Velocity
Lithium (univalent cation)	1.25 (1)	2.6	0.2	17.3	5.8%

Note: Soil-water partitioning coefficients (K_d) estimated based on groundwater pH of 6 to 7.5 standard units and redox potential of 0 to 100 millivolts.

Data Sources:

1. Yalamanchali, R.C.. 2012. *Lithium, an emerging environmental contaminant, is mobile in the soil-plant system*. Masters Thesis. Lincoln University.

As presented, lithium is expected to migrate as a univalent cation at approximately 6% of the groundwater flow velocity. These results indicate that natural sorption processes are expected to significantly retard the constituent of concern migration rates relative to the advective groundwater flow rate.

4.3.3 Extent of Lithium

A summary of the recent historical detections of lithium in groundwater samples from the vicinity of the East Pond is presented in Table 4. Lithium was detected at concentrations in exceedance of the federal CCR Rule GWPS (40 µg/L) and Virginia Solid Waste Permit GPS (25 µg/L) in groundwater samples collected from compliance wells MW-20S (330 µg/L) and MW-20D (121 µg/L) in March 2020, consistent with recent historical monitoring results. Lithium is typically detected at concentrations well below the Virginia Solid Waste Permit GPS and federal CCR Rule GWPS at the remaining East Pond wells.

As presented in Figure 7, the inferred horizontal extent of lithium (delineated to the federal CCR Rule GWPS and Virginia Solid Waste Permit GPS) was interpolated based on data from East Pond compliance and observation wells, downgradient surface monitoring results, and recent North Pond monitoring well results immediately upgradient of the East Pond (Table 8, following). As previously described, lithium was not detected in surface water

downgradient of the East Pond (where groundwater is ultimately expected to discharge). However, as illustrated in Figure 7, lithium was detected at concentrations along the downgradient property line which suggests that exceedances of the Virginia Solid Waste Permit GPS and federal CCR Rule GWPS in groundwater likely extend offsite onto the adjacent railroad property to the south. As discussed in the following section, this potential offsite migration is unlikely to pose an unacceptable risk to potential receptors, as the exposure pathway is incomplete.

Table 8: North Pond Lithium Reference Data – March 2020

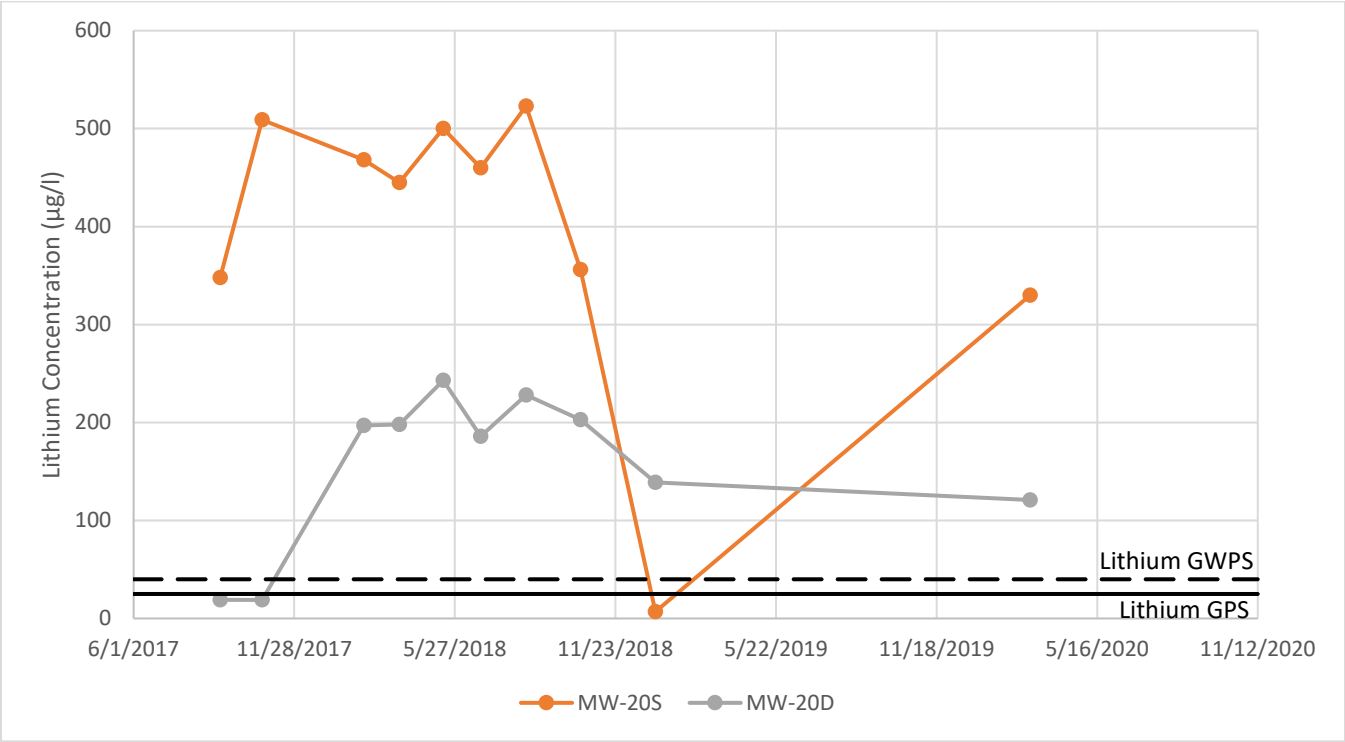
Monitoring Well	MW-24	MW-25S	MW-25D	MW-33	MW-34	MW-35
Lithium Concentration (µg/L)	2.1 J	<0.42	3.0	5.5	7.5	22.2

Hydrogeologic cross-sections A-A' and B-B', showing subsurface hydrogeologic conditions approximately parallel to groundwater flow direction (southwest) in the vicinity of the East Pond are presented in Figure 11. Additionally, cross-section C-C' in Figure 11 shows hydrogeologic conditions approximately perpendicular to groundwater flow along the East Pond berm. The inferred vertical extent of lithium (delineated to the Virginia Solid Waste Permit GPS and federal CCR Rule GWPS) was interpolated with data from East Pond compliance and observation wells, surface water monitoring results, and vertical gradient estimates, which suggest an upward flow component in the vicinity of MW-20S/MW-20D.

Based on interpolated contouring developed from surface water and groundwater concentrations, vertical gradients, and the relatively low estimated migration rate of lithium in groundwater (5.8% of groundwater flow velocity), the approximate extent of the Virginia Solid Waste Permit GPS and federal CCR Rule GWPS exceeding lithium concentrations in groundwater was delineated horizontally and vertically. Lithium impacts are believed to be localized to the immediate vicinity of MW-20S/MW-20D as shown on Figures 7 and 11. This interpretation is consistent with the Site Conceptual Model which indicates that the James River is a receiving stream system such that the vertical flow of groundwater within the aquifer beneath the river is upward, thus limiting the potential for additional lateral (trans river) migration or vertical (downward) migration of the lithium cation.

Additionally, lithium concentrations at these two wells have been decreasing since maximum concentrations of 523 µg/L (MW-20S) and 243 µg/L (MW-20D) were reported in 2018 during excavation activities, as depicted in Chart 9 (following). Excluding the more recent anonymous result from MW-20S, these trends likely reflects a combination of Station actions, including the removal of the CCR Materials from the East Pond, the conversion of the former East Pond to a stormwater management system, and on-going remedial actions associated with the North Pond, including installation of a rain cover and active CCR material dewatering.

Chart 9: Lithium Concentration Timeseries at MW-20S and MW-20D



4.3.4 Lithium Risk Assessment

Lithium is routinely used as a drug for the treatment of clinical depression, and at low levels causes no serious health effects (VDH, 2011). Excessive levels of lithium (as measured in blood serum) may result in toxic responses impacting the neuromuscular system, central nervous system, cardiovascular system, gastrointestinal system, and renal system, and may ultimately be fatal (VDH, 2011).

An evaluation of lithium concentrations with the DEQ VURAM indicates that the both the historical maximum concentration of lithium detected in groundwater at the East Pond (523 µg/L, MW-20S, August 2018), and the current maximum concentration as of March 2020 (330 µg/L, MW-20S), result in exceedances of the default hazard index of 1 for both children and adults with respect to ingestion of groundwater, indicating potential non-cancer risk.

However, as discussed previously, the Station is a private industrial property (as is the railroad property between the East Pond and the James River) with restricted access to the public, and groundwater at the Station and at the railroad property to the south is not used as a potable water source. Therefore, complete exposure pathway(s) for lithium in groundwater do not exist at the East Pond or immediate downgradient property, indicating that no risk is present. Furthermore, although the James River is nominally publicly accessible, lithium was not detected in surface water and therefore risk is not present for this medium. Thus, it is concluded that unacceptable risks do not exist for lithium in groundwater at the East Pond.

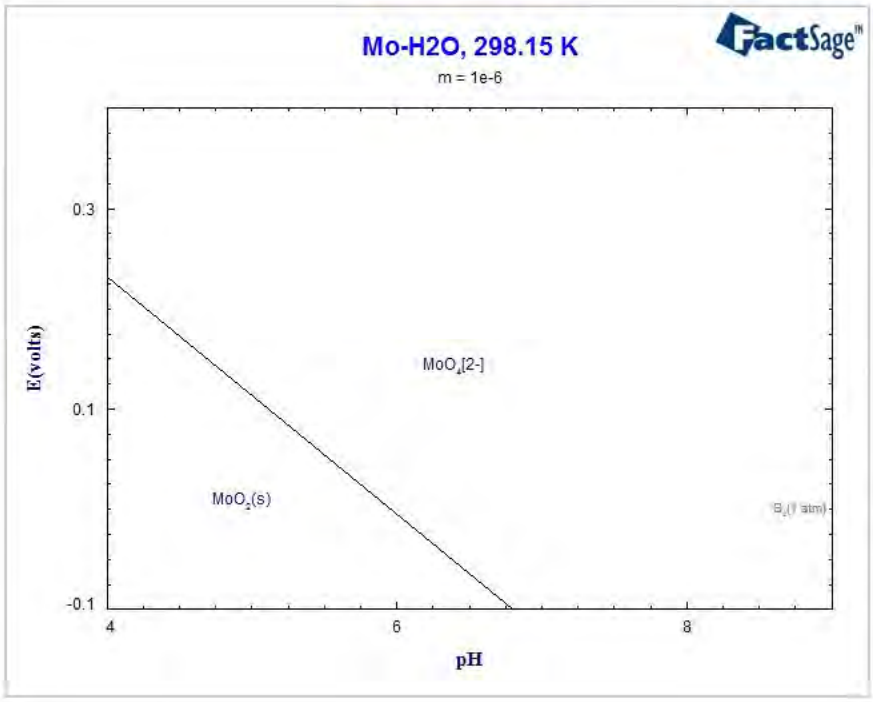
4.4 Molybdenum

4.4.1 Nature of Molybdenum

Molybdenum is included as an Appendix IV constituent in 40 CFR Part 257 as historically it has been detected at CCR disposal sites and is relevant to risk assessment and damage cases (USEPA, 2015). Molybdenum is a naturally occurring metal found in the Earth's crust. It is found in minerals, rocks and soils as well as in aqueous

form, however it does not occur naturally as a free metal. Estimates of crustal abundance have been put at around 0.6 - 1.5 mg/kg (Hu, *et al.*, 2008; Taylor, 1964). Within Virginia the USGS reported an average molybdenum concentration in Virginia soils (based on 16 samples) of less than 3 mg/kg (Shacklette, 1984). More recent studies (Smith *et al.*, 2013) identified a mean concentration of 1.03 mg/kg for soils in Virginia based on analysis of 132 samples. Overall, this is consistent with the limited evaluation of site soils adjacent to North Pond at the Station (*i.e.,* immediately upgradient of the East Pond), where concentrations of molybdenum ranged from below the MDL (<0.12 mg/kg) to 0.76 mg/kg (Golder, 2019).

Molybdenum is released into soil and water as a result of industrial activity and natural environmental conditions due to anthropogenic and geologic sources. Contamination of water through geologic sources includes degradation of organic matter and natural weathering processes. Anthropogenic sources of molybdenum include impacts from metal sulfide mining, the combustion of fossil fuels, and discharges from industrial operations (Smedley, *et al.*, 2017)



As illustrated in the inset Eh-pH diagram from FactSage™ (Bale *et al.*, 2016) under natural groundwater and surface water conditions (pH of 4 to 9 Standard Units and Eh of -0.1 to 0.4 volts) found in central Virginia, molybdenum is found almost exclusively as the stable molybdate ion in the natural environment. Molybdenum is a redox-sensitive element that forms highly insoluble minerals under certain reducing conditions. Under most oxidizing conditions (typical pH greater than 6), the molybdate ion is expected to be the dominant solution species (Smedley, *et al.*, 2017). Molybdate transport in groundwater is retarded by sorption, depending on the pH, adsorbent contents (including clay, iron, aluminum oxides, iron sulfide, manganese oxides, and organic matter) of soils, and the influence of the competitive adsorption of other anions (Xu, *et al.*, 2013).

Using standard soil-water partitioning calculations and detected concentrations of molybdenum in site soil, expected groundwater concentrations of molybdenum were estimated using the following relationship between soil and water concentrations:

$$K_d(L/kg) = {[Concentration\ in\ Soil\ (mg/kg)]}/{[Concentration\ in\ Water\ (mg/L)]}$$

Where K_d is the soil-water partitioning coefficient for molybdenum (64.42 L/kg; Buchter, *et al.,* 1989). Using the site-specific soil data presented above (*i.e.*, detected concentrations ranging from 0.16 J to 0.76 mg/kg), the predicted concentrations of molybdenum in groundwater range from approximately 2.5 µg/L to 12 µg/L. These results suggest that some of the molybdenum detected in the impacted wells may in part be associated with a natural geologic source. However, molybdenum has either not been detected or detected at concentrations below

the Virginia Solid Waste Permit GPS and federal CCR Rule GWPS at upgradient wells (MW-11, MW-29S, and MW-29D) during recent monitoring events. Furthermore, concentrations of molybdenum observed at MW-20S and MW-20D are significantly elevated compared to other East Pond wells, and are generally similar in magnitude to molybdenum concentrations reported for pumping wells (SDW-4, SDW-7) installed within CCR material at the North Pond (Golder, 2019). Molybdenum concentrations at these North Pond pumping wells ranged from 103 µg/L to 140 µg/L in January 2019, compared to current concentrations of boron at MW-20S (330 µg/L) and MW-20D (121 µg/L). Although source area samples from the East Pond could not be collected (because the CCR materials were excavated prior to the NES), comparison to North Pond source area pumping wells suggests that groundwater at MW-20S and MW-20D is impacted by molybdenum that has been leached from CCR materials.

4.4.2 Estimated Molybdenum Migration Rate

To assist with understanding the fate and transport characteristics of the constituents of concern, Golder evaluated the expected groundwater retardation coefficients for the constituents of concern in the alluvial and saprolitic aquifer matrix materials using publicly available data and the following formula.

$$R = 1 + \frac{pKd}{ne} = \frac{(Velocity\ of\ Groundwater)}{(Velocity\ of\ Contaminant)}$$

Where:
R = Retardation Coefficient
p = media bulk density (kilograms per liter [kg/L])
K_d = Soil-Water partitioning coefficient (liters per kilogram [L/kg])
ne = effective porosity (unitless)

The results of the evaluation are summarized in the following table.

Constituent of Concern	K_d (L/kg) with Data Source	Bulk Density (kg/L)	Effective Porosity (unitless)	Retardation Coefficient (unitless)	Fraction of Groundwater Velocity
Molybdenum (oxyanion)	64.42 (1)	2.6	0.2	838.4	<1%

Note: Soil-water partitioning coefficients (K_d) estimated based on groundwater pH of 6 to 7.5 standard units and redox potential of 0 to 100 millivolts.

Data Sources:

1. Buchter, B., B. Davidoff, M.C. Amacher, C. Hinz, I.K. Iskandar, and H.M. Selim. 1989. Correlation of Freundlich Kd and n_e Retention Parameters with Soils and Elements. *Soil Science*. Vol. 148, No. 5. November.

As presented, molybdenum is expected to migrate as an oxyanion at a rate of less than 1% of the groundwater flow velocity. These results indicate that natural sorption processes are expected to significantly retard the constituent of concern migration rates relative to the advective groundwater flow rate.

4.4.3 Extent of Molybdenum

A summary of the recent historical detections of molybdenum in groundwater samples from the vicinity of the East Pond is presented in Table 4. Molybdenum was detected at concentrations in exceedance of both the federal CCR Rule GWPS (100 µg/L) and Virginia Solid Waste Permit GPS (16.4 µg/L) for groundwater in samples collected from compliance wells MW-20S (137 µg/L) and MW-20D (114 µg/L) in March 2020, consistent with recent historical

monitoring results. Molybdenum is typically not detected or detected at concentrations well below the GPS and GWPS at the remaining East Pond wells.

As presented in Figure 8, the inferred horizontal extent of molybdenum (delineated to the federal CCR Rule GWPS and the Virginia Solid Waste Permit GPS) is based on interpolation and extrapolation of data from East Pond compliance and observation wells, downgradient surface water monitoring results, and recent North Pond monitoring well results immediately upgradient of the East Pond (Table 9, following). As previously described, molybdenum was not detected in surface water downgradient of the East Pond (where groundwater is ultimately expected to discharge). However, as illustrated in Figure 8, molybdenum was detected at concentrations along the downgradient property line which suggest that exceedances of the Virginia Solid Waste Permit GPS in groundwater likely extend offsite onto the adjacent railroad property to the south. As discussed in the following section, this potential offsite migration is unlikely to pose an unacceptable risk to potential receptors, as the exposure pathway is incomplete.

Table 9: North Pond Molybdenum Reference Data – March 2020

Monitoring Well	MW-24	MW-25S	MW-25D	MW-33	MW-34	MW-35
Molybdenum Concentration (µg/L)	3.6 J	2.4 J	5.8	6.2	1.0 J	1.7 J

As shown in Table 9 and Figure 8, although molybdenum Virginia Solid Waste Permit GPS and federal CCR Rule GWPS exceedances are not reported for North Pond wells immediately upgradient of the East Pond or at MW-40 located within the East Pond, the historical North Pond source area molybdenum results and the geochemical signature evaluation described in Section 3.4, suggest a likely source water impact at MW-20S and MW-20D related to North Pond CCR materials and/or the former East Pond CCR material that has been removed. As previously described, the locally elevated results at MW-20S and MW-20D compared to other downgradient East Pond wells may indicate that, consistent with the linear feature analysis presented in Section 3.1, northeast-southwest trending fractures intersected by these wells are providing a preferential pathway for groundwater flow from the North Pond area. While not expected based on geochemical modeling, lateral migration of molybdenum within the aquifer matrix could be expected in a fractured medium if geochemical conditions conducive for dissolution of iron oxyhydroxide minerals are present.

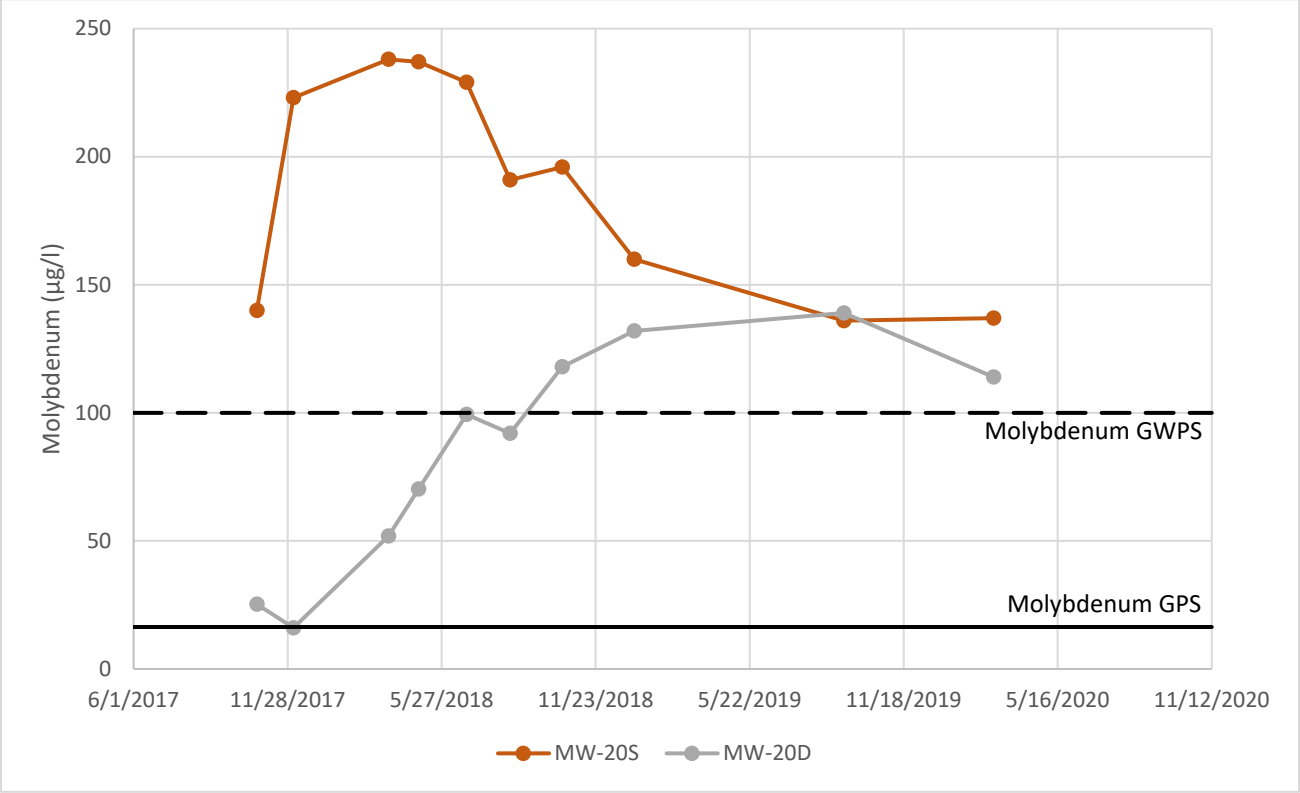
Hydrogeologic cross-sections A-A' and B-B', showing subsurface hydrogeologic conditions approximately parallel to groundwater flow direction (southwest) in the vicinity of the East Pond are presented in Figure 12. Additionally, cross-section C-C' in Figure 12 shows hydrogeologic conditions approximately perpendicular to groundwater flow along the East Pond berm. The inferred vertical extent of molybdenum (delineated to the Virginia Solid Waste Permit GPS and federal CCR Rule GWPS) is based on interpolation and extrapolation of data from East Pond compliance wells and observation wells, surface water monitoring results, vertical gradient estimates indicating an upward flow component in the vicinity of MW-20S/MW-20D, and geochemical modeling results that indicate the molybdenum would be attenuated over a relatively short distance.

Based on interpolated contouring developed surface water and groundwater concentrations, vertical gradients, and the low (<1% of groundwater flow velocity under non-turbulent flow conditions) estimated molybdenum migration rate in groundwater, the approximately extent of the Virginia Solid Waste Permit GPS and federal CCR Rule GWPS exceeding concentrations for molybdenum in groundwater is delineated horizontally and vertically. Molybdenum impacts are believed to be localized to the immediate vicinity of MW-20S/MW-20D as shown on Figures 8 and 12.

This interpretation is consistent with the Site Conceptual Model which indicates that the James River is a receiving stream system such that the vertical flow of groundwater within the aquifer beneath the river is upward, thus limiting the potential for additional lateral (trans river) migration or vertical (downward) migration of the molybdenum cation. While some of the molybdenum detected in groundwater at MW-20S and MW-20D may be related to a natural source, geochemical considerations indicate that there may be an additional source associated with the CCR material that was formerly in the East Pond or the CCR material that is currently in the North Pond.

Overall, molybdenum concentrations at MW-20S have been declining since a maximum concentration of 238 µg/L was reported in March 2018. Similarly, concentrations of molybdenum at MW-20D appear to have plateaued in 2019 and have begun to decrease in 2020. Chart 10 (following) depicts concentrations of molybdenum at MW-20S and MW-20D since sampling for CCR Appendix IV constituents was initiated in 2017. These trends likely reflect a combination of Station actions, including the removal of the CCR Materials from the East Pond, the conversion of the former East Pond to a stormwater management system, and on-going remedial actions associated with the North Pond, including installation of a rain cover and active CCR material dewatering.

Chart 10: Molybdenum Concentration Timeseries at MW-20S and MW-20D



4.4.4 Molybdenum Risk Assessment

Acute molybdenum toxicity is rare, but it can occur with industrial mining and metalworking exposure (USEPA, 1979). The most sensitive effects appear to be respiratory effects following inhalation exposure, and decreases in body weight, gout-like symptoms, kidney damage, decreases in sperm count, and anemia following oral exposure (ATSDR, 2020).

An evaluation of molybdenum concentrations with the DEQ VURAM indicates that the both the historical maximum concentration of molybdenum detected in groundwater at the East Pond (238 µg/L, MW-20S, February 2018) result

in exceedances of the default hazard index of 1 for both children and adults with respect to ingestion of groundwater. Using the current maximum concentration as of March 2020 (137 µg/L, MW-20S), the calculated index for adults (0.826) is less than the default hazard index of 1; however, the calculated index for children (1.37) exceeds 1, indicating potential non-cancer risk based on current groundwater concentrations.

However, as discussed previously, the Station is a private industrial property (as is the railroad property between the East Pond and the James River) with restricted access to the public, and groundwater at the East Pond and at the railroad property to the south is not used as a potable water source. Therefore, complete exposure pathway(s) for molybdenum in groundwater do not exist at the East Pond or immediate downgradient property, indicating that no risk is present. Furthermore, although the James River is nominally publicly accessible, molybdenum was not detected above the MDL (*i.e.*, ranging from <0.39 to <0.50 µg/L) in the James River, indicating that the constituent of concern is not present at a concentration in excess of the MDL, and therefore risk is not present for this medium. Therefore, it is concluded that unacceptable risks do not exist for molybdenum in groundwater at the East Pond.

5.0 CONCLUSIONS

The NES delineated the inferred vertical and horizontal extents of boron concentrations in groundwater which exceed the Virginia GPS (250 µg/L), cobalt concentrations in groundwater which exceed the Virginia GPS and federal CCR Rule GWPS (7.83 µg/L), lithium concentrations in groundwater which exceed the Virginia Solid Waste Permit GPS (25 µg/L) and federal CCR Rule GWPS (40 µg/L), and molybdenum concentrations in groundwater which exceed the Virginia Solid Waste Permit GPS (16.4 µg/L) and federal CCR Rule GWPS (100 µg/L).

Potential natural geological soil sources for the constituents of concern were identified based on limited historical soil sampling conducted in the vicinity of the East Pond, and published data collected in Virginia. However, the groundwater concentrations predicted based on these soil results for molybdenum are not sufficient to explain the observed molybdenum groundwater concentrations at MW-20S and MW-20D based on predicted fractionation calculations. This finding suggests an additional molybdenum source.

Based on the information evaluated during this study, the inferred extent of the federal CCR Rule GWPS and Virginia Solid Waste Permit GPS exceeding lithium concentrations in groundwater is believed to be localized around the two compliance monitoring wells, MW-20S and MW-20D, which were the only groundwater monitoring locations at the East Pond with lithium federal CCR Rule GWPS and Virginia Solid Waste Permit GPS exceedances. Lithium concentrations at the remaining East Pond area wells ranged from an estimated concentration of 1.3 µg/L to 6.7 µg/L. The lithium concentrations observed at MW-20S and MW-20D are thought to be related to a natural geological soil source. Concentrations of lithium have decreased relative to maximum concentrations detected in 2018 during the excavation of CCR materials from the East Pond. The observed decrease in lithium concentrations is believed to be associated with transient geochemical conditions in the aquifer due to Station completed site work, including source removal from the East Pond and conversion of the pond to a stormwater management system.

Similar to lithium, based on the information evaluated during this study, the inferred extent of the federal CCR Rule GWPS and Virginia Solid Waste Permit GPS exceeding molybdenum concentrations in groundwater is believed to be localized around the two compliance monitoring wells, MW-20S and MW-20D, which were the only groundwater monitoring locations at the East Pond with molybdenum federal CCR Rule GWPS and Virginia Solid Waste Permit GPS exceedances. Molybdenum concentrations at the remaining East Pond wells ranged from an estimated concentration of 1.7 µg/L to 7.6 µg/L, where detected. While some of the molybdenum detected in groundwater at these wells may be related to a natural source, geochemical considerations indicate that there may be an additional source associated with the CCR material that was formerly in the East Pond or the CCR material that is currently in the North Pond. Overall, concentrations of molybdenum have decreased relative to maximum concentrations detected in 2018 during the excavation of CCR materials from the East Pond.

The inferred extent of the federal CCR Rule GWPS and Virginia Solid Waste Permit GPS exceeding cobalt concentrations generally extend along the southern berm of the East Pond from MW-20S to MW-22. The cobalt impacts among these wells appear localized along the berm within the near-surface aquifer. As noted above, a natural vadose zone geological source combined with transient geochemical conditions resulting in the dissolution of iron oxyhydroxide minerals is likely contributing to cobalt concentrations in the vicinity of the East Pond. With the exception of MW-20S, wells with on-going cobalt federal CCR Rule GWPS and Virginia Solid Waste Permit GPS exceedances have reported decreases in cobalt concentrations since maximum concentrations were detected in 2018. The decreasing trends are expected to continue subsequent to the removal of the CCR materials from the East Pond as geochemical conditions revert to conditions that are conducive for iron oxyhydroxide mineral formation resulting in the removal of dissolved cobalt from the groundwater via a sorption attenuation mechanism.

Similar to cobalt, the inferred extent of Virginia Solid Waste Permit GPS exceeding boron concentrations extends along the southern berm of the East Pond from MW-19 to MW-22, with the highest concentrations centered on the MW-20S/MW-20D couplet. Boron impacts from the East Pond area appear to extend northward and may overlap with impacts associated with the North Pond. Although a natural geologic source may be contributing to concentrations of boron detected in groundwater at the East Pond, based on a geochemical evaluation and historical monitoring results from North Pond source area pumping wells, North Pond CCR material pore water and/or former East Pond CCR material pore water may have contributed to the relatively higher groundwater concentrations observed at MW-20S and MW-20D.

Assessment of the risk related to Virginia Solid Waste Permit GPS and federal CCR Rule GWPS exceedances in the vicinity of the East Pond identified potential non-cancer risk associated with current groundwater concentrations of cobalt, lithium, and molybdenum for either adults and children, or children only (molybdenum). However, access to the Station and downgradient (railroad) property is restricted to the public, and groundwater at the Station is not used as a potable water source. Because exposure pathways associated with groundwater are not complete at the East Pond, no actual unacceptable risk associated with Virginia Solid Waste Permit GPS and federal CCR Rule GWPS exceedances is present.

Although boron concentrations in the vicinity of the East Pond exceed the GPS of 250 µg/L, neither current nor historical concentrations of boron exceed the RSL for boron in drinking water of 4,000 µg/L, which is based on the conservative USEPA default exposure scenario for drinking water consumption and exposure. The GPS for boron of 250 µg/L is not a risk-based concentration but is rather based on a laboratory quantitation limit (QL) concentration that is not reflective of actual risk.

Surface water samples collected from along the north shore of the James River (located 200 to 400 feet downgradient of East Pond and thought to be the exchange point for groundwater flowing southwest across the Station) reported no detections of the constituents of concern (boron, cobalt, lithium, and molybdenum). These results indicate that impacted groundwater is not discharging to surface water at concentrations that could pose a risk to human health or the environment.

Based on the results of this NES, and in consideration of the completion of CCR material removal from the East Pond in 2019, Dominion Energy has prepared an ACM Report under separate cover in which potential corrective actions are evaluated for the remediation of the observed impacts to groundwater as described herein.

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7.0 SIGNATURE PAGE

This Report has been prepared by a qualified groundwater scientist on behalf of Dominion Energy for the East Pond at the Bremo Power Station in Fluvanna County, Virginia. This document was prepared by qualified groundwater scientists and engineers who have received baccalaureate and/or post-graduate degrees in the natural sciences or engineering and who have sufficient training and experience in groundwater hydrology, engineering, statistical evaluations, and related fields as demonstrated by state professional registrations and completion of an accredited university program that enables sound professional judgments consistent with the industry standard of care for groundwater monitoring, contaminant fate and transport, environmental corrective actions, and cost estimate development.

Golder Associates Inc.

FOR Hannah Elkinton
Project Geologist

Michael G. Williams, C.P.G.
Principal and Practice Leader

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TABLE 1
Summary of Historical CCR and VSWMR Static Water Level Data
Bremo Power Station, East Pond
Permit No. 618

Well Identification	Top of Casing Elevation (ft amsl)	Measurement Date	Depth to Water (ft btc)	Groundwater Elevation (ft amsl)
MW-11	330.52	10/27/2016	26.54	303.98
		12/07/2016	27.30	303.22
		01/18/2017	27.65	302.87
		02/28/2017	27.78	302.74
		04/10/2017	27.73	302.79
		05/11/2017	27.36	303.16
		06/19/2017	27.20	303.32
		07/25/2017	28.01	302.51
		09/06/2017	29.04	301.48
		01/29/2018	30.77	299.75
		04/30/2018	30.01	300.51
		10/15/2018	28.06	302.46
		01/16/2019	24.84	305.68
		09/09/2019	24.98	305.54
		11/18/2019	26.75	303.77
		03/04/2020	27.32	303.20
		05/07/2020	26.79	303.73
MW-29D	390.43	10/31/2016	145.32	245.11
		12/07/2016	56.35	334.08
		01/18/2017	41.60	348.83
		02/28/2017	42.38	348.05
		04/10/2017	42.60	347.83
		05/11/2017	43.54	346.89
		06/19/2017	42.93	347.50
		07/25/2017	43.56	346.87
		09/06/2017	43.79	346.64
		01/29/2018	44.85	345.58
		05/01/2018	45.90	344.53
		10/15/2018	44.32	346.11
		01/16/2019	57.07	333.36
		09/09/2019	165.00	225.43
		11/18/2019	41.65	348.78
		03/04/2020	42.27	348.16
		05/07/2020	42.46	347.97
MW-29S	387.32	10/27/2016	38.81	348.51
	Formerly OW-29S	12/07/2016	39.31	348.01
		01/18/2017	39.70	347.62
		02/28/2017	40.07	347.25
		04/10/2017	40.38	346.94
		05/11/2017	40.31	347.01
		06/19/2017	40.53	346.79
		07/25/2017	40.84	346.48
		09/06/2017	41.42	345.90
		01/29/2018	43.38	343.94
		05/01/2018	44.00	343.32

TABLE 1
Summary of Historical CCR and VSWMR Static Water Level Data
Bremo Power Station, East Pond
Permit No. 618

Well Identification	Top of Casing Elevation (ft amsl)	Measurement Date	Depth to Water (ft btc)	Groundwater Elevation (ft amsl)
MW-29S	387.32	10/15/2018	42.21	345.11
		01/16/2019	40.62	346.70
		09/09/2019	37.29	350.03
		11/18/2019	38.85	348.47
		03/04/2020	40.20	347.12
		05/07/2020	40.40	346.92
MW-19	235.21	10/23/2017	32.41	202.80
		12/05/2017	31.57	203.64
		02/14/2018	26.41	208.80
		03/26/2018	28.79	206.42
		05/14/2018	29.27	205.94
		06/25/2018	28.61	206.60
		08/15/2018	31.87	203.34
		10/15/2018	29.29	205.92
		01/07/2019	31.27	203.94
		09/09/2019	33.55	201.66
		10/10/2019	33.86	201.35
		11/18/2019	31.74	203.47
	235.16	03/04/2020	28.75	206.41
		05/07/2020	26.91	208.25
MW-20S	228.07	10/23/2017	25.95	202.12
		12/05/2017	25.94	202.13
		02/14/2018	20.83	207.24
		03/26/2018	23.87	204.20
		05/14/2018	24.00	204.07
		06/25/2018	22.85	205.22
		08/15/2018	26.95	201.12
		10/15/2018	22.94	205.13
		01/07/2019	27.14	200.93
		09/09/2019	27.50	200.57
		11/18/2019	32.44	195.63
	234.13	03/04/2020	29.52	204.61
		05/07/2020	27.24	206.89
MW-20D	228.28	10/23/2017	26.39	201.89
		12/05/2017	27.42	200.86
		02/14/2018	23.32	204.96
		03/26/2018	25.84	202.44
		05/14/2018	26.19	202.09
		06/25/2018	24.39	203.89
		08/16/2018	28.70	199.58
		10/15/2018	23.99	204.29
		01/07/2019	29.46	198.82
		09/09/2019	27.79	200.49
		10/10/2019	28.04	200.24
		11/18/2019	32.46	195.82
	234.02	03/04/2020	29.27	204.75
		05/07/2020	27.10	206.92

TABLE 1
Summary of Historical CCR and VSWMR Static Water Level Data
Bremo Power Station, East Pond
Permit No. 618

Well Identification	Top of Casing Elevation (ft amsl)	Measurement Date	Depth to Water (ft btc)	Groundwater Elevation (ft amsl)
MW-21	239.23	10/23/2017	37.77	201.46
		12/05/2017	36.33	202.90
		02/14/2018	31.01	208.22
	233.61	03/26/2018	27.18	206.43
		05/14/2018	27.00	206.61
		06/25/2018	26.43	207.18
		08/15/2018	28.63	204.98
		10/15/2018	24.67	208.94
		01/07/2019	27.25	206.36
		09/09/2019	31.70	201.91
		12/18/2019	29.06	204.55
	233.62	03/04/2020	27.81	205.81
		05/07/2020	25.63	207.99
MW-22	238.79	10/23/2017	37.23	201.56
		12/05/2017	32.27	206.52
		02/14/2018	31.94	206.85
	231.71	03/26/2018	27.61	204.10
		05/14/2018	27.93	203.78
		06/25/2018	27.41	204.30
		08/15/2018	29.10	202.61
		10/15/2018	25.20	206.51
		01/07/2019	27.51	204.20
		09/09/2019	30.08	201.63
		11/18/2019	26.18	205.53
	227.66	03/04/2020	23.07	204.59
		05/07/2020	21.16	206.50
MW-22D	215.38	01/18/2019	11.60	203.78
		02/14/2019	11.35	204.03
	234.66	05/07/2020	28.33	206.33
MW-23	236.87	10/23/2017	27.60	209.27
		12/05/2017	27.38	209.49
		02/14/2018	26.00	210.87
		03/26/2018	26.72	210.15
		05/14/2018	26.61	210.26
		06/25/2018	26.71	210.16
		08/15/2018	28.05	208.82
		10/15/2018	25.77	211.10
		01/07/2019	25.88	210.99
		09/09/2019	27.34	209.53
		11/18/2019	26.78	210.09
	236.83	03/04/2020	25.19	211.64
		05/07/2020	23.85	212.98

TABLE 1
Summary of Historical CCR and VSWMR Static Water Level Data
Bremo Power Station, East Pond
Permit No. 618

Well Identification	Top of Casing Elevation (ft amsl)	Measurement Date	Depth to Water (ft btc)	Groundwater Elevation (ft amsl)
MW-23D	236.43	05/07/2020	30.00	206.43
MW-24	346.04	10/28/2016	52.28	293.76
		12/07/2016	53.72	292.32
		01/18/2017	53.75	292.29
		02/28/2017	55.59	290.45
		04/10/2017	58.25	287.79
		05/11/2017	59.55	286.49
		06/20/2017	61.15	284.89
		07/25/2017	64.32	281.72
		09/06/2017	65.73	280.31
		01/29/2018	69.36	276.68
		01/30/2018	69.36	276.68
		05/01/2018	70.89	275.15
		10/15/2018	74.45	271.59
		01/16/2019	72.68	273.36
		09/09/2019	75.51	270.53
		11/18/2019	76.59	269.45
		03/04/2020	79.13	266.91
		04/08/2020	78.54	267.50
		05/07/2020	78.10	267.94
MW-25D	361.41	12/07/2016	42.30	319.11
	Formerly OW-25D	01/18/2017	42.12	319.29
		03/01/2017	42.88	318.53
		04/10/2017	42.22	319.19
		05/11/2017	41.91	319.50
		06/20/2017	42.16	319.25
		07/25/2017	43.33	318.08
		09/06/2017	43.02	318.39
		01/29/2018	41.57	319.84
		10/15/2018	41.30	320.11
		01/16/2019	40.86	320.55
		09/09/2019	42.22	319.19
		10/10/2019	42.84	318.57
		11/18/2019	43.03	318.38
		03/04/2020	43.76	317.65
		05/07/2020	43.96	317.45
MW-25S	361.36	12/07/2016	41.91	319.45
		01/18/2017	41.97	319.39
		03/01/2017	42.69	318.67
		04/10/2017	42.61	318.75
		05/11/2017	42.28	319.08
		06/20/2017	42.53	318.83
		07/25/2017	43.59	317.77
		09/06/2017	43.64	317.72
		01/29/2018	42.04	319.32
		10/15/2018	42.25	319.11
		01/16/2019	40.30	321.06

TABLE 1
Summary of Historical CCR and VSWMR Static Water Level Data
Bremo Power Station, East Pond
Permit No. 618

Well Identification	Top of Casing Elevation (ft amsl)	Measurement Date	Depth to Water (ft btc)	Groundwater Elevation (ft amsl)
MW-25S	361.36	09/09/2019	41.60	319.76
		11/18/2019	51.37	309.99
		03/04/2020	43.61	317.75
		05/07/2020	43.71	317.65
MW-33	336.50	10/27/2016	105.29	231.21
		12/07/2016	80.40	256.10
		01/18/2017	80.98	255.52
		03/01/2017	81.50	255.00
		04/10/2017	82.52	253.98
		05/11/2017	83.81	252.69
		06/20/2017	85.42	251.08
		07/25/2017	87.08	249.42
		09/06/2017	88.22	248.28
		01/29/2018	92.34	244.16
		04/30/2018	92.56	243.94
		10/15/2018	90.75	245.75
		01/16/2019	90.39	246.11
		09/09/2019	89.41	247.09
		10/10/2019	89.33	247.17
		11/18/2019	89.10	247.40
		03/04/2020	90.00	246.50
		05/07/2020	90.72	245.78
MW-34	338.18	10/31/2016	80.77	257.41
		12/07/2016	81.15	257.03
		01/18/2017	80.96	257.22
		02/28/2017	81.61	256.57
		04/10/2017	83.63	254.55
		05/11/2017	85.29	252.89
		06/20/2017	87.27	250.91
		07/25/2017	88.85	249.33
		09/06/2017	90.22	247.96
		01/29/2018	92.31	245.87
		04/30/2018	102.14	236.04
		10/15/2018	103.79	234.39
		01/16/2019	103.85	234.33
		09/09/2019	99.83	238.35
		11/18/2019	93.88	244.30
		03/04/2020	93.45	244.73
		05/07/2020	93.76	244.42
MW-35	335.65	10/27/2016	98.86	236.79
		12/07/2016	98.85	236.80
		01/18/2017	98.68	236.97
		02/28/2017	99.01	236.64
		04/10/2017	99.32	236.33
		05/11/2017	101.19	234.46
		06/20/2017	102.12	233.53
		07/25/2017	104.30	231.35

TABLE 1
Summary of Historical CCR and VSWMR Static Water Level Data
Bremo Power Station, East Pond
Permit No. 618

Well Identification	Top of Casing Elevation (ft amsl)	Measurement Date	Depth to Water (ft btc)	Groundwater Elevation (ft amsl)
MW-35	335.65	09/06/2017	106.10	229.55
		01/29/2018	106.79	228.86
		04/30/2018	107.33	228.32
		10/15/2018	108.97	226.68
		01/16/2019	108.95	226.70
		09/09/2019	105.54	230.11
		11/18/2019	105.43	230.22
		03/04/2020	105.25	230.40
		05/07/2020	104.85	230.80
MW-40	216.79	05/07/2020	9.98	206.81
MW-VPDES	226.57	05/07/2020	20.59	205.98

Notes:
ft amsl - feet above mean sea level
ft btc - feet below top of casing
CCR - Coal Combustion Residuals
VSWMR - Virginia Solid Waste Management Regulations

TABLE 2
Summary of East Pond NES Program Sampling Event Data (May 2020)
Bremo Power Station, East Pond
Permit No 618

					Observation Wells								Closure Demonstration Well				Field QC							
				Sample ID:	MW-VPDES				MW-22D				MW-40				Equipment Blank				Field Blank			
				Sample Date:	05/07/2020				05/07/2020				05/07/2020				05/07/2020				05/07/2020			
Parameter Name	**Units**	**Site Specific Background**	**Federal GWPS**	**Virginia GPS**	**Result**	**Qualifier**	**MDL**	**RL**	**Result**	**Qualifier**	**MDL**	**RL**	**Result**	**Qualifier**	**MDL**	**RL**	**Result**	**Qualifier**	**MDL**	**RL**	**Result**	**Qualifier**	**MDL**	**RL**
CCR Appendix III Constituents																								
Boron	µg/L	QL (250)	--	QL (250)	**620**		32	50	**290**		32	50	**480**		32	50	< 32		32	50	< 32		32	50
Calcium	µg/L	60,800	--	--	**49200**		94	100	**50100**		94	100	**96900**		94	100	< 94		94	100	< 94		94	100
Chloride	mg/L	63.4	--	--	**4.6**		0.60	1.0	**10.6**		0.60	1.0	**12.7**	J+	0.60	1.0	< 0.60		0.60	1.0	< 0.60		0.60	1.0
Fluoride	mg/L	0.15	4	4	**0.070**	J	0.050	0.10	**0.13**		0.050	0.10	**0.90**	J+	0.050	0.10	< 0.050		0.050	0.10	< 0.050		0.050	0.10
pH	SU	4.49-7.25	--	--	5.96		0.01	0.01	**7.68**		0.01	0.01	6.80		0.01	0.01	--		--	--	--		--	--
Sulfate	mg/L	179	--	--	**75.7**		0.50	1.0	**1.1**		0.50	1.0	**10.9**	J+	0.50	1.0	< 0.50		0.50	1.0	< 0.50		0.50	1.0
Total Dissolved Solids	mg/L	612	--	--	**250**		25.0	25.0	**317**		25.0	25.0	**370**		25.0	25.0	< 25.0		25.0	25.0	< 25.0		25.0	25.0
CCR Appendix IV Constituents																								
Antimony	µg/L	QL (5)	6	6	< 3.0		3.0	5.0	< 3.0		3.0	5.0	< 3.0		3.0	5.0	< 3.0		3.0	5.0	< 3.0		3.0	5.0
Arsenic	µg/L	QL (10)	10	10	< 4.7		4.7	10.0	< 4.7		4.7	10.0	< 4.7		4.7	10.0	< 4.7		4.7	10.0	< 4.7		4.7	10.0
Barium	µg/L	59	2,000	2,000	**109**		3.5	5.0	**41.4**		3.5	5.0	**108**		3.5	5.0	< 3.5		3.5	5.0	< 3.5		3.5	5.0
Beryllium	µg/L	QL (1)	4	4	< 0.70		0.70	1.0	< 0.70		0.70	1.0	< 0.70		0.70	1.0	< 0.70		0.70	1.0	< 0.70		0.70	1.0
Cadmium	µg/L	1	5	5	**0.88**	J	0.40	1.0	< 0.40		0.40	1.0	< 0.40		0.40	1.0	< 0.40		0.40	1.0	< 0.40		0.40	1.0
Chromium	µg/L	QL (5)	100	100	< 3.7		3.7	5.0	**5.1**		3.7	5.0	< 3.7		3.7	5.0	< 3.7		3.7	5.0	< 3.7		3.7	5.0
Cobalt	µg/L	7.83	7.83	7.83	**2.0**		0.050	0.10	**0.29**		0.050	0.10	**0.20**		0.050	0.10	< 0.050		0.050	0.10	< 0.050		0.050	0.10
Fluoride	mg/L	0.15	4	4	**0.070**	J	0.050	0.10	**0.13**		0.050	0.10	**0.90**		0.050	0.10	< 0.050		0.050	0.10	< 0.050		0.050	0.10
Lead	µg/L	QL (5)	15	QL (5)	**0.10**		0.077	0.10	< 0.077		0.077	0.10	**0.084**	J	0.077	0.10	< 0.077		0.077	0.10	< 0.077		0.077	0.10
Lithium	µg/L	QL (25)	40	QL (25)	**6.7**		0.39	2.5	**3.7**		0.39	2.5	**22.3**		0.39	2.5	< 0.39		0.39	2.5	< 0.39		0.39	2.5
Mercury	µg/L	QL (0.2)	2	2	< 0.12		0.12	0.20	< 0.12		0.12	0.20	< 0.12		0.12	0.20	< 0.12		0.12	0.20	< 0.12		0.12	0.20
Molybdenum	µg/L	16.4	100	16.4	< 3.9		3.9	5.0	**6.5**		3.9	5.0	< 3.9		3.9	5.0	< 3.9		3.9	5.0	< 3.9		3.9	5.0
Selenium	µg/L	QL (10)	50	50	< 4.7		4.7	10.0	< 4.7		4.7	10.0	< 4.7		4.7	10.0	< 4.7		4.7	10.0	< 4.7		4.7	10.0
Thallium	µg/L	QL (1)	2	2	< 0.050		0.050	0.10	< 0.050		0.050	0.10	< 0.050		0.050	0.10	< 0.050		0.050	0.10	< 0.050		0.050	0.10
Total Radium	pCi/l	MDC (1.39)	5	5	**0.0711**	U	1.26	1.26	**1.16**	U	1.52	1.52	**1.01**	U	1.43	1.43	**0.157**	U	1.54	1.54	**0.0814**	U	1.35	1.35
Former VPDES Constituents																								
Ammonia	mg/L	--	--	--	--		--	--	--		--	--	< 0.070		0.070	0.10	< 0.070		0.070	0.10	< 0.070		0.070	0.10
Hardness	µg/L	--	--	--	--		--	--	--		--	--	**315000**		131	662	< 131		131	662	< 131		131	662
Iron	µg/L	--	--	--	--		--	--	--		--	--	**7420**		1050	2500	< 20.9		20.9	50.0	< 20.9		20.9	50.0
Manganese	µg/L	--	--	--	--		--	--	--		--	--	**2480**		23.6	25.0	< 0.47		0.47	0.50	< 0.47		0.47	0.50
Nitrate	mg/L	--	--	--	--		--	--	--		--	--	< 0.060		0.060	0.10	< 0.060		0.060	0.10	< 0.060		0.060	0.10
Speciation of Chromium																								
Hexavalent Chromium	µg/L	--	--	--	--		--	--	--		--	--	< 5		5	5	**6**		5	5	< 5		5	5
VSWMR Constituents																								
Copper	µg/L	11.2	--	1,300*	--		--	--	--		--	--	< 4.3		4.3	5.0	< 4.3		4.3	5.0	< 4.3		4.3	5.0
Nickel	µg/L	7.9	--	7.9	--		--	--	--		--	--	< 3.5		3.5	5.0	< 3.5		3.5	5.0	< 3.5		3.5	5.0
Silver	µg/L	QL (5)	--	QL (5)	--		--	--	--		--	--	< 2.5		2.5	5.0	< 2.5		2.5	5.0	< 2.5		2.5	5.0
Tin	µg/L	QL (5)	--	QL (5)	--		--	--	--		--	--	**0.56**		0.24	0.50	< 0.24		0.24	0.50	< 0.24		0.24	0.50
Vanadium	µg/L	22.5	--	22.5	--		--	--	--		--	--	< 3.9		3.9	5.0	< 3.9		3.9	5.0	< 3.9		3.9	5.0
Zinc	µg/L	QL (50)	--	QL (50)	--		--	--	--		--	--	< 9.5		9.5	10.0	< 9.5		9.5	10.0	< 9.5		9.5	10.0
Field Parameters																								
Conductivity	µS/cm	--	--	--	426.9		0.1	0.1	550		0.1	0.1	700		0.1	0.1	--		--	--	--		--	--
Depth to Water**	ft btoc	--	--	--	20.59		0.01	0.01	28.33		0.01	0.01	9.98		0.01	0.01	--		--	--	--		--	--
Dissolved Oxygen	mg/L	--	--	--	0.68		0.01	0.01	0.30		0.01	0.01	0.45		0.01	0.01	--		--	--	--		--	--
Groundwater Elevation**	ft msl	--	--	--	205.98		0.01	0.01	187.05		0.01	0.01	206.81		0.01	0.01	--		--	--	--		--	--
Oxidation Reduction Potential	millivolts	--	--	--	81.0		0.1	0.1	-261.7		0.1	0.1	-138.2		0.1	0.1	--		--	--	--		--	--
Temperature	C	--	--	--	18.2		0.01	0.01	16.0		0.01	0.01	16.3		0.01	0.01	--		--	--	--		--	--
Turbidity	NTU	--	--	--	7.74		0.1	0.1	6.67		0.1	0.1	5.19		0.1	0.1	--		--	--	--		--	--

Notes:
MDL = Method Detection Limit
RL = Reporting Limit
mg/L = Milligram per liter
µg/L = Microgram per liter
pCi/L = picoCurie per liter
µS/cm = MicroSiemen per centimeter
SU = Standard Units
C = Degrees Celsius
NTU = Nephelometric Turbidity Unit
ft btoc = feet below top of casing
ft msl = feet above mean sea level
MDC = Minimum Detection Concentration
CCR = Coal Combustion Residuals

Notes:
QL = Laboratory quantitation limit (value shown in parentheses is a recent QL and is subject to change)
Future QL values are subject to change; however, GWPS cannot be less than values in parentheses
GWPS = Federal Groundwater Protection Standards
GPS = Virginia Groundwater Protection Standards
Site-specific background for hexavalent chromium will be established after the requisite number of background samples
VSWMR = Virginia Solid Waste Management Regulations
VPDES = Virginia Pollutant Discharge Elimination System
Bold font = Detected constituent
*- EPA Action Level
** - Groundwater Elevation data collected on 5/7/2020

Qualifiers:
J = Estimated Result
J+ = Potential Bias High
U = Not detected above the Minimum Detection Concentration

= Concentration greater than site specific background

= Concentration greater than Virginia CCR+VSWMR GWPS and site background

= Concentration greater than Federal CCR GWPS, Virginia CCR+VSWMR GWPS, and site background

TABLE 4
Histoical Constituent of Concern Groundwater Analytical Results - East Pond Wells
Bremo Power Station, East Pond
Permit No. 618

					Upgradient Wells			Downgradient Wells						Observation Wells		Closure Demonstration Well
Sample Dates	**Unit**	**Site-Specific Background**	**Federal GWPS**	**Virginia GPS**	**MW-11**	**MW-29S**	**MW-29D**	**MW-19**	**MW-20S**	**MW-20D**	**MW-21**	**MW-22**	**MW-23**	**MW-22D**	**MW-VPDES**	**MW-40**
Boron																
10/27-11/01/2016	ug/L	QL (250)	--	250 (QL)	12.9 J	16.2 J	25.6 J	--	--	--	--	--	--	--	--	--
12/06-07/2016	ug/L	QL (250)	--	250 (QL)	15 B	< 5.7	64.9 J	--	--	--	--	--	--	--	--	--
01/18-19/2017	ug/L	QL (250)	--	250 (QL)	< 5.7	< 5.7	60.7 J	--	--	--	--	--	--	--	--	--
02/28-03/02/2017	ug/L	QL (250)	--	250 (QL)	14.4 J	8.5 J	33.8 J	--	--	--	--	--	--	--	--	--
04/10-12/2017	ug/L	QL (250)	--	250 (QL)	< 5.7	9.5 J	51.7 J+	--	--	--	--	--	--	--	--	--
05/11-12/2017	ug/L	QL (250)	--	250 (QL)	6 J	36.7 J+	45.8 J+	--	--	--	--	--	--	--	--	--
06/19-20/2017	ug/L	QL (250)	--	250 (QL)	< 25	< 25	37.2 J	--	--	--	--	--	--	--	--	--
07/24-25/2017	ug/L	QL (250)	--	250 (QL)	< 25	< 25	29.4 J	--	--	--	--	--	--	--	--	--
09/06/2017	ug/L	QL (250)	--	250 (QL)	< 25	--	34.6 J	--	--	--	--	--	--	--	--	--
10/23/2017	ug/L	QL (250)	--	250 (QL)	--	--	--	1300	2290	407	389	216	144	--	--	--
12/05/2017	ug/L	QL (250)	--	250 (QL)	--	--	--	1320	2460	1070	363	217	133	--	--	--
02/14/2018	ug/L	QL (250)	--	250 (QL)	--	--	--	1580	2660	2420	404	235	149	--	--	--
03/26-28/2018	ug/L	QL (250)	--	250 (QL)	--	--	--	1310	2650	2290	353	215	147	--	--	--
04/30-05/01/2018	ug/L	QL (250)	--	250 (QL)	< 25	< 25	54	--	--	--	--	--	--	--	--	--
05/14-15/2018	ug/L	QL (250)	--	250 (QL)	--	--	--	1200	2800	2400	370	400	140	--	--	--
06/25-26/2018	ug/L	QL (250)	--	250 (QL)	--	--	--	1200	3000	2200	400	350	140	--	--	--
08/15-16/2018	ug/L	QL (250)	--	250 (QL)	--	--	--	1100	2800	2400	340	420	140	--	--	--
10/15-16/2018	ug/L	QL (250)	--	250 (QL)	< 25	< 25	45 J	990	2500	2500	340	270	140	--	--	--
01/07-08/2019	ug/L	QL (250)	--	250 (QL)	< 25	< 25	40 J	880	2400	2200	310	180	190	--	--	--
09/09-13/2019	ug/L	QL (250)	--	250 (QL)	< 6.6	< 6.6	44 J	750	2300	2300	350	390	140	--	--	--
03/02-05/2020	ug/L	QL (250)	--	250 (QL)	< 6.6	< 6.6	44 J	710	2400	2100	360	360	190	--	--	--
05/07/2020	ug/L	QL (250)	--	250 (QL)	--	--	--	--	--	--	--	--	--	290	620	480
Cobalt																
10/27-11/01/2016	ug/L	7.83	7.83	7.83	0.89 J	6.5	1.4	--	--	--	--	--	--	--	--	--
12/06-07/2016	ug/L	7.83	7.83	7.83	2.6	4.3	1.5	--	--	--	--	--	--	--	--	--
01/18-19/2017	ug/L	7.83	7.83	7.83	1.3	5.4	1.6	--	--	--	--	--	--	--	--	--
02/28-03/02/2017	ug/L	7.83	7.83	7.83	0.88 J	4.3	1.1	--	--	--	--	--	--	--	--	--
04/10-12/2017	ug/L	7.83	7.83	7.83	0.42 J	3.4	0.24 J	--	--	--	--	--	--	--	--	--
05/11-12/2017	ug/L	7.83	7.83	7.83	0.66 J	3.1	0.99 J	--	--	--	--	--	--	--	--	--
06/19-20/2017	ug/L	7.83	7.83	7.83	0.38 J	2.7	0.86 J	--	--	--	--	--	--	--	--	--
07/24-25/2017	ug/L	7.83	7.83	7.83	0.22 J	2	0.79 J	--	--	--	--	--	--	--	--	--
10/23/2017	ug/L	7.83	7.83	7.83	--	--	--	0.67 J+	1.1 J+	0.78 J+	8.2 J+	3.3 J+	4.5 J+	--	--	--
12/05/2017	ug/L	7.83	7.83	7.83	--	--	--	0.45 J	0.84	0.72	4.7	3.6	14.5	--	--	--
01/29-30/2018	ug/L	7.83	7.83	7.83	0.62	1.2	0.55	--	--	--	--	--	--	--	--	--
02/14/2018	ug/L	7.83	7.83	7.83	--	--	--	0.63	3.0	0.72	14.7	9.6	21.3	--	--	--
03/26-28/2018	ug/L	7.83	7.83	7.83	--	--	--	0.90	6.0	0.64	18.7	47.9	10.2	--	--	--
04/30-05/01/2018	ug/L	7.83	7.83	7.83	< 2.5	< 2.5	< 2.5	--	--	--	--	--	--	--	--	--
05/14-15/2018	ug/L	7.83	7.83	7.83	--	--	--	< 2.5	7.1	< 2.5	21.5	74.2	6.6	--	--	--
06/25-26/2018	ug/L	7.83	7.83	7.83	--	--	--	< 2.5	10.6	3.2 J	31.3	54.7	6.4	--	--	--
08/15-16/2018	ug/L	7.83	7.83	7.83	--	--	--	< 2.5	8.5	12.2	17.0	53.8	5.2	--	--	--
10/15-16/2018	ug/L	7.83	7.83	7.83	0.42 J	0.82	0.76	< 2.5	9.0	11.5	14.8	54.8	7.3	--	--	--
09/09-13/2019	ug/L	7.83	7.83	7.83	0.34	0.28	0.34	0.52	0.12 J	4.7	17.4	30.4	2.9	--	--	--
03/02-05/2020	ug/L	7.83	7.83	7.83	1.2	0.78	0.37	3.1	13.0	5.2	18.3	27.2	3.5	--	--	--
05/07/2020	ug/L	7.83	7.83	7.83	--	--	--	--	--	--	--	--	--	0.29	2.0	0.20
Lithium																
10/27-11/01/2016	ug/L	QL (25)	40	QL (25)	1 J	2.3 J	2.8 J	--	--	--	--	--	--	--	--	--
12/06-07/2016	ug/L	QL (25)	40	QL (25)	3.5 B	< 0.7	7.6 B	--	--	--	--	--	--	--	--	--
01/18-19/2017	ug/L	QL (25)	40	QL (25)	< 0.7	< 0.7	5.2 J	--	--	--	--	--	--	--	--	--
02/28-03/02/2017	ug/L	QL (25)	40	QL (25)	< 0.7	0.86 B	2.9 J	--	--	--	--	--	--	--	--	--
04/10-12/2017	ug/L	QL (25)	40	QL (25)	< 0.7	< 0.7	< 0.7	--	--	--	--	--	--	--	--	--
05/11-12/2017	ug/L	QL (25)	40	QL (25)	3.9 J+	2.3 J	4.2 J	--	--	--	--	--	--	--	--	--
06/19-20/2017	ug/L	QL (25)	40	QL (25)	< 0.7	1.2 J	3.7 J	--	--	--	--	--	--	--	--	--
07/24-25/2017	ug/L	QL (25)	40	QL (25)	0.79 J	1.3 J	3 J	--	--	--	--	--	--	--	--	--
10/23/2017	ug/L	QL (25)	40	QL (25)	--	--	--	1.9 J+	348 J+	19.1 J+	2.4 J+	2.5 J+	2.8 J+	--	--	--
12/05/2017	ug/L	QL (25)	40	QL (25)	--	--	--	1.5	509	18.9	1.8	2.1	2.1	--	--	--
01/29-30/2018	ug/L	QL (25)	40	QL (25)	0.43 J	0.75	2.7	--	--	--	--	--	--	--	--	--
02/14/2018	ug/L	QL (25)	40	QL (25)	--	--	--	1.5	468	197	1.6	2.0	2.3	--	--	--
03/26-28/2018	ug/L	QL (25)	40	QL (25)	--	--	--	1.6	445	198	1.7	2.0	1.8	--	--	--
04/30-05/01/2018	ug/L	QL (25)	40	QL (25)	0.48 J	0.80	2.0	--	--	--	--	--	--	--	--	--
05/14-15/2018	ug/L	QL (25)	40	QL (25)	--	--	--	0.84 J	500	243	1.2 J	1.5 J	1.2 J	--	--	--
06/25-26/2018	ug/L	QL (25)	40	QL (25)	--	--	--	5.6 J+	460	186	5.5 J+	5.8 J+	4.9 J+	--	--	--
08/15-16/2018	ug/L	QL (25)	40	QL (25)	--	--	--	< 4.6	523	228	< 4.6	< 4.6	< 4.6	--	--	--
10/15-16/2018	ug/L	QL (25)	40	QL (25)	0.43 J	0.77 J	2.1 J	1.3 J	356	203	1.9 J	2.1 J	1.6 J	--	--	--
09/09-13/2019	ug/L	QL (25)	40	QL (25)	< 0.42	0.50 J	2.2 J	49.1	6.9	139	1.3 J	1.7 J	1.2 J	--	--	--
10/10/2019	ug/L	QL (25)	40	QL (25)	--	--	--	1.1 J	--	--	--	--	--	--	--	--
03/02-05/2020	ug/L	QL (25)	40	QL (25)	< 0.42	< 0.42	1.4 J	1.3 J	330	121	1.5 J	1.8 J	1.4 J	--	--	--
05/07/2020	ug/L	QL (25)	40	QL (25)	--	--	--	--	--	--	--	--	--	3.7	6.7	22.3

TABLE 4
Histoical Constituent of Concern Groundwater Analytical Results - East Pond Wells
Bremo Power Station, East Pond
Permit No. 618

					Upgradient Wells			Downgradient Wells						Observation Wells		Closure Demonstration Well
Sample Dates	**Unit**	**Site-Specific Background**	**Federal GWPS**	**Virginia GPS**	**MW-11**	**MW-29S**	**MW-29D**	**MW-19**	**MW-20S**	**MW-20D**	**MW-21**	**MW-22**	**MW-23**	**MW-22D**	**MW-VPDES**	**MW-40**
Molybdenum																
10/27-11/01/2016	ug/L	16.4	100	16.4	< 1.10	7.6	46.1	--	--	--	--	--	--	--	--	--
12/06-07/2016	ug/L	16.4	100	16.4	< 1.10	2 J	15.7	--	--	--	--	--	--	--	--	--
01/18-19/2017	ug/L	16.4	100	16.4	< 1.10	1.7 J	16.4	--	--	--	--	--	--	--	--	--
02/28-03/02/2017	ug/L	16.4	100	16.4	< 1.10	1.3 J	12.8	--	--	--	--	--	--	--	--	--
03/29/2017	ug/L	16.4	100	16.4	--	--	--	--	--	--	--	--	--	--	< 50	--
04/10-12/2017	ug/L	16.4	100	16.4	< 1.10	1.4 J	3.5 J	--	--	--	--	--	--	--	--	--
05/11-12/2017	ug/L	16.4	100	16.4	< 1.10	< 1.10	5.5	--	--	--	--	--	--	--	--	--
06/19-20/2017	ug/L	16.4	100	16.4	< 1.10	< 1.10	3.8 J	--	--	--	--	--	--	--	--	--
07/24-25/2017	ug/L	16.4	100	16.4	< 1.10	< 1.10	3.3 J	--	--	--	--	--	--	--	--	--
10/23/2017	ug/L	16.4	100	16.4	--	--	--	13.4	140	25.3	3.2	0.77	1.9	--	--	--
12/05/2017	ug/L	16.4	100	16.4	--	--	--	11.8	223	16.1	1.3	0.67	1	--	--	--
01/29-30/2018	ug/L	16.4	100	16.4	< 2.50	< 2.50	< 2.50	--	--	--	--	--	--	--	--	--
02/14/2018	ug/L	16.4	100	16.4	--	--	--	9.6	238	51.9	0.48 J	0.58	0.70	--	--	--
03/26-28/2018	ug/L	16.4	100	16.4	--	--	--	10.5	237	70.2	0.35 J	0.74	0.44 J	--	--	--
04/30-05/01/2018	ug/L	16.4	100	16.4	< 2.5	< 2.5	< 2.5	--	--	--	--	--	--	--	--	--
05/14-15/2018	ug/L	16.4	100	16.4	--	--	--	10.2	229	99.4	< 2.5	< 2.5	< 2.5	--	--	--
06/25-26/2018	ug/L	16.4	100	16.4	--	--	--	11.2	191	92.0	< 2.5	< 2.5	< 2.5	--	--	--
08/15-16/2018	ug/L	16.4	100	16.4	--	--	--	9.1	196	118	< 2.5	< 2.5	< 2.5	--	--	--
10/15-16/2018	ug/L	16.4	100	16.4	< 2.5	< 2.5	< 2.5	7.6	160	132	< 2.5	< 2.5	< 2.5	--	--	--
09/09-13/2019	ug/L	16.4	100	16.4	< 0.90	< 0.90	7.7	8.1	136	139	< 0.90	< 0.90	< 0.90	--	--	--
03/02-05/2020	ug/L	16.4	100	16.4	< 0.90	< 0.90	9.3	7.6	137	114	< 0.90	< 0.90	1.7 J	--	--	--
05/07/2020	ug/L	16.4	100	16.4	--	--	--	--	--	--	--	--	--	6.5	< 3.9	< 3.9

Notes:
µg/L = Microgram per liter
CCR = Coal Combustion Residuals
GWPS = Federal Groundwater Protection Standards
GPS = Virginia Groundwater Protection Standards
Bold font = Detected constituent

Qualifiers:
J = Estimated Result
U = Not detected above the Minimum Detection Concentration
J+ = Potential Bias High
UJ = Estimated non-detect

= Concentration greater than site-specific background

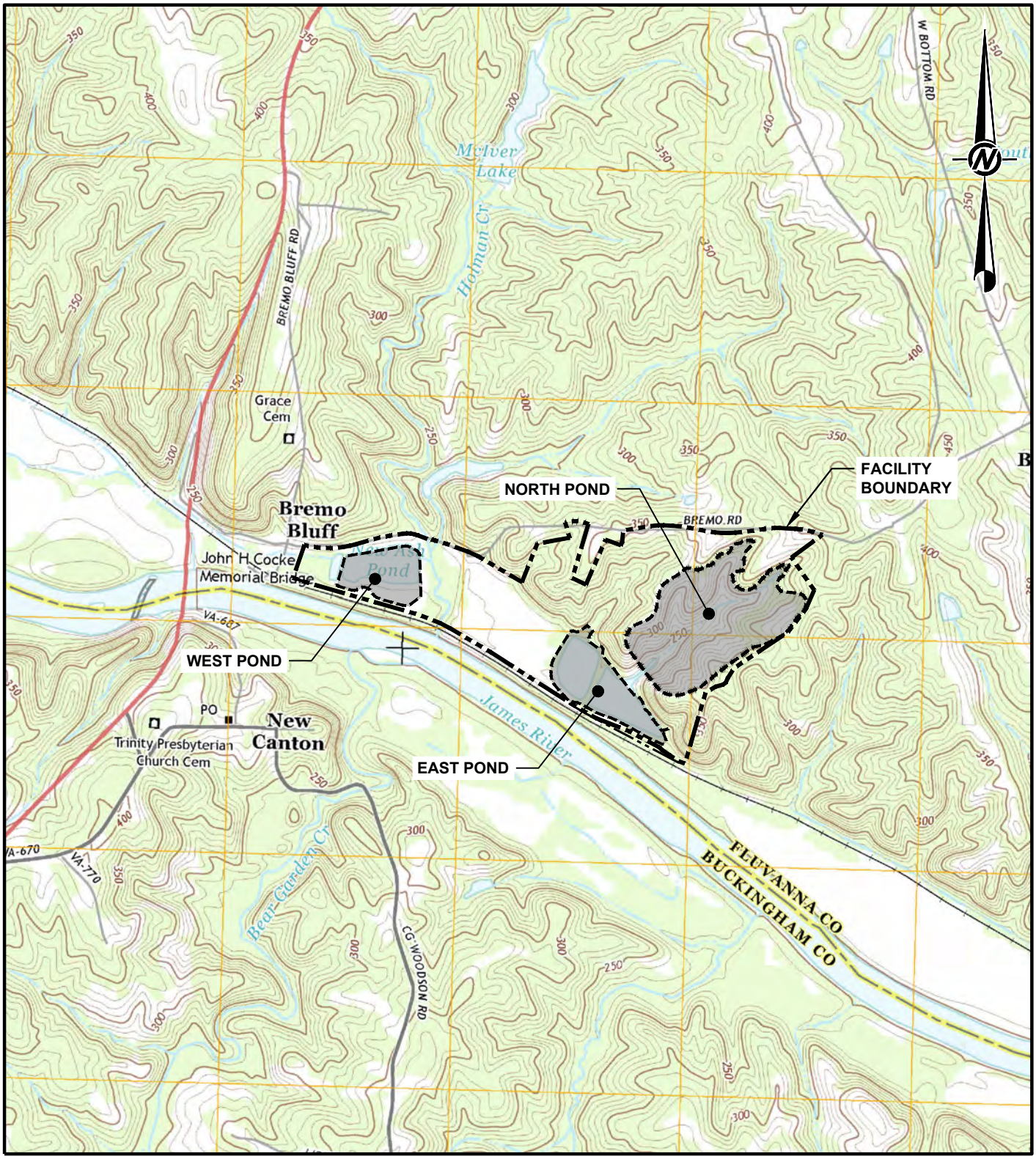
= Concentration greater than Federal GWPS, Virginia GPS, and site-specific background

= Concentration greater than Virginia GPS and site-specific background

TABLE 5
Geochemistry Parameters
Bremo Power Station, East Pond
Permit No. 618

Well Designation:		Upgradient Wells			East Pond Downgradient Wells								North Pond Source Area	
Sample ID:		**MW-11**	**MW-29D**	**MW-29S**	**MW-19**	**MW-20D**	**MW-20S**	**MW-21**	**MW-22**	**MW-22D**	**MW-23**	**MW-23D**	**SDW-4**	**SDW-7**
Sample Date:		01/07/19	01/07/19	01/07/19	01/08/19	01/07/19	01/07/19	01/08/19	01/08/19	01/18/19	01/08/18	01/18/19	01/16/19	01/16/19
Analyte	Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Alkalinity, Total	mg/L	91.0	256	32.1	77.5	363	479	119	190	191	175	212	594	567
Boron	ug/L	< 25	40.2 J	< 25.0	862	2070	2240	305	180	145	184	79.6	2380	2360
Calcium	ug/L	19100	50100	13500	33900	114000	147000	37000	49100	49000	33600	28400	165000	155000
Chloride	mg/L	9.7	58.8	29.8	8.9	11.3	5.3	7.2	13.1	9.5	17.1	11.7	18.2	17.3
Magnesium	ug/L	13200	12500	2600	9520	23100	36200	11400	17600	8990	19800	10100	35600	32200
Potassium	ug/L	333	5370	948	1110	5850	7240	1070	4090	9770	1670	6350	12900	11600
Sodium	ug/L	4120	123000	23700	15700	25300	14300	14000	29200	25600	17700	99000	17600	13200
Sulfate	mg/L	7.0	105	24.4	77.8	53.8	73.0	54.2	59.8	24.9	12.3	14.6	27.4	12.6

Notes:
µg/L = Microgram per liter
mg/L = Milligram per liter



REFERENCE

BASE MAP CONSISTS OF 7.5-MINUTE USGS TOPOGRAPHIC QUADRANGLE NAMED ARVONIA, VIRGINIA, DATED 2013.

2000 0 2000
SCALE FEET

CLIENT
DOMINION ENERGY

PROJECT
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-15
DESIGNED	HDE
PREPARED	SIB
REVIEWED	MGW
APPROVED	MGW

TITLE
SITE LOCATION MAP

PROJECT NO. 20-140438 | REV. 0 | FIGURE 1

Path: G:\Plan Production Data Files\Drawing Data Files\20-140438\010_Bremo-ACM\Active Drawings\20140438-010-01.dwg

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

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BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

PROJECT
ACM FIELD INVESTIGATION REPORT

TITLE
SITE AERIAL PHOTOGRAPH

CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-15
DESIGNED	HDE
PREPARED	SIB
REVIEWED	MGW
APPROVED	MGW

PROJECT NO. 20-140438 | REV. 0 | FIGURE 2

Path: G:\Plan Production Data Files\Drawing Data Files\20-140438\010_Bremo-ACM\Active Drawings\20140438-010-02.dwg

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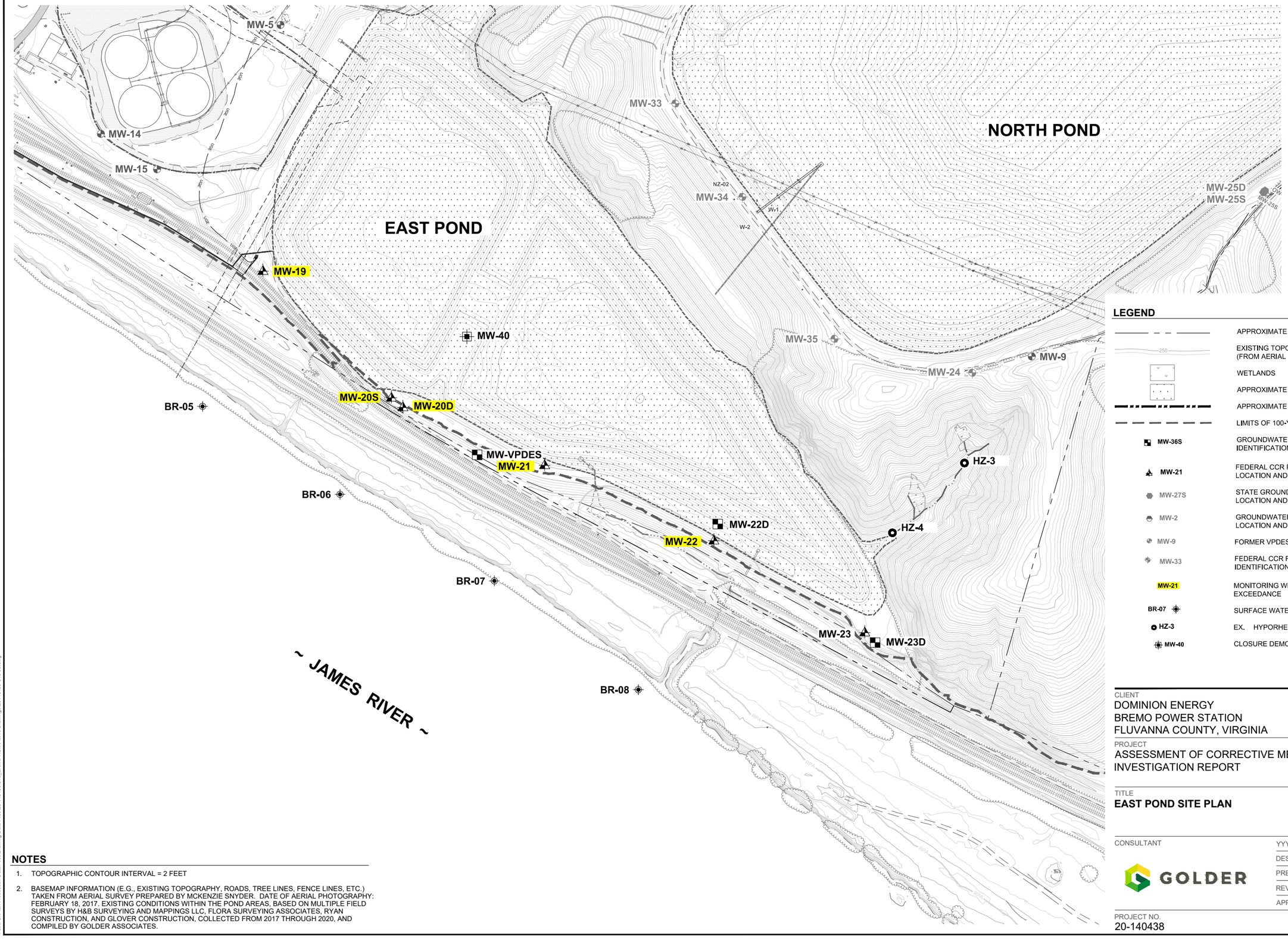

LEGEND

	APPROXIMATE PROPERTY BOUNDARY
250	EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS) (FROM AERIAL SURVEY - SEE NOTE 6)
	WETLANDS
	APPROXIMATE LIMITS OF EXISTING ASH PONDS
	APPROXIMATE LIMITS OF NORTH ASH POND FILL
	LIMITS OF 100-YR FLOOD PLAIN
MW-36S	GROUNDWATER OBSERVATION WELL LOCATION AND IDENTIFICATION
MW-21	FEDERAL CCR RULE COMPLIANCE WELL LOCATION AND IDENTIFICATION - EAST POND
MW-27S	STATE GROUNDWATER COMPLIANCE WELL LOCATION AND IDENTIFICATION
MW-2	GROUNDWATER OBSERVATION WELL LOCATION AND IDENTIFICATION
MW-9	FORMER VPDES MONITORING WELL
MW-33	FEDERAL CCR RULE COMPLIANCE WELL LOCATION AND IDENTIFICATION - NORTH POND
MW-21	MONITORING WELL WITH FEDERAL GWPS OR VIRGINIA GPS EXCEEDANCE
BR-07	SURFACE WATER MONITORING LOCATION
HZ-3	EX. HYPORHEIC ZONE WELL
MW-40	CLOSURE DEMONSTRATION WELL

NOTES

1. TOPOGRAPHIC CONTOUR INTERVAL = 2 FEET
2. BASEMAP INFORMATION (E.G., EXISTING TOPOGRAPHY, ROADS, TREE LINES, FENCE LINES, ETC.) TAKEN FROM AERIAL SURVEY PREPARED BY MCKENZIE SNYDER. DATE OF AERIAL PHOTOGRAPHY: FEBRUARY 18, 2017. EXISTING CONDITIONS WITHIN THE POND AREAS, BASED ON MULTIPLE FIELD SURVEYS BY H&B SURVEYING AND MAPPINGS LLC, FLORA SURVEYING ASSOCIATES, RYAN CONSTRUCTION, AND GLOVER CONSTRUCTION, COLLECTED FROM 2017 THROUGH 2020, AND COMPILED BY GOLDER ASSOCIATES.

CLIENT
DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

PROJECT
ASSESSMENT OF CORRECTIVE MEASURES INVESTIGATION REPORT

TITLE
EAST POND SITE PLAN

CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-15
DESIGNED	HDE
PREPARED	SIB
REVIEWED	MGW
APPROVED	MGW

PROJECT NO. 20-140438 | REV. 0 | FIGURE 3

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

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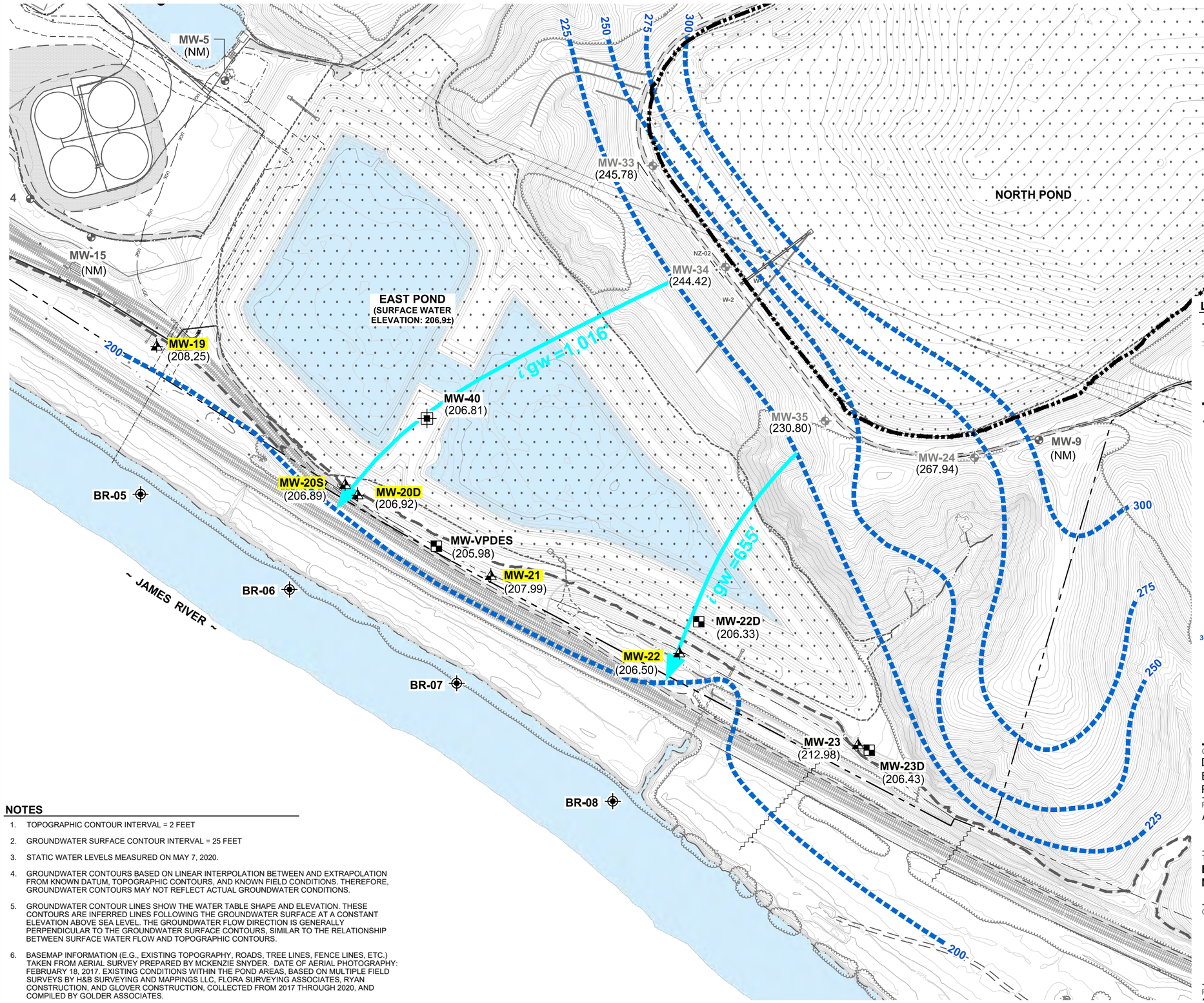

LEGEND

	APPROXIMATE PROPERTY BOUNDARY
250	EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS) (FROM AERIAL SURVEY - SEE NOTE 6)
	WETLANDS
	APPROXIMATE LIMITS OF EXISTING ASH PONDS
	APPROXIMATE LIMITS OF NORTH ASH POND FILL
	LIMITS OF 100-YR FLOOD PLAIN
MW-36S	GROUNDWATER OBSERVATION WELL LOCATION AND IDENTIFICATION
(275.15)	STATIC GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
(NM)	NOT MEASURED
MW-21	FEDERAL CCR RULE COMPLIANCE WELL LOCATION AND IDENTIFICATION - EAST POND
MW-27S	STATE GROUNDWATER COMPLIANCE WELL LOCATION AND IDENTIFICATION
MW-2	GROUNDWATER OBSERVATION WELL LOCATION AND IDENTIFICATION
MW-9	FORMER VPDES MONITORING WELL
MW-33	FEDERAL CCR RULE COMPLIANCE WELL LOCATION AND IDENTIFICATION - NORTH POND
300	POTENTIOMETRIC SURFACE CONTOURS
	APPROXIMATE GROUNDWATER FLOW LINE
MW-21	MONITORING WELL WITH FEDERAL GWPS OR VIRGINIA GPS EXCEEDANCE
BR-07	SURFACE WATER MONITORING LOCATION
MW-40	CLOSURE DEMONSTRATION WELL

NOTES

1. TOPOGRAPHIC CONTOUR INTERVAL = 2 FEET
2. GROUNDWATER SURFACE CONTOUR INTERVAL = 25 FEET
3. STATIC WATER LEVELS MEASURED ON MAY 7, 2020.
4. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATUM, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL GROUNDWATER CONDITIONS.
5. GROUNDWATER CONTOUR LINES SHOW THE WATER TABLE SHAPE AND ELEVATION. THESE CONTOURS ARE INFERRED LINES FOLLOWING THE GROUNDWATER SURFACE AT A CONSTANT ELEVATION ABOVE SEA LEVEL. THE GROUNDWATER FLOW DIRECTION IS GENERALLY PERPENDICULAR TO THE GROUNDWATER SURFACE CONTOURS, SIMILAR TO THE RELATIONSHIP BETWEEN SURFACE WATER FLOW AND TOPOGRAPHIC CONTOURS.
6. BASEMAP INFORMATION (E.G., EXISTING TOPOGRAPHY, ROADS, TREE LINES, FENCE LINES, ETC.) TAKEN FROM AERIAL SURVEY PREPARED BY MCKENZIE SNYDER. DATE OF AERIAL PHOTOGRAPHY: FEBRUARY 18, 2017. EXISTING CONDITIONS WITHIN THE POND AREAS, BASED ON MULTIPLE FIELD SURVEYS BY H&B SURVEYING AND MAPPINGS LLC, FLORA SURVEYING ASSOCIATES, RYAN CONSTRUCTION, AND GLOVER CONSTRUCTION, COLLECTED FROM 2017 THROUGH 2020, AND COMPILED BY GOLDER ASSOCIATES.

CLIENT
DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

PROJECT
ACM FIELD INVESTIGATION REPORT

TITLE
EAST POND POTENTIOMETRIC SURFACE PLAN
MAY 7, 2020

CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-15
DESIGNED	HDE
PREPARED	SIB
REVIEWED	MGW
APPROVED	MGW

PROJECT NO. 20-140438 | REV. 0 | FIGURE 4

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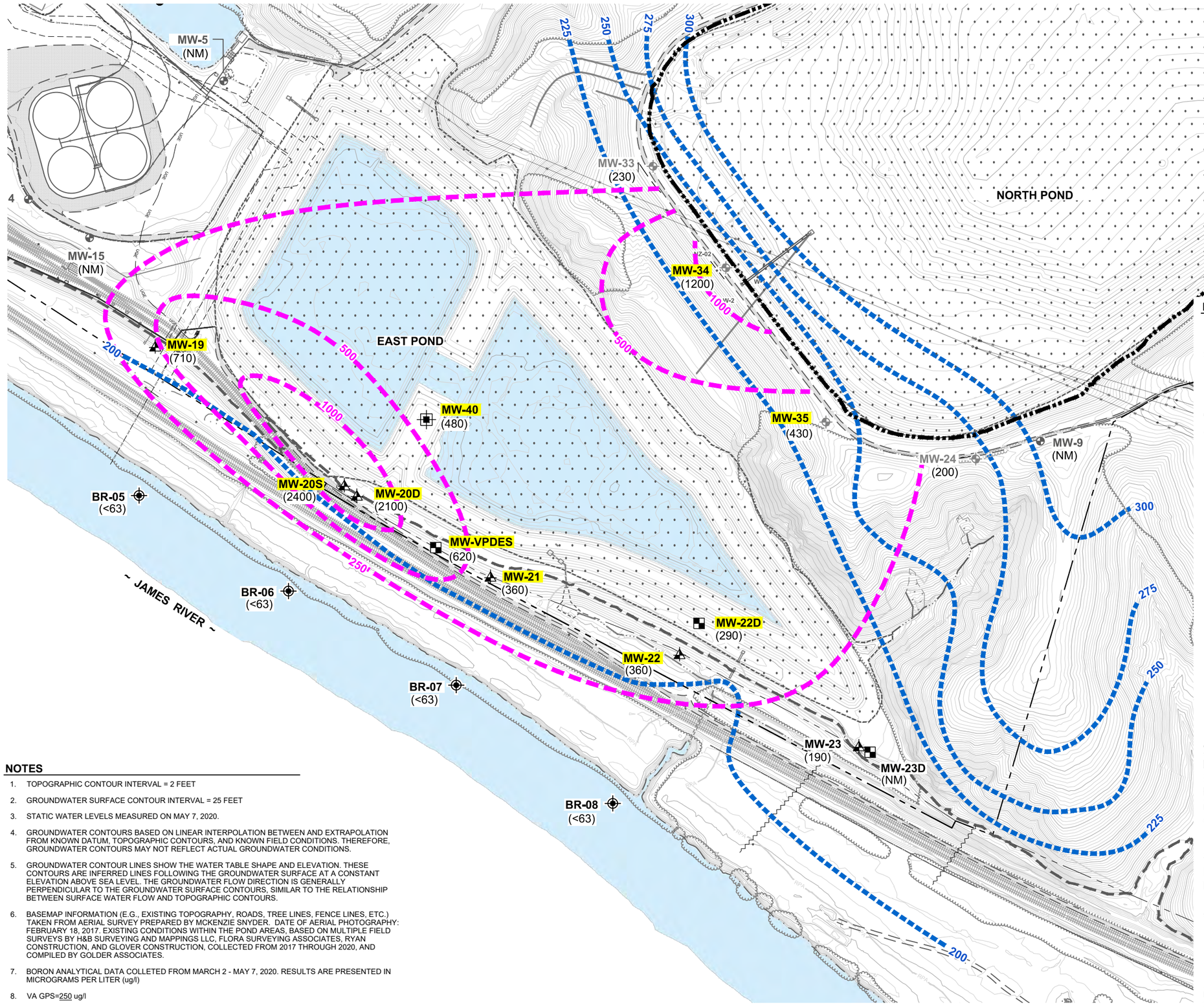

NOTES

1. TOPOGRAPHIC CONTOUR INTERVAL = 2 FEET
2. GROUNDWATER SURFACE CONTOUR INTERVAL = 25 FEET
3. STATIC WATER LEVELS MEASURED ON MAY 7, 2020.
4. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATUM, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL GROUNDWATER CONDITIONS.
5. GROUNDWATER CONTOUR LINES SHOW THE WATER TABLE SHAPE AND ELEVATION. THESE CONTOURS ARE INFERRED LINES FOLLOWING THE GROUNDWATER SURFACE AT A CONSTANT ELEVATION ABOVE SEA LEVEL. THE GROUNDWATER FLOW DIRECTION IS GENERALLY PERPENDICULAR TO THE GROUNDWATER SURFACE CONTOURS, SIMILAR TO THE RELATIONSHIP BETWEEN SURFACE WATER FLOW AND TOPOGRAPHIC CONTOURS.
6. BASEMAP INFORMATION (E.G., EXISTING TOPOGRAPHY, ROADS, TREE LINES, FENCE LINES, ETC.) TAKEN FROM AERIAL SURVEY PREPARED BY MCKENZIE SNYDER. DATE OF AERIAL PHOTOGRAPHY: FEBRUARY 18, 2017. EXISTING CONDITIONS WITHIN THE POND AREAS, BASED ON MULTIPLE FIELD SURVEYS BY H&B SURVEYING AND MAPPINGS LLC, FLORA SURVEYING ASSOCIATES, RYAN CONSTRUCTION, AND GLOVER CONSTRUCTION, COLLECTED FROM 2017 THROUGH 2020, AND COMPILED BY GOLDER ASSOCIATES.
7. BORON ANALYTICAL DATA COLLETED FROM MARCH 2 - MAY 7, 2020. RESULTS ARE PRESENTED IN MICROGRAMS PER LITER (ug/l)
8. VA GPS=250 ug/l

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS) (FROM AERIAL SURVEY - SEE NOTE 6)
- WETLANDS
- APPROXIMATE LIMITS OF EXISTING ASH PONDS
- APPROXIMATE LIMITS OF NORTH ASH POND FILL
- LIMITS OF 100-YR FLOOD PLAIN
- MW-36S — GROUNDWATER OBSERVATION WELL LOCATION AND IDENTIFICATION
- (190) — BORON CONCENTRATION (ug/l)
- (NM) — NOT MEASURED
- MW-21 — FEDERAL CCR RULE COMPLIANCE WELL LOCATION AND IDENTIFICATION - EAST POND
- MW-27S — STATE GROUNDWATER COMPLIANCE WELL LOCATION AND IDENTIFICATION
- MW-2 — GROUNDWATER OBSERVATION WELL LOCATION AND IDENTIFICATION
- MW-9 — FORMER VPDES MONITORING WELL
- MW-33 — FEDERAL CCR RULE COMPLIANCE WELL LOCATION AND IDENTIFICATION - NORTH POND
- 300 — POTENTIOMETRIC SURFACE CONTOURS
- MW-21 — MONITORING WELL WITH BORON GPS EXCEEDENCE
- BR-07 — SURFACE WATER MONITORING LOCATION
- MW-40 — CLOSURE DEMONSTRATION WELL
- 250 — BORON ISOCONCENTRATION CONTOUR

SCALE 120 0 120 240 FEET

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DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

PROJECT
ACM FIELD INVESTIGATION REPORT

TITLE
EAST POND BORON ISOCONCENTRATION CONTOURS MARCH - MAY 2020

CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-15
DESIGNED	HDE
PREPARED	SIB
REVIEWED	MGW
APPROVED	MGW

PROJECT NO. 20-140438 | REV. 0 | FIGURE 5

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

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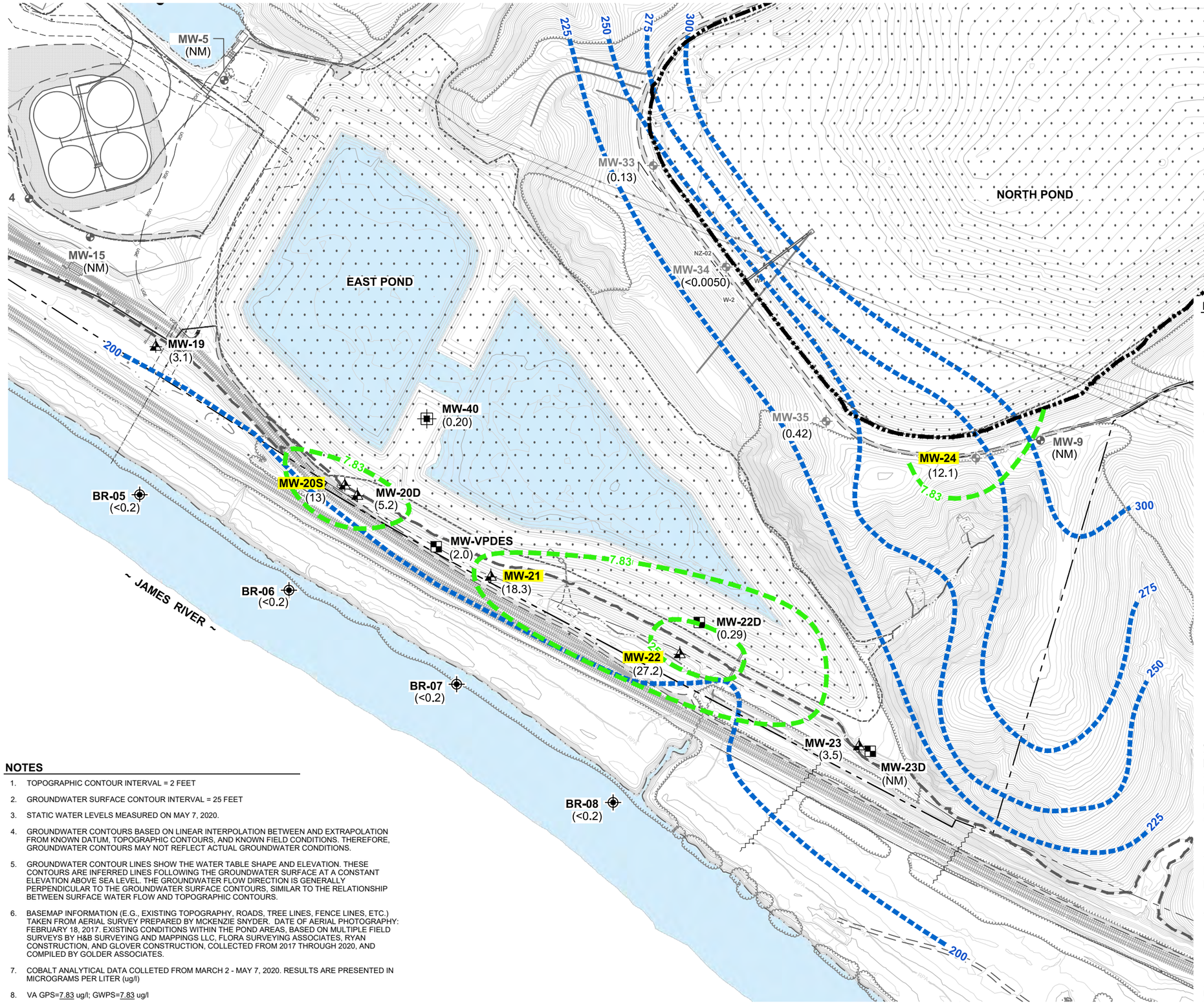

NOTES

1. TOPOGRAPHIC CONTOUR INTERVAL = 2 FEET
2. GROUNDWATER SURFACE CONTOUR INTERVAL = 25 FEET
3. STATIC WATER LEVELS MEASURED ON MAY 7, 2020.
4. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATUM, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL GROUNDWATER CONDITIONS.
5. GROUNDWATER CONTOUR LINES SHOW THE WATER TABLE SHAPE AND ELEVATION. THESE CONTOURS ARE INFERRED LINES FOLLOWING THE GROUNDWATER SURFACE AT A CONSTANT ELEVATION ABOVE SEA LEVEL. THE GROUNDWATER FLOW DIRECTION IS GENERALLY PERPENDICULAR TO THE GROUNDWATER SURFACE CONTOURS, SIMILAR TO THE RELATIONSHIP BETWEEN SURFACE WATER FLOW AND TOPOGRAPHIC CONTOURS.
6. BASEMAP INFORMATION (E.G., EXISTING TOPOGRAPHY, ROADS, TREE LINES, FENCE LINES, ETC.) TAKEN FROM AERIAL SURVEY PREPARED BY MCKENZIE SNYDER. DATE OF AERIAL PHOTOGRAPHY: FEBRUARY 18, 2017. EXISTING CONDITIONS WITHIN THE POND AREAS, BASED ON MULTIPLE FIELD SURVEYS BY H&B SURVEYING AND MAPPINGS LLC, FLORA SURVEYING ASSOCIATES, RYAN CONSTRUCTION, AND GLOVER CONSTRUCTION, COLLECTED FROM 2017 THROUGH 2020, AND COMPILED BY GOLDER ASSOCIATES.
7. COBALT ANALYTICAL DATA COLLETED FROM MARCH 2 - MAY 7, 2020. RESULTS ARE PRESENTED IN MICROGRAMS PER LITER (ug/l)
8. VA GPS=7.83 ug/l; GWPS=7.83 ug/l

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS) (FROM AERIAL SURVEY - SEE NOTE 6)
- WETLANDS
- APPROXIMATE LIMITS OF EXISTING ASH PONDS
- APPROXIMATE LIMITS OF NORTH ASH POND FILL
- LIMITS OF 100-YR FLOOD PLAIN
- MW-36S — GROUNDWATER OBSERVATION WELL LOCATION AND IDENTIFICATION
- (3.5) — COBALT CONCENTRATION (ug/l)
- (NM) — NOT MEASURED
- MW-21 — FEDERAL CCR RULE COMPLIANCE WELL LOCATION AND IDENTIFICATION - EAST POND
- MW-27S — STATE GROUNDWATER COMPLIANCE WELL LOCATION AND IDENTIFICATION
- MW-2 — GROUNDWATER OBSERVATION WELL LOCATION AND IDENTIFICATION
- MW-9 — FORMER VPDES MONITORING WELL
- MW-33 — FEDERAL CCR RULE COMPLIANCE WELL LOCATION AND IDENTIFICATION - NORTH POND
- 300 — POTENTIOMETRIC SURFACE CONTOURS
- MW-21 — MONITORING WELL WITH COBALT GPS EXCEEDENCE
- BR-07 — SURFACE WATER MONITORING LOCATION
- MW-40 — CLOSURE DEMONSTRATION WELL
- 25 — COBALT ISOCONCENTRATION CONTOUR

CLIENT
DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

PROJECT
ACM FIELD INVESTIGATION REPORT

TITLE
EAST POND COBALT ISOCONCENTRATION CONTOURS MARCH - MAY 2020

CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-15
DESIGNED	HDE
PREPARED	SIB
REVIEWED	MGW
APPROVED	MGW

PROJECT NO. 20-140438 | REV. 0 | FIGURE 6

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

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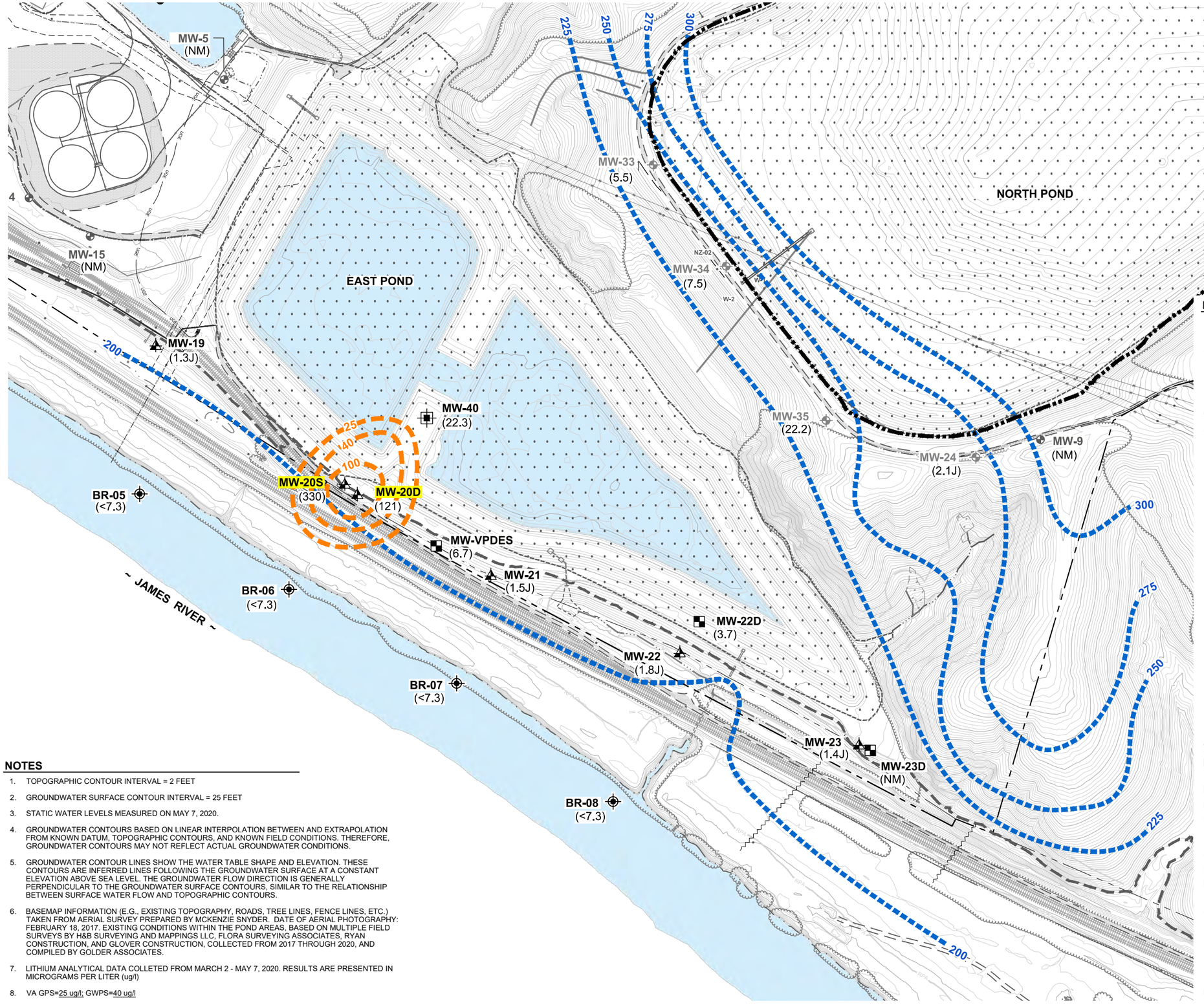
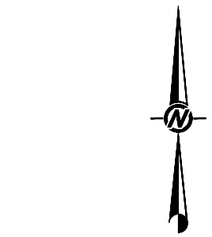




LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS) (FROM AERIAL SURVEY - SEE NOTE 6)
- WETLANDS
- APPROXIMATE LIMITS OF EXISTING ASH PONDS
- APPROXIMATE LIMITS OF NORTH ASH POND FILL
- LIMITS OF 100-YR FLOOD PLAIN
- MW-36S — GROUNDWATER OBSERVATION WELL LOCATION AND IDENTIFICATION
- (3.7) — LITHIUM CONCENTRATION (ug/l)
- (NM) — NOT MEASURED
- MW-21 — FEDERAL CCR RULE COMPLIANCE WELL LOCATION AND IDENTIFICATION - EAST POND
- MW-27S — STATE GROUNDWATER COMPLIANCE WELL LOCATION AND IDENTIFICATION
- MW-2 — GROUNDWATER OBSERVATION WELL LOCATION AND IDENTIFICATION
- MW-9 — FORMER VPDES MONITORING WELL
- MW-33 — FEDERAL CCR RULE COMPLIANCE WELL LOCATION AND IDENTIFICATION - NORTH POND
- 300 — POTENTIOMETRIC SURFACE CONTOURS
- MW-21 — MONITORING WELL WITH LITHIUM GPS EXCEEDENCE
- BR-07 — SURFACE WATER MONITORING LOCATION
- MW-40 — CLOSURE DEMONSTRATION WELL
- 25 — LITHIUM ISOCONCENTRATION CONTOUR

NOTES

1. TOPOGRAPHIC CONTOUR INTERVAL = 2 FEET
2. GROUNDWATER SURFACE CONTOUR INTERVAL = 25 FEET
3. STATIC WATER LEVELS MEASURED ON MAY 7, 2020.
4. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATUM, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL GROUNDWATER CONDITIONS.
5. GROUNDWATER CONTOUR LINES SHOW THE WATER TABLE SHAPE AND ELEVATION. THESE CONTOURS ARE INFERRED LINES FOLLOWING THE GROUNDWATER SURFACE AT A CONSTANT ELEVATION ABOVE SEA LEVEL. THE GROUNDWATER FLOW DIRECTION IS GENERALLY PERPENDICULAR TO THE GROUNDWATER SURFACE CONTOURS, SIMILAR TO THE RELATIONSHIP BETWEEN SURFACE WATER FLOW AND TOPOGRAPHIC CONTOURS.
6. BASEMAP INFORMATION (E.G., EXISTING TOPOGRAPHY, ROADS, TREE LINES, FENCE LINES, ETC.) TAKEN FROM AERIAL SURVEY PREPARED BY MCKENZIE SNYDER. DATE OF AERIAL PHOTOGRAPHY: FEBRUARY 18, 2017. EXISTING CONDITIONS WITHIN THE POND AREAS, BASED ON MULTIPLE FIELD SURVEYS BY H&B SURVEYING AND MAPPINGS LLC, FLORA SURVEYING ASSOCIATES, RYAN CONSTRUCTION, AND GLOVER CONSTRUCTION, COLLECTED FROM 2017 THROUGH 2020, AND COMPILED BY GOLDER ASSOCIATES.
7. LITHIUM ANALYTICAL DATA COLLETED FROM MARCH 2 - MAY 7, 2020. RESULTS ARE PRESENTED IN MICROGRAMS PER LITER (ug/l)
8. VA GPS=25 ug/l; GWPS=40 ug/l

CLIENT
DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

PROJECT
ACM FIELD INVESTIGATION REPORT

TITLE
EAST POND LITHIUM ISOCONCENTRATION CONTOURS MARCH - MAY 2020

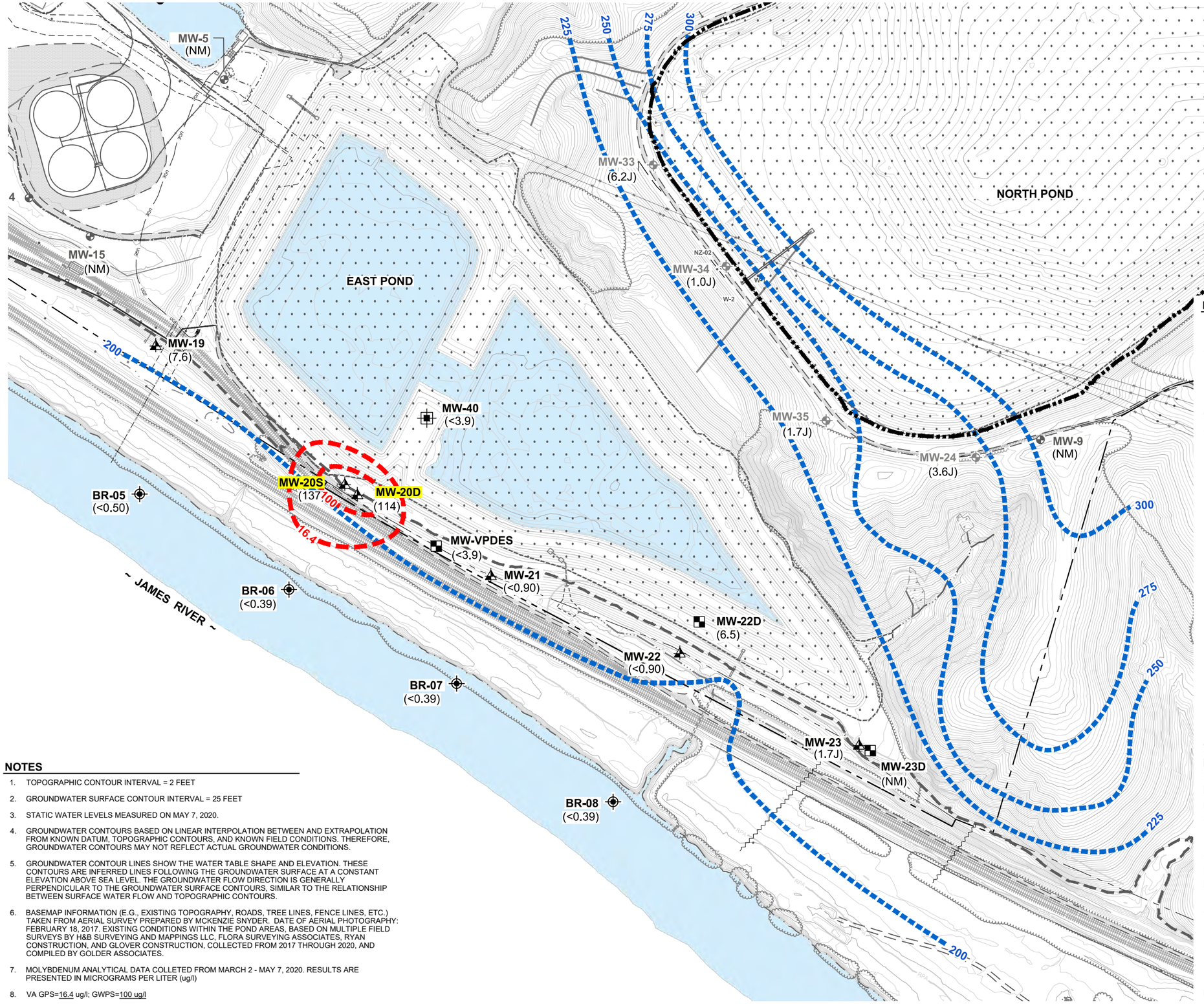
CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-15
DESIGNED	HDE
PREPARED	SIB
REVIEWED	MGW
APPROVED	MGW

PROJECT NO. 20-140438 | REV. 0 | FIGURE 7

Path: G:\Plan Production Data Files\Drawing Data Files\20-140438\010_Bremo-ACM\Active Drawings\20140438-010-07.dwg

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



NOTES

1. TOPOGRAPHIC CONTOUR INTERVAL = 2 FEET
2. GROUNDWATER SURFACE CONTOUR INTERVAL = 25 FEET
3. STATIC WATER LEVELS MEASURED ON MAY 7, 2020.
4. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATUM, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL GROUNDWATER CONDITIONS.
5. GROUNDWATER CONTOUR LINES SHOW THE WATER TABLE SHAPE AND ELEVATION. THESE CONTOURS ARE INFERRED LINES FOLLOWING THE GROUNDWATER SURFACE AT A CONSTANT ELEVATION ABOVE SEA LEVEL. THE GROUNDWATER FLOW DIRECTION IS GENERALLY PERPENDICULAR TO THE GROUNDWATER SURFACE CONTOURS, SIMILAR TO THE RELATIONSHIP BETWEEN SURFACE WATER FLOW AND TOPOGRAPHIC CONTOURS.
6. BASEMAP INFORMATION (E.G., EXISTING TOPOGRAPHY, ROADS, TREE LINES, FENCE LINES, ETC.) TAKEN FROM AERIAL SURVEY PREPARED BY MCKENZIE SNYDER. DATE OF AERIAL PHOTOGRAPHY: FEBRUARY 18, 2017. EXISTING CONDITIONS WITHIN THE POND AREAS, BASED ON MULTIPLE FIELD SURVEYS BY H&B SURVEYING AND MAPPINGS LLC, FLORA SURVEYING ASSOCIATES, RYAN CONSTRUCTION, AND GLOVER CONSTRUCTION, COLLECTED FROM 2017 THROUGH 2020, AND COMPILED BY GOLDER ASSOCIATES.
7. MOLYBDENUM ANALYTICAL DATA COLLETED FROM MARCH 2 - MAY 7, 2020. RESULTS ARE PRESENTED IN MICROGRAMS PER LITER (ug/l)
8. VA GPS=16.4 ug/l; GWPS=100 ug/l

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS) (FROM AERIAL SURVEY - SEE NOTE 6)
- WETLANDS
- APPROXIMATE LIMITS OF EXISTING ASH PONDS
- APPROXIMATE LIMITS OF NORTH ASH POND FILL
- LIMITS OF 100-YR FLOOD PLAIN
- MW-36S — GROUNDWATER OBSERVATION WELL LOCATION AND IDENTIFICATION
- (114) — MOLYBDENUM CONCENTRATION (ug/l)
- (NM) — NOT MEASURED
- MW-21 — FEDERAL CCR RULE COMPLIANCE WELL LOCATION AND IDENTIFICATION - EAST POND
- MW-27S — STATE GROUNDWATER COMPLIANCE WELL LOCATION AND IDENTIFICATION
- MW-2 — GROUNDWATER OBSERVATION WELL LOCATION AND IDENTIFICATION
- MW-9 — FORMER VPDES MONITORING WELL
- MW-33 — FEDERAL CCR RULE COMPLIANCE WELL LOCATION AND IDENTIFICATION - NORTH POND
- 300 — POTENTIOMETRIC SURFACE CONTOURS
- MW-21 — MONITORING WELL WITH MOLYBDENUM GPS EXCEEDENCE
- BR-07 — SURFACE WATER MONITORING LOCATION
- MW-40 — CLOSURE DEMONSTRATION WELL
- 100 — MOLYBDENUM ISOCONCENTRATION CONTOUR

CLIENT
DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

PROJECT
ACM FIELD INVESTIGATION REPORT

TITLE
EAST POND MOLYBDENUM ISOCONCENTRATION CONTOURS MARCH - MAY 2020

CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-15
DESIGNED	HDE
PREPARED	SIB
REVIEWED	MGW
APPROVED	MGW

PROJECT NO. 20-140438 | REV. 0 | FIGURE 8

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

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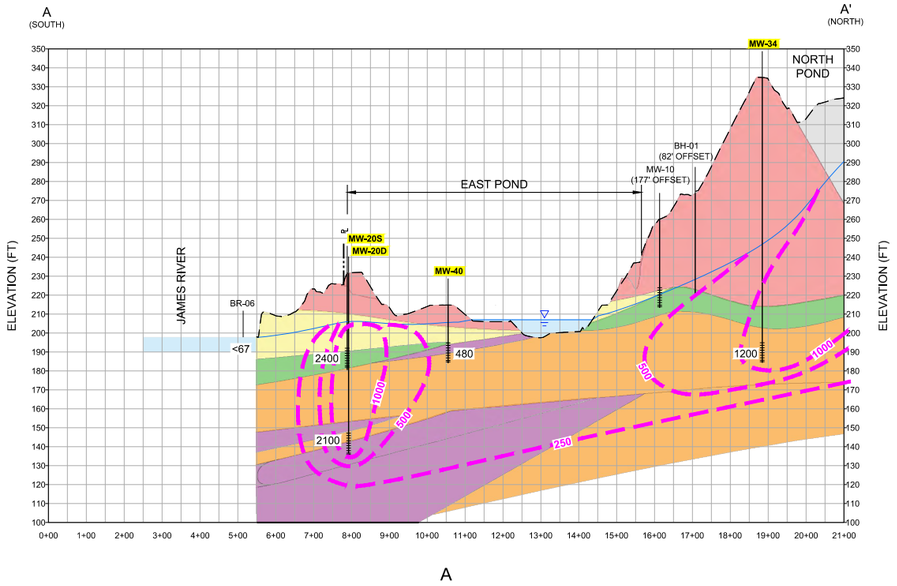

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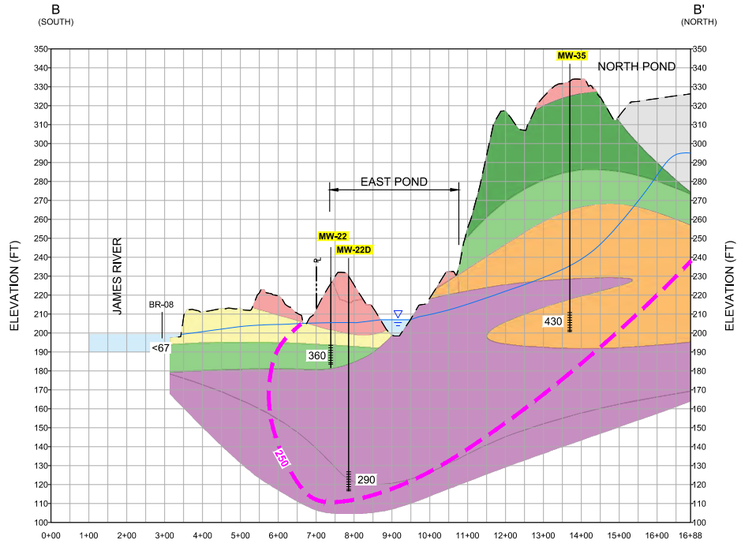

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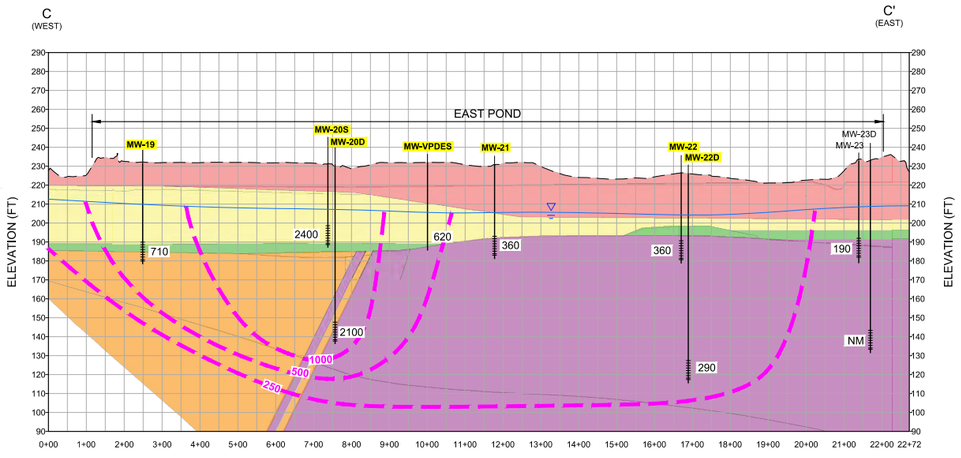

C

VERTICAL EXAGGERATION: 5X

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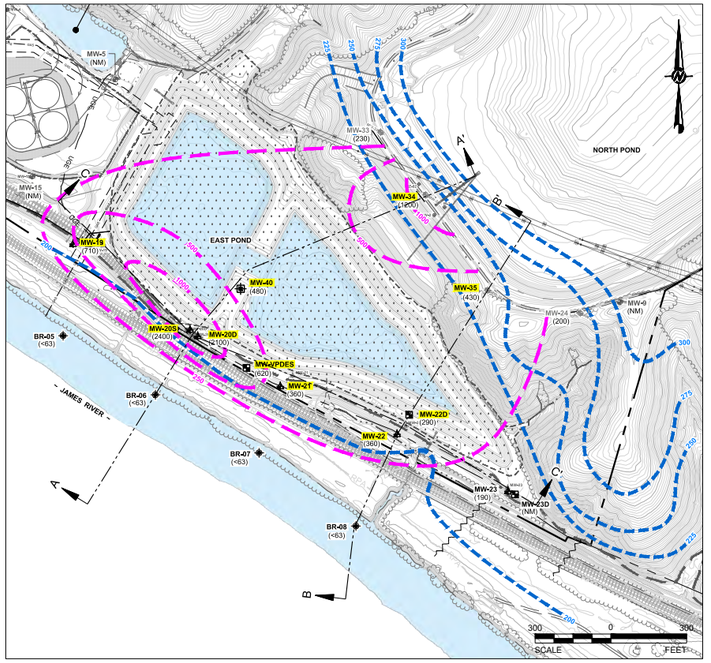
SCALE 40 0 40 FEET



NOTES

1. WATER TABLE SURFACE BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATUM, TOPOGRAPHIC CONTOURS AND KNOWN FIELD CONDITIONS. THEREFORE, WATER TABLE SURFACE MAY NOT REFLECT ACTUAL GROUND WATER CONDITIONS.

LEGEND

- EXISTING GROUND
- GROUND WATER
- ALLUVIUM
- COAL COMBUSTION RESIDUALS (CCR)
- PARTIALLY WEATHERED BEDROCK
- BERM MATERIAL
- SAPROLITE

BEDROCK

- PORPHYROBLASTIC BIOTITE AND BIOTITE-GARNET SCHIST
- GNEISSIC QUARTZ DIORITE, GRANODIORITE, AND SOME GRANITE
- 250 BORON CONCENTRATION (ug/l)
- MW-21 MONITORING WELL WITH GROUNDWATER PROTECTION STANDARD EXCEEDANCE

CLIENT
DOMINION ENERGY

PROJECT
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

TITLE
GEOLOGIC CROSS SECTIONS A-A', B-B' AND C-C'
- BORON ISOCONCENTRATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-15
DESIGNED	HDE
PREPARED	SIB
REVIEWED	MGW
APPROVED	MGW

PROJECT NO. 20-140438
REV. 0
DRAWING 9

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

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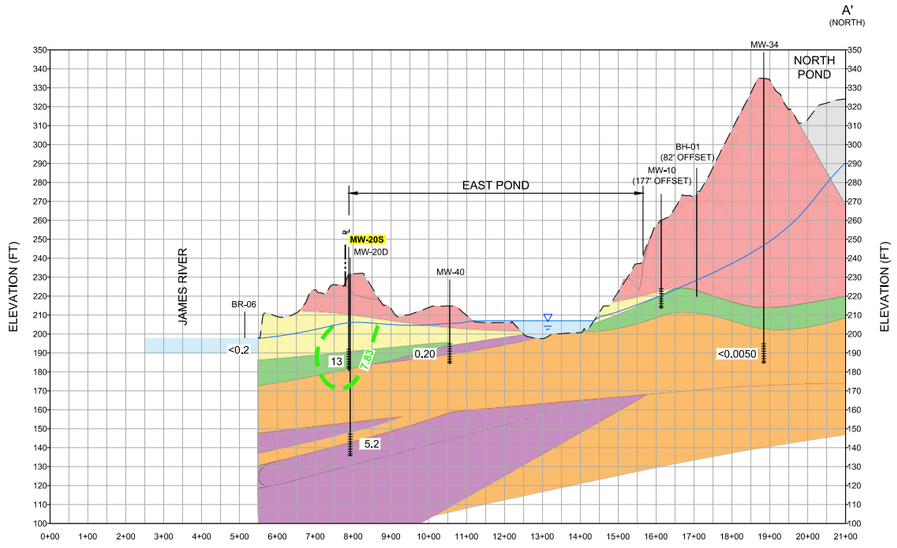

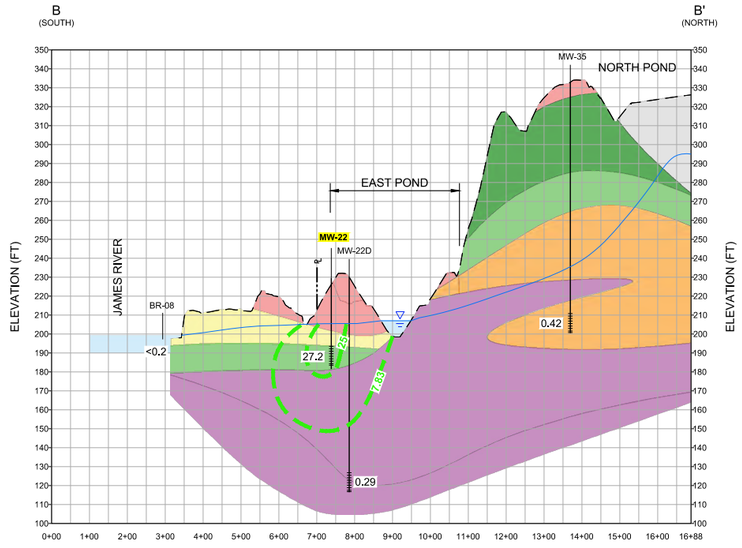

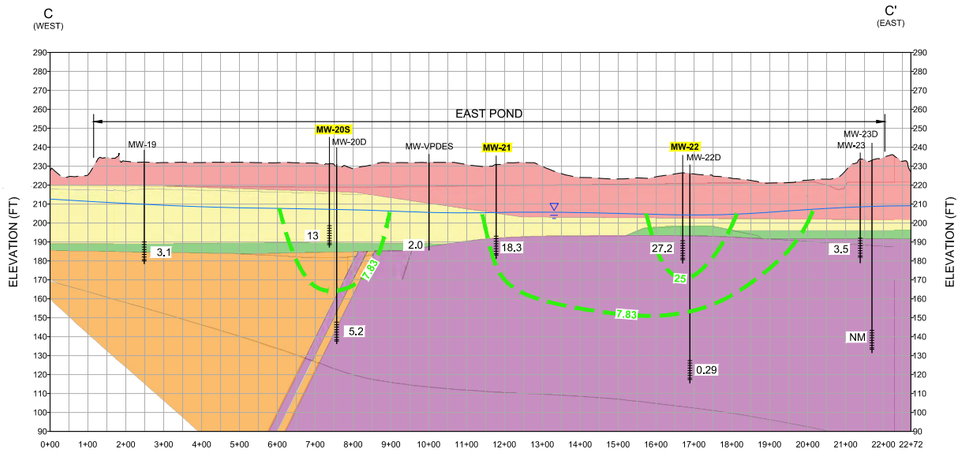

VERTICAL EXAGGERATION: 5X

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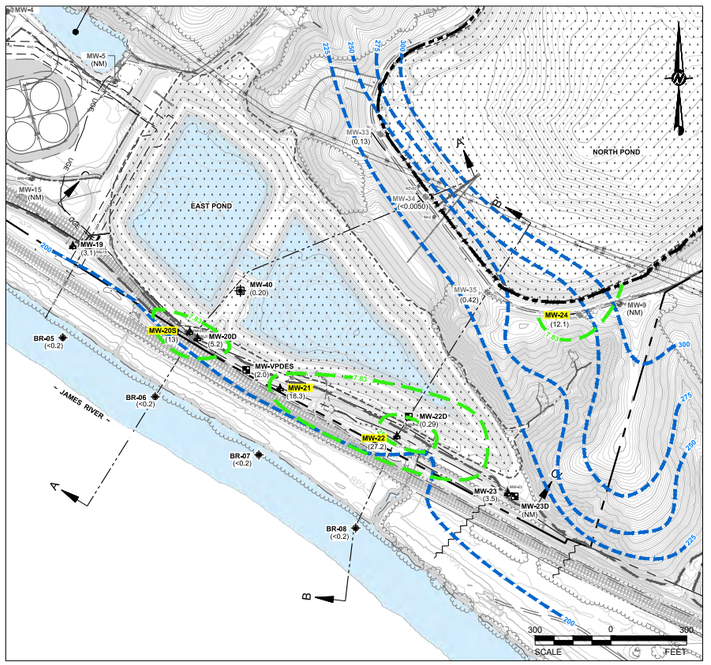
SCALE 40 0 40 FEET



NOTES

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LEGEND

- EXISTING GROUND
- GROUND WATER
- ALLUVIUM
- COAL COMBUSTION RESIDUALS (CCR)
- PARTIALLY WEATHERED BEDROCK
- BERM MATERIAL
- SAPROLITE

BEDROCK

- PORPHYROBLASTIC BIOTITE AND BIOTITE-GARNET SCHIST
- GNEISSIC QUARTZ DIORITE, GRANODIORITE, AND SOME GRANITE
- 25 — COBALT CONCENTRATION (ug/l)
- MW-21 — MONITORING WELL WITH GROUNDWATER PROTECTION STANDARD EXCEEDANCE

CLIENT
DOMINION ENERGY

PROJECT
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

TITLE
GEOLOGIC CROSS SECTIONS A-A', B-B' AND C-C'
- COBALT ISOCONCENTRATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-15
DESIGNED	HDE
PREPARED	SIB
REVIEWED	MGW
APPROVED	MGW

PROJECT NO. 20-140438 | REV. 0 | DRAWING 10

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

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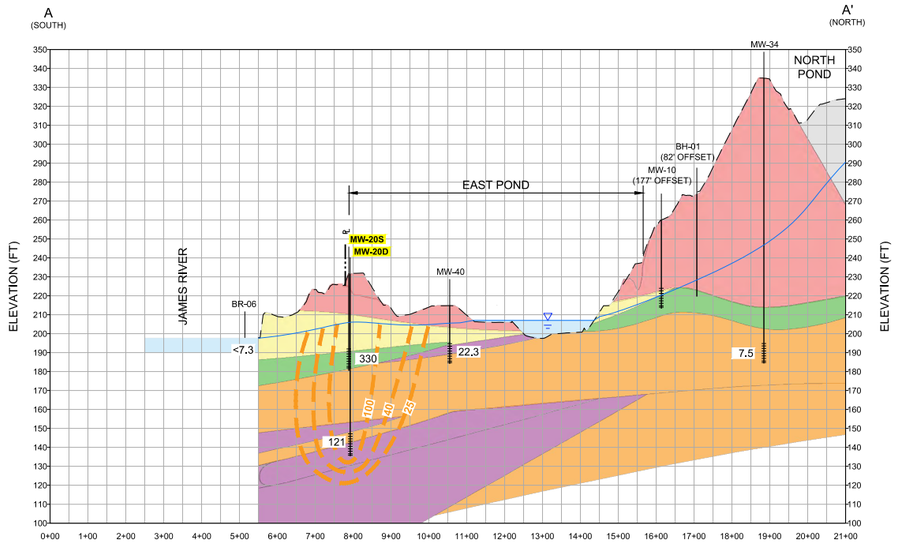

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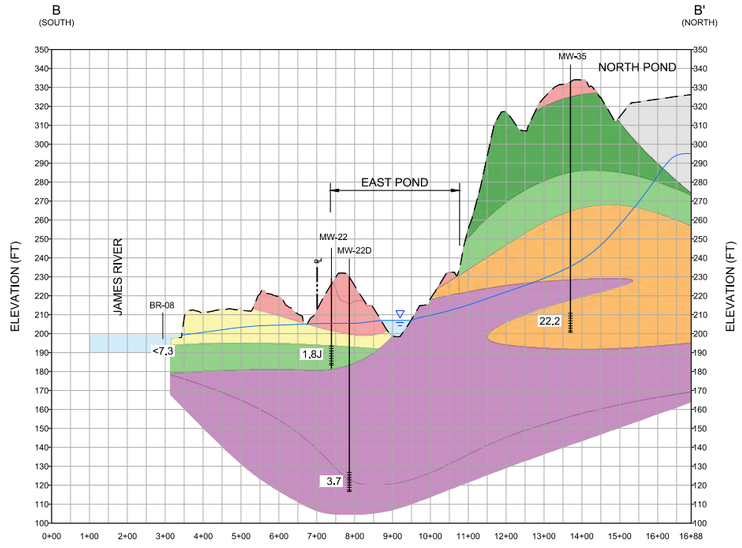

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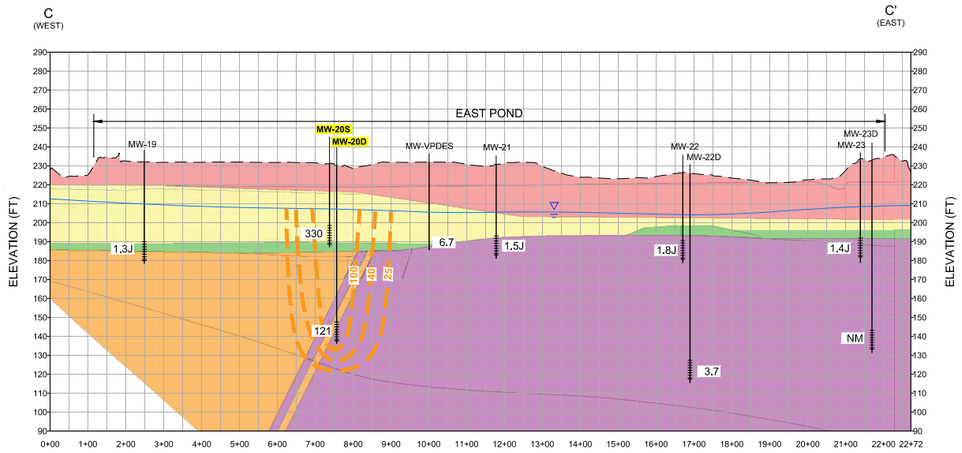

C

VERTICAL EXAGGERATION: 5X

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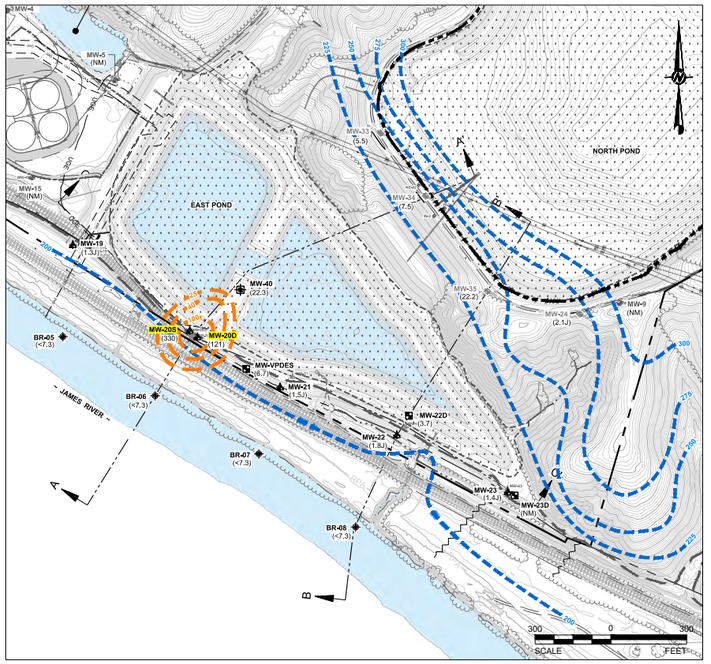
SCALE 40 0 40 FEET



NOTES

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LEGEND

- EXISTING GROUND
- GROUND WATER
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- COAL COMBUSTION RESIDUALS (CCR)
- PARTIALLY WEATHERED BEDROCK
- BERM MATERIAL
- SAPROLITE

BEDROCK

- PORPHYROBLASTIC BIOTITE AND BIOTITE-GARNET SCHIST
- GNEISSIC QUARTZ DIORITE, GRANODIORITE, AND SOME GRANITE
- 100 — LITHIUM CONCENTRATION (ug/l)
- MW-21 — MONITORING WELL WITH GROUNDWATER PROTECTION STANDARD EXCEEDANCE

CLIENT
DOMINION ENERGY

PROJECT
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

TITLE
GEOLOGIC CROSS SECTIONS A-A', B-B' AND C-C' - LITHIUM ISOCONCENTRATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-15
DESIGNED	HDE
PREPARED	SIB
REVIEWED	MGW
APPROVED	MGW

PROJECT NO. 20-140438
REV. 0
DRAWING 11

Path: G:\Plan Production Data Files\Drawing Data Files\20-140438\010_Bremo-ACM\Active Drawings\20140438-010-11.dwg
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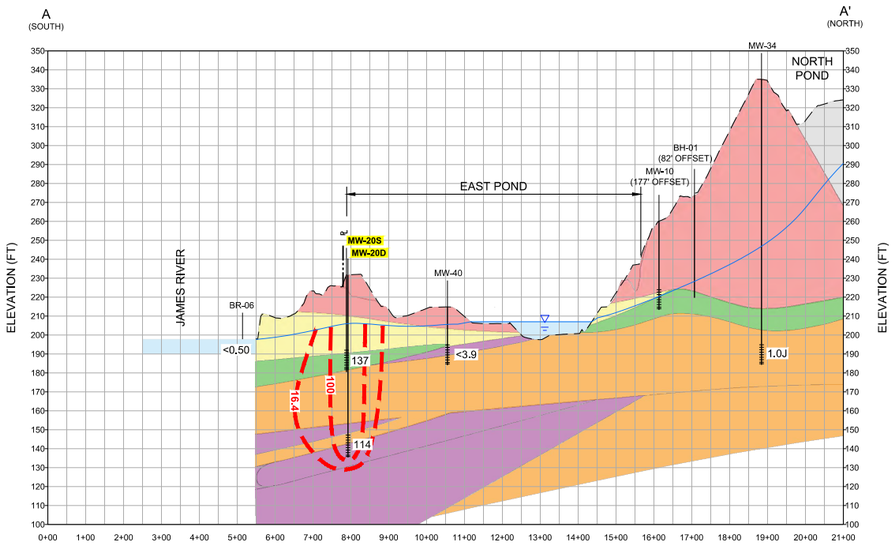

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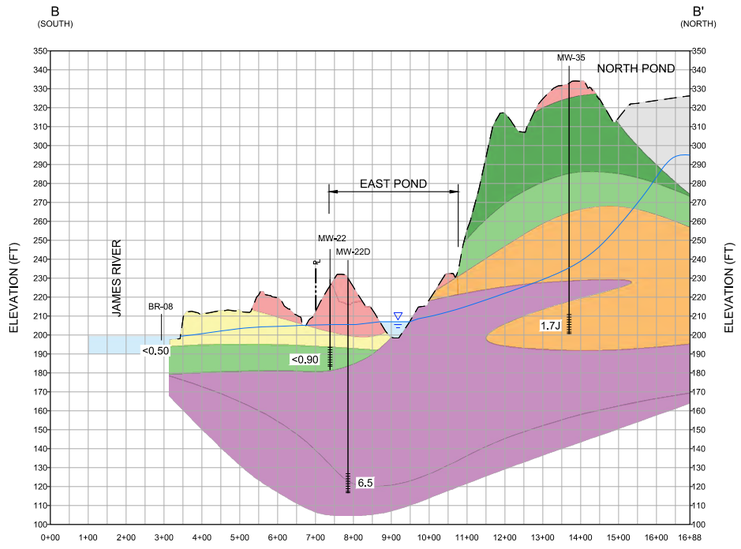

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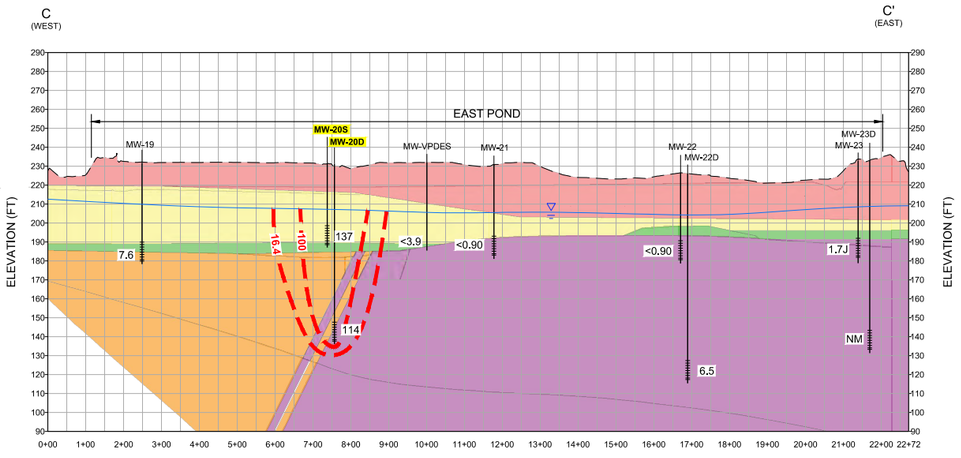
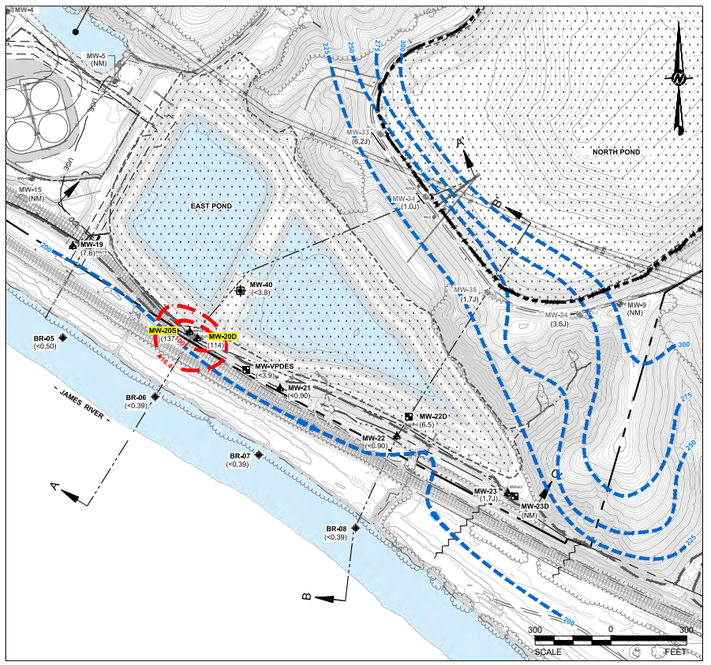


C

VERTICAL EXAGGERATION: 5X

SCALE 200 0 200 400 FEET

SCALE 40 0 40 FEET



NOTES

1. WATER TABLE SURFACE BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATUM, TOPOGRAPHIC CONTOURS AND KNOWN FIELD CONDITIONS. THEREFORE, WATER TABLE SURFACE MAY NOT REFLECT ACTUAL GROUND WATER CONDITIONS.

LEGEND

- EXISTING GROUND
- GROUND WATER
- ALLUVIUM
- COAL COMBUSTION RESIDUALS (CCR)
- PARTIALLY WEATHERED BEDROCK
- BERM MATERIAL
- SAPROLITE

BEDROCK

- PORPHYROBLASTIC BIOTITE AND BIOTITE-GARNET SCHIST
- GNEISSIC QUARTZ DIORITE, GRANODIORITE, AND SOME GRANITE
- 100 — MOLYBDNUM CONCENTRATION (ug/l)
- MW-21 — MONITORING WELL WITH GROUNDWATER PROTECTION STANDARD EXCEEDANCE

CLIENT
DOMINION ENERGY

PROJECT
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

TITLE
GEOLOGIC CROSS SECTIONS A-A', B-B' AND C-C' - MOLYBDENUM ISOCONCENTRATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-15
DESIGNED	HDE
PREPARED	SIB
REVIEWED	MGW
APPROVED	MGW

PROJECT NO. 20-140438
REV. 0
DRAWING 12

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

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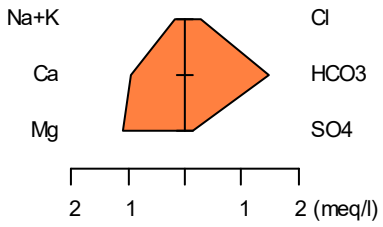
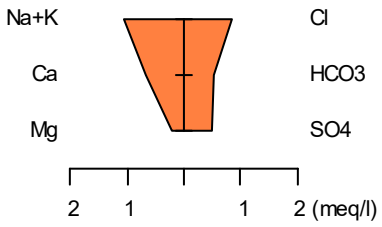
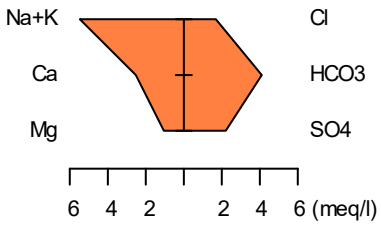
Upgradient Wells, MW-11



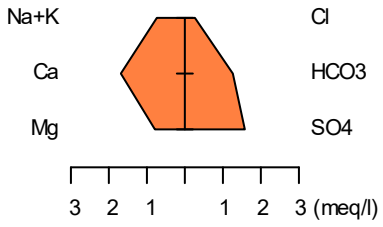
Upgradient Wells, MW-29S



Upgradient Wells, MW-29D



EAP Downgradient, MW-19



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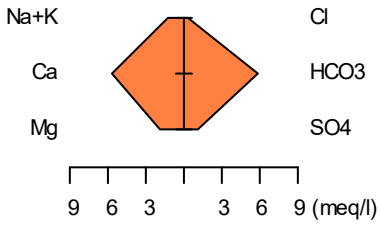
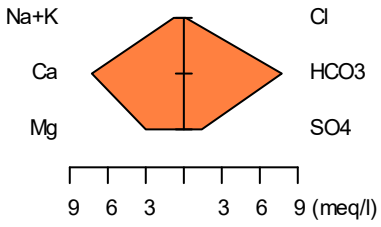
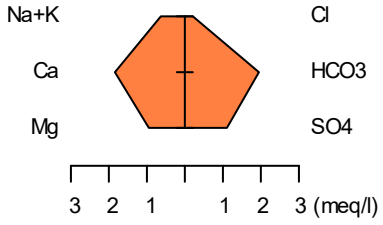


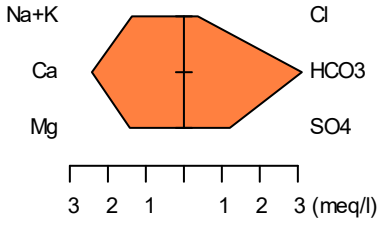
EAP Downgradient, MW-20S



EAP Downgradient, MW-21



EAP Downgradient, MW-22



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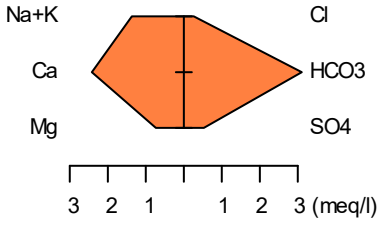
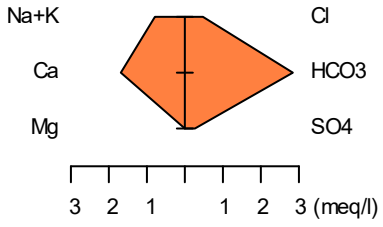
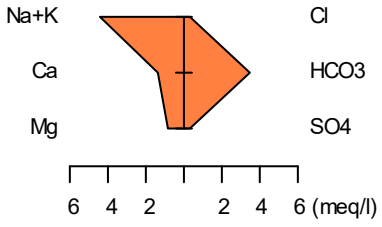


EAP Downgradient, MW-23



EAP Downgradient, MW-23D



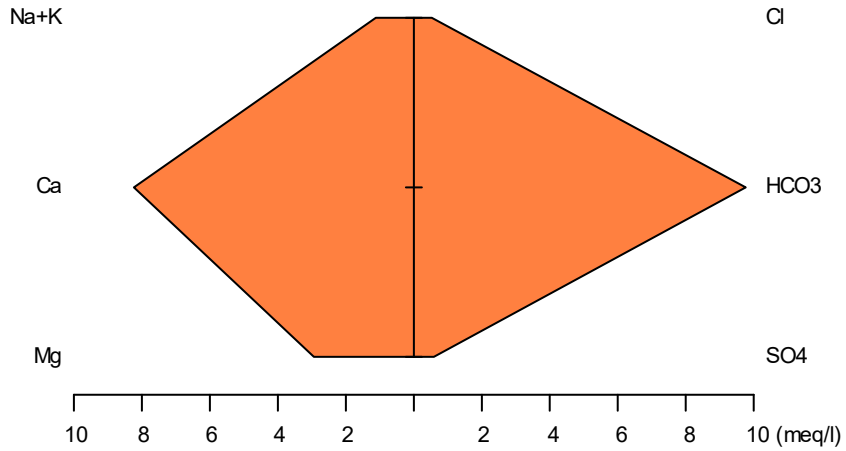
Notes:

EAP = East Ash Pond
meq/l = milliequivalents per liter

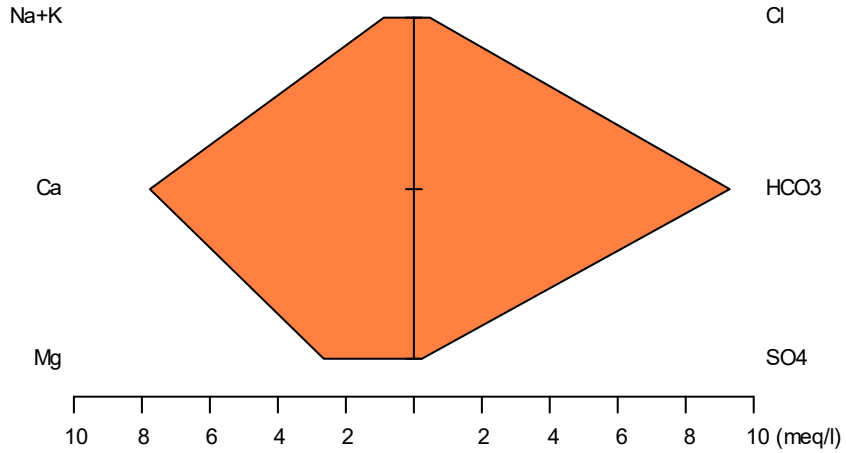
DESCRIPTION: Chart 1 - Stiff Diagrams East Pond Wells

GOLDER	PROJECT: Bremo Power Station North Pond ACM	PROJECT NO: 20-140438
	CLIENT: Dominion Energy	DATE: August 13, 2020

Leach, SDW-4



Leach, SDW-7



DESCRIPTION: Chart 2 - Stiff Diagrams North Pond Pore Water

GOLDER	PROJECT: Bremo Power Station North Pond ACM	PROJECT NO: 20-140438
	CLIENT: Dominion Energy	DATE: August 13, 2020

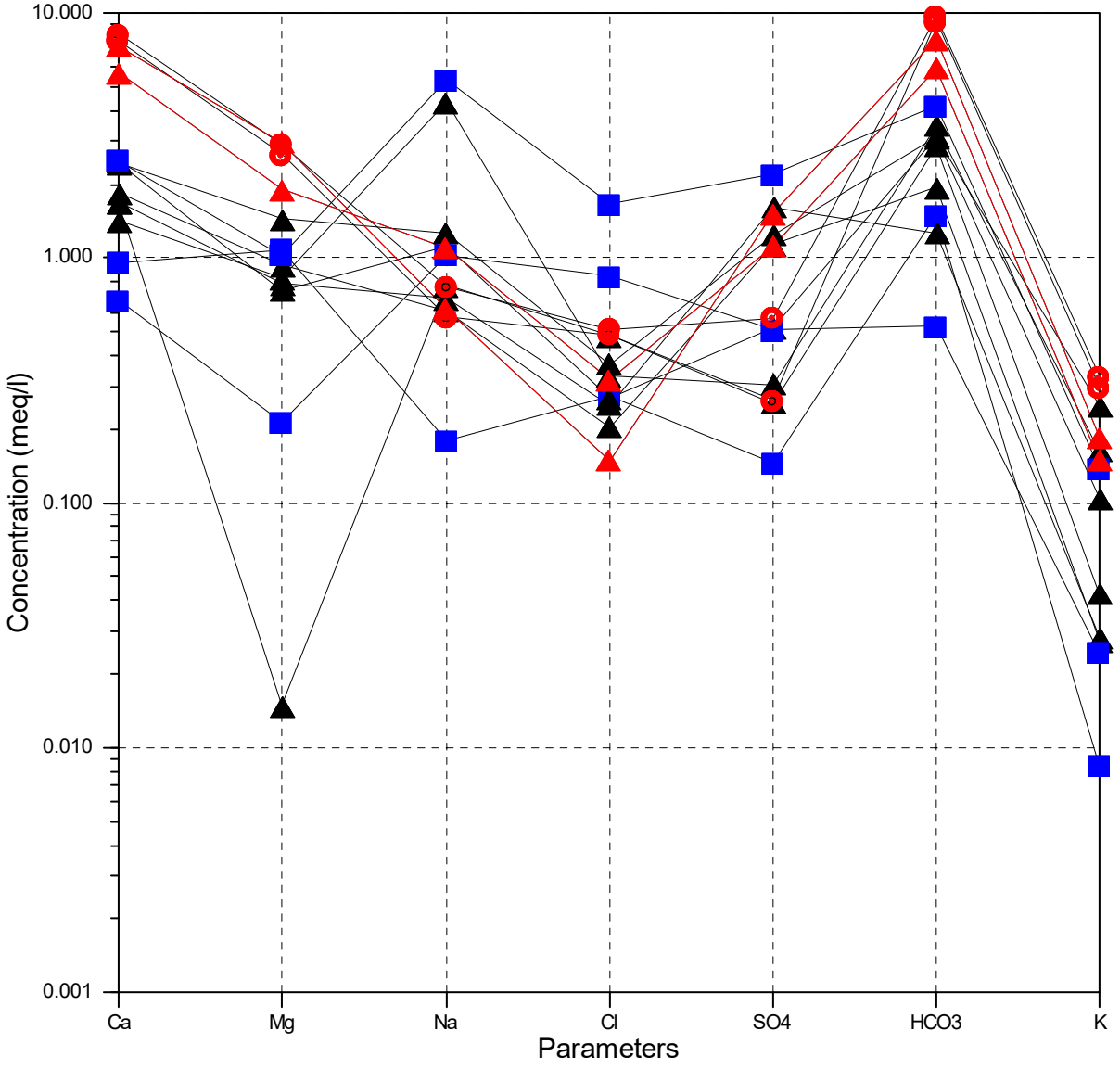
Legend

- NAP Pore Water
- Upgradient Wells
- EAP Dow ngradient

Notes:

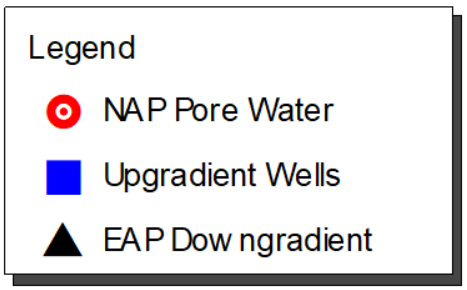
EAP = East Ash Pond
NAP = North Ash Pond
meq/l = milliequivalents per liter

Schoeller Plot



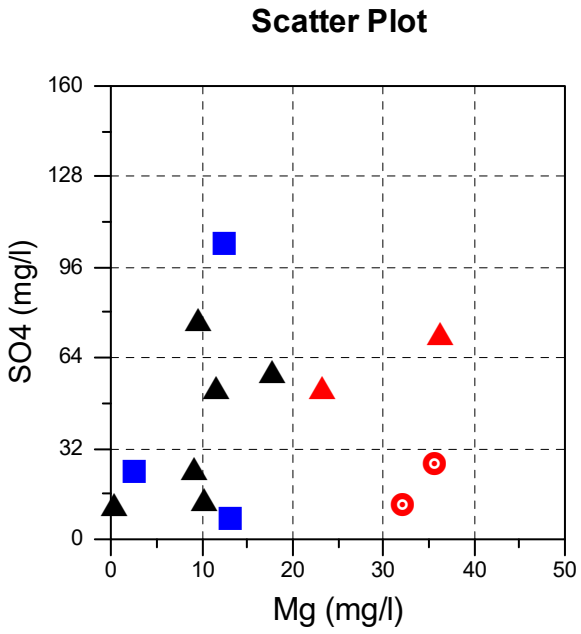
DESCRIPTION: Chart 3 - Schoeller Plot

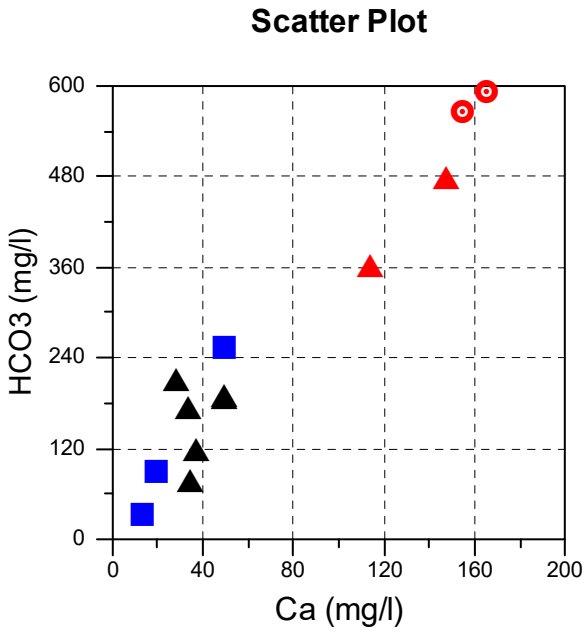
GOLDER	PROJECT: Bremo Power Station North Pond ACM	PROJECT NO: 20-140438
	CLIENT: Dominion Energy	DATE: August 13, 2020

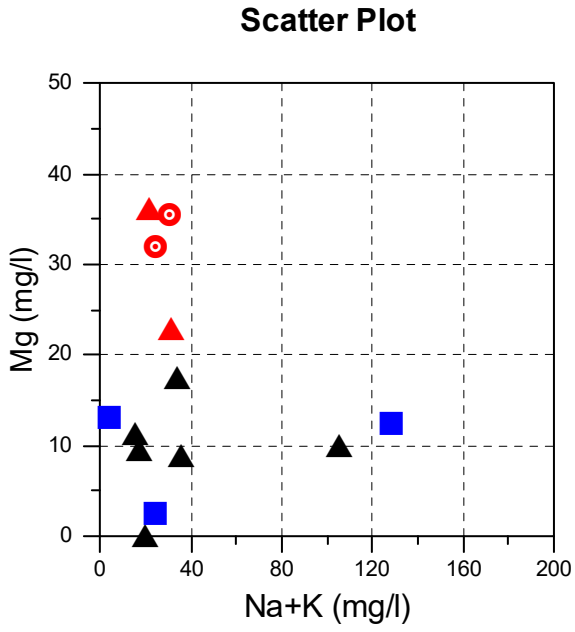


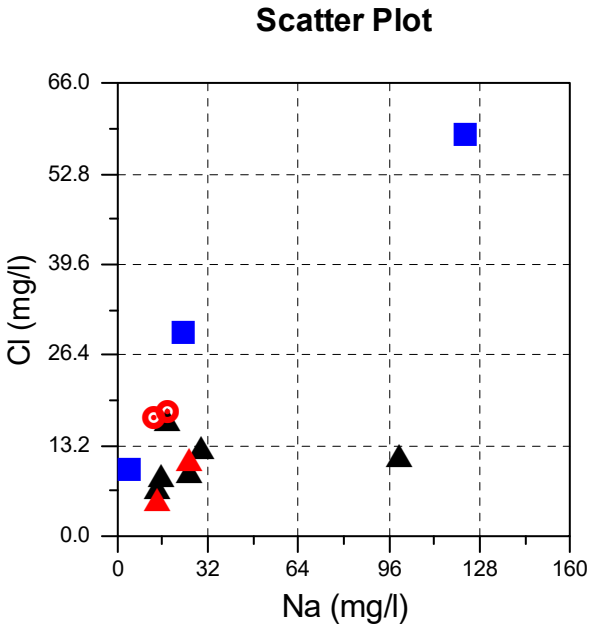
Notes:

EAP = East Ash Pond
NAP = North Ash Pond
mg/l = milligrams per liter









DESCRIPTION: Chart 4 - Scatter Plots - Common Anions and Cations

GOLDER	PROJECT: Bremo Power Station North Pond ACM	PROJECT NO: 20-140438
	CLIENT: Dominion Energy	DATE: August 13, 2020

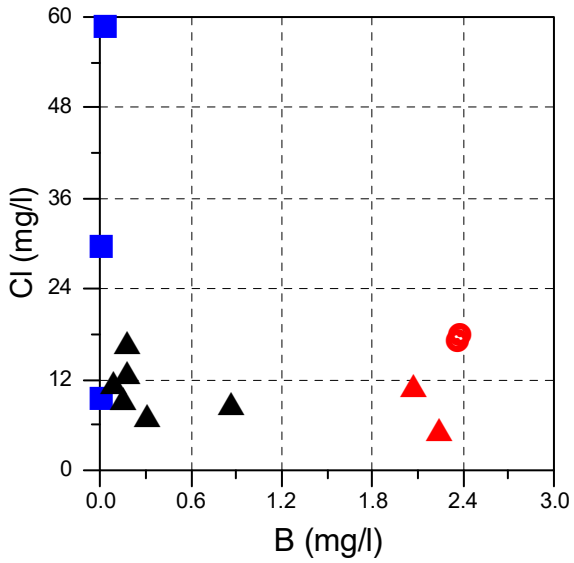
Legend

- NAP Pore Water
- Upgradient Wells
- EAP Dow ngradient

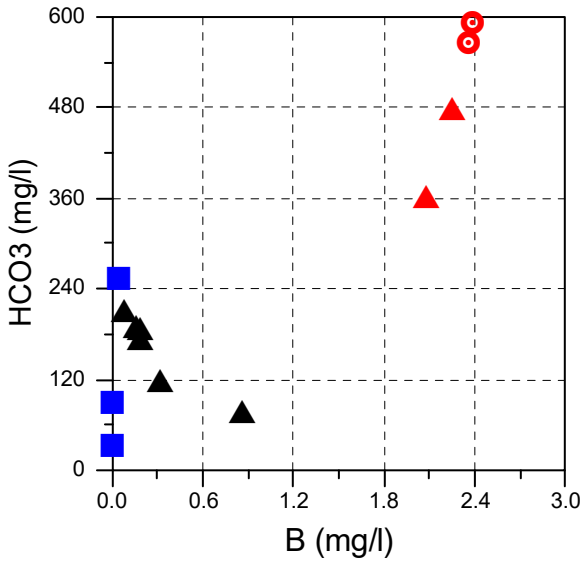
Notes:

EAP = East Ash Pond
NAP = North Ash Pond
mg/l = milligrams per liter

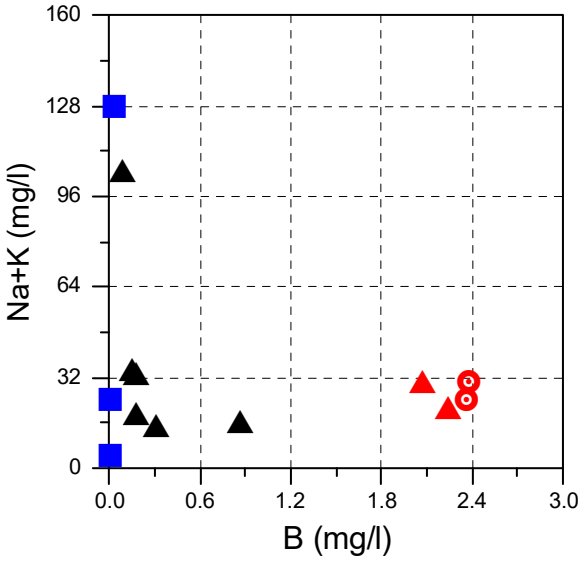
Scatter Plot



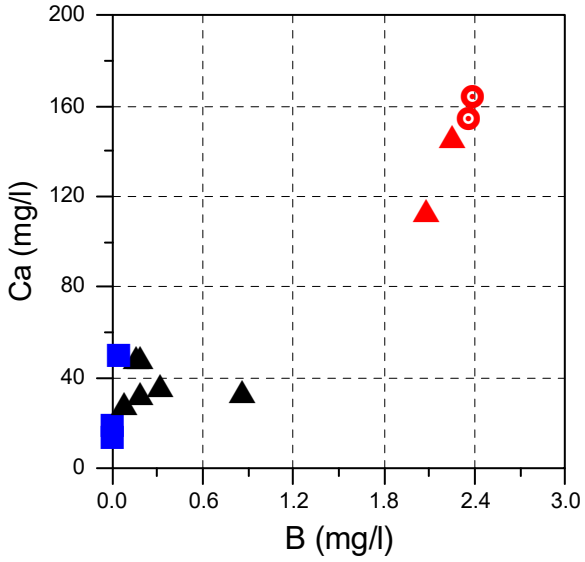
Scatter Plot



Scatter Plot



Scatter Plot



DESCRIPTION: Chart 5 - Scatter Plots - Boron Vs. Common Anions and Cations

GOLDER	PROJECT: Bremo Power Station North Pond ACM	PROJECT NO: 20-140438
	CLIENT: Dominion Energy	DATE: August 13, 2020

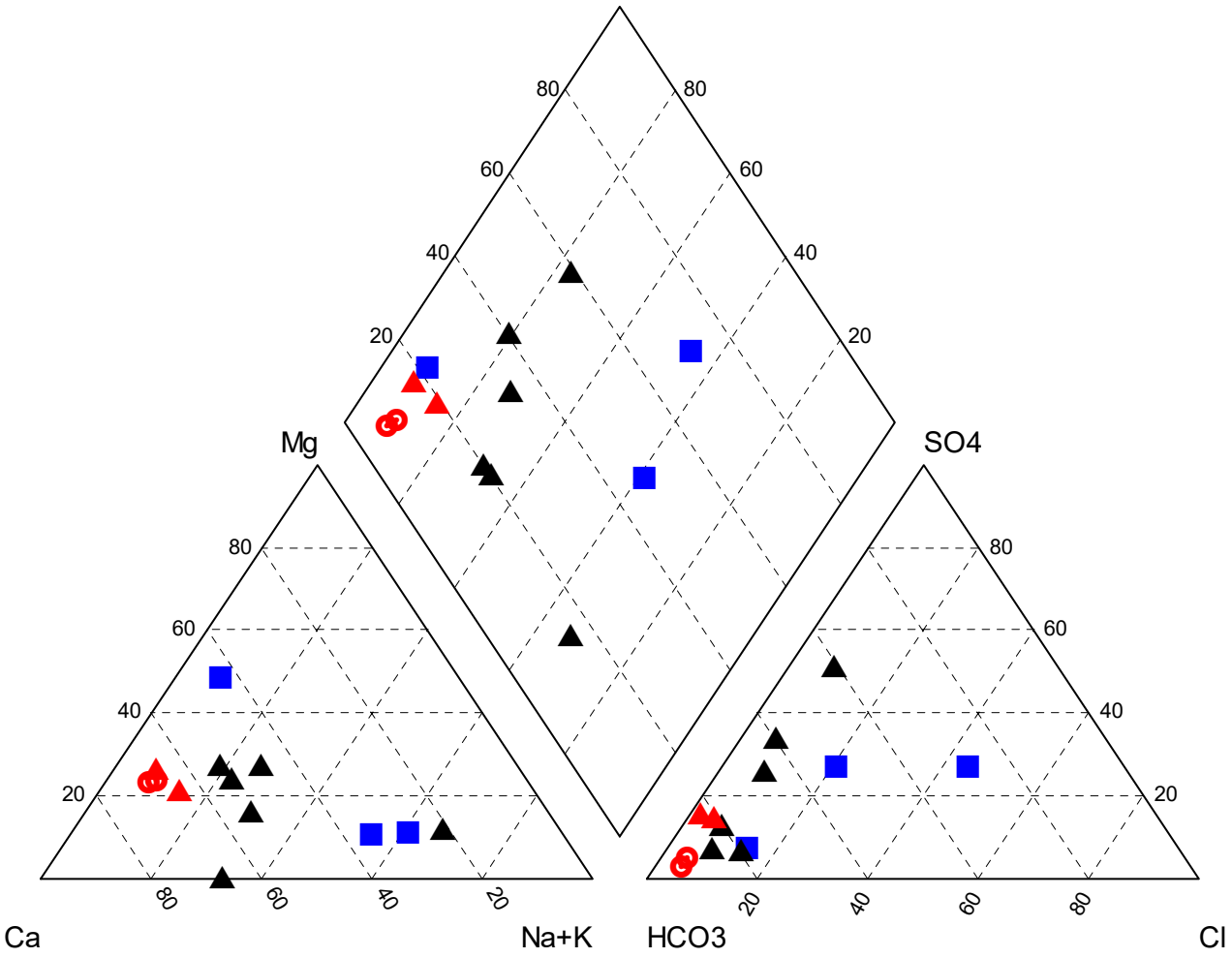
Legend

- NAP Pore Water
- Upgradient Wells
- EAP Dow ngradient

Notes:

EAP = East Ash Pond
NAP = North Ash Pond

Piper Plot



DESCRIPTION: Chart 6 - Piper Plot

GOLDER	PROJECT: Bremo Power Station North Pond ACM	PROJECT NO: 20-140438
	CLIENT: Dominion Energy	DATE: August 13, 2020

APPENDIX A

Field Data Sheets

Date: 05/07/2020

GOLDER

WELL GAUGING LOG

Project Name: Bremo Power Station - NAP Project No./Task No.: 20140438

Sampler(s): T. Kokal / A. Bartlett

Equipment: WL indicator

Well ID	Personnel (initials)	Time	DTW (feet)	DTB (feet)	Well Condition Summary				
					Protective Casing	Well Casing	Label	Lock	Pad Condition
MW-36D	TK	1441	10.04	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-36S	TK	1440	15.38	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-11	TK	1446	26.79	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-28	AB	1450	37.99	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-27D	TK	1456	39.34	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-27S	TK	1455	40.55	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-33	AB	1500	90.72	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-34	TK	1503	93.76	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-35	AB	1508	104.85	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-24	AB	1512	78.10	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-25D	AB	1516 TK	~~43.34~~ 43.71 TK	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-25S	TK	1516	43.71	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-26D	TK	1520	52.61	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-26S	TK	1521	52.95	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-29D	TK	1534	42.46	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-29S	TK	1531	40.40	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
					☐ OK ☐ Damaged	☐ OK ☐ Damaged	☐ OK ☐ Inadequate	☐ Yes ☐ No	☐ OK ☐ Damaged

Observations/Notes: _____

Signature: _____ Date: 05/07/2020

QA/QC Signature: _____ Date: 05/08/2020

Date: 05/07/2020

GOLDER

WELL GAUGING LOG

Project Name: Bremo Power Station - EAP Project No./Task No.: 20140438

Sampler(s): A. Bartlett / T. Kokal

Equipment: WL indicator

Well ID	Personnel (initials)	Time	DTW (feet)	DTB (feet)	Well Condition Summary				
					Protective Casing	Well Casing	Label	Lock	Pad Condition
MW-19	AB	1414	24.91	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-21	TK	1424	25.63	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-22	AB	1429	21.16	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-22D	TK	1100	28.33	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-23	AB	1434	23.85		☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-23D	AB	1435	30.00		☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-20S	AB	1420	27.24	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-20D	AB	1419	27.10	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☒ Yes ☐ No	☒ OK ☐ Damaged
MW-40	TK	~~1422~~ 0935 TK	~~20.57~~ 9.98 TK	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☐ Yes ☒ No	☒ OK ☐ Damaged
MW-VPDES	TK	1224	20.59	—	☒ OK ☐ Damaged	☒ OK ☐ Damaged	☒ OK ☐ Inadequate	☐ Yes ☒ No	☒ OK ☐ Damaged
					☐ OK ☐ Damaged	☐ OK ☐ Damaged	☐ OK ☐ Inadequate	☐ Yes ☐ No	☐ OK ☐ Damaged
					☐ OK ☐ Damaged	☐ OK ☐ Damaged	☐ OK ☐ Inadequate	☐ Yes ☐ No	☐ OK ☐ Damaged
					☐ OK ☐ Damaged	☐ OK ☐ Damaged	☐ OK ☐ Inadequate	☐ Yes ☐ No	☐ OK ☐ Damaged
					☐ OK ☐ Damaged	☐ OK ☐ Damaged	☐ OK ☐ Inadequate	☐ Yes ☐ No	☐ OK ☐ Damaged
					☐ OK ☐ Damaged	☐ OK ☐ Damaged	☐ OK ☐ Inadequate	☐ Yes ☐ No	☐ OK ☐ Damaged
					☐ OK ☐ Damaged	☐ OK ☐ Damaged	☐ OK ☐ Inadequate	☐ Yes ☐ No	☐ OK ☐ Damaged
					☐ OK ☐ Damaged	☐ OK ☐ Damaged	☐ OK ☐ Inadequate	☐ Yes ☐ No	☐ OK ☐ Damaged

Observations/Notes: _____

Signature: _____ Date: 05/07/2020

QA/QC Signature: _____ Date: 05/08/2020

GOLDER

MICROPURGE SAMPLING LOG

Date: 05/07/2020

Weather: sunny 50's

Project Name: Bremo Power Station

Project No./Task No.: 20140438

Event: EAP NES

Sampler(s): T. Kolcal

Well ID: MW-40

Field Calibration Completed: 05/07/2020 @ 0840

Well Diameter: 2.0 inches

Initial Depth to Water: 9.98 feet

Depth to Bottom: — feet

Water Column Thickness: — feet

Equipment Used:
- [X] WL Indicator
- [X] YSI ProDSS s/n: 16K102184
- [ ] In-Situ
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [X] MP-15 Controller Box
- [ ] Dedicated Bladder Pump
- [X] Non-dedicated BP
- [ ] _____

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)^{oC}	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
0942	6.79	696	11.66	0.74	16.1	-106.9	10.60	250
0947	6.79	695	18.24	0.57	16.1	-117.1	10.60	250
0952	6.79	696	9.95	0.51	16.1	-128.1	10.53	250
0957	6.80	698	7.25	0.48	16.0	-136.8	10.53	250
1002	6.80	700	5.19	0.45	16.3	-138.2	10.64	250
1005	—	—	SAMPLED		—			
1022	6.85	725	4.23	0.47	16.8	-125.2	10.75	250

Purge Cycle (End): 25/5 seconds @ 30 psi Flow Rate (ml/min End): 250

Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~~0.17~~ ~0.17

Total Purge Volume (Gallons): 2 Purge Water Management: on site containment

Purge Observations (color, odor, turbidity, sheen): clear grab sample

purge time: 0937 DTP = 28ft.

Sample Time: 1005 Field Filtered (0.45um): [ ] Yes [X] No

Sample Parameters/Analyte(s):
- [ ] VSWMR Table 3.1 Column A VOCs
- [ ] VSWMR Table 3.1 Column A Metals
- [ ] VSWMR Table 3.1 Column B
- [X] Other: 6010/6020 metals, NO_2/Cl/F/SO_4, TDS, Hardness, Ammonia, Mercury, Radium 226/228, Total Radium

Other Observations / Equipment Operation Problems:

Sampler Signature: _____ Date: 05/07/2020

QA/QC Signature: _____ Date: 05/08/2020

GOLDER

MICROPURGE SAMPLING LOG

Date: 05/07/2020
Weather: sunny 50's

Project Name: ~~EAP NES~~ TK Bremo PS
Project No./Task No.: 20140438
Event: EAP NES
Sampler(s): T. Kokal
Well ID: MW-22D
Field Calibration Completed: 05/07/2020 @ 0840
Well Diameter: 2.0 inches
Initial Depth to Water: 28.33 feet
Depth to Bottom: ——— feet
Water Column Thickness: ——— feet

Equipment Used:
- [X] WL Indicator
- [ ] Turbidity Meter
- [ ] Air Tank
- [ ] Dedicated Bladder Pump
- [X] YSI ProDSS s/n: 16K102184
- [ ] Peristaltic Pump
- [ ] Compressor
- [X] Non-dedicated BP
- [ ] In-Situ ———
- [ ] MP-10 Controller Box
- [X] MP-15 Controller Box
- [ ] ———

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)^{oC}	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
1107	7.71	545	13.38	5.39	16.4	-185.6	29.03	250
1112	7.70	547	7.93	1.09	16.1	-216.8	29.18	250
1117	7.69	549	10.69	0.51	16.0	-235.9	29.19	250
1122	7.68	549	10.43	0.36	16.0	-246.4	29.23	250
1127	7.67	551	7.63	0.32	15.9	-253.7	29.23	250
1132	7.68	550	6.67	0.30	16.0	-261.7	29.32	250
1135	———	———	———	SAMPLED	———	———	———	———
1148	7.69	572	2.65	0.24	16.8	-271.1	29.30	250

Purge Cycle (End): 20/10 seconds @ 65 psi
Flow Rate (ml/min End): 250
Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.5
Total Purge Volume (Gallons): 2.5
Purge Water Management: on site containment
Purge Observations (color, odor, turbidity, sheen): 87 clear grab sample
Purge time: 1102 DTP = ~~89~~ TK ft.
Sample Time: 1135
Field Filtered (0.45um): [ ] Yes [X] No

Sample Parameters/Analyte(s):
- [ ] VSWMR Table 3.1 Column A VOCs
- [ ] VSWMR Table 3.1 Column A Metals
- [ ] VSWMR Table 3.1 Column B
- [X] Other: 6010/6020 metals, NO_3/Cl/F/SO_4, TDS, Mercury, Radium 226/228, Total Radium

Other Observations / Equipment Operation Problems:

Sampler Signature: [signature] Date: 05/07/2020
QA/QC Signature: [signature] Date: 05/08/2020

GOLDER

MICROPURGE SAMPLING LOG

Date: 5/7/2020

Weather: Sunny 50's

Project Name: Breno Power Station

Project No./Task No.: 20140438

Event: EAP NES

Sampler(s): T. Kolcun

Well ID: VPDES

Field Calibration Completed: 05/07/2020 @ 0840

Well Diameter: 2.0 inches

Initial Depth to Water: 20.59 feet

Depth to Bottom: 31.05 feet

Water Column Thickness: ~~_____~~ feet

Equipment Used:
- [X] WL Indicator
- [ ] Turbidity Meter
- [ ] Air Tank
- [ ] Dedicated Bladder Pump
- [X] YSI Pro DSS S/N: 16K102184
- [ ] Peristaltic Pump
- [ ] Compressor
- [X] Non-dedicated BP
- [ ] In-Situ _____
- [ ] MP-10 Controller Box
- [X] MP-15 Controller Box
- [ ] _____

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)^{oC}	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
1231	6.16	495.1	23.35	1.22	17.3	62.5	21.60	250
1236	6.10	488.9	26.91	1.00	17.2	73.4	23.19	250
1241	6.10	488.0	22.61	1.04	17.7	74.7	23.39	250
1246	6.08	483.6	14.36	0.99	17.8	76.1	23.54	200
1251	5.99	446.0	8.76	0.78	17.8	77.9	23.70	200
1256	5.97	433.7	7.28	0.81	17.9	79.7	23.64	200
1301	5.96	427.8	8.22	0.71	18.0	80.7	23.67	200
1306	5.96	426.9	7.74	0.68	18.2	81.0	23.77	200
1310	~~_____~~	~~_____~~	~~_____~~ SAMPLED ~~_____~~		~~_____~~	~~_____~~	~~_____~~	~~_____~~
1338	5.97	437.7	7.45	1.01	20.2	56.8	23.84	200

Purge Cycle (End): 53/7 seconds @ 30 psi Flow Rate (ml/min End): 200

Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): 0.162

Total Purge Volume (Gallons): 1.5 Purge Water Management: On site containment

Purge Observations (color, odor, turbidity, sheen): clear grab sample

Purge time: 1226

Sample Time: 1310 Field Filtered (0.45um): [ ] Yes [X] No

Sample Parameters/Analyte(s):
- [ ] VSWMR Table 3.1 Column A VOCs
- [ ] VSWMR Table 3.1 Column A Metals
- [ ] VSWMR Table 3.1 Column B
- [X] Other: 6010/6020 metals, NO_3/Cl/F/SO_4, TDS, Mercury, Radium 224/228, Total Radium

Other Observations / Equipment Operation Problems:

Sampler Signature: _____ Date: 05/07/2020 Page 1 of 1

QA/QC Signature: _____ Date: 05/08/2020

GOLDER

MICROPURGE SAMPLING LOG

Date: 05/07/2020
Weather: sunny 40's

Project Name: Bremo Power Station
Project No./Task No.: 20140438
Event: EAP NES
Sampler(s): T. Kokal
Well ID: Equipment blank
Field Calibration Completed: 05/07/2020 @ 0840
Well Diameter: — inches
Initial Depth to Water: — feet
Depth to Bottom: — feet
Water Column Thickness: — feet

Equipment Used:
- ☐ WL Indicator
- ☐ YSI _____
- ☐ In-Situ _____
- ☐ Turbidity Meter
- ☐ Peristaltic Pump
- ☐ MP-10 Controller Box
- ☐ Air Tank
- ☐ Compressor
- ☐ MP-15 Controller Box
- ☐ Dedicated Bladder Pump
- ☐ Non-dedicated BP
- ☐ _____

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)^{oC}	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
0838	—	—	—	SAMPLED	—	—	—	—

Purge Cycle (End): — seconds @ — psi
Flow Rate (ml/min End): —
Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): —
Total Purge Volume (Gallons): —
Purge Water Management: —
Purge Observations (color, odor, turbidity, sheen): Clear grab sample taken @ MW-11 using lab supplied DI water.

Sample Time: 0838
Field Filtered (0.45um): ☐ Yes ☒ No

Sample Parameters/Analyte(s):
- ☐ VSWMR Table 3.1 Column A VOCs
- ☐ VSWMR Table 3.1 Column A Metals
- ☐ VSWMR Table 3.1 Column B
- ☒ Other: 6010/6020 metals, NO_3/Cl/F/SO_4, TDS, Hardness, Ammonia, Mercury, Radium 226/228, Total Radium

Other Observations / Equipment Operation Problems:

Sampler Signature: [signature] Date: 05/07/2020
QA/QC Signature: [signature] Date: 05/08/2020

GOLDER

MICROPURGE SAMPLING LOG

Date: 05/07/2020
Weather: Sunny 40's

Project Name: Bremo Power Station
Project No./Task No.: 20140438
Event: EAP NES
Sampler(s): T. Kolcal
Well ID: Field blank
Field Calibration Completed: 05/07/2020 @ 0840
Well Diameter: ____ inches
Initial Depth to Water: ____ feet
Depth to Bottom: ____ feet
Water Column Thickness: ____ feet

Equipment Used:
- ☐ WL Indicator
- ☐ Turbidity Meter
- ☐ Air Tank
- ☐ Dedicated Bladder Pump
- ☐ YSI ____
- ☐ Peristaltic Pump
- ☐ Compressor
- ☐ Non-dedicated BP
- ☐ In-Situ ____
- ☐ MP-10 Controller Box
- ☐ MP-15 Controller Box
- ☐ ____

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)°C	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
0852				SAMPLED				

Purge Cycle (End): ____ seconds @ ____ psi
Flow Rate (ml/min End): ____

Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ____

Total Purge Volume (Gallons): ____
Purge Water Management: ____

Purge Observations (color, odor, turbidity, sheen): Clear grab sample taken @ MW-11 using lab supplied DI water

Sample Time: 0852
Field Filtered (0.45um): ☐ Yes ☒ No

Sample Parameters/Analyte(s):
- ☐ VSWMR Table 3.1 Column A VOCs
- ☐ VSWMR Table 3.1 Column A Metals
- ☐ VSWMR Table 3.1 Column B
- ☒ Other: 6010/6020 metals, NO_3/Cl/F/SO_4, TDS, Hardness, Ammonia, Mercury, Radium 224/228, Total Radium

Other Observations / Equipment Operation Problems:

Sampler Signature: [signature] Date: 05/07/2020
QA/QC Signature: [signature] Date: 05/08/2020

Calibration Log

Project Name: EAP NES Event: Bremo

Instrument: YSI Pro DSS Serial Number: 16K102184

GOLDER

Solution Standard	Lot Number	Expiration Date	Standard Concentration	Temp. (°C)	Pre-Calibration Reading	Calibrated Reading	Initials
Date: 5/7/2020 Time: 0840							
pH 7.0 (S.U.)	HZZ4-03	08/20	7.00	18.9	7.06	7.03	AB
pH 10.0 (S.U.)	2001A50	7/21	10.00	18.7	10.09	10.08	AB
pH 4.0 (S.U.)	2910E95	10/21	4.00	18.1	4.07	4.00	AB
Sp. Conductance (µS/cm)	2905D40	5/21	1413	19.1	1371	1413	AB
ORP (mV)	4923	1/25	240	19.4	241.1	240.0	AB
Date: Time:							
pH 7.0 (S.U.)							
pH 10.0 (S.U.)							
pH 4.0 (S.U.)							
Sp. Conductance (µS/cm)							
ORP (mV)							
Date: Time:							
pH 7.0 (S.U.)							
pH 10.0 (S.U.)							
pH 4.0 (S.U.)							
Sp. Conductance (µS/cm)							
ORP (mV)							
Date: Time:							
pH 7.0 (S.U.)							
pH 10.0 (S.U.)							
pH 4.0 (S.U.)							
Sp. Conductance (µS/cm)							
ORP (mV)							
Date: Time:							
pH 7.0 (S.U.)							
pH 10.0 (S.U.)							
pH 4.0 (S.U.)							
Sp. Conductance (µS/cm)							
ORP (mV)							

Sampler Signature: [signature]

Page 1 of 1

APPENDIX B

Laboratory Certificates-of-Analysis and Chain-of-Custody Forms

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, VA 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Analysis Detects Report

Client Name: Golder Associates, Inc.
Client Site ID: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:49PM

Laboratory Sample ID: **20E0334-02** **Client Sample ID:** **Equipment Blank**

Parameter	Samp ID	Reference Method	Sample Results	Qual	DL	LOQ	Dil. Factor	Units
Chromium, Hexavalent	02	SW7196A	0.006		0.005	0.005	1	mg/L

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the " Certificate of Analysis".

AIR WATER & SOIL
an Enthalpy Analytical Laboratory
1941 Reymet Road ● Richmond, Virginia 23237 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Laboratory Order ID 20E0334

Client Name:	Golder Associates, Inc. 2108 W. Laburnum Ave. Suite 200 Richmond, VA 23227	Date Received:	May 7, 2020 14:48
		Date Issued:	May 20, 2020 14:32
		Project Number:	20140438
Submitted To:	Amanda Reynolds	Purchase Order:	
Client Site I.D.:	Bremo Power Station		

Enclosed are the results of analyses for samples received by the laboratory on 05/07/2020 14:48. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars
Technical Director

End Notes:
The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

This report shall not be reproduced except in full without the expressed and written approval of an authorized representative of Air Water & Soil Laboratories, Inc.

ACCREDITED IN ACCORDANCE WITH nelac
Commonwealth of Virginia, DCLS
Accreditation # 460021

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:49PM

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Field Blank	20E0334-01	Ground Water	05/07/2020 08:52	05/07/2020 14:48
Equipment Blank	20E0334-02	Ground Water	05/07/2020 08:38	05/07/2020 14:48

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:49PM

Client Sample ID: **Field Blank** **Laboratory Sample ID:** **20E0334-01**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	01	18540-29-9	SW7196A	05/08/2020 06:50	05/08/2020 09:40	BLOD		0.005	0.005	1	mg/L	RCV

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:49PM

Client Sample ID: **Equipment Blank** **Laboratory Sample ID:** **20E0334-02**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	02	18540-29-9	SW7196A	05/08/2020 06:50	05/08/2020 09:40	0.006		0.005	0.005	1	mg/L	RCV

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:49PM

Wet Chemistry Analysis - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BDE0349 - No Prep Wet Chem										
Blank (BDE0349-BLK1)				Prepared & Analyzed: 05/08/2020						
Chromium, Hexavalent	ND	0.005	mg/L							
LCS (BDE0349-BS1)				Prepared & Analyzed: 05/08/2020						
Chromium, Hexavalent	0.102	0.005	mg/L	0.100		102	80-120			
Matrix Spike (BDE0349-MS1)	**Source: 20E0334-01**			Prepared & Analyzed: 05/08/2020						
Chromium, Hexavalent	0.099	0.005	mg/L	0.100	BLOD	99.0	80-120			
Matrix Spike Dup (BDE0349-MSD1)	**Source: 20E0334-01**			Prepared & Analyzed: 05/08/2020						
Chromium, Hexavalent	0.100	0.005	mg/L	0.100	BLOD	100	80-120	1.01	20	

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
20E0334-01	100 mL / 100 mL	SW7196A	BDE0349	SDE0298	AE00049
20E0334-02	100 mL / 100 mL	SW7196A	BDE0349	SDE0298	AE00049

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:49PM

Certified Analyses included in this Report

Analyte	Certifications
SW7196A in Non-Potable Water	
Chromium, Hexavalent	VELAP

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2020
NC	North Carolina DENR	495	12/31/2020
NCDOH	North Carolina Department of Health	51714	07/31/2020
NJDEP	New Jersey DEP	VA015	06/30/2020
PADEP	NELAC-Pennsylvania Certificate #005	68-03503	10/31/2020
VELAP	NELAC-Virginia Certificate #10637	460021	06/14/2020
WVDEP	West Virginia DEP	350	11/30/2020

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:49PM

Qualifiers and Definitions

RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
LOD	Limit of Detection
BLOD	Below Limit of Detection
LOQ	Limit of Quantitation
DF	Dilution Factor
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

AIR WATER & SOIL LABORATORIES, INC.

1941 REYMET ROAD
RICHMOND, VIRGINIA 23237
(804) 358-8295 PHONE
(804)358-8297 FAX

Chain of Custody
Effective: Nov 15, 2018

CHAIN OF CUSTODY

PAGE ____ OF ____

COMPANY NAME: Golder Associates Inc	INVOICE TO:	PROJECT NAME/Quote #: EAP NES - Report B
CONTACT: Amanda Reynolds	INVOICE CONTACT:	SITE NAME: Bremo Power Station
ADDRESS: 2108 W. Laburnum Ave. St. 200	INVOICE ADDRESS:	PROJECT NUMBER: 20140438
PHONE #: 804-358-7900	INVOICE PHONE #:	P.O. #:
FAX #: 804-358-2900 EMAIL: areynolds@golder.com		Pretreatment Program:
Is sample for compliance reporting? YES (NO)	Regulatory State:	Is sample from a chlorinated supply? YES (NO) PWS I.D. #:
SAMPLER NAME (PRINT): Taylor Kokal	SAMPLER SIGNATURE:	Turn Around Time: Circle: 10 5 Days or standard __ Day(s)

Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other_____

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE) Hexavalent Chromium (by 7196)							
1) Field Blank	\			—	—	05/07/20	0852	0852	GW	1	\							
2) Equipment Blank	\			—	—	05/07/20	0838	0838	GW	1	\							
3)																		
4)																		
5)																		
6)																		
7)																		
8)																		
9)																		
10)																		

COMMENTS

Preservative Codes: N=Nitric Acid C=Hydrochloric Acid S=Sulfuric Acid H=Sodium Hydroxide A=Ascorbic Acid Z=Zinc Acetate T=Sodium Thiosulfate M=Methanol

PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)

All samples preserved on ice

RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME
Amanda Reynolds	5/7/2020 1300	Harry Walker	5-7-20 1300
Harry Walker	5-7-20 248	[illegible]	5/7/20 1448

QC Data Package
Level III ☐
Level IV ☐

LAB USE ONLY Therm ID: 271 COOLER TEMP 1.8 °C
Custody Seals used and intact? (Y) N) Received on ice? (Y) N)

GA 20E0334
Bremo - East Ash Pond Nature Stu
Recd: 05/07/2020 Due: 05/14/2020

v130325002

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:49PM

Sample Conditions Checklist

Samples Received at:	**1.80°C**
How were samples received?	ent Provided Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	No
Are all volatile organic and TOX containers free of headspace?	NA
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, VA 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Analysis Detects Report

Date Issued:

Client Name:

Client Site ID:

Submitted To:

Laboratory Sample ID: **Client Sample ID:**

Parameter	Samp ID	Reference Method	Sample Results	Qual	DL	LOQ	Dil. Factor	Units

There are no reportable results for target analytes in this report.

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the " Certificate of Analysis".

AIR WATER & SOIL
an Enthalpy Analytical Laboratory
1941 Reymet Road ● Richmond, Virginia 23237 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Laboratory Order ID 20E0337

Client Name:	Golder Associates, Inc. 2108 W. Laburnum Ave. Suite 200 Richmond, VA 23227	Date Received:	May 7, 2020 14:48
		Date Issued:	May 20, 2020 14:32
		Project Number:	20140438
Submitted To:	Amanda Reynolds	Purchase Order:	
Client Site I.D.:	Bremo Power Station		

Enclosed are the results of analyses for samples received by the laboratory on 05/07/2020 14:48. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars
Technical Director

End Notes:
The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

This report shall not be reproduced except in full without the expressed and written approval of an authorized representative of Air Water & Soil Laboratories, Inc.

ACCREDITED IN ACCORDANCE WITH nelac
Commonwealth of Virginia, DCLS
Accreditation # 460021

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:36PM

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-40	20E0337-01	Ground Water	05/07/2020 10:05	05/07/2020 14:48

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:36PM

Client Sample ID: **MW-40** **Laboratory Sample ID:** **20E0337-01**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	01	18540-29-9	SW7196A	05/08/2020 06:50	05/08/2020 09:40	BLOD		0.005	0.005	1	mg/L	RCV

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:36PM

Wet Chemistry Analysis - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BDE0349 - No Prep Wet Chem										
Blank (BDE0349-BLK1)				Prepared & Analyzed: 05/08/2020						
Chromium, Hexavalent	ND	0.005	mg/L							
LCS (BDE0349-BS1)				Prepared & Analyzed: 05/08/2020						
Chromium, Hexavalent	0.102	0.005	mg/L	0.100		102	80-120			
Matrix Spike (BDE0349-MS1)	**Source: 20E0334-01**			Prepared & Analyzed: 05/08/2020						
Chromium, Hexavalent	0.099	0.005	mg/L	0.100	BLOD	99.0	80-120			
Matrix Spike Dup (BDE0349-MSD1)	**Source: 20E0334-01**			Prepared & Analyzed: 05/08/2020						
Chromium, Hexavalent	0.100	0.005	mg/L	0.100	BLOD	100	80-120	1.01	20	

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
20E0337-01	100 mL / 100 mL	SW7196A	BDE0349	SDE0298	AE00049

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:36PM

Certified Analyses included in this Report

Analyte	Certifications
SW7196A in Non-Potable Water	
Chromium, Hexavalent	VELAP

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2020
NC	North Carolina DENR	495	12/31/2020
NCDOH	North Carolina Department of Health	51714	07/31/2020
NJDEP	New Jersey DEP	VA015	06/30/2020
PADEP	NELAC-Pennsylvania Certificate #005	68-03503	10/31/2020
VELAP	NELAC-Virginia Certificate #10637	460021	06/14/2020
WVDEP	West Virginia DEP	350	11/30/2020

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:36PM

Qualifiers and Definitions

RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
LOD	Limit of Detection
BLOD	Below Limit of Detection
LOQ	Limit of Quantitation
DF	Dilution Factor
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

AIR WATER & SOIL LABORATORIES, INC.

1941 REYMET ROAD
RICHMOND, VIRGINIA 23237
(804) 358-8295 PHONE
(804)358-8297 FAX

Chain of Custody
Effective: Nov 15, 2018

CHAIN OF CUSTODY

PAGE ____ OF ____

COMPANY NAME: Golder Associates Inc	INVOICE TO:	PROJECT NAME/Quote #: EAP NES-Report A
CONTACT: Amanda Reynolds	INVOICE CONTACT:	SITE NAME: Bremo Power Station
ADDRESS: 2108 W. Laburnum Ave ste. 200	INVOICE ADDRESS:	PROJECT NUMBER: 20140438
PHONE #: 804-358-7900	INVOICE PHONE #:	P.O. #:
FAX #: 804-358-2900	EMAIL: areynolds@golder.com	Pretreatment Program:
Is sample for compliance reporting? YES (NO)	**Regulatory State:** VA	Is sample from a chlorinated supply? YES (NO)
SAMPLER NAME (PRINT): Taylor Kokal	SAMPLER SIGNATURE:	PWS I.D. #:
		Turn Around Time: Circle: **10** **5 Days** **Standard** or __ Day(s)

Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other_____

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE) Hexavalent Chromium (by 7196)							
1) MW-40	/			—		05/07/20	1005	1005	GW	1	/							
2)																		
3)																		
4)																		
5)																		
6)																		
7)																		
8)																		
9)																		
10)																		

COMMENTS

Preservative Codes: N=Nitric Acid C=Hydrochloric Acid S=Sulfuric Acid H=Sodium Hydroxide A=Ascorbic Acid Z=Zinc Acetate T=Sodium Thiosulfate M=Methanol

PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)

* All samples preserved on ice *

RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME
[signature]	5/7/2020 1300	[signature]	5-7-20 1300
[signature]	5-7-20 2:48	[signature]	5/7/20 1448

QC Data Package
Level III ☐
Level IV ☐

LAB USE ONLY Therm ID: 271 **COOLER TEMP** 1.8 °C
Custody Seals used and intact? (Y/N) Received on ice? (Y/N)

GA **20E0337**
Bremo - Hex Cr Report Group A
Recd: 05/07/2020 **Due: 05/14/2020**

v130325002

Air Water & Soil Laboratories, Inc.
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: Golder Associates, Inc.
Client Site I.D.: Bremo Power Station
Submitted To: Amanda Reynolds

Date Issued: 5/20/2020 2:32:36PM

Sample Conditions Checklist

Samples Received at:	**1.80°C**
How were samples received?	ent Provided Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	No
Are all volatile organic and TOX containers free of headspace?	NA
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

Work Order Comments

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

June 02, 2020

Hannah Elkinton
Golder Associates, Inc.
2108 W. Laburnum Avenue
Suite 200
Richmond, VA 23227

RE: Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Dear Hannah Elkinton:

Enclosed are the analytical results for sample(s) received by the laboratory on May 07, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Asheville
- Pace Analytical Services - Eden
- Pace Analytical Services - Greensburg

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

Sincerely,

Nicole Gasiorowski
nicole.gasiorowski@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Steven Taylor, Golder Associates

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CERTIFICATIONS

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

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

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

Pace Analytical Services Eden
205 East Meadow Road Suite A, Eden, NC 27288
North Carolina Drinking Water Certification #: 37738
North Carolina Wastewater Certification #: 633
Virginia/VELAP Certification #: 460025

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SAMPLE SUMMARY

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92476680001	**MW-40**	Water	05/07/20 10:05	05/07/20 15:15

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SAMPLE ANALYTE COUNT

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92476680001	**MW-40**	SM 2540C-2011	MWF	1	PASI-E
		EPA 6010D	SH1	16	PASI-A
		EPA 6020B	BG2	7	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 350.1 Rev 2.0 1993	KDF1	1	PASI-A
		EPA 9056A	CDC	4	PASI-A

PASI-A = Pace Analytical Services - Asheville
PASI-E = Pace Analytical Services - Eden
PASI-PA = Pace Analytical Services - Greensburg

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SUMMARY OF DETECTION

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92476680001	**MW-40**					
SM 2540C-2011	Total Dissolved Solids	370	mg/L	25.0	05/11/20 14:00	
EPA 6010D	Barium	108	ug/L	5.0	05/16/20 03:27	
EPA 6010D	Boron	0.48	mg/L	0.050	05/16/20 03:27	
EPA 6010D	Calcium	96.9	mg/L	0.10	05/16/20 03:27	
EPA 6010D	Hardness, Total(SM 2340B)	315000	ug/L	662	05/16/20 03:27	
EPA 6020B	Cobalt	0.20	ug/L	0.10	05/15/20 15:14	
EPA 6020B	Iron	7420	ug/L	2500	05/15/20 15:42	
EPA 6020B	Lead	0.084J	ug/L	0.10	05/15/20 15:14	
EPA 6020B	Lithium	22.3	ug/L	2.5	05/15/20 15:14	
EPA 6020B	Manganese	2480	ug/L	25.0	05/15/20 15:42	
EPA 6020B	Tin	0.56	ug/L	0.50	05/15/20 15:14	
EPA 9315	Radium-226	0.498 ± 0.360 (0.650) C:90% T:NA	pCi/L		05/21/20 07:10	
EPA 9320	Radium-228	0.511 ± 0.395 (0.783) C:73% T:87%	pCi/L		06/01/20 11:32	
Total Radium Calculation	Total Radium	1.01 ± 0.755 (1.43)	pCi/L		06/02/20 10:58	
EPA 9056A	Chloride	12.7	mg/L	1.0	05/08/20 18:42	M1
EPA 9056A	Fluoride	0.90	mg/L	0.10	05/08/20 18:42	M1
EPA 9056A	Sulfate	10.9	mg/L	1.0	05/08/20 18:42	M1

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Method: **SM 2540C-2011**
Description: 2540C Total Dissolved Solids
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
1 sample was analyzed for SM 2540C-2011 by Pace Analytical Services Eden. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Method: **EPA 6010D**
Description: 6010 MET ICP
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
1 sample was analyzed for EPA 6010D by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 541711

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92476393001

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

- MSD (Lab ID: 2886683)
  - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Method: **EPA 6020B**
Description: 6020 MET ICPMS
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
1 sample was analyzed for EPA 6020B by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Method: **EPA 7470A**
Description: 7470 Mercury
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
1 sample was analyzed for EPA 7470A by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Method: **EPA 9315**
Description: 9315 Total Radium
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
1 sample was analyzed for EPA 9315 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Method: **EPA 9320**
Description: 9320 Radium 228
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
1 sample was analyzed for EPA 9320 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
1 sample was analyzed for Total Radium Calculation by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Method: **EPA 350.1 Rev 2.0 1993**
Description: 350.1 Ammonia
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
1 sample was analyzed for EPA 350.1 Rev 2.0 1993 by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Method: **EPA 9056A**
Description: 9056 IC Anions 48hr
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
1 sample was analyzed for EPA 9056A by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 540531

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92476680001

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

- MS (Lab ID: 2881075)
  - Chloride
  - Fluoride
  - Sulfate
- MSD (Lab ID: 2881076)
  - Chloride
  - Fluoride
  - Sulfate

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Sample: MW-40 **Lab ID: 92476680001** Collected: 05/07/20 10:05 Received: 05/07/20 15:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2540C Total Dissolved Solids	Analytical Method: SM 2540C-2011 Pace Analytical Services - Eden								
Total Dissolved Solids	**370**	mg/L	25.0	25.0	1		05/11/20 14:00		
6010 MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Asheville								
Antimony	ND	ug/L	5.0	3.0	1	05/15/20 03:04	05/19/20 23:58	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	05/15/20 03:04	05/16/20 03:27	7440-38-2	
Barium	**108**	ug/L	5.0	3.5	1	05/15/20 03:04	05/16/20 03:27	7440-39-3	
Beryllium	ND	ug/L	1.0	0.70	1	05/15/20 03:04	05/16/20 03:27	7440-41-7	
Boron	**0.48**	mg/L	0.050	0.032	1	05/15/20 03:04	05/16/20 03:27	7440-42-8	
Cadmium	ND	ug/L	1.0	0.40	1	05/15/20 03:04	05/16/20 03:27	7440-43-9	
Calcium	**96.9**	mg/L	0.10	0.094	1	05/15/20 03:04	05/16/20 03:27	7440-70-2	
Chromium	ND	ug/L	5.0	3.7	1	05/15/20 03:04	05/16/20 03:27	7440-47-3	
Copper	ND	ug/L	5.0	4.3	1	05/15/20 03:04	05/16/20 03:27	7440-50-8	
Molybdenum	ND	ug/L	5.0	3.9	1	05/15/20 03:04	05/16/20 03:27	7439-98-7	
Nickel	ND	ug/L	5.0	3.5	1	05/15/20 03:04	05/16/20 03:27	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	05/15/20 03:04	05/16/20 03:27	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	05/15/20 03:04	05/16/20 03:27	7440-22-4	
Hardness, Total(SM 2340B)	**315000**	ug/L	662	131	1	05/15/20 03:04	05/16/20 03:27		
Vanadium	ND	ug/L	5.0	3.9	1	05/15/20 03:04	05/16/20 03:27	7440-62-2	
Zinc	ND	ug/L	10.0	9.5	1	05/15/20 03:04	05/16/20 03:27	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville								
Cobalt	**0.20**	ug/L	0.10	0.050	1	05/15/20 02:04	05/15/20 15:14	7440-48-4	
Iron	**7420**	ug/L	2500	1050	50	05/15/20 02:04	05/15/20 15:42	7439-89-6	
Lead	**0.084J**	ug/L	0.10	0.077	1	05/15/20 02:04	05/15/20 15:14	7439-92-1	
Lithium	**22.3**	ug/L	2.5	0.39	1	05/15/20 02:04	05/15/20 15:14	7439-93-2	
Manganese	**2480**	ug/L	25.0	23.6	50	05/15/20 02:04	05/15/20 15:42	7439-96-5	
Thallium	ND	ug/L	0.10	0.050	1	05/15/20 02:04	05/15/20 15:14	7440-28-0	
Tin	**0.56**	ug/L	0.50	0.24	1	05/15/20 02:04	05/15/20 15:14	7440-31-5	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville								
Mercury	ND	ug/L	0.20	0.12	1	05/15/20 11:45	05/15/20 17:26	7439-97-6	
350.1 Ammonia	Analytical Method: EPA 350.1 Rev 2.0 1993 Pace Analytical Services - Asheville								
Nitrogen, Ammonia	ND	mg/L	0.10	0.070	1		05/19/20 11:33	7664-41-7	
9056 IC Anions 48hr	Analytical Method: EPA 9056A Pace Analytical Services - Asheville								
Chloride	**12.7**	mg/L	1.0	0.60	1		05/08/20 18:42	16887-00-6	M1
Fluoride	**0.90**	mg/L	0.10	0.050	1		05/08/20 18:42	16984-48-8	M1
Nitrate as N	ND	mg/L	0.10	0.060	1		05/08/20 18:42	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Sample: MW-40 **Lab ID: 92476680001** Collected: 05/07/20 10:05 Received: 05/07/20 15:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions 48hr	Analytical Method: EPA 9056A Pace Analytical Services - Asheville								
Sulfate	**10.9**	mg/L	1.0	0.50	1		05/08/20 18:42	14808-79-8	M1

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

QC Batch: 540538
QC Batch Method: SM 2540C-2011
Analysis Method: SM 2540C-2011
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Eden
Associated Lab Samples: 92476680001

METHOD BLANK: 2881131 Matrix: Water
Associated Lab Samples: 92476680001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	05/11/20 13:52	

LABORATORY CONTROL SAMPLE: 2881132

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	230	92	90-110	

SAMPLE DUPLICATE: 2881133

Parameter	Units	92476217014 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	159	180	12	25	

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Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

QC Batch: 541804
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476680001

METHOD BLANK: 2886897 Matrix: Water
Associated Lab Samples: 92476680001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.12	05/15/20 16:23	

LABORATORY CONTROL SAMPLE: 2886898

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.6	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2886899 2886900

Parameter	Units	92476928018 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.5	2.6	99	102	75-125	3	25	

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

QC Batch: 541711
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92476680001

METHOD BLANK: 2886680 Matrix: Water
Associated Lab Samples: 92476680001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	3.0	05/19/20 23:39	
Arsenic	ug/L	ND	10.0	4.7	05/16/20 02:51	
Barium	ug/L	ND	5.0	3.5	05/16/20 02:51	
Beryllium	ug/L	ND	1.0	0.70	05/16/20 02:51	
Boron	mg/L	ND	0.050	0.032	05/16/20 02:51	
Cadmium	ug/L	ND	1.0	0.40	05/16/20 02:51	
Calcium	mg/L	ND	0.10	0.094	05/16/20 02:51	
Chromium	ug/L	ND	5.0	3.7	05/16/20 02:51	
Copper	ug/L	ND	5.0	4.3	05/16/20 02:51	
Hardness, Total(SM 2340B)	ug/L	ND	662	131	05/16/20 02:51	
Molybdenum	ug/L	ND	5.0	3.9	05/16/20 02:51	
Nickel	ug/L	ND	5.0	3.5	05/16/20 02:51	
Selenium	ug/L	ND	10.0	4.7	05/16/20 02:51	
Silver	ug/L	ND	5.0	2.5	05/16/20 02:51	
Vanadium	ug/L	ND	5.0	3.9	05/16/20 02:51	
Zinc	ug/L	ND	10.0	9.5	05/16/20 02:51	

LABORATORY CONTROL SAMPLE: 2886681

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	452	90	80-120	
Arsenic	ug/L	500	487	97	80-120	
Barium	ug/L	500	502	100	80-120	
Beryllium	ug/L	500	489	98	80-120	
Boron	mg/L	0.5	0.49	97	80-120	
Cadmium	ug/L	500	500	100	80-120	
Calcium	mg/L	5	5.0	100	80-120	
Chromium	ug/L	500	497	99	80-120	
Copper	ug/L	500	522	104	80-120	
Hardness, Total(SM 2340B)	ug/L	33100	32700	99	80-120	
Molybdenum	ug/L	500	513	103	80-120	
Nickel	ug/L	500	491	98	80-120	
Selenium	ug/L	500	491	98	80-120	
Silver	ug/L	250	250	100	80-120	
Vanadium	ug/L	500	511	102	80-120	
Zinc	ug/L	500	491	98	80-120	

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2886682 2886683

Parameter	Units	92476393001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L		500	500	495	493	99	99	75-125	0	20	
Arsenic	ug/L	22.8	500	500	553	559	106	107	75-125	1	20	
Barium	ug/L	407	500	500	891	906	103	106	75-125	2	20	
Beryllium	ug/L	ND	500	500	511	516	102	103	75-125	1	20	
Boron	mg/L	0.041J	0.5	0.5	0.53	0.53	105	106	75-125	1	20	
Cadmium	ug/L	ND	500	500	521	524	104	105	75-125	1	20	
Calcium	mg/L	53.5	5	5	55.4	56.5	110	132	75-125	2	20	M1
Chromium	ug/L	ND	500	500	526	530	105	106	75-125	1	20	
Copper	ug/L	ND	500	500	568	570	114	114	75-125	0	20	
Hardness, Total(SM 2340B)	ug/L	207000	33100	33100	244000	249000	112	126	75-125	2		
Molybdenum	ug/L	ND	500	500	533	535	107	107	75-125	0	20	
Nickel	ug/L	ND	500	500	515	521	102	104	75-125	1	20	
Selenium	ug/L	5.9J	500	500	522	527	104	105	75-125	1	20	
Silver	ug/L	ND	250	250	269	270	108	108	75-125	0	20	
Vanadium	ug/L	4.6J	500	500	550	553	109	110	75-125	1	20	
Zinc	ug/L	ND	500	500	515	520	102	103	75-125	1	20	

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

QC Batch: 541713
QC Batch Method: EPA 3010A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476680001

METHOD BLANK: 2886685 Matrix: Water
Associated Lab Samples: 92476680001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Cobalt	ug/L	ND	0.10	0.050	05/15/20 14:09	
Iron	ug/L	ND	50.0	20.9	05/15/20 14:09	
Lead	ug/L	ND	0.10	0.077	05/15/20 14:09	
Lithium	ug/L	ND	2.5	0.39	05/15/20 14:09	
Manganese	ug/L	ND	0.50	0.47	05/15/20 14:09	
Thallium	ug/L	ND	0.10	0.050	05/15/20 14:09	
Tin	ug/L	ND	0.50	0.24	05/15/20 14:09	

LABORATORY CONTROL SAMPLE: 2886686

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cobalt	ug/L	10	10.3	103	80-120	
Iron	ug/L	625	627	100	80-120	
Lead	ug/L	50	51.5	103	80-120	
Lithium	ug/L	50	50.1	100	80-120	
Manganese	ug/L	50	50.7	101	80-120	
Thallium	ug/L	10	10.3	103	80-120	
Tin	ug/L	50	51.3	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2886687 2886688

Parameter	Units	92476393002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	0.36	10	10	10.8	10.8	105	104	75-125	0	20	
Iron	ug/L	176	625	625	805	803	101	100	75-125	0	20	
Lead	ug/L	0.094J	50	50	53.0	51.8	106	103	75-125	2	20	
Lithium	ug/L	2.8	50	50	54.9	54.5	104	103	75-125	1	20	
Manganese	ug/L	16.9	50	50	67.4	67.5	101	101	75-125	0	20	
Thallium	ug/L	ND	10	10	10.6	10.4	106	104	75-125	1	20	
Tin	ug/L	ND	50	50	53.2	51.8	106	103	75-125	3	20	

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

QC Batch: 542253
QC Batch Method: EPA 350.1 Rev 2.0 1993
Analysis Method: EPA 350.1 Rev 2.0 1993
Analysis Description: 350.1 Ammonia
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476680001

METHOD BLANK: 2889235 Matrix: Water
Associated Lab Samples: 92476680001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	0.070	05/19/20 11:14	

LABORATORY CONTROL SAMPLE: 2889236

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	4.8	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2889237 2889238

Parameter	Units	92476539002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	15.2	5	5	19.8	19.9	92	95	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2889239 2889240

Parameter	Units	92476635001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	ND	5	5	4.7	4.7	94	93	90-110	0	10	

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

QC Batch: 540531
QC Batch Method: EPA 9056A
Analysis Method: EPA 9056A
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476680001

METHOD BLANK: 2881073 Matrix: Water
Associated Lab Samples: 92476680001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	05/08/20 17:44	
Fluoride	mg/L	ND	0.10	0.050	05/08/20 17:44	
Nitrate as N	mg/L	ND	0.10	0.060	05/08/20 17:44	
Sulfate	mg/L	ND	1.0	0.50	05/08/20 17:44	

LABORATORY CONTROL SAMPLE: 2881074

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	52.0	104	90-110	
Fluoride	mg/L	2.5	2.7	106	90-110	
Nitrate as N	mg/L	2.5	2.3	93	90-110	
Sulfate	mg/L	50	52.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2881075 2881076

Parameter	Units	92476680001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	12.7	50	50	68.3	70.8	111	116	90-110	4	10	M1
Fluoride	mg/L	0.90	2.5	2.5	3.7	3.8	112	117	90-110	4	10	M1
Nitrate as N	mg/L	ND	2.5	2.5	2.4	2.5	94	99	90-110	5	10	
Sulfate	mg/L	10.9	50	50	66.5	69.7	111	118	90-110	5	10	M1

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Sample: MW-40 **Lab ID: 92476680001** Collected: 05/07/20 10:05 Received: 05/07/20 15:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.498 ± 0.360 (0.650) C:90% T:NA**	pCi/L	05/21/20 07:10	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.511 ± 0.395 (0.783) C:73% T:87%**	pCi/L	06/01/20 11:32	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.01 ± 0.755 (1.43)**	pCi/L	06/02/20 10:58	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

QC Batch: 396562
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92476680001

METHOD BLANK: 1920744
Matrix: Water
Associated Lab Samples: 92476680001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0671 ± 0.156 (0.373) C:96% T:NA	pCi/L	05/21/20 07:10	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

QC Batch: 396564
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92476680001

METHOD BLANK: 1920750
Matrix: Water
Associated Lab Samples: 92476680001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.436 ± 0.392 (0.795) C:76% T:81%	pCi/L	06/01/20 11:31	

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QUALIFIERS

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Bremo PS- EAP NES (MW-40)
Pace Project No.: 92476680

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92476680001	**MW-40**	SM 2540C-2011	540538		
92476680001	**MW-40**	EPA 3010A	541711	EPA 6010D	541734
92476680001	**MW-40**	EPA 3010A	541713	EPA 6020B	541726
92476680001	**MW-40**	EPA 7470A	541804	EPA 7470A	541849
92476680001	**MW-40**	EPA 9315	396562		
92476680001	**MW-40**	EPA 9320	396564		
92476680001	**MW-40**	Total Radium Calculation	398920		
92476680001	**MW-40**	EPA 350.1 Rev 2.0 1993	542253		
92476680001	**MW-40**	EPA 9056A	540531		

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CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login MTJL Log

WO# : 92476680

92476680

ALL SHADED AREA

Company: Golder Associates Inc	Billing Information:
Address: 2108 W. Laburnum Ave St. 200	
Report To: Mike Williams	Email To: areynolds@golder.com
Copy To: Amanda Reynolds	Site Collection Info/Address: Bremo Power Station
Customer Project Name/Number: EAP NES / 20140438	State: VA / County/City: Fluvanna / Time Zone Collected: [ ]PT [ ]MT [ ]CT [X]ET
Phone: 804-358-7900 Email: areynolds@golder.com	Site/Facility ID #: / Compliance Monitoring? [ ] Yes [X] No
Collected By (print): T. Kokal	Purchase Order #: / Quote #: / DW PWS ID #: / DW Location Code:
Collected By (signature):	Turnaround Date Required: Standard / Immediately Packed on Ice: [X] Yes [ ] No
Sample Disposal: [X] Dispose as appropriate [ ] Return [ ] Archive: ____ [ ] Hold: ____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply) / Field Filtered (if applicable): [ ] Yes [X] No / Analysis: ____

Container Preservative Type **: U | | | | U | | | | |

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other ____

Lab Project Manager:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Analyses: Chloride, Fluoride, Sulfate, Nitrate	Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Nickel, Molybdenum, Selenium, Silver, Vanadium, Zinc	Cobalt, Iron, Lead, Lithium, Manganese, Thallium, Tin	Total Dissolved Solids	Hardness	Mercury	Radium - 226	Radium - 228	Total Radium	Lab Profile/Line:
MW-40	GW	G			05/01/20	1005		7										001
																		page 1 of 2

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips: ____			
Sample pH Acceptable	Y	N	NA
pH Strips: ____			
Sulfide Present	Y	N	NA
Lead Acetate Strips: ____			

LAB USE ONLY:
Lab Sample # / Comments:
92476680

Customer Remarks / Special Conditions / Possible Hazards:
Level II data package
All samples preserved on ice
Report Group B

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2326473

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: T-3
Cooler 1 Temp Upon Receipt: 5.3 oC
Cooler 1 Therm Corr. Factor: 0.0 oC
Cooler 1 Corrected Temp: 5.3 oC
Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Golder	05-01-20/1400		5-1-20 1400
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
	5-01/20 15:10	Rachel Burrum	5-1-20 1515
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: ____ of: ____

Pace Analytical

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/ MT

WO# : 92476680

PM: NMG **Due Date: 06/01/20**

CLIENT: 92-Golder

ALL SHADED A

Company: Golder Associates Inc	Billing Information:
Address: 2108 W. Laburnum Ave St. 200	
Report To: Mike Williams	Email To: areynolds@golder.com
Copy To: Amanda TW Reynolds	Site Collection Info/Address: Bremo Power Station
Customer Project Name/Number: EAP NES / 20140438	State: VA County/City: Fluvanna Time Zone Collected: [ ]PT [ ]MT [ ]CT [X]ET
Phone: 804-358-7900 Email: areynolds@golder.com	Site/Facility ID #: Compliance Monitoring? [ ] Yes [X] No
Collected By (print): T. Kokal	Purchase Order #: Quote #: DW PWS ID #: DW Location Code:
Collected By (signature):	Turnaround Date Required: Standard Immediately Packed on Ice: [X] Yes [ ] No
Sample Disposal: [X] Dispose as appropriate [ ] Return [ ] Archive: [ ] Hold:	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply) Field Filtered (if applicable): [ ] Yes [X] No Analysis:

Container Preservative Type **: 2

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Analyses: Ammonia

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	X	N	NA
Custody Signatures Present	X	N	NA
Collector Signature Present	X	N	NA
Bottles Intact	X	N	NA
Correct Bottles	X	N	NA
Sufficient Volume	X	N	NA
Samples Received on Ice	X	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips:			
Sample pH Acceptable	X	N	NA
pH Strips:			
Sulfide Present	Y	N	NA
Lead Acetate Strips:			

LAB USE ONLY:
Lab Sample # / Comments:
92476680 001

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns
MW-40	GW	G	—	—	05/07/20	1005		7

page 1 of 2

Customer Remarks / Special Conditions / Possible Hazards:
Level II data package
All samples preserved on ice
Report Group B

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2326532

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: T-3
Cooler 1 Temp Upon Receipt: 5.3 oC
Cooler 1 Therm Corr. Factor: 0.0 oC
Cooler 1 Corrected Temp: 5.3 oC
Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Golder	05-07-20/1400		5/7/20 17:00
	5-07-20 1520	Rachel Burruss	5-7-20 1515

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

June 02, 2020

Hannah Elkinton
Golder Associates, Inc.
2108 W. Laburnum Avenue
Suite 200
Richmond, VA 23227

RE: Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Dear Hannah Elkinton:

Enclosed are the analytical results for sample(s) received by the laboratory on May 07, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Asheville
- Pace Analytical Services - Eden
- Pace Analytical Services - Greensburg

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

Sincerely,

Nicole Gasiorowski

Nicole Gasiorowski
nicole.gasiorowski@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Steven Taylor, Golder Associates

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CERTIFICATIONS

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

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

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

Pace Analytical Services Eden
205 East Meadow Road Suite A, Eden, NC 27288
North Carolina Drinking Water Certification #: 37738
North Carolina Wastewater Certification #: 633
Virginia/VELAP Certification #: 460025

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92476681001	**Field Blank**	Water	05/07/20 08:52	05/07/20 15:15
92476681002	**Equipment Blank**	Water	05/07/20 08:38	05/07/20 15:15

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SAMPLE ANALYTE COUNT

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92476681001	**Field Blank**	SM 2540C-2011	MWF	1	PASI-E
		EPA 6010D	SH1	16	PASI-A
		EPA 6020B	BG2	7	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 350.1 Rev 2.0 1993	KDF1	1	PASI-A
		EPA 9056A	CDC	4	PASI-A
92476681002	**Equipment Blank**	SM 2540C-2011	MWF	1	PASI-E
		EPA 6010D	SH1	16	PASI-A
		EPA 6020B	BG2	7	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 350.1 Rev 2.0 1993	KDF1	1	PASI-A
		EPA 9056A	CDC	4	PASI-A

PASI-A = Pace Analytical Services - Asheville
PASI-E = Pace Analytical Services - Eden
PASI-PA = Pace Analytical Services - Greensburg

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SUMMARY OF DETECTION

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92476681001	**Field Blank**					
EPA 9315	Radium-226	-0.0336 ± 0.166 (0.495) C:89% T:NA	pCi/L		05/21/20 07:10	
EPA 9320	Radium-228	0.0814 ± 0.377 (0.858) C:69% T:84%	pCi/L		06/01/20 11:32	
Total Radium Calculation	Total Radium	0.0814 ± 0.543 (1.35)	pCi/L		06/02/20 10:58	
92476681002	**Equipment Blank**					
EPA 9315	Radium-226	0.157 ± 0.216 (0.452) C:84% T:NA	pCi/L		05/21/20 07:10	
EPA 9320	Radium-228	-0.112 ± 0.468 (1.09) C:73% T:80%	pCi/L		06/01/20 11:32	
Total Radium Calculation	Total Radium	0.157 ± 0.684 (1.54)	pCi/L		06/02/20 10:58	

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Method: **SM 2540C-2011**
Description: 2540C Total Dissolved Solids
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for SM 2540C-2011 by Pace Analytical Services Eden. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Method: **EPA 6010D**
Description: 6010 MET ICP
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 6010D by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 541711

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92476393001

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

- MSD (Lab ID: 2886683)
  - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Method: **EPA 6020B**
Description: 6020 MET ICPMS
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 6020B by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Method: **EPA 7470A**
Description: 7470 Mercury
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 7470A by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Method: **EPA 9315**
Description: 9315 Total Radium
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 9315 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Method: **EPA 9320**
Description: 9320 Radium 228
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 9320 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for Total Radium Calculation by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Method: **EPA 350.1 Rev 2.0 1993**
Description: 350.1 Ammonia
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 350.1 Rev 2.0 1993 by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Method: **EPA 9056A**
Description: 9056 IC Anions 48hr
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 9056A by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 540531

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92476680001

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

- MS (Lab ID: 2881075)
  - Chloride
  - Fluoride
  - Sulfate
- MSD (Lab ID: 2881076)
  - Chloride
  - Fluoride
  - Sulfate

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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Huntersville, NC 28078
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ANALYTICAL RESULTS

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Sample: Field Blank **Lab ID: 92476681001** Collected: 05/07/20 08:52 Received: 05/07/20 15:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2540C Total Dissolved Solids	Analytical Method: SM 2540C-2011 Pace Analytical Services - Eden								
Total Dissolved Solids	ND	mg/L	25.0	25.0	1		05/11/20 14:02		
6010 MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Asheville								
Antimony	ND	ug/L	5.0	3.0	1	05/15/20 03:04	05/20/20 00:01	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	05/15/20 03:04	05/16/20 03:30	7440-38-2	
Barium	ND	ug/L	5.0	3.5	1	05/15/20 03:04	05/16/20 03:30	7440-39-3	
Beryllium	ND	ug/L	1.0	0.70	1	05/15/20 03:04	05/16/20 03:30	7440-41-7	
Boron	ND	mg/L	0.050	0.032	1	05/15/20 03:04	05/16/20 03:30	7440-42-8	
Cadmium	ND	ug/L	1.0	0.40	1	05/15/20 03:04	05/16/20 03:30	7440-43-9	
Calcium	ND	mg/L	0.10	0.094	1	05/15/20 03:04	05/16/20 03:30	7440-70-2	
Chromium	ND	ug/L	5.0	3.7	1	05/15/20 03:04	05/16/20 03:30	7440-47-3	
Copper	ND	ug/L	5.0	4.3	1	05/15/20 03:04	05/16/20 03:30	7440-50-8	
Molybdenum	ND	ug/L	5.0	3.9	1	05/15/20 03:04	05/16/20 03:30	7439-98-7	
Nickel	ND	ug/L	5.0	3.5	1	05/15/20 03:04	05/16/20 03:30	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	05/15/20 03:04	05/16/20 03:30	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	05/15/20 03:04	05/16/20 03:30	7440-22-4	
Hardness, Total(SM 2340B)	ND	ug/L	662	131	1	05/15/20 03:04	05/16/20 03:30		
Vanadium	ND	ug/L	5.0	3.9	1	05/15/20 03:04	05/16/20 03:30	7440-62-2	
Zinc	ND	ug/L	10.0	9.5	1	05/15/20 03:04	05/16/20 03:30	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville								
Cobalt	ND	ug/L	0.10	0.050	1	05/15/20 02:04	05/15/20 14:21	7440-48-4	
Iron	ND	ug/L	50.0	20.9	1	05/15/20 02:04	05/15/20 14:21	7439-89-6	
Lead	ND	ug/L	0.10	0.077	1	05/15/20 02:04	05/15/20 14:21	7439-92-1	
Lithium	ND	ug/L	2.5	0.39	1	05/15/20 02:04	05/15/20 14:21	7439-93-2	
Manganese	ND	ug/L	0.50	0.47	1	05/15/20 02:04	05/15/20 14:21	7439-96-5	
Thallium	ND	ug/L	0.10	0.050	1	05/15/20 02:04	05/15/20 14:21	7440-28-0	
Tin	ND	ug/L	0.50	0.24	1	05/15/20 02:04	05/15/20 14:21	7440-31-5	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville								
Mercury	ND	ug/L	0.20	0.12	1	05/15/20 11:45	05/15/20 17:29	7439-97-6	
350.1 Ammonia	Analytical Method: EPA 350.1 Rev 2.0 1993 Pace Analytical Services - Asheville								
Nitrogen, Ammonia	ND	mg/L	0.10	0.070	1		05/19/20 11:34	7664-41-7	
9056 IC Anions 48hr	Analytical Method: EPA 9056A Pace Analytical Services - Asheville								
Chloride	ND	mg/L	1.0	0.60	1		05/08/20 18:27	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		05/08/20 18:27	16984-48-8	
Nitrate as N	ND	mg/L	0.10	0.060	1		05/08/20 18:27	14797-55-8	

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ANALYTICAL RESULTS

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Sample: Field Blank **Lab ID: 92476681001** Collected: 05/07/20 08:52 Received: 05/07/20 15:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions 48hr	Analytical Method: EPA 9056A Pace Analytical Services - Asheville								
Sulfate	ND	mg/L	1.0	0.50	1		05/08/20 18:27	14808-79-8	

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ANALYTICAL RESULTS

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Sample: Equipment Blank **Lab ID: 92476681002** Collected: 05/07/20 08:38 Received: 05/07/20 15:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2540C Total Dissolved Solids	Analytical Method: SM 2540C-2011 Pace Analytical Services - Eden								
Total Dissolved Solids	ND	mg/L	25.0	25.0	1		05/11/20 14:03		
6010 MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Asheville								
Antimony	ND	ug/L	5.0	3.0	1	05/15/20 03:04	05/20/20 00:10	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	05/15/20 03:04	05/16/20 03:34	7440-38-2	
Barium	ND	ug/L	5.0	3.5	1	05/15/20 03:04	05/16/20 03:34	7440-39-3	
Beryllium	ND	ug/L	1.0	0.70	1	05/15/20 03:04	05/16/20 03:34	7440-41-7	
Boron	ND	mg/L	0.050	0.032	1	05/15/20 03:04	05/16/20 03:34	7440-42-8	
Cadmium	ND	ug/L	1.0	0.40	1	05/15/20 03:04	05/16/20 03:34	7440-43-9	
Calcium	ND	mg/L	0.10	0.094	1	05/15/20 03:04	05/16/20 03:34	7440-70-2	
Chromium	ND	ug/L	5.0	3.7	1	05/15/20 03:04	05/16/20 03:34	7440-47-3	
Copper	ND	ug/L	5.0	4.3	1	05/15/20 03:04	05/16/20 03:34	7440-50-8	
Molybdenum	ND	ug/L	5.0	3.9	1	05/15/20 03:04	05/16/20 03:34	7439-98-7	
Nickel	ND	ug/L	5.0	3.5	1	05/15/20 03:04	05/16/20 03:34	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	05/15/20 03:04	05/16/20 03:34	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	05/15/20 03:04	05/16/20 03:34	7440-22-4	
Hardness, Total(SM 2340B)	ND	ug/L	662	131	1	05/15/20 03:04	05/16/20 03:34		
Vanadium	ND	ug/L	5.0	3.9	1	05/15/20 03:04	05/16/20 03:34	7440-62-2	
Zinc	ND	ug/L	10.0	9.5	1	05/15/20 03:04	05/16/20 03:34	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville								
Cobalt	ND	ug/L	0.10	0.050	1	05/15/20 02:04	05/15/20 14:25	7440-48-4	
Iron	ND	ug/L	50.0	20.9	1	05/15/20 02:04	05/15/20 14:25	7439-89-6	
Lead	ND	ug/L	0.10	0.077	1	05/15/20 02:04	05/15/20 14:25	7439-92-1	
Lithium	ND	ug/L	2.5	0.39	1	05/15/20 02:04	05/15/20 14:25	7439-93-2	
Manganese	ND	ug/L	0.50	0.47	1	05/15/20 02:04	05/15/20 14:25	7439-96-5	
Thallium	ND	ug/L	0.10	0.050	1	05/15/20 02:04	05/15/20 14:25	7440-28-0	
Tin	ND	ug/L	0.50	0.24	1	05/15/20 02:04	05/15/20 14:25	7440-31-5	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville								
Mercury	ND	ug/L	0.20	0.12	1	05/15/20 11:45	05/15/20 17:31	7439-97-6	
350.1 Ammonia	Analytical Method: EPA 350.1 Rev 2.0 1993 Pace Analytical Services - Asheville								
Nitrogen, Ammonia	ND	mg/L	0.10	0.070	1		05/19/20 11:39	7664-41-7	
9056 IC Anions 48hr	Analytical Method: EPA 9056A Pace Analytical Services - Asheville								
Chloride	ND	mg/L	1.0	0.60	1		05/08/20 18:13	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		05/08/20 18:13	16984-48-8	
Nitrate as N	ND	mg/L	0.10	0.060	1		05/08/20 18:13	14797-55-8	

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ANALYTICAL RESULTS

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Sample: Equipment Blank **Lab ID: 92476681002** Collected: 05/07/20 08:38 Received: 05/07/20 15:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions 48hr	Analytical Method: EPA 9056A Pace Analytical Services - Asheville								
Sulfate	ND	mg/L	1.0	0.50	1		05/08/20 18:13	14808-79-8	

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

QC Batch: 540538
QC Batch Method: SM 2540C-2011
Analysis Method: SM 2540C-2011
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Eden
Associated Lab Samples: 92476681001, 92476681002

METHOD BLANK: 2881131 Matrix: Water
Associated Lab Samples: 92476681001, 92476681002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	05/11/20 13:52	

LABORATORY CONTROL SAMPLE: 2881132

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	230	92	90-110	

SAMPLE DUPLICATE: 2881133

Parameter	Units	92476217014 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	159	180	12	25	

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

QC Batch: 541804
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476681001, 92476681002

METHOD BLANK: 2886897 Matrix: Water
Associated Lab Samples: 92476681001, 92476681002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.12	05/15/20 16:23	

LABORATORY CONTROL SAMPLE: 2886898

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.6	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2886899 2886900

Parameter	Units	92476928018 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.5	2.6	99	102	75-125	3	25	

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

QC Batch: 541711
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476681001, 92476681002

METHOD BLANK: 2886680 Matrix: Water
Associated Lab Samples: 92476681001, 92476681002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	3.0	05/19/20 23:39	
Arsenic	ug/L	ND	10.0	4.7	05/16/20 02:51	
Barium	ug/L	ND	5.0	3.5	05/16/20 02:51	
Beryllium	ug/L	ND	1.0	0.70	05/16/20 02:51	
Boron	mg/L	ND	0.050	0.032	05/16/20 02:51	
Cadmium	ug/L	ND	1.0	0.40	05/16/20 02:51	
Calcium	mg/L	ND	0.10	0.094	05/16/20 02:51	
Chromium	ug/L	ND	5.0	3.7	05/16/20 02:51	
Copper	ug/L	ND	5.0	4.3	05/16/20 02:51	
Hardness, Total(SM 2340B)	ug/L	ND	662	131	05/16/20 02:51	
Molybdenum	ug/L	ND	5.0	3.9	05/16/20 02:51	
Nickel	ug/L	ND	5.0	3.5	05/16/20 02:51	
Selenium	ug/L	ND	10.0	4.7	05/16/20 02:51	
Silver	ug/L	ND	5.0	2.5	05/16/20 02:51	
Vanadium	ug/L	ND	5.0	3.9	05/16/20 02:51	
Zinc	ug/L	ND	10.0	9.5	05/16/20 02:51	

LABORATORY CONTROL SAMPLE: 2886681

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	452	90	80-120	
Arsenic	ug/L	500	487	97	80-120	
Barium	ug/L	500	502	100	80-120	
Beryllium	ug/L	500	489	98	80-120	
Boron	mg/L	0.5	0.49	97	80-120	
Cadmium	ug/L	500	500	100	80-120	
Calcium	mg/L	5	5.0	100	80-120	
Chromium	ug/L	500	497	99	80-120	
Copper	ug/L	500	522	104	80-120	
Hardness, Total(SM 2340B)	ug/L	33100	32700	99	80-120	
Molybdenum	ug/L	500	513	103	80-120	
Nickel	ug/L	500	491	98	80-120	
Selenium	ug/L	500	491	98	80-120	
Silver	ug/L	250	250	100	80-120	
Vanadium	ug/L	500	511	102	80-120	
Zinc	ug/L	500	491	98	80-120	

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2886682 2886683

Parameter	Units	92476393001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L		500	500	495	493	99	99	75-125	0	20	
Arsenic	ug/L	22.8	500	500	553	559	106	107	75-125	1	20	
Barium	ug/L	407	500	500	891	906	103	106	75-125	2	20	
Beryllium	ug/L	ND	500	500	511	516	102	103	75-125	1	20	
Boron	mg/L	0.041J	0.5	0.5	0.53	0.53	105	106	75-125	1	20	
Cadmium	ug/L	ND	500	500	521	524	104	105	75-125	1	20	
Calcium	mg/L	53.5	5	5	55.4	56.5	110	132	75-125	2	20	M1
Chromium	ug/L	ND	500	500	526	530	105	106	75-125	1	20	
Copper	ug/L	ND	500	500	568	570	114	114	75-125	0	20	
Hardness, Total(SM 2340B)	ug/L	207000	33100	33100	244000	249000	112	126	75-125	2		
Molybdenum	ug/L	ND	500	500	533	535	107	107	75-125	0	20	
Nickel	ug/L	ND	500	500	515	521	102	104	75-125	1	20	
Selenium	ug/L	5.9J	500	500	522	527	104	105	75-125	1	20	
Silver	ug/L	ND	250	250	269	270	108	108	75-125	0	20	
Vanadium	ug/L	4.6J	500	500	550	553	109	110	75-125	1	20	
Zinc	ug/L	ND	500	500	515	520	102	103	75-125	1	20	

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

QC Batch: 541713
QC Batch Method: EPA 3010A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476681001, 92476681002

METHOD BLANK: 2886685 Matrix: Water
Associated Lab Samples: 92476681001, 92476681002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Cobalt	ug/L	ND	0.10	0.050	05/15/20 14:09	
Iron	ug/L	ND	50.0	20.9	05/15/20 14:09	
Lead	ug/L	ND	0.10	0.077	05/15/20 14:09	
Lithium	ug/L	ND	2.5	0.39	05/15/20 14:09	
Manganese	ug/L	ND	0.50	0.47	05/15/20 14:09	
Thallium	ug/L	ND	0.10	0.050	05/15/20 14:09	
Tin	ug/L	ND	0.50	0.24	05/15/20 14:09	

LABORATORY CONTROL SAMPLE: 2886686

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cobalt	ug/L	10	10.3	103	80-120	
Iron	ug/L	625	627	100	80-120	
Lead	ug/L	50	51.5	103	80-120	
Lithium	ug/L	50	50.1	100	80-120	
Manganese	ug/L	50	50.7	101	80-120	
Thallium	ug/L	10	10.3	103	80-120	
Tin	ug/L	50	51.3	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2886687 2886688

Parameter	Units	92476393002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	0.36	10	10	10.8	10.8	105	104	75-125	0	20	
Iron	ug/L	176	625	625	805	803	101	100	75-125	0	20	
Lead	ug/L	0.094J	50	50	53.0	51.8	106	103	75-125	2	20	
Lithium	ug/L	2.8	50	50	54.9	54.5	104	103	75-125	1	20	
Manganese	ug/L	16.9	50	50	67.4	67.5	101	101	75-125	0	20	
Thallium	ug/L	ND	10	10	10.6	10.4	106	104	75-125	1	20	
Tin	ug/L	ND	50	50	53.2	51.8	106	103	75-125	3	20	

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

QC Batch: 542253
QC Batch Method: EPA 350.1 Rev 2.0 1993
Analysis Method: EPA 350.1 Rev 2.0 1993
Analysis Description: 350.1 Ammonia
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476681001, 92476681002

METHOD BLANK: 2889235 Matrix: Water
Associated Lab Samples: 92476681001, 92476681002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	0.070	05/19/20 11:14	

LABORATORY CONTROL SAMPLE: 2889236

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	4.8	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2889237 2889238

Parameter	Units	92476539002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	15.2	5	5	19.8	19.9	92	95	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2889239 2889240

Parameter	Units	92476635001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	ND	5	5	4.7	4.7	94	93	90-110	0	10	

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QUALITY CONTROL DATA

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

QC Batch: 540531
QC Batch Method: EPA 9056A
Analysis Method: EPA 9056A
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476681001, 92476681002

METHOD BLANK: 2881073 Matrix: Water
Associated Lab Samples: 92476681001, 92476681002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	05/08/20 17:44	
Fluoride	mg/L	ND	0.10	0.050	05/08/20 17:44	
Nitrate as N	mg/L	ND	0.10	0.060	05/08/20 17:44	
Sulfate	mg/L	ND	1.0	0.50	05/08/20 17:44	

LABORATORY CONTROL SAMPLE: 2881074

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	52.0	104	90-110	
Fluoride	mg/L	2.5	2.7	106	90-110	
Nitrate as N	mg/L	2.5	2.3	93	90-110	
Sulfate	mg/L	50	52.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2881075 2881076

Parameter	Units	92476680001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	12.7	50	50	68.3	70.8	111	116	90-110	4	10	M1
Fluoride	mg/L	0.90	2.5	2.5	3.7	3.8	112	117	90-110	4	10	M1
Nitrate as N	mg/L	ND	2.5	2.5	2.4	2.5	94	99	90-110	5	10	
Sulfate	mg/L	10.9	50	50	66.5	69.7	111	118	90-110	5	10	M1

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REPORT OF LABORATORY ANALYSIS

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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Sample: Field Blank **Lab ID: 92476681001** Collected: 05/07/20 08:52 Received: 05/07/20 15:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**-0.0336 ± 0.166 (0.495) C:89% T:NA**	pCi/L	05/21/20 07:10	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.0814 ± 0.377 (0.858) C:69% T:84%**	pCi/L	06/01/20 11:32	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.0814 ± 0.543 (1.35)**	pCi/L	06/02/20 10:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Sample: Equipment Blank **Lab ID: 92476681002** Collected: 05/07/20 08:38 Received: 05/07/20 15:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.157 ± 0.216 (0.452) C:84% T:NA**	pCi/L	05/21/20 07:10	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**-0.112 ± 0.468 (1.09) C:73% T:80%**	pCi/L	06/01/20 11:32	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.157 ± 0.684 (1.54)**	pCi/L	06/02/20 10:58	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

QC Batch:	396562	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 92476681001, 92476681002

METHOD BLANK: 1920744 Matrix: Water

Associated Lab Samples: 92476681001, 92476681002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0671 ± 0.156 (0.373) C:96% T:NA	pCi/L	05/21/20 07:10	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

QC Batch:	396564	Analysis Method:	EPA 9320
QC Batch Method:	EPA 9320	Analysis Description:	9320 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 92476681001, 92476681002

METHOD BLANK: 1920750 Matrix: Water

Associated Lab Samples: 92476681001, 92476681002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.436 ± 0.392 (0.795) C:76% T:81%	pCi/L	06/01/20 11:31	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Bremo PS- EAP NES (Blanks)
Pace Project No.: 92476681

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92476681001	**Field Blank**	SM 2540C-2011	540538		
92476681002	**Equipment Blank**	SM 2540C-2011	540538		
92476681001	**Field Blank**	EPA 3010A	541711	EPA 6010D	541734
92476681002	**Equipment Blank**	EPA 3010A	541711	EPA 6010D	541734
92476681001	**Field Blank**	EPA 3010A	541713	EPA 6020B	541726
92476681002	**Equipment Blank**	EPA 3010A	541713	EPA 6020B	541726
92476681001	**Field Blank**	EPA 7470A	541804	EPA 7470A	541849
92476681002	**Equipment Blank**	EPA 7470A	541804	EPA 7470A	541849
92476681001	**Field Blank**	EPA 9315	396562		
92476681002	**Equipment Blank**	EPA 9315	396562		
92476681001	**Field Blank**	EPA 9320	396564		
92476681002	**Equipment Blank**	EPA 9320	396564		
92476681001	**Field Blank**	Total Radium Calculation	398920		
92476681002	**Equipment Blank**	Total Radium Calculation	398920		
92476681001	**Field Blank**	EPA 350.1 Rev 2.0 1993	542253		
92476681002	**Equipment Blank**	EPA 350.1 Rev 2.0 1993	542253		
92476681001	**Field Blank**	EPA 9056A	540531		
92476681002	**Equipment Blank**	EPA 9056A	540531		

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CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical™

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Log MTJL L

WO# : 92476681

92476681

ALL SHADED ARE

Company: Golder Associates Inc.	Billing Information:
Address: 2108 N. Laburnum Ave ste 200	
Report To: Mike Williams	Email To: areynolds@golder.com
Copy To: Amanda Reynolds	Site Collection Info/Address: Breme Power Station
Customer Project Name/Number: EAP NES / 20140438	State: County/City: Time Zone Collected: VA / Fluvanna [ ]PT [ ]MT [ ]CT [X]ET
Phone: 804-358-7900 Email: areynolds@golder.com	Site/Facility ID #:
Collected By (print): T. Kokal	Purchase Order #: Quote #:
Collected By (signature):	Turnaround Date Required: standard
Sample Disposal: [X] Dispose as appropriate [ ] Return [ ] Archive: _____ [ ] Hold: _____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply)

Compliance Monitoring? [ ] Yes [X] No

DW PWS ID #: DW Location Code:

Immediately Packed on Ice: [X] Yes [ ] No

Field Filtered (if applicable): [ ] Yes [X] No

Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Container Preservative Type **: U | | | | U | | | | | |

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Chloride, Fluoride, Sulfate, Nitrate	Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Nickel, Molybdenum, Selenium, Silver, Vanadium, Zinc	Cobalt, Iron, Lead, Lithium, Manganese, Thallium, Tin	Total Dissolved Solids	Hardness	Mercury	Radium - 226	Radium - 228	Total Radium	Lab Sample # / Comments:
Field Blank	GW	G	—	—	05/07/20	0852		7										92476681 001
Equipment Blank	GW	G	—	—	05/07/20	0838		7										002

page 1 of 2

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	X	N	NA
Custody Signatures Present	X	N	NA
Collector Signature Present	X	N	NA
Bottles Intact	X	N	NA
Correct Bottles	X	N	NA
Sufficient Volume	X	N	NA
Samples Received on Ice	X	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	X	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips: _____			
Sample pH Acceptable	X	N	NA
pH Strips: _____			
Sulfide Present	Y	N	NA
Lead Acetate Strips: _____			

LAB USE ONLY:

Customer Remarks / Special Conditions / Possible Hazards:

Level II data package
All samples preserved on ice
Report Group C

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2326530

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: Y N NA

Therm ID#: T-3

Cooler 1 Temp Upon Receipt: 5.3 oC

Cooler 1 Therm Corr. Factor: 0.0 oC

Cooler 1 Corrected Temp: 5.3 oC

Comments:

	Date/Time:	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature) Golder	05/07/20 1400		5-7-20 1400
Relinquished by/Company: (Signature)	5/07/20 15:15	Rachel Burruss	5-7-20 1515
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:

MTJL LAB USE ONLY

Table #:

Acctnum:

Template:

Prelogin:

PM:

PB:

Trip Blank Received: Y N NA

HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

WO# : 92476681

PM: NMG Due Date: 06/01/20
CLIENT: 92-Golder

Pace Analytical

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder

ALL SHADED

Company: Golder Associates Inc	Billing Information:
Address: 2108 W. Laburnum Ave ste. 205	
Report To: Mike Williams	Email To: areynolds@golder.com
Copy To: Amanda Reynolds	Site Collection Info/Address: Bremo Power Station
Customer Project Name/Number: EAP NES / 20140438	State: VA / County/City: Fluvanna / Time Zone Collected: [ ]PT [ ]MT [ ]CT [X]ET
Phone: 804-358-7900 Email: areynolds@golder.com	Site/Facility ID #:
Collected By (print): T. Kokal	Purchase Order #: Quote #:
Collected By (signature):	Turnaround Date Required: Standard
Sample Disposal: [X] Dispose as appropriate [ ] Return [ ] Archive: [ ] Hold:	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply)

Compliance Monitoring? [ ] Yes [X] No

DW PWS ID #: DW Location Code:

Immediately Packed on Ice: [X] Yes [ ] No

Field Filtered (if applicable): [ ] Yes [X] No

Analysis:

Container Preservative Type **: 2

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses: Ammonia

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	✓	N	NA
Custody Signatures Present	✓	N	NA
Collector Signature Present	✓	N	NA
Bottles Intact	✓	N	NA
Correct Bottles	✓	N	NA
Sufficient Volume	✓	N	NA
Samples Received on Ice	✓	N	NA
VOA - Headspace Acceptable	✓	N	NA
USDA Regulated Soils	Y	N	✓ NA
Samples in Holding Time	✓	N	NA
Residual Chlorine Present	Y	✓	NA
Cl Strips:			
Sample pH Acceptable	✓	N	NA
pH Strips:			
Sulfide Present	Y	N	✓ NA
Lead Acetate Strips:			

LAB USE ONLY:
Lab Sample # / Comments:
92476681

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Lab Sample # / Comments
Field Blank	GW	G	—	—	05/07/20	0852		1	001
Equipment Blank	GW	G	—	—	05/07/20	0838		1	002
									page 2 of 2

Customer Remarks / Special Conditions / Possible Hazards:
Level II data package
All samples preserved on ice
Report Group C

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2326531

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: T-3
Cooler 1 Temp Upon Receipt: 5.3 oC
Cooler 1 Therm Corr. Factor: 0.0 oC
Cooler 1 Corrected Temp: 5.3 oC
Comments:

Relinquished by/Company: (Signature) / Golder	Date/Time: 05-07-20 / 1400	Received by/Company: (Signature)	Date/Time: 5-7-20 1410	MTJL LAB USE ONLY
Relinquished by/Company: (Signature)	Date/Time: 5-7-20 15:15	Received by/Company: (Signature) Rachel Burruss	Date/Time: 5-7-20 1515	Table #: Acctnum: Template: Prelogin: PM: PB:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: of:

Pace Analytical Services, LLC
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(704)875-9092

June 02, 2020

Hannah Elkinton
Golder Associates, Inc.
2108 W. Laburnum Avenue
Suite 200
Richmond, VA 23227

RE: Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Dear Hannah Elkinton:

Enclosed are the analytical results for sample(s) received by the laboratory on May 07, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Asheville
- Pace Analytical Services - Eden
- Pace Analytical Services - Greensburg

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

Sincerely,

Nicole Gasiorowski

Nicole Gasiorowski
nicole.gasiorowski@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Steven Taylor, Golder Associates

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CERTIFICATIONS

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

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

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

Pace Analytical Services Eden
205 East Meadow Road Suite A, Eden, NC 27288
North Carolina Drinking Water Certification #: 37738
North Carolina Wastewater Certification #: 633
Virginia/VELAP Certification #: 460025

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SAMPLE SUMMARY

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92476687001	**MW-22D**	Water	05/07/20 11:35	05/07/20 15:15
92476687002	**VPDES**	Water	05/07/20 13:10	05/07/20 15:15

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SAMPLE ANALYTE COUNT

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92476687001	**MW-22D**	SM 2540C-2011	MWF	1	PASI-E
		EPA 6010D	SH1	10	PASI-A
		EPA 6020B	BG2	4	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9056A	CDC	3	PASI-A
92476687002	**VPDES**	SM 2540C-2011	MWF	1	PASI-E
		EPA 6010D	SH1	10	PASI-A
		EPA 6020B	BG2	4	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9056A	CDC	3	PASI-A

PASI-A = Pace Analytical Services - Asheville
PASI-E = Pace Analytical Services - Eden
PASI-PA = Pace Analytical Services - Greensburg

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Huntersville, NC 28078
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SUMMARY OF DETECTION

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92476687001	**MW-22D**					
SM 2540C-2011	Total Dissolved Solids	317	mg/L	25.0	05/11/20 14:04	
EPA 6010D	Barium	41.4	ug/L	5.0	05/16/20 03:37	
EPA 6010D	Boron	0.29	mg/L	0.050	05/16/20 03:37	
EPA 6010D	Calcium	50.1	mg/L	0.10	05/16/20 03:37	
EPA 6010D	Chromium	5.1	ug/L	5.0	05/16/20 03:37	
EPA 6010D	Molybdenum	6.5	ug/L	5.0	05/16/20 03:37	
EPA 6020B	Cobalt	0.29	ug/L	0.10	05/15/20 15:18	
EPA 6020B	Lithium	3.7	ug/L	2.5	05/15/20 15:18	
EPA 9315	Radium-226	1.03 ± 0.488 (0.678) C:72% T:NA	pCi/L		05/21/20 07:11	
EPA 9320	Radium-228	0.129 ± 0.374 (0.838) C:73% T:81%	pCi/L		06/01/20 11:32	
Total Radium Calculation	Total Radium	1.16 ± 0.862 (1.52)	pCi/L		06/02/20 10:58	
EPA 9056A	Chloride	10.6	mg/L	1.0	05/12/20 23:08	
EPA 9056A	Fluoride	0.13	mg/L	0.10	05/12/20 23:08	
EPA 9056A	Sulfate	1.1	mg/L	1.0	05/12/20 23:08	
92476687002	**VPDES**					
SM 2540C-2011	Total Dissolved Solids	250	mg/L	25.0	05/11/20 14:05	
EPA 6010D	Barium	109	ug/L	5.0	05/16/20 04:29	
EPA 6010D	Boron	0.62	mg/L	0.050	05/16/20 04:29	
EPA 6010D	Cadmium	0.88J	ug/L	1.0	05/16/20 04:29	
EPA 6010D	Calcium	49.2	mg/L	0.10	05/16/20 04:29	
EPA 6020B	Cobalt	2.0	ug/L	0.10	05/15/20 15:22	
EPA 6020B	Lead	0.10	ug/L	0.10	05/15/20 15:22	
EPA 6020B	Lithium	6.7	ug/L	2.5	05/15/20 15:22	
EPA 9315	Radium-226	0.0146 ± 0.162 (0.450) C:81% T:NA	pCi/L		05/21/20 07:11	
EPA 9320	Radium-228	0.0565 ± 0.353 (0.806) C:74% T:87%	pCi/L		06/01/20 11:32	
Total Radium Calculation	Total Radium	0.0711 ± 0.515 (1.26)	pCi/L		06/02/20 10:58	
EPA 9056A	Chloride	4.6	mg/L	1.0	05/12/20 23:23	
EPA 9056A	Fluoride	0.070J	mg/L	0.10	05/12/20 23:23	
EPA 9056A	Sulfate	75.7	mg/L	1.0	05/12/20 23:23	

REPORT OF LABORATORY ANALYSIS

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(704)875-9092

PROJECT NARRATIVE

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Method: **SM 2540C-2011**
Description: 2540C Total Dissolved Solids
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for SM 2540C-2011 by Pace Analytical Services Eden. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Method: **EPA 6010D**
Description: 6010 MET ICP
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 6010D by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 541711

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92476393001

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

- MSD (Lab ID: 2886683)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Method: **EPA 6020B**
Description: 6020 MET ICPMS
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 6020B by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Method: **EPA 7470A**
Description: 7470 Mercury
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 7470A by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Method: **EPA 9315**
Description: 9315 Total Radium
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 9315 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Method: **EPA 9320**
Description: 9320 Radium 228
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 9320 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for Total Radium Calculation by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Method: **EPA 9056A**
Description: 9056 IC anions 28 Days
Client: Golder Associates, Inc.
Date: June 02, 2020

General Information:
2 samples were analyzed for EPA 9056A by Pace Analytical Services Asheville. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Sample: MW-22D **Lab ID: 92476687001** Collected: 05/07/20 11:35 Received: 05/07/20 15:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2540C Total Dissolved Solids	Analytical Method: SM 2540C-2011 Pace Analytical Services - Eden								
Total Dissolved Solids	**317**	mg/L	25.0	25.0	1		05/11/20 14:04		
6010 MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Asheville								
Antimony	ND	ug/L	5.0	3.0	1	05/15/20 03:04	05/20/20 00:14	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	05/15/20 03:04	05/16/20 03:37	7440-38-2	
Barium	**41.4**	ug/L	5.0	3.5	1	05/15/20 03:04	05/16/20 03:37	7440-39-3	
Beryllium	ND	ug/L	1.0	0.70	1	05/15/20 03:04	05/16/20 03:37	7440-41-7	
Boron	**0.29**	mg/L	0.050	0.032	1	05/15/20 03:04	05/16/20 03:37	7440-42-8	
Cadmium	ND	ug/L	1.0	0.40	1	05/15/20 03:04	05/16/20 03:37	7440-43-9	
Calcium	**50.1**	mg/L	0.10	0.094	1	05/15/20 03:04	05/16/20 03:37	7440-70-2	
Chromium	**5.1**	ug/L	5.0	3.7	1	05/15/20 03:04	05/16/20 03:37	7440-47-3	
Molybdenum	**6.5**	ug/L	5.0	3.9	1	05/15/20 03:04	05/16/20 03:37	7439-98-7	
Selenium	ND	ug/L	10.0	4.7	1	05/15/20 03:04	05/16/20 03:37	7782-49-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville								
Cobalt	**0.29**	ug/L	0.10	0.050	1	05/15/20 02:04	05/15/20 15:18	7440-48-4	
Lead	ND	ug/L	0.10	0.077	1	05/15/20 02:04	05/15/20 15:18	7439-92-1	
Lithium	**3.7**	ug/L	2.5	0.39	1	05/15/20 02:04	05/15/20 15:18	7439-93-2	
Thallium	ND	ug/L	0.10	0.050	1	05/15/20 02:04	05/15/20 15:18	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville								
Mercury	ND	ug/L	0.20	0.12	1	05/15/20 11:45	05/15/20 17:33	7439-97-6	
9056 IC anions 28 Days	Analytical Method: EPA 9056A Pace Analytical Services - Asheville								
Chloride	**10.6**	mg/L	1.0	0.60	1		05/12/20 23:08	16887-00-6	
Fluoride	**0.13**	mg/L	0.10	0.050	1		05/12/20 23:08	16984-48-8	
Sulfate	**1.1**	mg/L	1.0	0.50	1		05/12/20 23:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Sample: VPDES **Lab ID: 92476687002** Collected: 05/07/20 13:10 Received: 05/07/20 15:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2540C Total Dissolved Solids	Analytical Method: SM 2540C-2011 Pace Analytical Services - Eden								
Total Dissolved Solids	**250**	mg/L	25.0	25.0	1		05/11/20 14:05		
6010 MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Asheville								
Antimony	ND	ug/L	5.0	3.0	1	05/15/20 03:04	05/20/20 00:17	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	05/15/20 03:04	05/16/20 04:29	7440-38-2	
Barium	**109**	ug/L	5.0	3.5	1	05/15/20 03:04	05/16/20 04:29	7440-39-3	
Beryllium	ND	ug/L	1.0	0.70	1	05/15/20 03:04	05/16/20 04:29	7440-41-7	
Boron	**0.62**	mg/L	0.050	0.032	1	05/15/20 03:04	05/16/20 04:29	7440-42-8	
Cadmium	**0.88J**	ug/L	1.0	0.40	1	05/15/20 03:04	05/16/20 04:29	7440-43-9	
Calcium	**49.2**	mg/L	0.10	0.094	1	05/15/20 03:04	05/16/20 04:29	7440-70-2	
Chromium	ND	ug/L	5.0	3.7	1	05/15/20 03:04	05/16/20 04:29	7440-47-3	
Molybdenum	ND	ug/L	5.0	3.9	1	05/15/20 03:04	05/16/20 04:29	7439-98-7	
Selenium	ND	ug/L	10.0	4.7	1	05/15/20 03:04	05/16/20 04:29	7782-49-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville								
Cobalt	**2.0**	ug/L	0.10	0.050	1	05/15/20 02:04	05/15/20 15:22	7440-48-4	
Lead	**0.10**	ug/L	0.10	0.077	1	05/15/20 02:04	05/15/20 15:22	7439-92-1	
Lithium	**6.7**	ug/L	2.5	0.39	1	05/15/20 02:04	05/15/20 15:22	7439-93-2	
Thallium	ND	ug/L	0.10	0.050	1	05/15/20 02:04	05/15/20 15:22	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville								
Mercury	ND	ug/L	0.20	0.12	1	05/15/20 11:45	05/15/20 17:41	7439-97-6	
9056 IC anions 28 Days	Analytical Method: EPA 9056A Pace Analytical Services - Asheville								
Chloride	**4.6**	mg/L	1.0	0.60	1		05/12/20 23:23	16887-00-6	
Fluoride	**0.070J**	mg/L	0.10	0.050	1		05/12/20 23:23	16984-48-8	
Sulfate	**75.7**	mg/L	1.0	0.50	1		05/12/20 23:23	14808-79-8	

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QUALITY CONTROL DATA

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

QC Batch: 540538
QC Batch Method: SM 2540C-2011
Analysis Method: SM 2540C-2011
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Eden
Associated Lab Samples: 92476687001, 92476687002

METHOD BLANK: 2881131 Matrix: Water
Associated Lab Samples: 92476687001, 92476687002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	05/11/20 13:52	

LABORATORY CONTROL SAMPLE: 2881132

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	230	92	90-110	

SAMPLE DUPLICATE: 2881133

Parameter	Units	92476217014 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	159	180	12	25	

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

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QUALITY CONTROL DATA

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

QC Batch: 541804
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476687001, 92476687002

METHOD BLANK: 2886897 Matrix: Water
Associated Lab Samples: 92476687001, 92476687002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.12	05/15/20 16:23	

LABORATORY CONTROL SAMPLE: 2886898

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.6	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2886899 2886900

Parameter	Units	92476928018 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.5	2.6	99	102	75-125	3	25	

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

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QUALITY CONTROL DATA

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

QC Batch: 541711
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476687001, 92476687002

METHOD BLANK: 2886680 Matrix: Water
Associated Lab Samples: 92476687001, 92476687002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	3.0	05/19/20 23:39	
Arsenic	ug/L	ND	10.0	4.7	05/16/20 02:51	
Barium	ug/L	ND	5.0	3.5	05/16/20 02:51	
Beryllium	ug/L	ND	1.0	0.70	05/16/20 02:51	
Boron	mg/L	ND	0.050	0.032	05/16/20 02:51	
Cadmium	ug/L	ND	1.0	0.40	05/16/20 02:51	
Calcium	mg/L	ND	0.10	0.094	05/16/20 02:51	
Chromium	ug/L	ND	5.0	3.7	05/16/20 02:51	
Molybdenum	ug/L	ND	5.0	3.9	05/16/20 02:51	
Selenium	ug/L	ND	10.0	4.7	05/16/20 02:51	

LABORATORY CONTROL SAMPLE: 2886681

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	452	90	80-120	
Arsenic	ug/L	500	487	97	80-120	
Barium	ug/L	500	502	100	80-120	
Beryllium	ug/L	500	489	98	80-120	
Boron	mg/L	0.5	0.49	97	80-120	
Cadmium	ug/L	500	500	100	80-120	
Calcium	mg/L	5	5.0	100	80-120	
Chromium	ug/L	500	497	99	80-120	
Molybdenum	ug/L	500	513	103	80-120	
Selenium	ug/L	500	491	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2886682 2886683

Parameter	Units	92476393001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L		500	500	495	493	99	99	75-125	0	20	
Arsenic	ug/L	22.8	500	500	553	559	106	107	75-125	1	20	
Barium	ug/L	407	500	500	891	906	103	106	75-125	2	20	
Beryllium	ug/L	ND	500	500	511	516	102	103	75-125	1	20	
Boron	mg/L	0.041J	0.5	0.5	0.53	0.53	105	106	75-125	1	20	
Cadmium	ug/L	ND	500	500	521	524	104	105	75-125	1	20	
Calcium	mg/L	53.5	5	5	55.4	56.5	110	132	75-125	2	20	M1
Chromium	ug/L	ND	500	500	526	530	105	106	75-125	1	20	

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Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2886682 2886683

Parameter	Units	92476393001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Molybdenum	ug/L	ND	500	500	533	535	107	107	75-125	0	20	
Selenium	ug/L	5.9J	500	500	522	527	104	105	75-125	1	20	

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QUALITY CONTROL DATA

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

QC Batch: 541713
QC Batch Method: EPA 3010A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476687001, 92476687002

METHOD BLANK: 2886685 Matrix: Water
Associated Lab Samples: 92476687001, 92476687002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Cobalt	ug/L	ND	0.10	0.050	05/15/20 14:09	
Lead	ug/L	ND	0.10	0.077	05/15/20 14:09	
Lithium	ug/L	ND	2.5	0.39	05/15/20 14:09	
Thallium	ug/L	ND	0.10	0.050	05/15/20 14:09	

LABORATORY CONTROL SAMPLE: 2886686

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cobalt	ug/L	10	10.3	103	80-120	
Lead	ug/L	50	51.5	103	80-120	
Lithium	ug/L	50	50.1	100	80-120	
Thallium	ug/L	10	10.3	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2886687 2886688

Parameter	Units	92476393002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	0.36	10	10	10.8	10.8	105	104	75-125	0	20	
Lead	ug/L	0.094J	50	50	53.0	51.8	106	103	75-125	2	20	
Lithium	ug/L	2.8	50	50	54.9	54.5	104	103	75-125	1	20	
Thallium	ug/L	ND	10	10	10.6	10.4	106	104	75-125	1	20	

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QUALITY CONTROL DATA

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

QC Batch: 540729
QC Batch Method: EPA 9056A
Analysis Method: EPA 9056A
Analysis Description: 9056 IC anions 28 Days
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92476687001, 92476687002

METHOD BLANK: 2882045 Matrix: Water
Associated Lab Samples: 92476687001, 92476687002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	05/12/20 19:31	
Fluoride	mg/L	ND	0.10	0.050	05/12/20 19:31	
Sulfate	mg/L	ND	1.0	0.50	05/12/20 19:31	

LABORATORY CONTROL SAMPLE: 2882046

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	52.3	105	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	50	52.9	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2882047 2882048

Parameter	Units	92476217010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	31.2	50	50	81.3	81.9	100	101	90-110	1	10	
Fluoride	mg/L	0.34	2.5	2.5	2.8	2.8	98	100	90-110	2	10	
Sulfate	mg/L	31.1	50	50	81.7	81.8	101	101	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2882049 2882050

Parameter	Units	92476063003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	9.7	50	50	61.1	61.3	103	103	90-110	0	10	
Fluoride	mg/L	0.14	2.5	2.5	2.7	2.8	103	104	90-110	1	10	
Sulfate	mg/L	43.3	50	50	93.7	93.8	101	101	90-110	0	10	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Sample: MW-22D **Lab ID: 92476687001** Collected: 05/07/20 11:35 Received: 05/07/20 15:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**1.03 ± 0.488 (0.678) C:72% T:NA**	pCi/L	05/21/20 07:11	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.129 ± 0.374 (0.838) C:73% T:81%**	pCi/L	06/01/20 11:32	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.16 ± 0.862 (1.52)**	pCi/L	06/02/20 10:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Sample: VPDES **Lab ID: 92476687002** Collected: 05/07/20 13:10 Received: 05/07/20 15:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.0146 ± 0.162 (0.450) C:81% T:NA**	pCi/L	05/21/20 07:11	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.0565 ± 0.353 (0.806) C:74% T:87%**	pCi/L	06/01/20 11:32	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.0711 ± 0.515 (1.26)**	pCi/L	06/02/20 10:58	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

QC Batch: 396562
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92476687001, 92476687002

METHOD BLANK: 1920744 Matrix: Water
Associated Lab Samples: 92476687001, 92476687002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0671 ± 0.156 (0.373) C:96% T:NA	pCi/L	05/21/20 07:10	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

QC Batch: 396564
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92476687001, 92476687002

METHOD BLANK: 1920750 Matrix: Water
Associated Lab Samples: 92476687001, 92476687002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.436 ± 0.392 (0.795) C:76% T:81%	pCi/L	06/01/20 11:31	

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QUALIFIERS

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Bremo PS-EAP NES (MW22D/VPDES)
Pace Project No.: 92476687

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92476687001	**MW-22D**	SM 2540C-2011	540538		
92476687002	**VPDES**	SM 2540C-2011	540538		
92476687001	**MW-22D**	EPA 3010A	541711	EPA 6010D	541734
92476687002	**VPDES**	EPA 3010A	541711	EPA 6010D	541734
92476687001	**MW-22D**	EPA 3010A	541713	EPA 6020B	541726
92476687002	**VPDES**	EPA 3010A	541713	EPA 6020B	541726
92476687001	**MW-22D**	EPA 7470A	541804	EPA 7470A	541849
92476687002	**VPDES**	EPA 7470A	541804	EPA 7470A	541849
92476687001	**MW-22D**	EPA 9315	396562		
92476687002	**VPDES**	EPA 9315	396562		
92476687001	**MW-22D**	EPA 9320	396564		
92476687002	**VPDES**	EPA 9320	396564		
92476687001	**MW-22D**	Total Radium Calculation	398920		
92476687002	**VPDES**	Total Radium Calculation	398920		
92476687001	**MW-22D**	EPA 9056A	540729		
92476687002	**VPDES**	EPA 9056A	540729		

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CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login La
MTJL Log-i

WO# : 92476687

92476687

ALL SHADED AREAS

Company: Golder Associates Inc	Billing Information:
Address: 2108 W. Laburnum Ave Ste. 200	
Report To: Mike Williams	Email To: areynolds@golder.com
Copy To: Amanda Reynolds	Site Collection Info/Address: Bremo Power Station
Customer Project Name/Number: EAP NES / 20140438	State: VA / County/City: Fluvanna / Time Zone Collected: [ ]PT [ ]MT [ ]CT [X]ET
Phone: 804-358-7900 Email: areynolds@golder.com	Site/Facility ID #: / Compliance Monitoring? [ ] Yes [X] No
Collected By (print): T. Kokal	Purchase Order #: / Quote #: / DW PWS ID #: / DW Location Code:
Collected By (signature):	Turnaround Date Required: Standard / Immediately Packed on Ice: [X] Yes [ ] No
Sample Disposal: [X] Dispose as appropriate [ ] Return [ ] Archive: [ ] Hold:	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply) / Field Filtered (if applicable): [ ] Yes [X] No / Analysis:

Container Preservative Type **: U | | | | U | | | | | |

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Lab Project Manager:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Chloride, Fluoride, Sulfate	Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Iron	Molybdenum, Selenium	Cobalt, Lead, Lithium, Thallium	Total Dissolved Solids	Mercury	Radium - 226	Radium - 228	Total Radium	Lab Sample # / Comments
MW-22D ~~-VPDES~~ TR	GW	G			05/07/20	1135		6										001
VPDES	GW	G			05/07/20	1310		6										002

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	X	N	NA
Custody Signatures Present	X	N	NA
Collector Signature Present	X	N	NA
Bottles Intact	X	N	NA
Correct Bottles	X	N	NA
Sufficient Volume	X	N	NA
Samples Received on Ice	X	N	NA
VOA - Headspace Acceptable	Y	N	~~NA~~
USDA Regulated Soils	Y	N	~~NA~~
Samples in Holding Time	X	N	NA
Residual Chlorine Present	Y	N	~~NA~~
Cl Strips: _____			
Sample pH Acceptable	X	N	NA
pH Strips: _____			
Sulfide Present	Y	N	~~NA~~
Lead Acetate Strips: _____			

LAB USE ONLY:
Lab Sample # / Comments:
92476687

Customer Remarks / Special Conditions / Possible Hazards:
Level II data package
All samples preserved on ice
Report Group A

Type of Ice Used: (Wet) Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2326410

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: T-3
Cooler 1 Temp Upon Receipt: 5.3 oC
Cooler 1 Therm Corr. Factor: 0.0 oC
Cooler 1 Corrected Temp: 5.3 oC
Comments:

Relinquished by/Company: (Signature)	Date/Time: 05-07-20 / 1400	Received by/Company: (Signature)	Date/Time: 5-7-20 1412	MTJL LAB USE ONLY
Relinquished by/Company: (Signature)	Date/Time: 5/7/20 15:15	Received by/Company: (Signature)	Date/Time: 5-7-20 1555	Table #: / Acctnum: / Template: / Prelogin: / PM: / PB:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

APPENDIX C

Data Validation Summary

Project Name: Bremo Power Station - East Ash Pond ACM

Project Reference Number: 2014-0438.002

Sampling Event Date: May 7, 2020

Review Date: 06/17/2020 *Initials:* HDE

Review Date: June 22, 2020 *Initials:* RMS

Person(s) performing the review are to initial each item on this form as acknowledgement of data acceptance, or as acknowledgement of a review issue. In the case of the latter, a brief explanation should follow the applicable item.

Golder Associates Inc. has reviewed the laboratory certificates of analysis, chain-of-custody form, and laboratory provided sample group quality assurance and quality control data for the above referenced sample group to identify potential bias or inaccuracy, in general accordance with the following United States Environmental Protection Agency (EPA) and Department of Energy (DOE) documents:

- National Functional Guidelines for Organic Superfund Methods Data Review, January 2017;
- National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017;
- US Department of Energy Evaluation of Radiochemical Data Usability, April 1997; and
- Sampling and Analysis Plan for US Department of Energy Office of Legacy Management Sites.

COMMON ACRONYMS:

- MS = matrix spike
- MSD = matrix spike duplicate
- LCS = laboratory control spike
- RPD = relative percent difference
- MB = method blank
- DUP = duplicate
- FB = field blank
- VSWMR = Virginia Solid Waste Management Regulations
- J = estimated
- ND and/or U= not detected
- COC = chain of custody
- QC = quality control
- µg/L = micrograms per liter
- mg/L = milligrams per liter
- EPA = United States Environmental Protection Agency
- pCi/L = picocuries per liter

COMPLIANCE ANALYTE LIST

☐ Historical VPDES Parameters

☒ CCR Appendix III to Part 257

☒ CCR Appendix IV to Part 257

☒ VSWMR Phase II Parameters: Copper, Nickel, Silver, Vanadium, Tin, Zinc, Ammonia, Hardness, Iron, Manganese, and Nitrate

☒ Other: Hexavalent Chromium

Note: Pace Package Nos. 92476680, 92476681, and 92476687; AWS Package Nos. 20E0334 and 20E0337.

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1.0 CHAIN OF CUSTODY (COC) REVIEW

Yes COC was properly signed by all parties.

Yes Correct project name and number are on the form.

Yes Sample receipt condition at laboratory was acceptable.

Yes Each sample and blank submitted for analysis appears in the data report.

Note: NA

2.0 SAMPLE HOLDING TIMES

Yes Holding times for extraction *and/or* analysis were met for each analytical method.

Review Criteria		
Method	**Analytes**	**Holding Time**
EPA 9056	Chloride, Flouride, Sulfate	28 days
EPA 9056	Nitrate	48 hours
EPA 6000 series	Metals	6 months
EPA 7470	Mercury	28 days
EPA 350.1	Ammonia	28 days
EPA 9000 series	Radium-226 and Radium-228	6 months
SM 2340B	Hardness	6 months
SM 2540C	TDS	7 days
EPA 7196	Hexavalent Chromium	24 hours (unpreserved)

Notes: NA

3.0 LABORATORY QUALITY CONTROL REVIEW

Yes Laboratory analyzed at least one internal blank for each method, where applicable.

See Note Laboratory blanks were interference free.

Notes: The following table presents method blank detections and their associated sample delivery groups (batch). In accordance with EPA guidance, associated samples within the same SDG may be qualified estimated high (J+), estimated low (J-), non-detect estimated (UJ), or unusable (R) using professional judgement. As presented below, no data qualification is recommended.

For radiochemistry data, if the reported absolute value of the method blank is above the minimum detectable concentration (MDC) and no other deficiencies are noted in the associated dataset, detections above the MDC and less than 5 times the concentration reported in the method blank may be blank qualified "J" in accordance with qualification guidance. As presented below, no data qualification was required. No detections in the Laboratory Method Blank were reported.

Parameter	Method Blank Detection (µg/L)	Batch	Associated Qualified Sample(s)	Validator Qualifier
NA	--	--	--	--

NA Surrogate recoveries are provided for each analytical method, where applicable.

NA Surrogate recoveries for each method are within the acceptable limits.

Notes: NA

Yes Tracer and carrier yields are provided for each analytical method, where applicable (Radiochemical Data Only).

Yes Tracer and carrier yields for each method are within the acceptable limits (Radiochemical Data Only).

Notes: NA

Yes MS/MSD/LCS/RPD data results are provided for each analytical method.

See Note MS/MSD/LCS/RPD recoveries for each method are within the acceptable limits.

Notes: The following table presents recoveries and relative percent differences (RPDs) that were outside of QC limits for the associated sample delivery group (analytical batch). In accordance with EPA guidance for evaluation of spike recoveries, the associated samples may be qualified estimated high (J+), estimated low (J-), non-detect estimated (UJ), or unusable (R) using professional judgement to evaluate the spike recovery. Post-digestion spike recovery will be evaluated for MS/MSD qualification purposes where provided. As presented, no data qualification is recommended. No MS/MSD results were provided for radium-226 or radium-228.

In accordance with EPA guidance for evaluation of RPDs, the associated samples may be qualified estimated (J or UJ) using professional judgement to evaluate the RPD. As presented, no data qualification is recommended. No MS/MSDs were provided for the Radiochemcial Data.

Parameter	Recovery Outside QC Limits	Batch	Associated Qualified Sample(s)	Validator Qualifier
Calcium	MSD	541711	--	--
Hardness	MSD	541711	--	--
Chloride	MS, MSD	540531	MW-40	J+
Flouride	MS, MSD	540531	MW-40	J+
Sulfate	MS, MSD	540531	MW-40	J+

Yes Minimum Detectable Concentrations (MDCs) are provided for radiological samples.

Yes Radiological samples reported below their respective MDC have been qualified with a “U.”

Notes: NA

Parameter	Associated Samples Below MDC
Radium-226	MW-40, MW-VPDES, Equipment Blank, Field Blank
Radium-228	MW-40, MW-VPDES, MW-22D, Equipment Blank, Field Blank
Total Radium	MW-40, MW-VPDES, MW-22D, Equipment Blank, Field Blank

4.0 ANALYTE LISTS/METHODS

Yes The proper number of constituents are present for each analyte list as identified above (including detects where applicable).

Yes Proper EPA SW-846 analytical methods were used for analysis.

Notes: NA

5.0 DATA REPORTING

See Note Trip; field and/or equipment; and laboratory blank results have all been reported and the detected constituents in these blanks, if any, have been qualified using professional judgement where detected in other samples.

Notes: The following table presents field, equipment, and/or trip blank detections and associated samples that have been qualified. In accordance with EPA guidance, associated samples may be qualified estimated high (J+), estimated low (J-), non-detect estimated (UJ), or unusable (R) using professional judgement to evaluate the blank detection. As presented below, data qualification is recommended. No detections were reported in the Field Blank.

Sample ID	Parameter	Blank Detection (µg/L)	Associated Qualified Sample(s)	Validator Qualifier
NA	Hexavalent Chromium	6	Equipment Blank	--

Yes It is clear from the laboratory report that samples have or have not been diluted during analysis, and if the samples have been diluted, the result is reported as a multiple of the dilution (*e.g.*, a sample diluted 10x resulting in an analytical detection of 1.0 should be reported as 10).

Yes The report provides the reporting limit for each constituent.

Yes The proper reporting limits have been used (*e.g.* NC Solid Waste Section approved PQLs, or VA DEQ Permit approved detection limits, as appropriate).

Notes: Hexavalent chromium was not detected in primary sample MW-40; therefore, no validation qualifier is needed.

APPENDIX D

Surface Water Monitoring Report – 1st Quarter 2020

Dominion Energy Services, Inc.
120 Tredegar Street, Richmond, VA 23219
DominionEnergy.com

BY ELECTRONIC MAIL

June 5, 2020

Ms. Laura Stuart, P.G.
Virginia Department of Environmental Quality – Valley Regional Office
Attn: Division of Land Protection and Revitalization
4411 Early Road
Harrisonburg, Virginia 22801
laura.stuart@deq.virginia.gov

RE: Bremo Power Station, Solid Waste Permit No. 618: 2020 1st Quarter Surface Water Monitoring Report

Dear Ms. Stuart:

In accordance with Solid Waste Permit No. 618 Module XVIII.F.1, Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy) is submitting the 2020 first quarter Surface Water Monitoring Report for the Bremo Power Station. The first 2020 quarterly surface water sampling event was conducted on March 13, 2020 and complete analytical laboratory results were received on April 8, 2020. A summary of this quarter's monitoring is provided in the attached report prepared by EnviroScience Inc.

If you have any questions regarding this submittal, please contact Kelly Hicks at (804) 273-4903 or via email at kelly.a.hicks@dominionenergy.com.

Sincerely,

Lisa C. Messinger

Lisa C. Messinger
Director, Environmental Services

Attachment

SURFACE WATER MONITORING REPORT – 1ST QUARTER, 2020

Dominion Energy
Bremo Power Station
Bremo Bluff, Virginia

VDEQ Solid Waste Permit No. 618

Prepared for:

Virginia Electric and Power Company
(d/b/a Dominion Energy Virginia)
120 Tredegar Street
Richmond, Virginia 23219

ES Project No.: 12246
Date: 06/05/2020

Prepared by:

EnviroScience
Excellence In Any Environment
1100 Athens Ave., Suite F
Richmond, VA 23227
800-940-4025
www.EnviroScienceInc.com

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Certification of Results

As a representative of Dominion Energy Services, Inc., the undersigned certifies, to the best of their knowledge, that the information and analytical results contained within this document and its appendices are true and accurate.

6-5-2020

Williams F. Reed
Director Bremo Power Station

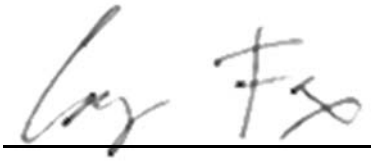
Bremo Power Station
Surface Water Monitoring Report 1Q20
Document Date: 06/05/2020
ES Project No.: 12246

Prepared for:
Dominion Energy
Virginia

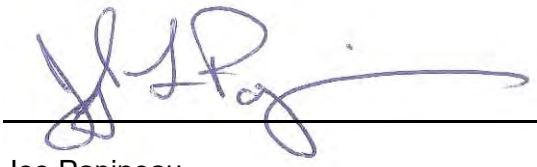
Authorization for Release

The analyses, opinions, and conclusions in this document are based entirely on EnviroScience's unbiased, professional judgement. EnviroScience's compensation is not in any way contingent on any action or event resulting from this study.

The undersigned attest, to the best of their knowledge, that this document and the information contained herein is accurate and conforms to EnviroScience's internal Quality Assurance standards.



Cory Fox
Lead Field Scientist



Joe Papineau
Project Manager

Kyle Lawrence
Director of Operations

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Figure 1. Site and Sampling Locations

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Appendix A: Field Documentation

Appendix B: Analytical Laboratory Report

Appendix C: Data Validation Summary

1.0 INTRODUCTION

Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy) operated the Bremo Power Station, located at 1038 Bremo Bluff Rd. in Bremo Bluff, Virginia until 2018. The station, situated on the north bank of the James River, was converted from coal to natural gas power in 2014. Sluiced coal combustion residuals (CCRs) produced during pre-conversion operations were managed in three on-site surface impoundments at various points in time from the 1930s to present: East Pond, West Pond, and North Pond. The East Pond and West Pond previously held CCRs, but the materials have been removed and the impoundments no longer contain CCR materials. Currently, all CCRs have been consolidated in the North Pond impoundment. The North Pond was constructed during 1982 and 1983 and contains approximately 8 million cubic yards of CCRs.

Permit Module XVIII of Bremo Power Station's Solid Waste Facility Permit (Permit No. 618) describes surface monitoring requirements for near-shore waters of the James River, with the objective of detecting potential surface water impacts that may be occurring due to potential groundwater / surface water exchange downgradient of the active and inactive impoundments. To address the requirements set out in Permit Module XVIII, Dominion Energy submitted a Surface Water Monitoring Plan (SWMP) for Bremo Power Station to the Virginia Department of Environmental Quality (VDEQ), dated August 2019 and revised May 2020 (EA Engineering, Science, and Technology, Inc., 2020).

Dominion Energy retained EnviroScience, Inc. (EnviroScience) to provide field sampling and reporting services associated with the requirements set out under Permit Module XVIII. This Surface Water Monitoring Report summarizes activities undertaken and presents the results for the first quarter of 2020, in accordance with the SWMP as preliminarily approved by VDEQ via e-mail on January 16, 2020.

2.0 SUMMARY OF FIELD ACTIVITIES

All field activities were conducted by EnviroScience personnel. Surface water samples were collected from the James River at designated locations proximal to Bremo Power Station on March 13, 2020. Sampling took place under fair weather conditions with temperatures ranging from 73-76° F, light winds, and partly cloudy to mostly cloudy skies. The average discharge of the James River during the sampling event was approximately 3,400 cfs, as reported by United States Geological Survey (USGS) gauge 02029000 at Scottsville, Virginia; the closest upstream gauge to the Station (USGS, 2020).

2.1 SAMPLING LOCATIONS

Samples were collected from all locations prescribed in the SWMP. These locations are shown on Figure 1 and listed in Table 1 along with their respective coordinates. Eight samples were collected from the James River for evaluation of potential impacts as required by Permit Module XVIII; these are designated by a "BR" identifier. Sample locations BR-01 through BR-04 are located downgradient of the West Pond, and sample locations BR-05 through BR-08 are located downgradient of the North Pond and East Pond. Two reference locations, designated by a "JR" identifier, were also collected from the James River upstream of Bremo Power Station to document ambient conditions. During the initial sampling event, each sampling location was marked on the shore with permanent signage to allow for future identification.

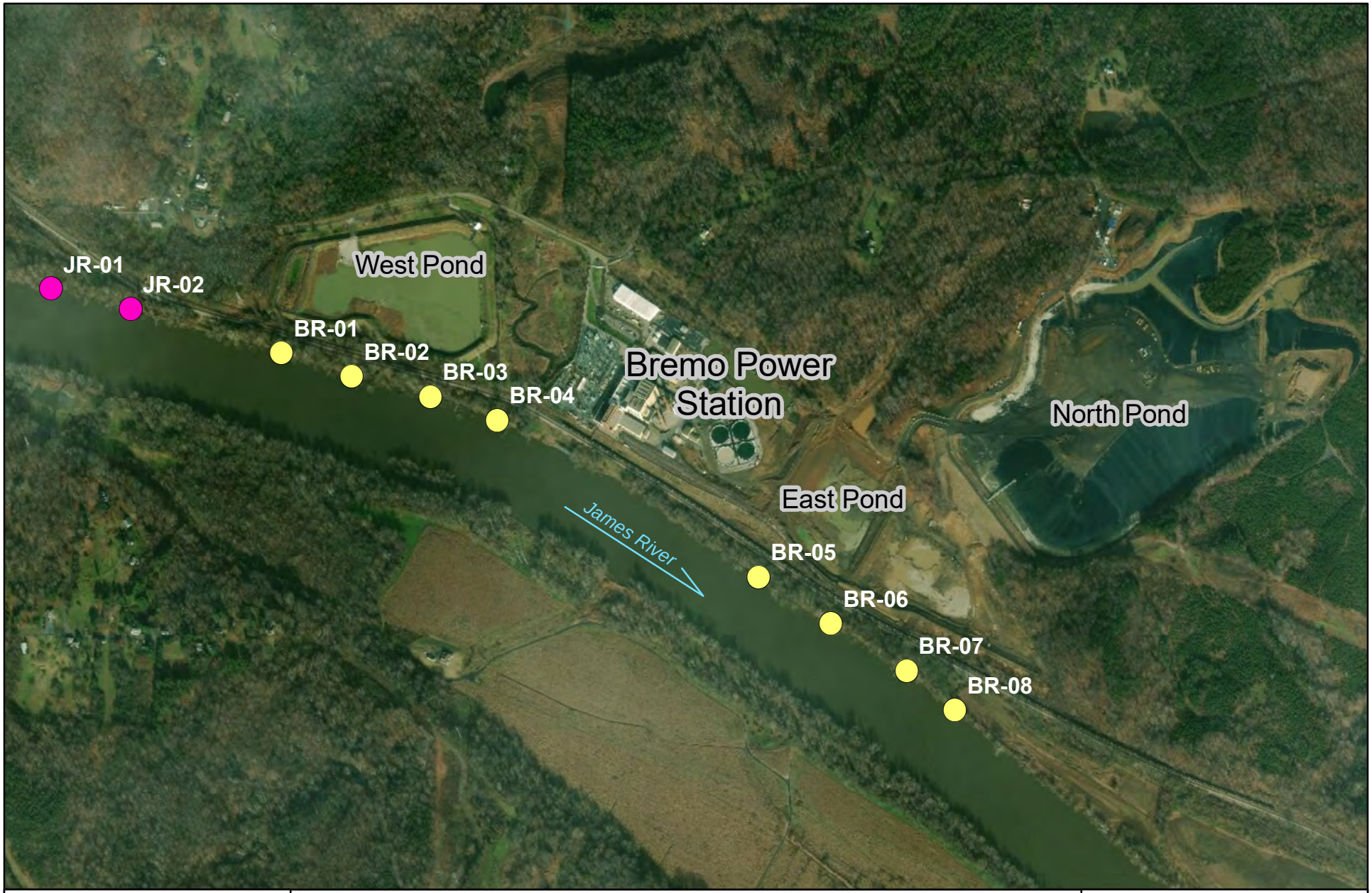

Figure 1. Site Map of Bremo Power Station Showing Sampling Locations.

Surface Water Sampling Location

Reference Sampling Location

0 250 500 1,000 Feet

0 75 150 300 Meters

EnviroScience
Excellence In Any Environment

Date: 5/27/2020

Basemap courtesy of Esri.

Table 1. Sampling Locations and Coordinates

Sample Location	Latitude	Longitude
BR-01	37.71008	-78.29521
BR-02	37.70967	-78.29369
BR-03	37.70932	-78.29198
BR-04	37.70891	-78.29054
BR-05	37.70620	-78.28488
BR-06	37.70540	-78.28332
BR-07	37.70458	-78.28168
BR-08	37.70390	-78.28063
JR-01	37.71119	-78.30020
JR-02	37.71084	-78.29847

2.2 SAMPLE COLLECTION

Samples were collected from a jon boat, beginning with the most downstream location and proceeding upstream to prevent inadvertent cross-contamination due to introduction of disturbed sediments. At each location, the sampling boat was maneuvered as close to shore as river depths would allow.

Samples were collected from mid-depth into laboratory-supplied certified clean sample containers using a peristaltic pump and new dedicated Teflon tubing at each sampling location. During collection, samples were field filtered using a 0.45 micron in-line capsule filter, with a new filter used at each sampling location. Sample collection followed VDEQ's Collection of Trace Element Samples (Clean Metals) protocols (i.e., "clean hands / dirty hands" technique), which is included in the SWMP.

After collection, each sample container was placed into a cooler with wet ice and chilled to 4° C before being shipped to the analytical laboratory under chain-of-custody protocols, consistent with packaging and shipping procedures described in the SWMP.

2.3 QUALITY ASSURANCE SAMPLES

Quality assurance samples were collected in accordance with the SWMP, with the addition of a field blank. Altogether, collected quality assurance samples included one field duplicate, one matrix spike, one matrix spike duplicate, one equipment blank, and one field blank. Quality assurance samples were handled and shipped in the same manner as the primary analytical samples described in Section 2.2.

2.4 FIELD MEASUREMENTS

Water depth and infield chemistry parameters (temperature, specific conductance, pH, and dissolved oxygen), measured with a YSI Pro-DSS multiparameter probe, were recorded at each sampling location prior to sample collection. The YSI Pro-DSS was calibrated onsite prior to sampling in accordance with the manufacturer's specifications. Field-measured parameters are provided alongside validated analytical results in Table 2 (Section 4).

2.5 FIELD DOCUMENTATION

Field conditions including weather, locations, measured parameters, and other pertinent information were documented in field notebooks. A copy of this documentation is included as Appendix A.

3.0 SAMPLE ANALYSIS AND VALIDATION

Samples were analyzed by SGS North America, Inc. (SGS) at their Orlando, Florida and Dayton, New Jersey facilities. Third-party data validation of analytical results was performed by Environmental Standards, Inc. (Environmental Standards).

3.1 ANALYTES AND METHODS

Samples were analyzed by SGS for the following metals, using the noted SW-846 methods:

- Method 6020 - Dissolved antimony, arsenic, cadmium, calcium, total chromium, cobalt, copper, lead, magnesium, molybdenum, nickel, selenium, silver, thallium, and zinc
- Method 6010 – Dissolved boron and lithium
- Method 7196 – Dissolved chromium VI
- Method 7470 – Dissolved mercury
- Calculated – Dissolved chromium III calculated by subtracting chromium VI from total chromium concentrations
- Calculated – Hardness calculated using calcium and magnesium concentrations

Final analytical results were received on April 8, 2020 and a complete copy of the SGS analytical report is included as Appendix B.

3.2 DATA VALIDATION

Environmental Standards performed a Tier 2 review of the SGS Level 4 laboratory data package following USEPA's *National Functional Guidelines for Superfund Inorganics Method Data Review* (2017). A complete copy of the Environmental Standards validation report is included as Appendix C.

4.0 RESULTS

Validated analytical results (as reported by Environmental Standards) and measured field parameters are presented on the following pages in Table 2. Table 2 also includes a comparison standard for each analyte, based on applicable Virginia Water Quality Standards (VAWQS) in 9VAC25-260-140 or to groundwater protection standards where VAWQS do not exist. Based on these comparisons, all first quarter 2020 surface water monitoring results were below applicable standards.

Table 2. Validated Analytical Results and Measured Field Parameters

Sample ID / Sample Location / Sample Date		JR-01-20-Q1 Upstream Reference 3/13/2020					JR-02-20-Q1 Upstream Reference 3/13/2020					BR-01-20-Q1 BR-01 (West Pond) 3/13/2020					BR-02-20-Q1 BR-02 (West Pond) 3/13/2020					BR-03-20-Q1 BR-03 (West Pond) 3/13/2020				
CHEMICAL_NAME	**Comparison Standard**	**Comparison Standard Value**	**Result**	**Qual**	**MDL**	**RL**	**Comparison Standard Value**	**Result**	**Qual**	**MDL**	**RL**	**Comparison Standard Value**	**Result**	**Qual**	**MDL**	**RL**	**Comparison Standard Value**	**Result**	**Qual**	**MDL**	**RL**	**Comparison Standard Value**	**Result**	**Qual**	**MDL**	**RL**
Metals (µg/L)																										
Antimony	HH - AOSW	640	< 0.20	U	0.20	2.0	640	< 0.20	U	0.20	2.0	640	< 0.20	U	0.20	2.0	640	< 0.20	U	0.20	2.0	640	< 0.20	U	0.20	2.0
Arsenic	AL FW Chronic	150	< 0.21	U	0.21	2.0	150	**0.22**	**J**	0.21	2.0	150	**0.24**	**J**	0.21	2.0	150	**0.24**	**J**	0.21	2.0	150	< 0.21	U	0.21	2.0
Boron	GPS	250	< 63	U	63	100	250	< 63	U	63	100	250	< 63	U	63	100	250	< 63	U	63	100	250	< 63	U	63	100
Cadmium	AL FW Chronic*	0.51	< 0.20	U	0.20	2.0	0.50	< 0.20	U	0.20	2.0	0.52	< 0.20	U	0.20	2.0	0.51	< 0.20	U	0.20	2.0	0.45	< 0.20	U	0.20	2.0
Chromium	GPS	100	< 0.62	U	0.62	2.0	100	< 1.3	U	1.3	2.0	100	< 0.65	U	0.65	2.0	100	< 0.66	U	0.66	2.0	100	< 0.54	U	0.54	2.0
Chromium, Trivalent	AL FW Chronic*	0.051	< 0.0082	U	0.0082	0.012	0.050	< 0.0082	U	0.0082	0.012	52	< 8.2	U	8.2	12	51	< 8.2	U	8.2	12	44	< 8.2	U	8.2	12
Chromium, Hexavalent	AL FW Chronic	0.011	< 0.0080	U	0.0080	0.010	0.011	< 0.0080	U	0.0080	0.010	11	< 10	U	10	10	11	< 8.0	U	8.0	10	11	< 8.0	U	8.0	10
Cobalt	GPS	5.0	< 0.20	U	0.20	2.0	5.0	< 0.20	U	0.20	2.0	5.0	< 0.20	U	0.20	2.0	5.0	< 0.20	U	0.20	2.0	5.0	< 0.20	U	0.20	2.0
Copper	AL FW Chronic*	6.1	< 1.1	U	1.1	2.0	6.0	< 1.1	U	1.1	2.0	6.2	< 1.2	U	1.2	2.0	6.0	< 1.1	U	1.1	2.0	5.2	< 1.4	U	1.4	2.0
Lead	AL FW Chronic*	6.6	< 0.20	U	0.20	2.0	6.3	< 0.20	U	0.20	2.0	6.7	< 0.20	U	0.20	2.0	6.4	< 0.20	U	0.20	2.0	5.3	< 0.20	U	0.20	2.0
Lithium	GPS	50	< 7.3	U	7.3	50	50	< 7.3	U	7.3	50	50	< 7.3	U	7.3	50	50	< 7.3	U	7.3	50	50	< 7.3	U	7.3	50
Mercury	AL FW Chronic	0.77	< 0.030	U	0.030	0.50	0.77	< 0.030	U	0.030	0.50	0.77	< 0.50	U	0.50	0.50	0.77	< 0.030	U	0.030	0.50	0.77	< 0.030	U	0.030	0.50
Molybdenum	GPS	5.0	< 0.39	U	0.39	2.0	5.0	< 0.39	U	0.39	2.0	5.0	< 0.39	U	0.39	2.0	5.0	< 0.39	U	0.39	2.0	5.0	< 0.39	U	0.39	2.0
Nickel	AL FW Chronic*	14	< 0.74	U	0.74	2.0	14	< 0.77	U	0.77	2.0	14	< 0.51	U	0.51	2.0	14	< 0.83	U	0.83	2.0	12	< 2.0	U	2.0	2.0
Selenium	AL FW Chronic	5.0	< 0.22	U	0.22	2.0	5.0	< 0.22	U	0.22	2.0	5.0	< 0.22	U	0.22	2.0	5.0	< 0.22	U	0.22	2.0	5.0	< 0.22	U	0.22	2.0
Silver	AL FW Acute*	1.6	< 0.20	U	0.20	2.0	1.5	< 0.20	U	0.20	2.0	1.6	< 0.20	U	0.20	2.0	1.6	< 0.20	U	0.20	2.0	1.2	< 0.20	U	0.20	2.0
Thallium	HH - AOSW	0.47	< 0.20	U	0.20	2.0	0.47	< 0.20	U	0.20	2.0	0.47	< 0.20	U	0.20	2.0	0.47	< 0.20	U	0.20	2.0	0.47	< 0.20	U	0.20	2.0
Zinc	AL FW Chronic*	81	< 5.4	U	5.4	5.4	79	< 6.5	U	6.5	6.5	82	< 4.9	U	4.9	4.9	80	< 5.4	U	5.4	5.4	69	< 5.6	U	5.6	5.6
Hardness																										
Calcium (µg/L)	--	--	**18600**		36	200	--	**18200**		36	200	--	**18900**		36	200	--	**18400**		36	200	--	**15500**		36	200
Hardness (mg/L)	--	--	**63.6**		0.17	1.3	--	**62.2**		0.17	1.3	--	**64.5**		0.17	1.3	--	**62.7**		0.17	1.3	--	**52.8**		0.17	1.3
Magnesium (ug/L)	--	--	**4160**		19	200	--	**4080**		19	200	--	**4200**		19	200	--	**4070**		19	200	--	**3430**		19	200
Field Data																										
Conductivity (uS/cm)	--	--	136.9				--	133.4				--	137.3				--	137				--	136.7			
Dissolved Oxygen (mg/L)	--	--	10.24				--	10.29				--	10.62				--	10.90				--	10.83			
pH (pH Units)	--	--	8.92				--	8.92				--	8.96				--	8.96				--	8.92			
Salinity (ppt)	--	--	0.08				--	0.08				--	0.08				--	0.08				--	0.08			
Specific Conductivity (µS/cm)	--	--	165.6				--	161.0				--	166.0				--	165.8				--	166.2			
Temperature (°C)	--	--	15.9				--	16.0				--	15.9				--	15.9				--	15.8			
Water Depth (M)	--	--	0.6				--	0.1				--	0.5				--	0.3				--	0.6			

Table 2. Validated Analytical Results and Measured Field Parameters (Cont.)

Sample ID		BR-03-20-Q1-FD					BR-04-20-Q1					BR-05-20-Q1					BR-06-20-Q1					BR-07-20-Q1				
Sample Location		Field Duplicate					BR-04 (West Pond)					BR-05 (North & East Ponds)					BR-06 (North & East Ponds)					BR-07 (North & East Ponds)				
Sample Date		3/13/2020					3/13/2020					3/13/2020					3/13/2020					3/13/2020				
CHEMICAL_NAME	Comparison Standard	Comparison Standard Value	Result	Qual	MDL	RL	Comparison Standard Value	Result	Qual	MDL	RL	Comparison Standard Value	Result	Qual	MDL	RL	Comparison Standard Value	Result	Qual	MDL	RL	Comparison Standard Value	Result	Qual	MDL	RL
Metals (µg/L)																										
Antimony	HH - AOSW	640	< 0.20	U	0.20	2.0	640	< 0.20	U	0.20	2.0	640	< 0.20	U	0.20	2.0	640	< 0.20	U	0.20	2.0	640	< 0.20	U	0.20	2.0
Arsenic	AL FW Chronic	150	< 0.21	U	0.21	2.0	150	< 0.21	U	0.21	2.0	150	**0.26**	**J**	0.21	2.0	150	**0.23**	**J**	0.21	2.0	150	< 0.21	U	0.21	2.0
Boron	GPS	250	< 63	U	63	100	250	< 63	U	63	100	250	< 63	U	63	100	250	< 63	U	63	100	250	< 63	U	63	100
Cadmium	AL FW Chronic*	0.51	< 0.20	U	0.20	2.0	0.50	< 0.20	U	0.20	2.0	0.51	< 0.20	U	0.20	2.0	0.51	< 0.20	U	0.20	2.0	0.52	< 0.20	U	0.20	2.0
Chromium	GPS	100	< 0.65	U	0.65	2.0	100	< 0.60	U	0.60	2.0	100	< 0.68	U	0.68	2.0	100	< 0.63	U	0.63	2.0	100	< 0.70	U	0.70	2.0
Chromium, Trivalent	AL FW Chronic*	51	< 8.2	U	8.2	12	49	< 8.2	U	8.2	12	51	< 8.2	U	8.2	12	51	< 8.2	U	8.2	12	52	< 8.2	U	8.2	12
Chromium, Hexavalent	AL FW Chronic	11	< 8.0	U	8.0	10	11	< 8.0	U	8.0	10	11	< 8.0	U	8.0	10	11	< 8.0	U	8.0	10	11	< 8.0	U	8.0	10
Cobalt	GPS	5.0	< 0.20	U	0.20	2.0	5.0	< 0.20	U	0.20	2.0	7.83	< 0.20	U	0.20	2.0	7.83	< 0.20	U	0.20	2.0	7.83	< 0.20	U	0.20	2.0
Copper	AL FW Chronic*	6.0	< 1.0	U	1.0	2.0	5.9	< 1.2	U	1.2	2.0	6.0	< 1.3	U	1.3	2.0	6.1	< 1.3	U	1.3	2.0	6.2	< 1.2	U	1.2	2.0
Lead	AL FW Chronic*	6.4	< 0.20	U	0.20	2.0	6.2	< 0.20	U	0.20	2.0	6.4	< 0.20	U	0.20	2.0	6.6	< 0.20	U	0.20	2.0	6.7	< 0.20	U	0.20	2.0
Lithium	GPS	50	< 7.3	U	7.3	50	50	< 7.3	U	7.3	50	50	< 7.3	U	7.3	50	50	< 7.3	U	7.3	50	50	< 7.3	U	7.3	50
Mercury	AL FW Chronic	0.77	< 0.030	U	0.030	0.50	0.77	< 0.030	U	0.030	0.50	0.77	< 0.030	U	0.030	0.50	0.77	< 0.030	U	0.030	0.50	0.77	< 0.030	U	0.030	0.50
Molybdenum	GPS	5.0	< 0.39	U	0.39	2.0	5.0	< 0.39	U	0.39	2.0	16.4	< 0.50	U	0.50	2.0	16.4	< 0.39	U	0.39	2.0	16.4	< 0.39	U	0.39	2.0
Nickel	AL FW Chronic*	14	< 0.82	U	0.82	2.0	13	< 1.1	U	1.1	2.0	14	< 0.86	U	0.86	2.0	14	< 0.62	U	0.62	2.0	14	< 0.63	U	0.63	2.0
Selenium	AL FW Chronic	5.0	< 0.22	U	0.22	2.0	5.0	< 0.22	U	0.22	2.0	5.0	< 0.22	U	0.22	2.0	5.0	< 0.22	U	0.22	2.0	5.0	< 0.22	U	0.22	2.0
Silver	AL FW Acute*	1.6	< 0.20	U	0.20	2.0	1.5	< 0.20	U	0.20	2.0	1.6	< 0.20	U	0.20	2.0	1.6	< 0.20	U	0.20	2.0	1.6	< 0.20	U	0.20	2.0
Thallium	HH - AOSW	0.47	< 0.20	U	0.20	2.0	0.47	< 0.20	U	0.20	2.0	0.47	< 0.20	U	0.20	2.0	0.47	< 0.20	U	0.20	2.0	0.47	< 0.20	U	0.20	2.0
Zinc	AL FW Chronic*	80	< 4.9	U	4.9	4.9	78	< 6.0	U	6.0	6.0	80	< 5.0	U	5.0	5.0	81	< 6.4	U	6.4	6.4	82	< 6.5	U	6.5	6.5
Hardness																										
Calcium (µg/L)	--	--	**18400**		36	200	--	**17900**		36	200	--	**18600**		36	200	--	**18800**		36	200	--	**19000**		36	200
Hardness (mg/L)	--	--	**62.7**		0.17	1.3	--	**61.0**		0.17	1.3	--	**63.4**		0.17	1.3	--	**64.2**		0.17	1.3	--	**64.8**		0.17	1.3
Magnesium (ug/L)	--	--	**4060**		19	200	--	**3950**		19	200	--	**4120**		19	200	--	**4190**		19	200	--	**4210**		19	200
Field Data																										
Conductivity (uS/cm)	--	--					--	136.9				--	134.5				--	134.3				--	133.9			
Dissolved Oxygen (mg/L)	--	--					--	10.35				--	10.57				--	10.69				--	9.51			
pH (pH Units)	--	--					--	8.83				--	8.77				--	8.75				--	8.68			
Salinity (ppt)	--	--					--	0.08				--	0.08				--	0.08				--	0.08			
Specific Conductivity (µS/cm)	--	--					--	166.5				--	164.5				--	164.9				--	165.4			
Temperature (°C)	--	--					--	15.7				--	15.4				--	15.2				--	15.0			
Water Depth (M)	--	--					--	0.3				--	0.2				--	0.4				--	0.3			

Table 2. Validated Analytical Results and Measured Field Parameters (Cont.)

	Sample ID	BR-08-20-Q1					FB-01-20-Q1					EB-01-20-Q1				
	Sample Location	BR-08 (North & East Ponds)					Field Blank					Equipment Blank				
	Sample Date	3/13/2020					3/13/2020					3/13/2020				
CHEMICAL_NAME	Comparison Standard	Comparison Standard Value	Result	Qual	MDL	RL	Comparison Standard Value	Result	Qual	MDL	RL	Comparison Standard Value	Result	Qual	MDL	RL
Metals (µg/L)																
Antimony	HH - AOSW	640	< 0.20	U	0.20	2.0	--	< 0.20	U	0.20	2.0	--	< 0.20	U	0.20	2.0
Arsenic	AL FW Chronic	150	< 0.21	U	0.21	2.0	--	< 0.21	U	0.21	2.0	--	< 0.21	U	0.21	2.0
Boron	GPS	250	< 63	U	63	100	--	< 63	U	63	100	--	< 63	U	63	100
Cadmium	AL FW Chronic*	0.44	< 0.20	U	0.20	2.0	--	< 0.20	U	0.20	2.0	--	< 0.20	U	0.20	2.0
Chromium	GPS	100	< 0.66	U	0.66	2.0	--	**0.46**	**J**	0.20	2.0	--	**0.60**	**J**	0.20	2.0
Chromium, Trivalent	AL FW Chronic*	43	< 8.2	U	8.2	12	--	< 8.2	UJ	8.2	12	--	< 8.2	U	8.2	12
Chromium, Hexavalent	AL FW Chronic	11	< 8.0	U	8.0	10	--	**14**	**J**	8.0	10	--	< 8.0	U	8.0	10
Cobalt	GPS	7.83	< 0.20	U	0.20	2.0	--	< 0.20	U	0.20	2.0	--	< 0.20	U	0.20	2.0
Copper	AL FW Chronic*	5.1	< 2.2	U	2.2	2.2	--	**0.068**	**J**	0.20	2.0	--	**0.81**	**J**	0.20	2.0
Lead	AL FW Chronic*	5.2	< 0.20	U	0.20	2.0	--	< 0.20	U	0.20	2.0	--	< 0.20	U	0.20	2.0
Lithium	GPS	50	< 7.3	U	7.3	50	--	< 7.3	U	7.3	50	--	< 7.3	U	7.3	50
Mercury	AL FW Chronic	0.77	< 0.030	U	0.030	0.50	--	< 0.030	U	0.030	0.50	--	< 0.030	U	0.030	0.50
Molybdenum	GPS	16.4	< 0.39	U	0.39	2.0	--	< 0.39	U	0.39	2.0	--	< 0.39	U	0.39	2.0
Nickel	AL FW Chronic*	12	< 0.97	U	0.97	2.0	--	**0.023**	**J**	0.20	2.0	--	**0.52**	**J**	0.20	2.0
Selenium	AL FW Chronic	5.0	< 0.22	U	0.22	2.0	--	< 0.22	U	0.22	2.0	--	< 0.22	U	0.22	2.0
Silver	AL FW Acute*	1.1	< 0.20	U	0.20	2.0	--	< 0.20	U	0.20	2.0	--	< 0.20	U	0.20	2.0
Thallium	HH - AOSW	0.47	< 0.20	U	0.20	2.0	--	< 0.20	U	0.20	2.0	--	< 0.20	U	0.20	2.0
Zinc	AL FW Chronic*	68	< 6.3	U	6.3	6.3	--	**5.0**		1.7	4.0	--	**5.3**		1.7	4.0
Hardness																
Calcium (µg/L)	--	--	**15200**		36	200	--	< 36	U	36	200	--	**42.6**	**J**	36	200
Hardness (mg/L)	--	--	**52.0**		0.17	1.3	--	< 0.17	U	0.17	1.3	--	< 0.17	U	0.17	1.3
Magnesium (ug/L)	--	--	**3400**		19	200	--	< 19	U	19	200	--	< 19	U	19	200
Field Data																
Conductivity (uS/cm)	--	--	133.0				--					--				
Dissolved Oxygen (mg/L)	--	--	10.12				--					--				
pH (pH Units)	--	--	8.45				--					--				
Salinity (ppt)	--	--	0.08				--					--				
Specific Conductivity (µS/cm)	--	--	155.7				--					--				
Temperature (°C)	--	--	14.8				--					--				
Water Depth (M)	--	--	0.7				--					--				

Notes:

°C = Degrees Celsius
GPS = Groundwater Protection Standard (Virginia Solid Waste Permit #618)
MDL = Method detection limit
mg/L = Milligrams per liter
M = Meters
ppt = parts per trillion
QL = Quantitation limit; values in parentheses (1) represent the highest laboratory QL for the constituent based on background data. Future QL values are subject to change; however, the groundwater protection standard cannot be less than the values in parentheses.
RL = Reporting limit
pH Units= standard pH Units
µg/L = Micrograms per liter
µS/cm = MicroSiemen per centimeter
VA WQC = Virginia Water Quality Criterial (9VAC-25-260-140)
HH AOSW = Human health (all other surface waters)
AL FW = Aquatic life - freshwater
* hardness-specific criteria
Bold = detected concentration

Qualifiers (Qual):

J = Indicates the result is an estimated quantity with indeterminate bias
U = Indicates a result < MDL
UJ = Indcates analyte was not detected, but the reporting limit
may or may not be higher due to a bias identified during data validation.

= Concentration greater than applicable comparison standard

5.0 REFERENCES

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Appendix A

Field Documentation

BPS Water sampling Q1 3/13/2020

0830: CF and JR on site for sign installation

1200 - YSI Calibration

Parameter	I	F	BP: 753.3 mmHg
DO %	123.5	98.6	
pH 4	4.01	[4.00]	
pH 7	6.88	[7.00]	
pH 10	9.96	10.08	
Sp. COND.	1396	1413	

Weather Conditions: 73°F, winds 5-10 mph SW, Small rain event overnight, Partly Cloudy

1305-BR-08-20-Q1 1300-EB-01-20-Q1
FB-01-20-Q1

Weather: 74°F, winds 5-10 mph SW, Partly Cloudy

Coordinates: 37.70390, -78.28063

Water depth: 0.7 m

DO: 10.12 mg/L pH: 8.45 sp Cond: 155.7 µs/cm

Cond: 133.0 µs/cm Sal: 0.08 ppt Temp: 14.8°C

1340-BR-07-20-Q1 - coordinates adjusted due to debris blocking location

Weather: 77°F, winds 0-5 mph SW, Partly Cloudy

Coordinates: 37.70458, -78.28168

Water Depth: 0.3 m

DO: 9.51 mg/L pH: 8.68 sp. Cond: 165.4 µS/cm

Cond: 133.9 µS/cm Sal: 0.08 Temp: 15.0°C

Rite in the Rain

Scanned with CamScanner

1405-BR-06-20-Q1

Weather: 77°F, winds 0-5 SW, Partly Cloudy

Coordinates: 37.70540, -78.28832

Water Depth: 0.4 m

DO: 10.69 mg/L pH: 8.75 Sp. Cond: 164.9 µS/cm

Cond: 134.3 µS/cm Sal: 0.08 ppt Temp: 15.2 °C

1435-BR-05-20-Q1 Coordinates adjusted to ~~avoid down trees blocking bank~~

Weather: 77°F, winds 5-10 W, Partly Cloudy

Coordinates: 37.70620, -78.28488

Water depth: 0.2 m

DO: 10.57 mg/L pH: 8.77 Sp. Cond: 164.5 µS/cm

Cond: 134.5 µS/cm Sal: 0.08 ppt Temp: 15.4 °C

* BR-05-20-Q1-MS & BR-05-20-Q1 MSD collected here

1510-BR-04-20-Q1 Coordinates adjusted ~~upstream of outfall~~

Weather: 76°F, winds 5-10 mph W, Partly Cloudy

Coordinates: 37.70891, -78.29054

Water depth: 0.3 m

DO: 10.35 mg/L pH: 8.83 Sp. Cond: 166.5 µS/cm

Cond: 136.9 µS/cm Sal: 0.08 ppt Temp: 15.7 °C

1540-BR-03-20-Q1 Coordinates adjusted to ~~accomodate moving~~ BR-04

Weather: 76°F, Winds 5-10 W, Partly Cloudy

Coordinates: 37.70932, -78.29198

Water Depth: 0.6 m

DO: 10.83 mg/L pH: 8.92 Sp. Cond: 166.2 µS/cm

Cond: 136.7 µS/cm Sal: 0.08 ppt Temp: 15.8 °C

* BR-03-20-Q1-FD taken here

Scanned with CamScanner

1600-BR-02-20-Q1 Coordinates adjusted to accomodate moving BR-04

Weather: 76°F, winds 5-10 W, Mostly Cloudy

coordinates: 37.70967, -78.29369

Water Depth: 0.3 m

DO: 10.90 mg/L pH: 8.96 Sp.Cond: 165.8 µs/cm

Cond: 137.0 µs/cm Sal: 0.08 ppt Temp: 15.9°C

1625-BR-01-20-Q1

Weather: 79°F, winds 5-10 W, Mostly Cloudy

Coordinates: 37.71008, -78.29521

Water depth: 0.5 m

DO: 10.62 mg/L pH: 8.96 Sp.Cond: 166.0 µs/cm

Cond: 137.3 µs/cm Sal: 0.08 ppt Temp: 15.9°C

1650-JR-02-20-Q1

Weather: 75°F, winds 5-10 W, Mostly Cloudy

Coordinates: 37.71084, -78.29847

Water Depth: 0.1 m

DO: 10.29 mg/L pH: 8.92 Sp. Cond: 161.0 µs/cm

Cond: 133.4 µs/cm Sal: 0.08 ppt Temp: 16.0°C

1705-JR-01-20-Q1

Weather: 74°F, winds 0-5 W, Mostly Cloudy

Coordinates: 37.71119, -78.30020

Water Depth: 0.6 m

DO: 10.24 mg/L pH: 8.92 Sp Cond: 165.6 µs/cm

Cond: 136.9 µs/cm Sal: 0.08 ppt Temp: 15.9°C

Rite in the Rain.

Scanned with CamScanner

Appendix B

Laboratory Analytical Report

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

EnviroScience

Bremo

12246

SGS Job Number: FA73461

Sampling Date: 03/13/20

Report to:

EnviroScience
551 Eastpark Ct
Sandston, VA 23150
jrose@enviroscienceinc.com; Kelly.A.Hicks@dominionenergy.com

ATTN: Jason Rose

Total number of pages in report: 279

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Heather Wandrey 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, IA, KY, MA, MS, ND, NH, NV, OK, OR, UT, WA, WV

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EHS.US.CustomerCare@sgs.com

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SGS North America Inc.

Sample Summary

EnviroScience

Job No: FA73461

Bremo
Project No: 12246

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA73461-1	03/13/20	13:00	JRCF	03/14/20	AQ	Surface H2O Filtered	EB-01-20-Q1
FA73461-2	03/13/20	13:00	JRCF	03/14/20	AQ	Surface H2O Filtered	FB-01-20-Q1
FA73461-3	03/13/20	13:05	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-08-20-Q1
FA73461-4	03/13/20	13:40	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-07-20-Q1
FA73461-5	03/13/20	14:05	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-06-20-Q1
FA73461-6	03/13/20	14:35	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-05-20-Q1
FA73461-6D	03/13/20	14:35	JRCF	03/14/20	AQ	Water Dup/MSD	BR-05-20-Q1
FA73461-6S	03/13/20	14:35	JRCF	03/14/20	AQ	Water Matrix Spike	BR-05-20-Q1
FA73461-7	03/13/20	15:10	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-04-20-Q1
FA73461-8	03/13/20	15:40	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-03-20-Q1
FA73461-9	03/13/20	15:40	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-03-20-Q1-FD
FA73461-10	03/13/20	16:00	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-02-20-Q1
FA73461-11	03/13/20	16:25	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-01-20-Q1

Sample Summary
(continued)

EnviroScience

Job No: FA73461

Bremo
Project No: 12246

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA73461-12	03/13/20	16:50	JRCF	03/14/20	AQ	Surface H2O Filtered	JR-02-20-Q1
FA73461-13	03/13/20	17:05	JRCF	03/14/20	AQ	Surface H2O Filtered	JR-01-20-Q1

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EnviroScience **Job No:** FA73461

Site: Bremo **Report Date** 4/2/2020 6:04:28 PM

13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 03/13/2020 and were received at SGS North America Inc - Orlando on 03/14/2020 properly preserved, at 2.7 Deg. C and intact. These Samples received an SGS Orlando job number of FA73461. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section. Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals Analysis By Method SW846 6010D

Matrix: AQ **Batch ID:** N:MP20382

FA73461-10 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-2 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-3 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-3 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-4 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-1 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-5 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-6 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-6 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-2 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-8 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-9 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-9 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-4 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-10 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-11 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-11 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-12 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-12 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-13 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-13 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-7 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-8 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-1 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-7 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-5 for Boron: Analysis performed at SGS Dayton, NJ.

Metals Analysis By Method SW846 6020A

Matrix: AQ **Batch ID:** MP37025

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA73461-6DUP, FA73461-6MS, FA73461-6MSD, FA73461-6SDL, were used as the QC samples for metals.

RPD(s) for Duplicate for Nickel are outside control limits for sample MP37025-D1. RPD acceptable due to low duplicate and sample concentrations.

RPD(s) for Serial Dilution for Arsenic, Chromium, Copper, Nickel, Zinc are outside control limits for sample MP37025-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals Analysis By Method SW846 7470A

Matrix: AQ **Batch ID:** MP36990

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA73461-6DUP, FA73461-6MS, FA73461-6MSD, FA73461-6SDL were used as the QC samples for metals.

Matrix: AQ **Batch ID:** MP36991

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA73494-1DUP, FA73494-1MS, FA73494-1MSD, FA73494-1SDL were used as the QC samples for metals.

General Chemistry By Method SM19 2340B

Matrix: AQ **Batch ID:** R50330

FA73461-6 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50333

FA73461-1 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50334

FA73461-2 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50337

FA73461-3 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50339

FA73461-4 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50341

FA73461-5 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50342

FA73461-7 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50345

FA73461-8 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50347

FA73461-9 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50348

FA73461-10 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50350

FA73461-13 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50353

FA73461-11 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50355

FA73461-12 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

General Chemistry By Method SW846 6010/7196A M

Matrix: AQ **Batch ID:** R50331

FA73461-6 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50332

FA73461-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50335

FA73461-2 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50336

FA73461-3 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50338

FA73461-4 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50340

FA73461-5 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50343

FA73461-7 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50344

FA73461-8 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50346

FA73461-9 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50349

FA73461-10 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50351

FA73461-13 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50352

FA73461-11 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50354

FA73461-12 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

General Chemistry By Method SW846 7196A

Matrix: AQ **Batch ID:** GN84635

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA73461-13MS, FA73461-13MSD, FA73461-6MS were used as the QC samples for Chromium, Hexavalent.

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	SGS Orlando, FL	**Job No**	FA73461
Site:	ESVAS: Bremo	**Report Date**	3/30/2020 10:43:07 A

On 03/17/2020, 13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.5 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of FA73461 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

Metals Analysis By Method SW846 6010D

Matrix: AQ **Batch ID:** MP20382

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JD4881-1SDL, JD4881-1MS, JD4881-1MSD were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Lithium are outside control limits for sample MP20382-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover

Summary of Hits

Job Number: FA73461
Account: EnviroScience
Project: Bremo
Collected: 03/13/20

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA73461-1	**EB-01-20-Q1**					
Calcium		42.6 J	200	36	ug/l	SW846 6020A
Chromium		0.60 J	2.0	0.20	ug/l	SW846 6020A
Copper		0.81 J	2.0	0.20	ug/l	SW846 6020A
Nickel		0.52 J	2.0	0.20	ug/l	SW846 6020A
Zinc		5.3	4.0	1.7	ug/l	SW846 6020A
FA73461-2	**FB-01-20-Q1**					
Chromium		0.46 J	2.0	0.20	ug/l	SW846 6020A
Copper		0.68 J	2.0	0.20	ug/l	SW846 6020A
Nickel		0.23 J	2.0	0.20	ug/l	SW846 6020A
Zinc		5.0	4.0	1.7	ug/l	SW846 6020A
Chromium, Hexavalent		0.014	0.010	0.0080	mg/l	SW846 7196A
FA73461-3	**BR-08-20-Q1**					
Calcium		15200	200	36	ug/l	SW846 6020A
Chromium		0.66 J	2.0	0.20	ug/l	SW846 6020A
Copper		2.2	2.0	0.20	ug/l	SW846 6020A
Magnesium		3400	200	19	ug/l	SW846 6020A
Nickel		0.97 J	2.0	0.20	ug/l	SW846 6020A
Zinc		6.3	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		52.0	1.3	0.17	mg/l	SM19 2340B
FA73461-4	**BR-07-20-Q1**					
Calcium		19000	200	36	ug/l	SW846 6020A
Chromium		0.70 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.2 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4210	200	19	ug/l	SW846 6020A
Nickel		0.63 J	2.0	0.20	ug/l	SW846 6020A
Zinc		6.5	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		64.8	1.3	0.17	mg/l	SM19 2340B
FA73461-5	**BR-06-20-Q1**					
Arsenic		0.23 J	2.0	0.21	ug/l	SW846 6020A
Calcium		18800	200	36	ug/l	SW846 6020A
Chromium		0.63 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.3 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4190	200	19	ug/l	SW846 6020A
Nickel		0.62 J	2.0	0.20	ug/l	SW846 6020A
Zinc		6.4	4.0	1.7	ug/l	SW846 6020A

Summary of Hits

Job Number: FA73461
Account: EnviroScience
Project: Bremo
Collected: 03/13/20

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Hardness, Total as CaCO3 [a]		64.2	1.3	0.17	mg/l	SM19 2340B
FA73461-6	**BR-05-20-Q1**					
Arsenic		0.26 J	2.0	0.21	ug/l	SW846 6020A
Calcium		18600	200	36	ug/l	SW846 6020A
Chromium		0.68 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.3 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4120	200	19	ug/l	SW846 6020A
Molybdenum		0.50 J	2.0	0.39	ug/l	SW846 6020A
Nickel		0.86 J	2.0	0.20	ug/l	SW846 6020A
Zinc		5.0	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		63.4	1.3	0.17	mg/l	SM19 2340B
FA73461-7	**BR-04-20-Q1**					
Calcium		17900	200	36	ug/l	SW846 6020A
Chromium		0.60 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.2 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		3950	200	19	ug/l	SW846 6020A
Nickel		1.1 J	2.0	0.20	ug/l	SW846 6020A
Zinc		6.0	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		61.0	1.3	0.17	mg/l	SM19 2340B
FA73461-8	**BR-03-20-Q1**					
Calcium		15500	200	36	ug/l	SW846 6020A
Chromium		0.54 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.4 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		3430	200	19	ug/l	SW846 6020A
Nickel		2.0	2.0	0.20	ug/l	SW846 6020A
Zinc		5.6	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		52.8	1.3	0.17	mg/l	SM19 2340B
FA73461-9	**BR-03-20-Q1-FD**					
Calcium		18400	200	36	ug/l	SW846 6020A
Chromium		0.65 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.0 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4060	200	19	ug/l	SW846 6020A
Nickel		0.82 J	2.0	0.20	ug/l	SW846 6020A
Zinc		4.9	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		62.7	1.3	0.17	mg/l	SM19 2340B

Summary of Hits

Job Number: FA73461
Account: EnviroScience
Project: Bremo
Collected: 03/13/20

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA73461-10	**BR-02-20-Q1**					
Arsenic		0.24 J	2.0	0.21	ug/l	SW846 6020A
Calcium		18400	200	36	ug/l	SW846 6020A
Chromium		0.66 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.1 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4070	200	19	ug/l	SW846 6020A
Nickel		0.83 J	2.0	0.20	ug/l	SW846 6020A
Zinc		5.4	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		62.7	1.3	0.17	mg/l	SM19 2340B
FA73461-11	**BR-01-20-Q1**					
Arsenic		0.24 J	2.0	0.21	ug/l	SW846 6020A
Calcium		18900	200	36	ug/l	SW846 6020A
Chromium		0.65 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.2 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4200	200	19	ug/l	SW846 6020A
Nickel		0.51 J	2.0	0.20	ug/l	SW846 6020A
Zinc		4.9	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		64.5	1.3	0.17	mg/l	SM19 2340B
FA73461-12	**JR-02-20-Q1**					
Arsenic		0.22 J	2.0	0.21	ug/l	SW846 6020A
Calcium		18200	200	36	ug/l	SW846 6020A
Chromium		1.3 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.1 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4080	200	19	ug/l	SW846 6020A
Nickel		0.77 J	2.0	0.20	ug/l	SW846 6020A
Zinc		6.5	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		62.2	1.3	0.17	mg/l	SM19 2340B
FA73461-13	**JR-01-20-Q1**					
Calcium		18600	200	36	ug/l	SW846 6020A
Chromium		0.62 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.1 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4160	200	19	ug/l	SW846 6020A
Nickel		0.74 J	2.0	0.20	ug/l	SW846 6020A
Zinc		5.4	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		63.6	1.3	0.17	mg/l	SM19 2340B

(a) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: EB-01-20-Q1
Lab Sample ID: FA73461-1
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	42.6 J	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.60 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	0.81 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	19 U	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.52 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	5.3	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	EB-01-20-Q1		
Lab Sample ID:	FA73461-1	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:01	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	0.17 U	1.3	0.17	mg/l	1	03/30/20 11:01	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: FB-01-20-Q1
Lab Sample ID: FA73461-2
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	36 U	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.46 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	0.68 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	19 U	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.23 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	5.0	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	FB-01-20-Q1		
Lab Sample ID:	FA73461-2	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.014	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:04	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	0.17 U	1.3	0.17	mg/l	1	03/30/20 11:04	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-08-20-Q1
Lab Sample ID: FA73461-3
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	15200	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.66 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	2.2	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	3400	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.97 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	6.3	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-08-20-Q1		
Lab Sample ID:	FA73461-3	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:20	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	52.0	1.3	0.17	mg/l	1	03/30/20 11:20	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-07-20-Q1
Lab Sample ID: FA73461-4
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	19000	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.70 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.2 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4210	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.63 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	6.5	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-07-20-Q1		
Lab Sample ID:	FA73461-4	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:24	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	64.8	1.3	0.17	mg/l	1	03/30/20 11:24	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-06-20-Q1
Lab Sample ID: FA73461-5
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.23 J	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18800	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.63 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.3 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4190	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.62 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	6.4	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-06-20-Q1		
Lab Sample ID:	FA73461-5	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:27	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	64.2	1.3	0.17	mg/l	1	03/30/20 11:27	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-05-20-Q1
Lab Sample ID: FA73461-6
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.26 J	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18600	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.68 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.3 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4120	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.50 J	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.86 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	5.0	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36990
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-05-20-Q1		
Lab Sample ID:	FA73461-6	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 10:38	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	63.4	1.3	0.17	mg/l	1	03/30/20 10:38	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-04-20-Q1
Lab Sample ID: FA73461-7
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	17900	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.60 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.2 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	3950	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	1.1 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	6.0	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-04-20-Q1		
Lab Sample ID:	FA73461-7	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:31	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	61.0	1.3	0.17	mg/l	1	03/30/20 11:31	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-03-20-Q1
Lab Sample ID: FA73461-8
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	15500	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.54 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.4 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	3430	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	2.0	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	5.6	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-03-20-Q1		
Lab Sample ID:	FA73461-8	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:35	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	52.8	1.3	0.17	mg/l	1	03/30/20 11:35	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-03-20-Q1-FD
Lab Sample ID: FA73461-9
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18400	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.65 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.0 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4060	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.82 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	4.9	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-03-20-Q1-FD		
Lab Sample ID:	FA73461-9	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:39	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	62.7	1.3	0.17	mg/l	1	03/30/20 11:39	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-02-20-Q1
Lab Sample ID: FA73461-10
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.24 J	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18400	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.66 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.1 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4070	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.83 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	5.4	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-02-20-Q1		
Lab Sample ID:	FA73461-10	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:43	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	62.7	1.3	0.17	mg/l	1	03/30/20 11:43	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-01-20-Q1
Lab Sample ID: FA73461-11
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.24 J	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18900	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.65 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.2 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4200	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.51 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	4.9	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-01-20-Q1		
Lab Sample ID:	FA73461-11	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:47	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	64.5	1.3	0.17	mg/l	1	03/30/20 11:47	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: JR-02-20-Q1
Lab Sample ID: FA73461-12
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.22 J	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18200	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	1.3 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.1 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4080	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.77 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	6.5	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	JR-02-20-Q1		
Lab Sample ID:	FA73461-12	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:50	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	62.2	1.3	0.17	mg/l	1	03/30/20 11:50	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: JR-01-20-Q1
Lab Sample ID: FA73461-13
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18600	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.62 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.1 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4160	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.74 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	5.4	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	JR-01-20-Q1		
Lab Sample ID:	FA73461-13	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:54	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	63.6	1.3	0.17	mg/l	1	03/30/20 11:54	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # FA73461 PAGE 1 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: EnviroScience
Address: 551 Eastpark Ct.
City: Sandston State: VA Zip: 23150
Project Contact: Joe Papineau Email: jpapineau@enviroscienceinc.com
Phone #: 330-206-5123
Sampler(s) Name(s) (Printed)
Sampler 1: Jason Rose Sampler 2: Cory Fox

Project Information

Project Name: Bremo
Street
City State
Project # 12246
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	B, Li	HRDCALC, ICPMS, Hg	PCR3 (Hex Chrom)	LAB USE ONLY
1	EB-01-20-Q1	3/13/20	1300	JR/CF	SW	3		1			2					X	X	X	
2	FB-01-20-Q1		1300																
3	BR-08-20-Q1		1305																
4	BR-07-20-Q1		1340																
5	BR-06-20-Q1		1405																
6	BR-05-20-Q1		1435																
6	BR-05-20-Q1-MS		1435																
6	BR-05-20-Q1-MSD		1435																
7	BR-04-20-Q1		1510																
8	BR-03-20-Q1		1540																
9	BR-03-20-Q1-FD		1540																
10	BR-02-20-Q1		1600																

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [x] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [x] EDD'S

Comments / Remarks

INITIAL ASESSMENT SP
LABEL VERIFICATION JM

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	Jason M Rose / ES	3/13/20 1930	2 Fedex (FO)	3 Fedex (F.O)	3/14/20 0900	4 Tew/mm
5	Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (1) Rev 031318

SGS North America Inc - Orlando

Chain of Custody

FA73461

SGS - ORLANDO JOB #: PAGE 2 OF 2

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: Environscience
Address: 551 Eastport Ct.
City: Sanford State: VA Zip: 23150
Project Contact: Jae Papineau Email: jpapineau@environscienceinc.com
Phone #: 330-206-5123
Sampler(s) Name(s) (Printed)
Sampler 1: Jason Rose Sampler 2: Cory Fox

Project Information

Project Name: Breno
Street
City State
Project # 12246
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	B, Li	HRDCALC, ICPMS, Hg	PCB's (Hex Chrom)	LAB USE ONLY
11	BR-01-20-Q1	3/13/20	1625	JR/CF	SW	3		↓			2					X	X	X	
12	JR-02-20-Q1	↓	1650	↓	↓	↓		↓			↓					↓	↓	↓	
13	JR-01-20-Q1	↓	1705	↓	↓	↓		↓			↓					↓	↓	↓	

Turnaround Time (Business days)

(10 Day (Business)) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [x] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [x] EDD'S

Comments / Remarks

INITIAL ASESSMENT
LABEL VERIFICATION

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	Jason M. Rose / ES	3/13/20 1730	2 Fedex (F.O)	3 Fedex (FO)	3/14/20 7:30	4
5	Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
			6	7		8

Lab Use Only: Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (1) Rev 031318

SGS Sample Receipt Summary

Job Number: FA73461 **Client:** ENVIROSCIENCE **Project:** BREMO

Date / Time Received: 3/14/2020 7:00:00 AM **Delivery Method:** FED EX (FO) **Airbill #'s:** 020139115990206

Therm ID: IR 1; **Therm CF:** -0.8; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (3.5); Cooler 2: (2.9);

Cooler Temps (Corrected) °C: Cooler 1: (2.7); Cooler 2: (2.1);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: TRINITYM Date: 3/14/2020 7:00:00 AM Reviewer: _____ Date: _____

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries
- IDL and Linear Range Summaries

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:25	MA16622-STD1	1		STD1
12:27	MA16622-STD2	1		STD2
12:28	MA16622-STD3	1		STD3
12:29	MA16622-STD4	1		STD4
12:31	MA16622-STD5	1		STD5
12:33	MA16622-STD6	1		STD6
12:35	MA16622-HSTD1	1		
12:36	MA16622-ICV1	1		
12:38	MA16622-ICB1	1		
12:40	MA16622-CRI1	1		
12:41	MA16622-CCV1	1		
12:43	MA16622-CCB1	1		
12:44	MP36990-MB1	1		
12:46	MP36990-B1	1		
12:47	FA73461-6	1		
12:49	MP36990-D1	1		
12:50	MP36990-SD1	5		
12:51	MP36990-S1	1		
12:53	MP36990-S2	1		
12:54	ZZZZZZ	1		
12:56	ZZZZZZ	1		
12:57	ZZZZZZ	1		
12:59	MA16622-CCV2	1		
13:00	MA16622-CCB2	1		
13:02	ZZZZZZ	1		
13:03	ZZZZZZ	1		
13:04	ZZZZZZ	1		
13:06	ZZZZZZ	1		
13:07	ZZZZZZ	1		
13:08	ZZZZZZ	1		
13:10	ZZZZZZ	1		
13:11	ZZZZZZ	1		
13:13	ZZZZZZ	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
13:14	ZZZZZZ	1		
13:16	MA16622-CCV3	1		
13:17	MA16622-CCB3	1		
13:19	ZZZZZZ	1		
13:20	ZZZZZZ	1		
13:22	ZZZZZZ	1		
13:23	ZZZZZZ	1		
13:24	ZZZZZZ	1		
13:26	ZZZZZZ	1		
13:27	MP36991-MB1	1		
13:28	MP36991-B1	1		
13:30	FA73494-1	1		(sample used for QC only; not part of login FA73461)
13:31	MP36991-D1	1		
13:33	MA16622-CCV4	1		
13:34	MA16622-CCB4	1		
13:35	MP36991-SD1	5		
13:37	MP36991-S1	1		
13:38	MP36991-S2	1		
13:40	FA73461-1	1		
13:42	FA73461-2	1		
13:43	FA73461-3	1		
13:44	FA73461-4	1		
13:45	FA73461-5	1		
13:47	FA73461-7	1		
13:48	FA73461-8	1		
13:49	MA16622-CCV5	1		
13:51	MA16622-CCB5	1		
13:52	FA73461-9	1		
13:54	FA73461-10	1		
13:55	FA73461-11	1		
13:56	FA73461-12	1		
13:57	FA73461-13	1		
13:59	ZZZZZZ	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
14:00	ZZZZZZ	1		
14:01	ZZZZZZ	1		
14:03	ZZZZZZ	1		
14:04	ZZZZZZ	1		
14:05	MA16622-CCV6	1		
14:07	MA16622-CCB6	1		
14:08	ZZZZZZ	1		
14:10	MP36991-MB2A	1		
---------->	Last reportable sample/prep for job FA73461			
14:11	MP36992-MB1	1		
14:12	MP36992-B1	1		
14:14	FA73494-3	1		(sample used for QC only; not part of login FA73461)
14:15	MP36992-D1	1		
14:17	MP36992-SD1	5		
14:18	MP36992-S1	1		
14:20	MP36992-S2	1		
14:21	ZZZZZZ	1		
14:23	MA16622-CCV7	1		
14:24	MA16622-CCB7	1		
14:26	ZZZZZZ	1		
14:27	ZZZZZZ	1		
14:29	ZZZZZZ	1		
14:30	ZZZZZZ	1		
14:31	ZZZZZZ	1		
14:33	ZZZZZZ	1		
14:34	ZZZZZZ	1		
14:36	ZZZZZZ	1		
14:37	ZZZZZZ	1		
14:38	ZZZZZZ	1		
14:40	MA16622-CCV8	1		
14:41	MA16622-CCB8	1		
14:43	ZZZZZZ	10		
14:44	ZZZZZZ	10		
14:45	ZZZZZZ	10		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
14:46	ZZZZZZ	10		
14:48	ZZZZZZ	10		
14:49	ZZZZZZ	10		
14:52	MP36993-MB1	1		
14:53	MP36993-B1	1		
14:54	FA73586-3	1		(sample used for QC only; not part of login FA73461)
14:56	MA16622-CCV9	1		
14:57	MA16622-CCB9	1		
14:59	MP36993-D1	1		
15:00	MP36993-SD1	5		
15:02	MP36993-S1	1		
15:03	MP36993-S2	1		
15:05	ZZZZZZ	1		
15:06	ZZZZZZ	1		
15:08	ZZZZZZ	1		
15:09	ZZZZZZ	1		
15:10	MP36993-MB2	1		
15:12	MP36993-B2	1		
15:13	MA16622-CCV10	1		
15:15	MA16622-CCB10	1		
15:17	MP36993-MB3	1		
15:18	MP36993-B3	1		
15:19	MP36993-MB4	1		
15:21	MP36993-B4	1		
15:22	MA16622-CRI2	1		
15:24	MA16622-CCV11	1		
15:25	MA16622-CCB11	1		

----------> Last reportable CCB for job FA73461
Refer to raw data for calibration curve and standards.

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Element: Dilution	Hg
12:35	MA16622-HSTD1	1	X
12:36	MA16622-ICV1	1	X
12:38	MA16622-ICB1	1	X
12:40	MA16622-CRI1	1	X
12:41	MA16622-CCV1	1	X
12:43	MA16622-CCB1	1	X
12:44	MP36990-MB1	1	X
12:46	MP36990-B1	1	X
12:47	FA73461-6	1	X
12:49	MP36990-D1	1	X
12:50	MP36990-SD1	5	X
12:51	MP36990-S1	1	X
12:53	MP36990-S2	1	X
12:54	ZZZZZZ	1	
12:56	ZZZZZZ	1	
12:57	ZZZZZZ	1	
12:59	MA16622-CCV2	1	X
13:00	MA16622-CCB2	1	X
13:02	ZZZZZZ	1	
13:03	ZZZZZZ	1	
13:04	ZZZZZZ	1	
13:06	ZZZZZZ	1	
13:07	ZZZZZZ	1	
13:08	ZZZZZZ	1	
13:10	ZZZZZZ	1	
13:11	ZZZZZZ	1	
13:13	ZZZZZZ	1	
13:14	ZZZZZZ	1	
13:16	MA16622-CCV3	1	X
13:17	MA16622-CCB3	1	X
13:19	ZZZZZZ	1	
13:20	ZZZZZZ	1	
13:22	ZZZZZZ	1	
		Element:	Hg

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Element: Dilution	Hg	
13:23	ZZZZZZ	1		
13:24	ZZZZZZ	1		
13:26	ZZZZZZ	1		
13:27	MP36991-MB1	1	X	
13:28	MP36991-B1	1	X	
13:30	FA73494-1	1	X	(a)
13:31	MP36991-D1	1	X	
13:33	MA16622-CCV4	1	X	
13:34	MA16622-CCB4	1	X	
13:35	MP36991-SD1	5	X	
13:37	MP36991-S1	1	X	
13:38	MP36991-S2	1	X	
13:40	FA73461-1	1	X	
13:42	FA73461-2	1	X	
13:43	FA73461-3	1	X	
13:44	FA73461-4	1	X	
13:45	FA73461-5	1	X	
13:47	FA73461-7	1	X	
13:48	FA73461-8	1	X	
13:49	MA16622-CCV5	1	X	
13:51	MA16622-CCB5	1	X	
13:52	FA73461-9	1	X	
13:54	FA73461-10	1	X	
13:55	FA73461-11	1	X	
13:56	FA73461-12	1	X	
13:57	FA73461-13	1	X	
13:59	ZZZZZZ	1		
14:00	ZZZZZZ	1		
14:01	ZZZZZZ	1		
14:03	ZZZZZZ	1		
14:04	ZZZZZZ	1		
14:05	MA16622-CCV6	1	X	
14:07	MA16622-CCB6	1	X	
		Element:	Hg	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Element: Dilution	Hg	
14:08	ZZZZZZ	1		
14:10	MP36991-MB2A	1	X	
14:11	MP36992-MB1	1	X	
14:12	MP36992-B1	1	X	
14:14	FA73494-3	1	X	(a)
14:15	MP36992-D1	1	X	
14:17	MP36992-SD1	5	X	
14:18	MP36992-S1	1	X	
14:20	MP36992-S2	1	X	
14:21	ZZZZZZ	1		
14:23	MA16622-CCV7	1	X	
14:24	MA16622-CCB7	1	X	
14:26	ZZZZZZ	1		
14:27	ZZZZZZ	1		
14:29	ZZZZZZ	1		
14:30	ZZZZZZ	1		
14:31	ZZZZZZ	1		
14:33	ZZZZZZ	1		
14:34	ZZZZZZ	1		
14:36	ZZZZZZ	1		
14:37	ZZZZZZ	1		
14:38	ZZZZZZ	1		
14:40	MA16622-CCV8	1	X	
14:41	MA16622-CCB8	1	X	
14:43	ZZZZZZ	10		
14:44	ZZZZZZ	10		
14:45	ZZZZZZ	10		
14:46	ZZZZZZ	10		
14:48	ZZZZZZ	10		
14:49	ZZZZZZ	10		
14:52	MP36993-MB1	1	X	
14:53	MP36993-B1	1	X	
14:54	FA73586-3	1	X	(a)
		Element:	Hg	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Element: Dilution	Hg
14:56	MA16622-CCV9	1	X
14:57	MA16622-CCB9	1	X
14:59	MP36993-D1	1	X
15:00	MP36993-SD1	5	X
15:02	MP36993-S1	1	X
15:03	MP36993-S2	1	X
15:05	ZZZZZZ	1	
15:06	ZZZZZZ	1	
15:08	ZZZZZZ	1	
15:09	ZZZZZZ	1	
15:10	MP36993-MB2	1	X
15:12	MP36993-B2	1	X
15:13	MA16622-CCV10	1	X
15:15	MA16622-CCB10	1	X
15:17	MP36993-MB3	1	X
15:18	MP36993-B3	1	X
15:19	MP36993-MB4	1	X
15:21	MP36993-B4	1	X
15:22	MA16622-CRI2	1	X
15:24	MA16622-CCV11	1	X
15:25	MA16622-CCB11	1	X

(a) Sample used for QC only; not part of login FA73461.

Element: Hg

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA16622 Units: ug/l

Time: / Sample ID:			12:38 ICB1		12:43 CCB1		13:00 CCB2		13:17 CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Mercury	0.50	.03	-0.0815	<0.50	-0.0582	<0.50	-0.0386	<0.50	-0.0499	<0.50

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA16622 Units: ug/l

Time: / Sample ID:			13:34 CCB4		13:51 CCB5		14:07 CCB6		14:24 CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Mercury	0.50	.03	-0.0466	<0.50	-0.0435	<0.50	-0.0471	<0.50	-0.0373	<0.50

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA16622 Units: ug/l

Time: / Sample ID:			14:41 CCB8		14:57 CCB9		15:15 CCB10		15:25 CCB11	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Mercury	0.50	.03	-0.0319	<0.50	-0.0392	<0.50	-0.0357	<0.50	-0.0667	<0.50

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA16622 Units: ug/l

Time:		12:36			12:41			12:59	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	3	2.93	97.7	3	3.06	102.0	3	2.97	99.0

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA16622 Units: ug/l

Time:		13:16			13:33			13:49	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	3	2.91	97.0	3	2.92	97.3	3	2.89	96.3

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA16622 Units: ug/l

Time:		14:05			14:23			14:40	
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	3	2.92	97.3	3	2.85	95.0	3	2.84	94.7

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA16622 Units: ug/l

Time:		14:56			15:13			15:24	
Sample ID:	CCV	CCV9		CCV	CCV10		CCV	CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	3	2.83	94.3	3	2.81	93.7	3	2.78	92.7

(*) Outside of QC limits
(anr) Analyte not requested

HIGH STANDARD CHECK SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: 95 to 105 % Recovery Run ID: MA16622 Units: ug/l

Time:		12:35	
Sample ID:	HSTD	HSTD1	
Metal	True	Results	% Rec
Mercury	6	5.86	97.7

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: 80 to 120 % Recovery Run ID: MA16622 Units: ug/l

Time:			12:40		15:22	
Sample ID:	CRI	CRIA	CRI1		CRI2	
Metal	True	True	Results	% Rec	Results	% Rec
Mercury	0.20		0.180	90.0	0.148	74.0*(a)

(*) Outside of QC limits
(anr) Analyte not requested
(a) Possible instrument baseline drift.

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
Analyst: DM Run ID: MA16641
Parameters: Sb,As,Cd,Ca,Cr,Co,Cu,Pb,Mg,Mo,Ni,Se,Ag,Tl,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
09:23	MA16641-STD1	1		STDA
09:28	MA16641-STD2	1		STDB
09:31	MA16641-STD3	1		STDC
09:36	MA16641-STD4	1		STDD
09:40	MA16641-STD5	1		STDE
09:44	MA16641-STD6	1		STDF
09:48	MA16641-STD7	1		STDG
09:52	MA16641-HSTD1	1		
09:55	MA16641-HSTD2	1		
09:59	MA16641-ICV1	1		
10:03	MA16641-ICB1	1		
10:07	MA16641-CRIA1	1		
10:11	MA16641-ICSA1	1		
10:15	MA16641-ICSAB1	1		
10:18	MA16641-CCV1	1		
10:22	MA16641-CCV2	1		
10:26	MA16641-CCB1	1		
10:30	MP37025-MB1	2		
10:34	MP37025-B1	2		
10:38	FA73461-6	2		
10:41	MP37025-D1	2		
10:45	MP37025-SD1	10		
10:49	MP37025-S1	2		
10:53	MP37025-S2	2		
10:57	MP37025-PS1	2		
11:01	FA73461-1	2		
11:04	FA73461-2	2		
11:08	MA16641-CCV3	1		
11:12	MA16641-CCV4	1		
11:16	MA16641-CCB2	1		
11:20	FA73461-3	2		
11:24	FA73461-4	2		
11:27	FA73461-5	2		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
Analyst: DM Run ID: MA16641
Parameters: Sb,As,Cd,Ca,Cr,Co,Cu,Pb,Mg,Mo,Ni,Se,Ag,Tl,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
11:31	FA73461-7	2		
11:35	FA73461-8	2		
11:39	FA73461-9	2		
11:43	FA73461-10	2		
11:47	FA73461-11	2		
11:50	FA73461-12	2		
11:54	FA73461-13	2		
---------->	Last reportable sample/prep for job FA73461			
11:58	MA16641-CCV5	1		
12:02	MA16641-CCV6	1		
12:06	MA16641-CCB3	1		
---------->	Last reportable CCB for job FA73461			
12:10	ZZZZZZ	2		
12:13	ZZZZZZ	2		
12:17	ZZZZZZ	2		
12:21	ZZZZZZ	2		
12:25	ZZZZZZ	2		
12:48	MA16641-CCV7	1		
12:52	MA16641-CCV8	1		
12:55	MA16641-CCB4	1		
13:38	MA16641-CCV9	1		
13:41	MA16641-CCV10	1		
13:45	MA16641-CCB5	1		

Refer to raw data for calibration curve and standards.

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
Analyst: DM Run ID: MA16641
Parameters: Sb,As,Cd,Ca,Cr,Co,Cu,Pb,Mg,Mo,Ni,Se,Ag,Tl,Zn

Time	Sample Description	Element: Dilution	Sb	As	Cd	Ca	Cr	Co	Cu	Pb	Mg	Mo	Ni	Se	Ag	Tl	Zn
09:52	MA16641-HSTD1	1													X		
09:55	MA16641-HSTD2	1	X	X	X	X	X	X	X	X	X	X	X	X		X	X
09:59	MA16641-ICV1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:03	MA16641-ICB1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:07	MA16641-CRIA1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:11	MA16641-ICSA1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:15	MA16641-ICSAB1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:18	MA16641-CCV1	1													X		
10:22	MA16641-CCV2	1	X	X	X	X	X	X	X	X	X	X	X	X		X	X
10:26	MA16641-CCB1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:30	MP37025-MB1	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:34	MP37025-B1	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:38	FA73461-6	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:41	MP37025-D1	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:45	MP37025-SD1	10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:49	MP37025-S1	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:53	MP37025-S2	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:57	MP37025-PS1	2															
11:01	FA73461-1	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:04	FA73461-2	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:08	MA16641-CCV3	1													X		
11:12	MA16641-CCV4	1	X	X	X	X	X	X	X	X	X	X	X	X		X	X
11:16	MA16641-CCB2	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:20	FA73461-3	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:24	FA73461-4	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:27	FA73461-5	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:31	FA73461-7	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:35	FA73461-8	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:39	FA73461-9	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:43	FA73461-10	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:47	FA73461-11	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:50	FA73461-12	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:54	FA73461-13	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Element:	Sb	As	Cd	Ca	Cr	Co	Cu	Pb	Mg	Mo	Ni	Se	Ag	Tl	Zn

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
Analyst: DM Run ID: MA16641
Parameters: Sb,As,Cd,Ca,Cr,Co,Cu,Pb,Mg,Mo,Ni,Se,Ag,Tl,Zn

Time	Sample Description	Dilution	Element:	Sb	As	Cd	Ca	Cr	Co	Cu	Pb	Mg	Mo	Ni	Se	Ag	Tl	Zn
11:58	MA16641-CCV5	1														X		
12:02	MA16641-CCV6	1		X	X	X	X	X	X	X	X	X	X	X	X		X	X
12:06	MA16641-CCB3	1		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12:10	ZZZZZZ	2																
12:13	ZZZZZZ	2																
12:17	ZZZZZZ	2																
12:21	ZZZZZZ	2																
12:25	ZZZZZZ	2																
12:48	MA16641-CCV7	1														X		
12:52	MA16641-CCV8	1		X	X	X	X	X	X	X	X	X	X	X	X		X	X
12:55	MA16641-CCB4	1		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:38	MA16641-CCV9	1														X		
13:41	MA16641-CCV10	1		X	X	X	X	X	X	X	X	X	X	X	X		X	X
13:45	MA16641-CCB5	1		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			Element:	Sb	As	Cd	Ca	Cr	Co	Cu	Pb	Mg	Mo	Ni	Se	Ag	Tl	Zn

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
Analyst: DM Run ID: MA16641
Parameters: Sb,As,Cd,Ca,Cr,Co,Cu,Pb,Mg,Mo,Ni,Se,Ag,Tl,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4	Istd#5	Istd#6	Istd#7	Istd#8
09:23	MA16641-STD1	100	100	100	100	100	100	100	100
09:28	MA16641-STD2	106.5	102.4	101.8	101.8	101.8	102	101.8	100
09:31	MA16641-STD3	121	103.8	101.5	102.2	102.6	102.5	102.2	100
09:36	MA16641-STD4	116.5	102.6	101.4	101.3	101.7	102.4	101.7	100
09:40	MA16641-STD5	114.6	100.6	99.2	99.4	98.3	100	98	100
09:44	MA16641-STD6	110.1	100.3	98.3	98.7	97.4	100.4	96.5	100
09:48	MA16641-STD7	98.2	97.2	95.5	95.1	93.9	96.4	91.2	100
09:52	MA16641-HSTD1	101.6	96.5	95	95.1	95.1	97.1	94	100
09:55	MA16641-HSTD2	101.8	93.3	92	92.1	90.8	93.6	88.9	100
09:59	MA16641-ICV1	123.4	98	95.1	95.8	94	96.3	93.2	100
10:03	MA16641-ICB1	109.5	95.7	95.4	95.2	95.4	96.8	96.3	100
10:07	MA16641-CRIA1	123	97.8	96.7	97.1	96.8	97.8	97.5	100
10:11	MA16641-ICSA1	92.4	95.9	92.4	91	88.8	92.6	84.4	100
10:15	MA16641-ICSAB1	94.2	96.4	92.3	91.9	89	93.6	84.3	100
10:18	MA16641-CCV1	112.4	95.2	94.6	94.9	94.6	97	94.4	100
10:22	MA16641-CCV2	106.7	95	95	94.2	92.8	95.1	91.4	100
10:26	MA16641-CCB1	111.9	95	94.1	95	95.2	96.6	95.9	100
10:30	MP37025-MB1	95.1	91.1	89.1	90.4	91.7	94	93.7	100
10:34	MP37025-B1	109.2	89.7	86.6	86.8	87.9	92	88.2	100
10:38	FA73461-6	107	87.9	88.2	88.5	87.5	91.5	89.1	100
10:41	MP37025-D1	112.2	90.4	90.5	90.4	89.3	92.9	90.8	100
10:45	MP37025-SD1	118.3	96.8	96.3	97.1	95.2	96.3	94.6	100
10:49	MP37025-S1	114.7	88.4	87.1	87.2	85.6	89.9	85.5	100
10:53	MP37025-S2	99.6	90	87.7	88.6	87.5	91.5	86.7	100
10:57	MP37025-PS1	No results reported for the elements associated with this internal standard.							
11:01	FA73461-1	105.8	94.2	91.5	91.7	91.6	94.3	92.4	100
11:04	FA73461-2	120	95.8	93.2	94.7	93.1	94.9	93.1	100
11:08	MA16641-CCV3	109.4	102.5	99.4	99.9	96.9	97.5	94	100
11:12	MA16641-CCV4	108.6	102.5	99	99.2	96.8	99.1	92.7	100
11:16	MA16641-CCB2	119.2	95.7	96	96.1	94.3	92.8	92.3	100
11:20	FA73461-3	105.9	92	91.2	91.7	89.7	91.8	89.8	100
11:24	FA73461-4	118.2	94.3	92.5	92.7	90.3	92.5	88.9	100
11:27	FA73461-5	113.8	95	93.3	93.4	91.5	93	90.3	100

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
Analyst: DM Run ID: MA16641
Parameters: Sb,As,Cd,Ca,Cr,Co,Cu,Pb,Mg,Mo,Ni,Se,Ag,Tl,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4	Istd#5	Istd#6	Istd#7	Istd#8
11:31	FA73461-7	107.2	98.4	95.7	93.8	92.2	94.4	90.7	100
11:35	FA73461-8	114.7	97	93.8	94.2	92.6	92.5	90.1	100
11:39	FA73461-9	125.5	97	94	93.9	91.9	93.5	89.7	100
11:43	FA73461-10	110.6	98.4	94.1	94.5	91.8	92.9	89.8	100
11:47	FA73461-11	116.7	95.8	93.2	93.6	91.4	92.5	89.2	100
11:50	FA73461-12	124.6	95.5	93.2	92.8	90.2	92.5	88.8	100
11:54	FA73461-13	110.6	95.4	93.1	93	90.1	92.2	88.8	100
11:58	MA16641-CCV5	113.7	101.9	97.3	97.6	94.5	96.1	92	100
12:02	MA16641-CCV6	111.7	100	96.6	97.7	94.2	94	89.6	100
12:06	MA16641-CCB3	118.7	100.7	97.3	97.3	96.8	96.1	93.6	100
12:10	ZZZZZZ	109.4	91.7	89.2	89.8	89	90.8	89.6	100
12:13	ZZZZZZ	119.8	93.8	92	91.1	89.4	92	89.2	100
12:17	ZZZZZZ	116.9	95.4	92.5	91.8	90.2	92.4	90.2	100
12:21	ZZZZZZ	112.2	95.2	91.1	92.5	90.8	92.4	89.3	100
12:25	ZZZZZZ	117.3	96.3	91.9	92.1	90.4	92.2	90	100
12:48	MA16641-CCV7	107.9	100	95.3	96	94	93.9	90.2	100
12:52	MA16641-CCV8	108.8	100.3	96.4	96.4	93	93.6	88.7	100
12:55	MA16641-CCB4	113.1	99	95.8	96.7	94.7	94.1	92.6	100
13:38	MA16641-CCV9	122.5	99.9	96.9	95.9	92.7	93.7	90	100
13:41	MA16641-CCV10	121.9	101.5	96.8	96.9	92.6	93.5	87.5	100
13:45	MA16641-CCB5	107.9	98.7	95.6	96.3	93.3	93.6	91.2	100

! = Outside limits.

LEGEND:

Istd#	Parameter	Limits	CCV/CCB Limits
Istd#1	Lithium	70-130 %	70-130 %
Istd#2	Scandium	70-130 %	70-130 %
Istd#3	Germanium (72-2)	70-130 %	70-130 %
Istd#4	Germanium (74-2)	70-130 %	70-130 %
Istd#5	Indium	70-130 %	70-130 %
Istd#6	Terbium	70-130 %	70-130 %
Istd#7	Bismuth	70-130 %	70-130 %
Istd#8	Tellurium	70-130 %	70-130 %

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: result < RL Run ID: MA16641 Units: ug/l

Time: / Sample ID:			10:03 ICB1		10:26 CCB1		11:16 CCB2		12:06 CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	100	4.4	anr							
Antimony	1.0	.1	0.0368	<1.0	0.0252	<1.0	0.0172	<1.0	0.0187	<1.0
Arsenic	1.0	.1	0.0232	<1.0	0.0207	<1.0	0.0199	<1.0	0.0200	<1.0
Barium	1.0	.1	anr							
Beryllium	1.0	.1	anr							
Cadmium	1.0	.1	0.0158	<1.0	0.0130	<1.0	0.00303	<1.0	0.0135	<1.0
Calcium	100	7.2	-0.423	<100	0.898	<100	-0.0273	<100	0.446	<100
Chromium	1.0	.1	0.0182	<1.0	0.0458	<1.0	0.0356	<1.0	0.0410	<1.0
Cobalt	1.0	.1	0.0186	<1.0	0.0127	<1.0	0.00399	<1.0	0.0106	<1.0
Copper	1.0	.1	-0.142	<1.0	-0.123	<1.0	-0.126	<1.0	-0.141	<1.0
Iron	100	7.9	anr							
Lead	1.0	.1	0.0376	<1.0	0.0260	<1.0	0.0167	<1.0	0.0199	<1.0
Magnesium	100	5.2	0.829	<100	1.48	<100	-0.392	<100	-0.442	<100
Manganese	1.0	.1	anr							
Molybdenum	1.0	.1	0.191	<1.0	0.234	<1.0	0.113	<1.0	0.126	<1.0
Nickel	1.0	.1	-0.0173	<1.0	0.00561	<1.0	-0.0292	<1.0	-0.0232	<1.0
Potassium	100	6.6	anr							
Selenium	1.0	.11	0.00444	<1.0	-0.0272	<1.0	-0.00843	<1.0	0.0234	<1.0
Silver	1.0	.1	0.0111	<1.0	0.0160	<1.0	0.00620	<1.0	0.0109	<1.0
Sodium	100	4.8	anr							
Strontium	1.0	.1	anr							
Thallium	1.0	.1	0.0689	<1.0	0.0384	<1.0	0.0314	<1.0	0.0297	<1.0
Tin	1.0	.1	anr							
Titanium	1.0	.3	anr							
Vanadium	1.0	.1	anr							
Zinc	2.0	.29	0.0974	<2.0	1.32	<2.0	1.40	<2.0	1.33	<2.0

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: 90 to 110 % Recovery Run ID: MA16641 Units: ug/l

Time:		09:59			10:18			10:22	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	100	102	102.0				100	99.7	99.7
Arsenic	100	101	101.0				100	98.8	98.8
Barium	anr								
Beryllium	anr								
Cadmium	100	102	102.0				100	100	100.0
Calcium	10000	9970	99.7				10000	9940	99.4
Chromium	100	102	102.0				100	98.5	98.5
Cobalt	100	103	103.0				100	99.1	99.1
Copper	100	106	106.0				100	100	100.0
Iron	anr								
Lead	100	99.3	99.3				100	97.7	97.7
Magnesium	10000	10400	104.0				10000	9730	97.3
Manganese	anr								
Molybdenum	100	99.9	99.9				100	99.4	99.4
Nickel	100	101	101.0				100	99.4	99.4
Potassium	anr								
Selenium	100	102	102.0				100	99.2	99.2
Silver	50	50.7	101.4	50	50.3	100.6			
Sodium	anr								
Strontium	anr								
Thallium	100	101	101.0				100	98.4	98.4
Tin	anr								
Titanium	anr								
Vanadium	anr								
Zinc	100	103	103.0				100	100	100.0

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: 90 to 110 % Recovery Run ID: MA16641 Units: ug/l

Time:		11:08			11:12			11:58	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum									
Antimony				100	96.3	96.3			
Arsenic				100	99.5	99.5			
Barium									
Beryllium									
Cadmium				100	97.1	97.1			
Calcium				10000	9790	97.9			
Chromium				100	100	100.0			
Cobalt				100	100	100.0			
Copper				100	101	101.0			
Iron									
Lead				100	96.6	96.6			
Magnesium				10000	9970	99.7			
Manganese									
Molybdenum				100	98.1	98.1			
Nickel				100	100	100.0			
Potassium									
Selenium				100	99.2	99.2			
Silver	50	49.4	98.8				50	49.7	99.4
Sodium									
Strontium									
Thallium				100	101	101.0			
Tin									
Titanium									
Vanadium									
Zinc				100	99.4	99.4			

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: 90 to 110 % Recovery Run ID: MA16641 Units: ug/l

Time:		12:02	
Sample ID:	CCV	CCV6	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	100	95.7	95.7
Arsenic	100	101	101.0
Barium	anr		
Beryllium	anr		
Cadmium	100	97.3	97.3
Calcium	10000	10000	100.0
Chromium	100	101	101.0
Cobalt	100	100	100.0
Copper	100	101	101.0
Iron	anr		
Lead	100	97.7	97.7
Magnesium	10000	10200	102.0
Manganese	anr		
Molybdenum	100	97.2	97.2
Nickel	100	101	101.0
Potassium	anr		
Selenium	100	98.8	98.8
Silver			
Sodium	anr		
Strontium	anr		
Thallium	100	101	101.0
Tin	anr		
Titanium	anr		
Vanadium	anr		
Zinc	100	99.6	99.6

(*) Outside of QC limits
(anr) Analyte not requested

HIGH STANDARD CHECK SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: 90 to 110 % Recovery Run ID: MA16641 Units: ug/l

Time:		09:52			09:55	
Sample ID:	HSTD	HSTD1		HSTD	HSTD2	
Metal	True	Results	% Rec	True	Results	% Rec
Aluminum						
Antimony				200	203	101.5
Arsenic				200	206	103.0
Barium						
Beryllium						
Cadmium				200	203	101.5
Calcium				20000	20500	102.5
Chromium				200	204	102.0
Cobalt				200	204	102.0
Copper				200	203	101.5
Iron						
Lead				200	205	102.5
Magnesium				20000	20600	103.0
Manganese						
Molybdenum				200	205	102.5
Nickel				200	202	101.0
Potassium						
Selenium				200	203	101.5
Silver	100	101	101.0			
Sodium						
Strontium						
Thallium				200	205	102.5
Tin						
Titanium						
Vanadium						
Zinc				200	202	101.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: CRI 70-130% CRIA 80-120% Run ID: MA16641 Units: ug/l

Time:			10:07	
Sample ID:	CRI	CRIA	CRIA1	
Metal	True	True	Results	% Rec
Aluminum	100	100	anr	
Antimony	1.0	1.0	0.960	96.0
Arsenic	1.0	1.0	0.980	98.0
Barium	1.0	1.0	anr	
Beryllium	1.0	1.0	anr	
Cadmium	1.0	1.0	0.992	99.2
Calcium	100	100	111	111.0
Chromium	1.0	1.0	0.987	98.7
Cobalt	1.0	1.0	1.02	102.0
Copper	1.0	1.0	1.22	122.0
Iron	100	100	anr	
Lead	1.0	1.0	0.983	98.3
Magnesium	100	100	99.6	99.6
Manganese	1.0	1.0	anr	
Molybdenum	1.0	1.0	1.04	104.0
Nickel	1.0	1.0	1.01	101.0
Potassium	100	100	anr	
Selenium	1.0	1.0	0.826	82.6
Silver	1.0	1.0	1.04	104.0
Sodium	100	100	anr	
Strontium	1.0	1.0	anr	
Thallium	1.0	1.0	0.975	97.5
Tin	1.0	1.0	anr	
Titanium	1.0	1.0	anr	
Vanadium	1.0	1.0	anr	
Zinc	1.0	1.0	1.58	158.0*(a

(*) Outside of QC limits
(anr) Analyte not requested
(a) Positive bias.

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: 80 to 120 % Recovery Run ID: MA16641 Units: ug/l

Time:			10:11		10:15	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1	
Metal	True	True	Results	% Rec	Results	% Rec
Aluminum	100000	100000	98900	98.9	96600	96.6
Antimony			0.175		0.168	
Arsenic		20	0.0795		19.6	98.0
Barium			0.187		0.169	
Beryllium			0.0235		0.0567	
Cadmium		20	0.398		18.9	94.5
Calcium	100000	100000	94300	94.3	92200	92.2
Chromium		20	0.327		19.9	99.5
Cobalt		20	0.325		19.6	98.0
Copper		20	0.306		18.9	94.5
Iron	100000	100000	99200	99.2	97800	97.8
Lead			0.131		0.149	
Magnesium	100000	100000	97900	97.9	95900	95.9
Manganese		20	0.666		19.9	99.5
Molybdenum	2000	2000	2040	102.0	2000	100.0
Nickel		20	0.327		19.3	96.5
Potassium	100000	100000	99700	99.7	98000	98.0
Selenium			0.140		0.0925	
Silver		20	0.0216		18.4	92.0
Sodium	100000	100000	99000	99.0	96500	96.5
Strontium			0.904		0.876	
Thallium			0.0206		0.0134	
Tin			0.357		0.315	
Titanium	2000	2000	2030	101.5	1990	99.5
Vanadium			0.0184		0.0280	
Zinc		20	2.23		20.5	102.5

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36990
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 03/23/20

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.50	.03	.03	-0.050	<0.50

Associated samples MP36990: FA73461-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36990
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 03/23/20 03/23/20

Metal	FA73461-6 Original	DUP	RPD	QC Limits	FA73461-6 Original	MS	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.0	0.0	NC	0-20	0.0	2.9	3	96.7	80-120

Associated samples MP36990: FA73461-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36990 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/23/20

Metal	FA73461-6 Original	MSD	Spikelot HGFLWS1	% Rec	MSD RPD	QC Limit
Mercury	0.0	2.9	3	96.7	0.0	20

Associated samples MP36990: FA73461-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36990
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 03/23/20

Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	2.9	3	96.7	80-120

Associated samples MP36990: FA73461-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36990 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/23/20

Metal	FA73461-6 Original	SDL 1:5	%DIF	QC Limits
Mercury	0.00	0.00	NC	0-10

Associated samples MP36990: FA73461-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36991 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/23/20 03/23/20

Metal	RL	IDL	MDL	MB raw	final	MB raw	final
Mercury	0.50	.03	.03	-0.029	<0.50	-0.050	<0.50

Associated samples MP36991: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36991
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 03/23/20 03/23/20

Metal	FA73494-1 Original	DUP	RPD	QC Limits	FA73494-1 Original	MS	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.0	0.0	NC	0-20	0.0	2.9	3	96.7	80-120

Associated samples MP36991: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36991 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/23/20

Metal	FA73494-1 Original	MSD	Spikelot HGFLWS1	% Rec	MSD RPD	QC Limit
Mercury	0.0	2.9	3	96.7	0.0	20

Associated samples MP36991: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36991
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 03/23/20

Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	2.9	3	96.7	80-120

Associated samples MP36991: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36991 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/23/20

Metal	FA73494-1 Original	SDL 1:5	%DIF	QC Limits
Mercury	0.00	0.00	NC	0-10

Associated samples MP36991: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP37025
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 03/28/20

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.7	22		
Antimony	2.0	.2	.2	0.043	<2.0
Arsenic	2.0	.2	.21	0.076	<2.0
Barium	2.0	.2	.2		
Beryllium	2.0	.2	.2		
Cadmium	2.0	.2	.2	0.015	<2.0
Calcium	200	14	36	11.9	<200
Chromium	2.0	.2	.2	0.44	<2.0
Cobalt	2.0	.2	.2	0.015	<2.0
Copper	2.0	.2	.2	1.6	<2.0
Iron	200	16	23		
Lead	2.0	.2	.2	0.070	<2.0
Magnesium	200	10	19	6.3	<200
Manganese	2.0	.2	.2		
Molybdenum	2.0	.2	.39	0.40	<2.0
Nickel	2.0	.2	.2	-0.0065	<2.0
Potassium	200	13	75		
Selenium	2.0	.22	.22	0.061	<2.0
Silver	2.0	.2	.2	0.032	<2.0
Sodium	200	9.6	24		
Strontium	2.0	.2	.2		
Thallium	2.0	.2	.2	0.047	<2.0
Tin	2.0	.2	.2		
Titanium	2.0	.61	.88		
Vanadium	2.0	.2	.24		
Zinc	4.0	.58	1.7	0.99	<4.0

Associated samples MP37025: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP37025
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 03/28/20 03/28/20

Metal	FA73461-6 Original	DUP	RPD	QC Limits	FA73461-6 Original	MS	Spikelot MPICPMS1	% Rec	QC Limits
Aluminum	anr								
Antimony	0.0	0.0	NC	0-20	0.0	190	200	95.0	80-120
Arsenic	0.26	0.24	8.0	0-20	0.26	196	200	97.9	80-120
Barium	anr								
Beryllium	anr								
Cadmium	0.0	0.0	NC	0-20	0.0	191	200	95.5	80-120
Calcium	18600	17900	3.8	0-20	18600	36200	20000	88.0	80-120
Chromium	0.68	0.60	12.5	0-20	0.68	194	200	96.7	80-120
Cobalt	0.0	0.0	NC	0-20	0.0	197	200	98.5	80-120
Copper	1.3	1.1	16.7	0-20	1.3	198	200	98.4	80-120
Iron	anr								
Lead	0.0	0.0	NC	0-20	0.0	190	200	95.0	80-120
Magnesium	4120	3980	3.5	0-20	4120	22100	20000	89.9	80-120
Manganese	anr								
Molybdenum	0.50	0.37	29.9 (a)	0-20	0.50	197	200	98.3	80-120
Nickel	0.86	0.54	45.7 (a)	0-20	0.86	198	200	98.6	80-120
Potassium	anr								
Selenium	0.0	0.0	NC	0-20	0.0	182	200	91.0	80-120
Silver	0.0	0.0	NC	0-20	0.0	98.1	100	98.1	80-120
Sodium	anr								
Strontium	anr								
Thallium	0.0	0.0	NC	0-20	0.0	189	200	94.5	80-120
Tin	anr								
Titanium	anr								
Vanadium	anr								
Zinc	5.0	4.9	2.0	0-20	5.0	191	200	93.0	80-120

Associated samples MP37025: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP37025 Methods: SW846 6020A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/28/20

Metal	FA73461-6 Original	MSD	Spikelot MPICPMS1	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	0.0	194	200	97.0	2.1	20
Arsenic	0.26	203	200	101.4	3.5	20
Barium	anr					
Beryllium	anr					
Cadmium	0.0	195	200	97.5	2.1	20
Calcium	18600	37400	20000	94.0	3.3	20
Chromium	0.68	203	200	101.2	4.5	20
Cobalt	0.0	206	200	103.0	4.5	20
Copper	1.3	205	200	101.9	3.5	20
Iron	anr					
Lead	0.0	195	200	97.5	2.6	20
Magnesium	4120	23700	20000	97.9	7.0	20
Manganese	anr					
Molybdenum	0.50	203	200	101.3	3.0	20
Nickel	0.86	206	200	102.6	4.0	20
Potassium	anr					
Selenium	0.0	185	200	92.5	1.6	20
Silver	0.0	96.8	100	96.8	1.3	20
Sodium	anr					
Strontium	anr					
Thallium	0.0	193	200	96.5	2.1	20
Tin	anr					
Titanium	anr					
Vanadium	anr					
Zinc	5.0	195	200	95.0	2.1	20

Associated samples MP37025: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP37025
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 03/28/20

Metal	BSP Result	Spikelot MPICPMS1	% Rec	QC Limits
Aluminum	anr			
Antimony	205	200	102.5	80-120
Arsenic	212	200	106.0	80-120
Barium	anr			
Beryllium	anr			
Cadmium	206	200	103.0	80-120
Calcium	19600	20000	98.0	80-120
Chromium	211	200	105.5	80-120
Cobalt	214	200	107.0	80-120
Copper	216	200	108.0	80-120
Iron	anr			
Lead	200	200	100.0	80-120
Magnesium	19400	20000	97.0	80-120
Manganese	anr			
Molybdenum	213	200	106.5	80-120
Nickel	215	200	107.5	80-120
Potassium	anr			
Selenium	197	200	98.5	80-120
Silver	101	100	101.0	80-120
Sodium	anr			
Strontium	anr			
Thallium	198	200	99.0	80-120
Tin	anr			
Titanium	anr			
Vanadium	anr			
Zinc	203	200	101.5	80-120

Associated samples MP37025: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP37025
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 03/28/20

Metal	FA73461-6 Original	SDL 2:10	%DIF	QC Limits
Aluminum	anr			
Antimony	0.00	0.00	NC	0-10
Arsenic	0.262	0.00	100.0(a)	0-10
Barium	anr			
Beryllium	anr			
Cadmium	0.00	0.00	NC	0-10
Calcium	18600	17800	4.3	0-10
Chromium	0.683	0.00	100.0(a)	0-10
Cobalt	0.00	0.00	NC	0-10
Copper	1.30	8.31	541.4(a)	0-10
Iron	anr			
Lead	0.00	0.00	NC	0-10
Magnesium	4120	3940	4.5	0-10
Manganese	anr			
Molybdenum	0.501	0.00	100.0(a)	0-10
Nickel	0.863	0.00	100.0(a)	0-10
Potassium	anr			
Selenium	0.00	0.00	NC	0-10
Silver	0.00	0.00	NC	0-10
Sodium	anr			
Strontium	anr			
Thallium	0.00	0.00	NC	0-10
Tin	anr			
Titanium	anr			
Vanadium	anr			
Zinc	5.04	7.49	48.8 (a)	0-10

Associated samples MP37025: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Instrument Detection Limits

Job Number: FA73461
Account: ESVAS EnviroScience
Project: Bremo

Instrument ID: AGICPMS1 **Effective Date:** 05/21/16

Analyte	IDL ug/l
Aluminum	4.35
Antimony	.1
Arsenic	.1
Arsenic	.1
Barium	.1
Beryllium	.1
Boron	.5
Cadmium	.1
Cadmium	.1
Calcium	7.2
Calcium	7.2
Chromium	.1
Chromium	.1
Cobalt	.1
Cobalt	.1
Copper	.1
Copper	.1
Iron	7.9
Iron	7.9
Lead	.1
Magnesium	5.2
Manganese	.1
Manganese	.1
Molybdenum	.1
Nickel	.1
Nickel	.1
Potassium	6.57
Selenium	.11
Selenium	.11
Silver	.1
Sodium	4.8
Strontium	.1
Thallium	.1
Tin	.1
Tin	.1
Titanium	.303
Vanadium	.1
Vanadium	.1
Zinc	.29
Zinc	.29

The above applies to the following instrument runs:
MA16641

Instrument Detection Limits

Job Number: FA73461
Account: ESVAS EnviroScience
Project: Bremo

Instrument ID: LEEMANHG4 **Effective Date:** 10/01/12

Analyte	IDL ug/l
Mercury	.03

The above applies to the following instrument runs:
MA16622

Instrument Linear Ranges

Job Number: FA73461
Account: ESVAS EnviroScience
Project: Bremo

Instrument ID: AGICPMS1 **Effective Date:** 05/21/16

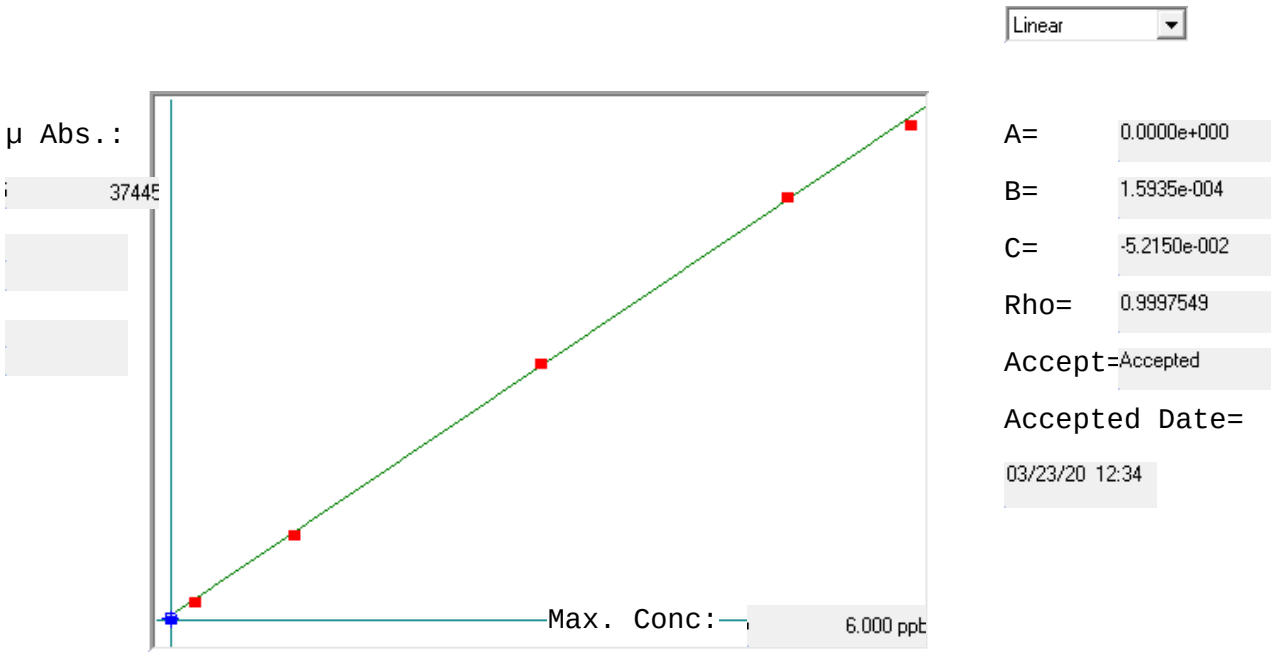
Analyte	Linear Range ug/l
Aluminum	100000
Antimony	1000
Arsenic	1000
Arsenic	1000
Barium	1000
Beryllium	1000
Cadmium	1000
Cadmium	1000
Calcium	100000
Calcium	100000
Chromium	1000
Chromium	1000
Cobalt	1000
Cobalt	1000
Copper	1000
Copper	1000
Iron	100000
Iron	100000
Lead	1000
Magnesium	100000
Manganese	1000
Manganese	1000
Molybdenum	1000
Nickel	1000
Nickel	1000
Potassium	100000
Selenium	1000
Selenium	1000
Silver	100
Sodium	100000
Strontium	1000
Thallium	1000
Tin	1000
Tin	1000
Titanium	1000
Vanadium	1000
Vanadium	1000
Zinc	1000
Zinc	1000

The above applies to the following instrument runs:
MA16641

Metals Analysis

Raw Data

Hg7470/EPA245.1 HG4



Std ID	Conc.	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
blank	0.000	-0.011	-0.011	257	0.000	257				
.2ppb	0.200	0.186	-0.014	1493	0.0 %	1493				
1ppb	1.000	0.984	-0.016	6502	0.0 %	6502				
3ppb	3.000	3.060	0.060	19528	0.0 %	19528				
5ppb	5.000	5.067	0.067	32127	0.0 %	32127				
6ppb	6.000	5.915	-0.085	37445	0.0 %	37445				

Method: Hg7470/EPA245.1 HG4 Operator: Admin Date of Analysis: 23 Mar 2020 11:55:06

Sample ID	Date	Type	Units	Conc.	µ Abs.	Wt.	Vol.
blank - 1	23 Mar 2020 12:25:51	Std	ppb	-	257	1.000	1.000
.2ppb - 1	23 Mar 2020 12:27:07	Std	ppb	-	1493	1.000	1.000
1ppb - 1	23 Mar 2020 12:28:27	Std	ppb	-	6502	1.000	1.000
3ppb - 1	23 Mar 2020 12:29:54	Std	ppb	-	19528	1.000	1.000
5ppb - 1	23 Mar 2020 12:31:29	Std	ppb	-	32127	1.000	1.000
6ppb - 1	23 Mar 2020 12:33:13	Std	ppb	-	37445	1.000	1.000
HSTD - 1	23 Mar 2020 12:35:00	CK STND	ppb	97.7% 5.8594	37098	1.000	1.000
ICV - 1	23 Mar 2020 12:36:50	CK STND	ppb	97.5% 2.9261	18690	1.000	1.000
ICB - 1	23 Mar 2020 12:38:39	CK STND	ppb	-0.0815	-184	1.000	1.000
CRI - 1	23 Mar 2020 12:40:25	CK STND	ppb	89.8% 0.1795	1454	1.000	1.000
CCV - 1	23 Mar 2020 12:41:45	CK STND	ppb	101.9% 3.0579	19517	1.000	1.000
CCB - 1	23 Mar 2020 12:43:10	CK STND	ppb	-0.0582	-38	1.000	1.000
MP36990-MB1 - 1	23 Mar 2020 12:44:54	SMPL	ppb	-0.0504	11	1.000	1.000
MP36990-B1 - 1	23 Mar 2020 12:46:12	SMPL	ppb	2.9422	18791	1.000	1.000
FA73461-6 - 1	23 Mar 2020 12:47:29	SMPL	ppb	-0.0604	-52	1.000	1.000
MP36990-D1 - 1	23 Mar 2020 12:49:13	SMPL	ppb	-0.0537	-10	1.000	1.000
MP36990-SD1 - 1	23 Mar 2020 12:50:29	SMPL	ppb	-0.4623	-253	1.000	5.000
MP36990-S1 - 1	23 Mar 2020 12:51:47	SMPL	ppb	2.9098	18588	1.000	1.000
MP36990-S2 - 1	23 Mar 2020 12:53:03	SMPL	ppb	2.9092	18584	1.000	1.000
FA73403-5F - 1	23 Mar 2020 12:54:47	SMPL	ppb	-0.0678	-98	1.000	1.000
FA73417-1 - 1	23 Mar 2020 12:56:30	SMPL	ppb	-0.0439	52	1.000	1.000
FA73417-2 - 1	23 Mar 2020 12:57:47	SMPL	ppb	-0.0370	95	1.000	1.000
CCV - 1	23 Mar 2020 12:59:04	CK STND	ppb	99.0% 2.9704	18968	1.000	1.000
CCB - 1	23 Mar 2020 13:00:20	CK STND	ppb	-0.0386	85	1.000	1.000
FA73417-3 - 1	23 Mar 2020 13:02:05	SMPL	ppb	-0.0333	118	1.000	1.000
FA73417-1F - 1	23 Mar 2020 13:03:25	SMPL	ppb	-0.0413	68	1.000	1.000
FA73417-2F - 1	23 Mar 2020 13:04:45	SMPL	ppb	-0.0338	115	1.000	1.000
FA73417-3F - 1	23 Mar 2020 13:06:02	SMPL	ppb	0.0455	613	1.000	1.000
FA73609-1 - 1	23 Mar 2020 13:07:20	SMPL	ppb	0.4731	3296	1.000	1.000
FA73609-2 - 1	23 Mar 2020 13:08:40	SMPL	ppb	0.3241	2361	1.000	1.000
FA73609-3 - 1	23 Mar 2020 13:10:12	SMPL	ppb	0.2207	1712	1.000	1.000
FA73609-4 - 1	23 Mar 2020 13:11:42	SMPL	ppb	0.4852	3372	1.000	1.000
FA73609-5 - 1	23 Mar 2020 13:13:11	SMPL	ppb	0.3649	2617	1.000	1.000
FA73609-6 - 1	23 Mar 2020 13:14:45	SMPL	ppb	0.3067	2252	1.000	1.000
CCV - 1	23 Mar 2020 13:16:17	CK STND	ppb	97.2% 2.9148	18619	1.000	1.000
CCB - 1	23 Mar 2020 13:17:49	CK STND	ppb	-0.0499	14	1.000	1.000
FA73423-1 - 1	23 Mar 2020 13:19:34	SMPL	ppb	-0.0424	61	1.000	1.000
FA73423-2 - 1	23 Mar 2020 13:20:53	SMPL	ppb	-0.0130	246	1.000	1.000
FA73423-3 - 1	23 Mar 2020 13:22:12	SMPL	ppb	0.0204	455	1.000	1.000
FA73651-3 - 1	23 Mar 2020 13:23:32	SMPL	ppb	-0.0314	130	1.000	1.000
FA73652-4 - 1	23 Mar 2020 13:24:52	SMPL	ppb	-0.0246	173	1.000	1.000
FA73653-4 - 1	23 Mar 2020 13:26:09	SMPL	ppb	-0.0251	170	1.000	1.000
MP36991-MB1 - 1	23 Mar 2020 13:27:26	SMPL	ppb	-0.0290	145	1.000	1.000
MP36991-B1 - 1	23 Mar 2020 13:28:44	SMPL	ppb	2.9411	18784	1.000	1.000
FA73494-1 - 1	23 Mar 2020 13:30:00	SMPL	ppb	-0.0555	-21	1.000	1.000
MP36991-D1 - 1	23 Mar 2020 13:31:42	SMPL	ppb	-0.0168	222	1.000	1.000
CCV - 1	23 Mar 2020 13:33:00	CK STND	ppb	97.5% 2.9238	18676	1.000	1.000
CCB - 1	23 Mar 2020 13:34:16	CK STND	ppb	-0.0466	35	1.000	1.000
MP36991-SD1 - 1	23 Mar 2020 13:35:59	SMPL	ppb	-0.3675	-134	1.000	5.000
MP36991-S1 - 1	23 Mar 2020 13:37:16	SMPL	ppb	2.9046	18555	1.000	1.000
MP36991-S2 - 1	23 Mar 2020 13:38:32	SMPL	ppb	2.8604	18278	1.000	1.000
FA73461-1 - 1	23 Mar 2020 13:40:16	SMPL	ppb	-0.0576	-34	1.000	1.000
FA73461-2 - 1	23 Mar 2020 13:42:00	SMPL	ppb	-0.0413	68	1.000	1.000
FA73461-3 - 1	23 Mar 2020 13:43:19	SMPL	ppb	-0.0341	113	1.000	1.000
FA73461-4 - 1	23 Mar 2020 13:44:39	SMPL	ppb	-0.0380	89	1.000	1.000
FA73461-5 - 1	23 Mar 2020 13:45:55	SMPL	ppb	-0.0107	260	1.000	1.000
FA73461-7 - 1	23 Mar 2020 13:47:14	SMPL	ppb	-0.0346	110	1.000	1.000
FA73461-8 - 1	23 Mar 2020 13:48:30	SMPL	ppb	-0.0265	161	1.000	1.000
CCV - 1	23 Mar 2020 13:49:49	CK STND	ppb	96.3% 2.8885	18454	1.000	1.000
CCB - 1	23 Mar 2020 13:51:05	CK STND	ppb	-0.0435	54	1.000	1.000
FA73461-9 - 1	23 Mar 2020 13:52:49	SMPL	ppb	-0.0305	136	1.000	1.000
FA73461-10 - 1	23 Mar 2020 13:54:07	SMPL	ppb	-0.0319	127	1.000	1.000
FA73461-11 - 1	23 Mar 2020 13:55:25	SMPL	ppb	-0.0300	139	1.000	1.000
FA73461-12 - 1	23 Mar 2020 13:56:41	SMPL	ppb	-0.0310	133	1.000	1.000
FA73461-13 - 1	23 Mar 2020 13:57:58	SMPL	ppb	-0.0380	89	1.000	1.000
FA73643-2 - 1	23 Mar 2020 13:59:15	SMPL	ppb	0.0415	588	1.000	1.000
FA73645-2 - 1	23 Mar 2020 14:00:34	SMPL	ppb	-0.0067	285	1.000	1.000
FA73645-3 - 1	23 Mar 2020 14:01:55	SMPL	ppb	-0.0204	199	1.000	1.000
FA73423-1F - 1	23 Mar 2020 14:03:15	SMPL	ppb	-0.0359	102	1.000	1.000

Method: Hg7470/EPA245.1 HG4 Operator: Admin Date of Analysis: 23 Mar 2020 11:55:06

Sample ID	Date	Type	Units	Conc.	µ Abs.	Wt.	Vol.
FA73423-2F - 1	23 Mar 2020 14:04:34	SMPL	ppb	-0.0090	271	1.000	1.000
CCV - 1	23 Mar 2020 14:05:52	CK STND	ppb	97.3% 2.9200	18652	1.000	1.000
CCB - 1	23 Mar 2020 14:07:09	CK STND	ppb	-0.0471	32	1.000	1.000
FA73423-3F - 1	23 Mar 2020 14:08:54	SMPL	ppb	-0.0187	210	1.000	1.000
MP36991-MB2A - 1	23 Mar 2020 14:10:12	SMPL	ppb	-0.0504	11	1.000	1.000
MP36992-MB1 - 1	23 Mar 2020 14:11:31	SMPL	ppb	0.1247	1110	1.000	1.000
MP36992-B1 - 1	23 Mar 2020 14:12:49	SMPL	ppb	3.1030	19800	1.000	1.000
FA73494-3 - 1	23 Mar 2020 14:14:13	SMPL	ppb	0.0616	714	1.000	1.000
MP36992-D1 - 1	23 Mar 2020 14:15:57	SMPL	ppb	0.0524	656	1.000	1.000
MP36992-SD1 - 1	23 Mar 2020 14:17:19	SMPL	ppb	-0.3157	-69	1.000	5.000
MP36992-S1 - 1	23 Mar 2020 14:18:42	SMPL	ppb	3.0886	19710	1.000	1.000
MP36992-S2 - 1	23 Mar 2020 14:20:01	SMPL	ppb	2.9439	18802	1.000	1.000
FA73494-4 - 1	23 Mar 2020 14:21:47	SMPL	ppb	0.0205	456	1.000	1.000
CCV - 1	23 Mar 2020 14:23:32	CK STND	ppb	95.0% 2.8502	18214	1.000	1.000
CCB - 1	23 Mar 2020 14:24:51	CK STND	ppb	-0.0373	93	1.000	1.000
FA73494-5 - 1	23 Mar 2020 14:26:37	SMPL	ppb	0.0396	576	1.000	1.000
FA73494-6 - 1	23 Mar 2020 14:27:53	SMPL	ppb	0.0212	460	1.000	1.000
FA73553-1 - 1	23 Mar 2020 14:29:14	SMPL	ppb	0.0031	347	1.000	1.000
FA73566-2 - 1	23 Mar 2020 14:30:34	SMPL	ppb	0.0041	353	1.000	1.000
FA73610-1 - 1	23 Mar 2020 14:31:54	SMPL	ppb	0.3325	2414	1.000	1.000
FA73581-1 - 1	23 Mar 2020 14:33:13	SMPL	ppb	0.0057	363	1.000	1.000
FA73581-3 - 1	23 Mar 2020 14:34:47	SMPL	ppb	-0.0201	201	1.000	1.000
FA73581-4 - 1	23 Mar 2020 14:36:06	SMPL	ppb	-0.0136	242	1.000	1.000
FA73581-5 - 1	23 Mar 2020 14:37:25	SMPL	ppb	-0.0238	178	1.000	1.000
FA73581-6 - 1	23 Mar 2020 14:38:44	SMPL	ppb	-0.0056	292	1.000	1.000
CCV - 1	23 Mar 2020 14:40:03	CK STND	ppb	94.8% 2.8442	18176	1.000	1.000
CCB - 1	23 Mar 2020 14:41:21	CK STND	ppb	-0.0319	127	1.000	1.000
FA73617-1 - 1	23 Mar 2020 14:43:06	SMPL	ppb	-0.5709	-31	1.000	10.000
FA73617-2 - 1	23 Mar 2020 14:44:24	SMPL	ppb	-0.2490	171	1.000	10.000
FA73617-3 - 1	23 Mar 2020 14:45:42	SMPL	ppb	-0.9135	-246	1.000	10.000
FA73617-4 - 1	23 Mar 2020 14:46:59	SMPL	ppb	-0.5119	6	1.000	10.000
FA73617-5 - 1	23 Mar 2020 14:48:16	SMPL	ppb	-0.2618	163	1.000	10.000
FA73617-6 - 1	23 Mar 2020 14:49:33	SMPL	ppb	-0.5135	5	1.000	10.000
lot#357298-4694 - 1	23 Mar 2020 14:50:50	SMPL	ppb	-0.0168	222	1.000	1.000
MP36993-MB1 - 1	23 Mar 2020 14:52:07	SMPL	ppb	0.0055	362	1.000	1.000
MP36993-B1 - 1	23 Mar 2020 14:53:27	SMPL	ppb	2.9619	18915	1.000	1.000
FA73586-3 - 1	23 Mar 2020 14:54:47	SMPL	ppb	-0.0026	311	1.000	1.000
CCV - 1	23 Mar 2020 14:56:31	CK STND	ppb	94.4% 2.8309	18093	1.000	1.000
CCB - 1	23 Mar 2020 14:57:48	CK STND	ppb	-0.0392	81	1.000	1.000
MP36993-D1 - 1	23 Mar 2020 14:59:33	SMPL	ppb	0.0127	407	1.000	1.000
MP36993-SD1 - 1	23 Mar 2020 15:00:50	SMPL	ppb	-0.3827	-153	1.000	5.000
MP36993-S1 - 1	23 Mar 2020 15:02:10	SMPL	ppb	2.8416	18160	1.000	1.000
MP36993-S2 - 1	23 Mar 2020 15:03:27	SMPL	ppb	2.8290	18081	1.000	1.000
FA73574-1 - 1	23 Mar 2020 15:05:12	SMPL	ppb	-0.0005	324	1.000	1.000
FA73574-2 - 1	23 Mar 2020 15:06:55	SMPL	ppb	-0.0000	327	1.000	1.000
FA73507-1 - 1	23 Mar 2020 15:08:16	SMPL	ppb	-0.0064	287	1.000	1.000
FA73475-1 - 1	23 Mar 2020 15:09:35	SMPL	ppb	-0.0125	249	1.000	1.000
MP36993-MB2 - 1	23 Mar 2020 15:10:55	SMPL	ppb	-0.0005	324	1.000	1.000
MP36993-B2 - 1	23 Mar 2020 15:12:14	SMPL	ppb	2.8590	18269	1.000	1.000
CCV - 1	23 Mar 2020 15:13:34	CK STND	ppb	93.8% 2.8137	17985	1.000	1.000
CCB - 1	23 Mar 2020 15:15:18	CK STND	ppb	-0.0357	103	1.000	1.000
MP36993-MB3 - 1	23 Mar 2020 15:17:03	SMPL	ppb	0.0103	392	1.000	1.000
MP36993-B3 - 1	23 Mar 2020 15:18:23	SMPL	ppb	3.0180	19267	1.000	1.000
MP36993-MB4 - 1	23 Mar 2020 15:19:43	SMPL	ppb	-0.0133	244	1.000	1.000
MP36993-B4 - 1	23 Mar 2020 15:21:27	SMPL	ppb	2.9297	18713	1.000	1.000
CRI - 1	23 Mar 2020 15:22:46	SMPL	ppb	0.1482	1257	1.000	1.000
CCV - 1	23 Mar 2020 15:24:31	CK STND	ppb	92.5% 2.7750	17742	1.000	1.000
CCB - 1	23 Mar 2020 15:25:56	CK STND	ppb	-0.0667	-91	1.000	1.000

Quantitation Report

File Name	002CALB.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 9:15
Sample Name	Blank
Sample Type	CalBlk
Comment	
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.007	ug/l	35.87	989.36	9.000E-03	Pulse	0.50	3
As			1	0.004	ug/l	6.28	20.33	1.850E-04	Pulse	1.00	3
Mo			1	0.017	ug/l	40.15	190.67	1.142E-03	Pulse	0.50	3
Pb			1	0.026	ug/l	33.24	1,993.79	5.320E-04	Pulse	1.00	3
Be			1	-0.001	ug/l	-1812.98	0.50	3.919E-06	Pulse	2.00	3
Ag			1	0.001	ug/l	115.01	48.67	2.922E-04	Pulse	0.50	3
Ba			1	0.005	ug/l	103.71	33.33	2.939E-05	Pulse	0.50	3
Tl			1	0.010	ug/l	23.52	720.02	1.921E-04	Pulse	0.50	3
Sn			1	0.087	ug/l	4.53	1,073.37	9.435E-04	Pulse	0.30	3
Sr			1	0.000	ug/l	4017.49	414.68	3.645E-04	Pulse	0.50	3
[Pb]			1	0.023	ug/l	45.88	928.03	2.476E-04	Pulse	0.50	3
Ca			1	-0.204	ug/l	-268.56	125.33	9.826E-04	Pulse	0.50	3
Ti			1	0.021	ug/l	151.77	10.00	7.850E-05	Pulse	0.50	3
Na			1	0.039	ug/l	257.05	8,774.26	6.879E-02	Pulse	1.00	3
Mg			1	0.102	ug/l	27.78	1,645.07	1.290E-02	Pulse	1.00	3
K			1	0.063	ug/l	298.52	17,659.55	1.384E-01	Pulse	1.00	3
V			1	-0.003	ug/l	-215.05	507.34	3.976E-03	Pulse	0.50	3
Mn			1	-0.002	ug/l	-118.17	62.67	5.711E-04	Pulse	0.50	3
Fe			1	1.946	ug/l	5.66	25,618.86	2.332E-01	Pulse	0.50	3
Co			1	0.001	ug/l	94.61	68.67	6.234E-04	Pulse	0.50	3
Ni			1	0.012	ug/l	186.34	672.02	6.125E-03	Pulse	0.50	3
Cu			1	0.194	ug/l	53.83	10,198.75	9.294E-02	Pulse	0.50	3
Zn			1	0.090	ug/l	51.76	890.69	5.338E-03	Pulse	1.00	3
Cd			1	0.000	ug/l	-2366.47	3.33	1.990E-05	Pulse	0.50	3
Al			1	1.364	ug/l	7.86	564.01	4.422E-03	Pulse	1.00	3
Se			1	-0.051	ug/l	-19.56	12.11	7.253E-05	Pulse	3.00	3
Sb			1	0.006	ug/l	12.46	89.33	5.351E-04	Pulse	1.00	3
Se			1	0.016	ug/l	408.08	14.67	8.791E-05	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,753,456.75	1.27	100.0	Pulse	0.50	3
1	Sc		127,557.82	0.97	100.0	Pulse	0.30	3

Quantitation Report

1	Ge		109,909.84	1.79	100.0	Pulse	0.30	3
1	In		1,137,791.73	1.53	100.0	Pulse	0.30	3
1	Tb		4,525,030.33	0.70	100.0	Pulse	0.50	3
1	Lu		2,729,320.58	1.14	100.0	Pulse	0.50	3
1	Ge		166,926.15	0.95	100.0	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		671.13	13.05	100.0	Pulse	0.30	3

Quantitation Report

File Name 003CALB.d
File Path D:\2020\03-March\xa033020m1.b
Method File
Method Path
Acq Time 3/30/2020 9:19
Sample Name Blank
Sample Type CalBlk
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 3/30/2020 9:49
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.002	ug/l	192.70	946.70	8.500E-03	Pulse	0.50	3
As			1	0.007	ug/l	159.54	24.00	2.152E-04	Pulse	1.00	3
Mo			1	0.000	ug/l	-316.70	68.67	4.068E-04	Pulse	0.50	3
Pb			1	0.004	ug/l	51.71	1,044.37	2.780E-04	Pulse	1.00	3
Be			1	0.024	ug/l	78.95	1.83	1.397E-05	Pulse	2.00	3
Ag			1	0.000	ug/l	219.47	40.00	2.376E-04	Pulse	0.50	3
Ba			1	-0.001	ug/l	-235.64	16.00	1.393E-05	Pulse	0.50	3
Tl			1	0.000	ug/l	37.51	152.67	4.063E-05	Pulse	0.50	3
Sn			1	0.005	ug/l	66.93	607.79	5.282E-04	Pulse	0.30	3
Sr			1	0.007	ug/l	175.97	454.01	3.945E-04	Pulse	0.50	3
[Pb]			1	-0.001	ug/l	-157.74	450.68	1.200E-04	Pulse	0.50	3
Ca			1	-1.256	ug/l	-26.66	106.67	8.162E-04	Pulse	0.50	3
Ti			1	-0.012	ug/l	-204.23	4.67	3.561E-05	Pulse	0.50	3
Na			1	-0.083	ug/l	-145.95	8,857.63	6.780E-02	Pulse	1.00	3
Mg			1	0.072	ug/l	113.53	1,671.07	1.279E-02	Pulse	1.00	3
K			1	-1.597	ug/l	-57.96	17,430.68	1.334E-01	Pulse	1.00	3
V			1	0.000	ug/l	-1940.15	538.68	4.126E-03	Pulse	0.50	3
Mn			1	-0.002	ug/l	-176.66	65.33	5.863E-04	Pulse	0.50	3
Fe			1	0.273	ug/l	11.46	13,399.98	1.203E-01	Pulse	0.50	3
Co			1	0.000	ug/l	36.24	60.67	5.447E-04	Pulse	0.50	3
Ni			1	-0.003	ug/l	-378.07	614.01	5.513E-03	Pulse	0.50	3
Cu			1	0.000	ug/l	-5767.24	7,826.27	7.026E-02	Pulse	0.50	3
Zn			1	-0.010	ug/l	-219.30	724.02	4.293E-03	Pulse	1.00	3
Cd			1	0.000	ug/l	-370.96	2.67	1.579E-05	Pulse	0.50	3
Al			1	-0.016	ug/l	-1772.53	404.34	3.093E-03	Pulse	1.00	3
Se			1	-0.038	ug/l	-103.49	13.11	7.767E-05	Pulse	3.00	3
Sb			1	0.001	ug/l	57.15	52.00	3.084E-04	Pulse	1.00	3
Se			1	0.024	ug/l	493.80	15.11	8.945E-05	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,756,644.42	0.76	100.0	Pulse	0.50	3
1	Sc		130,648.25	1.16	100.0	Pulse	0.30	3

Quantitation Report

1	Ge		111,379.24	0.44	100.0	Pulse	0.30	3
1	In		1,150,831.52	1.19	100.0	Pulse	0.30	3
1	Tb		4,515,553.33	1.23	100.0	Pulse	0.50	3
1	Lu		2,734,818.75	0.83	100.0	Pulse	0.50	3
1	Ge		168,668.04	0.88	100.0	Pulse	0.30	3
1	Te		0.67	173.21	100.0	Pulse	0.50	3
1	Li		698.91	6.49	100.0	Pulse	0.30	3

Quantitation Report

File Name	004CALB.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 9:23
Sample Name	CALSTD-1
Sample Type	CalBlk
Comment	
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.000	ug/l	---	906.69	8.351E-03	Pulse	0.50	3
As			1	0.000	ug/l	---	15.33	1.423E-04	Pulse	1.00	3
Mo			1	0.000	ug/l	---	69.33	4.241E-04	Pulse	0.50	3
Pb			1	0.000	ug/l	---	858.69	2.370E-04	Pulse	1.00	3
Be			1	0.000	ug/l	---	0.50	4.134E-06	Pulse	2.00	3
Ag			1	0.000	ug/l	---	33.33	2.012E-04	Pulse	0.50	3
Ba			1	0.000	ug/l	---	19.33	1.717E-05	Pulse	0.50	3
Tl			1	0.000	ug/l	---	119.33	3.318E-05	Pulse	0.50	3
Sn			1	0.000	ug/l	---	562.24	5.019E-04	Pulse	0.30	3
Sr			1	0.000	ug/l	---	410.01	3.638E-04	Pulse	0.50	3
[Pb]			1	0.000	ug/l	---	445.34	1.230E-04	Pulse	0.50	3
Ca			1	0.000	ug/l	---	128.67	1.015E-03	Pulse	0.50	3
Ti			1	0.000	ug/l	---	6.67	5.110E-05	Pulse	0.50	3
Na			1	0.000	ug/l	---	8,708.89	6.847E-02	Pulse	1.00	3
Mg			1	0.000	ug/l	---	1,596.07	1.254E-02	Pulse	1.00	3
K			1	0.000	ug/l	---	17,575.13	1.383E-01	Pulse	1.00	3
V			1	0.000	ug/l	---	528.68	4.151E-03	Pulse	0.50	3
Mn			1	0.000	ug/l	---	70.67	6.500E-04	Pulse	0.50	3
Fe			1	0.000	ug/l	---	11,077.85	1.019E-01	Pulse	0.50	3
Co			1	0.000	ug/l	---	54.00	4.916E-04	Pulse	0.50	3
Ni			1	0.000	ug/l	---	612.68	5.627E-03	Pulse	0.50	3
Cu			1	0.000	ug/l	---	7,636.19	7.030E-02	Pulse	0.50	3
Zn			1	0.000	ug/l	---	721.68	4.400E-03	Pulse	1.00	3
Cd			1	0.000	ug/l	---	3.33	2.068E-05	Pulse	0.50	3
Al			1	0.000	ug/l	---	395.00	3.108E-03	Pulse	1.00	3
Se			1	0.000	ug/l	---	15.22	9.281E-05	Pulse	3.00	3
Sb			1	0.000	ug/l	---	43.33	2.645E-04	Pulse	1.00	3
Se			1	0.000	ug/l	---	13.89	8.461E-05	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,631,801.92	5.08	100.0	Pulse	0.50	3
1	Sc		127,349.10	5.13	100.0	Pulse	0.30	3

Quantitation Report

1	Ge		108,733.34	4.55	100.0	Pulse	0.30	3
1	In		1,124,481.52	5.67	100.0	Pulse	0.30	3
1	Tb		4,395,850.83	5.83	100.0	Pulse	0.50	3
1	Lu		2,658,197.00	6.57	100.0	Pulse	0.50	3
1	Ge		164,188.32	3.86	100.0	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		617.79	4.71	100.0	Pulse	0.30	3

Quantitation Report

File Name 005CALS.d
File Path D:\2020\03-March\xa033020m1.b
Method File
Method Path
Acq Time 3/30/2020 9:28
Sample Name CALSTD-2
Sample Type CalStd
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 3/30/2020 9:49
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.464	ug/l	2.24	5,415.44	4.895E-02	Pulse	0.50	3
As			1	0.458	ug/l	2.06	541.68	4.896E-03	Pulse	1.00	3
Mo			1	0.450	ug/l	3.90	3,156.95	1.889E-02	Pulse	0.50	3
Pb			1	0.459	ug/l	0.65	20,313.36	5.496E-03	Pulse	1.00	3
Be			1	0.455	ug/l	10.60	24.67	1.890E-04	Pulse	2.00	3
Ag			1	0.486	ug/l	0.99	11,516.28	6.893E-02	Pulse	0.50	3
Ba			1	0.462	ug/l	4.10	1,264.72	1.105E-03	Pulse	0.50	3
Tl			1	0.454	ug/l	0.74	28,176.49	7.623E-03	Pulse	0.50	3
Sn			1	0.460	ug/l	4.35	3,242.52	2.834E-03	Pulse	0.30	3
Sr			1	0.472	ug/l	3.29	2,750.88	2.404E-03	Pulse	0.50	3
[Pb]			1	0.465	ug/l	0.95	9,632.74	2.606E-03	Pulse	0.50	3
Ca			1	46.594	ug/l	5.43	1,092.70	8.379E-03	Pulse	0.50	3
Ti			1	0.595	ug/l	5.75	110.00	8.434E-04	Pulse	0.50	3
Na			1	47.221	ug/l	1.43	58,770.58	4.505E-01	Pulse	1.00	3
Mg			1	48.162	ug/l	0.35	23,518.10	1.803E-01	Pulse	1.00	3
K			1	46.286	ug/l	0.89	36,234.39	2.778E-01	Pulse	1.00	3
V			1	0.468	ug/l	2.50	3,977.75	3.049E-02	Pulse	0.50	3
Mn			1	0.473	ug/l	5.19	2,057.45	1.860E-02	Pulse	0.50	3
Fe			1	46.821	ug/l	1.11	360,811.13	3.261E+00	Pulse	0.50	3
Co			1	0.478	ug/l	2.22	8,197.76	7.408E-02	Pulse	0.50	3
Ni			1	0.507	ug/l	1.90	3,019.58	2.729E-02	Pulse	0.50	3
Cu			1	0.602	ug/l	4.09	15,530.26	1.404E-01	Pulse	0.50	3
Zn			1	0.562	ug/l	2.41	1,712.75	1.025E-02	Pulse	1.00	3
Cd			1	0.474	ug/l	11.69	1,470.73	8.802E-03	Pulse	0.50	3
Al			1	46.669	ug/l	2.90	6,268.99	4.806E-02	Pulse	1.00	3
Se			1	0.448	ug/l	10.99	45.33	2.712E-04	Pulse	3.00	3
Sb			1	0.464	ug/l	0.80	3,549.68	2.124E-02	Pulse	1.00	3
Se			1	0.505	ug/l	14.69	31.11	1.863E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,696,186.08	1.05	101.8	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Sc		130,455.63	1.14	102.4	Pulse	0.30	3
1	Ge		110,641.93	1.02	101.8	Pulse	0.30	3
1	In		1,144,408.60	0.77	101.8	Pulse	0.30	3
1	Tb		4,482,173.17	0.77	102.0	Pulse	0.50	3
1	Lu		2,702,160.50	0.83	101.7	Pulse	0.50	3
1	Ge		167,090.00	1.39	101.8	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		657.79	10.54	106.5	Pulse	0.30	3

Quantitation Report

File Name 006CALS.d
File Path D:\2020\03-March\xa033020m1.b
Method File
Method Path
Acq Time 3/30/2020 9:31
Sample Name CALSTD-3
Sample Type CalStd
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 3/30/2020 9:49
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	1.003	ug/l	2.67	10,592.23	9.602E-02	Pulse	0.50	3
As			1	0.985	ug/l	3.65	1,143.37	1.037E-02	Pulse	1.00	3
Mo			1	0.985	ug/l	3.25	6,852.60	4.086E-02	Pulse	0.50	3
Pb			1	0.955	ug/l	0.18	41,445.61	1.117E-02	Pulse	1.00	3
Be			1	0.891	ug/l	10.31	48.33	3.659E-04	Pulse	2.00	3
Ag			1	1.023	ug/l	0.91	24,297.26	1.449E-01	Pulse	0.50	3
Ba			1	1.023	ug/l	3.47	2,802.90	2.430E-03	Pulse	0.50	3
Tl			1	0.950	ug/l	1.36	59,060.55	1.592E-02	Pulse	0.50	3
Sn			1	0.950	ug/l	3.02	6,128.83	5.314E-03	Pulse	0.30	3
Sr			1	0.940	ug/l	2.26	5,109.37	4.431E-03	Pulse	0.50	3
[Pb]			1	0.965	ug/l	0.97	19,578.57	5.277E-03	Pulse	0.50	3
Ca			1	99.256	ug/l	1.93	2,207.46	1.670E-02	Pulse	0.50	3
Ti			1	0.860	ug/l	9.21	158.00	1.196E-03	Pulse	0.50	3
Na			1	97.207	ug/l	2.31	112,994.73	8.550E-01	Pulse	1.00	3
Mg			1	99.445	ug/l	1.25	47,435.53	3.589E-01	Pulse	1.00	3
K			1	98.648	ug/l	0.87	57,577.71	4.356E-01	Pulse	1.00	3
V			1	0.955	ug/l	3.38	7,645.53	5.786E-02	Pulse	0.50	3
Mn			1	1.036	ug/l	1.85	4,412.52	3.999E-02	Pulse	0.50	3
Fe			1	99.236	ug/l	0.52	749,964.10	6.798E+00	Pulse	0.50	3
Co			1	1.017	ug/l	1.91	17,315.76	1.570E-01	Pulse	0.50	3
Ni			1	1.049	ug/l	2.04	5,567.48	5.047E-02	Pulse	0.50	3
Cu			1	1.205	ug/l	2.92	23,233.29	2.106E-01	Pulse	0.50	3
Zn			1	1.216	ug/l	2.21	2,860.22	1.705E-02	Pulse	1.00	3
Cd			1	0.992	ug/l	4.49	3,084.94	1.839E-02	Pulse	0.50	3
Al			1	100.435	ug/l	3.35	13,197.35	9.986E-02	Pulse	1.00	3
Se			1	1.051	ug/l	9.56	85.78	5.113E-04	Pulse	3.00	3
Sb			1	0.974	ug/l	0.44	7,423.51	4.426E-02	Pulse	1.00	3
Se			1	1.001	ug/l	34.57	48.00	2.864E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,710,508.08	0.52	102.2	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Sc		132,193.94	1.81	103.8	Pulse	0.30	3
1	Ge		110,320.97	0.74	101.5	Pulse	0.30	3
1	In		1,153,326.97	0.75	102.6	Pulse	0.30	3
1	Tb		4,505,197.17	0.21	102.5	Pulse	0.50	3
1	Lu		2,706,499.17	0.18	101.8	Pulse	0.50	3
1	Ge		167,735.69	0.58	102.2	Pulse	0.30	3
1	Te		2.00	100.00		Pulse	0.50	3
1	Li		747.80	2.87	121.0	Pulse	0.30	3

Quantitation Report

File Name 007CALS.d
File Path D:\2020\03-March\xa033020m1.b
Method File
Method Path
Acq Time 3/30/2020 9:36
Sample Name CALSTD-4
Sample Type CalStd
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 3/30/2020 9:49
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	10.540	ug/l	0.85	102,459.72	9.297E-01	Pulse	0.50	3
As			1	10.379	ug/l	1.63	11,886.36	1.079E-01	Pulse	1.00	3
Mo			1	10.181	ug/l	1.48	69,627.12	4.185E-01	Pulse	0.50	3
Pb			1	10.129	ug/l	0.59	429,451.24	1.162E-01	Pulse	1.00	3
Be			1	10.659	ug/l	5.17	566.18	4.332E-03	Pulse	2.00	3
Ag			1	10.933	ug/l	1.38	257,256.52	1.546E+00	Pulse	0.50	3
Ba			1	10.400	ug/l	0.91	28,069.74	2.454E-02	Pulse	0.50	3
Tl			1	10.118	ug/l	0.93	624,935.50	1.691E-01	Pulse	0.50	3
Sn			1	10.361	ug/l	1.59	60,610.54	5.298E-02	Pulse	0.30	3
Sr			1	10.348	ug/l	0.41	51,614.20	4.512E-02	Pulse	0.50	3
[Pb]			1	10.196	ug/l	0.86	201,655.48	5.458E-02	Pulse	0.50	3
Ca			1	1052.324	ug/l	0.43	21,868.86	1.673E-01	Pulse	0.50	3
Ti			1	10.128	ug/l	1.94	1,769.42	1.354E-02	Pulse	0.50	3
Na			1	1039.249	ug/l	0.97	1,107,839.29	8.477E+00	Pulse	1.00	3
Mg			1	1061.946	ug/l	0.36	484,987.00	3.711E+00	Pulse	1.00	3
K			1	1053.916	ug/l	0.85	433,210.37	3.315E+00	Pulse	1.00	3
V			1	10.385	ug/l	0.56	76,844.28	5.880E-01	Pulse	0.50	3
Mn			1	10.485	ug/l	1.28	43,946.12	3.988E-01	Pulse	0.50	3
Fe			1	1040.970	ug/l	0.76	7,752,164.50	7.035E+01	Analog	0.50	3
Co			1	10.767	ug/l	0.84	182,624.83	1.657E+00	Pulse	0.50	3
Ni			1	10.746	ug/l	0.58	51,254.16	4.651E-01	Pulse	0.50	3
Cu			1	11.063	ug/l	0.72	149,679.40	1.358E+00	Pulse	0.50	3
Zn			1	10.859	ug/l	1.17	19,526.20	1.174E-01	Pulse	1.00	3
Cd			1	10.475	ug/l	0.75	32,288.73	1.941E-01	Pulse	0.50	3
Al			1	1058.553	ug/l	1.02	133,667.60	1.023E+00	Pulse	1.00	3
Se			1	10.474	ug/l	2.53	709.46	4.264E-03	Pulse	3.00	3
Sb			1	10.442	ug/l	1.46	78,524.24	4.719E-01	Pulse	1.00	3
Se			1	10.418	ug/l	3.56	363.45	2.184E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,694,938.08	0.15	101.7	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Sc		130,688.29	0.35	102.6	Pulse	0.30	3
1	Ge		110,204.95	0.60	101.4	Pulse	0.30	3
1	In		1,144,027.80	0.50	101.7	Pulse	0.30	3
1	Tb		4,499,165.17	0.06	102.4	Pulse	0.50	3
1	Lu		2,700,906.83	1.20	101.6	Pulse	0.50	3
1	Ge		166,394.90	0.52	101.3	Pulse	0.30	3
1	Te		0.67	173.21		Pulse	0.50	3
1	Li		720.02	6.82	116.5	Pulse	0.30	3

Quantitation Report

File Name	008CALS.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 9:40
Sample Name	CALSTD-5
Sample Type	CalStd
Comment	
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	48.094	ug/l	0.96	454,440.20	4.213E+00	Pulse	0.50	3
As			1	47.932	ug/l	0.74	53,679.26	4.976E-01	Pulse	1.00	3
Mo			1	47.226	ug/l	1.04	316,680.41	1.940E+00	Pulse	0.50	3
Pb			1	46.584	ug/l	0.33	1,899,244.13	5.337E-01	Pulse	1.00	3
Be			1	47.421	ug/l	1.07	2,467.82	1.926E-02	Pulse	2.00	3
Ag			1	49.318	ug/l	1.19	1,138,623.04	6.974E+00	Pulse	0.50	3
Ba			1	47.782	ug/l	0.07	124,491.58	1.127E-01	Pulse	0.50	3
Tl			1	47.044	ug/l	0.31	2,798,091.17	7.863E-01	Pulse	0.50	3
Sn			1	48.569	ug/l	0.56	272,381.43	2.465E-01	Pulse	0.30	3
Sr			1	48.321	ug/l	1.15	231,291.71	2.093E-01	Pulse	0.50	3
[Pb]			1	47.410	ug/l	0.42	901,526.27	2.533E-01	Pulse	0.50	3
Ca			1	4837.451	ug/l	1.40	98,094.97	7.656E-01	Pulse	0.50	3
Ti			1	47.804	ug/l	2.37	8,165.73	6.372E-02	Pulse	0.50	3
Na			1	4772.008	ug/l	1.10	4,955,647.33	3.868E+01	Analog	1.00	3
Mg			1	4806.900	ug/l	1.24	2,146,529.75	1.675E+01	Pulse	1.00	3
K			1	4827.831	ug/l	0.50	1,882,199.37	1.469E+01	Pulse	1.00	3
V			1	47.780	ug/l	0.27	344,730.93	2.690E+00	Pulse	0.50	3
Mn			1	48.099	ug/l	0.63	197,099.02	1.827E+00	Pulse	0.50	3
Fe			1	4769.696	ug/l	1.31	34,729,798.67	3.220E+02	Analog	0.50	3
Co			1	49.090	ug/l	0.53	814,877.62	7.554E+00	Pulse	0.50	3
Ni			1	49.073	ug/l	0.60	226,952.01	2.104E+00	Pulse	0.50	3
Cu			1	49.723	ug/l	1.08	632,045.52	5.859E+00	Pulse	0.50	3
Zn			1	48.841	ug/l	1.19	83,665.87	5.124E-01	Pulse	1.00	3
Cd			1	48.352	ug/l	0.86	146,242.75	8.957E-01	Pulse	0.50	3
Al			1	4885.790	ug/l	0.46	603,439.46	4.710E+00	Pulse	1.00	3
Se			1	48.804	ug/l	0.36	3,188.82	1.953E-02	Pulse	3.00	3
Sb			1	47.849	ug/l	0.70	352,937.41	2.162E+00	Pulse	1.00	3
Se			1	48.578	ug/l	1.77	1,612.40	9.876E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,558,660.42	0.29	98.0	Pulse	0.50	3
1	Sc		128,134.06	1.22	100.6	Pulse	0.30	3
1	Ge		107,879.43	1.03	99.2	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,104,901.73	0.27	98.3	Pulse	0.30	3
1	Tb		4,395,825.67	0.84	100.0	Pulse	0.50	3
1	Lu		2,656,190.67	0.82	99.9	Pulse	0.50	3
1	Ge		163,282.74	0.98	99.4	Pulse	0.30	3
1	Te		4.67	24.74		Pulse	0.50	3
1	Li		707.79	6.27	114.6	Pulse	0.30	3

Quantitation Report

File Name	009CALS.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 9:44
Sample Name	CALSTD-6
Sample Type	CalStd
Comment	
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	99.166	ug/l	1.99	926,961.44	8.677E+00	Pulse	0.50	3
As			1	98.413	ug/l	1.99	109,128.87	1.022E+00	Pulse	1.00	3
Mo			1	97.891	ug/l	1.13	651,145.17	4.020E+00	Pulse	0.50	3
Pb			1	96.329	ug/l	0.76	3,867,003.17	1.103E+00	Pulse	1.00	3
Be			1	98.608	ug/l	2.22	5,115.81	4.005E-02	Pulse	2.00	3
Ag			1	100.248	ug/l	1.25	2,296,020.42	1.418E+01	Pulse	0.50	3
Ba			1	98.060	ug/l	1.48	253,095.50	2.312E-01	Pulse	0.50	3
Tl			1	97.068	ug/l	0.12	5,685,994.17	1.622E+00	Mix	0.50	3
Sn			1	99.534	ug/l	1.77	552,463.31	5.047E-01	Pulse	0.30	3
Sr			1	99.461	ug/l	1.43	471,240.64	4.305E-01	Pulse	0.50	3
[Pb]			1	97.851	ug/l	0.28	1,832,091.38	5.227E-01	Pulse	0.50	3
Ca			1	9824.388	ug/l	1.85	198,503.28	1.554E+00	Pulse	0.50	3
Ti			1	98.898	ug/l	3.55	16,831.91	1.318E-01	Pulse	0.50	3
Na			1	9820.663	ug/l	1.43	10,160,518.33	7.953E+01	Analog	1.00	3
Mg			1	9783.986	ug/l	1.74	4,354,939.83	3.409E+01	Pulse	1.00	3
K			1	9846.079	ug/l	1.40	3,809,258.50	2.982E+01	Pulse	1.00	3
V			1	97.994	ug/l	1.39	704,416.96	5.514E+00	Pulse	0.50	3
Mn			1	98.635	ug/l	1.95	400,190.71	3.746E+00	Pulse	0.50	3
Fe			1	9801.300	ug/l	2.21	70,663,541.33	6.615E+02	Analog	0.50	3
Co			1	99.534	ug/l	2.52	1,636,052.58	1.532E+01	Pulse	0.50	3
Ni			1	99.878	ug/l	1.75	456,812.77	4.276E+00	Pulse	0.50	3
Cu			1	100.110	ug/l	1.84	1,252,615.96	1.173E+01	Pulse	0.50	3
Zn			1	100.038	ug/l	0.78	169,266.68	1.045E+00	Pulse	1.00	3
Cd			1	98.632	ug/l	1.24	295,935.38	1.827E+00	Pulse	0.50	3
Al			1	9885.432	ug/l	1.66	1,216,994.46	9.526E+00	Pulse	1.00	3
Se			1	98.752	ug/l	1.81	6,385.73	3.942E-02	Pulse	3.00	3
Sb			1	98.211	ug/l	1.17	718,604.89	4.436E+00	Pulse	1.00	3
Se			1	98.027	ug/l	1.25	3,214.16	1.984E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,504,840.33	0.60	96.5	Pulse	0.50	3
1	Sc		127,776.37	1.44	100.3	Pulse	0.30	3
1	Ge		106,845.62	1.28	98.3	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,094,754.82	1.03	97.4	Pulse	0.30	3
1	Tb		4,412,984.33	2.19	100.4	Mix	0.50	3
1	Lu		2,657,347.42	1.00	100.0	Pulse	0.50	3
1	Ge		161,993.65	1.60	98.7	Pulse	0.30	3
1	Te		6.67	75.50		Pulse	0.50	3
1	Li		680.02	6.81	110.1	Pulse	0.30	3

Quantitation Report

File Name	010CALS.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 9:48
Sample Name	CALSTD-7
Sample Type	CalStd
Comment	
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	200.867	ug/l	0.52	1,824,183.83	1.757E+01	Pulse	0.50	3
As			1	201.292	ug/l	0.80	216,948.79	2.089E+00	Pulse	1.00	3
Mo			1	201.739	ug/l	0.60	1,293,395.75	8.284E+00	Pulse	0.50	3
Pb			1	202.683	ug/l	1.07	7,685,059.33	2.321E+00	Analog	1.00	3
Be			1	201.308	ug/l	1.51	10,114.51	8.175E-02	Pulse	2.00	3
Ag			1	163.569	ug/l	1.01	3,611,166.25	2.313E+01	Pulse	0.50	3
Ba			1	201.504	ug/l	1.01	501,788.83	4.751E-01	Pulse	0.50	3
Tl			1	202.199	ug/l	1.15	11,188,099.33	3.379E+00	Analog	0.50	3
Sn			1	200.573	ug/l	0.65	1,073,681.17	1.016E+00	Pulse	0.30	3
Sr			1	200.672	ug/l	0.29	917,010.29	8.682E-01	Pulse	0.50	3
[Pb]			1	201.712	ug/l	1.35	3,567,165.83	1.077E+00	Pulse	0.50	3
Ca			1	20125.840	ug/l	1.68	393,673.49	3.182E+00	Pulse	0.50	3
Ti			1	201.094	ug/l	0.94	33,151.98	2.679E-01	Pulse	0.50	3
Na			1	20144.725	ug/l	1.40	20,175,153.33	1.631E+02	Analog	1.00	3
Mg			1	20153.192	ug/l	1.97	8,685,143.33	7.020E+01	Analog	1.00	3
K			1	20117.323	ug/l	1.22	7,519,611.00	6.077E+01	Analog	1.00	3
V			1	201.539	ug/l	1.25	1,402,496.29	1.134E+01	Pulse	0.50	3
Mn			1	201.133	ug/l	0.68	793,138.42	7.638E+00	Pulse	0.50	3
Fe			1	20154.889	ug/l	0.84	141,231,024.00	1.360E+03	Analog	0.50	3
Co			1	200.422	ug/l	0.32	3,202,269.50	3.084E+01	Pulse	0.50	3
Ni			1	200.255	ug/l	0.59	889,662.15	8.568E+00	Pulse	0.50	3
Cu			1	199.960	ug/l	0.39	2,424,679.83	2.335E+01	Pulse	0.50	3
Zn			1	200.226	ug/l	0.47	325,882.98	2.087E+00	Pulse	1.00	3
Cd			1	201.072	ug/l	0.49	581,565.50	3.725E+00	Pulse	0.50	3
Al			1	20082.915	ug/l	1.39	2,394,010.92	1.935E+01	Pulse	1.00	3
Se			1	200.899	ug/l	0.05	12,507.53	8.010E-02	Pulse	3.00	3
Sb			1	201.410	ug/l	0.27	1,420,520.21	9.098E+00	Pulse	1.00	3
Se			1	201.321	ug/l	0.92	6,349.06	4.066E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,310,974.67	1.15	91.2	Pulse	0.50	3
1	Sc		123,751.49	2.09	97.2	Pulse	0.30	3
1	Ge		103,840.57	0.81	95.5	Pulse	0.30	3
1	In		1,056,273.99	1.40	93.9	Pulse	0.30	3
1	Tb		4,235,600.67	0.26	96.4	Pulse	0.50	3
1	Lu		2,576,277.08	1.14	96.9	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		156,142.10	1.15	95.1	Pulse	0.30	3
1	Te		22.00	59.61		Pulse	0.50	3
1	Li		606.68	5.79	98.2	Pulse	0.30	3

Quantitation Report

File Name	011HSAG.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 9:52
Sample Name	HSTD (Ag)
Sample Type	HSTD _Ag
Comment	=std 5
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	98.130	ug/l	0.68	887,102.96	8.587E+00	Pulse	0.50	3
As			1	98.574	ug/l	0.61	105,710.13	1.023E+00	Pulse	1.00	3
Mo			1	98.384	ug/l	0.32	630,760.88	4.040E+00	Pulse	0.50	3
Pb			1	95.828	ug/l	0.41	3,746,549.33	1.098E+00	Pulse	1.00	3
Be			1	99.574	ug/l	2.75	4,970.61	4.044E-02	Pulse	2.00	3
Ag			1	100.746	ug/l	1.32	2,224,125.58	1.425E+01	Pulse	0.50	3
Ba			1	96.621	ug/l	0.55	243,509.91	2.278E-01	Pulse	0.50	3
Tl			1	96.385	ug/l	0.20	5,498,656.17	1.611E+00	Pulse	0.50	3
Sn			1	99.161	ug/l	1.19	537,402.23	5.028E-01	Pulse	0.30	3
Sr			1	98.090	ug/l	1.26	453,781.36	4.246E-01	Pulse	0.50	3
[Pb]			1	97.097	ug/l	0.48	1,770,544.46	5.187E-01	Pulse	0.50	3
Ca			1	9740.318	ug/l	1.96	189,367.62	1.540E+00	Pulse	0.50	3
Ti			1	99.992	ug/l	2.36	16,376.87	1.332E-01	Pulse	0.50	3
Na			1	9858.257	ug/l	1.20	9,814,233.33	7.983E+01	Analog	1.00	3
Mg			1	9737.631	ug/l	1.48	4,170,687.67	3.393E+01	Pulse	1.00	3
K			1	9764.354	ug/l	1.35	3,635,091.50	2.957E+01	Pulse	1.00	3
V			1	97.797	ug/l	1.63	676,436.27	5.503E+00	Pulse	0.50	3
Mn			1	98.004	ug/l	0.56	384,547.51	3.722E+00	Pulse	0.50	3
Fe			1	9843.933	ug/l	1.33	68,634,384.00	6.644E+02	Analog	0.50	3
Co			1	99.306	ug/l	1.16	1,578,622.79	1.528E+01	Pulse	0.50	3
Ni			1	99.341	ug/l	1.41	439,388.05	4.253E+00	Pulse	0.50	3
Cu			1	99.780	ug/l	0.62	1,207,414.87	1.169E+01	Pulse	0.50	3
Zn			1	99.317	ug/l	0.32	161,979.13	1.037E+00	Pulse	1.00	3
Cd			1	98.965	ug/l	0.68	286,214.58	1.833E+00	Pulse	0.50	3
Al			1	9832.733	ug/l	1.49	1,164,801.92	9.475E+00	Pulse	1.00	3
Se			1	98.978	ug/l	0.42	6,168.89	3.951E-02	Pulse	3.00	3
Sb			1	97.990	ug/l	0.77	691,070.96	4.426E+00	Pulse	1.00	3
Se			1	97.668	ug/l	1.50	3,086.81	1.977E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,413,393.08	0.28	94.0	Pulse	0.50	3
1	Sc		122,949.07	1.30	96.5	Pulse	0.30	3
1	Ge		103,315.90	0.70	95.0	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,068,905.69	0.74	95.1	Pulse	0.30	3
1	Tb		4,267,733.33	0.57	97.1	Pulse	0.50	3
1	Lu		2,556,230.75	0.43	96.2	Pulse	0.50	3
1	Ge		156,127.35	0.22	95.1	Pulse	0.30	3
1	Te		8.67	93.26		Pulse	0.50	3
1	Li		627.79	12.11	101.6	Pulse	0.30	3

Quantitation Report

File Name	012HSTD.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 9:55
Sample Name	HSTD
Sample Type	HSTD
Comment	=std 6
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	203.729	ug/l	4.02	1,781,155.42	1.782E+01	Pulse	0.50	3
As			1	205.639	ug/l	3.30	213,399.68	2.134E+00	Pulse	1.00	3
Mo			1	204.896	ug/l	4.75	1,270,607.63	8.413E+00	Pulse	0.50	3
Pb			1	204.920	ug/l	3.72	7,569,567.67	2.347E+00	Analog	1.00	3
Be			1	209.282	ug/l	2.13	10,098.00	8.499E-02	Pulse	2.00	3
Ag			1	167.026	ug/l	4.82	3,566,745.33	2.362E+01	Pulse	0.50	3
Ba			1	202.706	ug/l	4.07	487,509.84	4.779E-01	Pulse	0.50	3
Tl			1	204.578	ug/l	4.17	11,026,781.00	3.419E+00	Analog	0.50	3
Sn			1	205.598	ug/l	4.66	1,062,635.52	1.042E+00	Pulse	0.30	3
Sr			1	204.605	ug/l	4.42	902,844.67	8.852E-01	Pulse	0.50	3
[Pb]			1	202.674	ug/l	3.69	3,491,780.50	1.083E+00	Pulse	0.50	3
Ca			1	20497.995	ug/l	2.83	385,005.65	3.241E+00	Pulse	0.50	3
Ti			1	207.517	ug/l	2.27	32,844.82	2.764E-01	Pulse	0.50	3
Na			1	20650.929	ug/l	3.55	19,855,595.33	1.672E+02	Analog	1.00	3
Mg			1	20579.683	ug/l	3.65	8,515,155.00	7.169E+01	Analog	1.00	3
K			1	20547.845	ug/l	2.84	7,374,254.17	6.207E+01	Analog	1.00	3
V			1	204.469	ug/l	2.96	1,366,179.13	1.150E+01	Pulse	0.50	3
Mn			1	202.912	ug/l	3.37	770,422.67	7.706E+00	Pulse	0.50	3
Fe			1	20549.417	ug/l	3.96	138,627,829.33	1.387E+03	Analog	0.50	3
Co			1	203.524	ug/l	3.40	3,130,954.25	3.132E+01	Pulse	0.50	3
Ni			1	202.228	ug/l	3.40	865,036.10	8.652E+00	Pulse	0.50	3
Cu			1	203.184	ug/l	3.19	2,372,156.83	2.373E+01	Pulse	0.50	3
Zn			1	202.424	ug/l	4.22	318,700.99	2.110E+00	Pulse	1.00	3
Cd			1	203.264	ug/l	5.13	568,573.69	3.765E+00	Pulse	0.50	3
Al			1	20518.969	ug/l	3.41	2,348,335.17	1.977E+01	Pulse	1.00	3
Se			1	202.554	ug/l	4.24	12,198.88	8.076E-02	Pulse	3.00	3
Sb			1	202.552	ug/l	4.61	1,381,806.33	9.149E+00	Pulse	1.00	3
Se			1	200.499	ug/l	4.35	6,116.98	4.050E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,228,643.08	4.07	88.9	Pulse	0.50	3
1	Sc		118,870.50	3.05	93.3	Pulse	0.30	3
1	Ge		100,054.14	3.33	92.0	Pulse	0.30	3
1	In		1,021,199.79	4.19	90.8	Pulse	0.30	3
1	Tb		4,113,429.17	3.74	93.6	Pulse	0.50	3
1	Lu		2,478,954.50	4.62	93.3	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		151,236.38	4.50	92.1	Pulse	0.30	3
1	Te		24.00	14.43		Pulse	0.50	3
1	Li		628.90	8.45	101.8	Pulse	0.30	3

Quantitation Report

File Name	013_ICV.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 9:59
Sample Name	ICV
Sample Type	ICV
Comment	
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	101.967	ug/l	1.53	922,440.38	8.922E+00	Pulse	0.50	3
As			1	101.351	ug/l	1.60	108,766.24	1.052E+00	Pulse	1.00	3
Mo			1	99.884	ug/l	1.46	645,058.60	4.102E+00	Pulse	0.50	3
Pb			1	99.336	ug/l	1.13	3,849,864.67	1.138E+00	Pulse	1.00	3
Be			1	102.339	ug/l	2.55	5,186.83	4.156E-02	Pulse	2.00	3
Ag			1	50.703	ug/l	0.68	1,127,633.75	7.170E+00	Pulse	0.50	3
Ba			1	100.130	ug/l	0.21	249,672.22	2.361E-01	Pulse	0.50	3
Tl			1	101.403	ug/l	2.40	5,734,148.67	1.695E+00	Mix	0.50	3
Sn			1	104.101	ug/l	0.96	558,148.50	5.278E-01	Pulse	0.30	3
Sr			1	104.751	ug/l	1.25	479,416.68	4.534E-01	Pulse	0.50	3
[Pb]			1	100.634	ug/l	0.75	1,819,093.83	5.376E-01	Pulse	0.50	3
Ca			1	9973.007	ug/l	2.40	196,847.26	1.577E+00	Pulse	0.50	3
Ti			1	101.371	ug/l	4.92	16,849.94	1.351E-01	Pulse	0.50	3
Na			1	10146.789	ug/l	2.15	10,255,059.67	8.217E+01	Analog	1.00	3
Mg			1	10369.069	ug/l	1.63	4,509,180.50	3.613E+01	Mix	1.00	3
K			1	9882.865	ug/l	1.82	3,735,249.83	2.993E+01	Pulse	1.00	3
V			1	99.594	ug/l	2.86	699,301.56	5.604E+00	Pulse	0.50	3
Mn			1	99.617	ug/l	1.47	391,165.77	3.783E+00	Pulse	0.50	3
Fe			1	10126.972	ug/l	1.31	70,663,104.00	6.835E+02	Analog	0.50	3
Co			1	102.819	ug/l	1.33	1,635,751.33	1.582E+01	Pulse	0.50	3
Ni			1	101.298	ug/l	1.92	448,355.20	4.337E+00	Pulse	0.50	3
Cu			1	106.287	ug/l	2.26	1,286,542.58	1.244E+01	Pulse	0.50	3
Zn			1	103.218	ug/l	1.25	169,546.67	1.078E+00	Pulse	1.00	3
Cd			1	101.654	ug/l	1.35	296,146.05	1.883E+00	Pulse	0.50	3
Al			1	10212.210	ug/l	2.35	1,228,148.17	9.841E+00	Pulse	1.00	3
Se			1	101.973	ug/l	0.96	6,401.85	4.070E-02	Pulse	3.00	3
Sb			1	101.708	ug/l	1.04	722,569.41	4.594E+00	Pulse	1.00	3
Se			1	102.117	ug/l	0.77	3,250.50	2.067E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,383,918.42	1.12	93.2	Pulse	0.50	3
1	Sc		124,848.42	2.24	98.0	Pulse	0.30	3
1	Ge		103,403.97	1.45	95.1	Pulse	0.30	3
1	In		1,057,532.46	0.80	94.0	Pulse	0.30	3
1	Tb		4,231,910.25	1.50	96.3	Pulse	0.50	3
1	Lu		2,536,978.17	1.77	95.4	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		157,286.46	1.20	95.8	Pulse	0.30	3
1	Te		1.33	86.60		Pulse	0.50	3
1	Li		762.24	9.64	123.4	Pulse	0.30	3

Quantitation Report

File Name	014_ICB.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 10:03
Sample Name	ICB
Sample Type	ICB
Comment	
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.018	ug/l	42.16	1,030.70	9.940E-03	Pulse	0.50	3
As			1	0.023	ug/l	42.57	39.67	3.834E-04	Pulse	1.00	3
Mo			1	0.191	ug/l	17.36	1,295.38	8.274E-03	Pulse	0.50	3
Pb			1	0.038	ug/l	16.22	2,330.83	6.674E-04	Pulse	1.00	3
Be			1	0.068	ug/l	49.58	3.83	3.163E-05	Pulse	2.00	3
Ag			1	0.011	ug/l	25.06	276.00	1.768E-03	Pulse	0.50	3
Ba			1	0.010	ug/l	69.27	44.00	4.120E-05	Pulse	0.50	3
Tl			1	0.069	ug/l	13.37	4,135.85	1.184E-03	Pulse	0.50	3
Sn			1	0.111	ug/l	0.88	1,143.38	1.066E-03	Pulse	0.30	3
Sr			1	0.016	ug/l	80.75	464.68	4.334E-04	Pulse	0.50	3
[Pb]			1	0.035	ug/l	23.08	1,082.70	3.101E-04	Pulse	0.50	3
Ca			1	-0.423	ug/l	-227.32	115.33	9.479E-04	Pulse	0.50	3
Ti			1	0.048	ug/l	112.47	14.00	1.151E-04	Pulse	0.50	3
Na			1	3.148	ug/l	24.98	11,441.27	9.394E-02	Pulse	1.00	3
Mg			1	0.829	ug/l	107.13	1,875.76	1.543E-02	Pulse	1.00	3
K			1	0.312	ug/l	620.32	16,957.94	1.392E-01	Pulse	1.00	3
V			1	-0.007	ug/l	-99.23	460.68	3.782E-03	Pulse	0.50	3
Mn			1	0.013	ug/l	62.39	117.33	1.134E-03	Pulse	0.50	3
Fe			1	1.872	ug/l	44.72	23,611.62	2.282E-01	Pulse	0.50	3
Co			1	0.019	ug/l	53.83	345.34	3.346E-03	Pulse	0.50	3
Ni			1	-0.017	ug/l	-86.48	506.68	4.889E-03	Pulse	0.50	3
Cu			1	-0.142	ug/l	-9.33	5,580.16	5.379E-02	Pulse	0.50	3
Zn			1	0.097	ug/l	7.45	846.35	5.413E-03	Pulse	1.00	3
Cd			1	0.016	ug/l	61.97	48.67	3.124E-04	Pulse	0.50	3
Al			1	0.305	ug/l	309.45	413.34	3.402E-03	Pulse	1.00	3
Se			1	0.004	ug/l	606.36	14.78	9.458E-05	Pulse	3.00	3
Sb			1	0.037	ug/l	13.33	301.33	1.929E-03	Pulse	1.00	3
Se			1	0.158	ug/l	41.71	18.22	1.165E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,496,166.42	1.56	96.3	Pulse	0.50	3
1	Sc		121,911.04	2.33	95.7	Pulse	0.30	3

Quantitation Report

1	Ge		103,770.89	1.77	95.4	Pulse	0.30	3
1	In		1,072,759.82	1.83	95.4	Pulse	0.30	3
1	Tb		4,254,667.08	1.86	96.8	Pulse	0.50	3
1	Lu		2,556,461.92	1.90	96.2	Pulse	0.50	3
1	Ge		156,377.60	1.15	95.2	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		676.68	1.97	109.5	Pulse	0.30	3

Quantitation Report

File Name 015LCCV.d
File Path D:\2020\03-March\xa033020m1.b
Method File
Method Path
Acq Time 3/30/2020 10:07
Sample Name CRIA
Sample Type CRIA
Comment =std 2
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 3/30/2020 9:49
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.987	ug/l	0.51	9,949.23	9.466E-02	Pulse	0.50	3
As			1	0.980	ug/l	3.49	1,084.70	1.032E-02	Pulse	1.00	3
Mo			1	1.043	ug/l	6.54	6,891.96	4.324E-02	Pulse	0.50	3
Pb			1	0.983	ug/l	1.32	40,684.82	1.149E-02	Pulse	1.00	3
Be			1	1.018	ug/l	8.96	52.00	4.175E-04	Pulse	2.00	3
Ag			1	1.041	ug/l	1.60	23,507.54	1.474E-01	Pulse	0.50	3
Ba			1	0.984	ug/l	5.42	2,544.19	2.337E-03	Pulse	0.50	3
Tl			1	0.975	ug/l	0.99	57,819.08	1.633E-02	Pulse	0.50	3
Sn			1	1.021	ug/l	5.20	6,178.85	5.674E-03	Pulse	0.30	3
Sr			1	0.995	ug/l	0.92	5,084.70	4.669E-03	Pulse	0.50	3
[Pb]			1	0.983	ug/l	2.85	19,029.93	5.374E-03	Pulse	0.50	3
Ca			1	111.109	ug/l	5.96	2,312.81	1.858E-02	Pulse	0.50	3
Ti			1	0.899	ug/l	9.21	155.33	1.248E-03	Pulse	0.50	3
Na			1	101.323	ug/l	1.39	110,609.54	8.883E-01	Pulse	1.00	3
Mg			1	99.613	ug/l	1.41	44,762.09	3.595E-01	Pulse	1.00	3
K			1	97.626	ug/l	0.82	53,858.95	4.325E-01	Pulse	1.00	3
V			1	0.925	ug/l	1.62	6,995.93	5.618E-02	Pulse	0.50	3
Mn			1	1.028	ug/l	2.22	4,170.46	3.968E-02	Pulse	0.50	3
Fe			1	98.761	ug/l	1.94	711,109.69	6.766E+00	Pulse	0.50	3
Co			1	1.017	ug/l	1.39	16,490.37	1.569E-01	Pulse	0.50	3
Ni			1	1.005	ug/l	2.96	5,108.02	4.860E-02	Pulse	0.50	3
Cu			1	1.216	ug/l	3.32	22,262.16	2.118E-01	Pulse	0.50	3
Zn			1	1.582	ug/l	3.74	3,326.29	2.086E-02	Pulse	1.00	3
Cd			1	0.992	ug/l	2.28	2,932.91	1.839E-02	Pulse	0.50	3
Al			1	101.498	ug/l	2.95	12,560.95	1.009E-01	Pulse	1.00	3
Se			1	0.826	ug/l	9.51	67.33	4.220E-04	Pulse	3.00	3
Sb			1	0.960	ug/l	1.79	6,953.99	4.361E-02	Pulse	1.00	3
Se			1	1.078	ug/l	15.95	48.11	3.018E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,541,078.33	0.11	97.5	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Sc		124,533.23	1.21	97.8	Pulse	0.30	3
1	Ge		105,109.93	0.84	96.7	Pulse	0.30	3
1	In		1,089,040.90	0.67	96.8	Pulse	0.30	3
1	Tb		4,299,814.83	1.57	97.8	Pulse	0.50	3
1	Lu		2,567,509.33	0.66	96.6	Pulse	0.50	3
1	Ge		159,476.78	1.22	97.1	Pulse	0.30	3
1	Te		0.67	173.21		Pulse	0.50	3
1	Li		760.02	12.19	123.0	Pulse	0.30	3

Quantitation Report

File Name	016ICSA.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 10:11
Sample Name	ICSA
Sample Type	ICSA
Comment	
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.327	ug/l	2.61	3,709.70	3.692E-02	Pulse	0.50	3
As			1	0.079	ug/l	33.87	97.00	9.674E-04	Pulse	1.00	3
Mo			1	2043.814	ug/l	1.96	12,539,706.33	8.392E+01	Analog	0.50	3
Pb			1	0.131	ug/l	11.92	5,334.51	1.741E-03	Pulse	1.00	3
Be			1	0.023	ug/l	212.47	1.67	1.367E-05	Pulse	2.00	3
Ag			1	0.022	ug/l	10.99	486.01	3.254E-03	Pulse	0.50	3
Ba			1	0.187	ug/l	4.88	458.68	4.591E-04	Pulse	0.50	3
Tl			1	0.021	ug/l	8.10	1,156.71	3.772E-04	Pulse	0.50	3
Sn			1	0.357	ug/l	11.84	2,310.16	2.312E-03	Pulse	0.30	3
Sr			1	0.904	ug/l	2.49	4,267.83	4.272E-03	Pulse	0.50	3
[Pb]			1	0.132	ug/l	12.76	2,536.87	8.279E-04	Pulse	0.50	3
Ca			1	94251.026	ug/l	1.25	1,819,779.67	1.490E+01	Pulse	0.50	3
Ti			1	2034.740	ug/l	1.84	331,033.34	2.710E+00	Pulse	0.50	3
Na			1	98967.798	ug/l	0.98	97,824,528.00	8.008E+02	Analog	1.00	3
Mg			1	97895.077	ug/l	1.40	41,649,132.00	3.410E+02	Analog	1.00	3
K			1	99727.517	ug/l	1.48	36,734,824.00	3.007E+02	Analog	1.00	3
V			1	0.018	ug/l	9.27	633.34	5.184E-03	Pulse	0.50	3
Mn			1	0.666	ug/l	1.28	2,606.85	2.595E-02	Pulse	0.50	3
Fe			1	99221.430	ug/l	2.38	672,558,336.00	6.695E+03	Analog	0.50	3
Co			1	0.325	ug/l	3.37	5,074.67	5.052E-02	Pulse	0.50	3
Ni			1	0.327	ug/l	8.02	1,969.44	1.960E-02	Pulse	0.50	3
Cu			1	0.306	ug/l	12.12	10,642.96	1.060E-01	Pulse	0.50	3
Zn			1	2.230	ug/l	0.29	4,124.45	2.760E-02	Pulse	1.00	3
Cd			1	0.398	ug/l	2.11	1,106.04	7.401E-03	Pulse	0.50	3
Al			1	98874.966	ug/l	1.58	11,634,967.00	9.525E+01	Analog	1.00	3
Se			1	0.140	ug/l	42.13	22.22	1.485E-04	Pulse	3.00	3
Sb			1	0.175	ug/l	1.85	1,219.37	8.160E-03	Pulse	1.00	3
Se			1	0.093	ug/l	55.10	15.44	1.033E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,066,911.42	1.23	84.4	Pulse	0.50	3
1	Sc		122,160.71	0.66	95.9	Pulse	0.30	3
1	Ge		100,467.38	1.25	92.4	Pulse	0.30	3
1	In		999,009.89	0.39	88.8	Pulse	0.30	3
1	Tb		4,071,499.25	0.85	92.6	Pulse	0.50	3
1	Lu		2,467,514.50	1.12	92.8	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		149,446.68	1.10	91.0	Pulse	0.30	3
1	Te		0.67	173.21		Pulse	0.50	3
1	Li		571.12	9.94	92.4	Pulse	0.30	3

Quantitation Report

File Name 017ICSB.d
File Path D:\2020\03-March\xa033020m1.b
Method File
Method Path
Acq Time 3/30/2020 10:15
Sample Name ICSAB
Sample Type ICSAB
Comment
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 3/30/2020 9:49
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	19.869	ug/l	0.39	175,134.39	1.745E+00	Pulse	0.50	3
As			1	19.553	ug/l	0.77	20,379.16	2.031E-01	Pulse	1.00	3
Mo			1	1995.087	ug/l	0.08	12,358,520.33	8.192E+01	Analog	0.50	3
Pb			1	0.149	ug/l	8.91	5,940.05	1.940E-03	Pulse	1.00	3
Be			1	0.057	ug/l	19.39	3.33	2.714E-05	Pulse	2.00	3
Ag			1	18.370	ug/l	0.90	391,905.29	2.598E+00	Pulse	0.50	3
Ba			1	0.169	ug/l	8.75	416.01	4.155E-04	Pulse	0.50	3
Tl			1	0.013	ug/l	8.29	787.35	2.571E-04	Pulse	0.50	3
Sn			1	0.315	ug/l	8.12	2,099.02	2.097E-03	Pulse	0.30	3
Sr			1	0.876	ug/l	5.45	4,154.47	4.150E-03	Pulse	0.50	3
[Pb]			1	0.141	ug/l	11.36	2,683.56	8.767E-04	Pulse	0.50	3
Ca			1	92167.120	ug/l	0.73	1,787,540.88	1.457E+01	Pulse	0.50	3
Ti			1	1988.542	ug/l	0.36	324,978.87	2.649E+00	Pulse	0.50	3
Na			1	96523.532	ug/l	0.52	95,835,546.67	7.810E+02	Analog	1.00	3
Mg			1	95869.627	ug/l	0.77	40,970,988.00	3.339E+02	Analog	1.00	3
K			1	97957.963	ug/l	0.84	36,244,865.33	2.954E+02	Analog	1.00	3
V			1	0.028	ug/l	21.44	702.68	5.725E-03	Pulse	0.50	3
Mn			1	19.912	ug/l	0.20	75,941.30	7.568E-01	Pulse	0.50	3
Fe			1	97830.008	ug/l	0.97	662,475,925.33	6.602E+03	Analog	0.50	3
Co			1	19.584	ug/l	0.45	302,434.43	3.014E+00	Pulse	0.50	3
Ni			1	19.259	ug/l	0.81	83,197.48	8.291E-01	Pulse	0.50	3
Cu			1	18.895	ug/l	0.31	227,803.63	2.270E+00	Pulse	0.50	3
Zn			1	20.493	ug/l	0.62	32,821.47	2.176E-01	Pulse	1.00	3
Cd			1	18.864	ug/l	1.09	52,721.33	3.495E-01	Pulse	0.50	3
Al			1	96605.307	ug/l	0.59	11,418,927.00	9.306E+01	Analog	1.00	3
Se			1	0.093	ug/l	39.84	19.56	1.297E-04	Pulse	3.00	3
Sb			1	0.168	ug/l	5.35	1,187.37	7.870E-03	Pulse	1.00	3
Se			1	0.092	ug/l	37.02	15.56	1.031E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,061,560.00	0.33	84.3	Pulse	0.50	3
1	Sc		122,706.43	1.26	96.4	Pulse	0.30	3
1	Ge		100,349.90	0.35	92.3	Pulse	0.30	3
1	In		1,001,140.41	0.34	89.0	Pulse	0.30	3
1	Tb		4,115,049.50	0.73	93.6	Pulse	0.50	3
1	Lu		2,514,255.25	0.35	94.6	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		150,863.40	0.41	91.9	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		582.23	7.27	94.2	Pulse	0.30	3

Quantitation Report

File Name	018CCVA.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 10:18
Sample Name	CCV (Ag)
Sample Type	CCV_Ag
Comment	=std 4
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	48.140	ug/l	0.91	433,577.02	4.217E+00	Pulse	0.50	3
As			1	48.501	ug/l	1.37	51,771.34	5.035E-01	Pulse	1.00	3
Mo			1	49.215	ug/l	0.62	315,010.86	2.021E+00	Pulse	0.50	3
Pb			1	46.901	ug/l	0.56	1,841,546.33	5.373E-01	Pulse	1.00	3
Be			1	46.930	ug/l	0.44	2,310.96	1.906E-02	Pulse	2.00	3
Ag			1	50.286	ug/l	0.81	1,108,240.00	7.111E+00	Pulse	0.50	3
Ba			1	48.068	ug/l	0.88	120,605.38	1.133E-01	Pulse	0.50	3
Tl			1	47.389	ug/l	0.77	2,714,492.92	7.920E-01	Pulse	0.50	3
Sn			1	48.057	ug/l	0.49	259,550.48	2.439E-01	Pulse	0.30	3
Sr			1	47.566	ug/l	1.04	219,255.76	2.061E-01	Pulse	0.50	3
[Pb]			1	47.684	ug/l	0.85	873,227.67	2.548E-01	Pulse	0.50	3
Ca			1	4867.495	ug/l	1.10	93,396.45	7.703E-01	Pulse	0.50	3
Ti			1	48.427	ug/l	2.08	7,825.59	6.455E-02	Pulse	0.50	3
Na			1	4864.118	ug/l	0.92	4,779,792.00	3.942E+01	Analog	1.00	3
Mg			1	4774.667	ug/l	1.01	2,017,620.63	1.664E+01	Pulse	1.00	3
K			1	4819.500	ug/l	0.52	1,777,992.63	1.466E+01	Pulse	1.00	3
V			1	48.327	ug/l	1.26	329,913.71	2.721E+00	Pulse	0.50	3
Mn			1	47.958	ug/l	1.79	187,304.12	1.822E+00	Pulse	0.50	3
Fe			1	4923.311	ug/l	0.62	34,171,014.67	3.323E+02	Analog	0.50	3
Co			1	49.077	ug/l	1.09	776,487.52	7.552E+00	Pulse	0.50	3
Ni			1	49.371	ug/l	1.41	217,623.50	2.117E+00	Pulse	0.50	3
Cu			1	49.996	ug/l	1.05	605,723.50	5.891E+00	Pulse	0.50	3
Zn			1	48.969	ug/l	0.08	80,073.48	5.138E-01	Pulse	1.00	3
Cd			1	48.990	ug/l	0.25	141,440.55	9.075E-01	Pulse	0.50	3
Al			1	4838.465	ug/l	1.28	565,457.40	4.664E+00	Pulse	1.00	3
Se			1	48.199	ug/l	0.42	3,006.24	1.929E-02	Pulse	3.00	3
Sb			1	48.334	ug/l	0.38	340,304.57	2.183E+00	Pulse	1.00	3
Se			1	48.503	ug/l	1.59	1,536.84	9.861E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,427,328.67	0.87	94.4	Pulse	0.50	3
1	Sc		121,244.97	0.65	95.2	Pulse	0.30	3
1	Ge		102,830.72	1.30	94.6	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,064,063.67	0.76	94.6	Pulse	0.30	3
1	Tb		4,265,959.50	0.29	97.0	Pulse	0.50	3
1	Lu		2,553,481.17	0.28	96.1	Pulse	0.50	3
1	Ge		155,856.41	0.30	94.9	Pulse	0.30	3
1	Te		2.67	86.60		Pulse	0.50	3
1	Li		694.46	5.04	112.4	Pulse	0.30	3

Quantitation Report

File Name 019_CCV.d
File Path D:\2020\03-March\xa033020m1.b
Method File
Method Path
Acq Time 3/30/2020 10:22
Sample Name CCV
Sample Type CCV
Comment =std 5
Prep Dilution 1.000
Auto Dilution N/A
Total Dilution 1.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 3/30/2020 9:49
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	98.516	ug/l	0.45	890,353.85	8.620E+00	Pulse	0.50	3
As			1	98.813	ug/l	0.49	105,937.15	1.026E+00	Pulse	1.00	3
Mo			1	99.385	ug/l	1.48	630,938.08	4.081E+00	Pulse	0.50	3
Pb			1	97.746	ug/l	0.31	3,715,985.75	1.120E+00	Pulse	1.00	3
Be			1	97.861	ug/l	0.56	4,810.40	3.974E-02	Pulse	2.00	3
Ag			1	102.250	ug/l	1.01	2,235,344.25	1.446E+01	Pulse	0.50	3
Ba			1	99.452	ug/l	0.55	244,815.05	2.345E-01	Pulse	0.50	3
Tl			1	98.378	ug/l	0.71	5,457,322.67	1.644E+00	Pulse	0.50	3
Sn			1	100.210	ug/l	0.22	530,475.55	5.081E-01	Pulse	0.30	3
Sr			1	99.103	ug/l	0.09	447,827.07	4.289E-01	Pulse	0.50	3
[Pb]			1	99.470	ug/l	0.66	1,763,679.25	5.314E-01	Pulse	0.50	3
Ca			1	9940.688	ug/l	0.15	190,297.46	1.572E+00	Pulse	0.50	3
Ti			1	100.524	ug/l	2.80	16,210.06	1.339E-01	Pulse	0.50	3
Na			1	9979.562	ug/l	0.30	9,781,836.00	8.081E+01	Analog	1.00	3
Mg			1	9729.926	ug/l	0.55	4,103,246.08	3.390E+01	Pulse	1.00	3
K			1	9904.795	ug/l	0.68	3,630,328.17	2.999E+01	Pulse	1.00	3
V			1	99.566	ug/l	0.61	678,069.69	5.602E+00	Pulse	0.50	3
Mn			1	97.727	ug/l	0.64	383,354.50	3.712E+00	Pulse	0.50	3
Fe			1	10005.205	ug/l	0.54	69,742,117.33	6.752E+02	Analog	0.50	3
Co			1	99.134	ug/l	0.61	1,575,509.67	1.525E+01	Pulse	0.50	3
Ni			1	99.439	ug/l	0.02	439,716.35	4.257E+00	Pulse	0.50	3
Cu			1	99.979	ug/l	0.34	1,209,481.58	1.171E+01	Pulse	0.50	3
Zn			1	100.222	ug/l	1.62	161,844.42	1.047E+00	Pulse	1.00	3
Cd			1	100.217	ug/l	1.35	286,999.51	1.856E+00	Pulse	0.50	3
Al			1	9911.159	ug/l	0.81	1,155,997.63	9.551E+00	Pulse	1.00	3
Se			1	99.213	ug/l	2.99	6,122.42	3.961E-02	Pulse	3.00	3
Sb			1	99.668	ug/l	1.42	696,026.73	4.502E+00	Pulse	1.00	3
Se			1	100.137	ug/l	3.47	3,132.93	2.027E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,319,119.17	0.48	91.4	Pulse	0.50	3
1	Sc		121,043.73	0.62	95.0	Pulse	0.30	3
1	Ge		103,285.43	0.18	95.0	Pulse	0.30	3
1	In		1,044,035.51	0.45	92.8	Pulse	0.30	3
1	Tb		4,180,867.42	0.94	95.1	Pulse	0.50	3
1	Lu		2,515,278.33	0.97	94.6	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		154,615.70	1.23	94.2	Pulse	0.30	3
1	Te		6.00	88.19		Pulse	0.50	3
1	Li		658.91	5.46	106.7	Pulse	0.30	3

Quantitation Report

File Name	020_CCB.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 10:26
Sample Name	CCB
Sample Type	CCB
Comment	
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.046	ug/l	5.07	1,264.71	1.236E-02	Pulse	0.50	3
As			1	0.021	ug/l	43.92	36.67	3.575E-04	Pulse	1.00	3
Mo			1	0.234	ug/l	17.78	1,564.07	1.003E-02	Pulse	0.50	3
Pb			1	0.026	ug/l	21.01	1,865.11	5.352E-04	Pulse	1.00	3
Be			1	0.058	ug/l	19.28	3.33	2.754E-05	Pulse	2.00	3
Ag			1	0.016	ug/l	21.32	384.01	2.464E-03	Pulse	0.50	3
Ba			1	0.012	ug/l	29.33	49.33	4.605E-05	Pulse	0.50	3
Tl			1	0.038	ug/l	2.37	2,350.84	6.748E-04	Pulse	0.50	3
Sn			1	0.068	ug/l	8.22	903.36	8.442E-04	Pulse	0.30	3
Sr			1	0.012	ug/l	52.90	446.01	4.166E-04	Pulse	0.50	3
[Pb]			1	0.026	ug/l	34.68	916.70	2.631E-04	Pulse	0.50	3
Ca			1	0.898	ug/l	120.97	140.00	1.157E-03	Pulse	0.50	3
Ti			1	0.020	ug/l	194.17	9.33	7.746E-05	Pulse	0.50	3
Na			1	7.822	ug/l	7.88	15,933.67	1.318E-01	Pulse	1.00	3
Mg			1	1.476	ug/l	32.36	2,138.12	1.768E-02	Pulse	1.00	3
K			1	1.711	ug/l	19.17	17,341.27	1.434E-01	Pulse	1.00	3
V			1	0.006	ug/l	134.57	539.34	4.461E-03	Pulse	0.50	3
Mn			1	0.034	ug/l	0.56	199.33	1.947E-03	Pulse	0.50	3
Fe			1	3.643	ug/l	11.84	35,608.77	3.477E-01	Pulse	0.50	3
Co			1	0.013	ug/l	35.57	250.00	2.438E-03	Pulse	0.50	3
Ni			1	0.006	ug/l	74.10	600.68	5.867E-03	Pulse	0.50	3
Cu			1	-0.123	ug/l	-7.56	5,735.54	5.602E-02	Pulse	0.50	3
Zn			1	1.320	ug/l	1.66	2,826.21	1.813E-02	Pulse	1.00	3
Cd			1	0.013	ug/l	29.58	40.67	2.609E-04	Pulse	0.50	3
Al			1	9.903	ug/l	6.16	1,529.40	1.265E-02	Pulse	1.00	3
Se			1	-0.027	ug/l	-151.51	12.78	8.197E-05	Pulse	3.00	3
Sb			1	0.025	ug/l	3.14	219.00	1.405E-03	Pulse	1.00	3
Se			1	0.096	ug/l	43.33	16.22	1.040E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,483,636.92	0.56	95.9	Pulse	0.50	3
1	Sc		120,926.54	0.90	95.0	Pulse	0.30	3

Quantitation Report

1	Ge		102,364.99	1.17	94.1	Pulse	0.30	3
1	In		1,070,274.64	0.77	95.2	Pulse	0.30	3
1	Tb		4,245,559.33	0.37	96.6	Pulse	0.50	3
1	Lu		2,517,469.50	0.85	94.7	Pulse	0.50	3
1	Ge		155,897.68	0.25	95.0	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		691.13	8.13	111.9	Pulse	0.30	3

Quantitation Report

File Name	021_MB.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 10:30
Sample Name	MP37025-MB1
Sample Type	MB
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.442	ug/l	9.76	2,682.20	2.768E-02	Pulse	0.50	3
As			1	0.076	ug/l	24.86	51.67	5.341E-04	Pulse	1.00	3
Mo			1	0.398	ug/l	9.83	1,274.71	8.598E-03	Pulse	0.50	3
Pb			1	0.070	ug/l	11.27	2,167.81	6.363E-04	Pulse	1.00	3
Be			1	0.107	ug/l	19.37	3.00	2.584E-05	Pulse	2.00	3
Ag			1	0.032	ug/l	12.68	368.67	2.485E-03	Pulse	0.50	3
Ba			1	0.012	ug/l	57.21	32.67	3.173E-05	Pulse	0.50	3
Tl			1	0.047	ug/l	4.72	1,459.40	4.285E-04	Pulse	0.50	3
Sn			1	1.373	ug/l	2.59	4,101.59	3.979E-03	Pulse	0.30	3
Sr			1	0.038	ug/l	77.10	459.34	4.450E-04	Pulse	0.50	3
[Pb]			1	0.074	ug/l	5.41	1,091.37	3.205E-04	Pulse	0.50	3
Ca			1	11.861	ug/l	37.11	226.00	1.952E-03	Pulse	0.50	3
Ti			1	0.019	ug/l	479.53	7.33	6.378E-05	Pulse	0.50	3
Na			1	24.289	ug/l	3.62	19,344.30	1.667E-01	Pulse	1.00	3
Mg			1	6.330	ug/l	3.59	2,734.86	2.357E-02	Pulse	1.00	3
K			1	4.290	ug/l	24.77	16,793.81	1.447E-01	Pulse	1.00	3
V			1	0.323	ug/l	6.61	1,534.07	1.322E-02	Pulse	0.50	3
Mn			1	0.032	ug/l	30.69	122.67	1.264E-03	Pulse	0.50	3
Fe			1	5.950	ug/l	7.41	29,333.48	3.026E-01	Pulse	0.50	3
Co			1	0.015	ug/l	27.06	158.67	1.636E-03	Pulse	0.50	3
Ni			1	-0.006	ug/l	-389.91	532.01	5.489E-03	Pulse	0.50	3
Cu			1	1.623	ug/l	2.65	15,963.29	1.647E-01	Pulse	0.50	3
Zn			1	0.992	ug/l	1.31	1,418.05	9.557E-03	Pulse	1.00	3
Cd			1	0.015	ug/l	58.05	23.33	1.565E-04	Pulse	0.50	3
Al			1	1.874	ug/l	5.48	465.34	4.010E-03	Pulse	1.00	3
Se			1	0.061	ug/l	200.70	15.56	1.050E-04	Pulse	3.00	3
Sb			1	0.043	ug/l	10.69	183.33	1.236E-03	Pulse	1.00	3
Se			1	0.148	ug/l	91.40	14.78	9.951E-05	Pulse	3.00	3

Quantitation Report

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,403,863.17	2.94	93.7	Pulse	0.50	3
1	Sc		116,041.68	2.03	91.1	Pulse	0.30	3
1	Ge		96,908.11	1.50	89.1	Pulse	0.30	3
1	In		1,030,706.04	1.66	91.7	Pulse	0.30	3
1	Tb		4,132,252.58	1.42	94.0	Pulse	0.50	3
1	Lu		2,432,484.50	2.46	91.5	Pulse	0.50	3
1	Ge		148,381.05	1.38	90.4	Pulse	0.30	3
1	Te		1.33	173.21		Pulse	0.50	3
1	Li		587.79	7.70	95.1	Pulse	0.30	3

Quantitation Report

File Name	022_BSP.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 10:34
Sample Name	MP37025-B1
Sample Type	BSP
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	211.138	ug/l	2.46	869,554.08	9.237E+00	Pulse	0.50	3
As			1	211.627	ug/l	2.83	103,389.18	1.098E+00	Pulse	1.00	3
Mo			1	212.933	ug/l	1.43	622,892.85	4.372E+00	Pulse	0.50	3
Pb			1	199.942	ug/l	0.56	3,669,460.25	1.145E+00	Pulse	1.00	3
Be			1	216.413	ug/l	1.22	5,019.62	4.394E-02	Pulse	2.00	3
Ag			1	101.027	ug/l	1.61	1,017,678.67	7.143E+00	Pulse	0.50	3
Ba			1	196.803	ug/l	1.65	229,373.15	2.320E-01	Pulse	0.50	3
Tl			1	197.965	ug/l	0.54	5,301,529.17	1.654E+00	Pulse	0.50	3
Sn			1	207.206	ug/l	1.34	519,320.20	5.253E-01	Pulse	0.30	3
Sr			1	202.042	ug/l	1.01	432,279.73	4.372E-01	Pulse	0.50	3
[Pb]			1	195.067	ug/l	1.04	1,669,749.50	5.210E-01	Pulse	0.50	3
Ca			1	19557.250	ug/l	1.26	176,650.13	1.547E+00	Pulse	0.50	3
Ti			1	206.351	ug/l	1.73	15,702.31	1.375E-01	Pulse	0.50	3
Na			1	20198.564	ug/l	0.98	9,341,571.67	8.178E+01	Analog	1.00	3
Mg			1	19372.182	ug/l	0.94	3,854,747.92	3.375E+01	Pulse	1.00	3
K			1	19401.875	ug/l	0.62	3,355,766.33	2.938E+01	Pulse	1.00	3
V			1	200.435	ug/l	1.29	644,061.15	5.639E+00	Pulse	0.50	3
Mn			1	205.753	ug/l	2.70	367,801.26	3.907E+00	Pulse	0.50	3
Fe			1	20814.466	ug/l	2.31	66,122,129.33	7.024E+02	Analog	0.50	3
Co			1	214.100	ug/l	2.01	1,550,748.83	1.647E+01	Pulse	0.50	3
Ni			1	215.311	ug/l	1.44	433,922.89	4.609E+00	Pulse	0.50	3
Cu			1	215.883	ug/l	2.18	1,189,690.92	1.264E+01	Pulse	0.50	3
Zn			1	202.646	ug/l	1.24	150,789.85	1.058E+00	Pulse	1.00	3
Cd			1	206.321	ug/l	1.68	272,254.31	1.911E+00	Pulse	0.50	3
Al			1	19077.833	ug/l	1.13	1,049,949.87	9.192E+00	Pulse	1.00	3
Se			1	196.967	ug/l	3.07	5,600.93	3.932E-02	Pulse	3.00	3
Sb			1	204.583	ug/l	1.53	658,325.33	4.621E+00	Pulse	1.00	3
Se			1	196.789	ug/l	2.63	2,837.54	1.992E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,204,717.92	0.76	88.2	Pulse	0.50	3
1	Sc		114,230.18	0.71	89.7	Pulse	0.30	3
1	Ge		94,173.36	2.31	86.6	Pulse	0.30	3
1	In		988,754.85	1.36	87.9	Pulse	0.30	3
1	Tb		4,044,218.08	1.36	92.0	Pulse	0.50	3
1	Lu		2,396,127.67	1.34	90.1	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		142,496.82	1.61	86.8	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		674.46	13.84	109.2	Pulse	0.30	3

Quantitation Report

File Name	023SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 10:38
Sample Name	FA73461-6
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.683	ug/l	3.77	3,663.69	3.818E-02	Pulse	0.50	3
As			1	0.262	ug/l	11.29	144.33	1.503E-03	Pulse	1.00	3
Mo			1	0.501	ug/l	2.45	1,558.07	1.072E-02	Pulse	0.50	3
Pb			1	0.187	ug/l	21.44	4,230.88	1.306E-03	Pulse	1.00	3
Be			1	0.205	ug/l	66.83	5.17	4.581E-05	Pulse	2.00	3
Ag			1	0.033	ug/l	45.55	364.01	2.500E-03	Pulse	0.50	3
Ba			1	28.731	ug/l	1.47	33,348.66	3.389E-02	Pulse	0.50	3
Tl			1	0.096	ug/l	20.13	2,706.90	8.353E-04	Pulse	0.50	3
Sn			1	1.508	ug/l	4.41	4,254.96	4.321E-03	Pulse	0.30	3
Sr			1	80.875	ug/l	2.56	172,437.08	1.752E-01	Pulse	0.50	3
[Pb]			1	0.176	ug/l	14.92	1,918.78	5.926E-04	Pulse	0.50	3
Ca			1	18631.484	ug/l	2.47	164,951.66	1.473E+00	Pulse	0.50	3
Ti			1	1.264	ug/l	14.36	100.00	8.927E-04	Pulse	0.50	3
Na			1	8154.363	ug/l	2.75	3,700,764.33	3.306E+01	Pulse	1.00	3
Mg			1	4119.388	ug/l	3.32	804,407.23	7.186E+00	Pulse	1.00	3
K			1	1641.217	ug/l	2.95	292,372.71	2.612E+00	Pulse	1.00	3
V			1	0.794	ug/l	4.70	2,965.57	2.647E-02	Pulse	0.50	3
Mn			1	25.226	ug/l	3.12	45,990.11	4.796E-01	Pulse	0.50	3
Fe			1	168.651	ug/l	0.68	555,652.62	5.792E+00	Pulse	0.50	3
Co			1	0.180	ug/l	9.31	1,380.06	1.437E-02	Pulse	0.50	3
Ni			1	0.863	ug/l	1.82	2,309.48	2.407E-02	Pulse	0.50	3
Cu			1	1.295	ug/l	2.51	13,973.74	1.457E-01	Pulse	0.50	3
Zn			1	5.037	ug/l	0.79	4,447.52	3.060E-02	Pulse	1.00	3
Cd			1	0.050	ug/l	67.31	70.67	4.847E-04	Pulse	0.50	3
Al			1	32.015	ug/l	12.47	2,078.11	1.853E-02	Pulse	1.00	3
Se			1	-0.006	ug/l	-1759.58	13.33	9.161E-05	Pulse	3.00	3
Sb			1	0.105	ug/l	27.50	382.67	2.629E-03	Pulse	1.00	3
Se			1	0.563	ug/l	20.70	20.56	1.414E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,234,671.42	1.49	89.1	Pulse	0.50	3
1	Sc		112,001.85	2.52	87.9	Pulse	0.30	3
1	Ge		95,927.58	1.78	88.2	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		984,275.27	1.55	87.5	Pulse	0.30	3
1	Tb		4,023,680.25	1.71	91.5	Pulse	0.50	3
1	Lu		2,375,068.50	1.62	89.3	Pulse	0.50	3
1	Ge		145,346.64	0.89	88.5	Pulse	0.30	3
1	Te		2.00	0.00		Pulse	0.50	3
1	Li		661.13	2.49	107.0	Pulse	0.30	3

Quantitation Report

File Name	024SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 10:41
Sample Name	MP37025-D1
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.600	ug/l	7.68	3,399.65	3.456E-02	Pulse	0.50	3
As			1	0.243	ug/l	8.85	138.00	1.403E-03	Pulse	1.00	3
Mo			1	0.368	ug/l	10.82	1,183.38	7.973E-03	Pulse	0.50	3
Pb			1	0.097	ug/l	4.59	2,607.54	7.906E-04	Pulse	1.00	3
Be			1	0.036	ug/l	179.33	1.33	1.152E-05	Pulse	2.00	3
Ag			1	0.016	ug/l	17.57	195.33	1.316E-03	Pulse	0.50	3
Ba			1	27.735	ug/l	3.00	32,823.02	3.271E-02	Pulse	0.50	3
Tl			1	0.026	ug/l	17.33	821.36	2.490E-04	Pulse	0.50	3
Sn			1	1.332	ug/l	6.49	3,889.40	3.876E-03	Pulse	0.30	3
Sr			1	77.326	ug/l	0.97	168,154.33	1.676E-01	Pulse	0.50	3
[Pb]			1	0.098	ug/l	7.52	1,268.05	3.845E-04	Pulse	0.50	3
Ca			1	17920.903	ug/l	2.44	163,122.45	1.417E+00	Pulse	0.50	3
Ti			1	0.959	ug/l	9.88	79.33	6.896E-04	Pulse	0.50	3
Na			1	7919.413	ug/l	2.47	3,695,477.50	3.211E+01	Pulse	1.00	3
Mg			1	3975.333	ug/l	2.47	798,241.31	6.935E+00	Pulse	1.00	3
K			1	1584.564	ug/l	2.14	290,788.04	2.526E+00	Pulse	1.00	3
V			1	0.808	ug/l	10.68	3,089.59	2.686E-02	Pulse	0.50	3
Mn			1	24.259	ug/l	1.24	45,386.07	4.612E-01	Pulse	0.50	3
Fe			1	155.480	ug/l	0.62	526,197.36	5.348E+00	Pulse	0.50	3
Co			1	0.128	ug/l	4.21	1,020.03	1.037E-02	Pulse	0.50	3
Ni			1	0.541	ug/l	4.01	1,692.08	1.719E-02	Pulse	0.50	3
Cu			1	1.069	ug/l	4.01	13,041.07	1.325E-01	Pulse	0.50	3
Zn			1	4.866	ug/l	0.89	4,409.84	2.971E-02	Pulse	1.00	3
Cd			1	0.009	ug/l	52.26	15.33	1.032E-04	Pulse	0.50	3
Al			1	26.784	ug/l	2.48	1,842.76	1.601E-02	Pulse	1.00	3
Se			1	-0.034	ug/l	-242.41	12.78	8.605E-05	Pulse	3.00	3
Sb			1	0.055	ug/l	14.57	223.67	1.507E-03	Pulse	1.00	3
Se			1	0.259	ug/l	115.87	16.45	1.107E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,297,852.33	0.84	90.8	Pulse	0.50	3
1	Sc		115,128.76	1.51	90.4	Pulse	0.30	3
1	Ge		98,397.74	0.53	90.5	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,003,601.38	1.22	89.3	Pulse	0.30	3
1	Tb		4,082,994.33	1.26	92.9	Pulse	0.50	3
1	Lu		2,408,574.67	1.28	90.6	Pulse	0.50	3
1	Ge		148,443.55	0.23	90.4	Pulse	0.30	3
1	Te		1.33	173.21		Pulse	0.50	3
1	Li		693.35	14.67	112.2	Pulse	0.30	3

Quantitation Report

File Name	025SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 10:45
Sample Name	MP37025-SD1
Sample Type	Sample
Comment	
Prep Dilution	10.000
Auto Dilution	N/A
Total Dilution	10.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.656	ug/l	11.00	1,474.72	1.408E-02	Pulse	0.50	3
As			1	0.225	ug/l	26.39	39.33	3.755E-04	Pulse	1.00	3
Mo			1	0.523	ug/l	15.33	410.01	2.573E-03	Pulse	0.50	3
Pb			1	0.381	ug/l	2.67	2,311.83	6.729E-04	Pulse	1.00	3
Be			1	0.329	ug/l	74.60	2.17	1.751E-05	Pulse	2.00	3
Ag			1	0.033	ug/l	18.26	107.33	6.733E-04	Pulse	0.50	3
Ba			1	26.982	ug/l	1.54	6,830.65	6.379E-03	Pulse	0.50	3
Tl			1	0.093	ug/l	11.59	648.01	1.887E-04	Pulse	0.50	3
Sn			1	0.429	ug/l	17.96	770.02	7.190E-04	Pulse	0.30	3
Sr			1	76.865	ug/l	0.18	35,986.13	3.360E-02	Pulse	0.50	3
[Pb]			1	0.342	ug/l	3.67	1,049.37	3.055E-04	Pulse	0.50	3
Ca			1	17836.470	ug/l	1.78	34,874.19	2.829E-01	Pulse	0.50	3
Ti			1	0.676	ug/l	76.29	17.33	1.411E-04	Pulse	0.50	3
Na			1	7785.097	ug/l	1.75	784,881.40	6.367E+00	Pulse	1.00	3
Mg			1	3936.063	ug/l	1.69	170,523.62	1.383E+00	Pulse	1.00	3
K			1	1567.158	ug/l	1.50	75,270.36	6.106E-01	Pulse	1.00	3
V			1	0.890	ug/l	1.42	1,128.70	9.155E-03	Pulse	0.50	3
Mn			1	24.294	ug/l	2.31	9,725.79	9.290E-02	Pulse	0.50	3
Fe			1	152.111	ug/l	1.43	118,126.09	1.128E+00	Pulse	0.50	3
Co			1	0.122	ug/l	27.95	247.33	2.364E-03	Pulse	0.50	3
Ni			1	0.221	ug/l	77.31	688.01	6.572E-03	Pulse	0.50	3
Cu			1	8.308	ug/l	3.60	17,486.62	1.670E-01	Pulse	0.50	3
Zn			1	7.494	ug/l	7.20	1,943.43	1.220E-02	Pulse	1.00	3
Cd			1	0.043	ug/l	41.98	16.00	1.005E-04	Pulse	0.50	3
Al			1	15.939	ug/l	10.80	572.34	4.643E-03	Pulse	1.00	3
Se			1	-0.335	ug/l	-39.80	12.67	7.947E-05	Pulse	3.00	3
Sb			1	0.087	ug/l	6.95	105.00	6.588E-04	Pulse	1.00	3
Se			1	0.922	ug/l	18.17	16.44	1.032E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,435,544.58	0.36	94.6	Pulse	0.50	3
1	Sc		123,282.18	1.18	96.8	Pulse	0.30	3
1	Ge		104,697.51	0.59	96.3	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,070,879.26	0.32	95.2	Pulse	0.30	3
1	Tb		4,234,976.50	0.55	96.3	Pulse	0.50	3
1	Lu		2,489,270.08	1.04	93.6	Pulse	0.50	3
1	Ge		159,374.01	0.28	97.1	Pulse	0.30	3
1	Te		0.67	173.21		Pulse	0.50	3
1	Li		731.13	5.32	118.3	Pulse	0.30	3

Quantitation Report

File Name 026SMPL.d
File Path D:\2020\03-March\xa033020m1.b
Method File
Method Path
Acq Time 3/30/2020 10:49
Sample Name MP37025-S1
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 3/30/2020 9:49
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	194.279	ug/l	1.09	804,703.54	8.500E+00	Pulse	0.50	3
As			1	195.532	ug/l	0.61	96,074.83	1.015E+00	Pulse	1.00	3
Mo			1	196.815	ug/l	1.10	578,262.92	4.041E+00	Pulse	0.50	3
Pb			1	189.789	ug/l	0.79	3,375,310.58	1.087E+00	Pulse	1.00	3
Be			1	207.859	ug/l	1.04	4,750.56	4.221E-02	Pulse	2.00	3
Ag			1	98.092	ug/l	0.21	992,466.31	6.935E+00	Pulse	0.50	3
Ba			1	214.057	ug/l	0.79	242,804.00	2.524E-01	Pulse	0.50	3
Tl			1	188.757	ug/l	0.63	4,898,424.33	1.577E+00	Pulse	0.50	3
Sn			1	196.475	ug/l	0.27	479,261.15	4.981E-01	Pulse	0.30	3
Sr			1	267.924	ug/l	0.27	557,750.44	5.797E-01	Pulse	0.50	3
[Pb]			1	184.590	ug/l	0.23	1,531,171.12	4.931E-01	Pulse	0.50	3
Ca			1	36194.413	ug/l	1.06	322,030.71	2.861E+00	Pulse	0.50	3
Ti			1	194.471	ug/l	1.78	14,580.79	1.296E-01	Pulse	0.50	3
Na			1	27217.900	ug/l	0.58	12,400,625.67	1.102E+02	Analog	1.00	3
Mg			1	22086.412	ug/l	0.59	4,330,214.50	3.847E+01	Pulse	1.00	3
K			1	19851.356	ug/l	0.23	3,382,755.08	3.006E+01	Pulse	1.00	3
V			1	188.676	ug/l	0.99	597,414.17	5.308E+00	Pulse	0.50	3
Mn			1	212.803	ug/l	0.89	382,569.36	4.041E+00	Pulse	0.50	3
Fe			1	19507.416	ug/l	1.63	62,317,632.00	6.583E+02	Analog	0.50	3
Co			1	196.596	ug/l	1.42	1,431,906.83	1.513E+01	Pulse	0.50	3
Ni			1	198.210	ug/l	0.74	401,694.12	4.243E+00	Pulse	0.50	3
Cu			1	198.025	ug/l	0.95	1,097,960.83	1.160E+01	Pulse	0.50	3
Zn			1	191.259	ug/l	0.62	142,973.95	9.991E-01	Pulse	1.00	3
Cd			1	190.932	ug/l	0.75	253,058.59	1.768E+00	Pulse	0.50	3
Al			1	18136.945	ug/l	0.39	983,558.52	8.739E+00	Pulse	1.00	3
Se			1	182.353	ug/l	1.44	5,209.49	3.640E-02	Pulse	3.00	3
Sb			1	189.527	ug/l	0.56	612,561.02	4.281E+00	Pulse	1.00	3
Se			1	179.954	ug/l	1.54	2,607.29	1.822E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,105,464.33	0.44	85.5	Pulse	0.50	3
1	Sc		112,551.64	0.52	88.4	Pulse	0.30	3
1	Ge		94,674.67	0.63	87.1	Pulse	0.30	3
1	In		962,159.47	0.23	85.6	Pulse	0.30	3
1	Tb		3,951,221.58	0.56	89.9	Pulse	0.50	3
1	Lu		2,330,028.25	0.45	87.7	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		143,102.05	0.44	87.2	Pulse	0.30	3
1	Te		1.33	86.60		Pulse	0.50	3
1	Li		708.91	5.88	114.7	Pulse	0.30	3

Quantitation Report

File Name 027SMPL.d
File Path D:\2020\03-March\xa033020m1.b
Method File
Method Path
Acq Time 3/30/2020 10:53
Sample Name MP37025-S2
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 3/30/2020 9:49
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	202.864	ug/l	1.58	845,741.44	8.875E+00	Pulse	0.50	3
As			1	203.246	ug/l	1.42	100,521.77	1.055E+00	Pulse	1.00	3
Mo			1	202.924	ug/l	0.94	605,964.96	4.166E+00	Pulse	0.50	3
Pb			1	194.845	ug/l	1.44	3,514,106.17	1.116E+00	Pulse	1.00	3
Be			1	211.919	ug/l	3.11	4,928.77	4.303E-02	Pulse	2.00	3
Ag			1	96.847	ug/l	1.26	995,847.79	6.847E+00	Pulse	0.50	3
Ba			1	218.739	ug/l	3.08	253,679.36	2.579E-01	Pulse	0.50	3
Tl			1	192.641	ug/l	2.07	5,069,364.83	1.610E+00	Pulse	0.50	3
Sn			1	199.583	ug/l	2.39	497,784.53	5.060E-01	Pulse	0.30	3
Sr			1	274.625	ug/l	2.18	584,564.23	5.942E-01	Pulse	0.50	3
[Pb]			1	190.750	ug/l	2.14	1,604,432.50	5.095E-01	Pulse	0.50	3
Ca			1	37390.709	ug/l	1.80	338,618.68	2.956E+00	Pulse	0.50	3
Ti			1	198.783	ug/l	0.64	15,174.56	1.324E-01	Pulse	0.50	3
Na			1	28055.904	ug/l	1.89	13,010,222.00	1.136E+02	Analog	1.00	3
Mg			1	23687.966	ug/l	1.61	4,727,048.50	4.126E+01	Analog	1.00	3
K			1	20460.828	ug/l	2.06	3,548,222.17	3.097E+01	Pulse	1.00	3
V			1	194.885	ug/l	1.27	628,111.67	5.483E+00	Pulse	0.50	3
Mn			1	221.202	ug/l	1.77	400,268.37	4.201E+00	Pulse	0.50	3
Fe			1	20329.795	ug/l	1.26	65,374,208.00	6.860E+02	Analog	0.50	3
Co			1	205.680	ug/l	0.81	1,508,029.16	1.582E+01	Pulse	0.50	3
Ni			1	206.141	ug/l	1.13	420,504.91	4.413E+00	Pulse	0.50	3
Cu			1	204.689	ug/l	0.81	1,142,209.58	1.199E+01	Pulse	0.50	3
Zn			1	195.267	ug/l	0.53	148,343.08	1.020E+00	Pulse	1.00	3
Cd			1	194.997	ug/l	1.44	262,664.03	1.806E+00	Pulse	0.50	3
Al			1	18548.830	ug/l	2.04	1,023,797.48	8.937E+00	Pulse	1.00	3
Se			1	185.324	ug/l	1.86	5,380.54	3.700E-02	Pulse	3.00	3
Sb			1	193.697	ug/l	0.67	636,269.44	4.375E+00	Pulse	1.00	3
Se			1	183.902	ug/l	1.87	2,707.75	1.862E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,149,752.50	1.75	86.7	Pulse	0.50	3
1	Sc		114,581.28	1.70	90.0	Pulse	0.30	3
1	Ge		95,305.72	1.37	87.7	Pulse	0.30	3
1	In		984,131.07	2.16	87.5	Pulse	0.30	3
1	Tb		4,021,950.25	1.88	91.5	Pulse	0.50	3
1	Lu		2,367,832.25	2.13	89.1	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		145,442.92	0.62	88.6	Pulse	0.30	3
1	Te		3.33	69.28		Pulse	0.50	3
1	Li		615.57	13.94	99.6	Pulse	0.30	3

Quantitation Report

File Name	028SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 10:57
Sample Name	MP37025-PS1
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	21.457	ug/l	0.52	91,956.59	9.462E-01	Pulse	0.50	3
As			1	20.939	ug/l	1.52	10,572.60	1.088E-01	Pulse	1.00	3
Mo			1	21.080	ug/l	1.28	63,788.47	4.332E-01	Pulse	0.50	3
Pb			1	20.057	ug/l	0.94	368,710.09	1.151E-01	Pulse	1.00	3
Be			1	22.405	ug/l	5.14	527.51	4.553E-03	Pulse	2.00	3
Ag			1	4.366	ug/l	1.91	45,481.45	3.089E-01	Pulse	0.50	3
Ba			1	48.633	ug/l	1.50	56,684.21	5.735E-02	Pulse	0.50	3
Tl			1	19.410	ug/l	1.04	519,789.91	1.622E-01	Pulse	0.50	3
Sn			1	21.701	ug/l	1.49	54,824.76	5.546E-02	Pulse	0.30	3
Sr			1	99.649	ug/l	0.95	213,344.71	2.158E-01	Pulse	0.50	3
[Pb]			1	19.468	ug/l	1.06	166,958.69	5.211E-02	Pulse	0.50	3
Ca			1	20252.257	ug/l	1.14	185,573.78	1.601E+00	Pulse	0.50	3
Ti			1	21.774	ug/l	1.40	1,686.08	1.455E-02	Pulse	0.50	3
Na			1	10230.125	ug/l	0.77	4,803,749.33	4.145E+01	Analog	1.00	3
Mg			1	5985.290	ug/l	0.70	1,209,254.29	1.044E+01	Pulse	1.00	3
K			1	3532.458	ug/l	0.85	632,915.33	5.462E+00	Pulse	1.00	3
V			1	21.218	ug/l	0.95	69,600.60	6.006E-01	Pulse	0.50	3
Mn			1	44.772	ug/l	0.83	82,673.23	8.507E-01	Pulse	0.50	3
Fe			1	2202.762	ug/l	0.89	7,232,193.33	7.442E+01	Analog	0.50	3
Co			1	20.917	ug/l	0.50	156,435.46	1.610E+00	Pulse	0.50	3
Ni			1	21.388	ug/l	1.03	44,979.38	4.629E-01	Pulse	0.50	3
Cu			1	22.414	ug/l	1.92	133,618.16	1.375E+00	Pulse	0.50	3
Zn			1	25.210	ug/l	0.54	19,958.32	1.355E-01	Pulse	1.00	3
Cd			1	19.613	ug/l	1.46	26,750.00	1.817E-01	Pulse	0.50	3
Al			1	1916.248	ug/l	1.28	107,307.57	9.261E-01	Pulse	1.00	3
Se			1	18.617	ug/l	3.60	559.57	3.800E-03	Pulse	3.00	3
Sb			1	18.347	ug/l	2.29	61,045.09	4.146E-01	Pulse	1.00	3
Se			1	18.125	ug/l	7.25	281.23	1.911E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,204,171.42	1.18	88.2	Pulse	0.50	3
1	Sc		115,888.46	1.48	91.0	Pulse	0.30	3
1	Ge		97,186.17	1.30	89.4	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		988,570.48	1.52	87.9	Pulse	0.30	3
1	Tb		4,016,034.25	2.40	91.4	Pulse	0.50	3
1	Lu		2,364,338.00	1.46	88.9	Pulse	0.50	3
1	Ge		147,273.46	2.03	89.7	Pulse	0.30	3
1	Te		1.33	173.21		Pulse	0.50	3
1	Li		644.46	13.35	104.3	Pulse	0.30	3

Quantitation Report

File Name	029SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:01
Sample Name	FA73461-1
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.597	ug/l	5.15	3,426.98	3.445E-02	Pulse	0.50	3
As			1	0.082	ug/l	14.27	56.33	5.664E-04	Pulse	1.00	3
Mo			1	0.246	ug/l	16.24	824.02	5.470E-03	Pulse	0.50	3
Pb			1	0.081	ug/l	7.81	2,351.83	7.010E-04	Pulse	1.00	3
Be			1	0.082	ug/l	49.54	2.50	2.082E-05	Pulse	2.00	3
Ag			1	0.014	ug/l	6.73	183.33	1.217E-03	Pulse	0.50	3
Ba			1	0.106	ug/l	7.46	146.67	1.425E-04	Pulse	0.50	3
Tl			1	0.043	ug/l	9.12	1,304.06	3.889E-04	Pulse	0.50	3
Sn			1	1.224	ug/l	5.43	3,707.06	3.601E-03	Pulse	0.30	3
Sr			1	0.200	ug/l	8.62	820.02	7.966E-04	Pulse	0.50	3
[Pb]			1	0.073	ug/l	9.69	1,064.70	3.174E-04	Pulse	0.50	3
Ca			1	42.579	ug/l	15.61	525.34	4.380E-03	Pulse	0.50	3
Ti			1	0.057	ug/l	127.42	10.67	8.902E-05	Pulse	0.50	3
Na			1	67.947	ug/l	1.41	41,188.74	3.434E-01	Pulse	1.00	3
Mg			1	12.036	ug/l	2.79	4,018.74	3.350E-02	Pulse	1.00	3
K			1	9.067	ug/l	2.71	18,224.39	1.519E-01	Pulse	1.00	3
V			1	0.392	ug/l	9.45	1,821.43	1.518E-02	Pulse	0.50	3
Mn			1	0.211	ug/l	13.53	462.68	4.652E-03	Pulse	0.50	3
Fe			1	4.815	ug/l	0.83	26,295.07	2.643E-01	Pulse	0.50	3
Co			1	0.022	ug/l	3.76	217.33	2.185E-03	Pulse	0.50	3
Ni			1	0.525	ug/l	1.37	1,675.41	1.684E-02	Pulse	0.50	3
Cu			1	0.808	ug/l	4.47	11,671.56	1.173E-01	Pulse	0.50	3
Zn			1	5.261	ug/l	1.27	4,784.60	3.176E-02	Pulse	1.00	3
Cd			1	0.011	ug/l	48.37	18.00	1.195E-04	Pulse	0.50	3
Al			1	2.016	ug/l	14.87	489.34	4.079E-03	Pulse	1.00	3
Se			1	-0.044	ug/l	-216.63	12.67	8.409E-05	Pulse	3.00	3
Sb			1	0.114	ug/l	7.71	427.34	2.837E-03	Pulse	1.00	3
Se			1	0.302	ug/l	47.91	17.33	1.151E-04	Pulse	3.00	3

Quantitation Report

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,354,281.42	0.68	92.4	Pulse	0.50	3
1	Sc		119,963.86	0.32	94.2	Pulse	0.30	3
1	Ge		99,471.98	0.33	91.5	Pulse	0.30	3
1	In		1,029,659.82	1.11	91.6	Pulse	0.30	3
1	Tb		4,144,752.58	0.75	94.3	Pulse	0.50	3
1	Lu		2,403,441.00	0.62	90.4	Pulse	0.50	3
1	Ge		150,638.32	0.09	91.7	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		653.35	10.75	105.8	Pulse	0.30	3

Quantitation Report

File Name	030SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:04
Sample Name	FA73461-2
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.464	ug/l	3.74	2,898.89	2.862E-02	Pulse	0.50	3
As			1	0.059	ug/l	23.21	45.33	4.478E-04	Pulse	1.00	3
Mo			1	0.045	ug/l	40.98	209.33	1.350E-03	Pulse	0.50	3
Pb			1	0.090	ug/l	2.79	2,537.86	7.508E-04	Pulse	1.00	3
Be			1	0.087	ug/l	57.27	2.67	2.182E-05	Pulse	2.00	3
Ag			1	0.008	ug/l	13.29	116.67	7.510E-04	Pulse	0.50	3
Ba			1	0.071	ug/l	20.89	105.33	1.006E-04	Pulse	0.50	3
Tl			1	0.025	ug/l	17.50	808.02	2.393E-04	Pulse	0.50	3
Sn			1	0.726	ug/l	7.85	2,449.07	2.340E-03	Pulse	0.30	3
Sr			1	0.045	ug/l	23.85	484.01	4.621E-04	Pulse	0.50	3
[Pb]			1	0.086	ug/l	3.91	1,187.38	3.513E-04	Pulse	0.50	3
Ca			1	18.514	ug/l	26.91	302.00	2.478E-03	Pulse	0.50	3
Ti			1	0.071	ug/l	1.73	12.00	9.839E-05	Pulse	0.50	3
Na			1	56.553	ug/l	1.85	36,253.61	2.973E-01	Pulse	1.00	3
Mg			1	5.722	ug/l	10.24	2,744.19	2.250E-02	Pulse	1.00	3
K			1	1.944	ug/l	87.64	17,218.49	1.412E-01	Pulse	1.00	3
V			1	0.343	ug/l	5.42	1,681.41	1.379E-02	Pulse	0.50	3
Mn			1	0.087	ug/l	15.14	233.33	2.304E-03	Pulse	0.50	3
Fe			1	0.952	ug/l	12.40	13,572.76	1.340E-01	Pulse	0.50	3
Co			1	0.005	ug/l	61.02	86.67	8.560E-04	Pulse	0.50	3
Ni			1	0.233	ug/l	13.42	1,075.37	1.062E-02	Pulse	0.50	3
Cu			1	0.678	ug/l	5.00	11,118.55	1.098E-01	Pulse	0.50	3
Zn			1	5.049	ug/l	2.30	4,765.93	3.066E-02	Pulse	1.00	3
Cd			1	0.003	ug/l	42.46	8.00	5.148E-05	Pulse	0.50	3
Al			1	75.849	ug/l	1.31	4,834.59	3.964E-02	Pulse	1.00	3
Se			1	-0.056	ug/l	-155.40	12.67	8.157E-05	Pulse	3.00	3
Sb			1	0.032	ug/l	19.82	151.67	9.761E-04	Pulse	1.00	3
Se			1	0.195	ug/l	79.69	16.22	1.043E-04	Pulse	3.00	3

Quantitation Report

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,380,315.08	0.98	93.1	Pulse	0.50	3
1	Sc		121,968.40	0.83	95.8	Pulse	0.30	3
1	Ge		101,287.02	0.44	93.2	Pulse	0.30	3
1	In		1,047,059.02	1.02	93.1	Pulse	0.30	3
1	Tb		4,171,621.92	0.76	94.9	Pulse	0.50	3
1	Lu		2,448,461.67	1.32	92.1	Pulse	0.50	3
1	Ge		155,465.44	1.34	94.7	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		741.13	3.49	120.0	Pulse	0.30	3

Quantitation Report

File Name	031CCVA.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:08
Sample Name	CCV (Ag)
Sample Type	CCV_Ag
Comment	=std 4
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	49.101	ug/l	0.71	464,989.40	4.301E+00	Pulse	0.50	3
As			1	48.882	ug/l	1.37	54,866.23	5.075E-01	Pulse	1.00	3
Mo			1	47.607	ug/l	1.09	320,820.88	1.955E+00	Pulse	0.50	3
Pb			1	47.609	ug/l	0.46	1,862,657.54	5.454E-01	Pulse	1.00	3
Be			1	49.355	ug/l	1.56	2,615.51	2.005E-02	Pulse	2.00	3
Ag			1	49.447	ug/l	1.13	1,147,297.75	6.992E+00	Pulse	0.50	3
Ba			1	47.629	ug/l	0.60	122,382.61	1.123E-01	Pulse	0.50	3
Tl			1	47.690	ug/l	0.27	2,722,058.25	7.971E-01	Pulse	0.50	3
Sn			1	48.043	ug/l	0.40	265,724.76	2.439E-01	Pulse	0.30	3
Sr			1	48.498	ug/l	0.79	228,932.77	2.101E-01	Pulse	0.50	3
[Pb]			1	48.349	ug/l	0.23	882,284.15	2.583E-01	Pulse	0.50	3
Ca			1	4830.652	ug/l	1.03	99,745.12	7.645E-01	Pulse	0.50	3
Ti			1	48.385	ug/l	1.72	8,414.49	6.449E-02	Pulse	0.50	3
Na			1	4978.525	ug/l	0.38	5,264,460.00	4.035E+01	Analog	1.00	3
Mg			1	4824.162	ug/l	0.56	2,193,717.33	1.681E+01	Pulse	1.00	3
K			1	4847.937	ug/l	0.95	1,924,490.04	1.475E+01	Pulse	1.00	3
V			1	48.017	ug/l	0.50	352,761.97	2.704E+00	Pulse	0.50	3
Mn			1	48.573	ug/l	1.32	199,487.96	1.845E+00	Pulse	0.50	3
Fe			1	5005.800	ug/l	1.44	36,531,232.00	3.379E+02	Analog	0.50	3
Co			1	49.470	ug/l	1.11	823,034.02	7.612E+00	Pulse	0.50	3
Ni			1	49.708	ug/l	0.96	230,401.69	2.131E+00	Pulse	0.50	3
Cu			1	50.112	ug/l	0.94	638,392.65	5.904E+00	Pulse	0.50	3
Zn			1	49.123	ug/l	1.08	84,564.84	5.154E-01	Pulse	1.00	3
Cd			1	47.931	ug/l	1.78	145,680.05	8.879E-01	Pulse	0.50	3
Al			1	4852.137	ug/l	0.44	610,238.06	4.677E+00	Pulse	1.00	3
Se			1	48.226	ug/l	2.42	3,166.48	1.930E-02	Pulse	3.00	3
Sb			1	47.028	ug/l	1.41	348,588.08	2.124E+00	Pulse	1.00	3
Se			1	48.318	ug/l	1.93	1,611.85	9.824E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,415,099.42	0.46	94.0	Pulse	0.50	3
1	Sc		130,471.48	0.46	102.5	Pulse	0.30	3
1	Ge		108,126.30	0.90	99.4	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,089,689.40	0.70	96.9	Pulse	0.30	3
1	Tb		4,284,204.67	1.10	97.5	Pulse	0.50	3
1	Lu		2,547,095.00	0.62	95.8	Pulse	0.50	3
1	Ge		164,102.30	1.42	99.9	Pulse	0.30	3
1	Te		4.67	49.49		Pulse	0.50	3
1	Li		675.57	8.20	109.4	Pulse	0.30	3

Quantitation Report

File Name	032_CCV.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:12
Sample Name	CCV
Sample Type	CCV
Comment	=std 5
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	100.372	ug/l	0.97	944,947.15	8.783E+00	Pulse	0.50	3
As			1	99.512	ug/l	0.76	111,137.63	1.033E+00	Pulse	1.00	3
Mo			1	98.106	ug/l	1.76	655,733.07	4.029E+00	Pulse	0.50	3
Pb			1	96.589	ug/l	1.02	3,725,217.67	1.106E+00	Pulse	1.00	3
Be			1	100.440	ug/l	0.40	5,323.87	4.079E-02	Pulse	2.00	3
Ag			1	99.648	ug/l	1.54	2,293,538.08	1.409E+01	Pulse	0.50	3
Ba			1	96.870	ug/l	0.96	248,501.39	2.284E-01	Pulse	0.50	3
Tl			1	100.946	ug/l	3.13	5,680,520.33	1.687E+00	Mix	0.50	3
Sn			1	97.097	ug/l	0.45	535,673.62	4.923E-01	Pulse	0.30	3
Sr			1	98.910	ug/l	0.70	465,777.79	4.281E-01	Pulse	0.50	3
[Pb]			1	98.038	ug/l	1.48	1,763,507.21	5.237E-01	Pulse	0.50	3
Ca			1	9788.044	ug/l	0.25	202,044.90	1.548E+00	Pulse	0.50	3
Ti			1	99.036	ug/l	1.36	17,221.58	1.320E-01	Pulse	0.50	3
Na			1	10132.860	ug/l	0.23	10,709,500.33	8.205E+01	Analog	1.00	3
Mg			1	9970.766	ug/l	2.12	4,533,886.50	3.474E+01	Mix	1.00	3
K			1	9892.996	ug/l	0.55	3,909,907.00	2.996E+01	Pulse	1.00	3
V			1	97.830	ug/l	0.31	718,434.71	5.504E+00	Pulse	0.50	3
Mn			1	99.164	ug/l	0.98	405,216.74	3.766E+00	Pulse	0.50	3
Fe			1	10256.463	ug/l	1.39	74,474,016.00	6.922E+02	Analog	0.50	3
Co			1	100.230	ug/l	0.71	1,659,406.17	1.542E+01	Pulse	0.50	3
Ni			1	100.290	ug/l	0.59	461,981.37	4.294E+00	Pulse	0.50	3
Cu			1	100.677	ug/l	0.73	1,268,678.37	1.179E+01	Pulse	0.50	3
Zn			1	99.378	ug/l	1.13	168,979.60	1.038E+00	Pulse	1.00	3
Cd			1	97.128	ug/l	1.70	292,852.23	1.799E+00	Pulse	0.50	3
Al			1	9822.168	ug/l	0.55	1,235,325.33	9.465E+00	Pulse	1.00	3
Se			1	99.200	ug/l	2.34	6,445.31	3.960E-02	Pulse	3.00	3
Sb			1	96.253	ug/l	1.66	707,702.31	4.348E+00	Pulse	1.00	3
Se			1	98.909	ug/l	2.06	3,258.61	2.002E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,367,415.58	0.96	92.7	Pulse	0.50	3
1	Sc		130,519.38	0.62	102.5	Pulse	0.30	3
1	Ge		107,597.78	0.76	99.0	Pulse	0.30	3
1	In		1,088,062.29	1.19	96.8	Pulse	0.30	3
1	Tb		4,355,512.67	2.02	99.1	Mix	0.50	3
1	Lu		2,555,401.08	1.61	96.1	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		162,796.73	1.60	99.2	Pulse	0.30	3
1	Te		8.67	58.08		Pulse	0.50	3
1	Li		671.13	3.73	108.6	Pulse	0.30	3

Quantitation Report

File Name	033_CCB.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:16
Sample Name	CCB
Sample Type	CCB
Comment	
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.036	ug/l	43.41	1,192.04	1.146E-02	Pulse	0.50	3
As			1	0.020	ug/l	41.31	36.67	3.484E-04	Pulse	1.00	3
Mo			1	0.113	ug/l	21.53	804.69	5.072E-03	Pulse	0.50	3
Pb			1	0.017	ug/l	36.35	1,424.73	4.277E-04	Pulse	1.00	3
Be			1	0.053	ug/l	39.74	3.17	2.559E-05	Pulse	2.00	3
Ag			1	0.006	ug/l	21.04	169.33	1.078E-03	Pulse	0.50	3
Ba			1	0.004	ug/l	59.94	27.33	2.591E-05	Pulse	0.50	3
Tl			1	0.031	ug/l	13.23	1,859.44	5.571E-04	Pulse	0.50	3
Sn			1	0.047	ug/l	18.68	782.24	7.393E-04	Pulse	0.30	3
Sr			1	0.001	ug/l	813.14	388.01	3.669E-04	Pulse	0.50	3
[Pb]			1	0.015	ug/l	37.37	678.02	2.025E-04	Pulse	0.50	3
Ca			1	-0.027	ug/l	-6804.86	122.67	1.010E-03	Pulse	0.50	3
Ti			1	0.015	ug/l	238.91	8.67	7.169E-05	Pulse	0.50	3
Na			1	2.192	ug/l	54.29	10,442.06	8.621E-02	Pulse	1.00	3
Mg			1	-0.392	ug/l	-119.92	1,351.05	1.117E-02	Pulse	1.00	3
K			1	3.402	ug/l	151.26	17,994.84	1.485E-01	Pulse	1.00	3
V			1	-0.014	ug/l	-30.53	406.01	3.345E-03	Pulse	0.50	3
Mn			1	0.014	ug/l	78.60	123.33	1.194E-03	Pulse	0.50	3
Fe			1	1.459	ug/l	23.93	20,836.55	2.003E-01	Pulse	0.50	3
Co			1	0.004	ug/l	67.15	114.00	1.105E-03	Pulse	0.50	3
Ni			1	-0.029	ug/l	-46.22	455.34	4.380E-03	Pulse	0.50	3
Cu			1	-0.126	ug/l	-18.80	5,795.55	5.559E-02	Pulse	0.50	3
Zn			1	1.403	ug/l	6.36	2,993.24	1.900E-02	Pulse	1.00	3
Cd			1	0.003	ug/l	99.45	12.00	7.672E-05	Pulse	0.50	3
Al			1	8.776	ug/l	12.07	1,402.38	1.156E-02	Pulse	1.00	3
Se			1	-0.008	ug/l	-812.55	14.00	8.946E-05	Pulse	3.00	3
Sb			1	0.017	ug/l	6.93	164.67	1.042E-03	Pulse	1.00	3
Se			1	0.096	ug/l	209.74	16.33	1.039E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,351,507.75	5.68	92.3	Pulse	0.50	3
1	Sc		121,882.19	8.34	95.7	Pulse	0.30	3

Quantitation Report

1	Ge		104,432.35	5.39	96.0	Pulse	0.30	3
1	In		1,060,244.85	7.40	94.3	Pulse	0.30	3
1	Tb		4,078,355.92	7.24	92.8	Pulse	0.50	3
1	Lu		2,419,979.42	6.85	91.0	Pulse	0.50	3
1	Ge		157,802.53	4.65	96.1	Pulse	0.30	3
1	Te		1.33	173.21		Pulse	0.50	3
1	Li		736.69	2.07	119.2	Pulse	0.30	3

Quantitation Report

File Name	034SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:20
Sample Name	FA73461-3
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.659	ug/l	2.99	3,686.36	3.716E-02	Pulse	0.50	3
As			1	0.204	ug/l	6.69	119.00	1.200E-03	Pulse	1.00	3
Mo			1	0.312	ug/l	11.21	1,027.37	6.822E-03	Pulse	0.50	3
Pb			1	0.178	ug/l	1.92	4,106.17	1.259E-03	Pulse	1.00	3
Be			1	0.098	ug/l	116.25	2.83	2.405E-05	Pulse	2.00	3
Ag			1	0.020	ug/l	6.61	241.33	1.603E-03	Pulse	0.50	3
Ba			1	23.913	ug/l	1.09	28,442.97	2.821E-02	Pulse	0.50	3
Tl			1	0.038	ug/l	16.36	1,133.38	3.475E-04	Pulse	0.50	3
Sn			1	1.138	ug/l	4.02	3,412.56	3.384E-03	Pulse	0.30	3
Sr			1	66.163	ug/l	1.74	144,619.22	1.434E-01	Pulse	0.50	3
[Pb]			1	0.168	ug/l	6.50	1,866.11	5.722E-04	Pulse	0.50	3
Ca			1	15225.446	ug/l	2.29	141,126.37	1.204E+00	Pulse	0.50	3
Ti			1	0.772	ug/l	45.25	66.00	5.651E-04	Pulse	0.50	3
Na			1	6923.310	ug/l	1.95	3,290,591.17	2.808E+01	Pulse	1.00	3
Mg			1	3396.620	ug/l	1.93	694,691.35	5.927E+00	Pulse	1.00	3
K			1	1352.756	ug/l	1.57	255,145.92	2.177E+00	Pulse	1.00	3
V			1	0.608	ug/l	4.52	2,490.17	2.125E-02	Pulse	0.50	3
Mn			1	16.981	ug/l	1.29	32,049.65	3.231E-01	Pulse	0.50	3
Fe			1	142.979	ug/l	0.70	488,693.12	4.926E+00	Pulse	0.50	3
Co			1	0.101	ug/l	10.37	818.69	8.250E-03	Pulse	0.50	3
Ni			1	0.967	ug/l	6.35	2,608.85	2.630E-02	Pulse	0.50	3
Cu			1	2.216	ug/l	0.47	19,772.82	1.993E-01	Pulse	0.50	3
Zn			1	6.345	ug/l	2.45	5,631.49	3.740E-02	Pulse	1.00	3
Cd			1	0.007	ug/l	63.36	13.33	8.873E-05	Pulse	0.50	3
Al			1	23.102	ug/l	7.29	1,668.40	1.423E-02	Pulse	1.00	3
Se			1	0.060	ug/l	101.12	15.78	1.047E-04	Pulse	3.00	3
Sb			1	0.054	ug/l	13.58	222.33	1.476E-03	Pulse	1.00	3
Se			1	0.384	ug/l	73.34	18.55	1.233E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,262,070.75	1.58	89.8	Pulse	0.50	3
1	Sc		117,219.43	1.40	92.0	Pulse	0.30	3
1	Ge		99,207.31	0.42	91.2	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,008,447.95	1.07	89.7	Pulse	0.30	3
1	Tb		4,036,000.50	0.85	91.8	Pulse	0.50	3
1	Lu		2,376,315.25	1.30	89.4	Pulse	0.50	3
1	Ge		150,580.01	0.66	91.7	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		654.46	16.87	105.9	Pulse	0.30	3

Quantitation Report

File Name	035SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:24
Sample Name	FA73461-4
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.704	ug/l	2.18	3,933.75	3.913E-02	Pulse	0.50	3
As			1	0.200	ug/l	15.05	118.67	1.181E-03	Pulse	1.00	3
Mo			1	0.321	ug/l	10.23	1,068.03	7.021E-03	Pulse	0.50	3
Pb			1	0.120	ug/l	3.09	2,976.93	9.222E-04	Pulse	1.00	3
Be			1	0.055	ug/l	107.15	1.83	1.520E-05	Pulse	2.00	3
Ag			1	0.016	ug/l	17.34	201.33	1.324E-03	Pulse	0.50	3
Ba			1	29.136	ug/l	0.35	34,876.82	3.436E-02	Pulse	0.50	3
Tl			1	0.023	ug/l	9.38	724.02	2.243E-04	Pulse	0.50	3
Sn			1	1.051	ug/l	4.02	3,211.41	3.164E-03	Pulse	0.30	3
Sr			1	82.571	ug/l	1.08	181,575.05	1.789E-01	Pulse	0.50	3
[Pb]			1	0.113	ug/l	5.52	1,371.39	4.248E-04	Pulse	0.50	3
Ca			1	19028.018	ug/l	1.25	180,782.64	1.505E+00	Pulse	0.50	3
Ti			1	0.440	ug/l	41.56	41.33	3.443E-04	Pulse	0.50	3
Na			1	8471.067	ug/l	1.20	4,125,610.92	3.434E+01	Pulse	1.00	3
Mg			1	4206.877	ug/l	1.22	881,678.85	7.338E+00	Pulse	1.00	3
K			1	1689.873	ug/l	0.54	322,595.65	2.685E+00	Pulse	1.00	3
V			1	0.700	ug/l	0.87	2,863.55	2.383E-02	Pulse	0.50	3
Mn			1	10.628	ug/l	1.25	20,351.99	2.024E-01	Pulse	0.50	3
Fe			1	108.721	ug/l	2.02	379,015.31	3.770E+00	Pulse	0.50	3
Co			1	0.104	ug/l	5.57	850.69	8.463E-03	Pulse	0.50	3
Ni			1	0.631	ug/l	6.52	1,922.10	1.912E-02	Pulse	0.50	3
Cu			1	1.184	ug/l	4.87	13,999.10	1.392E-01	Pulse	0.50	3
Zn			1	6.514	ug/l	2.20	5,824.56	3.828E-02	Pulse	1.00	3
Cd			1	0.007	ug/l	94.36	12.67	8.321E-05	Pulse	0.50	3
Al			1	34.879	ug/l	8.18	2,391.82	1.991E-02	Pulse	1.00	3
Se			1	-0.045	ug/l	-111.76	12.78	8.393E-05	Pulse	3.00	3
Sb			1	0.055	ug/l	18.74	228.67	1.503E-03	Pulse	1.00	3
Se			1	0.124	ug/l	160.36	14.78	9.706E-05	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,228,106.67	0.39	88.9	Pulse	0.50	3
1	Sc		120,149.63	0.68	94.3	Pulse	0.30	3
1	Ge		100,538.95	0.50	92.5	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,014,915.65	0.10	90.3	Pulse	0.30	3
1	Tb		4,066,985.92	0.55	92.5	Pulse	0.50	3
1	Lu		2,387,584.75	0.64	89.8	Pulse	0.50	3
1	Ge		152,171.39	0.57	92.7	Pulse	0.30	3
1	Te		2.00	100.00		Pulse	0.50	3
1	Li		730.02	8.08	118.2	Pulse	0.30	3

Quantitation Report

File Name 036SMPL.d
File Path D:\2020\03-March\xa033020m1.b
Method File
Method Path
Acq Time 3/30/2020 11:27
Sample Name FA73461-5
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 3/30/2020 9:49
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.626	ug/l	2.92	3,623.68	3.573E-02	Pulse	0.50	3
As			1	0.226	ug/l	19.34	133.67	1.317E-03	Pulse	1.00	3
Mo			1	0.317	ug/l	4.49	1,062.03	6.928E-03	Pulse	0.50	3
Pb			1	0.100	ug/l	4.96	2,660.55	8.109E-04	Pulse	1.00	3
Be			1	0.088	ug/l	48.27	2.67	2.207E-05	Pulse	2.00	3
Ag			1	0.014	ug/l	15.49	186.67	1.217E-03	Pulse	0.50	3
Ba			1	28.379	ug/l	1.93	34,425.96	3.347E-02	Pulse	0.50	3
Tl			1	0.019	ug/l	13.69	621.35	1.894E-04	Pulse	0.50	3
Sn			1	0.902	ug/l	13.01	2,865.84	2.787E-03	Pulse	0.30	3
Sr			1	80.998	ug/l	1.93	180,511.09	1.755E-01	Pulse	0.50	3
[Pb]			1	0.095	ug/l	3.52	1,232.72	3.757E-04	Pulse	0.50	3
Ca			1	18768.002	ug/l	1.31	179,516.96	1.484E+00	Pulse	0.50	3
Ti			1	0.336	ug/l	51.54	33.33	2.748E-04	Pulse	0.50	3
Na			1	8369.458	ug/l	1.35	4,103,697.42	3.393E+01	Pulse	1.00	3
Mg			1	4186.330	ug/l	1.62	883,269.87	7.303E+00	Pulse	1.00	3
K			1	1678.024	ug/l	1.14	322,602.71	2.667E+00	Pulse	1.00	3
V			1	0.741	ug/l	4.27	3,021.58	2.498E-02	Pulse	0.50	3
Mn			1	10.809	ug/l	2.75	20,874.53	2.059E-01	Pulse	0.50	3
Fe			1	135.456	ug/l	0.92	473,809.73	4.672E+00	Pulse	0.50	3
Co			1	0.107	ug/l	4.76	888.03	8.754E-03	Pulse	0.50	3
Ni			1	0.620	ug/l	4.02	1,915.44	1.888E-02	Pulse	0.50	3
Cu			1	1.251	ug/l	4.61	14,511.47	1.431E-01	Pulse	0.50	3
Zn			1	6.404	ug/l	2.88	5,779.21	3.771E-02	Pulse	1.00	3
Cd			1	0.010	ug/l	60.17	18.00	1.169E-04	Pulse	0.50	3
Al			1	14.095	ug/l	4.14	1,197.37	9.897E-03	Pulse	1.00	3
Se			1	-0.002	ug/l	-8303.89	14.11	9.234E-05	Pulse	3.00	3
Sb			1	0.057	ug/l	15.07	236.33	1.543E-03	Pulse	1.00	3
Se			1	0.194	ug/l	113.08	16.00	1.042E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,281,090.33	0.20	90.3	Pulse	0.50	3
1	Sc		120,964.26	1.09	95.0	Pulse	0.30	3
1	Ge		101,419.98	1.35	93.3	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,028,629.37	0.85	91.5	Pulse	0.30	3
1	Tb		4,086,065.33	0.82	93.0	Pulse	0.50	3
1	Lu		2,394,525.25	0.58	90.1	Pulse	0.50	3
1	Ge		153,306.21	1.42	93.4	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		703.35	12.35	113.8	Pulse	0.30	3

Quantitation Report

File Name	037SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:31
Sample Name	FA73461-7
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.600	ug/l	5.94	3,595.01	3.456E-02	Pulse	0.50	3
As			1	0.187	ug/l	28.32	115.33	1.111E-03	Pulse	1.00	3
Mo			1	0.282	ug/l	5.10	956.70	6.209E-03	Pulse	0.50	3
Pb			1	0.087	ug/l	7.19	2,421.84	7.360E-04	Pulse	1.00	3
Be			1	0.045	ug/l	66.58	1.67	1.331E-05	Pulse	2.00	3
Ag			1	0.017	ug/l	15.06	216.00	1.402E-03	Pulse	0.50	3
Ba			1	26.909	ug/l	1.28	32,897.17	3.174E-02	Pulse	0.50	3
Tl			1	0.013	ug/l	9.18	459.34	1.396E-04	Pulse	0.50	3
Sn			1	0.919	ug/l	9.90	2,932.59	2.830E-03	Pulse	0.30	3
Sr			1	78.284	ug/l	1.39	175,827.09	1.696E-01	Pulse	0.50	3
[Pb]			1	0.080	ug/l	5.19	1,104.71	3.355E-04	Pulse	0.50	3
Ca			1	17941.090	ug/l	1.60	177,767.31	1.419E+00	Pulse	0.50	3
Ti			1	0.235	ug/l	29.90	26.00	2.073E-04	Pulse	0.50	3
Na			1	7934.338	ug/l	0.89	4,030,390.33	3.217E+01	Pulse	1.00	3
Mg			1	3952.435	ug/l	0.97	863,944.50	6.895E+00	Pulse	1.00	3
K			1	1589.884	ug/l	0.65	317,540.95	2.534E+00	Pulse	1.00	3
V			1	0.790	ug/l	3.07	3,302.29	2.636E-02	Pulse	0.50	3
Mn			1	15.150	ug/l	2.18	29,993.10	2.883E-01	Pulse	0.50	3
Fe			1	112.455	ug/l	2.13	405,308.29	3.896E+00	Pulse	0.50	3
Co			1	0.110	ug/l	3.24	933.36	8.971E-03	Pulse	0.50	3
Ni			1	1.103	ug/l	6.22	3,038.25	2.920E-02	Pulse	0.50	3
Cu			1	1.192	ug/l	1.70	14,534.15	1.397E-01	Pulse	0.50	3
Zn			1	6.013	ug/l	1.99	5,493.46	3.567E-02	Pulse	1.00	3
Cd			1	0.007	ug/l	43.50	12.67	8.213E-05	Pulse	0.50	3
Al			1	13.826	ug/l	12.52	1,223.71	9.767E-03	Pulse	1.00	3
Se			1	0.038	ug/l	280.99	15.44	1.003E-04	Pulse	3.00	3
Sb			1	0.043	ug/l	9.91	190.00	1.234E-03	Pulse	1.00	3
Se			1	0.485	ug/l	19.71	20.55	1.335E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,292,629.83	1.76	90.7	Pulse	0.50	3
1	Sc		125,300.24	0.57	98.4	Pulse	0.30	3
1	Ge		104,048.40	1.45	95.7	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,036,649.16	1.55	92.2	Pulse	0.30	3
1	Tb		4,148,690.92	1.79	94.4	Pulse	0.50	3
1	Lu		2,431,222.92	1.43	91.5	Pulse	0.50	3
1	Ge		154,029.29	1.50	93.8	Pulse	0.30	3
1	Te		3.33	173.21		Pulse	0.50	3
1	Li		662.24	11.64	107.2	Pulse	0.30	3

Quantitation Report

File Name 038SMPL.d
File Path D:\2020\03-March\xa033020m1.b
Method File
Method Path
Acq Time 3/30/2020 11:35
Sample Name FA73461-8
Sample Type Sample
Comment
Prep Dilution 2.000
Auto Dilution N/A
Total Dilution 2.000
Operator Name admin
Acq Mode Spectrum
Cal Title
Cal Type External Calibration
Last Calib 3/30/2020 9:49
Bkg File
Bkg Mode Count Subtraction except for ISTD
Interference File
FQ Blank File
VIS Fit Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.537	ug/l	3.60	3,246.95	3.182E-02	Pulse	0.50	3
As			1	0.161	ug/l	4.43	100.00	9.798E-04	Pulse	1.00	3
Mo			1	0.224	ug/l	12.28	777.35	5.026E-03	Pulse	0.50	3
Pb			1	0.088	ug/l	0.63	2,415.84	7.385E-04	Pulse	1.00	3
Be			1	0.060	ug/l	58.74	2.00	1.623E-05	Pulse	2.00	3
Ag			1	0.006	ug/l	20.14	101.33	6.549E-04	Pulse	0.50	3
Ba			1	22.526	ug/l	0.99	27,655.08	2.657E-02	Pulse	0.50	3
Tl			1	0.011	ug/l	16.43	400.67	1.225E-04	Pulse	0.50	3
Sn			1	0.593	ug/l	8.90	2,085.69	2.004E-03	Pulse	0.30	3
Sr			1	66.241	ug/l	0.68	149,447.82	1.436E-01	Pulse	0.50	3
[Pb]			1	0.092	ug/l	8.37	1,204.05	3.680E-04	Pulse	0.50	3
Ca			1	15502.328	ug/l	1.07	151,382.35	1.226E+00	Pulse	0.50	3
Ti			1	0.384	ug/l	37.65	38.00	3.068E-04	Pulse	0.50	3
Na			1	6861.861	ug/l	1.84	3,435,528.42	2.783E+01	Pulse	1.00	3
Mg			1	3428.726	ug/l	2.00	738,668.77	5.983E+00	Pulse	1.00	3
K			1	1373.442	ug/l	2.11	272,600.95	2.208E+00	Pulse	1.00	3
V			1	0.661	ug/l	1.77	2,807.55	2.273E-02	Pulse	0.50	3
Mn			1	10.385	ug/l	0.90	20,185.83	1.978E-01	Pulse	0.50	3
Fe			1	92.381	ug/l	1.47	328,443.56	3.219E+00	Pulse	0.50	3
Co			1	0.093	ug/l	7.27	780.02	7.648E-03	Pulse	0.50	3
Ni			1	2.008	ug/l	104.07	4,931.47	4.856E-02	Pulse	0.50	3
Cu			1	1.360	ug/l	5.73	15,249.39	1.495E-01	Pulse	0.50	3
Zn			1	5.635	ug/l	1.71	5,214.71	3.371E-02	Pulse	1.00	3
Cd			1	0.006	ug/l	28.76	11.33	7.328E-05	Pulse	0.50	3
Al			1	11.570	ug/l	4.73	1,071.70	8.681E-03	Pulse	1.00	3
Se			1	-0.019	ug/l	-328.73	13.78	8.909E-05	Pulse	3.00	3
Sb			1	0.038	ug/l	13.76	174.33	1.127E-03	Pulse	1.00	3
Se			1	0.165	ug/l	67.91	15.67	1.013E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,271,054.33	0.87	90.1	Pulse	0.50	3
1	Sc		123,483.45	1.90	97.0	Pulse	0.30	3
1	Ge		102,043.31	1.06	93.8	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,040,798.74	0.74	92.6	Pulse	0.30	3
1	Tb		4,064,287.92	0.92	92.5	Pulse	0.50	3
1	Lu		2,407,081.67	1.26	90.6	Pulse	0.50	3
1	Ge		154,708.73	0.45	94.2	Pulse	0.30	3
1	Te		0.67	173.21		Pulse	0.50	3
1	Li		708.90	12.67	114.7	Pulse	0.30	3

Quantitation Report

File Name	039SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:39
Sample Name	FA73461-9
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.652	ug/l	0.78	3,768.38	3.685E-02	Pulse	0.50	3
As			1	0.193	ug/l	17.25	117.00	1.144E-03	Pulse	1.00	3
Mo			1	0.273	ug/l	9.02	928.69	6.026E-03	Pulse	0.50	3
Pb			1	0.055	ug/l	4.84	1,804.76	5.542E-04	Pulse	1.00	3
Be			1	0.086	ug/l	70.17	2.67	2.150E-05	Pulse	2.00	3
Ag			1	0.007	ug/l	13.49	106.00	6.873E-04	Pulse	0.50	3
Ba			1	26.957	ug/l	2.25	32,839.71	3.179E-02	Pulse	0.50	3
Tl			1	0.010	ug/l	2.77	391.34	1.202E-04	Pulse	0.50	3
Sn			1	0.804	ug/l	11.84	2,619.09	2.537E-03	Pulse	0.30	3
Sr			1	79.890	ug/l	1.47	178,807.93	1.731E-01	Pulse	0.50	3
[Pb]			1	0.044	ug/l	6.22	782.02	2.401E-04	Pulse	0.50	3
Ca			1	18369.229	ug/l	0.76	179,363.74	1.453E+00	Pulse	0.50	3
Ti			1	0.191	ug/l	34.06	22.00	1.783E-04	Pulse	0.50	3
Na			1	8145.662	ug/l	1.73	4,076,938.17	3.302E+01	Pulse	1.00	3
Mg			1	4056.862	ug/l	1.80	873,748.66	7.077E+00	Pulse	1.00	3
K			1	1626.457	ug/l	1.07	319,712.34	2.589E+00	Pulse	1.00	3
V			1	0.814	ug/l	7.72	3,338.30	2.704E-02	Pulse	0.50	3
Mn			1	11.464	ug/l	2.57	22,320.14	2.183E-01	Pulse	0.50	3
Fe			1	94.773	ug/l	1.62	337,372.95	3.299E+00	Pulse	0.50	3
Co			1	0.095	ug/l	7.59	800.69	7.826E-03	Pulse	0.50	3
Ni			1	0.818	ug/l	1.64	2,364.16	2.312E-02	Pulse	0.50	3
Cu			1	1.005	ug/l	4.90	13,170.52	1.288E-01	Pulse	0.50	3
Zn			1	4.924	ug/l	1.61	4,624.90	3.001E-02	Pulse	1.00	3
Cd			1	0.011	ug/l	57.35	19.33	1.250E-04	Pulse	0.50	3
Al			1	9.920	ug/l	1.61	973.70	7.886E-03	Pulse	1.00	3
Se			1	-0.007	ug/l	-1509.90	14.11	9.140E-05	Pulse	3.00	3
Sb			1	0.040	ug/l	28.35	181.00	1.176E-03	Pulse	1.00	3
Se			1	0.514	ug/l	39.72	21.00	1.364E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,256,091.67	0.57	89.7	Pulse	0.50	3
1	Sc		123,478.77	1.20	97.0	Pulse	0.30	3
1	Ge		102,263.21	1.30	94.0	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,033,062.56	1.25	91.9	Pulse	0.30	3
1	Tb		4,111,006.83	0.86	93.5	Pulse	0.50	3
1	Lu		2,403,534.00	1.64	90.4	Pulse	0.50	3
1	Ge		154,125.71	1.29	93.9	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		775.58	7.52	125.5	Pulse	0.30	3

Quantitation Report

File Name	040SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:43
Sample Name	FA73461-10
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.663	ug/l	4.44	3,820.39	3.734E-02	Pulse	0.50	3
As			1	0.236	ug/l	22.11	140.00	1.369E-03	Pulse	1.00	3
Mo			1	0.252	ug/l	4.56	868.69	5.599E-03	Pulse	0.50	3
Pb			1	0.128	ug/l	4.43	3,163.96	9.709E-04	Pulse	1.00	3
Be			1	0.032	ug/l	34.44	1.33	1.063E-05	Pulse	2.00	3
Ag			1	0.008	ug/l	34.37	120.00	7.738E-04	Pulse	0.50	3
Ba			1	27.461	ug/l	2.33	33,414.05	3.239E-02	Pulse	0.50	3
Tl			1	0.009	ug/l	7.90	344.00	1.056E-04	Pulse	0.50	3
Sn			1	0.766	ug/l	6.50	2,519.08	2.441E-03	Pulse	0.30	3
Sr			1	81.272	ug/l	0.72	181,679.38	1.761E-01	Pulse	0.50	3
[Pb]			1	0.125	ug/l	2.96	1,486.07	4.558E-04	Pulse	0.50	3
Ca			1	18402.090	ug/l	1.14	182,418.52	1.455E+00	Pulse	0.50	3
Ti			1	0.330	ug/l	6.71	34.00	2.712E-04	Pulse	0.50	3
Na			1	8170.378	ug/l	1.25	4,151,895.17	3.312E+01	Pulse	1.00	3
Mg			1	4068.165	ug/l	1.21	889,596.38	7.097E+00	Pulse	1.00	3
K			1	1642.307	ug/l	0.81	327,591.17	2.613E+00	Pulse	1.00	3
V			1	0.780	ug/l	2.13	3,268.95	2.608E-02	Pulse	0.50	3
Mn			1	9.428	ug/l	1.81	18,385.38	1.797E-01	Pulse	0.50	3
Fe			1	100.772	ug/l	1.72	358,353.85	3.502E+00	Pulse	0.50	3
Co			1	0.093	ug/l	11.22	784.02	7.666E-03	Pulse	0.50	3
Ni			1	0.828	ug/l	6.25	2,386.82	2.332E-02	Pulse	0.50	3
Cu			1	1.074	ug/l	6.67	13,592.81	1.328E-01	Pulse	0.50	3
Zn			1	5.376	ug/l	1.63	5,020.00	3.236E-02	Pulse	1.00	3
Cd			1	0.004	ug/l	82.10	9.33	6.019E-05	Pulse	0.50	3
Al			1	12.839	ug/l	2.92	1,164.71	9.292E-03	Pulse	1.00	3
Se			1	-0.009	ug/l	-273.46	14.11	9.095E-05	Pulse	3.00	3
Sb			1	0.040	ug/l	20.99	181.00	1.167E-03	Pulse	1.00	3
Se			1	0.305	ug/l	48.41	17.89	1.153E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,259,560.00	1.11	89.8	Pulse	0.50	3
1	Sc		125,360.43	0.86	98.4	Pulse	0.30	3
1	Ge		102,344.00	1.03	94.1	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,031,734.09	0.78	91.8	Pulse	0.30	3
1	Tb		4,082,817.83	0.65	92.9	Pulse	0.50	3
1	Lu		2,386,781.42	1.50	89.8	Pulse	0.50	3
1	Ge		155,136.97	0.38	94.5	Pulse	0.30	3
1	Te		0.67	173.21		Pulse	0.50	3
1	Li		683.35	13.13	110.6	Pulse	0.30	3

Quantitation Report

File Name	041SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:47
Sample Name	FA73461-11
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.652	ug/l	1.97	3,734.37	3.686E-02	Pulse	0.50	3
As			1	0.243	ug/l	15.77	142.00	1.403E-03	Pulse	1.00	3
Mo			1	0.265	ug/l	2.36	902.03	5.867E-03	Pulse	0.50	3
Pb			1	0.064	ug/l	5.92	1,949.11	6.015E-04	Pulse	1.00	3
Be			1	0.007	ug/l	356.11	0.67	5.462E-06	Pulse	2.00	3
Ag			1	0.024	ug/l	11.20	291.33	1.896E-03	Pulse	0.50	3
Ba			1	27.330	ug/l	0.72	33,118.88	3.223E-02	Pulse	0.50	3
Tl			1	0.007	ug/l	19.77	308.00	9.512E-05	Pulse	0.50	3
Sn			1	0.737	ug/l	7.35	2,432.40	2.369E-03	Pulse	0.30	3
Sr			1	81.304	ug/l	1.84	180,974.53	1.762E-01	Pulse	0.50	3
[Pb]			1	0.068	ug/l	11.69	990.70	3.056E-04	Pulse	0.50	3
Ca			1	18886.616	ug/l	0.92	182,253.53	1.494E+00	Pulse	0.50	3
Ti			1	0.293	ug/l	47.72	30.00	2.463E-04	Pulse	0.50	3
Na			1	8348.254	ug/l	0.80	4,129,506.08	3.384E+01	Pulse	1.00	3
Mg			1	4199.364	ug/l	1.30	893,845.02	7.325E+00	Pulse	1.00	3
K			1	1683.267	ug/l	0.38	326,431.72	2.675E+00	Pulse	1.00	3
V			1	0.836	ug/l	5.91	3,373.64	2.764E-02	Pulse	0.50	3
Mn			1	14.657	ug/l	2.79	28,249.17	2.789E-01	Pulse	0.50	3
Fe			1	106.491	ug/l	2.70	374,212.16	3.695E+00	Pulse	0.50	3
Co			1	0.111	ug/l	12.96	912.02	9.011E-03	Pulse	0.50	3
Ni			1	0.513	ug/l	5.38	1,681.41	1.660E-02	Pulse	0.50	3
Cu			1	1.180	ug/l	1.31	14,076.48	1.390E-01	Pulse	0.50	3
Zn			1	4.947	ug/l	2.80	4,632.23	3.013E-02	Pulse	1.00	3
Cd			1	0.010	ug/l	48.97	18.00	1.171E-04	Pulse	0.50	3
Al			1	21.442	ug/l	1.86	1,639.40	1.344E-02	Pulse	1.00	3
Se			1	-0.030	ug/l	-145.43	13.33	8.678E-05	Pulse	3.00	3
Sb			1	0.041	ug/l	8.67	182.33	1.186E-03	Pulse	1.00	3
Se			1	0.403	ug/l	66.17	19.22	1.252E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,239,929.83	1.35	89.2	Pulse	0.50	3
1	Sc		122,029.95	0.74	95.8	Pulse	0.30	3
1	Ge		101,303.94	1.43	93.2	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,027,469.99	1.35	91.4	Pulse	0.30	3
1	Tb		4,066,605.50	1.10	92.5	Pulse	0.50	3
1	Lu		2,382,716.42	1.71	89.6	Pulse	0.50	3
1	Ge		153,757.10	1.14	93.6	Pulse	0.30	3
1	Te		0.67	173.21		Pulse	0.50	3
1	Li		721.13	3.08	116.7	Pulse	0.30	3

Quantitation Report

File Name	042SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:50
Sample Name	FA73461-12
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	1.325	ug/l	4.70	6,714.51	6.626E-02	Pulse	0.50	3
As			1	0.220	ug/l	17.64	130.33	1.286E-03	Pulse	1.00	3
Mo			1	0.258	ug/l	10.21	872.69	5.726E-03	Pulse	0.50	3
Pb			1	0.116	ug/l	6.75	2,909.92	9.019E-04	Pulse	1.00	3
Be			1	0.047	ug/l	25.54	1.67	1.372E-05	Pulse	2.00	3
Ag			1	0.016	ug/l	24.57	204.00	1.338E-03	Pulse	0.50	3
Ba			1	27.099	ug/l	0.24	32,409.56	3.196E-02	Pulse	0.50	3
Tl			1	0.009	ug/l	26.00	344.01	1.066E-04	Pulse	0.50	3
Sn			1	0.752	ug/l	8.17	2,440.18	2.406E-03	Pulse	0.30	3
Sr			1	79.142	ug/l	1.06	173,884.17	1.715E-01	Pulse	0.50	3
[Pb]			1	0.108	ug/l	2.59	1,328.72	4.118E-04	Pulse	0.50	3
Ca			1	18190.622	ug/l	1.06	174,859.50	1.439E+00	Pulse	0.50	3
Ti			1	0.491	ug/l	8.32	46.00	3.784E-04	Pulse	0.50	3
Na			1	8258.744	ug/l	1.09	4,069,541.00	3.348E+01	Pulse	1.00	3
Mg			1	4076.356	ug/l	1.10	864,375.44	7.111E+00	Pulse	1.00	3
K			1	1649.408	ug/l	0.84	318,960.57	2.624E+00	Pulse	1.00	3
V			1	0.888	ug/l	2.28	3,538.33	2.911E-02	Pulse	0.50	3
Mn			1	19.576	ug/l	0.67	37,735.80	3.723E-01	Pulse	0.50	3
Fe			1	130.771	ug/l	0.79	457,492.04	4.514E+00	Pulse	0.50	3
Co			1	0.122	ug/l	3.15	1,002.03	9.887E-03	Pulse	0.50	3
Ni			1	0.772	ug/l	4.79	2,244.14	2.214E-02	Pulse	0.50	3
Cu			1	1.127	ug/l	6.32	13,775.61	1.359E-01	Pulse	0.50	3
Zn			1	6.535	ug/l	0.75	5,852.23	3.839E-02	Pulse	1.00	3
Cd			1	0.010	ug/l	73.47	16.67	1.095E-04	Pulse	0.50	3
Al			1	18.919	ug/l	3.29	1,485.39	1.222E-02	Pulse	1.00	3
Se			1	0.043	ug/l	211.50	15.44	1.013E-04	Pulse	3.00	3
Sb			1	0.043	ug/l	22.75	187.33	1.228E-03	Pulse	1.00	3
Se			1	0.173	ug/l	128.03	15.56	1.020E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,226,437.75	0.23	88.8	Pulse	0.50	3
1	Sc		121,558.00	0.49	95.5	Pulse	0.30	3
1	Ge		101,348.78	0.23	93.2	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,013,997.53	0.81	90.2	Pulse	0.30	3
1	Tb		4,065,354.50	0.80	92.5	Pulse	0.50	3
1	Lu		2,378,463.58	0.55	89.5	Pulse	0.50	3
1	Ge		152,442.28	0.36	92.8	Pulse	0.30	3
1	Te		0.67	173.21		Pulse	0.50	3
1	Li		770.02	11.23	124.6	Pulse	0.30	3

Quantitation Report

File Name	043SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:54
Sample Name	FA73461-13
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.625	ug/l	1.54	3,609.01	3.566E-02	Pulse	0.50	3
As			1	0.201	ug/l	31.46	119.67	1.183E-03	Pulse	1.00	3
Mo			1	0.260	ug/l	6.26	880.02	5.765E-03	Pulse	0.50	3
Pb			1	0.059	ug/l	2.39	1,847.44	5.729E-04	Pulse	1.00	3
Be			1	0.034	ug/l	150.98	1.33	1.095E-05	Pulse	2.00	3
Ag			1	0.010	ug/l	33.76	135.33	8.878E-04	Pulse	0.50	3
Ba			1	27.330	ug/l	2.65	32,658.77	3.223E-02	Pulse	0.50	3
Tl			1	0.010	ug/l	27.48	370.67	1.147E-04	Pulse	0.50	3
Sn			1	0.862	ug/l	18.12	2,719.29	2.685E-03	Pulse	0.30	3
Sr			1	80.906	ug/l	1.40	177,623.70	1.753E-01	Pulse	0.50	3
[Pb]			1	0.058	ug/l	10.16	894.03	2.774E-04	Pulse	0.50	3
Ca			1	18635.005	ug/l	1.11	179,035.45	1.474E+00	Pulse	0.50	3
Ti			1	0.436	ug/l	70.72	41.33	3.412E-04	Pulse	0.50	3
Na			1	8276.677	ug/l	0.90	4,076,335.17	3.355E+01	Pulse	1.00	3
Mg			1	4162.664	ug/l	1.15	882,196.73	7.261E+00	Pulse	1.00	3
K			1	1661.139	ug/l	1.10	320,941.96	2.642E+00	Pulse	1.00	3
V			1	0.823	ug/l	2.99	3,313.63	2.727E-02	Pulse	0.50	3
Mn			1	10.870	ug/l	0.54	20,955.97	2.070E-01	Pulse	0.50	3
Fe			1	108.074	ug/l	1.75	379,360.86	3.748E+00	Pulse	0.50	3
Co			1	0.108	ug/l	14.19	893.36	8.829E-03	Pulse	0.50	3
Ni			1	0.743	ug/l	1.89	2,178.13	2.152E-02	Pulse	0.50	3
Cu			1	1.135	ug/l	3.90	13,803.62	1.364E-01	Pulse	0.50	3
Zn			1	5.367	ug/l	1.25	4,931.64	3.231E-02	Pulse	1.00	3
Cd			1	0.007	ug/l	11.59	13.33	8.737E-05	Pulse	0.50	3
Al			1	16.443	ug/l	2.72	1,339.72	1.103E-02	Pulse	1.00	3
Se			1	0.016	ug/l	275.29	14.67	9.605E-05	Pulse	3.00	3
Sb			1	0.044	ug/l	13.30	193.33	1.267E-03	Pulse	1.00	3
Se			1	0.367	ug/l	16.45	18.56	1.216E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,225,346.25	1.84	88.8	Pulse	0.50	3
1	Sc		121,497.94	0.74	95.4	Pulse	0.30	3
1	Ge		101,216.64	0.51	93.1	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,013,317.81	0.90	90.1	Pulse	0.30	3
1	Tb		4,052,735.83	1.15	92.2	Pulse	0.50	3
1	Lu		2,370,335.00	1.05	89.2	Pulse	0.50	3
1	Ge		152,629.34	0.73	93.0	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		683.35	11.62	110.6	Pulse	0.30	3

Quantitation Report

File Name	044CCVA.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 11:58
Sample Name	CCV (Ag)
Sample Type	CCV_Ag
Comment	=std 4
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	49.777	ug/l	1.57	461,293.69	4.360E+00	Pulse	0.50	3
As			1	48.817	ug/l	2.12	53,619.40	5.068E-01	Pulse	1.00	3
Mo			1	47.923	ug/l	0.18	315,314.88	1.968E+00	Pulse	0.50	3
Pb			1	47.338	ug/l	0.86	1,811,543.87	5.423E-01	Pulse	1.00	3
Be			1	49.823	ug/l	1.16	2,626.01	2.024E-02	Pulse	2.00	3
Ag			1	49.703	ug/l	0.35	1,126,002.96	7.028E+00	Pulse	0.50	3
Ba			1	47.755	ug/l	1.17	119,684.81	1.126E-01	Pulse	0.50	3
Tl			1	47.864	ug/l	0.49	2,672,253.17	8.000E-01	Pulse	0.50	3
Sn			1	48.073	ug/l	1.47	259,341.24	2.440E-01	Pulse	0.30	3
Sr			1	48.565	ug/l	1.56	223,600.95	2.104E-01	Pulse	0.50	3
[Pb]			1	48.449	ug/l	0.40	864,758.52	2.589E-01	Pulse	0.50	3
Ca			1	4829.422	ug/l	1.37	99,183.14	7.643E-01	Pulse	0.50	3
Ti			1	47.667	ug/l	3.34	8,244.43	6.354E-02	Pulse	0.50	3
Na			1	5045.736	ug/l	0.54	5,306,775.17	4.089E+01	Analog	1.00	3
Mg			1	4864.546	ug/l	0.57	2,200,182.75	1.695E+01	Pulse	1.00	3
K			1	4842.217	ug/l	0.67	1,911,946.25	1.473E+01	Pulse	1.00	3
V			1	47.546	ug/l	0.89	347,429.68	2.677E+00	Pulse	0.50	3
Mn			1	49.260	ug/l	0.90	198,002.69	1.871E+00	Pulse	0.50	3
Fe			1	5106.172	ug/l	1.60	36,467,812.00	3.447E+02	Analog	0.50	3
Co			1	49.859	ug/l	1.30	811,805.41	7.672E+00	Pulse	0.50	3
Ni			1	49.986	ug/l	1.87	226,729.82	2.143E+00	Pulse	0.50	3
Cu			1	50.413	ug/l	1.76	628,444.90	5.940E+00	Pulse	0.50	3
Zn			1	49.625	ug/l	0.47	83,403.10	5.206E-01	Pulse	1.00	3
Cd			1	47.975	ug/l	1.17	142,374.03	8.887E-01	Pulse	0.50	3
Al			1	4848.003	ug/l	1.22	606,423.11	4.673E+00	Pulse	1.00	3
Se			1	48.849	ug/l	1.70	3,131.59	1.955E-02	Pulse	3.00	3
Sb			1	46.950	ug/l	0.43	339,794.50	2.121E+00	Pulse	1.00	3
Se			1	48.822	ug/l	1.25	1,590.07	9.925E-03	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,340,422.42	0.67	92.0	Pulse	0.50	3
1	Sc		129,771.24	0.50	101.9	Pulse	0.30	3
1	Ge		105,826.15	1.59	97.3	Pulse	0.30	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	In		1,062,929.12	0.99	94.5	Pulse	0.30	3
1	Tb		4,225,546.50	0.44	96.1	Pulse	0.50	3
1	Lu		2,491,632.33	0.61	93.7	Pulse	0.50	3
1	Ge		160,209.84	0.40	97.6	Pulse	0.30	3
1	Te		3.33	91.65		Pulse	0.50	3
1	Li		702.24	5.62	113.7	Pulse	0.30	3

Quantitation Report

File Name	045_CCV.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 12:02
Sample Name	CCV
Sample Type	CCV
Comment	=std 5
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	101.021	ug/l	1.12	928,705.37	8.839E+00	Pulse	0.50	3
As			1	100.677	ug/l	1.34	109,793.40	1.045E+00	Pulse	1.00	3
Mo			1	97.238	ug/l	1.76	640,337.83	3.993E+00	Pulse	0.50	3
Pb			1	97.698	ug/l	0.73	3,643,293.58	1.119E+00	Pulse	1.00	3
Be			1	102.192	ug/l	0.71	5,283.02	4.150E-02	Pulse	2.00	3
Ag			1	99.400	ug/l	0.57	2,254,105.17	1.406E+01	Pulse	0.50	3
Ba			1	97.017	ug/l	2.36	242,330.92	2.288E-01	Pulse	0.50	3
Tl			1	100.716	ug/l	3.00	5,481,244.17	1.683E+00	Mix	0.50	3
Sn			1	98.239	ug/l	2.34	527,694.60	4.981E-01	Pulse	0.30	3
Sr			1	99.778	ug/l	1.91	457,510.54	4.319E-01	Pulse	0.50	3
[Pb]			1	99.672	ug/l	0.74	1,733,571.33	5.325E-01	Pulse	0.50	3
Ca			1	9997.571	ug/l	0.87	201,278.36	1.581E+00	Pulse	0.50	3
Ti			1	101.229	ug/l	2.43	17,169.54	1.349E-01	Pulse	0.50	3
Na			1	10446.803	ug/l	0.12	10,768,855.67	8.459E+01	Analog	1.00	3
Mg			1	10245.912	ug/l	2.52	4,544,332.17	3.570E+01	Mix	1.00	3
K			1	9986.356	ug/l	0.78	3,849,301.50	3.024E+01	Pulse	1.00	3
V			1	99.125	ug/l	0.53	709,985.50	5.577E+00	Pulse	0.50	3
Mn			1	100.349	ug/l	1.09	400,426.45	3.811E+00	Pulse	0.50	3
Fe			1	10429.242	ug/l	0.61	73,952,253.33	7.039E+02	Analog	0.50	3
Co			1	99.964	ug/l	0.70	1,616,098.37	1.538E+01	Pulse	0.50	3
Ni			1	101.195	ug/l	0.78	455,187.46	4.332E+00	Pulse	0.50	3
Cu			1	101.388	ug/l	1.29	1,247,536.63	1.187E+01	Pulse	0.50	3
Zn			1	99.637	ug/l	1.10	166,909.40	1.041E+00	Pulse	1.00	3
Cd			1	97.295	ug/l	0.68	289,033.21	1.802E+00	Pulse	0.50	3
Al			1	9946.877	ug/l	0.20	1,220,174.79	9.585E+00	Pulse	1.00	3
Se			1	98.807	ug/l	0.67	6,326.05	3.944E-02	Pulse	3.00	3
Sb			1	95.716	ug/l	0.68	693,387.58	4.324E+00	Pulse	1.00	3
Se			1	98.193	ug/l	0.73	3,187.60	1.988E-02	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,255,869.33	0.63	89.6	Pulse	0.50	3
1	Sc		127,300.57	0.24	100.0	Pulse	0.30	3
1	Ge		105,070.60	0.82	96.6	Pulse	0.30	3
1	In		1,059,597.32	1.47	94.2	Pulse	0.30	3
1	Tb		4,130,888.25	0.45	94.0	Pulse	0.50	3
1	Lu		2,470,357.08	1.26	92.9	Pulse	0.50	3

Quantitation Report

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Ge		160,376.00	0.87	97.7	Pulse	0.30	3
1	Te		8.67	13.32		Pulse	0.50	3
1	Li		690.02	0.97	111.7	Pulse	0.30	3

Quantitation Report

File Name	046_CCB.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 12:06
Sample Name	CCB
Sample Type	CCB
Comment	
Prep Dilution	1.000
Auto Dilution	N/A
Total Dilution	1.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.041	ug/l	26.15	1,262.71	1.193E-02	Pulse	0.50	3
As			1	0.020	ug/l	45.76	37.00	3.494E-04	Pulse	1.00	3
Mo			1	0.126	ug/l	20.78	890.69	5.580E-03	Pulse	0.50	3
Pb			1	0.020	ug/l	23.88	1,579.09	4.646E-04	Pulse	1.00	3
Be			1	0.044	ug/l	32.47	2.83	2.207E-05	Pulse	2.00	3
Ag			1	0.011	ug/l	40.83	279.34	1.744E-03	Pulse	0.50	3
Ba			1	0.008	ug/l	24.75	39.33	3.616E-05	Pulse	0.50	3
Tl			1	0.030	ug/l	4.14	1,800.77	5.297E-04	Pulse	0.50	3
Sn			1	0.038	ug/l	54.52	753.36	6.925E-04	Pulse	0.30	3
Sr			1	0.014	ug/l	30.48	461.34	4.240E-04	Pulse	0.50	3
[Pb]			1	0.018	ug/l	28.35	739.35	2.174E-04	Pulse	0.50	3
Ca			1	0.446	ug/l	367.38	139.33	1.085E-03	Pulse	0.50	3
Ti			1	-0.023	ug/l	-77.74	2.67	2.067E-05	Pulse	0.50	3
Na			1	1.771	ug/l	26.97	10,617.49	8.280E-02	Pulse	1.00	3
Mg			1	-0.442	ug/l	-131.84	1,411.39	1.100E-02	Pulse	1.00	3
K			1	-0.006	ug/l	-18018.72	17,721.60	1.382E-01	Pulse	1.00	3
V			1	-0.011	ug/l	-29.25	456.01	3.556E-03	Pulse	0.50	3
Mn			1	0.024	ug/l	46.55	164.67	1.555E-03	Pulse	0.50	3
Fe			1	2.074	ug/l	27.09	25,604.52	2.419E-01	Pulse	0.50	3
Co			1	0.011	ug/l	46.76	225.33	2.128E-03	Pulse	0.50	3
Ni			1	-0.023	ug/l	-23.74	490.68	4.637E-03	Pulse	0.50	3
Cu			1	-0.141	ug/l	-4.91	5,706.86	5.393E-02	Pulse	0.50	3
Zn			1	1.326	ug/l	3.36	2,906.56	1.819E-02	Pulse	1.00	3
Cd			1	0.013	ug/l	66.46	43.33	2.704E-04	Pulse	0.50	3
Al			1	8.581	ug/l	9.87	1,458.72	1.137E-02	Pulse	1.00	3
Se			1	0.023	ug/l	165.88	16.33	1.021E-04	Pulse	3.00	3
Sb			1	0.019	ug/l	6.43	177.00	1.108E-03	Pulse	1.00	3
Se			1	0.117	ug/l	111.64	17.33	1.083E-04	Pulse	3.00	3

ISTD Table

Tune	Element	Mass	CPS	RSD(%)	ISTD Recovery%	Det	Time(sec)	Rep
1	Bi		3,399,650.50	0.59	93.6	Pulse	0.50	3
1	Sc		128,212.45	0.87	100.7	Pulse	0.30	3

Quantitation Report

1	Ge		105,814.89	0.89	97.3	Pulse	0.30	3
1	In		1,088,016.24	0.30	96.8	Pulse	0.30	3
1	Tb		4,225,177.00	0.18	96.1	Pulse	0.50	3
1	Lu		2,496,746.08	0.12	93.9	Pulse	0.50	3
1	Ge		159,805.52	1.38	97.3	Pulse	0.30	3
1	Te		0.00	---		Pulse	0.50	3
1	Li		733.35	4.72	118.7	Pulse	0.30	3

Quantitation Report

File Name	047SMPL.d
File Path	D:\2020\03-March\xa033020m1.b
Method File	
Method Path	
Acq Time	3/30/2020 12:10
Sample Name	FA73645-2
Sample Type	Sample
Comment	
Prep Dilution	2.000
Auto Dilution	N/A
Total Dilution	2.000
Operator Name	admin
Acq Mode	Spectrum
Cal Title	
Cal Type	External Calibration
Last Calib	3/30/2020 9:49
Bkg File	
Bkg Mode	Count Subtraction except for ISTD
Interference File	
FQ Blank File	
VIS Fit	Point to Point

Tune Step	Tune File
1	

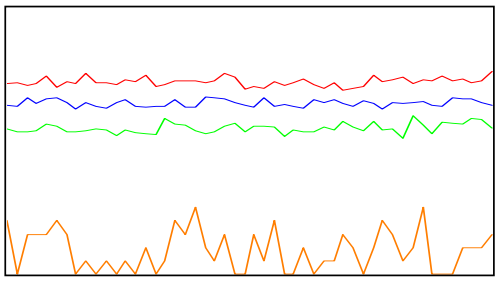
FullQuant Table

Element	Mass	ISTD	Tune	Conc	Units	RSD(%)	CPS	Ratio	Det	Time(sec)	Rep
Cr			1	0.638	ug/l	2.06	3,514.33	3.625E-02	Pulse	0.50	3
As			1	0.059	ug/l	26.27	43.33	4.475E-04	Pulse	1.00	3
Mo			1	0.127	ug/l	14.96	446.68	3.029E-03	Pulse	0.50	3
Pb			1	0.077	ug/l	4.04	2,211.15	6.794E-04	Pulse	1.00	3
Be			1	0.043	ug/l	98.45	1.50	1.286E-05	Pulse	2.00	3
Ag			1	0.024	ug/l	11.02	277.33	1.881E-03	Pulse	0.50	3
Ba			1	0.096	ug/l	7.05	130.67	1.305E-04	Pulse	0.50	3
Tl			1	0.029	ug/l	6.44	910.03	2.795E-04	Pulse	0.50	3
Sn			1	1.076	ug/l	10.64	3,228.09	3.228E-03	Pulse	0.30	3
Sr			1	0.121	ug/l	22.12	625.34	6.258E-04	Pulse	0.50	3
[Pb]			1	0.076	ug/l	10.35	1,063.37	3.266E-04	Pulse	0.50	3
Ca			1	41.960	ug/l	14.33	506.01	4.331E-03	Pulse	0.50	3
Ti			1	0.052	ug/l	84.87	10.00	8.552E-05	Pulse	0.50	3
Na			1	28.798	ug/l	1.89	21,607.94	1.850E-01	Pulse	1.00	3
Mg			1	7.704	ug/l	2.73	3,032.23	2.596E-02	Pulse	1.00	3
K			1	14.811	ug/l	1.92	18,757.55	1.606E-01	Pulse	1.00	3
V			1	0.406	ug/l	4.57	1,817.43	1.556E-02	Pulse	0.50	3
Mn			1	0.180	ug/l	8.10	394.67	4.072E-03	Pulse	0.50	3
Fe			1	6.364	ug/l	4.37	30,688.23	3.166E-01	Pulse	0.50	3
Co			1	0.016	ug/l	15.40	163.33	1.685E-03	Pulse	0.50	3
Ni			1	0.046	ug/l	78.23	641.35	6.620E-03	Pulse	0.50	3
Cu			1	1.270	ug/l	2.74	13,980.42	1.442E-01	Pulse	0.50	3
Zn			1	9.051	ug/l	1.84	7,587.50	5.147E-02	Pulse	1.00	3
Cd			1	0.012	ug/l	50.64	20.00	1.353E-04	Pulse	0.50	3
Al			1	1.539	ug/l	29.58	449.68	3.849E-03	Pulse	1.00	3
Se			1	-0.163	ug/l	-46.84	8.89	6.028E-05	Pulse	3.00	3
Sb			1	0.040	ug/l	10.35	172.67	1.171E-03	Pulse	1.00	3
Se			1	0.364	ug/l	100.60	17.89	1.213E-04	Pulse	3.00	3

Tune Report

Batch Folder	D:\2020\03-March\xa033020m1.b
Acq. Date-Time	3/30/2020 9:04
Report Comment	033020Tune
Instrument Name	G3281A JP12151709

[2]



Mass	Range	Count (Actual)	Response (Actual) [cps/ug/l]	Response (Required) [cps/ug/l]	Response (Flag)
59	5000	3602	36015.99	5000.00	
89	5000	2734	27337.46	5000.00	
205	20000	12812	128122.18	5000.00	
78	20	2			

Mass	Resp Ratio (Actual)	Resp Ratio (Required)	Resp Ratio (Flag)
59		-	
89		-	
205		-	
78		-	

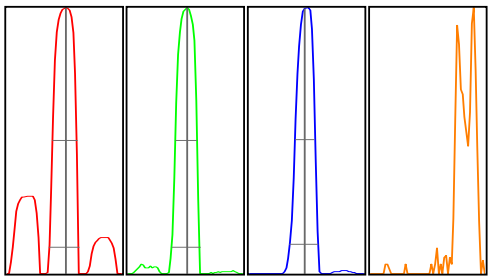
Mass	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
59	2.25	5.00	
89	3.36	5.00	
205	2.07	5.00	
78	87.51		

Mass	Background (Actual)	Background (Required)	Background (Flag)
59	0.00	2	
89	0.00	2	
205	0.20	2	
78	0.00	5	

Ratio	156/140	0.626 %	
Ratio	70/140	1.443 %	

Integration Time [sec] 0.1 **Sampling Period [sec]** 0.412

Tune Report



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	W-50%	W-10% (Actual)	W-10% (Required)	W-10% (Flag)
59	3627.28	59.05	58.9 - 59.1		0.61	0.743	0.900	
89	2886.31	89.05	88.9 - 89.1		0.54	0.707	0.900	
205	12842.66	205.00	204.9 - 205.1		0.51	0.723	0.900	
78			-					

Integration Time [sec] 0.1 **Acquisition Time [sec]** 29.92 **Y Axis** Linear

Tune Parameters
Plasma Paramters

RF Power	1600 W	Nebulizer Pump	0.10 rps
RF Matching	1.70 V	S/C Temp	2 ℃
Smpl Depth	9.0 mm	Gas Switch	Dilution Gas
Carrier Gas	0.90 L/min	Makeup/Dilution Gas	0.20 L/min
Option Gas	0.0 %		

Lenses Parameters

Extract 1	0.0 V	Cell Entrance	-36 V
Extract 2	-160.0 V	Cell Exit	-70 V
Omega Bias	-80 V	Deflect	2.4 V
Omega Lens	8.1 V	Plate Bias	-60 V

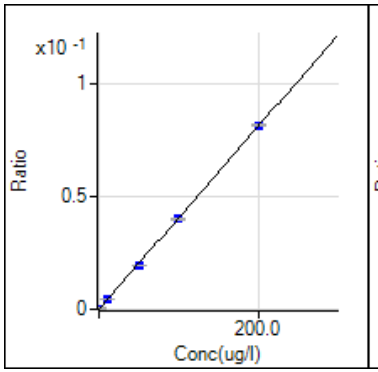
Cell Parameters

Use Gas	true	OctP Bias	-18.0 V
He Flow	5.0 mL/min	OctP RF	200 V
H2 Flow	0.0 mL/min	Energy Discrimination	3.0 V
3rd Gas Flow	0 %		

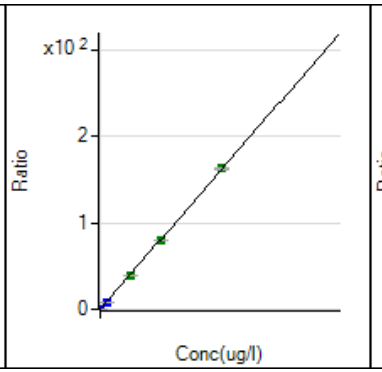
History

	Sensitivity			Background			Resolution/Axis					
Created Date	Channel 1 Count	Channel 2 Count	Channel 3 Count	Channel 1 Count	Channel 2 Count	Channel 3 Count	Channel 1 Axis	Channel 1 W-10%	Channel 2 Axis	Channel 2 W-10%	Channel 3 Axis	Channel 3 W-10%
3/30/2020 8:52 AM	5505.865	29175.954	23242.375	1.15	3.2500004	12.050006	7	0.7697234	89.05	0.7392682	205	0.7656478

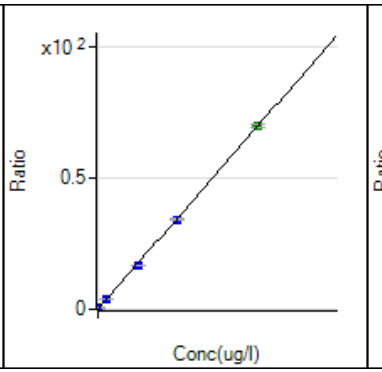
Calibration for D:\2020\03-March\xa033020m1.b\082SMPL.d



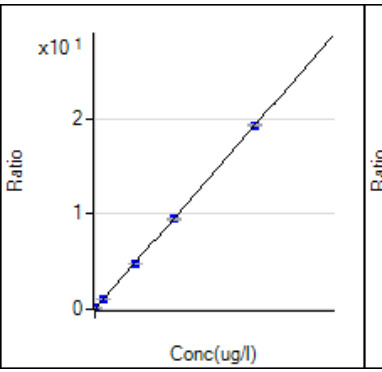
9 Be [2] / ISTD: 45 Sc
y = 4.061E-4 x + 4.134E-6
R 0.9999
DL 0.05289
BEC 0.01018



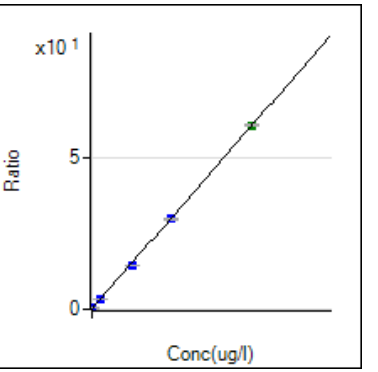
23 Na [2] / ISTD: 45 Sc
y = 8.091E-3 x + 6.847E-2
R 0.9999
DL 0.941
BEC 8.463



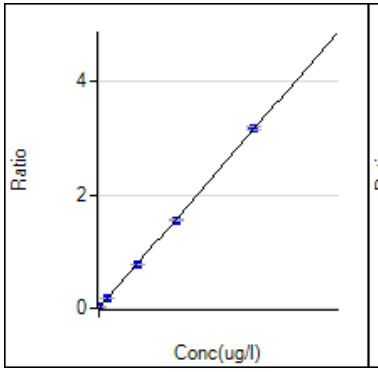
24 Mg [2] / ISTD: 45 Sc
y = 3.483E-3 x + 1.254E-2
R 0.9998
DL 0.2173
BEC 3.601



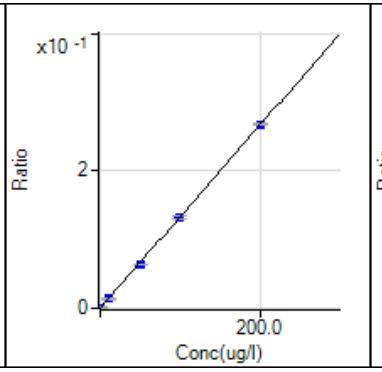
27 Al [2] / ISTD: 45 Sc
y = 9.633E-4 x + 3.108E-3
R 0.9999
DL 0.6484
BEC 3.226



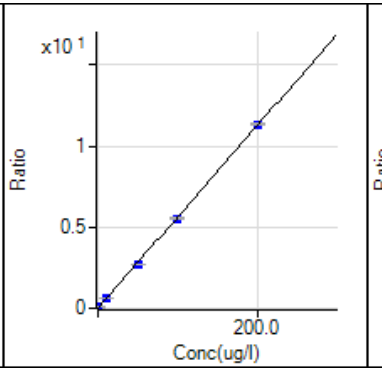
39 K [2] / ISTD: 45 Sc
y = 3.014E-3 x + 1.383E-1
R 0.9999
DL 7.224
BEC 45.87



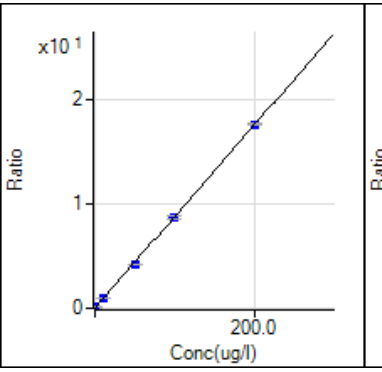
44 Ca [2] / ISTD: 45 Sc
y = 1.581E-4 x + 1.015E-3
R 0.9999
DL 2.475
BEC 6.421



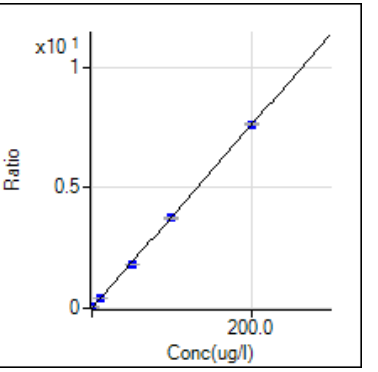
47 Ti [2] / ISTD: 45 Sc
y = 1.332E-3 x + 5.110E-5
R 0.9999
DL 0.08257
BEC 0.03837



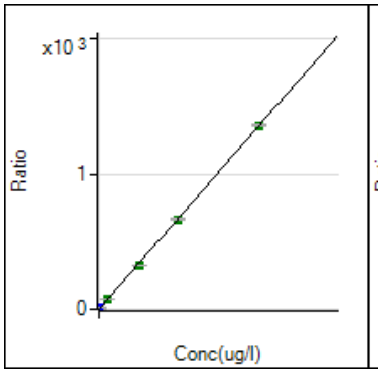
51 V [2] / ISTD: 45 Sc
y = 5.622E-2 x + 4.151E-3
R 0.9999
DL 0.004217
BEC 0.07383



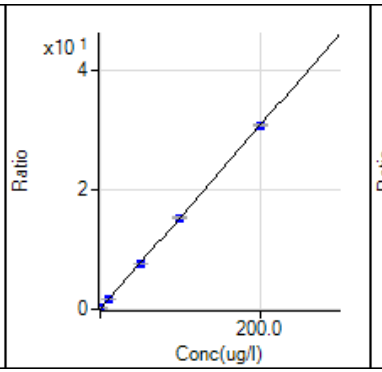
52 Cr [2] / ISTD: 72 Ge
y = 8.742E-2 x + 8.351E-3
R 0.9999
DL 0.01604
BEC 0.09553



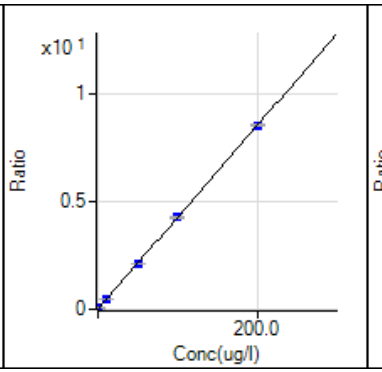
55 Mn [2] / ISTD: 72 Ge
y = 3.797E-2 x + 6.500E-4
R 0.9999
DL 0.002997
BEC 0.01712



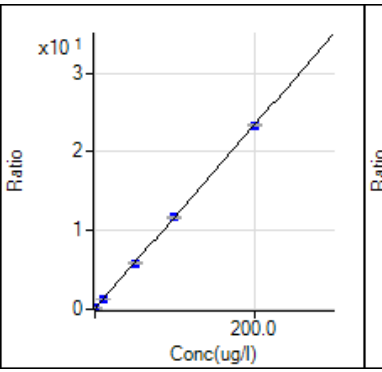
56 Fe [2] / ISTD: 72 Ge
y = 6.748E-2 x + 1.019E-1
R 0.9998
DL 0.01637
BEC 1.51



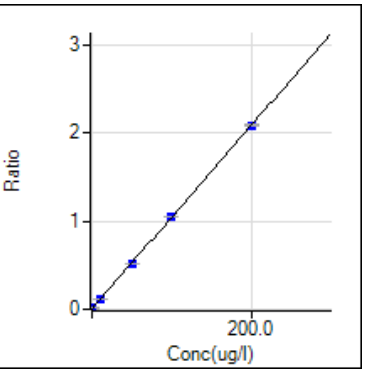
59 Co [2] / ISTD: 72 Ge
y = 1.539E-1 x + 4.916E-4
R 1.0000
DL 0.003448
BEC 0.003195



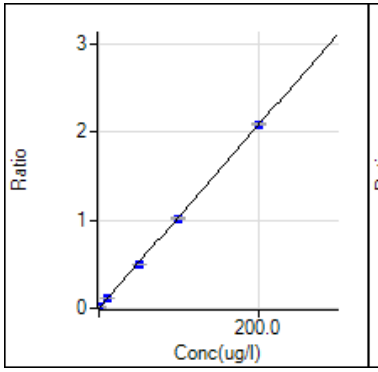
60 Ni [2] / ISTD: 72 Ge
y = 4.276E-2 x + 5.627E-3
R 1.0000
DL 0.02905
BEC 0.1316



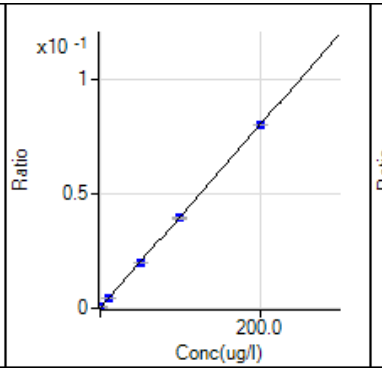
63 Cu [2] / ISTD: 72 Ge
y = 1.164E-1 x + 7.030E-2
R 1.0000
DL 0.0646
BEC 0.6038



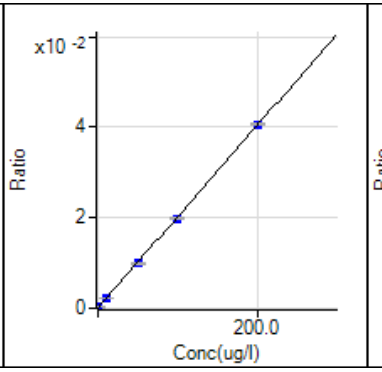
66 Zn [2] / ISTD: 74 Ge
y = 1.040E-2 x + 4.400E-3
R 1.0000
DL 0.05929
BEC 0.423



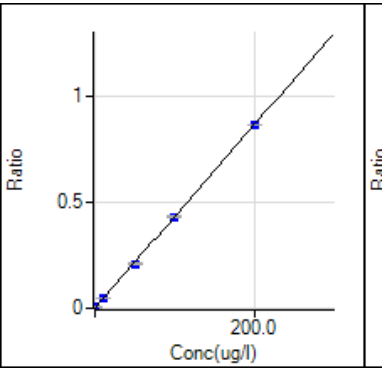
75 As [2] / ISTD: 72 Ge
y = 1.038E-2 x + 1.423E-4
R 0.9999
DL 0.02686
BEC 0.01371



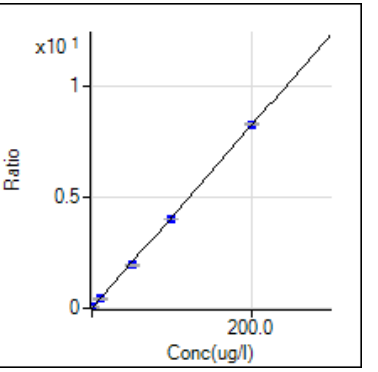
78 Se [2] / ISTD: 74 Ge
y = 3.983E-4 x + 9.281E-5
R 0.9999
DL 0.05757
BEC 0.233



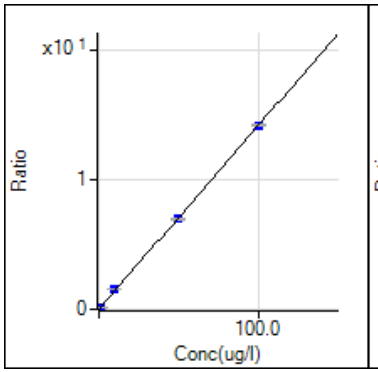
82 Se [2] / ISTD: 74 Ge
y = 2.016E-4 x + 8.461E-5
R 0.9999
DL 0.6278
BEC 0.4198



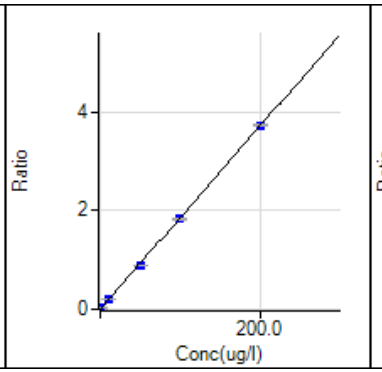
88 Sr [2] / ISTD: 115 In
y = 4.325E-3 x + 3.638E-4
R 1.0000
DL 0.02916
BEC 0.08413



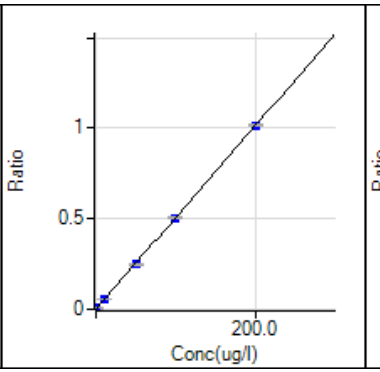
95 Mo [2] / ISTD: 74 Ge
y = 4.106E-2 x + 4.241E-4
R 0.9998
DL 0.006007
BEC 0.01033



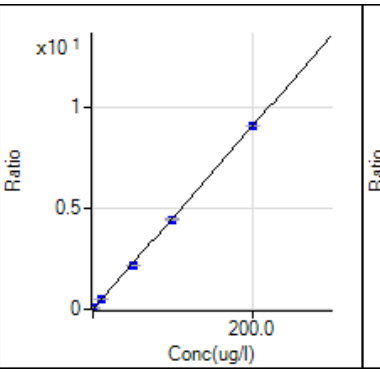
107 Ag [2] / ISTD: 74 Ge
y = 1.414E-1 x + 2.012E-4
R 0.9999
DL 0.00152
BEC 0.001423



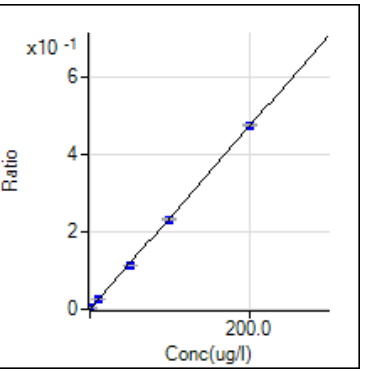
111 Cd [2] / ISTD: 74 Ge
y = 1.852E-2 x + 2.068E-5
R 0.9999
DL 0.003047
BEC 0.001116



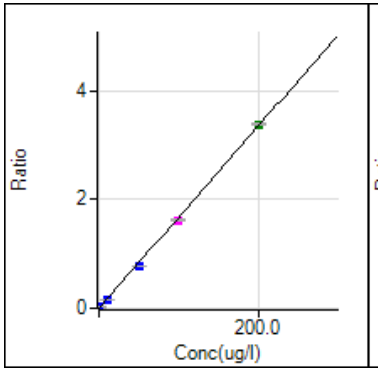
118 Sn [2] / ISTD: 115 In
y = 5.065E-3 x + 5.019E-4
R 1.0000
DL 0.03132
BEC 0.09908



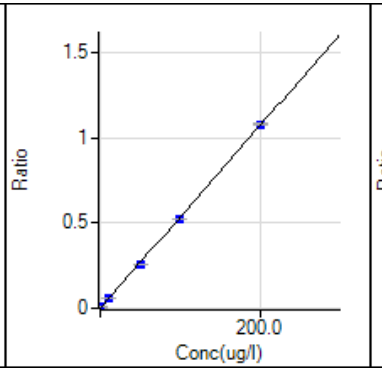
121 Sb [2] / ISTD: 74 Ge
y = 4.517E-2 x + 2.645E-4
R 0.9999
DL 0.001844
BEC 0.005855



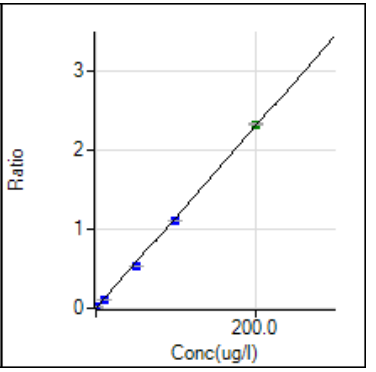
137 Ba [2] / ISTD: 115 In
y = 2.358E-3 x + 1.717E-5
R 0.9999
DL 0.01298
BEC 0.007283



205 Tl [2] / ISTD: 209 Bi
y = 1.671E-2 x + 3.318E-5
R 0.9997
DL 0.00207
BEC 0.001985



206 [Pb] [2] / ISTD: 209 Bi
y = 5.341E-3 x + 1.230E-4
R 0.9998
DL 0.008612
BEC 0.02302



208 Pb [2] / ISTD: 209 Bi
y = 1.145E-2 x + 2.370E-4
R 0.9996
DL 0.004413
BEC 0.0207

SGS Orlando

Date/Time Started	3/23/2020 9:40
Date/Time Started	3/23/2020 11:40

Analysts Name:	Jordan Cuoco		
MP Batch ID:	36990		
Method	SW846-7470A	Matrix	Water

Reagent Lot # (A)		MET #	Spk. Soln ID	Pipette#
Conc. HNO3 (A)	245675	6564	10 ppm int.	KU15244
Conc. HCL (A)	251602	6581	10 ppm 2nd (ICV)	PU08121
H2SO4 (A)	238844	6651	100 ppb Curve	NA
KMnO4 (A)	MET 6649	6650	100 ppb 2nd (ICV)	NA
K2S2O8 (A)	MET 6642	NA	NA	NA
SnCl (A)	B0147582A	NA	NA	NA
Hydroxylamine HCL (A)	MET 6640	NA	NA	NA

HotBlock I.D.	12	Therm ID	Mercury	Temp. C	92	Corr. Factor	-1	Corrected Observed Temp. C	91
pH Paper Lot#	220416	Teflon Chips	25280382	Filter Lot	0714Z18IV-P	Bal.ID		Digestion Tube Lot#	351340-4694

(D)	Bot#	Sample #	Initial (g)/(ml)	Final Vol.(ml)	pH<2	NA	NA	NA	NA	NA	NA	Comment
	NA	STD1 CAL BLANK	50.00	50	NA							
0.1ml (B)	NA	STD2	50.00	50	NA							
0.5ml (B)	NA	STD3	50.00	50	NA							
1.5ml (B)	NA	STD4	50.00	50	NA							
2.5ml (B)	NA	STD5	50.00	50	NA							
3.0ml (B)	NA	STD6	50.00	50	NA							
1.5ml (F)	NA	ICV	50.00	50	NA							
	NA	ICB	50.00	50	NA							
0.1ml (B)	NA	CRI	50.00	50	NA							
	NA	Method Blank	50.00	50	NA							
1.5ml (F)	NA	Blank Spk	50.00	50	NA							
1.5ml (F)	5	Matrix Spk	50.00	50	y							
1.5ml (F)	5	Mat Spk Dup	50.00	50	y							
	5	Duplicate	50.00	50	y							
1 QC [C]	5	FA73461-6	50.00	50	y							
2	11	FA73403-5F	50.00	50	y							
3	8	FA73417-1	50.00	50	y							
4	8	FA73417-2	50.00	50	y							
5	8	FA73417-3	50.00	50	y							
6	7	FA73417-1F	50.00	50	y							
7	7	FA73417-2F	50.00	50	y							
8	7	FA73417-3F	50.00	50	y							
9	1	FA73609-1	50.00	50	y							
10	1	FA73609-2	50.00	50	y							
11	1	FA73609-3	50.00	50	y							
12	1	FA73609-4	50.00	50	y							
13	1	FA73609-5	50.00	50	y							
14	1	FA73609-6	50.00	50	y							
15	16	FA73423-1	50.00	50	y							
16	16	FA73423-2	50.00	50	y							
17	16	FA73423-3	50.00	50	y							
18	1	FA73651-3	50.00	50	y							
19	1	FA73652-4	50.00	50	y							
20	1	FA73653-4	50.00	50	y							
21 [E]												
22 [E]												
23 [E]												
24 [E]												

Protected Worksheet

A For reagent volumes used consult SOP MET 105 or MET 106 current revision
B Amount of 100 ppb standard added (100ppb standard prepared from 10 ppm intermediate)
C Parent sample used to prepare MS,MSD,DUP (matrix QC)
D Bottle number
E Additional Matrix QC
F Amount of 100 ppb 2nd source standard used (100 ppb 2nd source standard prepared from 10ppm intermediate 2nd)

SGS Orlando

Date/Time Started	3/23/2020 9:40
Date/Time Started	3/23/2020 11:40

Analysts Name:	Jordan Cuoco				
MP Batch ID:	36991				
Method	SW846-7470A	**Matrix**	Water		

Reagent Lot # (A)		MET #	Spk. Soln ID	Pipette#
Conc. HNO3 (A)	245675	6564	10 ppm int.	KU15244
Conc. HCL (A)	251602	6581	10 ppm 2nd (ICV)	PU08121
H2SO4 (A)	238844	6651	100 ppb Curve	NA
KMnO4 (A)	MET 6649	6650	100 ppb 2nd (ICV)	NA
K2S2O8 (A)	MET 6642	NA	NA	NA
SnCl (A)	B0147582A	NA	NA	NA
Hydroxylamine HCL (A)	MET 6640	NA	NA	NA

HotBlock I.D.	12	**Therm ID**	Mercury	**Temp. C**	92	**Corr. Factor**	-1	**Corrected Observed Temp. C**	91
pH Paper Lot#	220416	**Teflon Chips**	25280382	**Filter Lot**	0714Z18IV-P	**Bal.ID**		**Digestion Tube Lot#**	351340-4694

(D)	Bot#	Sample #	Initial (g)/(ml)	Final Vol.(ml)	pH<2	NA	NA	NA	NA	NA	NA	Comment
	NA	STD1 CAL BLANK			NA							See MP36990 for cal. Curve
0.1ml (B)	NA	STD2			NA							and initial QC
0.5ml (B)	NA	STD3			NA							
1.5ml (B)	NA	STD4			NA							
2.5ml (B)	NA	STD5			NA							
3.0ml (B)	NA	STD6			NA							
1.5ml (F)	NA	ICV			NA							
	NA	ICB			NA							
0.1ml (B)	NA	CRI			NA							
	NA	Method Blank	50.00	50	NA							
1.5ml (F)	NA	Blank Spk	50.00	50	NA							
1.5ml (F)	12	Matrix Spk	50.00	50	y							
1.5ml (F)	12	Mat Spk Dup	50.00	50	y							
	12	Duplicate	50.00	50	y							
1 QC [C]	12	FA73494-1	50.00	50	y							
2	2	FA73461-1	50.00	50	y							
3	2	FA73461-2	50.00	50	y							
4	2	FA73461-3	50.00	50	y							
5	2	FA73461-4	50.00	50	y							
6	2	FA73461-5	50.00	50	y							
7	2	FA73461-7	50.00	50	y							
8	2	FA73461-8	50.00	50	y							
9	2	FA73461-9	50.00	50	y							
10	2	FA73461-10	50.00	50	y							
11	2	FA73461-11	50.00	50	y							
12	2	FA73461-12	50.00	50	y							
13	2	FA73461-13	50.00	50	y							
14	4	FA73643-2	50.00	50	y							
15	1	FA73645-2	50.00	50	y							
16	1	FA73645-3	50.00	50	y							
17	17	FA73423-1F	50.00	50	y							MB2A
18	17	FA73423-2F	50.00	50	y							MB2A
19	17	FA73423-3F	50.00	50	y							MB2A
20	na	MB2A-03/13/20	50.00	50	y							
21 [E]												
22 [E]												
23 [E]												
24 [E]												

Protected Worksheet

A For reagent volumes used consult SOP MET 105 or MET 106 current revision
B Amount of 100 ppb standard added (100ppb standard prepared from 10 ppm intermediate)
C Parent sample used to prepare MS,MSD,DUP (matrix QC)
D Bottle number
E Additional Matrix QC
F Amount of 100 ppb 2nd source standard used (100 ppb 2nd source standard prepared from 10ppm intermediate 2nd)

SGS Orlando

Date:	03/28/20
[24hr] **Time**	5:45

Analysts Name:	Igor T
MP Batch ID:	37025
Method	SW846-3010A

		Spk.Soln(A)	Vol. Used (ml)	Pipette#
Reagent Lot #				
Conc. HNO3 (B)	245675	ACC1131	0.05	MU45274
Conc. HCL (B)	251602	ACC1157	0.2	KU15244
NA	NA	MET6648	1	KU15244
NA	NA	NA	NA	NA

HotBlock I.D.	11	**Therm ID**	213	**Temp. C**	94	**Corr. Factor**	-1	**Corrected Observed Temp. C**	93
pH Paper Lot#	220416			FA73494-1.14				**Digestion Tube Lot#**	MP3358

	Bot#	Sample #	Initial Vol.(ml)	Final Vol.(ml)	pH<2	NA	NA	NA	NA	NA	NA	Comment
	NA	Method Blank(MB)	50	50	NA							
	NA	Spike Blank(SB)	50	50	NA							
	4	Matrix Spike(MS)	50	50	Y							
	4	Matrix Spike Dup(MSD)	50	50	Y							
	4	Duplicate(DUP)	50	50	Y							
1(QC) C	4	FA73461-6	50	50	Y							
2	2	FA73461-1	50	50	Y							
3	2	FA73461-2	50	50	Y							
4	2	FA73461-3	50	50	Y							
5	2	FA73461-4	50	50	Y							
6	2	FA73461-6	50	50	Y							
7	2	FA73461-7	50	50	Y							
8	2	FA73461-8	50	50	Y							
9	2	FA73461-9	50	50	Y							
10	2	FA73461-10	50	50	Y							
11	2	FA73461-11	50	50	Y							
12	2	FA73461-12	50	50	Y							
13	2	FA73461-13	50	50	Y							
14	1	FA73645-2	50	50	Y							
15	1	FA73645-3	50	50	Y							
16	1	FA73651-3	50	50	Y							
17	1	FA73652-4	50	50	Y							
18	1	FA73653-4	50	50	Y							
19			50	50								
20			50	50								
21 [D]			50	50								
22 [D]			50	50								
23 [D]			50	50								
24 [D]			50	50								

Protected Worksheet

A Used for SB, MS, MSD

B For reagent volumes used refer to SOP MET 103, current verion

C Parent sample used to prepare MS, MSD, DUP

D Additional matrix QC

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GN84635	0.010	0.0	mg/l	.1	0.10	99.6	85-115%

Associated Samples:
Batch GN84635: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GN84635	FA73461-13	mg/l	0.0080 U	.1	0.098	95.9	85-115%
Chromium, Hexavalent	GN84635	FA73461-6	mg/l	0.0080 U	.1	0.10	97.0	85-115%

Associated Samples:
Batch GN84635: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GN84635	FA73461-13	mg/l	0.0080 U	.1	0.096	2.2	20%

Associated Samples:
Batch GN84635: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

General Chemistry

Raw Data

Test Title: XCR

Rev: 0116 LM
Page 1 of 1

Analyst: JB
Prep Date/Time: 03/14/20 10:38
GP Batch:

Method: SW846 7196
Analysis Date/Time: 03/14/20 11:07
GN Batch: 84635

Calibration Summary **Cal. Date:** 03/06/20 **Spec #** 1

STD	Cal. Blk.	STD 1	STD 2	STD 3	STD 4	STD 5
Conc(mg/l	0.00	0.010	0.050	0.250	0.750	1.000
Corr. Abs.	0.00	0.009	0.048	0.240	0.710	0.935

Corr. Coef: 1.0000 **Slope:** 1.07 **Intercept:** -0.002

	Sample, bot#	Initial Abs.	Turb. Check Abs.	Final Abs.	Conc.	Final Vol. (ml)	Sam. Vol (ml)	Dilution	Final Conc.	Units	RL	MDL	LOD
QC Section													
ICV		0.235		0.235	0.249	50.0	50.0	1	**0.249**	mg/l	0.010	0.008	0.010
MB				0.000	-0.002	50.0	50.0	1	**-0.002**	mg/l	0.010	0.008	0.010
BS				0.000	-0.002	50.0	50.0	1	**-0.002**	mg/l	0.010	0.008	0.010
MS	FA73461-13.1	0.094		0.094	0.098	50.0	50.0	1	**0.098**	mg/l	0.010	0.008	0.010
MSD	FA73461-13.1	0.092		0.092	0.096	50.0	50.0	1	**0.096**	mg/l	0.010	0.008	0.010
QC	FA73461-13.1	0.004		0.004	0.003	50.0	50.0	1	**0.003**	mg/l	0.010	0.008	0.010
Samples													
	FA73461-12.1	0.002		0.002	0.000	100.0	50.0	1	**0.001**	mg/l	0.020	0.016	0.020
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
ICV		0.237		0.237	0.251	100.0	100.0	1	**0.251**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
ICV				#VALUE!	#######	50.0	50.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010

QC Summary Report

1.0

Matrix Spike Result	0.098	REC1 =	95.9%
MSD Result	0.096	REC2 =	93.8%
Spike Amount	0.100	RPD =	2.2%
Sample Result	0.003		
MB Result	0		
Blank Spike Result	-0.002	REC =	-1.7%
Spike Amount	0.100		

2.0

Primary Std Lot# : WC1545 GN29403 Primary Std Conc: 1000 mg/l
Secondary Std Lot# : WC1293 GN29438 Secondary Std Conc: 1000 mg/l

Spike Conc 10.0mg/l Vol Spike Added: 1.0ml

3.0 Standards are Prepared by:

10.0 ml of Primary (1000 mg/l) Stock to final volume of 100 ml in DI water	**100 mg/l**
1.0 ml of Primary (1000 mg/l) Stock to final volume of 100 ml in DI water	**10.0 mg/l**
1.0 ml of Primary 100 mg/l to final volume of 100 ml in DI water	**1.00 mg/l**
1.0 ml of Primary 1.0 mg/l to final volume of 100 ml in DI water	**.010 mg/l**
5.0 ml of Primary 1.0 mg/l to final volume of 100 ml in DI water	**.050 mg/l**
2.5 ml of Primary 10.0 mg/l to final volume of 100 ml in DI water	**.250 mg/l**
7.5 ml of Primary 10.0 mg/l to final volume of 100 ml in DI water	**.750 mg/l**
1.0 ml of Primary 100 mg/l to final volume of 100 ml in DI water	**1.00 mg/l**
1.0 ml of Secondary (1000 mg/l) Stock to final volume of 100 ml in DI water	**10.0 mg/l**
ICV=2.5 ml of Secondary 10.0 mg/l to final volume of 100 ml in DI water	**.250mg/l**

Comments:

Analyst's Signature: Date: 3-14-20

Reviewer's Signature: Date: 03/16/20

SGS Accutest - Orlando

Test Title: XCR

Rev: 0116 LM
Page 1 of 1

Analyst: JB
Prep Date/Time: 03/14/20 10:38
GP Batch:

Method: SW846 7196
Analysis Date/Time: 03/14/20 11:07
GN Batch: 84635

Calibration Summary **Cal. Date:** 03/06/20 **Spec #** 1

STD	Cal Blk	STD 1	STD 2	STD 3	STD 4	STD 5
Conc(mg/l	0.00	0.010	0.050	0.250	0.750	1.000
Corr. Abs.	0.00	0.009	0.048	0.240	0.710	0.935

Corr. Coef: 1.0000 **Slope:** 1.07 **Intercept:** -0.002

Sample. bot#		Initial Abs.	Turb. Check Abs.	Final Abs.	Conc.	Final Vol. (ml)	Sam. Vol (ml)	Dilution	Final Conc.	Units	RL	MDL	LOD
QC Section													
ICV		0.236		0.236	0.250	50.0	50.0	1	**0.250**	mg/l	0.010	0.008	0.010
MB		0.000		0.000	-0.002	50.0	50.0	1	**-0.002**	mg/l	0.010	0.008	0.010
BS		0.095		0.095	0.100	50.0	50.0	1	**0.100**	mg/l	0.010	0.008	0.010
MS	FA73461-6.3	0.095		0.095	0.100	50.0	50.0	1	**0.100**	mg/l	0.010	0.008	0.010
MSD	FA73461-6.3	0.092		0.092	0.096	50.0	50.0	1	**0.096**	mg/l	0.010	0.008	0.010
QC	FA73461-6.3	0.004		0.004	0.003	50.0	50.0	1	**0.003**	mg/l	0.010	0.008	0.010
Samples													
	FA73461-1.1	0.001		0.001	-0.001	100.0	50.0	1	**-0.001**	mg/l	0.020	0.016	0.020
	FA73461-2.1	0.015		0.015	0.014	100.0	100.0	1	**0.014**	mg/l	0.010	0.008	0.010
	FA73461-3.1	0.004		0.004	0.003	100.0	100.0	1	**0.003**	mg/l	0.010	0.008	0.010
	FA73461-4.1	0.002		0.002	0.000	100.0	100.0	1	**0.000**	mg/l	0.010	0.008	0.010
	FA73461-5.1	0.003		0.003	0.001	100.0	100.0	1	**0.001**	mg/l	0.010	0.008	0.010
ICV		0.236		0.236	0.250	100.0	100.0	1	**0.250**	mg/l	0.010	0.008	0.010
	FA73461-7.1	0.004		0.004	0.003	100.0	100.0	1	**0.003**	mg/l	0.010	0.008	0.010
	FA73461-8.1	0.002		0.002	0.000	100.0	100.0	1	**0.000**	mg/l	0.010	0.008	0.010
	FA73461-9.1	0.002		0.002	0.000	100.0	100.0	1	**0.000**	mg/l	0.010	0.008	0.010
	FA73461-10 1	0.003		0.003	0.001	100.0	100.0	1	**0.001**	mg/l	0.010	0.008	0.010
	FA73461-11 1	0.002		0.002	0.000	100.0	100.0	1	**0.000**	mg/l	0.010	0.008	0.010
ICV		0.236		0.236	0.250	50.0	50.0	1	**0.250**	mg/l	0.010	0.008	0.010

QC Summary Report

1.0

Matrix Spike Result 0.100
MSD Result 0.096
Spike Amount 0.100
Sample Result 0.003

REC1 = 97.0%
REC2 = 93.8%
RPD = 3.3%

MB Result 0
Blank Spike Result 0.100
Spike Amount 0.100

REC = 99.6%

2.0

Primary Std Lot# : WC1545 GN29403
Secondary Std Lot# : WC1293 GN29438

Primary Std Conc: 1000 mg/l
Secondary Std Conc: 1000 mg/l

Spike Conc 10.0mg/l Vol Spike Added: 1.0ml

3.0 Standards are Prepared by:

10.0 ml of Primary (1000 mg/l) Stock to final volume of 100 ml in DI water	**100 mg/l**
1.0 ml of Primary (1000 mg/l) Stock to final volume of 100 ml in DI water	**10.0 mg/l**
1.0 ml of Primary 100 mg/l to final volume of 100 ml in DI water	**1.00 mg/l**
1.0 ml of Primary 1.0 mg/l to final volume of 100 ml in DI water	**.010 mg/l**
5.0 ml of Primary 1.0 mg/l to final volume of 100 ml in DI water	**.050 mg/l**
2.5 ml of Primary 10.0 mg/l to final volume of 100 ml in DI water	**.250 mg/l**
7.5 ml of Primary 10.0 mg/l to final volume of 100 ml in DI water	**.750 mg/l**
1.0 ml of Primary 100 mg/l to final volume of 100 ml in DI water	**1.00 mg/l**
1.0 ml of Secondary (1000 mg/l) Stock to final volume of 100 ml in DI water	**10.0 mg/l**
ICV=2.5 ml of Secondary 10.0 mg/l to final volume of 100 ml in DI water	**.250mg/l**

Comments

Analyst's Signature: _____ Date: 3-14-20

Reviewer's Signature: _____ Date: _____

SGS Accutest - Orlando

Misc. Forms

Custody Documents and Other Forms

(SGS Dayton, NJ)

Includes the following where applicable:

- Chain of Custody

SGS

CHAIN OF CUSTODY

SGS North America Inc. - Orlando
4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com/ehsusa

FED-EX Tracking # 1386 6597 2883 | Bottle Order Control # | SGS Quote # | SGS Job # FA73461

Client / Reporting Information	Project Information	Requested Analysis (see TEST CODE sheet)
Company Name: SGS North America Inc.	Project Name: Bremo	
Street Address: 4405 Vineland Rd, Suite C-15	Street	Billing Information (if different from Report to)
City: Orlando State: FL Zip: 32811	City State	Company Name
Project Contact: heather.wandrey@sgs.com E-mail	Project #	Street Address
Phone #: 407-425-6700 Fax #	Client Purchase Order #	City State Zip
Sampler(s) Name(s): JRCF Phone	Project Manager	Attention:

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	B.T.U.	LAB USE ONLY
1	EB-01-20-Q1		3/13/20	1:00:00 PM	JRCF	AQ										X	A20
2	FB-01-20-Q1		3/13/20	1:00:00 PM	JRCF	AQ										X	
3	BR-08-20-Q1		3/13/20	1:05:00 PM	JRCF	AQ										X	
4	BR-07-20-Q1		3/13/20	1:40:00 PM	JRCF	AQ										X	
5	BR-06-20-Q1		3/13/20	2:05:00 PM	JRCF	AQ										X	
6	BR-05-20-Q1		3/13/20	2:35:00 PM	JRCF	AQ										X	
6D	BR-05-20-Q1		3/13/20	2:35:00 PM	JRCF	AQ										X	
6S	BR-05-20-Q1		3/13/20	2:35:00 PM	JRCF	AQ										X	
7	BR-04-20-Q1		3/13/20	3:10:00 PM	JRCF	AQ										X	
8	BR-03-20-Q1		3/13/20	3:40:00 PM	JRCF	AQ										X	
9	BR-03-20-Q1-FD		3/13/20	3:40:00 PM	JRCF	AQ										X	
10	BR-02-20-Q1		3/13/20	4:00:00 PM	JRCF	AQ										X	

Turnaround Time (Business days)

Approved By (SGS PM): / Date:

- [ ] Standard 10 Day (business)
- [ ] 5 Business Days RUSH
- [ ] 3 Business Days RUSH
- [ ] 2 Business Days RUSH
- [ ] 1 Business Day EMERGENCY
- [X] other 14

Emergency & Rush T/A data available via Lablink. Approval needed for RUSH/Emergency TAT

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] REDT1 (Level 3)
- [ ] FULT1 (Level 4)
- [ ] Commercial "C"
- [ ] State Forms
- [ ] EDD Format
- [ ] Other
- [X] QC

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

SGS-NJ

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		3-16-20/1600	fedex	fedex	3/17 10:05	
2	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3				4		
5	Relinquished by:	Date Time:	Received By:	Custody Seal #	Intact / Not intact	Preserved where applicable / Therm. ID: IR-4 / On Ice / Cooler Temp: 3.8C-IP

INITIAL ASESSMENT KG 3A

LABEL VERIFICATION_____

10.1 10

CHAIN OF CUSTODY

SGS

SGS North America Inc. - Orlando
4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com/ehsusa

FED-EX Tracking # 1386 6597 2883 | Bottle Order Control #
SGS Quote # | SGS Job # FA73461

Client / Reporting Information	Project Information
Company Name: SGS North America Inc.	Project Name: Bremo
Street Address: 4405 Vineland Rd, Suite C-15	Street
City State Zip: Orlando FL 32811	City State
Project Contact E-mail: heather.wandrey@sgs.com	Project #
Phone # 407-425-6700 Fax #	Client Purchase Order #
Sampler(s) Name(s): JRCF Phone	Project Manager

Billing Information (if different from Report to)
Company Name
Street Address
City State Zip
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	B.I.I.	LAB USE ONLY
11	BR-01-20-Q1		3/13/20	4:25:00 PM	JRCF	AQ										X	
12	JR-02-20-Q1		3/13/20	4:50:00 PM	JRCF	AQ										X	
13	JR-01-20-Q1		3/13/20	5:05:00 PM	JRCF	AQ										X	

~~INITIAL ASESSMENT~~ KG 3/4

LABEL VERIFICATION

Turnaround Time (Business days)

Approved By (SGS PM): / Date:

- [ ] Standard 10 Day (business)
- [ ] 5 Business Days RUSH
- [ ] 3 Business Days RUSH
- [ ] 2 Business Days RUSH
- [ ] 1 Business Day EMERGENCY
- [X] other 14

Emergency & Rush T/A data available via Lablink. Approval needed for RUSH/Emergency TAT

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] REDT1 (Level 3)
- [ ] FULT1 (Level 4)
- [ ] Commercial "C"
- [ ] State Forms
- [ ] EDD Format
- [ ] Other
- [X] CC

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions: SGS-NJ

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		3/16/20 1645	fedex	fedex	3/17/20 10:05	
2	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3						
4	Relinquished by:	Date Time:	Received By:	Custody Seal #	Intact / Not intact	Preserved where applicable / Therm. ID: / On Ice / Cooler Temp
5						3.8 C

SGS Sample Receipt Summary

Job Number: FA73461 **Client:** _____ **Project:** _____

Date / Time Received: 3/17/2020 10:05:00 AM **Delivery Method:** _____ **Airbill #'s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (3.8);

Cooler Temps (Corrected) °C: Cooler 1: (3.5);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 229517 pH 12+: 208717 Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

10.1 10

FA73461: Chain of Custody
Page 3 of 3

Metals Analysis

QC Data Summaries

(SGS Dayton, NJ)

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries
- IDL and Linear Range Summaries

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:40	MA48470-STD1	1		STDA
10:45	MA48470-STD2	1		STDB
10:50	ZZZZZZ	1		
10:55	ZZZZZZ	1		
11:00	MA48470-ICV1	1		
11:07	MA48470-ICB1	1		
11:14	MA48470-ICCV1	1		
11:20	MA48470-CCB1	1		
11:24	MA48470-CRID1	1		
11:29	MA48470-CRI1	1		
11:34	MA48470-ICSA1	1		
11:39	MA48470-ICSAB1	1		
11:44	MA48470-HSTD1	1		
11:50	MA48470-HSTD2	1		
11:56	ZZZZZZ	1		
12:01	ZZZZZZ	1		
12:06	ZZZZZZ	1		
12:11	MA48470-CCV1	1		
12:16	MA48470-CCB2	1		
12:21	ZZZZZZ	1		
12:26	ZZZZZZ	1		
12:31	ZZZZZZ	1		
12:36	ZZZZZZ	1		
12:41	ZZZZZZ	1		
12:45	ZZZZZZ	1		
12:50	ZZZZZZ	1		
12:55	ZZZZZZ	2		
13:00	ZZZZZZ	2		
13:05	MA48470-CCV2	1		
13:10	MA48470-CCB3	1		
13:15	MP20364-MB1	1		
13:20	MP20364-B1	1		
13:25	MP20364-S1	1		Needs post spike on antimony

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
13:30	MP20364-S2	1		
13:35	JD4627-10	1		(sample used for QC only; not part of login FA73461)
13:40	MP20364-SD1	5		
13:45	ZZZZZZ	1		
13:49	ZZZZZZ	1		
13:55	ZZZZZZ	1		
14:00	MA48470-CCV3	1		
14:05	MA48470-CCB4	1		
14:09	ZZZZZZ	1		
14:14	ZZZZZZ	1		
14:19	ZZZZZZ	1		
14:24	ZZZZZZ	1		
14:29	ZZZZZZ	1		
14:34	ZZZZZZ	1		
14:39	ZZZZZZ	1		
14:44	ZZZZZZ	1		
14:50	ZZZZZZ	1		
14:54	MA48470-CCV4	1		
14:59	MA48470-CCB5	1		
15:04	ZZZZZZ	10		
15:09	ZZZZZZ	1		
15:14	ZZZZZZ	1		
15:19	ZZZZZZ	1		
15:24	ZZZZZZ	1		
15:29	ZZZZZZ	1		
15:34	ZZZZZZ	1		
15:39	MP20366-B1	1		
15:44	MP20366-MB1	1		
15:48	MA48470-CCV5	1		
15:53	MA48470-CCB6	1		
15:58	MP20366-S1	1		
16:03	MP20366-S2	1		
16:08	JD4880-1	1		(sample used for QC only; not part of login FA73461)

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:13	MP20366-SD1	5		
16:18	MA48470-ICSA2	1		
16:23	MA48470-ICSAB2	1		
16:29	MA48470-CCV6	1		
16:34	MA48470-CCB7	1		
16:38	ZZZZZZ	1		
16:43	ZZZZZZ	10		
16:48	ZZZZZZ	100		
16:53	ZZZZZZ	10		
16:58	ZZZZZZ	5		
17:03	ZZZZZZ	10		
17:08	ZZZZZZ	100		
17:13	ZZZZZZ	10		
17:17	ZZZZZZ	5		
17:22	MA48470-CCV7	1		
17:27	MA48470-CCB8	1		
17:32	ZZZZZZ	5		
17:37	ZZZZZZ	5		
17:42	MP20315-MB1	1		
17:47	MP20315-B1	1		
17:52	MP20315-B2	1		
17:57	MP20315-S1	1		Na high
18:02	MP20315-S2	1		Na high
18:07	JD4684-6F	1		(sample used for QC only; not part of login FA73461)
18:12	MP20315-SD1	5		Na high
18:17	ZZZZZZ	1		
18:22	MA48470-CCV8	1		
18:27	MA48470-CCB9	1		
18:32	ZZZZZZ	1		
18:37	ZZZZZZ	1		
18:42	ZZZZZZ	1		
18:47	ZZZZZZ	1		
18:52	ZZZZZZ	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
18:57	ZZZZZZ	1		
19:02	ZZZZZZ	1		
19:07	ZZZZZZ	1		
19:12	ZZZZZZ	1		
19:17	ZZZZZZ	1		
19:22	MA48470-CCV9	1		
19:27	MA48470-CCB10	1		
19:32	ZZZZZZ	1		
19:37	ZZZZZZ	1		
19:41	ZZZZZZ	1		
19:46	ZZZZZZ	1		
19:51	ZZZZZZ	1		
19:56	ZZZZZZ	1		
20:01	MP20378-B1	1		
20:06	MP20378-MB1	1		
20:11	MP20378-S1	1		
20:16	MP20378-S2	1		
20:21	MA48470-CCV10	1		
20:26	MA48470-CCB11	1		
20:31	ZZZZZZ	1		
20:36	ZZZZZZ	1		
20:41	ZZZZZZ	1		
20:46	ZZZZZZ	1		
20:51	ZZZZZZ	1		
20:56	ZZZZZZ	1		
21:01	ZZZZZZ	1		
21:06	ZZZZZZ	1		
21:11	ZZZZZZ	1		
21:16	MA48470-CCV11	1		
21:21	MA48470-CCB12	1		
21:26	JD4646-1	1		(sample used for QC only; not part of login FA73461)
21:31	MP20378-SD1	5		
21:36	ZZZZZZ	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
21:41	ZZZZZZ	1		
21:46	ZZZZZZ	1		
21:51	ZZZZZZ	1		
21:56	ZZZZZZ	1		
22:01	ZZZZZZ	1		
22:06	ZZZZZZ	1		
22:11	ZZZZZZ	1		
22:17	MA48470-CCV12	1		
22:22	MA48470-CCB13	1		
22:27	ZZZZZZ	1		
22:32	ZZZZZZ	1		
22:37	ZZZZZZ	1		
22:41	ZZZZZZ	1		
22:47	ZZZZZZ	1		
22:52	ZZZZZZ	1		
22:57	ZZZZZZ	1		
23:02	ZZZZZZ	1		
23:07	ZZZZZZ	1		
23:12	ZZZZZZ	1		
23:18	MA48470-CCV13	1		
23:23	MA48470-CCB14	1		
23:28	ZZZZZZ	1		
23:33	ZZZZZZ	1		
23:38	ZZZZZZ	1		
23:43	MP20398-MB1	5		
23:48	MP20398-B1	5		
23:52	MP20398-S1	5		
23:57	MP20398-S2	5		
00:02	JD4436-1A	5		(sample used for QC only; not part of login FA73461)
00:07	MP20398-SD1	25		
00:12	ZZZZZZ	5		
00:17	MA48470-CCV14	1		
00:22	MA48470-CCB15	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:27	ZZZZZZ	1		
00:32	ZZZZZZ	1		
00:37	ZZZZZZ	5		
00:42	ZZZZZZ	1		
00:47	MP20399-MB1	5		
00:52	MP20399-B1	5		
00:57	MP20399-S1	1		
01:03	MP20399-S2	1		
01:08	JD4436-14A	1		(sample used for QC only; not part of login FA73461)
01:13	MP20399-SD1	5		
01:18	MA48470-CCV15	1		
01:23	MA48470-CCB16	1		
01:28	ZZZZZZ	5		
01:33	ZZZZZZ	5		
01:38	ZZZZZZ	1		
01:43	ZZZZZZ	2		
01:48	ZZZZZZ	1		
01:53	ZZZZZZ	5		
01:58	ZZZZZZ	1		
02:03	ZZZZZZ	1		
02:08	ZZZZZZ	5		
02:13	MA48470-CCV16	1		
02:18	MA48470-CCB17	1		
02:23	MP20430-MB1	1		
02:28	MP20430-B1	1		
02:33	MP20430-B2	1		
02:38	MP20430-S1	1		
02:43	MP20430-S2	1		
02:48	JD4979-1	1		(sample used for QC only; not part of login FA73461)
02:53	MP20430-SD1	5		
02:58	ZZZZZZ	1		
03:03	ZZZZZZ	1		
03:08	ZZZZZZ	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
03:13	MA48470-CCV17	1		
03:18	MA48470-CCB18	1		
03:23	ZZZZZZ	1		
03:28	ZZZZZZ	1		
03:33	ZZZZZZ	1		
03:38	ZZZZZZ	1		
03:43	MP20385-MB1	1		
03:48	MP20385-B1	1		
03:53	MP20385-S1	1		
03:58	MP20385-S2	1		
04:03	JD4480-17R	1		(sample used for QC only; not part of login FA73461)
04:08	MP20385-SD1	5		
04:13	MA48470-CCV18	1		
04:18	MA48470-CCB19	1		
04:23	ZZZZZZ	1		
04:27	ZZZZZZ	1		
04:32	MP20382-MB1	1		
04:37	MP20382-B1	1		
04:42	MP20382-S1	1		Na high
04:47	MP20382-S2	1		Na high
04:53	JD4881-1	1		(sample used for QC only; not part of login FA73461)
04:58	MP20382-SD1	5		
05:02	ZZZZZZ	1		
05:07	ZZZZZZ	1		
05:12	MA48470-CCV19	1		
05:17	MA48470-CCB20	1		
05:22	ZZZZZZ	1		
05:27	ZZZZZZ	1		
05:32	FA73461-1	1		
05:37	FA73461-2	1		
05:42	FA73461-3	1		
05:47	FA73461-4	1		
05:52	FA73461-5	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
05:57	FA73461-6	1		
06:02	FA73461-7	1		
06:07	FA73461-8	1		
06:11	MA48470-CCV20	1		
06:16	MA48470-CCB21	1		
06:21	FA73461-9	1		
06:26	FA73461-10	1		
06:31	FA73461-11	1		
06:36	FA73461-12	1		
06:41	FA73461-13	1		
---------->	Last reportable sample/prep for job FA73461			
06:46	ZZZZZZ	1		
06:51	MA48470-CCV21	1		
06:56	MA48470-CCB22	1		
---------->	Last reportable CCB for job FA73461			
07:54	MP20315-MB1	1		
08:01	MA48470-CCV22	1		
08:10	MA48470-CCB23	1		

Refer to raw data for calibration curve and standards.

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
10:50	ZZZZZZ	1			
10:55	ZZZZZZ	1			
11:00	MA48470-ICV1	1	X	X	
11:07	MA48470-ICB1	1	X	X	
11:14	MA48470-ICCV1	1	X	X	
11:20	MA48470-CCB1	1	X	X	
11:24	MA48470-CRID1	1	X	X	
11:29	MA48470-CRI1	1	X	X	
11:34	MA48470-ICSA1	1	X	X	
11:39	MA48470-ICSAB1	1	X	X	
11:44	MA48470-HSTD1	1	X	X	
11:50	MA48470-HSTD2	1	X	X	
11:56	ZZZZZZ	1			
12:01	ZZZZZZ	1			
12:06	ZZZZZZ	1			
12:11	MA48470-CCV1	1	X	X	
12:16	MA48470-CCB2	1	X	X	
12:21	ZZZZZZ	1			
12:26	ZZZZZZ	1			
12:31	ZZZZZZ	1			
12:36	ZZZZZZ	1			
12:41	ZZZZZZ	1			
12:45	ZZZZZZ	1			
12:50	ZZZZZZ	1			
12:55	ZZZZZZ	2			
13:00	ZZZZZZ	2			
13:05	MA48470-CCV2	1	X	X	
13:10	MA48470-CCB3	1	X	X	
13:15	MP20364-MB1	1			
13:20	MP20364-B1	1			
13:25	MP20364-S1	1			
13:30	MP20364-S2	1			
13:35	JD4627-10	1			(a)
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
13:40	MP20364-SD1	5			
13:45	ZZZZZZ	1			
13:49	ZZZZZZ	1			
13:55	ZZZZZZ	1			
14:00	MA48470-CCV3	1	X	X	
14:05	MA48470-CCB4	1	X	X	
14:09	ZZZZZZ	1			
14:14	ZZZZZZ	1			
14:19	ZZZZZZ	1			
14:24	ZZZZZZ	1			
14:29	ZZZZZZ	1			
14:34	ZZZZZZ	1			
14:39	ZZZZZZ	1			
14:44	ZZZZZZ	1			
14:50	ZZZZZZ	1			
14:54	MA48470-CCV4	1	X	X	
14:59	MA48470-CCB5	1	X	X	
15:04	ZZZZZZ	10			
15:09	ZZZZZZ	1			
15:14	ZZZZZZ	1			
15:19	ZZZZZZ	1			
15:24	ZZZZZZ	1			
15:29	ZZZZZZ	1			
15:34	ZZZZZZ	1			
15:39	MP20366-B1	1			
15:44	MP20366-MB1	1			
15:48	MA48470-CCV5	1	X	X	
15:53	MA48470-CCB6	1	X	X	
15:58	MP20366-S1	1			
16:03	MP20366-S2	1			
16:08	JD4880-1	1			(a)
16:13	MP20366-SD1	5			
16:18	MA48470-ICSA2	1	X	X	
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
16:23	MA48470-ICSAB2	1	X	X	
16:29	MA48470-CCV6	1	X	X	
16:34	MA48470-CCB7	1	X	X	
16:38	ZZZZZZ	1			
16:43	ZZZZZZ	10			
16:48	ZZZZZZ	100			
16:53	ZZZZZZ	10			
16:58	ZZZZZZ	5			
17:03	ZZZZZZ	10			
17:08	ZZZZZZ	100			
17:13	ZZZZZZ	10			
17:17	ZZZZZZ	5			
17:22	MA48470-CCV7	1	X	X	
17:27	MA48470-CCB8	1	X	X	
17:32	ZZZZZZ	5			
17:37	ZZZZZZ	5			
17:42	MP20315-MB1	1			
17:47	MP20315-B1	1			
17:52	MP20315-B2	1			
17:57	MP20315-S1	1			
18:02	MP20315-S2	1			
18:07	JD4684-6F	1			(a)
18:12	MP20315-SD1	5			
18:17	ZZZZZZ	1			
18:22	MA48470-CCV8	1	X	X	
18:27	MA48470-CCB9	1	X	X	
18:32	ZZZZZZ	1			
18:37	ZZZZZZ	1			
18:42	ZZZZZZ	1			
18:47	ZZZZZZ	1			
18:52	ZZZZZZ	1			
18:57	ZZZZZZ	1			
19:02	ZZZZZZ	1			
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
19:07	ZZZZZZ	1			
19:12	ZZZZZZ	1			
19:17	ZZZZZZ	1			
19:22	MA48470-CCV9	1	X	X	
19:27	MA48470-CCB10	1	X	X	
19:32	ZZZZZZ	1			
19:37	ZZZZZZ	1			
19:41	ZZZZZZ	1			
19:46	ZZZZZZ	1			
19:51	ZZZZZZ	1			
19:56	ZZZZZZ	1			
20:01	MP20378-B1	1			
20:06	MP20378-MB1	1			
20:11	MP20378-S1	1			
20:16	MP20378-S2	1			
20:21	MA48470-CCV10	1	X	X	
20:26	MA48470-CCB11	1	X	X	
20:31	ZZZZZZ	1			
20:36	ZZZZZZ	1			
20:41	ZZZZZZ	1			
20:46	ZZZZZZ	1			
20:51	ZZZZZZ	1			
20:56	ZZZZZZ	1			
21:01	ZZZZZZ	1			
21:06	ZZZZZZ	1			
21:11	ZZZZZZ	1			
21:16	MA48470-CCV11	1	X	X	
21:21	MA48470-CCB12	1	X	X	
21:26	JD4646-1	1			(a)
21:31	MP20378-SD1	5			
21:36	ZZZZZZ	1			
21:41	ZZZZZZ	1			
21:46	ZZZZZZ	1			
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
21:51	ZZZZZZ	1			
21:56	ZZZZZZ	1			
22:01	ZZZZZZ	1			
22:06	ZZZZZZ	1			
22:11	ZZZZZZ	1			
22:17	MA48470-CCV12	1	X	X	
22:22	MA48470-CCB13	1	X	X	
22:27	ZZZZZZ	1			
22:32	ZZZZZZ	1			
22:37	ZZZZZZ	1			
22:41	ZZZZZZ	1			
22:47	ZZZZZZ	1			
22:52	ZZZZZZ	1			
22:57	ZZZZZZ	1			
23:02	ZZZZZZ	1			
23:07	ZZZZZZ	1			
23:12	ZZZZZZ	1			
23:18	MA48470-CCV13	1	X	X	
23:23	MA48470-CCB14	1	X	X	
23:28	ZZZZZZ	1			
23:33	ZZZZZZ	1			
23:38	ZZZZZZ	1			
23:43	MP20398-MB1	5			
23:48	MP20398-B1	5			
23:52	MP20398-S1	5			
23:57	MP20398-S2	5			
00:02	JD4436-1A	5			(a)
00:07	MP20398-SD1	25			
00:12	ZZZZZZ	5			
00:17	MA48470-CCV14	1	X	X	
00:22	MA48470-CCB15	1	X	X	
00:27	ZZZZZZ	1			
00:32	ZZZZZZ	1			
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
00:37	ZZZZZZ	5			
00:42	ZZZZZZ	1			
00:47	MP20399-MB1	5			
00:52	MP20399-B1	5			
00:57	MP20399-S1	1			
01:03	MP20399-S2	1			
01:08	JD4436-14A	1			(a)
01:13	MP20399-SD1	5			
01:18	MA48470-CCV15	1	X	X	
01:23	MA48470-CCB16	1	X	X	
01:28	ZZZZZZ	5			
01:33	ZZZZZZ	5			
01:38	ZZZZZZ	1			
01:43	ZZZZZZ	2			
01:48	ZZZZZZ	1			
01:53	ZZZZZZ	5			
01:58	ZZZZZZ	1			
02:03	ZZZZZZ	1			
02:08	ZZZZZZ	5			
02:13	MA48470-CCV16	1	X	X	
02:18	MA48470-CCB17	1	X	X	
02:23	MP20430-MB1	1			
02:28	MP20430-B1	1			
02:33	MP20430-B2	1			
02:38	MP20430-S1	1			
02:43	MP20430-S2	1			
02:48	JD4979-1	1			(a)
02:53	MP20430-SD1	5			
02:58	ZZZZZZ	1			
03:03	ZZZZZZ	1			
03:08	ZZZZZZ	1			
03:13	MA48470-CCV17	1	X	X	
03:18	MA48470-CCB18	1	X	X	
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
03:23	ZZZZZZ	1			
03:28	ZZZZZZ	1			
03:33	ZZZZZZ	1			
03:38	ZZZZZZ	1			
03:43	MP20385-MB1	1			
03:48	MP20385-B1	1			
03:53	MP20385-S1	1			
03:58	MP20385-S2	1			
04:03	JD4480-17R	1			(a)
04:08	MP20385-SD1	5			
04:13	MA48470-CCV18	1	X	X	
04:18	MA48470-CCB19	1	X	X	
04:23	ZZZZZZ	1			
04:27	ZZZZZZ	1			
04:32	MP20382-MB1	1	X	X	
04:37	MP20382-B1	1	X	X	
04:42	MP20382-S1	1	X	X	
04:47	MP20382-S2	1	X	X	
04:53	JD4881-1	1			(a)
04:58	MP20382-SD1	5	X	X	
05:02	ZZZZZZ	1			
05:07	ZZZZZZ	1			
05:12	MA48470-CCV19	1	X	X	
05:17	MA48470-CCB20	1	X	X	
05:22	ZZZZZZ	1			
05:27	ZZZZZZ	1			
05:32	FA73461-1	1	X	X	
05:37	FA73461-2	1	X	X	
05:42	FA73461-3	1	X	X	
05:47	FA73461-4	1	X	X	
05:52	FA73461-5	1	X	X	
05:57	FA73461-6	1	X	X	
06:02	FA73461-7	1	X	X	
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li
06:07	FA73461-8	1	X	X
06:11	MA48470-CCV20	1	X	X
06:16	MA48470-CCB21	1	X	X
06:21	FA73461-9	1	X	X
06:26	FA73461-10	1	X	X
06:31	FA73461-11	1	X	X
06:36	FA73461-12	1	X	X
06:41	FA73461-13	1	X	X
06:46	ZZZZZZ	1		
06:51	MA48470-CCV21	1	X	X
06:56	MA48470-CCB22	1	X	X
07:54	MP20315-MB1	1		
08:01	MA48470-CCV22	1	X	X
08:10	MA48470-CCB23	1	X	X

(a) Sample used for QC only; not part of login FA73461.

Element:	B	Li

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
10:40	MA48470-STD1	10237 R	209410 R	24513 R	15693 R
10:45	MA48470-STD2	9821	197390	24241	14247
10:50	ZZZZZZ	10021	203950	24381	14561
10:55	ZZZZZZ	10241	210020	24349	15657
11:00	MA48470-ICV1	10016	204470	24341	14521
11:07	MA48470-ICB1	10378	213290	24873	15818
11:14	MA48470-ICCV1	10065	205930	24344	14548
11:20	MA48470-CCB1	10170	209030	24273	15548
11:24	MA48470-CRID1	10425	216840	24769	15716
11:29	MA48470-CRI1	10322	211990	24544	15392
11:34	MA48470-ICSA1	9374	191000	23308	13305
11:39	MA48470-ICSAB1	9410	187800	23576	13343
11:44	MA48470-HSTD1	10277	210750	24872	15427
11:50	MA48470-HSTD2	9458	190580	23642	13368
11:56	ZZZZZZ	10418	215090	24514	15786
12:01	ZZZZZZ	10218	215200	24776	15755
12:06	ZZZZZZ	10493	216120	24477	15804
12:11	MA48470-CCV1	10049	201880	24106	14463
12:16	MA48470-CCB2	10347	212790	24522	15702
12:21	ZZZZZZ	10445	217350	24468	15701
12:26	ZZZZZZ	10351	212920	24604	15389
12:31	ZZZZZZ	10518	216990	24640	15824
12:36	ZZZZZZ	10325	208240	24680	14972
12:41	ZZZZZZ	10433	217420	24471	15459
12:45	ZZZZZZ	10600	220030	24938	15918
12:50	ZZZZZZ	10286	210720	24513	14899
12:55	ZZZZZZ	10262	210130	24456	14817
13:00	ZZZZZZ	10334	210690	24595	14917
13:05	MA48470-CCV2	10071	205690	24050	14501
13:10	MA48470-CCB3	10441	217310	24615	15722
13:15	MP20364-MB1	10620	220120	25093	15855
13:20	MP20364-B1	10248	210340	24499	14861
13:25	MP20364-S1	10531	215460	25468	14696

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
13:30	MP20364-S2	10522	216470	25644	14706
13:35	JD4627-10	10725	218830	25678	15147
13:40	MP20364-SD1	10512	215500	24550	15466
13:45	ZZZZZZ	10536	214630	24984	15286
13:49	ZZZZZZ	9534	215470	25830	14458
13:55	ZZZZZZ	10533	216460	24661	15695
14:00	MA48470-CCV3	10043	205230	24121	14410
14:05	MA48470-CCB4	10427	216240	24240	15625
14:09	ZZZZZZ	10861	222320	25730	15074
14:14	ZZZZZZ	10923	221680	25834	15085
14:19	ZZZZZZ	10679	218290	25308	15122
14:24	ZZZZZZ	10739	220540	25414	15018
14:29	ZZZZZZ	10813	219720	25669	14940
14:34	ZZZZZZ	10744	222610	25374	14984
14:39	ZZZZZZ	10772	220660	25648	15001
14:44	ZZZZZZ	10696	219670	25833	14535
14:50	ZZZZZZ	10689	216660	24986	15305
14:54	MA48470-CCV4	10112	205320	24061	14376
14:59	MA48470-CCB5	10468	215650	24340	15582
15:04	ZZZZZZ	10282	211970	24180	15148
15:09	ZZZZZZ	10714	215820	24892	15241
15:14	ZZZZZZ	10665	218030	24857	15303
15:19	ZZZZZZ	10670	219830	25582	15059
15:24	ZZZZZZ	10643	217190	25277	15120
15:29	ZZZZZZ	10667	218830	25302	15232
15:34	ZZZZZZ	10567	212960	24997	15155
15:39	MP20366-B1	10778	223050	25316	16097
15:44	MP20366-MB1	10791	221250	25118	16101
15:48	MA48470-CCV5	10129	207870	24256	14432
15:53	MA48470-CCB6	10528	217250	24391	15683
15:58	MP20366-S1	10213	209180	24551	14292
16:03	MP20366-S2	10075	202580	24222	14109
16:08	JD4880-1	10075	203960	24453	14120

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
16:13	MP20366-SD1	10341	211920	24428	14902
16:18	MA48470-ICSA2	9542	193760	23411	13363
16:23	MA48470-ICSAB2	9531	192760	23386	13367
16:29	MA48470-CCV6	10174	209700	24163	14488
16:34	MA48470-CCB7	10492	216860	24395	15652
16:38	ZZZZZZ	10684	222790	24973	15870
16:43	ZZZZZZ	10171	207480	24372	14553
16:48	ZZZZZZ	10347	214790	24411	15474
16:53	ZZZZZZ	10225	214430	24208	14632
16:58	ZZZZZZ	10172	207880	24400	14580
17:03	ZZZZZZ	10287	209900	24385	14708
17:08	ZZZZZZ	10421	217990	24458	15592
17:13	ZZZZZZ	10111	208320	24462	14604
17:17	ZZZZZZ	10058	207680	24279	14365
17:22	MA48470-CCV7	10172	207600	24030	14526
17:27	MA48470-CCB8	10586	217910	24512	15799
17:32	ZZZZZZ	10335	209670	24481	14758
17:37	ZZZZZZ	10190	210990	24432	14566
17:42	MP20315-MB1	No results reported for the elements associated with this internal standard.			
17:47	MP20315-B1	10362	209480	24437	14848
17:52	MP20315-B2	10314	212270	24126	14779
17:57	MP20315-S1	9436	188600	24142	12854
18:02	MP20315-S2	9519	189400	24250	12929
18:07	JD4684-6F	9604	190500	24416	12993
18:12	MP20315-SD1	10072	201590	24121	14008
18:17	ZZZZZZ	8975	178690	24206	12137
18:22	MA48470-CCV8	10199	206610	24032	14487
18:27	MA48470-CCB9	10574	219250	24554	15732
18:32	ZZZZZZ	9927	197860	24442	13550
18:37	ZZZZZZ	10177	203210	24651	14104
18:42	ZZZZZZ	10012	200710	24603	13780
18:47	ZZZZZZ	9351	183890	24149	12716
18:52	ZZZZZZ	9425	187420	24021	12795

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
18:57	ZZZZZZ	10605	218030	24477	15570
19:02	ZZZZZZ	10594	219750	24744	15573
19:07	ZZZZZZ	10629	218750	24930	15439
19:12	ZZZZZZ	10573	219090	24697	15638
19:17	ZZZZZZ	10619	222000	24707	15704
19:22	MA48470-CCV9	10114	202420	24028	14432
19:27	MA48470-CCB10	10489	215610	24332	15655
19:32	ZZZZZZ	10639	220200	24985	15672
19:37	ZZZZZZ	10503	213050	24674	15206
19:41	ZZZZZZ	10578	218600	24709	15540
19:46	ZZZZZZ	10754	218860	24983	15970
19:51	ZZZZZZ	10474	218010	24906	15124
19:56	ZZZZZZ	9834	197310	24251	13623
20:01	MP20378-B1	10310	214160	24561	14808
20:06	MP20378-MB1	10702	221720	24856	15893
20:11	MP20378-S1	10225	208450	24532	14443
20:16	MP20378-S2	10189	207360	24541	14380
20:21	MA48470-CCV10	10166	205790	24008	14527
20:26	MA48470-CCB11	10562	218730	24474	15794
20:31	ZZZZZZ	10569	217040	24402	15786
20:36	ZZZZZZ	10417	216920	24443	15615
20:41	ZZZZZZ	10584	220770	24517	15853
20:46	ZZZZZZ	10625	219510	24648	15860
20:51	ZZZZZZ	10601	217100	24592	15828
20:56	ZZZZZZ	10659	206860	24610	14615
21:01	ZZZZZZ	9987	204110	24102	14137
21:06	ZZZZZZ	10506	217570	24613	15832
21:11	ZZZZZZ	10558	219920	24409	15773
21:16	MA48470-CCV11	10198	204130	24002	14553
21:21	MA48470-CCB12	10595	217970	24469	15814
21:26	JD4646-1	10313	211230	24523	14788
21:31	MP20378-SD1	10487	217720	24443	15408
21:36	ZZZZZZ	10121	208710	24389	14348

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
21:41	ZZZZZZ	9593	197170	23834	13336
21:46	ZZZZZZ	9693	197790	24070	13462
21:51	ZZZZZZ	10303	208770	24753	14665
21:56	ZZZZZZ	9964	204890	24354	14016
22:01	ZZZZZZ	10152	208030	24457	14286
22:06	ZZZZZZ	9659	195510	24314	13343
22:11	ZZZZZZ	9904	199330	24435	13578
22:17	MA48470-CCV12	10251	206080	24195	14623
22:22	MA48470-CCB13	10674	219410	24761	15906
22:27	ZZZZZZ	10178	210180	24698	14432
22:32	ZZZZZZ	10405	215020	24782	14939
22:37	ZZZZZZ	10333	210530	24685	14605
22:41	ZZZZZZ	9771	200380	24368	13547
22:47	ZZZZZZ	9745	198250	24341	13494
22:52	ZZZZZZ	10328	209550	24964	14669
22:57	ZZZZZZ	10078	207240	24662	14142
23:02	ZZZZZZ	10136	209490	24567	14294
23:07	ZZZZZZ	9783	195830	24541	13460
23:12	ZZZZZZ	10031	204410	24703	13724
23:18	MA48470-CCV13	10331	209420	24462	14687
23:23	MA48470-CCB14	10722	221000	24774	15956
23:28	ZZZZZZ	10162	208100	24424	14395
23:33	ZZZZZZ	10432	211730	24719	14934
23:38	ZZZZZZ	10724	222220	25112	15910
23:43	MP20398-MB1	10675	222690	24876	15900
23:48	MP20398-B1	10605	218050	24825	15531
23:52	MP20398-S1	9859	203020	24434	13893
23:57	MP20398-S2	9967	202860	24291	14052
00:02	JD4436-1A	10009	203780	24400	14117
00:07	MP20398-SD1	10419	211070	24844	15142
00:12	ZZZZZZ	10101	211760	24676	14190
00:17	MA48470-CCV14	10234	208010	24499	14610
00:22	MA48470-CCB15	10690	219870	24580	15954

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
00:27	ZZZZZZ	10051	206750	24619	14137
00:32	ZZZZZZ	9998	206390	24616	14087
00:37	ZZZZZZ	9963	204240	24257	14105
00:42	ZZZZZZ	10168	208100	24857	14349
00:47	MP20399-MB1	10231	205810	24551	14337
00:52	MP20399-B1	10208	208970	24541	14285
00:57	MP20399-S1	10107	205610	25284	14028
01:03	MP20399-S2	10038	205170	24827	13922
01:08	JD4436-14A	10308	211620	25194	14238
01:13	MP20399-SD1	10541	214730	24967	15020
01:18	MA48470-CCV15	10287	211530	24539	14708
01:23	MA48470-CCB16	10778	223310	24736	16063
01:28	ZZZZZZ	10176	207330	24860	14223
01:33	ZZZZZZ	10348	208800	24802	14458
01:38	ZZZZZZ	10710	222130	25120	15937
01:43	ZZZZZZ	10245	210550	24810	14344
01:48	ZZZZZZ	9971	204890	24844	14005
01:53	ZZZZZZ	10445	215800	25004	14895
01:58	ZZZZZZ	10516	215890	25202	15017
02:03	ZZZZZZ	9993	203900	25069	14036
02:08	ZZZZZZ	10391	211590	24870	14887
02:13	MA48470-CCV16	10290	207150	24750	14715
02:18	MA48470-CCB17	10679	220730	24798	15965
02:23	MP20430-MB1	10925	226700	25380	16484
02:28	MP20430-B1	10448	213260	24808	15163
02:33	MP20430-B2	10502	214770	24910	15219
02:38	MP20430-S1	10040	202940	24801	14081
02:43	MP20430-S2	10010	204180	24799	14047
02:48	JD4979-1	10299	208480	24888	14334
02:53	MP20430-SD1	10341	208400	24805	14882
02:58	ZZZZZZ	10659	216000	25361	14992
03:03	ZZZZZZ	10421	215690	25144	14777
03:08	ZZZZZZ	10052	202030	24495	14198

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
03:13	MA48470-CCV17	10227	207380	24379	14656
03:18	MA48470-CCB18	10548	217390	24755	15847
03:23	ZZZZZZ	10401	210780	24684	14903
03:28	ZZZZZZ	10392	209950	24438	14861
03:33	ZZZZZZ	9975	197620	24820	13858
03:38	ZZZZZZ	10095	202020	24999	14070
03:43	MP20385-MB1	10804	222490	25155	16097
03:48	MP20385-B1	10411	214430	24838	15028
03:53	MP20385-S1	10394	212060	24769	14942
03:58	MP20385-S2	10299	209860	24661	14824
04:03	JD4480-17R	10628	222610	25062	15559
04:08	MP20385-SD1	10535	217440	24810	15739
04:13	MA48470-CCV18	10207	207140	24508	14666
04:18	MA48470-CCB19	10561	218900	24499	15890
04:23	ZZZZZZ	10693	220700	25238	15622
04:27	ZZZZZZ	10677	220440	25071	15560
04:32	MP20382-MB1	10758	223260	24918	16080
04:37	MP20382-B1	10407	211890	24763	14986
04:42	MP20382-S1	10064	205330	24626	14109
04:47	MP20382-S2	10114	205310	24733	14179
04:53	JD4881-1	10169	207790	24860	14333
04:58	MP20382-SD1	10412	213170	24413	15125
05:02	ZZZZZZ	10724	216340	24964	16040
05:07	ZZZZZZ	10389	210430	25102	14566
05:12	MA48470-CCV19	10139	205400	23955	14565
05:17	MA48470-CCB20	10573	217300	24567	15881
05:22	ZZZZZZ	10673	219470	25577	14558
05:27	ZZZZZZ	10315	204820	24898	14796
05:32	FA73461-1	10676	225160	24909	15963
05:37	FA73461-2	10676	221810	24804	15964
05:42	FA73461-3	10562	220340	25051	15500
05:47	FA73461-4	10609	218770	25116	15557
05:52	FA73461-5	10671	218750	25141	15615

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
05:57	FA73461-6	10618	222310	25023	15560
06:02	FA73461-7	10667	220090	25303	15653
06:07	FA73461-8	10634	219100	25087	15610
06:11	MA48470-CCV20	10236	208700	24409	14716
06:16	MA48470-CCB21	10628	217920	24646	15966
06:21	FA73461-9	10654	221060	25254	15629
06:26	FA73461-10	10581	218460	25173	15565
06:31	FA73461-11	10631	219700	25153	15624
06:36	FA73461-12	10736	220440	25113	15748
06:41	FA73461-13	10664	220600	25452	15671
06:46	ZZZZZZ	10317	212110	24785	14959
06:51	MA48470-CCV21	10215	208170	24509	14709
06:56	MA48470-CCB22	10650	219730	24929	16034
07:54	MP20315-MB1	10920	231390	29270	16495
08:01	MA48470-CCV22	10154	206120	24181	14690
08:10	MA48470-CCB23	10528	219490	24284	15951

R = Reference for ISTD limits. ! = Outside limits.

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %
Istd#4	Indium	70-130 %

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			11:07 ICB1		11:20 CCB1		12:16 CCB2		13:10 CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	18	anr							
Antimony	6.0	1.5	anr							
Arsenic	3.0	1.9	anr							
Barium	200	.5	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	2.5								
Boron	100	2	1.60	<100	1.50	<100	1.50	<100	1.50	<100
Cadmium	3.0	.2	anr							
Calcium	5000	4.2	anr							
Cerium	100									
Chromium	10	.3	anr							
Cobalt	50	.3	anr							
Copper	10	1.8	anr							
Iron	100	2.6	anr							
Lead	3.0	1.5	anr							
Lithium	50	2.7	0.900	<50	2.50	<50	4.90	<50	1.00	<50
Magnesium	5000	25	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.3	anr							
Phosphorus	50	2.1								
Potassium	10000	71	anr							
Selenium	10	1.7	anr							
Silicon	200	1.3								
Silver	10	.9	anr							
Sodium	10000	38	anr							
Strontium	10	.1								
Sulfur	50	2.6	anr							
Thallium	10	.9	anr							
Tin	10	.5								
Titanium	10	.4								
Tungsten	50	.9								
Vanadium	50	.4	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			11:07 ICB1		11:20 CCB1		12:16 CCB2		13:10 CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.1	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			14:05 CCB4		14:59 CCB5		15:53 CCB6		16:34 CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	18	anr							
Antimony	6.0	1.5	anr							
Arsenic	3.0	1.9	anr							
Barium	200	.5	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	2.5								
Boron	100	2	1.50	<100	1.30	<100	-0.200	<100	1.30	<100
Cadmium	3.0	.2	anr							
Calcium	5000	4.2	anr							
Cerium	100									
Chromium	10	.3	anr							
Cobalt	50	.3	anr							
Copper	10	1.8	anr							
Iron	100	2.6	anr							
Lead	3.0	1.5	anr							
Lithium	50	2.7	-0.300	<50	0.00	<50	-0.700	<50	0.100	<50
Magnesium	5000	25	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.3	anr							
Phosphorus	50	2.1								
Potassium	10000	71	anr							
Selenium	10	1.7	anr							
Silicon	200	1.3								
Silver	10	.9	anr							
Sodium	10000	38	anr							
Strontium	10	.1								
Sulfur	50	2.6	anr							
Thallium	10	.9	anr							
Tin	10	.5								
Titanium	10	.4								
Tungsten	50	.9								
Vanadium	50	.4	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			14:05 CCB4		14:59 CCB5		15:53 CCB6		16:34 CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.1	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			17:27 CCB8		18:27 CCB9		19:27 CCB10		20:26 CCB11	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	18	anr							
Antimony	6.0	1.5	anr							
Arsenic	3.0	1.9	anr							
Barium	200	.5	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	2.5								
Boron	100	2	0.600	<100	0.600	<100	0.900	<100	2.20	<100
Cadmium	3.0	.2	anr							
Calcium	5000	4.2	anr							
Cerium	100									
Chromium	10	.3	anr							
Cobalt	50	.3	anr							
Copper	10	1.8	anr							
Iron	100	2.6	anr							
Lead	3.0	1.5	anr							
Lithium	50	2.7	1.40	<50	8.50	<50	2.80	<50	0.400	<50
Magnesium	5000	25	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.3	anr							
Phosphorus	50	2.1								
Potassium	10000	71	anr							
Selenium	10	1.7	anr							
Silicon	200	1.3								
Silver	10	.9	anr							
Sodium	10000	38	anr							
Strontium	10	.1								
Sulfur	50	2.6	anr							
Thallium	10	.9	anr							
Tin	10	.5								
Titanium	10	.4								
Tungsten	50	.9								
Vanadium	50	.4	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			17:27 CCB8		18:27 CCB9		19:27 CCB10		20:26 CCB11	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.1	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			21:21 CCB12		22:22 CCB13		23:23 CCB14		00:22 CCB15	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	18	anr							
Antimony	6.0	1.5	anr							
Arsenic	3.0	1.9	anr							
Barium	200	.5	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	2.5								
Boron	100	2	1.00	<100	-0.200	<100	0.200	<100	1.20	<100
Cadmium	3.0	.2	anr							
Calcium	5000	4.2	anr							
Cerium	100									
Chromium	10	.3	anr							
Cobalt	50	.3	anr							
Copper	10	1.8	anr							
Iron	100	2.6	anr							
Lead	3.0	1.5	anr							
Lithium	50	2.7	0.600	<50	2.00	<50	2.20	<50	-1.60	<50
Magnesium	5000	25	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.3	anr							
Phosphorus	50	2.1								
Potassium	10000	71	anr							
Selenium	10	1.7	anr							
Silicon	200	1.3								
Silver	10	.9	anr							
Sodium	10000	38	anr							
Strontium	10	.1								
Sulfur	50	2.6	anr							
Thallium	10	.9	anr							
Tin	10	.5								
Titanium	10	.4								
Tungsten	50	.9								
Vanadium	50	.4	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			21:21 CCB12		22:22 CCB13		23:23 CCB14		00:22 CCB15	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.1	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			01:23 CCB16		02:18 CCB17		03:18 CCB18		04:18 CCB19	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	18	anr							
Antimony	6.0	1.5	anr							
Arsenic	3.0	1.9	anr							
Barium	200	.5	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	2.5								
Boron	100	2	0.700	<100	1.70	<100	1.20	<100	1.70	<100
Cadmium	3.0	.2	anr							
Calcium	5000	4.2	anr							
Cerium	100									
Chromium	10	.3	anr							
Cobalt	50	.3	anr							
Copper	10	1.8	anr							
Iron	100	2.6	anr							
Lead	3.0	1.5	anr							
Lithium	50	2.7	1.40	<50	0.300	<50	2.10	<50	0.700	<50
Magnesium	5000	25	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.3	anr							
Phosphorus	50	2.1								
Potassium	10000	71	anr							
Selenium	10	1.7	anr							
Silicon	200	1.3								
Silver	10	.9	anr							
Sodium	10000	38	anr							
Strontium	10	.1								
Sulfur	50	2.6	anr							
Thallium	10	.9	anr							
Tin	10	.5								
Titanium	10	.4								
Tungsten	50	.9								
Vanadium	50	.4	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			01:23 CCB16		02:18 CCB17		03:18 CCB18		04:18 CCB19	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.1	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			05:17 CCB20		06:16 CCB21		06:56 CCB22	
Metal	RL	IDL	raw	final	raw	final	raw	final
Aluminum	200	18	anr					
Antimony	6.0	1.5	anr					
Arsenic	3.0	1.9	anr					
Barium	200	.5	anr					
Beryllium	1.0	.1	anr					
Bismuth	20	2.5						
Boron	100	2	1.80	<100	0.700	<100	0.300	<100
Cadmium	3.0	.2	anr					
Calcium	5000	4.2	anr					
Cerium	100							
Chromium	10	.3	anr					
Cobalt	50	.3	anr					
Copper	10	1.8	anr					
Iron	100	2.6	anr					
Lead	3.0	1.5	anr					
Lithium	50	2.7	1.40	<50	2.40	<50	-0.400	<50
Magnesium	5000	25	anr					
Manganese	15	.1	anr					
Molybdenum	20	.3						
Nickel	10	.3	anr					
Phosphorus	50	2.1						
Potassium	10000	71	anr					
Selenium	10	1.7	anr					
Silicon	200	1.3						
Silver	10	.9	anr					
Sodium	10000	38	anr					
Strontium	10	.1						
Sulfur	50	2.6	anr					
Thallium	10	.9	anr					
Tin	10	.5						
Titanium	10	.4						
Tungsten	50	.9						
Vanadium	50	.4	anr					

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time:			05:17		06:16		06:56	
Sample ID:			CCB20		CCB21		CCB22	
Metal	RL	IDL	raw	final	raw	final	raw	final
Zinc	20	.1	anr					
Zirconium	10	.3						

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: to % Recovery Run ID: MA48470 Units: ug/l

Time:		11:14	
Sample ID:	ICCV	ICCV1	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron	2000	2020	101.0
Cadmium	anr		
Calcium	anr		
Cerium			
Chromium	anr		
Cobalt	anr		
Copper	anr		
Iron	anr		
Lead	anr		
Lithium	2000	2010	100.5
Magnesium	anr		
Manganese	anr		
Molybdenum			
Nickel	anr		
Phosphorus			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Strontium			
Sulfur	anr		
Thallium	anr		
Tin			
Titanium			
Tungsten			
Vanadium	anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: to % Recovery Run ID: MA48470 Units: ug/l

Time:		11:14	
Sample ID:	ICCV	ICCV1	
Metal	True	Results	% Rec
Zinc	anr		
Zirconium			

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		11:00			12:11			13:05	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	2020	101.0	2000	2020	101.0	2000	2040	102.0
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	2010	100.5	2000	2000	100.0	2000	2000	100.0
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		11:00			12:11			13:05	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		14:00			14:54			15:48	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	2050	102.5	2000	2040	102.0	2000	2040	102.0
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	2010	100.5	2000	2000	100.0	2000	1990	99.5
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		14:00			14:54			15:48	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		16:29			17:22			18:22	
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	2020	101.0	2000	2010	100.5	2000	2020	101.0
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	1960	98.0	2000	1940	97.0	2000	1970	98.5
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		16:29			17:22			18:22	
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		19:22			20:21			21:16	
Sample ID:	CCV	CCV9		CCV	CCV10		CCV	CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	2010	100.5	2000	2020	101.0	2000	2000	100.0
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	1940	97.0	2000	1950	97.5	2000	1920	96.0
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		19:22			20:21			21:16	
Sample ID:	CCV	CCV9		CCV	CCV10		CCV	CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		22:17			23:18			00:17	
Sample ID:	CCV	CCV12		CCV	CCV13		CCV	CCV14	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	2010	100.5	2000	2000	100.0	2000	2010	100.5
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	1930	96.5	2000	1910	95.5	2000	1910	95.5
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		22:17			23:18			00:17	
Sample ID:	CCV	CCV12		CCV	CCV13		CCV	CCV14	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		01:18			02:13			03:13	
Sample ID:	CCV	CCV15		CCV	CCV16		CCV	CCV17	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	1990	99.5	2000	2000	100.0	2000	2020	101.0
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	1910	95.5	2000	1910	95.5	2000	1920	96.0
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		01:18			02:13			03:13	
Sample ID:	CCV	CCV15		CCV	CCV16		CCV	CCV17	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		04:13			05:12			06:11	
Sample ID:	CCV	CCV18		CCV	CCV19		CCV	CCV20	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	2020	101.0	2000	2020	101.0	2000	2000	100.0
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	1920	96.0	2000	1920	96.0	2000	1910	95.5
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		04:13			05:12			06:11	
Sample ID:	CCV	CCV18		CCV	CCV19		CCV	CCV20	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		06:51	
Sample ID:	CCV	CCV21	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron	2000	2020	101.0
Cadmium	anr		
Calcium	anr		
Cerium			
Chromium	anr		
Cobalt	anr		
Copper	anr		
Iron	anr		
Lead	anr		
Lithium	2000	1930	96.5
Magnesium	anr		
Manganese	anr		
Molybdenum			
Nickel	anr		
Phosphorus			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Strontium			
Sulfur	anr		
Thallium	anr		
Tin			
Titanium			
Tungsten			
Vanadium	anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		06:51	
Sample ID:	CCV	CCV21	
Metal	True	Results	% Rec
Zinc	anr		
Zirconium			

(*) Outside of QC limits
(anr) Analyte not requested

HIGH STANDARD CHECK SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 90 to 110 % Recovery Run ID: MA48470 Units: ug/l

Time:		11:44			11:50	
Sample ID:	HSTD	HSTD1		HSTD	HSTD2	
Metal	True	Results	% Rec	True	Results	% Rec
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Bismuth						
Boron	8000	7850	98.1			
Cadmium	anr					
Calcium						
Cerium						
Chromium	anr					
Cobalt	anr					
Copper	anr					
Iron						
Lead	anr					
Lithium	8000	7830	97.9			
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	anr					
Phosphorus						
Potassium						
Selenium	anr					
Silicon						
Silver	anr					
Sodium						
Strontium						
Sulfur	anr					
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					

HIGH STANDARD CHECK SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 90 to 110 % Recovery Run ID: MA48470 Units: ug/l

Time:		11:44			11:50	
Sample ID:	HSTD	HSTD1		HSTD	HSTD2	
Metal	True	Results	% Rec	True	Results	% Rec
Zinc	anr					
Zirconium						

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: CRI 80-120% CRIA 80-120% Run ID: MA48470 Units: ug/l

Time:				11:24		11:29	
Sample ID:	CRI	CRIA	CRID	CRID1		CRI1	
Metal	True	True	True	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr			
Antimony	6.0	20	3.0				
Arsenic	8.0	20	3.0	anr			
Barium	200		4.0	anr			
Beryllium	2.0		1.0	anr			
Bismuth	20						
Boron	100		10			101	101.0
Cadmium	3.0		1.0	anr			
Calcium	5000	2000	1000	anr			
Cerium							
Chromium	10		2.0				
Cobalt	50		3.0	anr			
Copper	10		2.0				
Iron	100	500					
Lead	3.0	20	2.5				
Lithium	50					58.0	116.0
Magnesium	5000	2000	100	anr			
Manganese	15		3.0	anr			
Molybdenum	20						
Nickel	10		4.0	anr			
Phosphorus	50						
Potassium	5000		2000	anr			
Selenium	10	20	5.0	anr			
Silicon	200						
Silver	5.0		2.0				
Sodium	5000		1000	anr			
Strontium	10						
Sulfur	50						
Thallium	10		2.0				
Tin	10						
Titanium	10						
Tungsten	50						
Vanadium	50		2.0	anr			

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: CRI 80-120% CRIA 80-120% Run ID: MA48470 Units: ug/l

Time:				11:24		11:29	
Sample ID:	CRI	CRIA	CRID	CRID1		CRI1	
Metal	True	True	True	Results	% Rec	Results	% Rec
Zinc	20		10	anr			
Zirconium	10						

(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 80 to 120 % Recovery Run ID: MA48470 Units: ug/l

Time:			11:34		11:39		16:18		16:23	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	505000	101.0	510000	102.0	507000	101.4	506000	101.2
Antimony		1000	2.40		1010	101.0	0.100		1000	100.0
Arsenic		1000	0.800		1040	104.0	0.100		1040	104.0
Barium		500	0.400		520	104.0	0.300		518	103.6
Beryllium		500	0.100		503	100.6	0.100		498	99.6
Bismuth		500	13.9		503	100.6	11.7		503	100.6
Boron		500	-2.80		471	94.2	-2.30		469	93.8
Cadmium		1000	0.400		997	99.7	0.200		981	98.1
Calcium	400000	400000	390000	97.5	385000	96.3	379000	94.8	385000	96.3
Cerium			17.1		31.8		17.3		24.8	
Chromium		500	2.20		494	98.8	2.60		483	96.6
Cobalt		500	0.100		493	98.6	-0.100		490	98.0
Copper		500	-2.00		503	100.6	-1.80		492	98.4
Iron	200000	200000	193000	96.5	190000	95.0	192000	96.0	191000	95.5
Lead		1000	0.00		951	95.1	1.80		951	95.1
Lithium		500	-6.00		538	107.6	-3.30		522	104.4
Magnesium	500000	500000	500000	100.0	491000	98.2	491000	98.2	486000	97.2
Manganese		500	0.400		506	101.2	0.300		491	98.2
Molybdenum		500	2.50		468	93.6	2.40		469	93.8
Nickel		1000	-0.100		981	98.1	0.00		985	98.5
Phosphorus		500	-11.9		451	90.2	-6.80		457	91.4
Potassium			-298		-275		-24.5		-135	
Selenium		1000	1.70		1040	104.0	1.70		1040	104.0
Silicon		500	5.20		497	99.4	2.90		493	98.6
Silver		1000	3.00		1020	102.0	1.80		997	99.7
Sodium			198		234		388		306	
Strontium		500	-2.30		507	101.4	-2.20		500	100.0
Sulfur		500	-3.90		489	97.8	8.10		488	97.6
Thallium		1000	-0.200		988	98.8	-1.00		992	99.2
Tin		500	-2.50		449	89.8	-2.10		440	88.0
Titanium		500	-1.10		486	97.2	-1.20		476	95.2
Tungsten		500	1.80		459	91.8	-0.600		460	92.0
Vanadium		500	1.90		492	98.4	3.70		478	95.6

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 80 to 120 % Recovery Run ID: MA48470 Units: ug/l

Time:			11:34		11:39		16:18		16:23	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Zinc		1000	1.70		958	95.8	1.50		948	94.8
Zirconium		500	3.90		530	106.0	4.10		516	103.2

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	18	46		
Antimony	6.0	1.5	4.7		
Arsenic	3.0	1.9	2.8		
Barium	200	.5	13		
Beryllium	1.0	.1	.5		
Bismuth	20	2.5	4		
Boron	100	2	63	-0.30	<100
Cadmium	3.0	.2	1		
Calcium	5000	4.2	99		
Cerium	100				
Chromium	10	.3	2		
Cobalt	50	.3	2.6		
Copper	10	1.8	5.9		
Iron	100	2.6	32		
Lead	3.0	1.5	1.8		
Lithium	50	2.7	7.3	-0.40	<50
Magnesium	5000	25	140		
Manganese	15	.1	1.4		
Molybdenum	20	.3	3.6		
Nickel	10	.3	1.7		
Phosphorus	50	2.1	18		
Potassium	10000	71	200		
Selenium	10	1.7	4.9		
Silicon	200	1.3	100		
Silver	10	.9	1.9		
Sodium	10000	38	570		
Strontium	10	.1	1		
Sulfur	50	2.6	45		
Thallium	10	.9	1.8		
Tin	10	.5	3.7		
Titanium	10	.4	2.5		
Tungsten	50	.9	40		
Vanadium	50	.4	1.8		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382 Methods: SW846 6010D
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/23/20

Metal	RL	IDL	MDL	MB raw	final
Zinc	20	.1	6.9		
Zirconium	10	.3	4.1		

Associated samples MP20382: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	JD4881-1 Original	MS	Spikelot MPSPK2	% Rec	QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Bismuth					
Boron	183	2150	2000	98.4	75-125
Cadmium	anr				
Calcium	anr				
Cerium					
Chromium	anr				
Cobalt	anr				
Copper	anr				
Iron	anr				
Lead	anr				
Lithium	6.1	1940	2000	96.7	75-125
Magnesium	anr				
Manganese	anr				
Molybdenum					
Nickel	anr				
Phosphorus					
Potassium	anr				
Selenium	anr				
Silicon					
Silver	anr				
Sodium	anr				
Strontium					
Sulfur					
Thallium	anr				
Tin					
Titanium					
Tungsten					
Vanadium	anr				

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	JD4881-1 Original MS	Spikelot MPSPK2	% Rec	QC Limits
Zinc	anr			
Zirconium				

Associated samples MP20382: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	JD4881-1 Original	MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Bismuth						
Boron	183	2140	2000	97.9	0.5	20
Cadmium	anr					
Calcium	anr					
Cerium						
Chromium	anr					
Cobalt	anr					
Copper	anr					
Iron	anr					
Lead	anr					
Lithium	6.1	1910	2000	95.2	1.6	20
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel	anr					
Phosphorus						
Potassium	anr					
Selenium	anr					
Silicon						
Silver	anr					
Sodium	anr					
Strontium						
Sulfur						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382 Methods: SW846 6010D
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/23/20

Metal	JD4881-1 Original	MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit
Zinc	anr					
Zirconium						

Associated samples MP20382: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron	1990	2000	99.5	80-120
Cadmium	anr			
Calcium	anr			
Cerium				
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	anr			
Lithium	1930	2000	96.5	80-120
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Zinc	anr			
Zirconium				

Associated samples MP20382: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	JD4881-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron	183	187	2.2	0-10
Cadmium	anr			
Calcium	anr			
Cerium				
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	anr			
Lithium	6.10	16.7	173.8(a)	0-10
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	JD4881-1 Original	SDL 1:5	%DIF	QC Limits
Zinc	anr			
Zirconium				

Associated samples MP20382: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Instrument Detection Limits

Job Number: FA73461
Account: ALSE SGS Orlando, FL
Project: ESVAS: Bremo

Instrument ID: SSTRACE3 **Effective Date:** 01/10/20

Analyte	IDL ug/l
Aluminum	18.2
Antimony	1.5
Arsenic	1.9
Barium	.5
Beryllium	.1
Bismuth	2.5
Boron	2
Cadmium	.2
Calcium	4.2
Chromium	.3
Cobalt	.3
Copper	1.8
Iron	2.6
Lead	1.5
Lithium	2.7
Magnesium	24.6
Manganese	.1
Molybdenum	.3
Nickel	.3
Phosphorus	2.1
Potassium	70.6
Selenium	1.7
Silicon	1.3
Silver	.9
Sodium	37.9
Sulfur	2.6
Strontium	.1
Thallium	.9
Tin	.5
Titanium	.4
Tungsten	.9
Vanadium	.4
Yttrium	5
Zinc	.1
Zirconium	.3

The above applies to the following instrument runs:
MA48470

Instrument Linear Ranges

Job Number: FA73461
Account: ALSE SGS Orlando, FL
Project: ESVAS: Bremo

Instrument ID: SSTRACE3 **Effective Date:** 08/22/19

Analyte	Linear Range ug/l
Aluminum	300000
Antimony	8000
Arsenic	8000
Barium	8000
Beryllium	8000
Bismuth	8000
Boron	8000
Cadmium	8000
Calcium	200000
Cerium	8000
Chromium	8000
Cobalt	8000
Copper	8000
Iron	200000
Lead	8000
Lithium	8000
Magnesium	300000
Manganese	8000
Molybdenum	8000
Nickel	8000
Palladium	8000
Phosphorus	8000
Potassium	200000
Selenium	8000
Silicon	25000
Silver	625
Sodium	200000
Sulfur	100000
Strontium	8000
Thallium	8000
Tin	8000
Titanium	8000
Tungsten	8000
Vanadium	8000
Zinc	8000
Zirconium	8000

The above applies to the following instrument runs:
MA48470

Appendix C

Data Validation Summary

ENVIRONMENTAL® STANDARDS
Setting the Standards for Innovative Environmental Solutions

Tier 2 Data Validation Report
Dominion Energy
Bremo Bluff Power Station
Surface Water Samples
Sample Delivery Group: FA73461

This quality assurance (QA) review is based upon an examination of the data generated from the analyses of the 13 aqueous samples and two aqueous blanks collected on March 13, 2020, at the Dominion Energy (Dominion) Bremo Bluff Power Station facility. These samples were collectively analyzed by SGS North America, Inc. (SGS), of Orlando, Florida, and Dayton, New Jersey, for metals by SW-846 Method 6020A and 6010D; for mercury by SW-846 Method 7470A; for hexavalent chromium by SW-846 Method 7196A; for total hardness by SM 2340B; and for trivalent chromium by calculation.

This Tier 2 data review was performed in accordance with the Quality Assurance Program Plan for Environmental Analyses for Dominion Energy (QAPP; Revision 1, March 2020). This review was performed with guidance from the National Functional Guidelines for Inorganic Superfund Methods Data Review (US EPA, January 2017). This validation guidance document specifically addresses analyses performed in accordance with the Contract Laboratory Program (CLP) analytical methods and is not completely applicable to the type of analyses and analytical protocols performed for the SW-846 methods utilized by the laboratory for these samples. Environmental Standards, Inc. (Environmental Standards) used professional judgment to determine the usability of the analytical results and compliance relative to the SW-846 methods utilized by the laboratory.

Summary

The analytical results and associated laboratory quality control (QC) samples were reviewed to determine the integrity of the reported analytical results and to ensure that the data met the established data quality objectives. This QA review includes all samples in SGS Job Number FA73461.

The samples that have undergone Tier 2 data validation are listed below:

Sample Identification	Laboratory Sample Identification	Job Number	Matrix	Date Sample Collected	Parameters Examined
EB-01-20-Q1 (Equipment Blank)	FA73461-1	FA73461	Aq	3/13/20	M^3, M^4, Hg*, Cr^{6+}, Cr^{3+}, HARD
FB-01-20-Q1 (Field Blank)	FA73461-2	FA73461	Aq	3/13/20	M^1, M^2, Hg, Cr^{6+}, Cr^{3+}, HARD
BR-08-20-Q1	FA73461-3	FA73461	Aq	3/13/20	M^3, M^4, Hg*, Cr^{6+}, Cr^{3+}, HARD
BR-07-20-Q1	FA73461-4	FA73461	Aq	3/13/20	M^3, M^4, Hg*, Cr^{6+}, Cr^{3+}, HARD
BR-06-20-Q1	FA73461-5	FA73461	Aq	3/13/20	M^3, M^4, Hg*, Cr^{6+}, Cr^{3+}, HARD
BR-05-20-Q1	FA73461-6	FA73461	Aq	3/13/20	M^3, M^4, Hg*, Cr^{6+}, Cr^{3+}, HARD
BR-05-20-Q1-MS (Matrix Spike)	FA73461-6S	FA73461	Aq	3/13/20	M^3, Hg*, Cr^{6+}
BR-05-20-Q1-MSD (Matrix Spike Duplicate)	FA73461-6D	FA73461	Aq	3/13/20	M^3, Hg*, Cr^{6+}
BR-04-20-Q1	FA73461-7	FA73461	Aq	3/13/20	M^3, M^4, Hg*, Cr^{6+}, Cr^{3+}, HARD
BR-03-20-Q1	FA73461-8	FA73461	Aq	3/13/20	M^3, M^4, Hg*, Cr^{6+}, Cr^{3+}, HARD
BR-03-20-Q1-FD (Field Duplicate of BR-03-20-Q1)	FA73461-9	FA73461	Aq	3/13/20	M^3, M^4, Hg*, Cr^{6+}, Cr^{3+}, HARD
BR-02-20-Q1	FA73461-10	FA73461	Aq	3/13/20	M^3, M^4, Hg*, Cr^{6+}, Cr^{3+}, HARD
BR-01-20-Q1	FA73461-11	FA73461	Aq	3/13/20	M^3, M^4, Hg*, Cr^{6+}, Cr^{3+}, HARD
JR-02-20-Q1	FA73461-12	FA73461	Aq	3/13/20	M^3, M^4, Hg*, Cr^{6+}, Cr^{3+}, HARD
JR-01-20-Q1	FA73461-13	FA73461	Aq	3/13/20	M^3, M^4, Hg*, Cr^{6+}, Cr^{3+}, HARD

Parameters Examined

M^1 - Total Metals by SW-846 Method 6020A.
M^2 - Total Metals by SW-846 Method 6010D.
M^3 - Dissolved Metals by SW-846 Method 6020A.
M^4 - Dissolved Metals by SW-846 Method 6010D.
Hg - Total Mercury by SW-846 Method 7470A.
Hg* - Dissolved Mercury by SW-846 Method 7470A.
Cr^{6+} - Hexavalent Chromium by SW-846 Method 7196A.
Cr^{3+} - Trivalent Chromium by Calculation

Parameters Examined (Cont.)

HARD - Total Hardness by SM 2340B.
Aq - Aqueous.

Items Reviewed	
Holding Times	Instrument Tuning and Calibrations
Sample Preservation	Reporting Limit (RL) Standard Recoveries
Chain-of-Custody (COC) Record and Case Narrative	Internal Standard Recoveries
Blank Results	Serial Dilution Analysis
Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results	Laboratory Control Sample (LCS) Results
Field and Laboratory Duplicate Results	Sample Preparation
Interference Check Sample Results	Analytical Sequence
Quantitation of Positive Results	Instrumental Raw Data

Comments and Exceptions

1. All analyses performed for the sampling event were compliant with the requirements set forth in the QAPP.

2. Although it was not evident in the field notes (*i.e.*, COC Record notes or filter lot numbers), the field sampling personnel confirmed that the field samples and equipment blank submitted for metals analyses were field filtered (see Project Correspondence [Section 5]). The laboratory analytical report and electronic data deliverable were revised to indicate that the reported metal results were dissolved. Qualification of data due to this issue was not warranted.

3. The laboratory incorrectly identified the field blank metal results as a dissolved parameter. The field sampling personnel confirmed that this sample had not been filtered in the field; therefore, Environmental Standards personnel corrected the fraction to total in the database for this sample. Qualification of data due to this issue was not warranted.

4. Due to the nature of the method, SW-846 Method 7196A has the potential for interferences and high variability at low concentration levels. In sample FB-01-20-Q1, the observed concentration for hexavalent chromium was significantly higher than dissolved chromium. Qualification of data due to this issue is summarized in the Qualifier Summary.

Qualifier Summary

Analyte(s)	Job Number	Sample(s)	Validation Qualifier(s)	Reason(s) for Qualification
dissolved copper	FA73461	all samples, except EB-01-20-Q1 and FB-01-20-Q1	U	BL, BE, BF
dissolved chromium	FA73461	all samples, except EB-01-20-Q1 and FB-01-20-Q1	U	BL, BE, BF
dissolved nickel	FA73461	all samples, except EB-01-20-Q1, FB-01-20-Q1, and BR-03-20-Q1	U	BF
dissolved nickel	FA73461	all samples, except EB-01-20-Q1 and FB-01-20-Q1	U	BE
dissolved molybdenum	FA73461	BR-05-20-Q1	U	BL
dissolved zinc	FA73461	all samples, except EB-01-20-Q1 and FB-01-20-Q1	U	BE, BF
total chromium, trivalent chromium, and hexavalent chromium	FA73461	FB-01-20-Q1	J/UJ	ZZ

In accordance with reporting conventions, all positive results reported between the method detection limit (MDL) and RL should be considered estimated and have been flagged “J” (unless previously flagged “U”) on the data tables. (Reason Code: RL)

Review performed by: Bryan J. Eck, Quality Assurance Chemist
Review reviewed by: Alyssa M. Reed, Senior Quality Assurance Chemist/Project Manager
Review approved by: Jennifer N. Gable, Principal Chemist
Date review completed: 5/21/2020

SECTION 2

ANALYTICAL RESULTS

INORGANIC DATA QUALIFIERS

U	The analyte was not detected at or above the level of the associated reporting limit.
J	The result is an estimated quantity with indeterminate bias. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity; the result may be biased high.
J-	The result is an estimated quantity; the result may be biased low.
UJ	This analyte was not detected; the sample reporting limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

REASON CODES AND EXPLANATIONS

Reason Code	Explanation
BE	Equipment blank contamination. The result should be considered “not-detected.”
BF	Field blank contamination. The result should be considered “not-detected.”
BL	Laboratory blank contamination. The result should be considered “not-detected.”
BN	Negative laboratory blank contamination.
C	Initial and/or Continuing Calibration issue, indeterminate bias.
FD	Field duplicate imprecision.
FG	Total versus Dissolved Imprecision.
H	Holding time exceeded.
I	Internal standard recovery outside of acceptance limits.
L	LCS and LCSD recoveries outside of acceptance limits, indeterminate bias.
LD	Laboratory duplicate imprecision.
LP	LCS/LCSD imprecision.
M	MS and MSD recoveries outside of acceptance limits, indeterminate bias.
MP	MS/MSD imprecision.
P	Post-digestion spike recoveries outside of acceptance limits, indeterminate bias.
Q	Chemical Preservation issue.
R	RL standards outside of acceptance limits, indeterminate bias.
RL	Reported result between the MDL and the QL.
SD	Serial Dilution imprecision.
T	Temperature preservation issue.
X	Percent solids < 50%.
Y	Chemical Yield outside of acceptance limits.
Z	ICP or ICP/MS Interference.
ZZ	Other.

Facility: Bremo Bluff Power Station
SDG: FA73461

Lab Sample ID	FA73461-1
Sys Sample Code	EB-01-20-Q1
Sample Name	EB-01-20-Q1
Sample Date	3/13/2020 1:05:00 PM
Location	BR-08-20
Sample Type	EB
Parent Sample	BR-08-20-Q1

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L		U		0.17	0.17	1.3	N	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	D	mg/L		U		0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	D	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	D	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	D	ug/L		U		0.21	0.21	2.0	N	Yes	2
	Cadmium	7440-43-9	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	D	ug/L	42.6	J	RL	36	36	200	Y	Yes	2
	Chromium	7440-47-3	D	ug/L	0.60	J	RL	0.20	0.20	2.0	Y	Yes	2
	Cobalt	7440-48-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	D	ug/L	0.81	J	RL	0.20	0.20	2.0	Y	Yes	2
	Lead	7439-92-1	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	D	ug/L		U		19	19	200	N	Yes	2
	Molybdenum	7439-98-7	D	ug/L		U		0.39	0.39	2.0	N	Yes	2
	Nickel	7440-02-0	D	ug/L	0.52	J	RL	0.20	0.20	2.0	Y	Yes	2
	Selenium	7782-49-2	D	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	D	ug/L	5.3			1.7	1.7	4.0	Y	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	D	mg/L		U		0.0080	0.0080	0.010	N	Yes	1
SW-846 7470A	Mercury	7439-97-6	D	ug/L		U		0.030	0.030	0.50	N	Yes	1

Lab Sample ID	FA73461-2
Sys Sample Code	FB-01-20-Q1
Sample Name	FB-01-20-Q1
Sample Date	3/13/2020 1:05:00 PM
Location	BR-08-20
Sample Type	FB
Parent Sample	BR-08-20-Q1

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L		U		0.17	0.17	1.3	N	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	T	mg/L		UJ	ZZ	0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	T	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	T	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	T	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	T	ug/L		U		0.21	0.21	2.0	N	Yes	2
	Cadmium	7440-43-9	T	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	T	ug/L		U		36	36	200	N	Yes	2
	Chromium	7440-47-3	T	ug/L	0.46	J	ZZ, RL	0.20	0.20	2.0	Y	Yes	2
	Cobalt	7440-48-4	T	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	T	ug/L	0.068	J	RL	0.20	0.20	2.0	Y	Yes	2
	Lead	7439-92-1	T	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	T	ug/L		U		19	19	200	N	Yes	2
	Molybdenum	7439-98-7	T	ug/L		U		0.39	0.39	2.0	N	Yes	2
	Nickel	7440-02-0	T	ug/L	0.023	J	RL	0.20	0.20	2.0	Y	Yes	2
	Selenium	7782-49-2	T	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	T	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	T	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	T	ug/L	5.0			1.7	1.7	4.0	Y	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	T	mg/L	0.014	J	ZZ	0.0080	0.0080	0.010	Y	Yes	1
SW-846 7470A	Mercury	7439-97-6	T	ug/L		U		0.030	0.030	0.50	N	Yes	1

Lab Sample ID	FA73461-3
Sys Sample Code	BR-08-20-Q1
Sample Name	BR-08-20-Q1
Sample Date	3/13/2020 1:05:00 PM
Location	BR-08-20
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L	52.0			0.17	0.17	1.3	Y	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	D	mg/L		U		0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	D	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	D	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	D	ug/L		U		0.21	0.21	2.0	N	Yes	2
	Cadmium	7440-43-9	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	D	ug/L	15200			36	36	200	Y	Yes	2
	Chromium	7440-47-3	D	ug/L		U	BL, BE, BF, RL	0.66	0.66	2.0	N	Yes	2
	Cobalt	7440-48-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	D	ug/L		U	BL, BE, BF	2.2	2.2	2.2	N	Yes	2
	Lead	7439-92-1	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	D	ug/L	3400			19	19	200	Y	Yes	2
	Molybdenum	7439-98-7	D	ug/L		U		0.39	0.39	2.0	N	Yes	2
	Nickel	7440-02-0	D	ug/L		U	BE, BF, RL	0.97	0.97	2.0	N	Yes	2
	Selenium	7782-49-2	D	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	D	ug/L		U	BE, BF	6.3	6.3	6.3	N	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	D	mg/L		U		0.0080	0.0080	0.010	N	Yes	1
SW-846 7470A	Mercury	7439-97-6	D	ug/L		U		0.030	0.030	0.50	N	Yes	1

Lab Sample ID	FA73461-4
Sys Sample Code	BR-07-20-Q1
Sample Name	BR-07-20-Q1
Sample Date	3/13/2020 1:40:00 PM
Location	BR-07-20
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L	64.8			0.17	0.17	1.3	Y	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	D	mg/L		U		0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	D	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	D	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	D	ug/L		U		0.21	0.21	2.0	N	Yes	2
	Cadmium	7440-43-9	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	D	ug/L	19000			36	36	200	Y	Yes	2
	Chromium	7440-47-3	D	ug/L		U	BL, BE, BF, RL	0.70	0.70	2.0	N	Yes	2
	Cobalt	7440-48-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	D	ug/L		U	BL, BE, BF, RL	1.2	1.2	2.0	N	Yes	2
	Lead	7439-92-1	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	D	ug/L	4210			19	19	200	Y	Yes	2
	Molybdenum	7439-98-7	D	ug/L		U		0.39	0.39	2.0	N	Yes	2
	Nickel	7440-02-0	D	ug/L		U	BE, BF, RL	0.63	0.63	2.0	N	Yes	2
	Selenium	7782-49-2	D	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	D	ug/L		U	BE, BF	6.5	6.5	6.5	N	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	D	mg/L		U		0.0080	0.0080	0.010	N	Yes	1
SW-846 7470A	Mercury	7439-97-6	D	ug/L		U		0.030	0.030	0.50	N	Yes	1

Lab Sample ID	FA73461-5
Sys Sample Code	BR-06-20-Q1
Sample Name	BR-06-20-Q1
Sample Date	3/13/2020 2:05:00 PM
Location	BR-06-20
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L	64.2			0.17	0.17	1.3	Y	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	D	mg/L		U		0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	D	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	D	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	D	ug/L	0.23	J	RL	0.21	0.21	2.0	Y	Yes	2
	Cadmium	7440-43-9	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	D	ug/L	18800			36	36	200	Y	Yes	2
	Chromium	7440-47-3	D	ug/L		U	BL, BE, BF, RL	0.63	0.63	2.0	N	Yes	2
	Cobalt	7440-48-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	D	ug/L		U	BL, BE, BF, RL	1.3	1.3	2.0	N	Yes	2
	Lead	7439-92-1	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	D	ug/L	4190			19	19	200	Y	Yes	2
	Molybdenum	7439-98-7	D	ug/L		U		0.39	0.39	2.0	N	Yes	2
	Nickel	7440-02-0	D	ug/L		U	BE, BF, RL	0.62	0.62	2.0	N	Yes	2
	Selenium	7782-49-2	D	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	D	ug/L		U	BE, BF	6.4	6.4	6.4	N	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	D	mg/L		U		0.0080	0.0080	0.010	N	Yes	1
SW-846 7470A	Mercury	7439-97-6	D	ug/L		U		0.030	0.030	0.50	N	Yes	1

Lab Sample ID	FA73461-6
Sys Sample Code	BR-05-20-Q1
Sample Name	BR-05-20-Q1
Sample Date	3/13/2020 2:35:00 PM
Location	BR-05-20
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L	63.4			0.17	0.17	1.3	Y	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	D	mg/L		U		0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	D	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	D	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	D	ug/L	0.26	J	RL	0.21	0.21	2.0	Y	Yes	2
	Cadmium	7440-43-9	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	D	ug/L	18600			36	36	200	Y	Yes	2
	Chromium	7440-47-3	D	ug/L		U	BL, BE, BF, RL	0.68	0.68	2.0	N	Yes	2
	Cobalt	7440-48-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	D	ug/L		U	BL, BE, BF, RL	1.3	1.3	2.0	N	Yes	2
	Lead	7439-92-1	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	D	ug/L	4120			19	19	200	Y	Yes	2
	Molybdenum	7439-98-7	D	ug/L		U	BL, RL	0.50	0.50	2.0	N	Yes	2
	Nickel	7440-02-0	D	ug/L		U	BE, BF, RL	0.86	0.86	2.0	N	Yes	2
	Selenium	7782-49-2	D	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	D	ug/L		U	BE, BF	5.0	5.0	5.0	N	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	D	mg/L		U		0.0080	0.0080	0.010	N	Yes	1
SW-846 7470A	Mercury	7439-97-6	D	ug/L		U		0.030	0.030	0.50	N	Yes	1

Lab Sample ID	FA73461-7
Sys Sample Code	BR-04-20-Q1
Sample Name	BR-04-20-Q1
Sample Date	3/13/2020 3:10:00 PM
Location	BR-04-20
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L	61.0			0.17	0.17	1.3	Y	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	D	mg/L		U		0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	D	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	D	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	D	ug/L		U		0.21	0.21	2.0	N	Yes	2
	Cadmium	7440-43-9	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	D	ug/L	17900			36	36	200	Y	Yes	2
	Chromium	7440-47-3	D	ug/L		U	BL, BE, BF, RL	0.60	0.60	2.0	N	Yes	2
	Cobalt	7440-48-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	D	ug/L		U	BL, BE, BF, RL	1.2	1.2	2.0	N	Yes	2
	Lead	7439-92-1	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	D	ug/L	3950			19	19	200	Y	Yes	2
	Molybdenum	7439-98-7	D	ug/L		U		0.39	0.39	2.0	N	Yes	2
	Nickel	7440-02-0	D	ug/L		U	BE, BF, RL	1.1	1.1	2.0	N	Yes	2
	Selenium	7782-49-2	D	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	D	ug/L		U	BE, BF	6.0	6.0	6.0	N	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	D	mg/L		U		0.0080	0.0080	0.010	N	Yes	1
SW-846 7470A	Mercury	7439-97-6	D	ug/L		U		0.030	0.030	0.50	N	Yes	1

Lab Sample ID	FA73461-8
Sys Sample Code	BR-03-20-Q1
Sample Name	BR-03-20-Q1
Sample Date	3/13/2020 3:40:00 PM
Location	BR-03-20
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L	52.8			0.17	0.17	1.3	Y	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	D	mg/L		U		0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	D	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	D	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	D	ug/L		U		0.21	0.21	2.0	N	Yes	2
	Cadmium	7440-43-9	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	D	ug/L	15500			36	36	200	Y	Yes	2
	Chromium	7440-47-3	D	ug/L		U	BL, BE, BF, RL	0.54	0.54	2.0	N	Yes	2
	Cobalt	7440-48-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	D	ug/L		U	BL, BE, BF, RL	1.4	1.4	2.0	N	Yes	2
	Lead	7439-92-1	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	D	ug/L	3430			19	19	200	Y	Yes	2
	Molybdenum	7439-98-7	D	ug/L		U		0.39	0.39	2.0	N	Yes	2
	Nickel	7440-02-0	D	ug/L		U	BE	2.0	2.0	2.0	N	Yes	2
	Selenium	7782-49-2	D	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	D	ug/L		U	BE, BF	5.6	5.6	5.6	N	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	D	mg/L		U		0.0080	0.0080	0.010	N	Yes	1
SW-846 7470A	Mercury	7439-97-6	D	ug/L		U		0.030	0.030	0.50	N	Yes	1

Lab Sample ID	FA73461-9
Sys Sample Code	BR-03-20-Q1-FD
Sample Name	BR-03-20-Q1-FD
Sample Date	3/13/2020 3:40:00 PM
Location	BR-03-20
Sample Type	FD
Parent Sample	BR-03-20-Q1

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L	62.7			0.17	0.17	1.3	Y	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	D	mg/L		U		0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	D	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	D	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	D	ug/L		U		0.21	0.21	2.0	N	Yes	2
	Cadmium	7440-43-9	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	D	ug/L	18400			36	36	200	Y	Yes	2
	Chromium	7440-47-3	D	ug/L		U	BL, BE, BF, RL	0.65	0.65	2.0	N	Yes	2
	Cobalt	7440-48-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	D	ug/L		U	BL, BE, BF, RL	1.0	1.0	2.0	N	Yes	2
	Lead	7439-92-1	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	D	ug/L	4060			19	19	200	Y	Yes	2
	Molybdenum	7439-98-7	D	ug/L		U		0.39	0.39	2.0	N	Yes	2
	Nickel	7440-02-0	D	ug/L		U	BE, BF, RL	0.82	0.82	2.0	N	Yes	2
	Selenium	7782-49-2	D	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	D	ug/L		U	BE, BF	4.9	4.9	4.9	N	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	D	mg/L		U		0.0080	0.008	0.010	N	Yes	1
SW-846 7470A	Mercury	7439-97-6	D	ug/L		U		0.030	0.030	0.50	N	Yes	1

Lab Sample ID	FA73461-10
Sys Sample Code	BR-02-20-Q1
Sample Name	BR-02-20-Q1
Sample Date	3/13/2020 4:00:00 PM
Location	BR-02-20
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L	62.7			0.17	0.17	1.3	Y	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	D	mg/L		U		0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	D	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	D	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	D	ug/L	0.24	J	RL	0.21	0.21	2.0	Y	Yes	2
	Cadmium	7440-43-9	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	D	ug/L	18400			36	36	200	Y	Yes	2
	Chromium	7440-47-3	D	ug/L		U	BL, BE, BF,RL	0.66	0.66	2.0	N	Yes	2
	Cobalt	7440-48-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	D	ug/L		U	BL, BE, BF,RL	1.1	1.1	2.0	N	Yes	2
	Lead	7439-92-1	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	D	ug/L	4070			19	19	200	Y	Yes	2
	Molybdenum	7439-98-7	D	ug/L		U		0.39	0.39	2.0	N	Yes	2
	Nickel	7440-02-0	D	ug/L		U	BE, BF, RL	0.83	0.83	2.0	N	Yes	2
	Selenium	7782-49-2	D	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	D	ug/L		U	BE, BF	5.4	5.4	5.4	N	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	D	mg/L		U		0.0080	0.0080	0.010	N	Yes	1
SW-846 7470A	Mercury	7439-97-6	D	ug/L		U		0.030	0.030	0.50	N	Yes	1

Lab Sample ID	FA73461-11
Sys Sample Code	BR-01-20-Q1
Sample Name	BR-01-20-Q1
Sample Date	3/13/2020 4:25:00 PM
Location	BR-01-20
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L	64.5			0.17	0.17	1.3	Y	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	D	mg/L		U		0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	D	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	D	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	D	ug/L	0.24	J	RL	0.21	0.21	2.0	Y	Yes	2
	Cadmium	7440-43-9	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	D	ug/L	18900			36	36	200	Y	Yes	2
	Chromium	7440-47-3	D	ug/L		U	BL, BE, BF, RL	0.65	0.65	2.0	N	Yes	2
	Cobalt	7440-48-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	D	ug/L		U	BL, BE, BF, RL	1.2	1.2	2.0	N	Yes	2
	Lead	7439-92-1	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	D	ug/L	4200			19	19	200	Y	Yes	2
	Molybdenum	7439-98-7	D	ug/L		U		0.39	0.39	2.0	N	Yes	2
	Nickel	7440-02-0	D	ug/L		U	BE, BF, RL	0.51	0.51	2.0	N	Yes	2
	Selenium	7782-49-2	D	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	D	ug/L		U	BE, BF	4.9	4.9	4.9	N	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	D	mg/L		U		0.0080	0.010	0.010	N	Yes	1
SW-846 7470A	Mercury	7439-97-6	D	ug/L		U		0.030	0.50	0.50	N	Yes	1

Lab Sample ID	FA73461-12
Sys Sample Code	JR-02-20-Q1
Sample Name	JR-02-20-Q1
Sample Date	3/13/2020 4:50:00 PM
Location	JR-02-20
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L	62.2			0.17	0.17	1.3	Y	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	D	mg/L		U		0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	D	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	D	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	D	ug/L	0.22	J	RL	0.21	0.21	2.0	Y	Yes	2
	Cadmium	7440-43-9	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	D	ug/L	18200			36	36	200	Y	Yes	2
	Chromium	7440-47-3	D	ug/L		U	BL,BE,BF, RL	1.3	1.3	2.0	N	Yes	2
	Cobalt	7440-48-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	D	ug/L		U	BL,BE,BF, RL	1.1	1.1	2.0	N	Yes	2
	Lead	7439-92-1	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	D	ug/L	4080			19	19	200	Y	Yes	2
	Molybdenum	7439-98-7	D	ug/L		U		0.39	0.39	2.0	N	Yes	2
	Nickel	7440-02-0	D	ug/L		U	BE,BF,RL	0.77	0.77	2.0	N	Yes	2
	Selenium	7782-49-2	D	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	D	ug/L		U	BE,BF	6.5	6.5	6.5	N	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	D	mg/L		U		0.0080	0.0080	0.010	N	Yes	1
SW-846 7470A	Mercury	7439-97-6	D	ug/L		U		0.030	0.030	0.50	N	Yes	1

Lab Sample ID	FA73461-13
Sys Sample Code	JR-01-20-Q1
Sample Name	JR-01-20-Q1
Sample Date	3/13/2020 5:05:00 PM
Location	JR-01-20
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF
SM 2340B	Hardness	HARD	N	mg/L	63.6			0.17	0.17	1.3	Y	Yes	1
SW-846	Chromium, Trivalent	CHROMIUM,	D	mg/L		U		0.0082	0.0082	0.012	N	Yes	1
SW-846 6010C	Boron	7440-42-8	D	ug/L		U		63	63	100	N	Yes	1
	Lithium	7439-93-2	D	ug/L		U		7.3	7.3	50	N	Yes	1
SW-846 6020A	Antimony	7440-36-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Arsenic	7440-38-2	D	ug/L		U		0.21	0.21	2.0	N	Yes	2
	Cadmium	7440-43-9	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Calcium	7440-70-2	D	ug/L	18600			36	36	200	Y	Yes	2
	Chromium	7440-47-3	D	ug/L		U	BL,BE,BF, RL	0.62	0.62	2.0	N	Yes	2
	Cobalt	7440-48-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Copper	7440-50-8	D	ug/L		U	BL,BE,BF, RL	1.1	1.1	2.0	N	Yes	2
	Lead	7439-92-1	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Magnesium	7439-95-4	D	ug/L	4160			19	19	200	Y	Yes	2
	Molybdenum	7439-98-7	D	ug/L		U		0.39	0.39	2.0	N	Yes	2
	Nickel	7440-02-0	D	ug/L		U	BE,BF,RL	0.74	0.74	2.0	N	Yes	2
	Selenium	7782-49-2	D	ug/L		U		0.22	0.22	2.0	N	Yes	2
	Silver	7440-22-4	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Thallium	7440-28-0	D	ug/L		U		0.20	0.20	2.0	N	Yes	2
	Zinc	7440-66-6	D	ug/L		U	BE, BF	5.4	5.4	5.4	N	Yes	2
SW-846 7196A	Chromium, Hexavalent	18540-29-9	D	mg/L		U		0.0080	0.0080	0.010	N	Yes	1
SW-846 7470A	Mercury	7439-97-6	D	ug/L		U		0.030	0.030	0.50	N	Yes	1

SECTION 3

SUPPORTING DOCUMENTATION

ENVIRONMENTAL STANDARDS

INORGANIC ANALYSIS SUPPORT DOCUMENTATION

ESI project name: Dominion Energy
Sample Collection Dates: 3/13/20
Job Number: 20198725.A000
Project Manager: Alyssa Reed
Laboratory: SGS

Reviewed by: Bryan Eck
Approved by: Alyssa M. Reed
Completion Date: 4/30/20

Applicable Sample No's (X) — Refer to Table 1 in the Quality Assurance Review

Deliverable:		Sample No.	Lab Control No.
	CLP (Full) ( )	FA73461	
	Level IV (Full) (X)		
	Limited ( )		
	Other:		

The following table indicates criteria that were examined, the identified problems, and support documentation attachments

	Criteria Examined in Detail (Check (√) if Yes or Footnote Letter for Comments Below)					Problems Identified (Check (√) if Yes or Footnote Letter for Comments Below)					Support Documentation Attachments (Check (√) if Yes or Footnote Letter for Comments Below)				
	6010	6020	Hardness	Hexachrome	Mercury	6010	6020	Hardness	Hexachrome	Mercury	6010	6020	Hardness	Hexachrome	Mercury
Holding Times	X	X	X	X	X						X	X	X	X	X
Blank Analysis Results	X	X	X	X	X		X				X	X	X	X	X
Matrix Spike (Predigestion) Results	X	X		X	X						X	X		X	X
Duplicate Analysis: (X) Field (X) Lab	X	X	X	X	X						X	X	X	X	X
Quantitation of Results	X	X	X	X	X										
Detection Limit/Sensitivity	X	X	X	X	X						X	X	X	X	X
Initial Calibrations	X	X	X	X	X						X	X	X	X	X
Continuing Calibrations	X	X	X	X	X						X	X	X	X	X
Laboratory Control Standard (LCS)	X	X	X	X	X						X	X	X	X	X
ICP Linear Range Analysis	X	X									X	X			
ICP Interference Checks	X	X									X	X			
ICP Serial Dilutions	X	X									X	X			
ICP Post-Digestion Spike															
GFAA Post Digestion Spikes															
GFAA Duplicate Injections															
ICP Multiple Exposures															
GFAA Standard Additions															
CRDL Standards	X	X			X						X	X			X
Condition on Receipt	X	X	X	X	X						X	X	X	X	X
Percent Solids															
Others:															

Comments:

BLANK ANALYSIS RESULTS FOR INORGANIC PARAMETERS

Analysis Type	Matrix (Aq, S)	Blank Type (2)	Blank Sample Number / Batch Number SDG: FA73461	Contaminant	Concentration (mg/kg)	Qualify Limit 5X	Qualify Limit 10X
M	Aq	MB	MP37025	Cu	1.6	8.0	
				Cr	0.44	2.2	
				Mo	0.40	2.00	
M	Aq	EB	EB-01-20-Q1	Ca	42.6	213.0	
				Cr	0.60	3.00	
				Cu	0.81	4.05	
				Ni	0.52	2.60	
				Zn	5.3	26.5	53
M	Aq	FB	FB-01-20-Q1	Cr	0.46	2.30	
				Cu	0.68	3.40	
				Ni	0.23	1.15	
				Zn	5.0	25.0	50

2: MB = Method Blank; TB = Trip Blank; EB = Equipment Blank; FB = Field Blank; IB = Instrument Blank; SB = Storage Blank

Notes: _____

_____

_____

ENVIRONMENTAL STANDARDS, INC.
EVALUATION OF DUPLICATE RESULTS

Matrix: ◉ Aqueous ○ Non-aq.
Reporting Level: ◉ MDL ○ QL
Units: µg/L

PRECISION OBJECTIVES:
If Both Results ≥ 5 × Their QL, RPD ≤: 20
If Either Result < 5 × Its QL, Dif. ≤: 1 **× Highest QL**

Sample ID:	BR-03-20-Q1				**Duplicate Sample ID:**	BR-03-20-Q1-FD					
Analyte	**Sample Concentration**	**Qual**	**QL**	**MDL**	**Duplicate Concentration**	**Qual**	**QL**	**MDL**	**Difference**	**RPD**	**Flag**
Calcium	15500		200	36	18400		200	36	NA	17%	
Chromium	0.54	J	2.0	0.20	0.65	J	2.0	0.20	NA	NA	
Copper	1.4	J	2.0	0.20	1.0	J	2.0	0.20	NA	NA	
Magnesium	3430		200	19	4060		200	19	NA	17%	
Nickel	2.0		2.0	0.20	0.82	J	2.0	0.20	1.18	NA	
Zinc	5.6		4.0	1.7	4.9		4.0	1.7	0.7	NA	
Hardness	52.8		1.3	0.17	62.7		1.3	0.17	NA	17%	

NOTES:

Qual: Qualifier(s) based on evaluation(s) other than Total/ vs. Dissolved comparison, if applicable (J, U, U* or B)
RPD: Relative Percent Difference
QL: Quantitation Limit
MDL: Method Detection Limit
RL: Reporting Limit. RL = QL for QL reporting and MDL for MDL reporting
J: The analyte concentration should be considered estimated
U: The analyte was not detected in the sample at or above the RL indicated. The RL will be used for comparison purposes.
UJ: The analyte was not detected in the sample at or above the Reporting Limit Indicated. The RL is approximate.
R: The analyte was analyzed for and detected, but sample results are unreliable. The presence or absence of the analyte cannot be verified.
UR: The analyte was analyzed for and not detected, but the determination that the analyte was not present in the sample is unreliable. The presence or absence of the analyte cannot be verified.
U* The result was blank qualified. The RL will be used for comparison purposes.
NA: The MDL (for QL reporting), RPD or Difference is not applicable

Comments:

Summary of Hits

Job Number: FA73461
Account: EnviroScience
Project: Bremo
Collected: 03/13/20

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA73461-1	**EB-01-20-Q1**					
Calcium		42.6 J	200	36	ug/l	SW846 6020A
Chromium		0.60 J	2.0	0.20	ug/l	SW846 6020A
Copper		0.81 J	2.0	0.20	ug/l	SW846 6020A
Nickel		0.52 J	2.0	0.20	ug/l	SW846 6020A
Zinc		5.3	4.0	1.7	ug/l	SW846 6020A
FA73461-2	**FB-01-20-Q1**					
Chromium		0.46 J	2.0	0.20	ug/l	SW846 6020A
Copper		0.68 J	2.0	0.20	ug/l	SW846 6020A
Nickel		0.23 J	2.0	0.20	ug/l	SW846 6020A
Zinc		5.0	4.0	1.7	ug/l	SW846 6020A
Chromium, Hexavalent		0.014	0.010	0.0080	mg/l	SW846 7196A
FA73461-3	**BR-08-20-Q1**					
Calcium		15200	200	36	ug/l	SW846 6020A
Chromium		0.66 J	2.0	0.20	ug/l	SW846 6020A
Copper		2.2	2.0	0.20	ug/l	SW846 6020A
Magnesium		3400	200	19	ug/l	SW846 6020A
Nickel		0.97 J	2.0	0.20	ug/l	SW846 6020A
Zinc		6.3	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		52.0	1.3	0.17	mg/l	SM19 2340B
FA73461-4	**BR-07-20-Q1**					
Calcium		19000	200	36	ug/l	SW846 6020A
Chromium		0.70 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.2 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4210	200	19	ug/l	SW846 6020A
Nickel		0.63 J	2.0	0.20	ug/l	SW846 6020A
Zinc		6.5	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		64.8	1.3	0.17	mg/l	SM19 2340B
FA73461-5	**BR-06-20-Q1**					
Arsenic		0.23 J	2.0	0.21	ug/l	SW846 6020A
Calcium		18800	200	36	ug/l	SW846 6020A
Chromium		0.63 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.3 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4190	200	19	ug/l	SW846 6020A
Nickel		0.62 J	2.0	0.20	ug/l	SW846 6020A
Zinc		6.4	4.0	1.7	ug/l	SW846 6020A

Summary of Hits

Job Number: FA73461
Account: EnviroScience
Project: Bremo
Collected: 03/13/20

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Hardness, Total as CaCO3 [a]		64.2	1.3	0.17	mg/l	SM19 2340B
FA73461-6	**BR-05-20-Q1**					
Arsenic		0.26 J	2.0	0.21	ug/l	SW846 6020A
Calcium		18600	200	36	ug/l	SW846 6020A
Chromium		0.68 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.3 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4120	200	19	ug/l	SW846 6020A
Molybdenum		0.50 J	2.0	0.39	ug/l	SW846 6020A
Nickel		0.86 J	2.0	0.20	ug/l	SW846 6020A
Zinc		5.0	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		63.4	1.3	0.17	mg/l	SM19 2340B
FA73461-7	**BR-04-20-Q1**					
Calcium		17900	200	36	ug/l	SW846 6020A
Chromium		0.60 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.2 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		3950	200	19	ug/l	SW846 6020A
Nickel		1.1 J	2.0	0.20	ug/l	SW846 6020A
Zinc		6.0	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		61.0	1.3	0.17	mg/l	SM19 2340B
FA73461-8	**BR-03-20-Q1**					
Calcium		15500	200	36	ug/l	SW846 6020A
Chromium		0.54 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.4 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		3430	200	19	ug/l	SW846 6020A
Nickel		2.0	2.0	0.20	ug/l	SW846 6020A
Zinc		5.6	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		52.8	1.3	0.17	mg/l	SM19 2340B
FA73461-9	**BR-03-20-Q1-FD**					
Calcium		18400	200	36	ug/l	SW846 6020A
Chromium		0.65 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.0 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4060	200	19	ug/l	SW846 6020A
Nickel		0.82 J	2.0	0.20	ug/l	SW846 6020A
Zinc		4.9	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		62.7	1.3	0.17	mg/l	SM19 2340B

Summary of Hits

Job Number: FA73461
Account: EnviroScience
Project: Bremo
Collected: 03/13/20

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA73461-10	**BR-02-20-Q1**					
Arsenic		0.24 J	2.0	0.21	ug/l	SW846 6020A
Calcium		18400	200	36	ug/l	SW846 6020A
Chromium		0.66 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.1 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4070	200	19	ug/l	SW846 6020A
Nickel		0.83 J	2.0	0.20	ug/l	SW846 6020A
Zinc		5.4	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		62.7	1.3	0.17	mg/l	SM19 2340B
FA73461-11	**BR-01-20-Q1**					
Arsenic		0.24 J	2.0	0.21	ug/l	SW846 6020A
Calcium		18900	200	36	ug/l	SW846 6020A
Chromium		0.65 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.2 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4200	200	19	ug/l	SW846 6020A
Nickel		0.51 J	2.0	0.20	ug/l	SW846 6020A
Zinc		4.9	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		64.5	1.3	0.17	mg/l	SM19 2340B
FA73461-12	**JR-02-20-Q1**					
Arsenic		0.22 J	2.0	0.21	ug/l	SW846 6020A
Calcium		18200	200	36	ug/l	SW846 6020A
Chromium		1.3 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.1 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4080	200	19	ug/l	SW846 6020A
Nickel		0.77 J	2.0	0.20	ug/l	SW846 6020A
Zinc		6.5	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		62.2	1.3	0.17	mg/l	SM19 2340B
FA73461-13	**JR-01-20-Q1**					
Calcium		18600	200	36	ug/l	SW846 6020A
Chromium		0.62 J	2.0	0.20	ug/l	SW846 6020A
Copper		1.1 J	2.0	0.20	ug/l	SW846 6020A
Magnesium		4160	200	19	ug/l	SW846 6020A
Nickel		0.74 J	2.0	0.20	ug/l	SW846 6020A
Zinc		5.4	4.0	1.7	ug/l	SW846 6020A
Hardness, Total as CaCO3 [a]		63.6	1.3	0.17	mg/l	SM19 2340B

(a) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Report of Analysis

Client Sample ID: EB-01-20-Q1
Lab Sample ID: FA73461-1
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	42.6 J	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.60 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	0.81 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	19 U	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.52 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	5.3	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	EB-01-20-Q1		
Lab Sample ID:	FA73461-1	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:01	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	0.17 U	1.3	0.17	mg/l	1	03/30/20 11:01	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: FB-01-20-Q1
Lab Sample ID: FA73461-2
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Total ~~Dissolved~~ **Metals Analysis** AMR 5/18/20 - Field team confirmed field blank was not filtered

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	36 U	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.46 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	0.68 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	19 U	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.23 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	5.0	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: FB-01-20-Q1
Lab Sample ID: FA73461-2
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.014 ✓	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:04	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	0.17 U	1.3	0.17	mg/l	1	03/30/20 11:04	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-08-20-Q1
Lab Sample ID: FA73461-3
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	15200	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.66 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	2.2	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	3400	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.97 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	6.3	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-08-20-Q1		
Lab Sample ID:	FA73461-3	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:20	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	52.0	1.3	0.17	mg/l	1	03/30/20 11:20	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-07-20-Q1
Lab Sample ID: FA73461-4
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	19000	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.70 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.2 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4210	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.63 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	6.5	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-07-20-Q1		
Lab Sample ID:	FA73461-4	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:24	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	64.8	1.3	0.17	mg/l	1	03/30/20 11:24	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-06-20-Q1
Lab Sample ID: FA73461-5
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.23 J	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18800	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.63 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.3 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4190	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.62 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	6.4	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-06-20-Q1		
Lab Sample ID:	FA73461-5	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:27	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	64.2	1.3	0.17	mg/l	1	03/30/20 11:27	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-05-20-Q1
Lab Sample ID: FA73461-6
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.26 J	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18600	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.68 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.3 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4120	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.50 J	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.86 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	5.0	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36990
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-05-20-Q1
Lab Sample ID: FA73461-6
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U ✓	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 10:38	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	63.4 ✓	1.3	0.17	mg/l	1	03/30/20 10:38	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-04-20-Q1
Lab Sample ID: FA73461-7
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	17900	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.60 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.2 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	3950	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	1.1 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	6.0	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-04-20-Q1		
Lab Sample ID:	FA73461-7	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:31	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	61.0	1.3	0.17	mg/l	1	03/30/20 11:31	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-03-20-Q1
Lab Sample ID: FA73461-8
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	15500	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.54 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.4 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	3430	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	2.0	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	5.6	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-03-20-Q1		
Lab Sample ID:	FA73461-8	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:35	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	52.8	1.3	0.17	mg/l	1	03/30/20 11:35	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-03-20-Q1-FD
Lab Sample ID: FA73461-9
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18400	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.65 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.0 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4060	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.82 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	4.9	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-03-20-Q1-FD		
Lab Sample ID:	FA73461-9	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:39	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	62.7	1.3	0.17	mg/l	1	03/30/20 11:39	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-02-20-Q1
Lab Sample ID: FA73461-10
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.24 J	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18400	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.66 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.1 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4070	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.83 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	5.4	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-02-20-Q1		
Lab Sample ID:	FA73461-10	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:43	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	62.7	1.3	0.17	mg/l	1	03/30/20 11:43	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: BR-01-20-Q1
Lab Sample ID: FA73461-11
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.24 J	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18900	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.65 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.2 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4200	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.51 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	4.9	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-01-20-Q1		
Lab Sample ID:	FA73461-11	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:47	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	64.5	1.3	0.17	mg/l	1	03/30/20 11:47	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: JR-02-20-Q1
Lab Sample ID: FA73461-12
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.22 J	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18200	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	1.3 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.1 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4080	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.77 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	6.5	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	JR-02-20-Q1		
Lab Sample ID:	FA73461-12	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:50	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	62.2	1.3	0.17	mg/l	1	03/30/20 11:50	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: JR-01-20-Q1
Lab Sample ID: FA73461-13
Matrix: AQ - Surface H2O Filtered
Project: Bremo

Date Sampled: 03/13/20
Date Received: 03/14/20
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Arsenic	0.21 U	2.0	0.21	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Boron [a]	63 U	100	63	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Cadmium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Calcium	18600	200	36	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Chromium	0.62 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Cobalt	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Copper	1.1 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lead	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Lithium [a]	7.3 U	50	7.3	ug/l	1	03/23/20	03/30/20	ANJ	SW846 6010D [3]	SW846 3010A [6]
Magnesium	4160	200	19	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Mercury	0.030 U	0.50	0.030	ug/l	1	03/23/20	03/23/20	JC	SW846 7470A [1]	SW846 7470A [4]
Molybdenum	0.39 U	2.0	0.39	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Nickel	0.74 J	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Selenium	0.22 U	2.0	0.22	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Silver	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Thallium	0.20 U	2.0	0.20	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]
Zinc	5.4	4.0	1.7	ug/l	2	03/28/20	03/30/20	DM	SW846 6020A [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA16622
(2) Instrument QC Batch: MA16641
(3) Instrument QC Batch: N:MA48470
(4) Prep QC Batch: MP36991
(5) Prep QC Batch: MP37025
(6) Prep QC Batch: N:MP20382

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	JR-01-20-Q1		
Lab Sample ID:	FA73461-13	**Date Sampled:**	03/13/20
Matrix:	AQ - Surface H2O Filtered	**Date Received:**	03/14/20
		Percent Solids:	n/a
Project:	Bremo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	03/14/20 11:07	JB	SW846 7196A
Chromium, Trivalent [a]	0.0082 U	0.012	0.0082	mg/l	1	03/30/20 11:54	DM	SW846 6010/7196A M
Hardness, Total as CaCO3 [b]	63.6	1.3	0.17	mg/l	1	03/30/20 11:54	DM	SM19 2340B

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries
- IDL and Linear Range Summaries

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:25	MA16622-STD1	1		STD1
12:27	MA16622-STD2	1		STD2
12:28	MA16622-STD3	1		STD3
12:29	MA16622-STD4	1		STD4
12:31	MA16622-STD5	1		STD5
12:33	MA16622-STD6	1		STD6
12:35	MA16622-HSTD1	1		
12:36	MA16622-ICV1	1		
12:38	MA16622-ICB1	1		
12:40	MA16622-CRI1	1		
12:41	MA16622-CCV1	1		
12:43	MA16622-CCB1	1		
12:44	MP36990-MB1	1		
12:46	MP36990-B1	1		
12:47	FA73461-6	1		
12:49	MP36990-D1	1		
12:50	MP36990-SD1	5		
12:51	MP36990-S1	1		
12:53	MP36990-S2	1		
12:54	ZZZZZZ	1		
12:56	ZZZZZZ	1		
12:57	ZZZZZZ	1		
12:59	MA16622-CCV2	1		
13:00	MA16622-CCB2	1		
13:02	ZZZZZZ	1		
13:03	ZZZZZZ	1		
13:04	ZZZZZZ	1		
13:06	ZZZZZZ	1		
13:07	ZZZZZZ	1		
13:08	ZZZZZZ	1		
13:10	ZZZZZZ	1		
13:11	ZZZZZZ	1		
13:13	ZZZZZZ	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
13:14	ZZZZZZ	1		
13:16	MA16622-CCV3	1		
13:17	MA16622-CCB3	1		
13:19	ZZZZZZ	1		
13:20	ZZZZZZ	1		
13:22	ZZZZZZ	1		
13:23	ZZZZZZ	1		
13:24	ZZZZZZ	1		
13:26	ZZZZZZ	1		
13:27	MP36991-MB1	1		
13:28	MP36991-B1	1		
13:30	FA73494-1	1		(sample used for QC only; not part of login FA73461)
13:31	MP36991-D1	1		
13:33	MA16622-CCV4	1		
13:34	MA16622-CCB4	1		
13:35	MP36991-SD1	5		
13:37	MP36991-S1	1		
13:38	MP36991-S2	1		
13:40	FA73461-1	1		
13:42	FA73461-2	1		
13:43	FA73461-3	1		
13:44	FA73461-4	1		
13:45	FA73461-5	1		
13:47	FA73461-7	1		
13:48	FA73461-8	1		
13:49	MA16622-CCV5	1		
13:51	MA16622-CCB5	1		
13:52	FA73461-9	1		
13:54	FA73461-10	1		
13:55	FA73461-11	1		
13:56	FA73461-12	1		
13:57	FA73461-13	1		
13:59	ZZZZZZ	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
14:00	ZZZZZZ	1		
14:01	ZZZZZZ	1		
14:03	ZZZZZZ	1		
14:04	ZZZZZZ	1		
14:05	MA16622-CCV6	1		
14:07	MA16622-CCB6	1		
14:08	ZZZZZZ	1		
14:10	MP36991-MB2A	1		
---------->	Last reportable sample/prep for job FA73461			
14:11	MP36992-MB1	1		
14:12	MP36992-B1	1		
14:14	FA73494-3	1		(sample used for QC only; not part of login FA73461)
14:15	MP36992-D1	1		
14:17	MP36992-SD1	5		
14:18	MP36992-S1	1		
14:20	MP36992-S2	1		
14:21	ZZZZZZ	1		
14:23	MA16622-CCV7	1		
14:24	MA16622-CCB7	1		
14:26	ZZZZZZ	1		
14:27	ZZZZZZ	1		
14:29	ZZZZZZ	1		
14:30	ZZZZZZ	1		
14:31	ZZZZZZ	1		
14:33	ZZZZZZ	1		
14:34	ZZZZZZ	1		
14:36	ZZZZZZ	1		
14:37	ZZZZZZ	1		
14:38	ZZZZZZ	1		
14:40	MA16622-CCV8	1		
14:41	MA16622-CCB8	1		
14:43	ZZZZZZ	10		
14:44	ZZZZZZ	10		
14:45	ZZZZZZ	10		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
14:46	ZZZZZZ	10		
14:48	ZZZZZZ	10		
14:49	ZZZZZZ	10		
14:52	MP36993-MB1	1		
14:53	MP36993-B1	1		
14:54	FA73586-3	1		(sample used for QC only; not part of login FA73461)
14:56	MA16622-CCV9	1		
14:57	MA16622-CCB9	1		
14:59	MP36993-D1	1		
15:00	MP36993-SD1	5		
15:02	MP36993-S1	1		
15:03	MP36993-S2	1		
15:05	ZZZZZZ	1		
15:06	ZZZZZZ	1		
15:08	ZZZZZZ	1		
15:09	ZZZZZZ	1		
15:10	MP36993-MB2	1		
15:12	MP36993-B2	1		
15:13	MA16622-CCV10	1		
15:15	MA16622-CCB10	1		
15:17	MP36993-MB3	1		
15:18	MP36993-B3	1		
15:19	MP36993-MB4	1		
15:21	MP36993-B4	1		
15:22	MA16622-CRI2	1		
15:24	MA16622-CCV11	1		
15:25	MA16622-CCB11	1		

----------> Last reportable CCB for job FA73461
Refer to raw data for calibration curve and standards.

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Element: Dilution	Hg
12:35	MA16622-HSTD1	1	X
12:36	MA16622-ICV1	1	X
12:38	MA16622-ICB1	1	X
12:40	MA16622-CRI1	1	X
12:41	MA16622-CCV1	1	X
12:43	MA16622-CCB1	1	X
12:44	MP36990-MB1	1	X
12:46	MP36990-B1	1	X
12:47	FA73461-6	1	X
12:49	MP36990-D1	1	X
12:50	MP36990-SD1	5	X
12:51	MP36990-S1	1	X
12:53	MP36990-S2	1	X
12:54	ZZZZZZ	1	
12:56	ZZZZZZ	1	
12:57	ZZZZZZ	1	
12:59	MA16622-CCV2	1	X
13:00	MA16622-CCB2	1	X
13:02	ZZZZZZ	1	
13:03	ZZZZZZ	1	
13:04	ZZZZZZ	1	
13:06	ZZZZZZ	1	
13:07	ZZZZZZ	1	
13:08	ZZZZZZ	1	
13:10	ZZZZZZ	1	
13:11	ZZZZZZ	1	
13:13	ZZZZZZ	1	
13:14	ZZZZZZ	1	
13:16	MA16622-CCV3	1	X
13:17	MA16622-CCB3	1	X
13:19	ZZZZZZ	1	
13:20	ZZZZZZ	1	
13:22	ZZZZZZ	1	
		Element:	Hg

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Element: Dilution	Hg	
13:23	ZZZZZZ	1		
13:24	ZZZZZZ	1		
13:26	ZZZZZZ	1		
13:27	MP36991-MB1	1	X	
13:28	MP36991-B1	1	X	
13:30	FA73494-1	1	X	(a)
13:31	MP36991-D1	1	X	
13:33	MA16622-CCV4	1	X	
13:34	MA16622-CCB4	1	X	
13:35	MP36991-SD1	5	X	
13:37	MP36991-S1	1	X	
13:38	MP36991-S2	1	X	
13:40	FA73461-1	1	X	
13:42	FA73461-2	1	X	
13:43	FA73461-3	1	X	
13:44	FA73461-4	1	X	
13:45	FA73461-5	1	X	
13:47	FA73461-7	1	X	
13:48	FA73461-8	1	X	
13:49	MA16622-CCV5	1	X	
13:51	MA16622-CCB5	1	X	
13:52	FA73461-9	1	X	
13:54	FA73461-10	1	X	
13:55	FA73461-11	1	X	
13:56	FA73461-12	1	X	
13:57	FA73461-13	1	X	
13:59	ZZZZZZ	1		
14:00	ZZZZZZ	1		
14:01	ZZZZZZ	1		
14:03	ZZZZZZ	1		
14:04	ZZZZZZ	1		
14:05	MA16622-CCV6	1	X	
14:07	MA16622-CCB6	1	X	
		Element:	Hg	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Element: Dilution	Hg	
14:08	ZZZZZZ	1		
14:10	MP36991-MB2A	1	X	
14:11	MP36992-MB1	1	X	
14:12	MP36992-B1	1	X	
14:14	FA73494-3	1	X	(a)
14:15	MP36992-D1	1	X	
14:17	MP36992-SD1	5	X	
14:18	MP36992-S1	1	X	
14:20	MP36992-S2	1	X	
14:21	ZZZZZZ	1		
14:23	MA16622-CCV7	1	X	
14:24	MA16622-CCB7	1	X	
14:26	ZZZZZZ	1		
14:27	ZZZZZZ	1		
14:29	ZZZZZZ	1		
14:30	ZZZZZZ	1		
14:31	ZZZZZZ	1		
14:33	ZZZZZZ	1		
14:34	ZZZZZZ	1		
14:36	ZZZZZZ	1		
14:37	ZZZZZZ	1		
14:38	ZZZZZZ	1		
14:40	MA16622-CCV8	1	X	
14:41	MA16622-CCB8	1	X	
14:43	ZZZZZZ	10		
14:44	ZZZZZZ	10		
14:45	ZZZZZZ	10		
14:46	ZZZZZZ	10		
14:48	ZZZZZZ	10		
14:49	ZZZZZZ	10		
14:52	MP36993-MB1	1	X	
14:53	MP36993-B1	1	X	
14:54	FA73586-3	1	X	(a)
		Element:	Hg	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
Analyst: JC Run ID: MA16622
Parameters: Hg

Time	Sample Description	Element: Dilution	Hg
14:56	MA16622-CCV9	1	X
14:57	MA16622-CCB9	1	X
14:59	MP36993-D1	1	X
15:00	MP36993-SD1	5	X
15:02	MP36993-S1	1	X
15:03	MP36993-S2	1	X
15:05	ZZZZZZ	1	
15:06	ZZZZZZ	1	
15:08	ZZZZZZ	1	
15:09	ZZZZZZ	1	
15:10	MP36993-MB2	1	X
15:12	MP36993-B2	1	X
15:13	MA16622-CCV10	1	X
15:15	MA16622-CCB10	1	X
15:17	MP36993-MB3	1	X
15:18	MP36993-B3	1	X
15:19	MP36993-MB4	1	X
15:21	MP36993-B4	1	X
15:22	MA16622-CRI2	1	X
15:24	MA16622-CCV11	1	X
15:25	MA16622-CCB11	1	X

(a) Sample used for QC only; not part of login FA73461.

Element: Hg

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA16622 Units: ug/l

Time:			12:38		12:43		13:00		13:17	
Sample ID:			ICB1		CCB1		CCB2		CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Mercury	0.50	.03	-0.0815	<0.50	-0.0582	<0.50	-0.0386	<0.50	-0.0499	<0.50

Doesn't bracket

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA16622 Units: ug/l

Time: / Sample ID:			13:34 CCB4		13:51 CCB5		14:07 CCB6		14:24 CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Mercury	0.50	.03	-0.0466	<0.50	-0.0435	<0.50	-0.0471	<0.50	-0.0373	<0.50

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA16622 Units: ug/l

Time:			14:41		14:57		15:15		15:25	
Sample ID:			CCB8		CCB9		CCB10		CCB11	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Mercury	0.50	.03	-0.0319	<0.50	-0.0392	<0.50	-0.0357	<0.50	-0.0667	<0.50

(*) Outside of QC limits
(anr) Analyte not requested

Doesn't bracket

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA16622 Units: ug/l

Time:		12:36			12:41			12:59	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	3	2.93	97.7	3	3.06	102.0	3	2.97	99.0

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA16622 Units: ug/l

Time:		13:16			13:33			13:49	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	3	2.91	97.0	3	2.92	97.3	3	2.89	96.3

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA16622 Units: ug/l

Time:		14:05			14:23			14:40	
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	3	2.92	97.3	3	2.85	95.0	3	2.84	94.7

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA16622 Units: ug/l

Time:		14:56			15:13			15:24	
Sample ID:	CCV	CCV9		CCV	CCV10		CCV	CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	3	2.83	94.3	3	2.81	93.7	3	2.78	92.7

(*) Outside of QC limits
(anr) Analyte not requested

HIGH STANDARD CHECK SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: 95 to 105 % Recovery Run ID: MA16622 Units: ug/l

Time:		12:35	
Sample ID:	HSTD	HSTD1	
Metal	True	Results	% Rec
Mercury	6	5.86	97.7

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: H40323W1.CSV Date Analyzed: 03/23/20 Methods: SW846 7470A
QC Limits: 80 to 120 % Recovery Run ID: MA16622 Units: ug/l

Time:			12:40		15:22	
Sample ID:	CRI	CRIA	CRI1		CRI2	
Metal	True	True	Results	% Rec	Results	% Rec
Mercury	0.20		0.180	90.0	0.148	74.0*(a)

(*) Outside of QC limits
(anr) Analyte not requested
(a) Possible instrument baseline drift.

70-130% per 2017 NFGs

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
Analyst: DM Run ID: MA16641
Parameters: Sb,As,Cd,Ca,Cr,Co,Cu,Pb,Mg,Mo,Ni,Se,Ag,Tl,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
09:23	MA16641-STD1	1		STDA
09:28	MA16641-STD2	1		STDB
09:31	MA16641-STD3	1		STDC
09:36	MA16641-STD4	1		STDD
09:40	MA16641-STD5	1		STDE
09:44	MA16641-STD6	1		STDF
09:48	MA16641-STD7	1		STDG
09:52	MA16641-HSTD1	1		
09:55	MA16641-HSTD2	1		
09:59	MA16641-ICV1	1		
10:03	MA16641-ICB1	1		
10:07	MA16641-CRIA1	1		
10:11	MA16641-ICSA1	1		
10:15	MA16641-ICSAB1	1		
10:18	MA16641-CCV1	1		
10:22	MA16641-CCV2	1		
10:26	MA16641-CCB1	1		
10:30	MP37025-MB1	2		
10:34	MP37025-B1	2		
10:38	FA73461-6	2		
10:41	MP37025-D1	2		
10:45	MP37025-SD1	10		
10:49	MP37025-S1	2		
10:53	MP37025-S2	2		
10:57	MP37025-PS1	2		
11:01	FA73461-1	2		
11:04	FA73461-2	2		
11:08	MA16641-CCV3	1		
11:12	MA16641-CCV4	1		
11:16	MA16641-CCB2	1		
11:20	FA73461-3	2		
11:24	FA73461-4	2		
11:27	FA73461-5	2		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
Analyst: DM Run ID: MA16641
Parameters: Sb,As,Cd,Ca,Cr,Co,Cu,Pb,Mg,Mo,Ni,Se,Ag,Tl,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
11:31	FA73461-7	2		
11:35	FA73461-8	2		
11:39	FA73461-9	2		
11:43	FA73461-10	2		
11:47	FA73461-11	2		
11:50	FA73461-12	2		
11:54	FA73461-13	2		
---------->	Last reportable sample/prep for job FA73461			
11:58	MA16641-CCV5	1		
12:02	MA16641-CCV6	1		
12:06	MA16641-CCB3	1		
---------->	Last reportable CCB for job FA73461			
12:10	ZZZZZZ	2		
12:13	ZZZZZZ	2		
12:17	ZZZZZZ	2		
12:21	ZZZZZZ	2		
12:25	ZZZZZZ	2		
12:48	MA16641-CCV7	1		
12:52	MA16641-CCV8	1		
12:55	MA16641-CCB4	1		
13:38	MA16641-CCV9	1		
13:41	MA16641-CCV10	1		
13:45	MA16641-CCB5	1		

Refer to raw data for calibration curve and standards.

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
Analyst: DM Run ID: MA16641
Parameters: Sb,As,Cd,Ca,Cr,Co,Cu,Pb,Mg,Mo,Ni,Se,Ag,Tl,Zn

Time	Sample Description	Element: Dilution	Sb	As	Cd	Ca	Cr	Co	Cu	Pb	Mg	Mo	Ni	Se	Ag	Tl	Zn
09:52	MA16641-HSTD1	1													X		
09:55	MA16641-HSTD2	1	X	X	X	X	X	X	X	X	X	X	X	X		X	X
09:59	MA16641-ICV1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:03	MA16641-ICB1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:07	MA16641-CRIA1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:11	MA16641-ICSA1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:15	MA16641-ICSAB1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:18	MA16641-CCV1	1													X		
10:22	MA16641-CCV2	1	X	X	X	X	X	X	X	X	X	X	X	X		X	X
10:26	MA16641-CCB1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:30	MP37025-MB1	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:34	MP37025-B1	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:38	FA73461-6	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:41	MP37025-D1	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:45	MP37025-SD1	10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:49	MP37025-S1	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:53	MP37025-S2	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10:57	MP37025-PS1	2															
11:01	FA73461-1	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:04	FA73461-2	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:08	MA16641-CCV3	1													X		
11:12	MA16641-CCV4	1	X	X	X	X	X	X	X	X	X	X	X	X		X	X
11:16	MA16641-CCB2	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:20	FA73461-3	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:24	FA73461-4	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:27	FA73461-5	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:31	FA73461-7	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:35	FA73461-8	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:39	FA73461-9	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:43	FA73461-10	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:47	FA73461-11	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:50	FA73461-12	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11:54	FA73461-13	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Element:	Sb	As	Cd	Ca	Cr	Co	Cu	Pb	Mg	Mo	Ni	Se	Ag	Tl	Zn

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
Analyst: DM Run ID: MA16641
Parameters: Sb,As,Cd,Ca,Cr,Co,Cu,Pb,Mg,Mo,Ni,Se,Ag,Tl,Zn

Time	Sample Description	Dilution	Element:	Sb	As	Cd	Ca	Cr	Co	Cu	Pb	Mg	Mo	Ni	Se	Ag	Tl	Zn
11:58	MA16641-CCV5	1														X		
12:02	MA16641-CCV6	1		X	X	X	X	X	X	X	X	X	X	X	X		X	X
12:06	MA16641-CCB3	1		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12:10	ZZZZZZ	2																
12:13	ZZZZZZ	2																
12:17	ZZZZZZ	2																
12:21	ZZZZZZ	2																
12:25	ZZZZZZ	2																
12:48	MA16641-CCV7	1														X		
12:52	MA16641-CCV8	1		X	X	X	X	X	X	X	X	X	X	X	X		X	X
12:55	MA16641-CCB4	1		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:38	MA16641-CCV9	1														X		
13:41	MA16641-CCV10	1		X	X	X	X	X	X	X	X	X	X	X	X		X	X
13:45	MA16641-CCB5	1		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			Element:	Sb	As	Cd	Ca	Cr	Co	Cu	Pb	Mg	Mo	Ni	Se	Ag	Tl	Zn

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
Analyst: DM Run ID: MA16641
Parameters: Sb,As,Cd,Ca,Cr,Co,Cu,Pb,Mg,Mo,Ni,Se,Ag,Tl,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4	Istd#5	Istd#6	Istd#7	Istd#8
09:23	MA16641-STD1	100	100	100	100	100	100	100	100
09:28	MA16641-STD2	106.5	102.4	101.8	101.8	101.8	102	101.8	100
09:31	MA16641-STD3	121	103.8	101.5	102.2	102.6	102.5	102.2	100
09:36	MA16641-STD4	116.5	102.6	101.4	101.3	101.7	102.4	101.7	100
09:40	MA16641-STD5	114.6	100.6	99.2	99.4	98.3	100	98	100
09:44	MA16641-STD6	110.1	100.3	98.3	98.7	97.4	100.4	96.5	100
09:48	MA16641-STD7	98.2	97.2	95.5	95.1	93.9	96.4	91.2	100
09:52	MA16641-HSTD1	101.6	96.5	95	95.1	95.1	97.1	94	100
09:55	MA16641-HSTD2	101.8	93.3	92	92.1	90.8	93.6	88.9	100
09:59	MA16641-ICV1	123.4	98	95.1	95.8	94	96.3	93.2	100
10:03	MA16641-ICB1	109.5	95.7	95.4	95.2	95.4	96.8	96.3	100
10:07	MA16641-CRIA1	123	97.8	96.7	97.1	96.8	97.8	97.5	100
10:11	MA16641-ICSA1	92.4	95.9	92.4	91	88.8	92.6	84.4	100
10:15	MA16641-ICSAB1	94.2	96.4	92.3	91.9	89	93.6	84.3	100
10:18	MA16641-CCV1	112.4	95.2	94.6	94.9	94.6	97	94.4	100
10:22	MA16641-CCV2	106.7	95	95	94.2	92.8	95.1	91.4	100
10:26	MA16641-CCB1	111.9	95	94.1	95	95.2	96.6	95.9	100
10:30	MP37025-MB1	95.1	91.1	89.1	90.4	91.7	94	93.7	100
10:34	MP37025-B1	109.2	89.7	86.6	86.8	87.9	92	88.2	100
10:38	FA73461-6	107	87.9	88.2	88.5	87.5	91.5	89.1	100
10:41	MP37025-D1	112.2	90.4	90.5	90.4	89.3	92.9	90.8	100
10:45	MP37025-SD1	118.3	96.8	96.3	97.1	95.2	96.3	94.6	100
10:49	MP37025-S1	114.7	88.4	87.1	87.2	85.6	89.9	85.5	100
10:53	MP37025-S2	99.6	90	87.7	88.6	87.5	91.5	86.7	100
10:57	MP37025-PS1	No results reported for the elements associated with this internal standard.							
11:01	FA73461-1	105.8	94.2	91.5	91.7	91.6	94.3	92.4	100
11:04	FA73461-2	120	95.8	93.2	94.7	93.1	94.9	93.1	100
11:08	MA16641-CCV3	109.4	102.5	99.4	99.9	96.9	97.5	94	100
11:12	MA16641-CCV4	108.6	102.5	99	99.2	96.8	99.1	92.7	100
11:16	MA16641-CCB2	119.2	95.7	96	96.1	94.3	92.8	92.3	100
11:20	FA73461-3	105.9	92	91.2	91.7	89.7	91.8	89.8	100
11:24	FA73461-4	118.2	94.3	92.5	92.7	90.3	92.5	88.9	100
11:27	FA73461-5	113.8	95	93.3	93.4	91.5	93	90.3	100

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
Analyst: DM Run ID: MA16641
Parameters: Sb,As,Cd,Ca,Cr,Co,Cu,Pb,Mg,Mo,Ni,Se,Ag,Tl,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4	Istd#5	Istd#6	Istd#7	Istd#8
11:31	FA73461-7	107.2	98.4	95.7	93.8	92.2	94.4	90.7	100
11:35	FA73461-8	114.7	97	93.8	94.2	92.6	92.5	90.1	100
11:39	FA73461-9	125.5	97	94	93.9	91.9	93.5	89.7	100
11:43	FA73461-10	110.6	98.4	94.1	94.5	91.8	92.9	89.8	100
11:47	FA73461-11	116.7	95.8	93.2	93.6	91.4	92.5	89.2	100
11:50	FA73461-12	124.6	95.5	93.2	92.8	90.2	92.5	88.8	100
11:54	FA73461-13	110.6	95.4	93.1	93	90.1	92.2	88.8	100
11:58	MA16641-CCV5	113.7	101.9	97.3	97.6	94.5	96.1	92	100
12:02	MA16641-CCV6	111.7	100	96.6	97.7	94.2	94	89.6	100
12:06	MA16641-CCB3	118.7	100.7	97.3	97.3	96.8	96.1	93.6	100
12:10	ZZZZZZ	109.4	91.7	89.2	89.8	89	90.8	89.6	100
12:13	ZZZZZZ	119.8	93.8	92	91.1	89.4	92	89.2	100
12:17	ZZZZZZ	116.9	95.4	92.5	91.8	90.2	92.4	90.2	100
12:21	ZZZZZZ	112.2	95.2	91.1	92.5	90.8	92.4	89.3	100
12:25	ZZZZZZ	117.3	96.3	91.9	92.1	90.4	92.2	90	100
12:48	MA16641-CCV7	107.9	100	95.3	96	94	93.9	90.2	100
12:52	MA16641-CCV8	108.8	100.3	96.4	96.4	93	93.6	88.7	100
12:55	MA16641-CCB4	113.1	99	95.8	96.7	94.7	94.1	92.6	100
13:38	MA16641-CCV9	122.5	99.9	96.9	95.9	92.7	93.7	90	100
13:41	MA16641-CCV10	121.9	101.5	96.8	96.9	92.6	93.5	87.5	100
13:45	MA16641-CCB5	107.9	98.7	95.6	96.3	93.3	93.6	91.2	100

! = Outside limits.

LEGEND:

Istd#	Parameter	Limits	CCV/CCB Limits
Istd#1	Lithium	70-130 %	70-130 %
Istd#2	Scandium	70-130 %	70-130 %
Istd#3	Germanium (72-2)	70-130 %	70-130 %
Istd#4	Germanium (74-2)	70-130 %	70-130 %
Istd#5	Indium	70-130 %	70-130 %
Istd#6	Terbium	70-130 %	70-130 %
Istd#7	Bismuth	70-130 %	70-130 %
Istd#8	Tellurium	70-130 %	70-130 %

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: result < RL Run ID: MA16641 Units: ug/l

Time: / Sample ID: / Metal	RL	IDL	10:03 ICB1 raw	final	10:26 CCB1 raw	final	11:16 CCB2 raw	final	12:06 CCB3 raw	final	
Aluminum	100	4.4	anr								
Antimony	1.0	.1	0.0368	<1.0	0.0252	<1.0	0.0172	<1.0	0.0187	<1.0	
Arsenic	1.0	.1	0.0232	<1.0	0.0207	<1.0	0.0199	<1.0	0.0200	<1.0	
Barium	1.0	.1	anr								
Beryllium	1.0	.1	anr								
Cadmium	1.0	.1	0.0158	<1.0	0.0130	<1.0	0.00303	<1.0	0.0135	<1.0	
Calcium	100	7.2	-0.423	<100	0.898	<100	-0.0273	<100	0.446	<100	
Chromium	1.0	.1	0.0182	<1.0	0.0458	<1.0	0.0356	<1.0	0.0410	<1.0	
Cobalt	1.0	.1	0.0186	<1.0	0.0127	<1.0	0.00399	<1.0	0.0106	<1.0	
Copper	1.0	.1	-0.142	<1.0	-0.123	<1.0	-0.126	<1.0	-0.141	<1.0	|x| < 2x MDL (0.20)
Iron	100	7.9	anr								
Lead	1.0	.1	0.0376	<1.0	0.0260	<1.0	0.0167	<1.0	0.0199	<1.0	
Magnesium	100	5.2	0.829	<100	1.48	<100	-0.392	<100	-0.442	<100	
Manganese	1.0	.1	anr								
Molybdenum	1.0	.1	0.191	<1.0	0.234	<1.0	0.113	<1.0	0.126	<1.0	all < MDL (0.39)
Nickel	1.0	.1	-0.0173	<1.0	0.00561	<1.0	-0.0292	<1.0	-0.0232	<1.0	
Potassium	100	6.6	anr								
Selenium	1.0	.11	0.00444	<1.0	-0.0272	<1.0	-0.00843	<1.0	0.0234	<1.0	
Silver	1.0	.1	0.0111	<1.0	0.0160	<1.0	0.00620	<1.0	0.0109	<1.0	
Sodium	100	4.8	anr								
Strontium	1.0	.1	anr								
Thallium	1.0	.1	0.0689	<1.0	0.0384	<1.0	0.0314	<1.0	0.0297	<1.0	
Tin	1.0	.1	anr								
Titanium	1.0	.3	anr								
Vanadium	1.0	.1	anr								
Zinc	2.0	.29	0.0974	<2.0	1.32	<2.0	1.40	<2.0	1.33	<2.0	all < MDL (1.7)

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: 90 to 110 % Recovery Run ID: MA16641 Units: ug/l

Time:		09:59			10:18			10:22	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	100	102	102.0				100	99.7	99.7
Arsenic	100	101	101.0				100	98.8	98.8
Barium	anr								
Beryllium	anr								
Cadmium	100	102	102.0				100	100	100.0
Calcium	10000	9970	99.7				10000	9940	99.4
Chromium	100	102	102.0				100	98.5	98.5
Cobalt	100	103	103.0				100	99.1	99.1
Copper	100	106	106.0				100	100	100.0
Iron	anr								
Lead	100	99.3	99.3				100	97.7	97.7
Magnesium	10000	10400	104.0				10000	9730	97.3
Manganese	anr								
Molybdenum	100	99.9	99.9				100	99.4	99.4
Nickel	100	101	101.0				100	99.4	99.4
Potassium	anr								
Selenium	100	102	102.0				100	99.2	99.2
Silver	50	50.7	101.4	50	50.3	100.6			
Sodium	anr								
Strontium	anr								
Thallium	100	101	101.0				100	98.4	98.4
Tin	anr								
Titanium	anr								
Vanadium	anr								
Zinc	100	103	103.0				100	100	100.0

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: 90 to 110 % Recovery Run ID: MA16641 Units: ug/l

Time:		11:08			11:12			11:58	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum									
Antimony				100	96.3	96.3			
Arsenic				100	99.5	99.5			
Barium									
Beryllium									
Cadmium				100	97.1	97.1			
Calcium				10000	9790	97.9			
Chromium				100	100	100.0			
Cobalt				100	100	100.0			
Copper				100	101	101.0			
Iron									
Lead				100	96.6	96.6			
Magnesium				10000	9970	99.7			
Manganese									
Molybdenum				100	98.1	98.1			
Nickel				100	100	100.0			
Potassium									
Selenium				100	99.2	99.2			
Silver	50	49.4	98.8				50	49.7	99.4
Sodium									
Strontium									
Thallium				100	101	101.0			
Tin									
Titanium									
Vanadium									
Zinc				100	99.4	99.4			

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: 90 to 110 % Recovery Run ID: MA16641 Units: ug/l

Time:		12:02	
Sample ID:	CCV	CCV6	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	100	95.7	95.7
Arsenic	100	101	101.0
Barium	anr		
Beryllium	anr		
Cadmium	100	97.3	97.3
Calcium	10000	10000	100.0
Chromium	100	101	101.0
Cobalt	100	100	100.0
Copper	100	101	101.0
Iron	anr		
Lead	100	97.7	97.7
Magnesium	10000	10200	102.0
Manganese	anr		
Molybdenum	100	97.2	97.2
Nickel	100	101	101.0
Potassium	anr		
Selenium	100	98.8	98.8
Silver			
Sodium	anr		
Strontium	anr		
Thallium	100	101	101.0
Tin	anr		
Titanium	anr		
Vanadium	anr		
Zinc	100	99.6	99.6

(*) Outside of QC limits
(anr) Analyte not requested

HIGH STANDARD CHECK SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: 90 to 110 % Recovery Run ID: MA16641 Units: ug/l

Time:		09:52			09:55	
Sample ID:	HSTD	HSTD1		HSTD	HSTD2	
Metal	True	Results	% Rec	True	Results	% Rec
Aluminum						
Antimony				200	203	101.5
Arsenic				200	206	103.0
Barium						
Beryllium						
Cadmium				200	203	101.5
Calcium				20000	20500	102.5
Chromium				200	204	102.0
Cobalt				200	204	102.0
Copper				200	203	101.5
Iron						
Lead				200	205	102.5
Magnesium				20000	20600	103.0
Manganese						
Molybdenum				200	205	102.5
Nickel				200	202	101.0
Potassium						
Selenium				200	203	101.5
Silver	100	101	101.0			
Sodium						
Strontium						
Thallium				200	205	102.5
Tin						
Titanium						
Vanadium						
Zinc				200	202	101.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: CRI 70-130% CRIA 80-120% Run ID: MA16641 Units: ug/l

Time:			10:07	
Sample ID:	CRI	CRIA	CRIA1	
Metal	True	True	Results	% Rec
Aluminum	100	100	anr	
Antimony	1.0	1.0	0.960	96.0
Arsenic	1.0	1.0	0.980	98.0
Barium	1.0	1.0	anr	
Beryllium	1.0	1.0	anr	
Cadmium	1.0	1.0	0.992	99.2
Calcium	100	100	111	111.0
Chromium	1.0	1.0	0.987	98.7
Cobalt	1.0	1.0	1.02	102.0
Copper	1.0	1.0	1.22	122.0
Iron	100	100	anr	
Lead	1.0	1.0	0.983	98.3
Magnesium	100	100	99.6	99.6
Manganese	1.0	1.0	anr	
Molybdenum	1.0	1.0	1.04	104.0
Nickel	1.0	1.0	1.01	101.0
Potassium	100	100	anr	
Selenium	1.0	1.0	0.826	82.6
Silver	1.0	1.0	1.04	104.0
Sodium	100	100	anr	
Strontium	1.0	1.0	anr	
Thallium	1.0	1.0	0.975	97.5
Tin	1.0	1.0	anr	
Titanium	1.0	1.0	anr	
Vanadium	1.0	1.0	anr	
Zinc	1.0	1.0	1.58	158.0*(a

(*) Outside of QC limits
(anr) Analyte not requested
(a) Positive bias.

all > 3; no qual

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

File ID: XA033020M1.CSV Date Analyzed: 03/30/20 Methods: SW846 6020A
QC Limits: 80 to 120 % Recovery Run ID: MA16641 Units: ug/l

Time: / Sample ID: / Metal	ICSA True	ICSAB True	10:11 ICSA1 Results	% Rec	10:15 ICSAB1 Results	% Rec
Aluminum	100000	100000	98900	98.9	96600	96.6
Antimony			0.175		0.168	
Arsenic		20	0.0795		19.6	98.0
Barium			0.187		0.169	
Beryllium			0.0235		0.0567	
Cadmium		20	0.398		18.9	94.5
Calcium	100000	100000	94300	94.3	92200	92.2
Chromium		20	0.327		19.9	99.5
Cobalt		20	0.325		19.6	98.0
Copper		20	0.306		18.9	94.5
Iron	100000	100000	99200	99.2	97800	97.8
Lead			0.131		0.149	
Magnesium	100000	100000	97900	97.9	95900	95.9
Manganese		20	0.666		19.9	99.5
Molybdenum	2000	2000	2040	102.0	2000	100.0
Nickel		20	0.327		19.3	96.5
Potassium	100000	100000	99700	99.7	98000	98.0
Selenium			0.140		0.0925	
Silver		20	0.0216		18.4	92.0
Sodium	100000	100000	99000	99.0	96500	96.5
Strontium			0.904		0.876	
Thallium			0.0206		0.0134	
Tin			0.357		0.315	
Titanium	2000	2000	2030	101.5	1990	99.5
Vanadium			0.0184		0.0280	
Zinc		20	2.23		20.5	102.5

(*) Outside of QC limits
(anr) Analyte not requested

> MDL

no interferents present in samples
No Qual

6.2.7
6

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36990
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 03/23/20

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.50	.03	.03	-0.050	<0.50

Associated samples MP36990: FA73461-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36990
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 03/23/20 03/23/20

Metal	FA73461-6 Original	DUP	RPD	QC Limits	FA73461-6 Original	MS	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.0	0.0	NC	0-20	0.0	2.9	3	96.7	80-120

Associated samples MP36990: FA73461-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36990 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/23/20

Metal	FA73461-6 Original	MSD	Spikelot HGFLWS1	% Rec	MSD RPD	QC Limit
Mercury	0.0	2.9	3	96.7	0.0	20

Associated samples MP36990: FA73461-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36990
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 03/23/20

Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	2.9	3	96.7	80-120

Associated samples MP36990: FA73461-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36990
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 03/23/20

Metal	FA73461-6 Original	SDL 1:5	%DIF	QC Limits
Mercury	0.00	0.00	NC	0-10

Associated samples MP36990: FA73461-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36991
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date:				03/23/20		03/23/20	
Metal	RL	IDL	MDL	MB raw	final	MB raw	final
Mercury	0.50	.03	.03	-0.029	<0.50	-0.050	<0.50

Associated samples MP36991: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36991
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 03/23/20 03/23/20

Metal	FA73494-1 Original	DUP	RPD	QC Limits	FA73494-1 Original	MS	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.0	0.0	NC	0-20	0.0	2.9	3	96.7	80-120

Associated samples MP36991: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36991 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/23/20

Metal	FA73494-1 Original	MSD	Spikelot HGFLWS1	% Rec	MSD RPD	QC Limit
Mercury	0.0	2.9	3	96.7	0.0	20

Associated samples MP36991: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36991
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 03/23/20

Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	2.9	3	96.7	80-120

Associated samples MP36991: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP36991
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 03/23/20

Metal	FA73494-1 Original	SDL 1:5	%DIF	QC Limits
Mercury	0.00	0.00	NC	0-10

Associated samples MP36991: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP37025
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 03/28/20

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.7	22		
Antimony	2.0	.2	.2	0.043	<2.0
Arsenic	2.0	.2	.21	0.076	<2.0
Barium	2.0	.2	.2		
Beryllium	2.0	.2	.2		
Cadmium	2.0	.2	.2	0.015	<2.0
Calcium	200	14	36	11.9	<200
Chromium	2.0	.2	.2	0.44	<2.0
Cobalt	2.0	.2	.2	0.015	<2.0
Copper	2.0	.2	.2	1.6	<2.0
Iron	200	16	23		
Lead	2.0	.2	.2	0.070	<2.0
Magnesium	200	10	19	6.3	<200
Manganese	2.0	.2	.2		
Molybdenum	2.0	.2	.39	0.40	<2.0
Nickel	2.0	.2	.2	-0.0065	<2.0
Potassium	200	13	75		
Selenium	2.0	.22	.22	0.061	<2.0
Silver	2.0	.2	.2	0.032	<2.0
Sodium	200	9.6	24		
Strontium	2.0	.2	.2		
Thallium	2.0	.2	.2	0.047	<2.0
Tin	2.0	.2	.2		
Titanium	2.0	.61	.88		
Vanadium	2.0	.2	.24		
Zinc	4.0	.58	1.7	0.99	<4.0

Associated samples MP37025: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP37025
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 03/28/20 03/28/20 75-125%

Metal	FA73461-6 Original	DUP	RPD	QC Limits	FA73461-6 Original	MS	Spikelot MPICPMS1	% Rec	QC Limits
Aluminum	anr								
Antimony	0.0	0.0	NC	0-20	0.0	190	200	95.0	80-120
Arsenic	0.26	0.24	8.0	0-20	0.26	196	200	97.9	80-120
Barium	anr								
Beryllium	anr								
Cadmium	0.0	0.0	NC	0-20	0.0	191	200	95.5	80-120
Calcium	18600	17900	3.8	0-20	18600	36200	20000	88.0	80-120
Chromium	0.68	0.60	12.5	0-20	0.68	194	200	96.7	80-120
Cobalt	0.0	0.0	NC	0-20	0.0	197	200	98.5	80-120
Copper	1.3	1.1	16.7	0-20	1.3	198	200	98.4	80-120
Iron	anr								
Lead	0.0	0.0	NC	0-20	0.0	190	200	95.0	80-120
Magnesium	4120	3980	3.5	0-20	4120	22100	20000	89.9	80-120
Manganese	anr								
Molybdenum	0.50	0.37	29.9 (a)	0-20	0.50	197	200	98.3	80-120
Nickel	0.86	0.54	45.7 (a)	0-20	0.86	198	200	98.6	80-120
Potassium	anr								
Selenium	0.0	0.0	NC	0-20	0.0	182	200	91.0	80-120
Silver	0.0	0.0	NC	0-20	0.0	98.1	100	98.1	80-120
Sodium	anr								
Strontium	anr								
Thallium	0.0	0.0	NC	0-20	0.0	189	200	94.5	80-120
Tin	anr								
Titanium	anr								
Vanadium	anr								
Zinc	5.0	4.9	2.0	0-20	5.0	191	200	93.0	80-120

Associated samples MP37025: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP37025
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 03/28/20

Metal	FA73461-6 Original	MSD	Spikelot MPICPMS1	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	0.0	194	200	97.0	2.1	20
Arsenic	0.26	203	200	101.4	3.5	20
Barium	anr					
Beryllium	anr					
Cadmium	0.0	195	200	97.5	2.1	20
Calcium	18600	37400	20000	94.0	3.3	20
Chromium	0.68	203	200	101.2	4.5	20
Cobalt	0.0	206	200	103.0	4.5	20
Copper	1.3	205	200	101.9	3.5	20
Iron	anr					
Lead	0.0	195	200	97.5	2.6	20
Magnesium	4120	23700	20000	97.9	7.0	20
Manganese	anr					
Molybdenum	0.50	203	200	101.3	3.0	20
Nickel	0.86	206	200	102.6	4.0	20
Potassium	anr					
Selenium	0.0	185	200	92.5	1.6	20
Silver	0.0	96.8	100	96.8	1.3	20
Sodium	anr					
Strontium	anr					
Thallium	0.0	193	200	96.5	2.1	20
Tin	anr					
Titanium	anr					
Vanadium	anr					
Zinc	5.0	195	200	95.0	2.1	20

Associated samples MP37025: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP37025
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 03/28/20

70-130%

Metal	BSP Result	Spikelot MPICPMS1	% Rec	QC Limits
Aluminum	anr			
Antimony	205	200	102.5	80-120
Arsenic	212	200	106.0	80-120
Barium	anr			
Beryllium	anr			
Cadmium	206	200	103.0	80-120
Calcium	19600	20000	98.0	80-120
Chromium	211	200	105.5	80-120
Cobalt	214	200	107.0	80-120
Copper	216	200	108.0	80-120
Iron	anr			
Lead	200	200	100.0	80-120
Magnesium	19400	20000	97.0	80-120
Manganese	anr			
Molybdenum	213	200	106.5	80-120
Nickel	215	200	107.5	80-120
Potassium	anr			
Selenium	197	200	98.5	80-120
Silver	101	100	101.0	80-120
Sodium	anr			
Strontium	anr			
Thallium	198 ✓	200	99.0 ✓	80-120
Tin	anr			
Titanium	anr			
Vanadium	anr			
Zinc	203 ✓	200	101.5 ✓	80-120

Associated samples MP37025: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

QC Batch ID: MP37025
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 03/28/20

Metal	FA73461-6 Original	SDL 2:10	%DIF	QC Limits	
Aluminum	anr				
Antimony	0.00	0.00	NC	0-10	
Arsenic	0.262	0.00	100.0(a)	0-10	
Barium	anr				
Beryllium	anr				
Cadmium	0.00	0.00	NC	0-10	
Calcium	18600	17800	4.3	0-10	
Chromium	0.683	0.00	100.0(a)	0-10	
Cobalt	0.00	0.00	NC	0-10	
Copper	1.30	8.31	541.4(a)	0-10	< 50X MDL
Iron	anr				
Lead	0.00	0.00	NC	0-10	
Magnesium	4120	3940	4.5	0-10	
Manganese	anr				
Molybdenum	0.501	0.00	100.0(a)	0-10	< 50X MDL
Nickel	0.863	0.00	100.0(a)	0-10	< 50X MDL
Potassium	anr				
Selenium	0.00	0.00	NC	0-10	
Silver	0.00	0.00	NC	0-10	
Sodium	anr				
Strontium	anr				
Thallium	0.00	0.00	NC	0-10	
Tin	anr				
Titanium	anr				
Vanadium	anr				
Zinc	5.04	7.49	48.8 (a)	0-10	< 50X MDL

Associated samples MP37025: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Instrument Detection Limits

Job Number: FA73461
Account: ESVAS EnviroScience
Project: Bremo

Instrument ID: AGICPMS1 **Effective Date:** 05/21/16

Analyte	IDL ug/l
Aluminum	4.35
Antimony	.1
Arsenic	.1
Arsenic	.1
Barium	.1
Beryllium	.1
Boron	.5
Cadmium	.1
Cadmium	.1
Calcium	7.2
Calcium	7.2
Chromium	.1
Chromium	.1
Cobalt	.1
Cobalt	.1
Copper	.1
Copper	.1
Iron	7.9
Iron	7.9
Lead	.1
Magnesium	5.2
Manganese	.1
Manganese	.1
Molybdenum	.1
Nickel	.1
Nickel	.1
Potassium	6.57
Selenium	.11
Selenium	.11
Silver	.1
Sodium	4.8
Strontium	.1
Thallium	.1
Tin	.1
Tin	.1
Titanium	.303
Vanadium	.1
Vanadium	.1
Zinc	.29
Zinc	.29

The above applies to the following instrument runs:
MA16641

Instrument Detection Limits

Job Number: FA73461
Account: ESVAS EnviroScience
Project: Bremo

Instrument ID: LEEMANHG4 **Effective Date:** 10/01/12

Analyte	IDL ug/l
Mercury	.03

The above applies to the following instrument runs:
MA16622

Instrument Linear Ranges

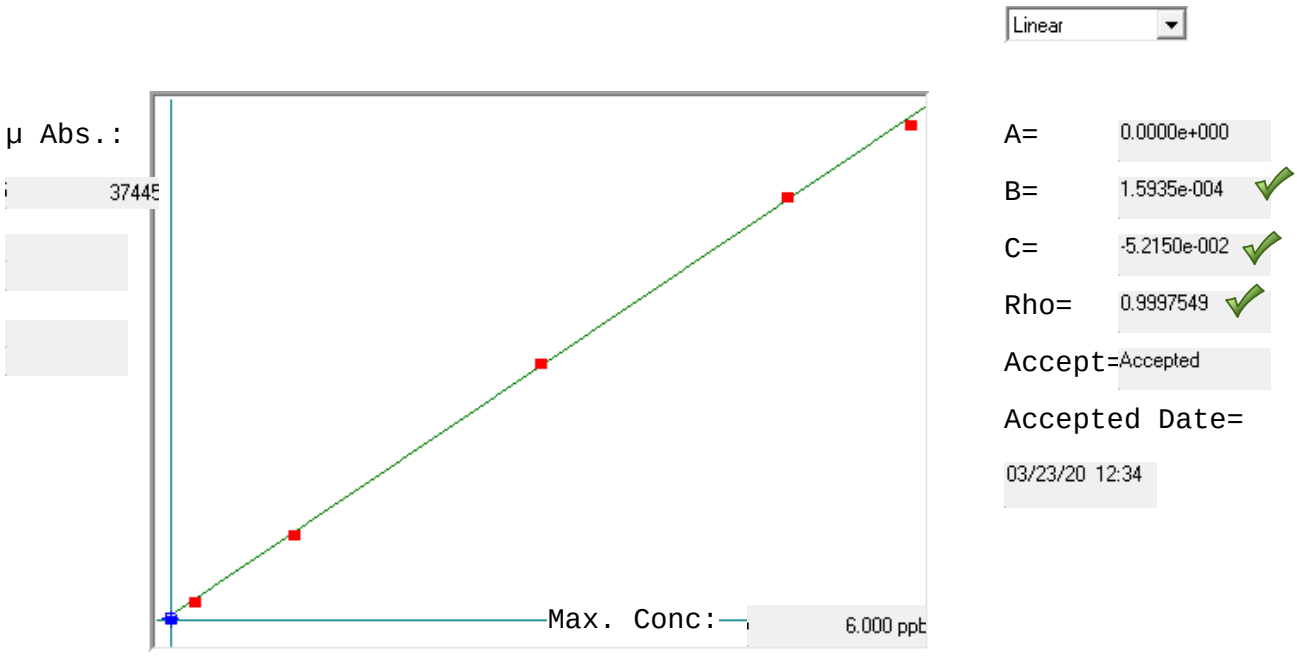
Job Number: FA73461
Account: ESVAS EnviroScience
Project: Bremo

Instrument ID: AGICPMS1 **Effective Date:** 05/21/16

Analyte	Linear Range ug/l
Aluminum	100000
Antimony	1000
Arsenic	1000
Arsenic	1000
Barium	1000
Beryllium	1000
Cadmium	1000
Cadmium	1000
Calcium	100000
Calcium	100000
Chromium	1000
Chromium	1000
Cobalt	1000
Cobalt	1000
Copper	1000
Copper	1000
Iron	100000
Iron	100000
Lead	1000
Magnesium	100000
Manganese	1000
Manganese	1000
Molybdenum	1000
Nickel	1000
Nickel	1000
Potassium	100000
Selenium	1000
Selenium	1000
Silver	100
Sodium	100000
Strontium	1000
Thallium	1000
Tin	1000
Tin	1000
Titanium	1000
Vanadium	1000
Vanadium	1000
Zinc	1000
Zinc	1000

The above applies to the following instrument runs:
MA16641

Hg7470/EPA245.1 HG4



Std ID	Conc.	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
blank	0.000	-0.011	-0.011	257	0.000	257				
.2ppb	0.200	0.186	-0.014	1493	0.0 %	1493				
1ppb	1.000	0.984	-0.016	6502	0.0 %	6502				
3ppb	3.000	3.060	0.060	19528	0.0 %	19528				
5ppb	5.000	5.067	0.067	32127	0.0 %	32127				
6ppb	6.000	5.915	-0.085	37445	0.0 %	37445				

Method: Hg7470/EPA245.1 HG4 Operator: Admin Date of Analysis: 23 Mar 2020 11:55:06

Sample ID	Date	Type	Units	Conc.	µ Abs.	Wt.	Vol.
blank - 1	23 Mar 2020 12:25:51	Std	ppb	-	257	1.000	1.000
.2ppb - 1	23 Mar 2020 12:27:07	Std	ppb	-	1493	1.000	1.000
1ppb - 1	23 Mar 2020 12:28:27	Std	ppb	-	6502	1.000	1.000
3ppb - 1	23 Mar 2020 12:29:54	Std	ppb	-	19528	1.000	1.000
5ppb - 1	23 Mar 2020 12:31:29	Std	ppb	-	32127	1.000	1.000
6ppb - 1	23 Mar 2020 12:33:13	Std	ppb	-	37445	1.000	1.000
HSTD - 1	23 Mar 2020 12:35:00	CK STND	ppb	97.7% 5.8594	37098	1.000	1.000
ICV - 1	23 Mar 2020 12:36:50	CK STND	ppb	97.5% 2.9261	18690	1.000	1.000
ICB - 1	23 Mar 2020 12:38:39	CK STND	ppb	-0.0815	-184	1.000	1.000
CRI - 1	23 Mar 2020 12:40:25	CK STND	ppb	89.8% 0.1795	1454	1.000	1.000
CCV - 1	23 Mar 2020 12:41:45	CK STND	ppb	101.9% 3.0579	19517	1.000	1.000
CCB - 1	23 Mar 2020 12:43:10	CK STND	ppb	-0.0582	-38	1.000	1.000
MP36990-MB1 - 1	23 Mar 2020 12:44:54	SMPL	ppb	-0.0504	11	1.000	1.000
MP36990-B1 - 1	23 Mar 2020 12:46:12	SMPL	ppb	2.9422	18791	1.000	1.000
FA73461-6 - 1	23 Mar 2020 12:47:29	SMPL	ppb	-0.0604	-52	1.000	1.000
MP36990-D1 - 1	23 Mar 2020 12:49:13	SMPL	ppb	-0.0537	-10	1.000	1.000
MP36990-SD1 - 1	23 Mar 2020 12:50:29	SMPL	ppb	-0.4623	-253	1.000	5.000
MP36990-S1 - 1	23 Mar 2020 12:51:47	SMPL	ppb	2.9098	18588	1.000	1.000
MP36990-S2 - 1	23 Mar 2020 12:53:03	SMPL	ppb	2.9092	18584	1.000	1.000
FA73403-5F - 1	23 Mar 2020 12:54:47	SMPL	ppb	-0.0678	-98	1.000	1.000
FA73417-1 - 1	23 Mar 2020 12:56:30	SMPL	ppb	-0.0439	52	1.000	1.000
FA73417-2 - 1	23 Mar 2020 12:57:47	SMPL	ppb	-0.0370	95	1.000	1.000
CCV - 1	23 Mar 2020 12:59:04	CK STND	ppb	99.0% 2.9704	18968	1.000	1.000
CCB - 1	23 Mar 2020 13:00:20	CK STND	ppb	-0.0386	85	1.000	1.000
FA73417-3 - 1	23 Mar 2020 13:02:05	SMPL	ppb	-0.0333	118	1.000	1.000
FA73417-1F - 1	23 Mar 2020 13:03:25	SMPL	ppb	-0.0413	68	1.000	1.000
FA73417-2F - 1	23 Mar 2020 13:04:45	SMPL	ppb	-0.0338	115	1.000	1.000
FA73417-3F - 1	23 Mar 2020 13:06:02	SMPL	ppb	0.0455	613	1.000	1.000
FA73609-1 - 1	23 Mar 2020 13:07:20	SMPL	ppb	0.4731	3296	1.000	1.000
FA73609-2 - 1	23 Mar 2020 13:08:40	SMPL	ppb	0.3241	2361	1.000	1.000
FA73609-3 - 1	23 Mar 2020 13:10:12	SMPL	ppb	0.2207	1712	1.000	1.000
FA73609-4 - 1	23 Mar 2020 13:11:42	SMPL	ppb	0.4852	3372	1.000	1.000
FA73609-5 - 1	23 Mar 2020 13:13:11	SMPL	ppb	0.3649	2617	1.000	1.000
FA73609-6 - 1	23 Mar 2020 13:14:45	SMPL	ppb	0.3067	2252	1.000	1.000
CCV - 1	23 Mar 2020 13:16:17	CK STND	ppb	97.2% 2.9148	18619	1.000	1.000
CCB - 1	23 Mar 2020 13:17:49	CK STND	ppb	-0.0499	14	1.000	1.000
FA73423-1 - 1	23 Mar 2020 13:19:34	SMPL	ppb	-0.0424	61	1.000	1.000
FA73423-2 - 1	23 Mar 2020 13:20:53	SMPL	ppb	-0.0130	246	1.000	1.000
FA73423-3 - 1	23 Mar 2020 13:22:12	SMPL	ppb	0.0204	455	1.000	1.000
FA73651-3 - 1	23 Mar 2020 13:23:32	SMPL	ppb	-0.0314	130	1.000	1.000
FA73652-4 - 1	23 Mar 2020 13:24:52	SMPL	ppb	-0.0246	173	1.000	1.000
FA73653-4 - 1	23 Mar 2020 13:26:09	SMPL	ppb	-0.0251	170	1.000	1.000
MP36991-MB1 - 1	23 Mar 2020 13:27:26	SMPL	ppb	-0.0290	145	1.000	1.000
MP36991-B1 - 1	23 Mar 2020 13:28:44	SMPL	ppb	2.9411	18784	1.000	1.000
FA73494-1 - 1	23 Mar 2020 13:30:00	SMPL	ppb	-0.0555	-21	1.000	1.000
MP36991-D1 - 1	23 Mar 2020 13:31:42	SMPL	ppb	-0.0168	222	1.000	1.000
CCV - 1	23 Mar 2020 13:33:00	CK STND	ppb	97.5% 2.9238	18676	1.000	1.000
CCB - 1	23 Mar 2020 13:34:16	CK STND	ppb	-0.0466	35	1.000	1.000
MP36991-SD1 - 1	23 Mar 2020 13:35:59	SMPL	ppb	-0.3675	-134	1.000	5.000
MP36991-S1 - 1	23 Mar 2020 13:37:16	SMPL	ppb	2.9046	18555	1.000	1.000
MP36991-S2 - 1	23 Mar 2020 13:38:32	SMPL	ppb	2.8604	18278	1.000	1.000
FA73461-1 - 1	23 Mar 2020 13:40:16	SMPL	ppb	-0.0576	-34	1.000	1.000
FA73461-2 - 1	23 Mar 2020 13:42:00	SMPL	ppb	-0.0413	68	1.000	1.000
FA73461-3 - 1	23 Mar 2020 13:43:19	SMPL	ppb	-0.0341	113	1.000	1.000
FA73461-4 - 1	23 Mar 2020 13:44:39	SMPL	ppb	-0.0380	89	1.000	1.000
FA73461-5 - 1	23 Mar 2020 13:45:55	SMPL	ppb	-0.0107	260	1.000	1.000
FA73461-7 - 1	23 Mar 2020 13:47:14	SMPL	ppb	-0.0346	110	1.000	1.000
FA73461-8 - 1	23 Mar 2020 13:48:30	SMPL	ppb	-0.0265	161	1.000	1.000
CCV - 1	23 Mar 2020 13:49:49	CK STND	ppb	96.3% 2.8885	18454	1.000	1.000
CCB - 1	23 Mar 2020 13:51:05	CK STND	ppb	-0.0435	54	1.000	1.000
FA73461-9 - 1	23 Mar 2020 13:52:49	SMPL	ppb	-0.0305	136	1.000	1.000
FA73461-10 - 1	23 Mar 2020 13:54:07	SMPL	ppb	-0.0319	127	1.000	1.000
FA73461-11 - 1	23 Mar 2020 13:55:25	SMPL	ppb	-0.0300	139	1.000	1.000
FA73461-12 - 1	23 Mar 2020 13:56:41	SMPL	ppb	-0.0310	133	1.000	1.000
FA73461-13 - 1	23 Mar 2020 13:57:58	SMPL	ppb	-0.0380	89	1.000	1.000
FA73643-2 - 1	23 Mar 2020 13:59:15	SMPL	ppb	0.0415	588	1.000	1.000
FA73645-2 - 1	23 Mar 2020 14:00:34	SMPL	ppb	-0.0067	285	1.000	1.000
FA73645-3 - 1	23 Mar 2020 14:01:55	SMPL	ppb	-0.0204	199	1.000	1.000
FA73423-1F - 1	23 Mar 2020 14:03:15	SMPL	ppb	-0.0359	102	1.000	1.000

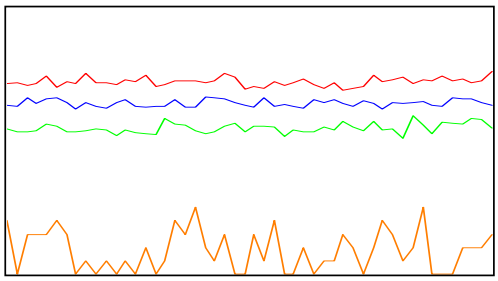
Method: Hg7470/EPA245.1 HG4 Operator: Admin Date of Analysis: 23 Mar 2020 11:55:06

Sample ID	Date	Type	Units	Conc.	µ Abs.	Wt.	Vol.
FA73423-2F - 1	23 Mar 2020 14:04:34	SMPL	ppb	-0.0090	271	1.000	1.000
CCV - 1	23 Mar 2020 14:05:52	CK STND	ppb	97.3% 2.9200	18652	1.000	1.000
CCB - 1	23 Mar 2020 14:07:09	CK STND	ppb	-0.0471	32	1.000	1.000
FA73423-3F - 1	23 Mar 2020 14:08:54	SMPL	ppb	-0.0187	210	1.000	1.000
MP36991-MB2A - 1	23 Mar 2020 14:10:12	SMPL	ppb	-0.0504	11	1.000	1.000
MP36992-MB1 - 1	23 Mar 2020 14:11:31	SMPL	ppb	0.1247	1110	1.000	1.000
MP36992-B1 - 1	23 Mar 2020 14:12:49	SMPL	ppb	3.1030	19800	1.000	1.000
FA73494-3 - 1	23 Mar 2020 14:14:13	SMPL	ppb	0.0616	714	1.000	1.000
MP36992-D1 - 1	23 Mar 2020 14:15:57	SMPL	ppb	0.0524	656	1.000	1.000
MP36992-SD1 - 1	23 Mar 2020 14:17:19	SMPL	ppb	-0.3157	-69	1.000	5.000
MP36992-S1 - 1	23 Mar 2020 14:18:42	SMPL	ppb	3.0886	19710	1.000	1.000
MP36992-S2 - 1	23 Mar 2020 14:20:01	SMPL	ppb	2.9439	18802	1.000	1.000
FA73494-4 - 1	23 Mar 2020 14:21:47	SMPL	ppb	0.0205	456	1.000	1.000
CCV - 1	23 Mar 2020 14:23:32	CK STND	ppb	95.0% 2.8502	18214	1.000	1.000
CCB - 1	23 Mar 2020 14:24:51	CK STND	ppb	-0.0373	93	1.000	1.000
FA73494-5 - 1	23 Mar 2020 14:26:37	SMPL	ppb	0.0396	576	1.000	1.000
FA73494-6 - 1	23 Mar 2020 14:27:53	SMPL	ppb	0.0212	460	1.000	1.000
FA73553-1 - 1	23 Mar 2020 14:29:14	SMPL	ppb	0.0031	347	1.000	1.000
FA73566-2 - 1	23 Mar 2020 14:30:34	SMPL	ppb	0.0041	353	1.000	1.000
FA73610-1 - 1	23 Mar 2020 14:31:54	SMPL	ppb	0.3325	2414	1.000	1.000
FA73581-1 - 1	23 Mar 2020 14:33:13	SMPL	ppb	0.0057	363	1.000	1.000
FA73581-3 - 1	23 Mar 2020 14:34:47	SMPL	ppb	-0.0201	201	1.000	1.000
FA73581-4 - 1	23 Mar 2020 14:36:06	SMPL	ppb	-0.0136	242	1.000	1.000
FA73581-5 - 1	23 Mar 2020 14:37:25	SMPL	ppb	-0.0238	178	1.000	1.000
FA73581-6 - 1	23 Mar 2020 14:38:44	SMPL	ppb	-0.0056	292	1.000	1.000
CCV - 1	23 Mar 2020 14:40:03	CK STND	ppb	94.8% 2.8442	18176	1.000	1.000
CCB - 1	23 Mar 2020 14:41:21	CK STND	ppb	-0.0319	127	1.000	1.000
FA73617-1 - 1	23 Mar 2020 14:43:06	SMPL	ppb	-0.5709	-31	1.000	10.000
FA73617-2 - 1	23 Mar 2020 14:44:24	SMPL	ppb	-0.2490	171	1.000	10.000
FA73617-3 - 1	23 Mar 2020 14:45:42	SMPL	ppb	-0.9135	-246	1.000	10.000
FA73617-4 - 1	23 Mar 2020 14:46:59	SMPL	ppb	-0.5119	6	1.000	10.000
FA73617-5 - 1	23 Mar 2020 14:48:16	SMPL	ppb	-0.2618	163	1.000	10.000
FA73617-6 - 1	23 Mar 2020 14:49:33	SMPL	ppb	-0.5135	5	1.000	10.000
lot#357298-4694 - 1	23 Mar 2020 14:50:50	SMPL	ppb	-0.0168	222	1.000	1.000
MP36993-MB1 - 1	23 Mar 2020 14:52:07	SMPL	ppb	0.0055	362	1.000	1.000
MP36993-B1 - 1	23 Mar 2020 14:53:27	SMPL	ppb	2.9619	18915	1.000	1.000
FA73586-3 - 1	23 Mar 2020 14:54:47	SMPL	ppb	-0.0026	311	1.000	1.000
CCV - 1	23 Mar 2020 14:56:31	CK STND	ppb	94.4% 2.8309	18093	1.000	1.000
CCB - 1	23 Mar 2020 14:57:48	CK STND	ppb	-0.0392	81	1.000	1.000
MP36993-D1 - 1	23 Mar 2020 14:59:33	SMPL	ppb	0.0127	407	1.000	1.000
MP36993-SD1 - 1	23 Mar 2020 15:00:50	SMPL	ppb	-0.3827	-153	1.000	5.000
MP36993-S1 - 1	23 Mar 2020 15:02:10	SMPL	ppb	2.8416	18160	1.000	1.000
MP36993-S2 - 1	23 Mar 2020 15:03:27	SMPL	ppb	2.8290	18081	1.000	1.000
FA73574-1 - 1	23 Mar 2020 15:05:12	SMPL	ppb	-0.0005	324	1.000	1.000
FA73574-2 - 1	23 Mar 2020 15:06:55	SMPL	ppb	-0.0000	327	1.000	1.000
FA73507-1 - 1	23 Mar 2020 15:08:16	SMPL	ppb	-0.0064	287	1.000	1.000
FA73475-1 - 1	23 Mar 2020 15:09:35	SMPL	ppb	-0.0125	249	1.000	1.000
MP36993-MB2 - 1	23 Mar 2020 15:10:55	SMPL	ppb	-0.0005	324	1.000	1.000
MP36993-B2 - 1	23 Mar 2020 15:12:14	SMPL	ppb	2.8590	18269	1.000	1.000
CCV - 1	23 Mar 2020 15:13:34	CK STND	ppb	93.8% 2.8137	17985	1.000	1.000
CCB - 1	23 Mar 2020 15:15:18	CK STND	ppb	-0.0357	103	1.000	1.000
MP36993-MB3 - 1	23 Mar 2020 15:17:03	SMPL	ppb	0.0103	392	1.000	1.000
MP36993-B3 - 1	23 Mar 2020 15:18:23	SMPL	ppb	3.0180	19267	1.000	1.000
MP36993-MB4 - 1	23 Mar 2020 15:19:43	SMPL	ppb	-0.0133	244	1.000	1.000
MP36993-B4 - 1	23 Mar 2020 15:21:27	SMPL	ppb	2.9297	18713	1.000	1.000
CRI - 1	23 Mar 2020 15:22:46	SMPL	ppb	0.1482	1257	1.000	1.000
CCV - 1	23 Mar 2020 15:24:31	CK STND	ppb	92.5% 2.7750	17742	1.000	1.000
CCB - 1	23 Mar 2020 15:25:56	CK STND	ppb	-0.0667	-91	1.000	1.000

Tune Report

Batch Folder	D:\2020\03-March\xa033020m1.b
Acq. Date-Time	3/30/2020 9:04
Report Comment	033020Tune
Instrument Name	G3281A JP12151709

[2]



Mass	Range	Count (Actual)	Response (Actual) [cps/ug/l]	Response (Required) [cps/ug/l]	Response (Flag)
59	5000	3602	36015.99	5000.00	
89	5000	2734	27337.46	5000.00	
205	20000	12812	128122.18	5000.00	
78	20	2			

Mass	Resp Ratio (Actual)	Resp Ratio (Required)	Resp Ratio (Flag)
59		-	
89		-	
205		-	
78		-	

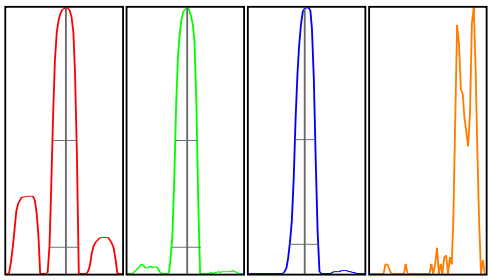
Mass	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
59	2.25	5.00	
89	3.36	5.00	
205	2.07	5.00	
78	87.51		

Mass	Background (Actual)	Background (Required)	Background (Flag)
59	0.00	2	
89	0.00	2	
205	0.20	2	
78	0.00	5	

Ratio	156/140	0.626 %	
Ratio	70/140	1.443 %	

Integration Time [sec] 0.1 **Sampling Period [sec]** 0.412

Tune Report



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	W-50%	W-10% (Actual)	W-10% (Required)	W-10% (Flag)
59	3627.28	59.05	58.9 - 59.1		0.61	0.743	0.900	
89	2886.31	89.05	88.9 - 89.1		0.54	0.707	0.900	
205	12842.66	205.00	204.9 - 205.1		0.51	0.723	0.900	
78			-					

Integration Time [sec] 0.1 **Acquisition Time [sec]** 29.92 **Y Axis** Linear

Tune Parameters
Plasma Paramters

RF Power	1600 W	Nebulizer Pump	0.10 rps
RF Matching	1.70 V	S/C Temp	2 ℃
Smpl Depth	9.0 mm	Gas Switch	Dilution Gas
Carrier Gas	0.90 L/min	Makeup/Dilution Gas	0.20 L/min
Option Gas	0.0 %		

Lenses Parameters

Extract 1	0.0 V	Cell Entrance	-36 V
Extract 2	-160.0 V	Cell Exit	-70 V
Omega Bias	-80 V	Deflect	2.4 V
Omega Lens	8.1 V	Plate Bias	-60 V

Cell Parameters

Use Gas	true	OctP Bias	-18.0 V
He Flow	5.0 mL/min	OctP RF	200 V
H2 Flow	0.0 mL/min	Energy Discrimination	3.0 V
3rd Gas Flow	0 %		

SGS Orlando

Date/Time Started	3/23/2020 9:40
Date/Time Started	3/23/2020 11:40

Analysts Name:	Jordan Cuoco		
MP Batch ID:	36990		
Method	SW846-7470A	Matrix	Water

Reagent Lot # (A)		MET #	Spk. Soln ID	Pipette#
Conc. HNO3 (A)	245675	6564	10 ppm int.	KU15244
Conc. HCL (A)	251602	6581	10 ppm 2nd (ICV)	PU08121
H2SO4 (A)	238844	6651	100 ppb Curve	NA
KMnO4 (A)	MET 6649	6650	100 ppb 2nd (ICV)	NA
K2S2O8 (A)	MET 6642	NA	NA	NA
SnCl (A)	B0147582A	NA	NA	NA
Hydroxylamine HCL (A)	MET 6640	NA	NA	NA

HotBlock I.D.	12	Therm ID	Mercury	Temp. C	92	Corr. Factor	-1	Corrected Observed Temp. C	91
pH Paper Lot#	220416	Teflon Chips	25280382	Filter Lot	0714Z18IV-P	Bal.ID		Digestion Tube Lot#	351340-4694

(D)	Bot#	Sample #	Initial (g)/(ml)	Final Vol.(ml)	pH<2	NA	NA	NA	NA	NA	NA	Comment
	NA	STD1 CAL BLANK	50.00	50	NA							
0.1ml (B)	NA	STD2	50.00	50	NA							
0.5ml (B)	NA	STD3	50.00	50	NA							
1.5ml (B)	NA	STD4	50.00	50	NA							
2.5ml (B)	NA	STD5	50.00	50	NA							
3.0ml (B)	NA	STD6	50.00	50	NA							
1.5ml (F)	NA	ICV	50.00	50	NA							
	NA	ICB	50.00	50	NA							
0.1ml (B)	NA	CRI	50.00	50	NA							
	NA	Method Blank	50.00	50	NA							
1.5ml (F)	NA	Blank Spk	50.00	50	NA							
1.5ml (F)	5	Matrix Spk	50.00	50	y							
1.5ml (F)	5	Mat Spk Dup	50.00	50	y							
	5	Duplicate	50.00	50	y							
1 QC [C]	5	FA73461-6	50.00	50	y							
2	11	FA73403-5F	50.00	50	y							
3	8	FA73417-1	50.00	50	y							
4	8	FA73417-2	50.00	50	y							
5	8	FA73417-3	50.00	50	y							
6	7	FA73417-1F	50.00	50	y							
7	7	FA73417-2F	50.00	50	y							
8	7	FA73417-3F	50.00	50	y							
9	1	FA73609-1	50.00	50	y							
10	1	FA73609-2	50.00	50	y							
11	1	FA73609-3	50.00	50	y							
12	1	FA73609-4	50.00	50	y							
13	1	FA73609-5	50.00	50	y							
14	1	FA73609-6	50.00	50	y							
15	16	FA73423-1	50.00	50	y							
16	16	FA73423-2	50.00	50	y							
17	16	FA73423-3	50.00	50	y							
18	1	FA73651-3	50.00	50	y							
19	1	FA73652-4	50.00	50	y							
20	1	FA73653-4	50.00	50	y							
21 [E]												
22 [E]												
23 [E]												
24 [E]												

Protected Worksheet

A For reagent volumes used consult SOP MET 105 or MET 106 current revision
B Amount of 100 ppb standard added (100ppb standard prepared from 10 ppm intermediate)
C Parent sample used to prepare MS,MSD,DUP (matrix QC)
D Bottle number
E Additional Matrix QC
F Amount of 100 ppb 2nd source standard used (100 ppb 2nd source standard prepared from 10ppm intermediate 2nd)

SGS Orlando

Date/Time Started	3/23/2020 9:40
Date/Time Started	3/23/2020 11:40

Analysts Name:	Jordan Cuoco				
MP Batch ID:	36991				
Method	SW846-7470A	**Matrix**	Water		

Reagent Lot # (A)		MET #	Spk. Soln ID	Pipette#
Conc. HNO3 (A)	245675	6564	10 ppm int.	KU15244
Conc. HCL (A)	251602	6581	10 ppm 2nd (ICV)	PU08121
H2SO4 (A)	238844	6651	100 ppb Curve	NA
KMnO4 (A)	MET 6649	6650	100 ppb 2nd (ICV)	NA
K2S2O8 (A)	MET 6642	NA	NA	NA
SnCl (A)	B0147582A	NA	NA	NA
Hydroxylamine HCL (A)	MET 6640	NA	NA	NA

HotBlock I.D.	12	**Therm ID**	Mercury	**Temp. C**	92	**Corr. Factor**	-1	**Corrected Observed Temp. C**	91
pH Paper Lot#	220416	**Teflon Chips**	25280382	**Filter Lot**	0714Z18IV-P	**Bal.ID**		**Digestion Tube Lot#**	351340-4694

(D)	Bot#	Sample #	Initial (g)/(ml)	Final Vol.(ml)	pH<2	NA	NA	NA	NA	NA	NA	Comment
	NA	STD1 CAL BLANK			NA							See MP36990 for cal. Curve
0.1ml (B)	NA	STD2			NA							and initial QC
0.5ml (B)	NA	STD3			NA							
1.5ml (B)	NA	STD4			NA							
2.5ml (B)	NA	STD5			NA							
3.0ml (B)	NA	STD6			NA							
1.5ml (F)	NA	ICV			NA							
	NA	ICB			NA							
0.1ml (B)	NA	CRI			NA							
	NA	Method Blank	50.00	50	NA							
1.5ml (F)	NA	Blank Spk	50.00	50	NA							
1.5ml (F)	12	Matrix Spk	50.00	50	y							
1.5ml (F)	12	Mat Spk Dup	50.00	50	y							
	12	Duplicate	50.00	50	y							
1 QC [C]	12	FA73494-1	50.00	50	y							
2	2	FA73461-1	50.00	50	y							
3	2	FA73461-2	50.00	50	y							
4	2	FA73461-3	50.00	50	y							
5	2	FA73461-4	50.00	50	y							
6	2	FA73461-5	50.00	50	y							
7	2	FA73461-7	50.00	50	y							
8	2	FA73461-8	50.00	50	y							
9	2	FA73461-9	50.00	50	y							
10	2	FA73461-10	50.00	50	y							
11	2	FA73461-11	50.00	50	y							
12	2	FA73461-12	50.00	50	y							
13	2	FA73461-13	50.00	50	y							
14	4	FA73643-2	50.00	50	y							
15	1	FA73645-2	50.00	50	y							
16	1	FA73645-3	50.00	50	y							
17	17	FA73423-1F	50.00	50	y							MB2A
18	17	FA73423-2F	50.00	50	y							MB2A
19	17	FA73423-3F	50.00	50	y							MB2A
20	na	MB2A-03/13/20	50.00	50	y							
21 [E]												
22 [E]												
23 [E]												
24 [E]												

Protected Worksheet

A For reagent volumes used consult SOP MET 105 or MET 106 current revision
B Amount of 100 ppb standard added (100ppb standard prepared from 10 ppm intermediate)
C Parent sample used to prepare MS,MSD,DUP (matrix QC)
D Bottle number
E Additional Matrix QC
F Amount of 100 ppb 2nd source standard used (100 ppb 2nd source standard prepared from 10ppm intermediate 2nd)

SGS Orlando

Date:	03/28/20
[24hr] **Time**	5:45

Analysts Name:	Igor T
MP Batch ID:	37025
Method	SW846-3010A

		Spk.Soln(A)	Vol. Used (ml)	Pipette#
Reagent Lot #				
Conc. HNO3 (B)	245675	ACC1131	0.05	MU45274
Conc. HCL (B)	251602	ACC1157	0.2	KU15244
NA	NA	MET6648	1	KU15244
NA	NA	NA	NA	NA

HotBlock I.D.	11	**Therm ID**	213	**Temp. C**	94	**Corr. Factor**	-1	**Corrected Observed Temp. C**	93
pH Paper Lot#	220416			FA73494-1.14				**Digestion Tube Lot#**	MP3358

	Bot#	Sample #	Initial Vol.(ml)	Final Vol.(ml)	pH<2	NA	NA	NA	NA	NA	NA	Comment
	NA	Method Blank(MB)	50	50	NA							
	NA	Spike Blank(SB)	50	50	NA							
	4	Matrix Spike(MS)	50	50	Y							
	4	Matrix Spike Dup(MSD)	50	50	Y							
	4	Duplicate(DUP)	50	50	Y							
1(QC) C	4	FA73461-6	50	50	Y							
2	2	FA73461-1	50	50	Y							
3	2	FA73461-2	50	50	Y							
4	2	FA73461-3	50	50	Y							
5	2	FA73461-4	50	50	Y							
6	2	FA73461-6	50	50	Y							
7	2	FA73461-7	50	50	Y							
8	2	FA73461-8	50	50	Y							
9	2	FA73461-9	50	50	Y							
10	2	FA73461-10	50	50	Y							
11	2	FA73461-11	50	50	Y							
12	2	FA73461-12	50	50	Y							
13	2	FA73461-13	50	50	Y							
14	1	FA73645-2	50	50	Y							
15	1	FA73645-3	50	50	Y							
16	1	FA73651-3	50	50	Y							
17	1	FA73652-4	50	50	Y							
18	1	FA73653-4	50	50	Y							
19			50	50								
20			50	50								
21 [D]			50	50								
22 [D]			50	50								
23 [D]			50	50								
24 [D]			50	50								

Protected Worksheet

A Used for SB, MS, MSD

B For reagent volumes used refer to SOP MET 103, current verion

C Parent sample used to prepare MS, MSD, DUP

D Additional matrix QC

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GN84635	0.010	0.0	mg/l	.1	0.10	99.6	85-115%

Associated Samples:
Batch GN84635: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GN84635	FA73461-13	mg/l	0.0080 U	.1	0.098	95.9	85-115%
Chromium, Hexavalent	GN84635	FA73461-6	mg/l	0.0080 U	.1	0.10	97.0	85-115%

Associated Samples:
Batch GN84635: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA73461
Account: ESVAS - EnviroScience
Project: Bremo

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GN84635	FA73461-13	mg/l	0.0080 U	.1	0.096	2.2	20%

Associated Samples:
Batch GN84635: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

Missing MSD for sample 6

8.3
8

Test Title: XCR

Rev: 0116 LM
Page 1 of 1

Analyst: JB
Prep Date/Time: 03/14/20 10:38
GP Batch:

Method: SW846 7196
Analysis Date/Time: 03/14/20 11:07
GN Batch: 84635

Calibration Summary **Cal. Date:** 03/06/20 **Spec #** 1

STD	Cal. Blk.	STD 1	STD 2	STD 3	STD 4	STD 5
Conc(mg/l	0.00	0.010	0.050	0.250	0.750	1.000
Corr. Abs.	0.00	0.009	0.048	0.240	0.710	0.935

Corr. Coef: 1.0000 **Slope:** 1.07 **Intercept:** -0.002

	Sample, bot#	Initial Abs.	Turb. Check Abs.	Final Abs.	Conc.	Final Vol. (ml)	Sam. Vol (ml)	Dilution	Final Conc.	Units	RL	MDL	LOD
QC Section													
ICV		0.235		0.235	0.249	50.0	50.0	1	**0.249**	mg/l	0.010	0.008	0.010
MB				0.000	-0.002	50.0	50.0	1	**-0.002**	mg/l	0.010	0.008	0.010
BS				0.000	-0.002	50.0	50.0	1	**-0.002**	mg/l	0.010	0.008	0.010
MS	FA73461-13.1	0.094		0.094	0.098	50.0	50.0	1	**0.098**	mg/l	0.010	0.008	0.010
MSD	FA73461-13.1	0.092		0.092	0.096	50.0	50.0	1	**0.096**	mg/l	0.010	0.008	0.010
QC	FA73461-13.1	0.004		0.004	0.003	50.0	50.0	1	**0.003**	mg/l	0.010	0.008	0.010
Samples													
	FA73461-12.1	0.002		0.002	0.000	100.0	50.0	1	**0.001**	mg/l	0.020	0.016	0.020
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
ICV		0.237		0.237	0.251	100.0	100.0	1	**0.251**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
				#VALUE!	#######	100.0	100.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010
ICV				#VALUE!	#######	50.0	50.0	1	**#VALUE!**	mg/l	0.010	0.008	0.010

QC Summary Report

1.0

Matrix Spike Result	0.098
MSD Result	0.096
Spike Amount	0.100
Sample Result	0.003

REC1 = 95.9% REC2 = 93.8% RPD = 2.2%

MB Result	0
Blank Spike Result	-0.002
Spike Amount	0.100

REC = -1.7%

2.0

Primary Std Lot# : WC1545 GN29403 Primary Std Conc: 1000 mg/l
Secondary Std Lot# : WC1293 GN29438 Secondary Std Conc: 1000 mg/l

Spike Conc 10.0mg/l Vol Spike Added: 1.0ml

3.0 Standards are Prepared by:

10.0 ml of Primary (1000 mg/l) Stock to final volume of 100 ml in DI water	**100 mg/l**
1.0 ml of Primary (1000 mg/l) Stock to final volume of 100 ml in DI water	**10.0 mg/l**
1.0 ml of Primary 100 mg/l to final volume of 100 ml in DI water	**1.00 mg/l**
1.0 ml of Primary 1.0 mg/l to final volume of 100 ml in DI water	**.010 mg/l**
5.0 ml of Primary 1.0 mg/l to final volume of 100 ml in DI water	**.050 mg/l**
2.5 ml of Primary 10.0 mg/l to final volume of 100 ml in DI water	**.250 mg/l**
7.5 ml of Primary 10.0 mg/l to final volume of 100 ml in DI water	**.750 mg/l**
1.0 ml of Primary 100 mg/l to final volume of 100 ml in DI water	**1.00 mg/l**
1.0 ml of Secondary (1000 mg/l) Stock to final volume of 100 ml in DI water	**10.0 mg/l**
ICV=2.5 ml of Secondary 10.0 mg/l to final volume of 100 ml in DI water	**.250mg/l**

Comments:

Analyst's Signature: Date: 3-14-20

Reviewer's Signature: Date: 03/16/20

SGS Accutest - Orlando

Test Title: XCR

Rev: 0116 LM
Page 1 of 1

Analyst: JB
Prep Date/Time: 03/14/20 10:38
GP Batch:

Method: SW846 7196
Analysis Date/Time: 03/14/20 11:07
GN Batch: 84635

Calibration Summary **Cal. Date:** 03/06/20 **Spec #** 1

STD	Cal Blk	STD 1	STD 2	STD 3	STD 4	STD 5
Conc(mg/l	0.00	0.010	0.050	0.250	0.750	1.000
Corr. Abs.	0.00	0.009	0.048	0.240	0.710	0.935

Corr. Coef: 1.0000 **Slope:** 1.07 **Intercept:** -0.002

	Sample. bot#	Initial Abs.	Turb. Check Abs.	Final Abs.	Conc.	Final Vol. (ml)	Sam. Vol (ml)	Dilution	Final Conc.	Units	RL	MDL	LOD
QC Section													
ICV		0.236		0.236	0.250	50.0	50.0	1	**0.250**	mg/l	0.010	0.008	0.010
MB		0.000		0.000	-0.002	50.0	50.0	1	**-0.002**	mg/l	0.010	0.008	0.010
BS		0.095		0.095	0.100	50.0	50.0	1	**0.100**	mg/l	0.010	0.008	0.010
MS	FA73461-6.3	0.095		0.095	0.100	50.0	50.0	1	**0.100**	mg/l	0.010	0.008	0.010
MSD	FA73461-6.3	0.092		0.092	0.096	50.0	50.0	1	**0.096**	mg/l	0.010	0.008	0.010
QC	FA73461-6.3	0.004		0.004	0.003	50.0	50.0	1	**0.003**	mg/l	0.010	0.008	0.010
Samples													
	FA73461-1.1	0.001		0.001	-0.001	100.0	50.0	1	**-0.001**	mg/l	0.020	0.016	0.020
	FA73461-2.1	0.015		0.015	0.014	100.0	100.0	1	**0.014**	mg/l	0.010	0.008	0.010
	FA73461-3.1	0.004		0.004	0.003	100.0	100.0	1	**0.003**	mg/l	0.010	0.008	0.010
	FA73461-4.1	0.002		0.002	0.000	100.0	100.0	1	**0.000**	mg/l	0.010	0.008	0.010
	FA73461-5.1	0.003		0.003	0.001	100.0	100.0	1	**0.001**	mg/l	0.010	0.008	0.010
ICV		0.236		0.236	0.250	100.0	100.0	1	**0.250**	mg/l	0.010	0.008	0.010
	FA73461-7.1	0.004		0.004	0.003	100.0	100.0	1	**0.003**	mg/l	0.010	0.008	0.010
	FA73461-8.1	0.002		0.002	0.000	100.0	100.0	1	**0.000**	mg/l	0.010	0.008	0.010
	FA73461-9.1	0.002		0.002	0.000	100.0	100.0	1	**0.000**	mg/l	0.010	0.008	0.010
	FA73461-10.1	0.003		0.003	0.001	100.0	100.0	1	**0.001**	mg/l	0.010	0.008	0.010
	FA73461-11.1	0.002		0.002	0.000	100.0	100.0	1	**0.000**	mg/l	0.010	0.008	0.010
ICV		0.236		0.236	0.250	50.0	50.0	1	**0.250**	mg/l	0.010	0.008	0.010

QC Summary Report

1.0

Matrix Spike Result 0.100
MSD Result 0.096
Spike Amount 0.100
Sample Result 0.003

REC1 = 97.0%
REC2 = 93.8%
RPD = 3.3%

MB Result 0
Blank Spike Result 0.100
Spike Amount 0.100

REC = 99.6%

2.0

Primary Std Lot# : WC1545 GN29403
Secondary Std Lot# : WC1293 GN29438

Primary Std Conc: 1000 mg/l
Secondary Std Conc: 1000 mg/l

Spike Conc 10.0mg/l Vol Spike Added: 1.0ml

3.0 Standards are Prepared by:

10.0 ml of Primary (1000 mg/l) Stock to final volume of 100 ml in DI water	**100 mg/l**
1.0 ml of Primary (1000 mg/l) Stock to final volume of 100 ml in DI water	**10.0 mg/l**
1.0 ml of Primary 100 mg/l to final volume of 100 ml in DI water	**1.00 mg/l**
1.0 ml of Primary 1.0 mg/l to final volume of 100 ml in DI water	**.010 mg/l**
5.0 ml of Primary 1.0 mg/l to final volume of 100 ml in DI water	**.050 mg/l**
2.5 ml of Primary 10.0 mg/l to final volume of 100 ml in DI water	**.250 mg/l**
7.5 ml of Primary 10.0 mg/l to final volume of 100 ml in DI water	**.750 mg/l**
1.0 ml of Primary 100 mg/l to final volume of 100 ml in DI water	**1.00 mg/l**
1.0 ml of Secondary (1000 mg/l) Stock to final volume of 100 ml in DI water	**10.0 mg/l**
ICV=2.5 ml of Secondary 10.0 mg/l to final volume of 100 ml in DI water	**.250mg/l**

Comments

Analyst's Signature: Date: 3-14-20

Reviewer's Signature: Date:

SGS Accutest - Orlando

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:40	MA48470-STD1	1		STDA
10:45	MA48470-STD2	1		STDB
10:50	ZZZZZZ	1		
10:55	ZZZZZZ	1		
11:00	MA48470-ICV1	1		
11:07	MA48470-ICB1	1		
11:14	MA48470-ICCV1	1		
11:20	MA48470-CCB1	1		
11:24	MA48470-CRID1	1		
11:29	MA48470-CRI1	1		
11:34	MA48470-ICSA1	1		
11:39	MA48470-ICSAB1	1		
11:44	MA48470-HSTD1	1		
11:50	MA48470-HSTD2	1		
11:56	ZZZZZZ	1		
12:01	ZZZZZZ	1		
12:06	ZZZZZZ	1		
12:11	MA48470-CCV1	1		
12:16	MA48470-CCB2	1		
12:21	ZZZZZZ	1		
12:26	ZZZZZZ	1		
12:31	ZZZZZZ	1		
12:36	ZZZZZZ	1		
12:41	ZZZZZZ	1		
12:45	ZZZZZZ	1		
12:50	ZZZZZZ	1		
12:55	ZZZZZZ	2		
13:00	ZZZZZZ	2		
13:05	MA48470-CCV2	1		
13:10	MA48470-CCB3	1		
13:15	MP20364-MB1	1		
13:20	MP20364-B1	1		
13:25	MP20364-S1	1		Needs post spike on antimony

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
13:30	MP20364-S2	1		
13:35	JD4627-10	1		(sample used for QC only; not part of login FA73461)
13:40	MP20364-SD1	5		
13:45	ZZZZZZ	1		
13:49	ZZZZZZ	1		
13:55	ZZZZZZ	1		
14:00	MA48470-CCV3	1		
14:05	MA48470-CCB4	1		
14:09	ZZZZZZ	1		
14:14	ZZZZZZ	1		
14:19	ZZZZZZ	1		
14:24	ZZZZZZ	1		
14:29	ZZZZZZ	1		
14:34	ZZZZZZ	1		
14:39	ZZZZZZ	1		
14:44	ZZZZZZ	1		
14:50	ZZZZZZ	1		
14:54	MA48470-CCV4	1		
14:59	MA48470-CCB5	1		
15:04	ZZZZZZ	10		
15:09	ZZZZZZ	1		
15:14	ZZZZZZ	1		
15:19	ZZZZZZ	1		
15:24	ZZZZZZ	1		
15:29	ZZZZZZ	1		
15:34	ZZZZZZ	1		
15:39	MP20366-B1	1		
15:44	MP20366-MB1	1		
15:48	MA48470-CCV5	1		
15:53	MA48470-CCB6	1		
15:58	MP20366-S1	1		
16:03	MP20366-S2	1		
16:08	JD4880-1	1		(sample used for QC only; not part of login FA73461)

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:13	MP20366-SD1	5		
16:18	MA48470-ICSA2	1		
16:23	MA48470-ICSAB2	1		
16:29	MA48470-CCV6	1		
16:34	MA48470-CCB7	1		
16:38	ZZZZZZ	1		
16:43	ZZZZZZ	10		
16:48	ZZZZZZ	100		
16:53	ZZZZZZ	10		
16:58	ZZZZZZ	5		
17:03	ZZZZZZ	10		
17:08	ZZZZZZ	100		
17:13	ZZZZZZ	10		
17:17	ZZZZZZ	5		
17:22	MA48470-CCV7	1		
17:27	MA48470-CCB8	1		
17:32	ZZZZZZ	5		
17:37	ZZZZZZ	5		
17:42	MP20315-MB1	1		
17:47	MP20315-B1	1		
17:52	MP20315-B2	1		
17:57	MP20315-S1	1		Na high
18:02	MP20315-S2	1		Na high
18:07	JD4684-6F	1		(sample used for QC only; not part of login FA73461)
18:12	MP20315-SD1	5		Na high
18:17	ZZZZZZ	1		
18:22	MA48470-CCV8	1		
18:27	MA48470-CCB9	1		
18:32	ZZZZZZ	1		
18:37	ZZZZZZ	1		
18:42	ZZZZZZ	1		
18:47	ZZZZZZ	1		
18:52	ZZZZZZ	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
18:57	ZZZZZZ	1		
19:02	ZZZZZZ	1		
19:07	ZZZZZZ	1		
19:12	ZZZZZZ	1		
19:17	ZZZZZZ	1		
19:22	MA48470-CCV9	1		
19:27	MA48470-CCB10	1		
19:32	ZZZZZZ	1		
19:37	ZZZZZZ	1		
19:41	ZZZZZZ	1		
19:46	ZZZZZZ	1		
19:51	ZZZZZZ	1		
19:56	ZZZZZZ	1		
20:01	MP20378-B1	1		
20:06	MP20378-MB1	1		
20:11	MP20378-S1	1		
20:16	MP20378-S2	1		
20:21	MA48470-CCV10	1		
20:26	MA48470-CCB11	1		
20:31	ZZZZZZ	1		
20:36	ZZZZZZ	1		
20:41	ZZZZZZ	1		
20:46	ZZZZZZ	1		
20:51	ZZZZZZ	1		
20:56	ZZZZZZ	1		
21:01	ZZZZZZ	1		
21:06	ZZZZZZ	1		
21:11	ZZZZZZ	1		
21:16	MA48470-CCV11	1		
21:21	MA48470-CCB12	1		
21:26	JD4646-1	1		(sample used for QC only; not part of login FA73461)
21:31	MP20378-SD1	5		
21:36	ZZZZZZ	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
21:41	ZZZZZZ	1		
21:46	ZZZZZZ	1		
21:51	ZZZZZZ	1		
21:56	ZZZZZZ	1		
22:01	ZZZZZZ	1		
22:06	ZZZZZZ	1		
22:11	ZZZZZZ	1		
22:17	MA48470-CCV12	1		
22:22	MA48470-CCB13	1		
22:27	ZZZZZZ	1		
22:32	ZZZZZZ	1		
22:37	ZZZZZZ	1		
22:41	ZZZZZZ	1		
22:47	ZZZZZZ	1		
22:52	ZZZZZZ	1		
22:57	ZZZZZZ	1		
23:02	ZZZZZZ	1		
23:07	ZZZZZZ	1		
23:12	ZZZZZZ	1		
23:18	MA48470-CCV13	1		
23:23	MA48470-CCB14	1		
23:28	ZZZZZZ	1		
23:33	ZZZZZZ	1		
23:38	ZZZZZZ	1		
23:43	MP20398-MB1	5		
23:48	MP20398-B1	5		
23:52	MP20398-S1	5		
23:57	MP20398-S2	5		
00:02	JD4436-1A	5		(sample used for QC only; not part of login FA73461)
00:07	MP20398-SD1	25		
00:12	ZZZZZZ	5		
00:17	MA48470-CCV14	1		
00:22	MA48470-CCB15	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:27	ZZZZZZ	1		
00:32	ZZZZZZ	1		
00:37	ZZZZZZ	5		
00:42	ZZZZZZ	1		
00:47	MP20399-MB1	5		
00:52	MP20399-B1	5		
00:57	MP20399-S1	1		
01:03	MP20399-S2	1		
01:08	JD4436-14A	1		(sample used for QC only; not part of login FA73461)
01:13	MP20399-SD1	5		
01:18	MA48470-CCV15	1		
01:23	MA48470-CCB16	1		
01:28	ZZZZZZ	5		
01:33	ZZZZZZ	5		
01:38	ZZZZZZ	1		
01:43	ZZZZZZ	2		
01:48	ZZZZZZ	1		
01:53	ZZZZZZ	5		
01:58	ZZZZZZ	1		
02:03	ZZZZZZ	1		
02:08	ZZZZZZ	5		
02:13	MA48470-CCV16	1		
02:18	MA48470-CCB17	1		
02:23	MP20430-MB1	1		
02:28	MP20430-B1	1		
02:33	MP20430-B2	1		
02:38	MP20430-S1	1		
02:43	MP20430-S2	1		
02:48	JD4979-1	1		(sample used for QC only; not part of login FA73461)
02:53	MP20430-SD1	5		
02:58	ZZZZZZ	1		
03:03	ZZZZZZ	1		
03:08	ZZZZZZ	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
03:13	MA48470-CCV17	1		
03:18	MA48470-CCB18	1		
03:23	ZZZZZZ	1		
03:28	ZZZZZZ	1		
03:33	ZZZZZZ	1		
03:38	ZZZZZZ	1		
03:43	MP20385-MB1	1		
03:48	MP20385-B1	1		
03:53	MP20385-S1	1		
03:58	MP20385-S2	1		
04:03	JD4480-17R	1		(sample used for QC only; not part of login FA73461)
04:08	MP20385-SD1	5		
04:13	MA48470-CCV18	1		
04:18	MA48470-CCB19	1		
04:23	ZZZZZZ	1		
04:27	ZZZZZZ	1		
04:32	MP20382-MB1	1		
04:37	MP20382-B1	1		
04:42	MP20382-S1	1		Na high
04:47	MP20382-S2	1		Na high
04:53	JD4881-1	1		(sample used for QC only; not part of login FA73461)
04:58	MP20382-SD1	5		
05:02	ZZZZZZ	1		
05:07	ZZZZZZ	1		
05:12	MA48470-CCV19	1		
05:17	MA48470-CCB20	1		
05:22	ZZZZZZ	1		
05:27	ZZZZZZ	1		
05:32	FA73461-1	1		
05:37	FA73461-2	1		
05:42	FA73461-3	1		
05:47	FA73461-4	1		
05:52	FA73461-5	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Dilution Factor	PS Recov	Comments
05:57	FA73461-6	1		
06:02	FA73461-7	1		
06:07	FA73461-8	1		
06:11	MA48470-CCV20	1		
06:16	MA48470-CCB21	1		
06:21	FA73461-9	1		
06:26	FA73461-10	1		
06:31	FA73461-11	1		
06:36	FA73461-12	1		
06:41	FA73461-13	1		
---------->	Last reportable sample/prep for job FA73461			
06:46	ZZZZZZ	1		
06:51	MA48470-CCV21	1		
06:56	MA48470-CCB22	1		
---------->	Last reportable CCB for job FA73461			
07:54	MP20315-MB1	1		
08:01	MA48470-CCV22	1		
08:10	MA48470-CCB23	1		

Refer to raw data for calibration curve and standards.

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
10:50	ZZZZZZ	1			
10:55	ZZZZZZ	1			
11:00	MA48470-ICV1	1	X	X	
11:07	MA48470-ICB1	1	X	X	
11:14	MA48470-ICCV1	1	X	X	
11:20	MA48470-CCB1	1	X	X	
11:24	MA48470-CRID1	1	X	X	
11:29	MA48470-CRI1	1	X	X	
11:34	MA48470-ICSA1	1	X	X	
11:39	MA48470-ICSAB1	1	X	X	
11:44	MA48470-HSTD1	1	X	X	
11:50	MA48470-HSTD2	1	X	X	
11:56	ZZZZZZ	1			
12:01	ZZZZZZ	1			
12:06	ZZZZZZ	1			
12:11	MA48470-CCV1	1	X	X	
12:16	MA48470-CCB2	1	X	X	
12:21	ZZZZZZ	1			
12:26	ZZZZZZ	1			
12:31	ZZZZZZ	1			
12:36	ZZZZZZ	1			
12:41	ZZZZZZ	1			
12:45	ZZZZZZ	1			
12:50	ZZZZZZ	1			
12:55	ZZZZZZ	2			
13:00	ZZZZZZ	2			
13:05	MA48470-CCV2	1	X	X	
13:10	MA48470-CCB3	1	X	X	
13:15	MP20364-MB1	1			
13:20	MP20364-B1	1			
13:25	MP20364-S1	1			
13:30	MP20364-S2	1			
13:35	JD4627-10	1			(a)
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
13:40	MP20364-SD1	5			
13:45	ZZZZZZ	1			
13:49	ZZZZZZ	1			
13:55	ZZZZZZ	1			
14:00	MA48470-CCV3	1	X	X	
14:05	MA48470-CCB4	1	X	X	
14:09	ZZZZZZ	1			
14:14	ZZZZZZ	1			
14:19	ZZZZZZ	1			
14:24	ZZZZZZ	1			
14:29	ZZZZZZ	1			
14:34	ZZZZZZ	1			
14:39	ZZZZZZ	1			
14:44	ZZZZZZ	1			
14:50	ZZZZZZ	1			
14:54	MA48470-CCV4	1	X	X	
14:59	MA48470-CCB5	1	X	X	
15:04	ZZZZZZ	10			
15:09	ZZZZZZ	1			
15:14	ZZZZZZ	1			
15:19	ZZZZZZ	1			
15:24	ZZZZZZ	1			
15:29	ZZZZZZ	1			
15:34	ZZZZZZ	1			
15:39	MP20366-B1	1			
15:44	MP20366-MB1	1			
15:48	MA48470-CCV5	1	X	X	
15:53	MA48470-CCB6	1	X	X	
15:58	MP20366-S1	1			
16:03	MP20366-S2	1			
16:08	JD4880-1	1			(a)
16:13	MP20366-SD1	5			
16:18	MA48470-ICSA2	1	X	X	
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
16:23	MA48470-ICSAB2	1	X	X	
16:29	MA48470-CCV6	1	X	X	
16:34	MA48470-CCB7	1	X	X	
16:38	ZZZZZZ	1			
16:43	ZZZZZZ	10			
16:48	ZZZZZZ	100			
16:53	ZZZZZZ	10			
16:58	ZZZZZZ	5			
17:03	ZZZZZZ	10			
17:08	ZZZZZZ	100			
17:13	ZZZZZZ	10			
17:17	ZZZZZZ	5			
17:22	MA48470-CCV7	1	X	X	
17:27	MA48470-CCB8	1	X	X	
17:32	ZZZZZZ	5			
17:37	ZZZZZZ	5			
17:42	MP20315-MB1	1			
17:47	MP20315-B1	1			
17:52	MP20315-B2	1			
17:57	MP20315-S1	1			
18:02	MP20315-S2	1			
18:07	JD4684-6F	1			(a)
18:12	MP20315-SD1	5			
18:17	ZZZZZZ	1			
18:22	MA48470-CCV8	1	X	X	
18:27	MA48470-CCB9	1	X	X	
18:32	ZZZZZZ	1			
18:37	ZZZZZZ	1			
18:42	ZZZZZZ	1			
18:47	ZZZZZZ	1			
18:52	ZZZZZZ	1			
18:57	ZZZZZZ	1			
19:02	ZZZZZZ	1			
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
19:07	ZZZZZZ	1			
19:12	ZZZZZZ	1			
19:17	ZZZZZZ	1			
19:22	MA48470-CCV9	1	X	X	
19:27	MA48470-CCB10	1	X	X	
19:32	ZZZZZZ	1			
19:37	ZZZZZZ	1			
19:41	ZZZZZZ	1			
19:46	ZZZZZZ	1			
19:51	ZZZZZZ	1			
19:56	ZZZZZZ	1			
20:01	MP20378-B1	1			
20:06	MP20378-MB1	1			
20:11	MP20378-S1	1			
20:16	MP20378-S2	1			
20:21	MA48470-CCV10	1	X	X	
20:26	MA48470-CCB11	1	X	X	
20:31	ZZZZZZ	1			
20:36	ZZZZZZ	1			
20:41	ZZZZZZ	1			
20:46	ZZZZZZ	1			
20:51	ZZZZZZ	1			
20:56	ZZZZZZ	1			
21:01	ZZZZZZ	1			
21:06	ZZZZZZ	1			
21:11	ZZZZZZ	1			
21:16	MA48470-CCV11	1	X	X	
21:21	MA48470-CCB12	1	X	X	
21:26	JD4646-1	1			(a)
21:31	MP20378-SD1	5			
21:36	ZZZZZZ	1			
21:41	ZZZZZZ	1			
21:46	ZZZZZZ	1			
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
21:51	ZZZZZZ	1			
21:56	ZZZZZZ	1			
22:01	ZZZZZZ	1			
22:06	ZZZZZZ	1			
22:11	ZZZZZZ	1			
22:17	MA48470-CCV12	1	X	X	
22:22	MA48470-CCB13	1	X	X	
22:27	ZZZZZZ	1			
22:32	ZZZZZZ	1			
22:37	ZZZZZZ	1			
22:41	ZZZZZZ	1			
22:47	ZZZZZZ	1			
22:52	ZZZZZZ	1			
22:57	ZZZZZZ	1			
23:02	ZZZZZZ	1			
23:07	ZZZZZZ	1			
23:12	ZZZZZZ	1			
23:18	MA48470-CCV13	1	X	X	
23:23	MA48470-CCB14	1	X	X	
23:28	ZZZZZZ	1			
23:33	ZZZZZZ	1			
23:38	ZZZZZZ	1			
23:43	MP20398-MB1	5			
23:48	MP20398-B1	5			
23:52	MP20398-S1	5			
23:57	MP20398-S2	5			
00:02	JD4436-1A	5			(a)
00:07	MP20398-SD1	25			
00:12	ZZZZZZ	5			
00:17	MA48470-CCV14	1	X	X	
00:22	MA48470-CCB15	1	X	X	
00:27	ZZZZZZ	1			
00:32	ZZZZZZ	1			
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
00:37	ZZZZZZ	5			
00:42	ZZZZZZ	1			
00:47	MP20399-MB1	5			
00:52	MP20399-B1	5			
00:57	MP20399-S1	1			
01:03	MP20399-S2	1			
01:08	JD4436-14A	1			(a)
01:13	MP20399-SD1	5			
01:18	MA48470-CCV15	1	X	X	
01:23	MA48470-CCB16	1	X	X	
01:28	ZZZZZZ	5			
01:33	ZZZZZZ	5			
01:38	ZZZZZZ	1			
01:43	ZZZZZZ	2			
01:48	ZZZZZZ	1			
01:53	ZZZZZZ	5			
01:58	ZZZZZZ	1			
02:03	ZZZZZZ	1			
02:08	ZZZZZZ	5			
02:13	MA48470-CCV16	1	X	X	
02:18	MA48470-CCB17	1	X	X	
02:23	MP20430-MB1	1			
02:28	MP20430-B1	1			
02:33	MP20430-B2	1			
02:38	MP20430-S1	1			
02:43	MP20430-S2	1			
02:48	JD4979-1	1			(a)
02:53	MP20430-SD1	5			
02:58	ZZZZZZ	1			
03:03	ZZZZZZ	1			
03:08	ZZZZZZ	1			
03:13	MA48470-CCV17	1	X	X	
03:18	MA48470-CCB18	1	X	X	
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li	
03:23	ZZZZZZ	1			
03:28	ZZZZZZ	1			
03:33	ZZZZZZ	1			
03:38	ZZZZZZ	1			
03:43	MP20385-MB1	1			
03:48	MP20385-B1	1			
03:53	MP20385-S1	1			
03:58	MP20385-S2	1			
04:03	JD4480-17R	1			(a)
04:08	MP20385-SD1	5			
04:13	MA48470-CCV18	1	X	X	
04:18	MA48470-CCB19	1	X	X	
04:23	ZZZZZZ	1			
04:27	ZZZZZZ	1			
04:32	MP20382-MB1	1	X	X	
04:37	MP20382-B1	1	X	X	
04:42	MP20382-S1	1	X	X	
04:47	MP20382-S2	1	X	X	
04:53	JD4881-1	1			(a)
04:58	MP20382-SD1	5	X	X	
05:02	ZZZZZZ	1			
05:07	ZZZZZZ	1			
05:12	MA48470-CCV19	1	X	X	
05:17	MA48470-CCB20	1	X	X	
05:22	ZZZZZZ	1			
05:27	ZZZZZZ	1			
05:32	FA73461-1	1	X	X	
05:37	FA73461-2	1	X	X	
05:42	FA73461-3	1	X	X	
05:47	FA73461-4	1	X	X	
05:52	FA73461-5	1	X	X	
05:57	FA73461-6	1	X	X	
06:02	FA73461-7	1	X	X	
		Element:	B	Li	

REPORTED ELEMENTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Element: Dilution	B	Li
06:07	FA73461-8	1	X	X
06:11	MA48470-CCV20	1	X	X
06:16	MA48470-CCB21	1	X	X
06:21	FA73461-9	1	X	X
06:26	FA73461-10	1	X	X
06:31	FA73461-11	1	X	X
06:36	FA73461-12	1	X	X
06:41	FA73461-13	1	X	X
06:46	ZZZZZZ	1		
06:51	MA48470-CCV21	1	X	X
06:56	MA48470-CCB22	1	X	X
07:54	MP20315-MB1	1		
08:01	MA48470-CCV22	1	X	X
08:10	MA48470-CCB23	1	X	X

(a) Sample used for QC only; not part of login FA73461.

Element:	B	Li

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
10:40	MA48470-STD1	10237 R	209410 R	24513 R	15693 R
10:45	MA48470-STD2	9821	197390	24241	14247
10:50	ZZZZZZ	10021	203950	24381	14561
10:55	ZZZZZZ	10241	210020	24349	15657
11:00	MA48470-ICV1	10016	204470	24341	14521
11:07	MA48470-ICB1	10378	213290	24873	15818
11:14	MA48470-ICCV1	10065	205930	24344	14548
11:20	MA48470-CCB1	10170	209030	24273	15548
11:24	MA48470-CRID1	10425	216840	24769	15716
11:29	MA48470-CRI1	10322	211990	24544	15392
11:34	MA48470-ICSA1	9374	191000	23308	13305
11:39	MA48470-ICSAB1	9410	187800	23576	13343
11:44	MA48470-HSTD1	10277	210750	24872	15427
11:50	MA48470-HSTD2	9458	190580	23642	13368
11:56	ZZZZZZ	10418	215090	24514	15786
12:01	ZZZZZZ	10218	215200	24776	15755
12:06	ZZZZZZ	10493	216120	24477	15804
12:11	MA48470-CCV1	10049	201880	24106	14463
12:16	MA48470-CCB2	10347	212790	24522	15702
12:21	ZZZZZZ	10445	217350	24468	15701
12:26	ZZZZZZ	10351	212920	24604	15389
12:31	ZZZZZZ	10518	216990	24640	15824
12:36	ZZZZZZ	10325	208240	24680	14972
12:41	ZZZZZZ	10433	217420	24471	15459
12:45	ZZZZZZ	10600	220030	24938	15918
12:50	ZZZZZZ	10286	210720	24513	14899
12:55	ZZZZZZ	10262	210130	24456	14817
13:00	ZZZZZZ	10334	210690	24595	14917
13:05	MA48470-CCV2	10071	205690	24050	14501
13:10	MA48470-CCB3	10441	217310	24615	15722
13:15	MP20364-MB1	10620	220120	25093	15855
13:20	MP20364-B1	10248	210340	24499	14861
13:25	MP20364-S1	10531	215460	25468	14696

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
13:30	MP20364-S2	10522	216470	25644	14706
13:35	JD4627-10	10725	218830	25678	15147
13:40	MP20364-SD1	10512	215500	24550	15466
13:45	ZZZZZZ	10536	214630	24984	15286
13:49	ZZZZZZ	9534	215470	25830	14458
13:55	ZZZZZZ	10533	216460	24661	15695
14:00	MA48470-CCV3	10043	205230	24121	14410
14:05	MA48470-CCB4	10427	216240	24240	15625
14:09	ZZZZZZ	10861	222320	25730	15074
14:14	ZZZZZZ	10923	221680	25834	15085
14:19	ZZZZZZ	10679	218290	25308	15122
14:24	ZZZZZZ	10739	220540	25414	15018
14:29	ZZZZZZ	10813	219720	25669	14940
14:34	ZZZZZZ	10744	222610	25374	14984
14:39	ZZZZZZ	10772	220660	25648	15001
14:44	ZZZZZZ	10696	219670	25833	14535
14:50	ZZZZZZ	10689	216660	24986	15305
14:54	MA48470-CCV4	10112	205320	24061	14376
14:59	MA48470-CCB5	10468	215650	24340	15582
15:04	ZZZZZZ	10282	211970	24180	15148
15:09	ZZZZZZ	10714	215820	24892	15241
15:14	ZZZZZZ	10665	218030	24857	15303
15:19	ZZZZZZ	10670	219830	25582	15059
15:24	ZZZZZZ	10643	217190	25277	15120
15:29	ZZZZZZ	10667	218830	25302	15232
15:34	ZZZZZZ	10567	212960	24997	15155
15:39	MP20366-B1	10778	223050	25316	16097
15:44	MP20366-MB1	10791	221250	25118	16101
15:48	MA48470-CCV5	10129	207870	24256	14432
15:53	MA48470-CCB6	10528	217250	24391	15683
15:58	MP20366-S1	10213	209180	24551	14292
16:03	MP20366-S2	10075	202580	24222	14109
16:08	JD4880-1	10075	203960	24453	14120

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
16:13	MP20366-SD1	10341	211920	24428	14902
16:18	MA48470-ICSA2	9542	193760	23411	13363
16:23	MA48470-ICSAB2	9531	192760	23386	13367
16:29	MA48470-CCV6	10174	209700	24163	14488
16:34	MA48470-CCB7	10492	216860	24395	15652
16:38	ZZZZZZ	10684	222790	24973	15870
16:43	ZZZZZZ	10171	207480	24372	14553
16:48	ZZZZZZ	10347	214790	24411	15474
16:53	ZZZZZZ	10225	214430	24208	14632
16:58	ZZZZZZ	10172	207880	24400	14580
17:03	ZZZZZZ	10287	209900	24385	14708
17:08	ZZZZZZ	10421	217990	24458	15592
17:13	ZZZZZZ	10111	208320	24462	14604
17:17	ZZZZZZ	10058	207680	24279	14365
17:22	MA48470-CCV7	10172	207600	24030	14526
17:27	MA48470-CCB8	10586	217910	24512	15799
17:32	ZZZZZZ	10335	209670	24481	14758
17:37	ZZZZZZ	10190	210990	24432	14566
17:42	MP20315-MB1	No results reported for the elements associated with this internal standard.			
17:47	MP20315-B1	10362	209480	24437	14848
17:52	MP20315-B2	10314	212270	24126	14779
17:57	MP20315-S1	9436	188600	24142	12854
18:02	MP20315-S2	9519	189400	24250	12929
18:07	JD4684-6F	9604	190500	24416	12993
18:12	MP20315-SD1	10072	201590	24121	14008
18:17	ZZZZZZ	8975	178690	24206	12137
18:22	MA48470-CCV8	10199	206610	24032	14487
18:27	MA48470-CCB9	10574	219250	24554	15732
18:32	ZZZZZZ	9927	197860	24442	13550
18:37	ZZZZZZ	10177	203210	24651	14104
18:42	ZZZZZZ	10012	200710	24603	13780
18:47	ZZZZZZ	9351	183890	24149	12716
18:52	ZZZZZZ	9425	187420	24021	12795

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
18:57	ZZZZZZ	10605	218030	24477	15570
19:02	ZZZZZZ	10594	219750	24744	15573
19:07	ZZZZZZ	10629	218750	24930	15439
19:12	ZZZZZZ	10573	219090	24697	15638
19:17	ZZZZZZ	10619	222000	24707	15704
19:22	MA48470-CCV9	10114	202420	24028	14432
19:27	MA48470-CCB10	10489	215610	24332	15655
19:32	ZZZZZZ	10639	220200	24985	15672
19:37	ZZZZZZ	10503	213050	24674	15206
19:41	ZZZZZZ	10578	218600	24709	15540
19:46	ZZZZZZ	10754	218860	24983	15970
19:51	ZZZZZZ	10474	218010	24906	15124
19:56	ZZZZZZ	9834	197310	24251	13623
20:01	MP20378-B1	10310	214160	24561	14808
20:06	MP20378-MB1	10702	221720	24856	15893
20:11	MP20378-S1	10225	208450	24532	14443
20:16	MP20378-S2	10189	207360	24541	14380
20:21	MA48470-CCV10	10166	205790	24008	14527
20:26	MA48470-CCB11	10562	218730	24474	15794
20:31	ZZZZZZ	10569	217040	24402	15786
20:36	ZZZZZZ	10417	216920	24443	15615
20:41	ZZZZZZ	10584	220770	24517	15853
20:46	ZZZZZZ	10625	219510	24648	15860
20:51	ZZZZZZ	10601	217100	24592	15828
20:56	ZZZZZZ	10659	206860	24610	14615
21:01	ZZZZZZ	9987	204110	24102	14137
21:06	ZZZZZZ	10506	217570	24613	15832
21:11	ZZZZZZ	10558	219920	24409	15773
21:16	MA48470-CCV11	10198	204130	24002	14553
21:21	MA48470-CCB12	10595	217970	24469	15814
21:26	JD4646-1	10313	211230	24523	14788
21:31	MP20378-SD1	10487	217720	24443	15408
21:36	ZZZZZZ	10121	208710	24389	14348

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
21:41	ZZZZZZ	9593	197170	23834	13336
21:46	ZZZZZZ	9693	197790	24070	13462
21:51	ZZZZZZ	10303	208770	24753	14665
21:56	ZZZZZZ	9964	204890	24354	14016
22:01	ZZZZZZ	10152	208030	24457	14286
22:06	ZZZZZZ	9659	195510	24314	13343
22:11	ZZZZZZ	9904	199330	24435	13578
22:17	MA48470-CCV12	10251	206080	24195	14623
22:22	MA48470-CCB13	10674	219410	24761	15906
22:27	ZZZZZZ	10178	210180	24698	14432
22:32	ZZZZZZ	10405	215020	24782	14939
22:37	ZZZZZZ	10333	210530	24685	14605
22:41	ZZZZZZ	9771	200380	24368	13547
22:47	ZZZZZZ	9745	198250	24341	13494
22:52	ZZZZZZ	10328	209550	24964	14669
22:57	ZZZZZZ	10078	207240	24662	14142
23:02	ZZZZZZ	10136	209490	24567	14294
23:07	ZZZZZZ	9783	195830	24541	13460
23:12	ZZZZZZ	10031	204410	24703	13724
23:18	MA48470-CCV13	10331	209420	24462	14687
23:23	MA48470-CCB14	10722	221000	24774	15956
23:28	ZZZZZZ	10162	208100	24424	14395
23:33	ZZZZZZ	10432	211730	24719	14934
23:38	ZZZZZZ	10724	222220	25112	15910
23:43	MP20398-MB1	10675	222690	24876	15900
23:48	MP20398-B1	10605	218050	24825	15531
23:52	MP20398-S1	9859	203020	24434	13893
23:57	MP20398-S2	9967	202860	24291	14052
00:02	JD4436-1A	10009	203780	24400	14117
00:07	MP20398-SD1	10419	211070	24844	15142
00:12	ZZZZZZ	10101	211760	24676	14190
00:17	MA48470-CCV14	10234	208010	24499	14610
00:22	MA48470-CCB15	10690	219870	24580	15954

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
00:27	ZZZZZZ	10051	206750	24619	14137
00:32	ZZZZZZ	9998	206390	24616	14087
00:37	ZZZZZZ	9963	204240	24257	14105
00:42	ZZZZZZ	10168	208100	24857	14349
00:47	MP20399-MB1	10231	205810	24551	14337
00:52	MP20399-B1	10208	208970	24541	14285
00:57	MP20399-S1	10107	205610	25284	14028
01:03	MP20399-S2	10038	205170	24827	13922
01:08	JD4436-14A	10308	211620	25194	14238
01:13	MP20399-SD1	10541	214730	24967	15020
01:18	MA48470-CCV15	10287	211530	24539	14708
01:23	MA48470-CCB16	10778	223310	24736	16063
01:28	ZZZZZZ	10176	207330	24860	14223
01:33	ZZZZZZ	10348	208800	24802	14458
01:38	ZZZZZZ	10710	222130	25120	15937
01:43	ZZZZZZ	10245	210550	24810	14344
01:48	ZZZZZZ	9971	204890	24844	14005
01:53	ZZZZZZ	10445	215800	25004	14895
01:58	ZZZZZZ	10516	215890	25202	15017
02:03	ZZZZZZ	9993	203900	25069	14036
02:08	ZZZZZZ	10391	211590	24870	14887
02:13	MA48470-CCV16	10290	207150	24750	14715
02:18	MA48470-CCB17	10679	220730	24798	15965
02:23	MP20430-MB1	10925	226700	25380	16484
02:28	MP20430-B1	10448	213260	24808	15163
02:33	MP20430-B2	10502	214770	24910	15219
02:38	MP20430-S1	10040	202940	24801	14081
02:43	MP20430-S2	10010	204180	24799	14047
02:48	JD4979-1	10299	208480	24888	14334
02:53	MP20430-SD1	10341	208400	24805	14882
02:58	ZZZZZZ	10659	216000	25361	14992
03:03	ZZZZZZ	10421	215690	25144	14777
03:08	ZZZZZZ	10052	202030	24495	14198

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
03:13	MA48470-CCV17	10227	207380	24379	14656
03:18	MA48470-CCB18	10548	217390	24755	15847
03:23	ZZZZZZ	10401	210780	24684	14903
03:28	ZZZZZZ	10392	209950	24438	14861
03:33	ZZZZZZ	9975	197620	24820	13858
03:38	ZZZZZZ	10095	202020	24999	14070
03:43	MP20385-MB1	10804	222490	25155	16097
03:48	MP20385-B1	10411	214430	24838	15028
03:53	MP20385-S1	10394	212060	24769	14942
03:58	MP20385-S2	10299	209860	24661	14824
04:03	JD4480-17R	10628	222610	25062	15559
04:08	MP20385-SD1	10535	217440	24810	15739
04:13	MA48470-CCV18	10207	207140	24508	14666
04:18	MA48470-CCB19	10561	218900	24499	15890
04:23	ZZZZZZ	10693	220700	25238	15622
04:27	ZZZZZZ	10677	220440	25071	15560
04:32	MP20382-MB1	10758	223260	24918	16080
04:37	MP20382-B1	10407	211890	24763	14986
04:42	MP20382-S1	10064	205330	24626	14109
04:47	MP20382-S2	10114	205310	24733	14179
04:53	JD4881-1	10169	207790	24860	14333
04:58	MP20382-SD1	10412	213170	24413	15125
05:02	ZZZZZZ	10724	216340	24964	16040
05:07	ZZZZZZ	10389	210430	25102	14566
05:12	MA48470-CCV19	10139	205400	23955	14565
05:17	MA48470-CCB20	10573	217300	24567	15881
05:22	ZZZZZZ	10673	219470	25577	14558
05:27	ZZZZZZ	10315	204820	24898	14796
05:32	FA73461-1	10676	225160	24909	15963
05:37	FA73461-2	10676	221810	24804	15964
05:42	FA73461-3	10562	220340	25051	15500
05:47	FA73461-4	10609	218770	25116	15557
05:52	FA73461-5	10671	218750	25141	15615

INTERNAL STANDARD SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA48470
Parameters: B,Li

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
05:57	FA73461-6	10618	222310	25023	15560
06:02	FA73461-7	10667	220090	25303	15653
06:07	FA73461-8	10634	219100	25087	15610
06:11	MA48470-CCV20	10236	208700	24409	14716
06:16	MA48470-CCB21	10628	217920	24646	15966
06:21	FA73461-9	10654	221060	25254	15629
06:26	FA73461-10	10581	218460	25173	15565
06:31	FA73461-11	10631	219700	25153	15624
06:36	FA73461-12	10736	220440	25113	15748
06:41	FA73461-13	10664	220600	25452	15671
06:46	ZZZZZZ	10317	212110	24785	14959
06:51	MA48470-CCV21	10215	208170	24509	14709
06:56	MA48470-CCB22	10650	219730	24929	16034
07:54	MP20315-MB1	10920	231390	29270	16495
08:01	MA48470-CCV22	10154	206120	24181	14690
08:10	MA48470-CCB23	10528	219490	24284	15951

R = Reference for ISTD limits. ! = Outside limits.

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %
Istd#4	Indium	70-130 %

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			11:07 ICB1		11:20 CCB1		12:16 CCB2		13:10 CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	18	anr							
Antimony	6.0	1.5	anr							
Arsenic	3.0	1.9	anr							
Barium	200	.5	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	2.5								
Boron	100	2	1.60	<100	1.50	<100	1.50	<100	1.50	<100
Cadmium	3.0	.2	anr							
Calcium	5000	4.2	anr							
Cerium	100									
Chromium	10	.3	anr							
Cobalt	50	.3	anr							
Copper	10	1.8	anr							
Iron	100	2.6	anr							
Lead	3.0	1.5	anr							
Lithium	50	2.7	0.900	<50	2.50	<50	4.90	<50	1.00	<50
Magnesium	5000	25	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.3	anr							
Phosphorus	50	2.1								
Potassium	10000	71	anr							
Selenium	10	1.7	anr							
Silicon	200	1.3								
Silver	10	.9	anr							
Sodium	10000	38	anr							
Strontium	10	.1								
Sulfur	50	2.6	anr							
Thallium	10	.9	anr							
Tin	10	.5								
Titanium	10	.4								
Tungsten	50	.9								
Vanadium	50	.4	anr							

< MDL (7.3)

11.1.3 11

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			11:07 ICB1		11:20 CCB1		12:16 CCB2		13:10 CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.1	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			14:05 CCB4		14:59 CCB5		15:53 CCB6		16:34 CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	18	anr							
Antimony	6.0	1.5	anr							
Arsenic	3.0	1.9	anr							
Barium	200	.5	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	2.5								
Boron	100	2	1.50	<100	1.30	<100	-0.200	<100	1.30	<100
Cadmium	3.0	.2	anr							
Calcium	5000	4.2	anr							
Cerium	100									
Chromium	10	.3	anr							
Cobalt	50	.3	anr							
Copper	10	1.8	anr							
Iron	100	2.6	anr							
Lead	3.0	1.5	anr							
Lithium	50	2.7	-0.300	<50	0.00	<50	-0.700	<50	0.100	<50
Magnesium	5000	25	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.3	anr							
Phosphorus	50	2.1								
Potassium	10000	71	anr							
Selenium	10	1.7	anr							
Silicon	200	1.3								
Silver	10	.9	anr							
Sodium	10000	38	anr							
Strontium	10	.1								
Sulfur	50	2.6	anr							
Thallium	10	.9	anr							
Tin	10	.5								
Titanium	10	.4								
Tungsten	50	.9								
Vanadium	50	.4	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			14:05 CCB4		14:59 CCB5		15:53 CCB6		16:34 CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.1	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			17:27 CCB8		18:27 CCB9		19:27 CCB10		20:26 CCB11		
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final	
Aluminum	200	18	anr								
Antimony	6.0	1.5	anr								
Arsenic	3.0	1.9	anr								
Barium	200	.5	anr								
Beryllium	1.0	.1	anr								
Bismuth	20	2.5									
Boron	100	2	0.600	<100	0.600	<100	0.900	<100	2.20	<100	< MDL (63)
Cadmium	3.0	.2	anr								
Calcium	5000	4.2	anr								
Cerium	100										
Chromium	10	.3	anr								
Cobalt	50	.3	anr								
Copper	10	1.8	anr								
Iron	100	2.6	anr								
Lead	3.0	1.5	anr								
Lithium	50	2.7	1.40	<50	8.50	<50	2.80	<50	0.400	<50	✓
Magnesium	5000	25	anr								
Manganese	15	.1	anr								
Molybdenum	20	.3									
Nickel	10	.3	anr								
Phosphorus	50	2.1									
Potassium	10000	71	anr								
Selenium	10	1.7	anr								
Silicon	200	1.3									
Silver	10	.9	anr								
Sodium	10000	38	anr								
Strontium	10	.1									
Sulfur	50	2.6	anr								
Thallium	10	.9	anr								
Tin	10	.5									
Titanium	10	.4									
Tungsten	50	.9									
Vanadium	50	.4	anr								

all samples ND

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BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			17:27 CCB8		18:27 CCB9		19:27 CCB10		20:26 CCB11	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.1	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			21:21 CCB12		22:22 CCB13		23:23 CCB14		00:22 CCB15	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	18	anr							
Antimony	6.0	1.5	anr							
Arsenic	3.0	1.9	anr							
Barium	200	.5	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	2.5								
Boron	100	2	1.00	<100	-0.200	<100	0.200	<100	1.20	<100
Cadmium	3.0	.2	anr							
Calcium	5000	4.2	anr							
Cerium	100									
Chromium	10	.3	anr							
Cobalt	50	.3	anr							
Copper	10	1.8	anr							
Iron	100	2.6	anr							
Lead	3.0	1.5	anr							
Lithium	50	2.7	0.600	<50	2.00	<50	2.20	<50	-1.60	<50
Magnesium	5000	25	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.3	anr							
Phosphorus	50	2.1								
Potassium	10000	71	anr							
Selenium	10	1.7	anr							
Silicon	200	1.3								
Silver	10	.9	anr							
Sodium	10000	38	anr							
Strontium	10	.1								
Sulfur	50	2.6	anr							
Thallium	10	.9	anr							
Tin	10	.5								
Titanium	10	.4								
Tungsten	50	.9								
Vanadium	50	.4	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			21:21 CCB12		22:22 CCB13		23:23 CCB14		00:22 CCB15	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.1	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			01:23 CCB16		02:18 CCB17		03:18 CCB18		04:18 CCB19	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	18	anr							
Antimony	6.0	1.5	anr							
Arsenic	3.0	1.9	anr							
Barium	200	.5	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	2.5								
Boron	100	2	0.700	<100	1.70	<100	1.20	<100	1.70	<100
Cadmium	3.0	.2	anr							
Calcium	5000	4.2	anr							
Cerium	100									
Chromium	10	.3	anr							
Cobalt	50	.3	anr							
Copper	10	1.8	anr							
Iron	100	2.6	anr							
Lead	3.0	1.5	anr							
Lithium	50	2.7	1.40	<50	0.300	<50	2.10	<50	0.700	<50
Magnesium	5000	25	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.3	anr							
Phosphorus	50	2.1								
Potassium	10000	71	anr							
Selenium	10	1.7	anr							
Silicon	200	1.3								
Silver	10	.9	anr							
Sodium	10000	38	anr							
Strontium	10	.1								
Sulfur	50	2.6	anr							
Thallium	10	.9	anr							
Tin	10	.5								
Titanium	10	.4								
Tungsten	50	.9								
Vanadium	50	.4	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			01:23 CCB16		02:18 CCB17		03:18 CCB18		04:18 CCB19	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.1	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time: / Sample ID:			05:17 CCB20		06:16 CCB21		06:56 CCB22	
Metal	RL	IDL	raw	final	raw	final	raw	final
Aluminum	200	18	anr					
Antimony	6.0	1.5	anr					
Arsenic	3.0	1.9	anr					
Barium	200	.5	anr					
Beryllium	1.0	.1	anr					
Bismuth	20	2.5						
Boron	100	2	1.80	<100	0.700	<100	0.300	<100
Cadmium	3.0	.2	anr					
Calcium	5000	4.2	anr					
Cerium	100							
Chromium	10	.3	anr					
Cobalt	50	.3	anr					
Copper	10	1.8	anr					
Iron	100	2.6	anr					
Lead	3.0	1.5	anr					
Lithium	50	2.7	1.40	<50	2.40	<50	-0.400	<50
Magnesium	5000	25	anr					
Manganese	15	.1	anr					
Molybdenum	20	.3						
Nickel	10	.3	anr					
Phosphorus	50	2.1						
Potassium	10000	71	anr					
Selenium	10	1.7	anr					
Silicon	200	1.3						
Silver	10	.9	anr					
Sodium	10000	38	anr					
Strontium	10	.1						
Sulfur	50	2.6	anr					
Thallium	10	.9	anr					
Tin	10	.5						
Titanium	10	.4						
Tungsten	50	.9						
Vanadium	50	.4	anr					

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA48470 Units: ug/l

Time:			05:17		06:16		06:56	
Sample ID:			CCB20		CCB21		CCB22	
Metal	RL	IDL	raw	final	raw	final	raw	final
Zinc	20	.1	anr					
Zirconium	10	.3						

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: to % Recovery Run ID: MA48470 Units: ug/l

Time:		11:14	
Sample ID:	ICCV	ICCV1	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron	2000	2020	101.0
Cadmium	anr		
Calcium	anr		
Cerium			
Chromium	anr		
Cobalt	anr		
Copper	anr		
Iron	anr		
Lead	anr		
Lithium	2000	2010	100.5
Magnesium	anr		
Manganese	anr		
Molybdenum			
Nickel	anr		
Phosphorus			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Strontium			
Sulfur	anr		
Thallium	anr		
Tin			
Titanium			
Tungsten			
Vanadium	anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: to % Recovery Run ID: MA48470 Units: ug/l

Time:		11:14	
Sample ID:	ICCV	ICCV1	
Metal	True	Results	% Rec
Zinc	anr		
Zirconium			

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		11:00			12:11			13:05	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	2020 ✓	101.0 ✓	2000	2020	101.0	2000	2040 ✓	102.0 ✓
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	2010	100.5	2000 ✓	2000	100.0 ✓	2000	2000	100.0
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		11:00			12:11			13:05	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		14:00			14:54			15:48	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	2050	102.5	2000	2040 ✓	102.0 ✓	2000	2040	102.0
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	2010 ✓	100.5 ✓	2000	2000	100.0	2000	1990 ✓	99.5 ✓
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		14:00			14:54			15:48	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		16:29			17:22			18:22	
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	2020 ✓	101.0 ✓	2000	2010	100.5	2000	2020 ✓	101.0 ✓
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	1960	98.0	2000	1940 ✓	97.0 ✓	2000	1970	98.5
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		16:29			17:22			18:22	
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		19:22			20:21			21:16	
Sample ID:	CCV	CCV9		CCV	CCV10		CCV	CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	2010	100.5	2000	2020 ✓	101.0 ✓	2000	2000	100.0
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	1940 ✓	97.0 ✓	2000	1950	97.5	2000	1920 ✓	96.0 ✓
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		19:22			20:21			21:16	
Sample ID:	CCV	CCV9		CCV	CCV10		CCV	CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		22:17			23:18			00:17	
Sample ID:	CCV	CCV12		CCV	CCV13		CCV	CCV14	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	2010	100.5	2000	2000	100.0	2000	2010	100.5
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	1930	96.5	2000	1910	95.5	2000	1910	95.5
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		22:17			23:18			00:17	
Sample ID:	CCV	CCV12		CCV	CCV13		CCV	CCV14	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		01:18			02:13			03:13	
Sample ID:	CCV	CCV15		CCV	CCV16		CCV	CCV17	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	1990	99.5	2000	2000 ✓	100.0 ✓	2000	2020	101.0
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	1910 ✓	95.5 ✓	2000	1910	95.5	2000	1920 ✓	96.0 ✓
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		01:18			02:13			03:13	
Sample ID:	CCV	CCV15		CCV	CCV16		CCV	CCV17	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		04:13			05:12			06:11	
Sample ID:	CCV	CCV18		CCV	CCV19		CCV	CCV20	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	2000	2020 ✓	101.0 ✓	2000	2020	101.0	2000	2000 ✓	100.0 ✓
Cadmium	anr								
Calcium	anr								
Cerium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Lithium	2000	1920	96.0	2000	1920 ✓	96.0 ✓	2000	1910	95.5
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Sulfur	anr								
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		04:13			05:12			06:11	
Sample ID:	CCV	CCV18		CCV	CCV19		CCV	CCV20	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		06:51	
Sample ID:	CCV	CCV21	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron	2000	2020	101.0
Cadmium	anr		
Calcium	anr		
Cerium			
Chromium	anr		
Cobalt	anr		
Copper	anr		
Iron	anr		
Lead	anr		
Lithium	2000	1930 ✓	96.5 ✓
Magnesium	anr		
Manganese	anr		
Molybdenum			
Nickel	anr		
Phosphorus			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Strontium			
Sulfur	anr		
Thallium	anr		
Tin			
Titanium			
Tungsten			
Vanadium	anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA48470 Units: ug/l

Time:		06:51	
Sample ID:	CCV	CCV21	
Metal	True	Results	% Rec
Zinc	anr		
Zirconium			

(*) Outside of QC limits
(anr) Analyte not requested

HIGH STANDARD CHECK SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 90 to 110 % Recovery Run ID: MA48470 Units: ug/l

Time:		11:44			11:50	
Sample ID:	HSTD	HSTD1		HSTD	HSTD2	
Metal	True	Results	% Rec	True	Results	% Rec
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Bismuth						
Boron	8000	7850	98.1			
Cadmium	anr					
Calcium						
Cerium						
Chromium	anr					
Cobalt	anr					
Copper	anr					
Iron						
Lead	anr					
Lithium	8000	7830	97.9			
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	anr					
Phosphorus						
Potassium						
Selenium	anr					
Silicon						
Silver	anr					
Sodium						
Strontium						
Sulfur	anr					
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					

HIGH STANDARD CHECK SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 90 to 110 % Recovery Run ID: MA48470 Units: ug/l

Time:		11:44			11:50	
Sample ID:	HSTD	HSTD1		HSTD	HSTD2	
Metal	True	Results	% Rec	True	Results	% Rec
Zinc	anr					
Zirconium						

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: CRI 80-120% CRIA 80-120% Run ID: MA48470 Units: ug/l

Time: / Sample ID: / Metal	CRI True	CRIA True	CRID True	11:24 CRID1 Results	% Rec	11:29 CRI1 Results	% Rec
Aluminum	200	500	100	anr			
Antimony	6.0	20	3.0				
Arsenic	8.0	20	3.0	anr			
Barium	200		4.0	anr			
Beryllium	2.0		1.0	anr			
Bismuth	20						
Boron	100		10			101	101.0
Cadmium	3.0		1.0	anr			
Calcium	5000	2000	1000	anr			
Cerium							
Chromium	10		2.0				
Cobalt	50		3.0	anr			
Copper	10		2.0				
Iron	100	500					
Lead	3.0	20	2.5				
Lithium	50					58.0 ✓	116.0 ✓
Magnesium	5000	2000	100	anr			
Manganese	15		3.0	anr			
Molybdenum	20						
Nickel	10		4.0	anr			
Phosphorus	50						
Potassium	5000		2000	anr			
Selenium	10	20	5.0	anr			
Silicon	200						
Silver	5.0		2.0				
Sodium	5000		1000	anr			
Strontium	10						
Sulfur	50						
Thallium	10		2.0				
Tin	10						
Titanium	10						
Tungsten	50						
Vanadium	50		2.0	anr			

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: CRI 80-120% CRIA 80-120% Run ID: MA48470 Units: ug/l

Time:				11:24		11:29	
Sample ID:	CRI	CRIA	CRID	CRID1		CRI1	
Metal	True	True	True	Results	% Rec	Results	% Rec
Zinc	20		10	anr			
Zirconium	10						

(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 80 to 120 % Recovery Run ID: MA48470 Units: ug/l

	Time:			11:34		11:39		16:18		16:23	
	Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
	Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
	Aluminum	500000	500000	505000	101.0	510000	102.0	507000	101.4	506000	101.2
	Antimony		1000	2.40		1010	101.0	0.100		1000	100.0
	Arsenic		1000	0.800		1040	104.0	0.100		1040	104.0
	Barium		500	0.400		520	104.0	0.300		518	103.6
	Beryllium		500	0.100		503	100.6	0.100		498	99.6
	Bismuth		500	13.9		503	100.6	11.7		503	100.6
MDL = 63	Boron		500	-2.80		471	94.2	-2.30		469 ✓	93.8 ✓
	Cadmium		1000	0.400		997	99.7	0.200		981	98.1
	Calcium	400000	400000	390000	97.5	385000	96.3	379000	94.8	385000	96.3
	Cerium			17.1		31.8		17.3		24.8	
	Chromium		500	2.20		494	98.8	2.60		483	96.6
	Cobalt		500	0.100		493	98.6	-0.100		490	98.0
	Copper		500	-2.00		503	100.6	-1.80		492	98.4
	Iron	200000	200000	193000	96.5	190000	95.0	192000	96.0	191000	95.5
	Lead		1000	0.00		951	95.1	1.80		951	95.1
MDL = 7.3	Lithium		500	-6.00		538 ✓	107.6 ✓	-3.30		522	104.4
	Magnesium	500000	500000	500000	100.0	491000	98.2	491000	98.2	486000	97.2
	Manganese		500	0.400		506	101.2	0.300		491	98.2
	Molybdenum		500	2.50		468	93.6	2.40		469	93.8
	Nickel		1000	-0.100		981	98.1	0.00		985	98.5
	Phosphorus		500	-11.9		451	90.2	-6.80		457	91.4
	Potassium			-298		-275		-24.5		-135	
	Selenium		1000	1.70		1040	104.0	1.70		1040	104.0
	Silicon		500	5.20		497	99.4	2.90		493	98.6
	Silver		1000	3.00		1020	102.0	1.80		997	99.7
	Sodium			198		234		388		306	
	Strontium		500	-2.30		507	101.4	-2.20		500	100.0
	Sulfur		500	-3.90		489	97.8	8.10		488	97.6
	Thallium		1000	-0.200		988	98.8	-1.00		992	99.2
	Tin		500	-2.50		449	89.8	-2.10		440	88.0
	Titanium		500	-1.10		486	97.2	-1.20		476	95.2
	Tungsten		500	1.80		459	91.8	-0.600		460	92.0
	Vanadium		500	1.90		492	98.4	3.70		478	95.6

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

File ID: SC032920M1.ICP Date Analyzed: 03/29/20 Methods: EPA 200.7, SW846 6010D
QC Limits: 80 to 120 % Recovery Run ID: MA48470 Units: ug/l

Time:			11:34		11:39		16:18		16:23	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Zinc		1000	1.70		958	95.8	1.50		948	94.8
Zirconium		500	3.90		530	106.0	4.10		516	103.2

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	18	46		
Antimony	6.0	1.5	4.7		
Arsenic	3.0	1.9	2.8		
Barium	200	.5	13		
Beryllium	1.0	.1	.5		
Bismuth	20	2.5	4		
Boron	100	2	63	-0.30	<100
Cadmium	3.0	.2	1		
Calcium	5000	4.2	99		
Cerium	100				
Chromium	10	.3	2		
Cobalt	50	.3	2.6		
Copper	10	1.8	5.9		
Iron	100	2.6	32		
Lead	3.0	1.5	1.8		
Lithium	50	2.7	7.3	-0.40	<50
Magnesium	5000	25	140		
Manganese	15	.1	1.4		
Molybdenum	20	.3	3.6		
Nickel	10	.3	1.7		
Phosphorus	50	2.1	18		
Potassium	10000	71	200		
Selenium	10	1.7	4.9		
Silicon	200	1.3	100		
Silver	10	.9	1.9		
Sodium	10000	38	570		
Strontium	10	.1	1		
Sulfur	50	2.6	45		
Thallium	10	.9	1.8		
Tin	10	.5	3.7		
Titanium	10	.4	2.5		
Tungsten	50	.9	40		
Vanadium	50	.4	1.8		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382 Methods: SW846 6010D
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/23/20

Metal	RL	IDL	MDL	MB raw	final
Zinc	20	.1	6.9		
Zirconium	10	.3	4.1		

Associated samples MP20382: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	JD4881-1 Original	MS	Spikelot MPSPK2	% Rec	QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Bismuth					
Boron	183	2150 ✓	2000	98.4 ✓	75-125
Cadmium	anr				
Calcium	anr				
Cerium					
Chromium	anr				
Cobalt	anr				
Copper	anr				
Iron	anr				
Lead	anr				
Lithium	6.1	1940	2000	96.7	75-125
Magnesium	anr				
Manganese	anr				
Molybdenum					
Nickel	anr				
Phosphorus					
Potassium	anr				
Selenium	anr				
Silicon					
Silver	anr				
Sodium	anr				
Strontium					
Sulfur					
Thallium	anr				
Tin					
Titanium					
Tungsten					
Vanadium	anr				

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	JD4881-1 Original MS	Spikelot MPSPK2	% Rec	QC Limits
Zinc	anr			
Zirconium				

Associated samples MP20382: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	JD4881-1 Original	MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Bismuth						
Boron	183	2140	2000	97.9	0.5	20
Cadmium	anr					
Calcium	anr					
Cerium						
Chromium	anr					
Cobalt	anr					
Copper	anr					
Iron	anr					
Lead	anr					
Lithium	6.1	1910	2000	95.2	1.6	20
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel	anr					
Phosphorus						
Potassium	anr					
Selenium	anr					
Silicon						
Silver	anr					
Sodium	anr					
Strontium						
Sulfur						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382 Methods: SW846 6010D
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/23/20

Metal	JD4881-1 Original	MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit
Zinc	anr					
Zirconium						

Associated samples MP20382: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron	1990	2000	99.5	80-120
Cadmium	anr			
Calcium	anr			
Cerium				
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	anr			
Lithium	1930 ✓	2000	96.5 ✓	80-120
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Zinc	anr			
Zirconium				

Associated samples MP20382: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	JD4881-1 Original	SDL 1:5	%DIF	QC Limits	
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Bismuth					
Boron	183	187 ✔	2.2 ✔	0-10	
Cadmium	anr				
Calcium	anr				
Cerium					
Chromium	anr				
Cobalt	anr				
Copper	anr				
Iron	anr				
Lead	anr				
Lithium	6.10	16.7	173.8(a)	0-10	< 50x MDL
Magnesium	anr				
Manganese	anr				
Molybdenum					
Nickel	anr				
Phosphorus					
Potassium	anr				
Selenium	anr				
Silicon					
Silver	anr				
Sodium	anr				
Strontium					
Sulfur					
Thallium	anr				
Tin					
Titanium					
Tungsten					
Vanadium	anr				

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA73461
Account: ALSE - SGS Orlando, FL
Project: ESVAS: Bremo

QC Batch ID: MP20382
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 03/23/20

Metal	JD4881-1 Original	SDL 1:5	%DIF	QC Limits
Zinc	anr			
Zirconium				

Associated samples MP20382: FA73461-1, FA73461-2, FA73461-3, FA73461-4, FA73461-5, FA73461-6, FA73461-7, FA73461-8, FA73461-9, FA73461-10, FA73461-11, FA73461-12, FA73461-13

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Instrument Detection Limits

Job Number: FA73461
Account: ALSE SGS Orlando, FL
Project: ESVAS: Bremo

Instrument ID: SSTRACE3 **Effective Date:** 01/10/20

Analyte	IDL ug/l
Aluminum	18.2
Antimony	1.5
Arsenic	1.9
Barium	.5
Beryllium	.1
Bismuth	2.5
Boron	2
Cadmium	.2
Calcium	4.2
Chromium	.3
Cobalt	.3
Copper	1.8
Iron	2.6
Lead	1.5
Lithium	2.7
Magnesium	24.6
Manganese	.1
Molybdenum	.3
Nickel	.3
Phosphorus	2.1
Potassium	70.6
Selenium	1.7
Silicon	1.3
Silver	.9
Sodium	37.9
Sulfur	2.6
Strontium	.1
Thallium	.9
Tin	.5
Titanium	.4
Tungsten	.9
Vanadium	.4
Yttrium	5
Zinc	.1
Zirconium	.3

The above applies to the following instrument runs:
MA48470

Instrument Linear Ranges

Job Number: FA73461
Account: ALSE SGS Orlando, FL
Project: ESVAS: Bremo

Instrument ID: SSTRACE3 **Effective Date:** 08/22/19

Analyte	Linear Range ug/l
Aluminum	300000
Antimony	8000
Arsenic	8000
Barium	8000
Beryllium	8000
Bismuth	8000
Boron	8000
Cadmium	8000
Calcium	200000
Cerium	8000
Chromium	8000
Cobalt	8000
Copper	8000
Iron	200000
Lead	8000
Lithium	8000
Magnesium	300000
Manganese	8000
Molybdenum	8000
Nickel	8000
Palladium	8000
Phosphorus	8000
Potassium	200000
Selenium	8000
Silicon	25000
Silver	625
Sodium	200000
Sulfur	100000
Strontium	8000
Thallium	8000
Tin	8000
Titanium	8000
Tungsten	8000
Vanadium	8000
Zinc	8000
Zirconium	8000

The above applies to the following instrument runs:
MA48470

SGS North America Inc

Aqueous Metals Digestion Form

Batch Information

Batch ID	Start Date	Start Time	End Date	End time	QC Samp 1	QC Samp 2
MP20382	3/23/2020	10:30	3/23/2020	1605	JD4881-1	

Temperature

		Block ID1	Therm. ID#	Temperature	Correction	Corrected Temp
1	Start	9	3106989	95	-2	93
1	End	9	3106989	96	-2	94
2	Start					
2	End					

Methods and Equipment

	Dig. Method	Heating Method		Auto Pipette #	Digestion Tube Lot #	
	SW846 3010A	Digestion Block		M-74	1909231	

Sample ID	Bottle Number	Pres (Y/N)	Initial Sample Volume	Final Volume in ML	Reagent Groups Added	Spike Groups Added	Comments
MP20382-MB1	N/A	N	50	50	AB		
MP20382-B1	N/A	N	50	50	AB	ABCDE	
MP20382-S1	5	Y	50	50	AB	ABCDE	
MP20382-S2	5	Y	50	50	AB	ABCDE	
MP20382-SD1	5	Y	50	50	AB		
FA73461-1	1	Y	50	50	AB		
FA73461-10	1	Y	50	50	AB		
FA73461-11	1	Y	50	50	AB		
FA73461-12	1	Y	50	50	AB		
FA73461-13	1	Y	50	50	AB		
FA73461-2	1	Y	50	50	AB		
FA73461-3	1	Y	50	50	AB		
FA73461-4	1	Y	50	50	AB		
FA73461-5	1	Y	50	50	AB		
FA73461-6	1	Y	50	50	AB		
FA73461-7	1	Y	50	50	AB		
FA73461-8	1	Y	50	50	AB		
FA73461-9	1	Y	50	50	AB		
FA73566-2	1	Y	50	50	AB		
JD4843-8	5	Y	50	50	AB		
JD4881-1	5	Y	50	50	AB		
JD4900-1	4	Y	50	50	AB		
JD4900-2	4	Y	50	50	AB		
JD4900-5	4	Y	50	50	AB		

Reagents Groups		
Group	Description	MLs Used
A	CONC HNO3	3
B	1:1 HCL	5
C		
D		
E		
F		
G		
H		

Spike Groups		
Group	Description	MLs Used
A	ACCUTEST 13A REV-1	0.5
B	ACCUTEST 14A REV-1	0.5
C	MINERALS 5000PPM	0.25
D	AG 20PPM	0.625
E	LI	0.1
F		
G		
H		
I		

Comments: _____

Analyst COLLEENH Approved by _____ Approved on _____

Note: Reagent traceability for batch Start Date can be seen on the reagent traceability page for this batch.
Serial Dilution samples shown for QC purposes only.
Acceptable Temperature range is 90-95 degrees C unless otherwise noted

SGS

Metals Digestion Reagents Information Log

Digestion Batch ID: MP 20382 **Date:** 3/23/2020

Matrix: ALL

Standard/Reagent Type	Exp. Date	Standard/Reagent ID
Spiking Solution - (ACCUTEST-13A REV1)	9/2/2020	MP-015-1292
Spiking Solution - (ACCUTEST-14A REV1)	9/2/2020	MP-015-1293
Spiking Solution - 5000 mg/l Minerals	1/8/2021	P2-MEB687401 MFG: INO. VENT.
Spiking Solution - Sulfur 1000ppm	9/25/2021	LOT: 092518 MFG: ABS. STANDARDS
Spiking Solution - Si 1000ppm	1/15/2021	P2-SI676242 MFG: INO. VENT.
Spiking Solution - Bi 1000ppm	11/17/2020	N2-BI669548 MFG: INO. VENT.
Spiking Solution - Se 20ppm	6/5/2020	MP-015-1288
Spiking Solution - Li 1000ppm	11/4/2020	P2-LI675235 MFG: INO. VENT.
Spiking Solution- Ag 20 ppm	9/2/2020	MP-015-1287
Spiking Solution - (ACCUTEST-13B REV1)	9/2/2020	MP-015-1289
Spiking Solution - (ACCUTEST-14B REV1)	7/29/2020	MP-015-1277
Spiking Solution - 1000ppm Minerals	5/27/2020	MP-015-1254
Spiking Solution- P		
Nitric Acid	3/23/2022	LOT: 245675 MFG: J.T. BAKER
Nitric Acid (1:1)	9/17/2020	MP-018-42-408 1:1 HNO3
Hydrochloric Acid	5/17/2022	LOT: 4119040 MFG: FISHER
Hydrochloric Acid (1:1)	9/10/2020	MP-018-42-399 1:1 HCL
Hydrogen Peroxide	3/12/2022	LOT: 192235 MFG: FISHER
Soil Lab Control/Soil LC	10/22/2022	LOT: D105-540 MFG: ERA
Teflon Chips(For Soil MB and Blank Spike)	N/A	LOT: 24635764 MFG: SAINT-GOBAIN
Digestion Tubes	N/A	LOT: 1909231 MFG: ENV. EXPRESS
pH Paper	11/1/2021	LOT: 231018 MFG: HYDRION
Filter paper Q8	N/A	LOT: 16939084 MFG: FISHER
Filter paper 0.45µm	N/A	LOT: F9HA99962E MFG: FISHER

Spike witnessed By: AC

Validated By:

Validated On:

Metals Prep Reagent
1/17/18

SECTION 4

CASE NARRATIVE AND CHAIN-OF-CUSTODY RECORD

SGS North America Inc.

Sample Summary

EnviroScience

Job No: FA73461

Bremo
Project No: 12246

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA73461-1	03/13/20	13:00	JRCF	03/14/20	AQ	Surface H2O Filtered	EB-01-20-Q1
FA73461-2	03/13/20	13:00	JRCF	03/14/20	AQ	Surface H2O Filtered	FB-01-20-Q1
FA73461-3	03/13/20	13:05	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-08-20-Q1
FA73461-4	03/13/20	13:40	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-07-20-Q1
FA73461-5	03/13/20	14:05	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-06-20-Q1
FA73461-6	03/13/20	14:35	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-05-20-Q1
FA73461-6D	03/13/20	14:35	JRCF	03/14/20	AQ	Water Dup/MSD	BR-05-20-Q1
FA73461-6S	03/13/20	14:35	JRCF	03/14/20	AQ	Water Matrix Spike	BR-05-20-Q1
FA73461-7	03/13/20	15:10	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-04-20-Q1
FA73461-8	03/13/20	15:40	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-03-20-Q1
FA73461-9	03/13/20	15:40	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-03-20-Q1-FD
FA73461-10	03/13/20	16:00	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-02-20-Q1
FA73461-11	03/13/20	16:25	JRCF	03/14/20	AQ	Surface H2O Filtered	BR-01-20-Q1

Sample Summary
(continued)

EnviroScience

Job No: FA73461

Bremo
Project No: 12246

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA73461-12	03/13/20	16:50	JRCF	03/14/20	AQ	Surface H2O Filtered	JR-02-20-Q1
FA73461-13	03/13/20	17:05	JRCF	03/14/20	AQ	Surface H2O Filtered	JR-01-20-Q1

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EnviroScience **Job No:** FA73461

Site: Bremo **Report Date** 4/2/2020 6:04:28 PM

13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 03/13/2020 and were received at SGS North America Inc - Orlando on 03/14/2020 properly preserved, at 2.7 Deg. C and intact. These Samples received an SGS Orlando job number of FA73461. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section. Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals Analysis By Method SW846 6010D

Matrix: AQ **Batch ID:** N:MP20382

FA73461-10 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-2 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-3 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-3 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-4 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-1 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-5 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-6 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-6 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-2 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-8 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-9 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-9 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-4 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-10 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-11 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-11 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-12 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-12 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-13 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-13 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-7 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-8 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-1 for Lithium: Analysis performed at SGS Dayton, NJ.
FA73461-7 for Boron: Analysis performed at SGS Dayton, NJ.
FA73461-5 for Boron: Analysis performed at SGS Dayton, NJ.

Metals Analysis By Method SW846 6020A

Matrix: AQ **Batch ID:** MP37025

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA73461-6DUP, FA73461-6MS, FA73461-6MSD, FA73461-6SDL, were used as the QC samples for metals.

RPD(s) for Duplicate for Nickel are outside control limits for sample MP37025-D1. RPD acceptable due to low duplicate and sample concentrations.

RPD(s) for Serial Dilution for Arsenic, Chromium, Copper, Nickel, Zinc are outside control limits for sample MP37025-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals Analysis By Method SW846 7470A

Matrix: AQ **Batch ID:** MP36990

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA73461-6DUP, FA73461-6MS, FA73461-6MSD, FA73461-6SDL were used as the QC samples for metals.

Matrix: AQ **Batch ID:** MP36991

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA73494-1DUP, FA73494-1MS, FA73494-1MSD, FA73494-1SDL were used as the QC samples for metals.

General Chemistry By Method SM19 2340B

Matrix: AQ **Batch ID:** R50330

FA73461-6 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50333

FA73461-1 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50334

FA73461-2 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50337

FA73461-3 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50339

FA73461-4 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50341

FA73461-5 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50342

FA73461-7 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50345

FA73461-8 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50347

FA73461-9 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50348

FA73461-10 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50350

FA73461-13 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50353

FA73461-11 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

Matrix: AQ **Batch ID:** R50355

FA73461-12 for Hardness, Total as CaCO3: Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

General Chemistry By Method SW846 6010/7196A M

Matrix: AQ **Batch ID:** R50331

FA73461-6 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50332

FA73461-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50335

FA73461-2 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50336

FA73461-3 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50338

FA73461-4 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50340

FA73461-5 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50343

FA73461-7 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50344

FA73461-8 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50346

FA73461-9 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50349

FA73461-10 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50351

FA73461-13 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50352

FA73461-11 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Matrix: AQ **Batch ID:** R50354

FA73461-12 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

General Chemistry By Method SW846 7196A

Matrix: AQ **Batch ID:** GN84635

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA73461-13MS, FA73461-13MSD, FA73461-6MS were used as the QC samples for Chromium, Hexavalent.

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: SGS Orlando, FL **Job No** FA73461

Site: ESVAS: Bremo **Report Date** 3/30/2020 10:43:07 A

On 03/17/2020, 13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.3 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of FA73461 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

Metals Analysis By Method SW846 6010D

Matrix: AQ **Batch ID:** MP20382

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JD4881-1SDL, JD4881-1MS, JD4881-1MSD were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Lithium are outside control limits for sample MP20382-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # FA73461 PAGE 1 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: EnviroScience
Address: 551 Eastpark Ct.
City: Sandston State: VA Zip: 23150
Project Contact: Joe Papineau Email: jpapineau@enviroscienceinc.com
Phone #: 330-206-5123
Sampler(s) Name(s) (Printed)
Sampler 1: Jason Rose Sampler 2: Cory Fox

Project Information

Project Name: Bremo
Street
City State
Project # 12246
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	B, Li	HRDCALC, ICPMS, Hg	PCR3 (Hex Chrom)	LAB USE ONLY
1	EB-01-20-Q1	3/13/20	1300	JR/CF	SW	3		1			2					X	X	X	
2	FB-01-20-Q1		1300																
3	BR-08-20-Q1		1305																
4	BR-07-20-Q1		1340																
5	BR-06-20-Q1		1405																
6	BR-05-20-Q1		1435																
6	BR-05-20-Q1-MS		1435																
6	BR-05-20-Q1-MSD		1435																
7	BR-04-20-Q1		1510																
8	BR-03-20-Q1		1540																
9	BR-03-20-Q1-FD		1540																
10	BR-02-20-Q1		1600																

Turnaround Time (Business days)

(10 Day (Business)) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [x] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [x] EDD'S

Comments / Remarks

INITIAL ASESSMENT SP
LABEL VERIFICATION JM

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	Jason M Rose / ES	3/13/20 1930	2 Fedex (FO)	3 Fedex (F.O)	3/14/20 0900	4
5	Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (1) Rev 031318

SGS North America Inc - Orlando

Chain of Custody

FA73461

SGS - ORLANDO JOB #: PAGE 2 OF 2

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: Environscience
Address: 551 Eastpark Ct.
City: Sandston State: VA Zip: 23150
Project Contact: Jae Papineau Email: jpapineau@environsciencesinc.com
Phone #: 330-206-5123
Sampler(s) Name(s) (Printed)
Sampler 1: Jason Rose Sampler 2: Cory Fox

Project Information

Project Name: Brenco
Street
City State
Project # 12246
Fax #
Client Purchase Order #

Analytical Information

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	B, Li	HRDCALC, ICPMS, Hg	PCB'S (Hex Chrom)	LAB USE ONLY
11	BR-01-20-Q1	3/13/20	1625	JR/CF	SW	3		↓			2					X	X	X	
12	JR-02-20-Q1	↓	1650	↓	↓	↓		↓			↓					↓	↓	↓	
13	JR-01-20-Q1	↓	1705	↓	↓	↓		↓			↓					↓	↓	↓	

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [x] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [x] EDD'S

Comments / Remarks

INITIAL ASESSMENT
LABEL VERIFICATION

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 Jason M. Rose / ES	3/13/20 1730	2 Fedex (F.O)	3 Fedex (FO)	3/14/20 7:30	4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5		6	7		8

Lab Use Only: Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (1) Rev 031318

SGS Sample Receipt Summary

Job Number: FA73461 **Client:** ENVIROSCIENCE **Project:** BREMO

Date / Time Received: 3/14/2020 7:00:00 AM **Delivery Method:** FED EX (FO) **Airbill #'s:** 020139115990206

Therm ID: IR 1; **Therm CF:** -0.8; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (3.5); Cooler 2: (2.9);

Cooler Temps (Corrected) °C: Cooler 1: (2.7); Cooler 2: (2.1);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: TRINITYM Date: 3/14/2020 7:00:00 AM Reviewer: _____ Date: _____

CHAIN OF CUSTODY

SGS North America Inc. - Orlando
4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com/ehsusa

FED-EX Tracking # 1336 6597 2883 | Bottle Order Control # | SGS Quote # | SGS Job # FA73461

Client / Reporting Information

Company Name: SGS North America Inc.
Street Address: 4405 Vineland Rd, Suite C-15
City: Orlando State: FL Zip: 32811
Project Contact: heather.wandrey@sgs.com E-mail:
Phone #: 407-425-6700 Fax #:
Sampler(s) Name(s): JRCF Phone:

Project Information

Project Name: Bremo
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	B.T.U.	LAB USE ONLY
1	EB-01-20-Q1		3/13/20	1:00:00 PM	JRCF	AQ										X	
2	FB-01-20-Q1		3/13/20	1:00:00 PM	JRCF	AQ										X	
3	BR-08-20-Q1		3/13/20	1:05:00 PM	JRCF	AQ										X	A20
4	BR-07-20-Q1		3/13/20	1:40:00 PM	JRCF	AQ										X	
5	BR-06-20-Q1		3/13/20	2:05:00 PM	JRCF	AQ										X	
6	BR-05-20-Q1		3/13/20	2:35:00 PM	JRCF	AQ										X	
6D	BR-05-20-Q1		3/13/20	2:35:00 PM	JRCF	AQ										X	
6S	BR-05-20-Q1		3/13/20	2:35:00 PM	JRCF	AQ										X	
7	BR-04-20-Q1		3/13/20	3:10:00 PM	JRCF	AQ										X	
8	BR-03-20-Q1		3/13/20	3:40:00 PM	JRCF	AQ										X	
9	BR-03-20-Q1-FD		3/13/20	3:40:00 PM	JRCF	AQ										X	
10	BR-02-20-Q1		3/13/20	4:00:00 PM	JRCF	AQ										X	

Turnaround Time (Business days)

Approved By (SGS PM): / Date:

- [ ] Standard 10 Day (business)
- [ ] 5 Business Days RUSH
- [ ] 3 Business Days RUSH
- [ ] 2 Business Days RUSH
- [ ] 1 Business Day EMERGENCY
- [X] other 14

Emergency & Rush T/A data available via Lablink. Approval needed for RUSH/Emergency TAT

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] REDT1 (Level 3)
- [ ] FULT1 (Level 4)
- [ ] Commercial "C"
- [ ] State Forms
- [ ] EDD Format
- [ ] Other
- [X] QC

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

SGS-NJ

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		3-16-20/1600	fedex	fedex	3/17/20 10:05	
2	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3						
4	Relinquished by:	Date Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice / Cooler Temp
5				Intact / Not intact	Therm. ID: IR-4	3.8C

INITIAL ASESSMENT KG 3A

LABEL VERIFICATION

CHAIN OF CUSTODY

SGS

SGS North America Inc. - Orlando
4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com/ehsusa

FED-EX Tracking # 1386 6597 2883 | Bottle Order Control #
SGS Quote # | SGS Job # FA73461

Client / Reporting Information	Project Information
Company Name: SGS North America Inc.	Project Name: Bremo
Street Address: 4405 Vineland Rd, Suite C-15	Street
City State Zip: Orlando FL 32811	City State
Project Contact E-mail: heather.wandrey@sgs.com	Project #
Phone # 407-425-6700 Fax #	Client Purchase Order #
Sampler(s) Name(s): JRCF Phone	Project Manager

Billing Information (if different from Report to)
Company Name
Street Address
City State Zip
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	B.I.I.	LAB USE ONLY
11	BR-01-20-Q1		3/13/20	4:25:00 PM	JRCF	AQ										X	
12	JR-02-20-Q1		3/13/20	4:50:00 PM	JRCF	AQ										X	
13	JR-01-20-Q1		3/13/20	5:05:00 PM	JRCF	AQ										X	

~~INITIAL ASESSMENT~~ KG 3/4

LABEL VERIFICATION

Turnaround Time (Business days)

Approved By (SGS PM): / Date:

- [ ] Standard 10 Day (business)
- [ ] 5 Business Days RUSH
- [ ] 3 Business Days RUSH
- [ ] 2 Business Days RUSH
- [ ] 1 Business Day EMERGENCY
- [X] other 14

Emergency & Rush T/A data available via Lablink. Approval needed for RUSH/Emergency TAT

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] REDT1 (Level 3)
- [ ] FULT1 (Level 4)
- [ ] Commercial "C"
- [ ] State Forms
- [ ] EDD Format
- [ ] Other
- [X] CC

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions: SGS-NJ

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		3/16/20 1645	fedex	fedex	3/17/20 10:05	
2	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3						
4	Relinquished by:	Date Time:	Received By:	Custody Seal #	Intact / Not intact	Preserved where applicable / Therm. ID: / On Ice / Cooler Temp
5						3.8 C

10.1 10

SGS Sample Receipt Summary

Job Number: FA73461 **Client:** _____ **Project:** _____

Date / Time Received: 3/17/2020 10:05:00 AM **Delivery Method:** _____ **Airbill #'s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (3.8);

Cooler Temps (Corrected) °C: Cooler 1: (3.5);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 229517 pH 12+: 208717 Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

10.1 10

FA73461: Chain of Custody
Page 3 of 3

SECTION 5

PROJECT CORRESPONDENCE

From:	Wandrey, Heather (Orlando)
To:	Alyssa Reed
Cc:	Jennifer Gable; Kelly A Hicks; Dominion
Subject:	RE: [EXTERNAL] Dominion Outstanding Data Requests
Date:	Friday, May 15, 2020 10:27:41 AM
Attachments:	image002.png FA73461b_ACTO.Unknown.EQEDD.zip FA73461b_ACTD.ESVAS37460.EQEDD.zip FA73703b_ACTO.Unknown.EQEDD.zip FA73703b_ACTD.ESVAS37459.EQEDD.zip fa73461.pdf

All EDD's are attached, for Equis we have to do 2 one for each lab where data was produced. So the 4 are attached. I can't get the metals raw data to transfer to my system for some reason, we have tried…but I am attaching it here for you, something broke in my link.

Just waiting on QA to finalize last bit.

Thank you!

Heather Wandrey
Environment, Health and Safety
Client Services Manager

Phone: +1 407 425 6700 X 14910

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SGS

From: Alyssa Reed <AReed@envstd.com>
Sent: Friday, May 15, 2020 7:06 AM
To: Wandrey, Heather (Orlando) <Heather.Wandrey@sgs.com>
Cc: Jennifer Gable <jgable@envstd.com>; Kelly A Hicks <Kelly.A.Hicks@dominionenergy.com>; Dominion <Dominion@envstd.com>
Subject: RE: [EXTERNAL] Dominion Outstanding Data Requests

*** WARNING: this message is from an EXTERNAL SENDER. Please be cautious, particularly with links and attachments. ***

Good Morning Heather,

Checking in on this request again. We need this information to wrap up our validation reports as Dominion is coming up on some deadlines for reporting.

Thanks,
Alyssa

From: Wandrey, Heather (Orlando) <Heather.Wandrey@sgs.com>
Sent: Monday, May 11, 2020 11:25 AM
To: Alyssa Reed <AReed@envstd.com>
Cc: Jennifer Gable <jgable@envstd.com>; Kelly A Hicks <Kelly.A.Hicks@dominionenergy.com>; Dominion <Dominion@envstd.com>
Subject: RE: [EXTERNAL] Dominion Outstanding Data Requests

Please see below

Heather Wandrey
Environment, Health and Safety
Client Services Manager
Phone: +1 407 425 6700 X 14910

From: Alyssa Reed <AReed@envstd.com>

Sent: Monday, May 11, 2020 11:23 AM
To: Wandrey, Heather (Orlando) <Heather.Wandrey@sgs.com>
Cc: Jennifer Gable <jgable@envstd.com>; Kelly A Hicks <Kelly.A.Hicks@dominionenergy.com>; Dominion <Dominion@envstd.com>
Subject: [EXTERNAL] Dominion Outstanding Data Requests

*** WARNING: this message is from an EXTERNAL SENDER. Please be cautious, particularly with links and attachments. ***

Good Morning Heather,

I wanted to check in on the status of our outstanding data requests

FA73461

- The EDD did not include SGS Orlando analytes.- IT is working on this
- The raw data for boron and lithium were not included in the data package. These analyses were subcontracted to SGS Dayton. (getting exported to my system)
- In the hexavalent chromium fraction, the results for the MSD were not summarized for sample FA73461-6. (Confirming with QA)

FA73703

- EDD for all analytes (Also part of what IT is working on)

Thanks!

Alyssa M. Reed
Senior Quality Assurance Chemist
Environmental Standards, Inc.
1412 Sachem Place, Suite 100 • Charlottesville, VA 22901
434.293.4039 x706 • www.envstd.com • areed@envstd.com

Emergency Response Quality Assurance Hotline: 855.374.7272

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From: Joe Papineau
To: Alyssa Reed; Cory Fox; Kelly A Hicks
Cc: Jennifer Gable
Subject: RE: Bremo and Possum Point Sampling
Date: Monday, May 18, 2020 11:16:01 AM

Hi Alyssa,

The field blanks were not filtered; we just transferred directly to the sample containers.

Joe

www.EnviroScienceInc.com
"Excellence in Any Environment"

From: Alyssa Reed <AReed@envstd.com>
Sent: Monday, May 18, 2020 8:56 AM
To: Cory Fox <cfox@enviroscienceinc.com>; Kelly A Hicks <Kelly.A.Hicks@dominionenergy.com>
Cc: Jennifer Gable <jgable@envstd.com>; Joe Papineau <jpapineau@enviroscienceinc.com>
Subject: RE: Bremo and Possum Point Sampling

Thanks Cory!

The lab also changed the fraction to dissolved for the field blank. Typically, these shouldn't be filtered, so before I change the fraction to total in the database I want to check if this was field filtered as well.

Thanks,
Alyssa

From: Cory Fox <cfox@enviroscienceinc.com>
Sent: Monday, May 18, 2020 8:23 AM
To: Alyssa Reed <AReed@envstd.com>; Kelly A Hicks <Kelly.A.Hicks@dominionenergy.com>
Cc: Jennifer Gable <jgable@envstd.com>; Joe Papineau <jpapineau@enviroscienceinc.com>
Subject: RE: Bremo and Possum Point Sampling

Hi Alyssa,

Samples collected at Bremo and Possum Point were field filtered as well as the equipment blanks.

Thanks,

Cory Fox

(330) 688-0111

www.EnviroScienceInc.com
"Excellence in Any Environment"

From: Alyssa Reed <AReed@envstd.com>
Sent: Friday, May 15, 2020 9:28 PM
To: Kelly A Hicks <Kelly.A.Hicks@dominionenergy.com>
Cc: Jennifer Gable <jgable@envstd.com>; Joe Papineau <jpapineau@enviroscienceinc.com>; Cory Fox <cfox@enviroscienceinc.com>
Subject: Bremo and Possum Point Sampling

Good Evening Kelly,

We just wanted to make sure that the samples collected at Bremo and Possum Point were field filtered, as that isn't totally clear from the field notes. Additionally, to make sure the fraction is correct in the database, can you confirm the equipment blank was also filtered in the field?

Thank you,

Alyssa M. Reed
Senior Quality Assurance Chemist
Environmental Standards, Inc.
1412 Sachem Place, Suite 100 • Charlottesville, VA 22901
434.293.4039 x706 • www.envstd.com • areed@envstd.com

Emergency Response Quality Assurance Hotline: 855.374.7272

golder.com