



BACKGROUND WATER QUALITY STATISTICAL CERTIFICATION

for Compliance with the Coal Combustion
Residuals (CCR) Rule

Erickson Station

Lansing Board of Water & Light

November 19, 2020



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Table of Abbreviations and Acronyms

Abbreviation	Definition
BDL	below detection limits
BTV	background threshold value
CCR	Coal Combustion Residuals
COI	constituent of interest
EDD	electronic data deliverable
EPA	Environmental Protection Agency
MDL	method detection limit
ND	non-detects
SOP	Standard Operating Procedure
SSI	statistically significant increase
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UPL	upper prediction limit

Certification

Background Water Quality Statistical Certification for Compliance with the Coal Combustion Residuals Rule

I hereby certify to the best of my knowledge that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR management area.

I am duly licensed Professional Engineer under the laws of the State of Michigan.



Lara Zawaideh-Syrocki, PE

Michigan PE License 6201065363

License renewal date 10/31/2021

1.0 Introduction

The U.S. Environmental Protection Agency's (EPA's) final Coal Combustion Residuals (CCR) Rule establishes a comprehensive set of requirements for the management and disposal of CCR (or coal ash) in landfills and surface impoundments by electric utilities. Erickson Power Station ("Erickson" or "Site"), located in Delta Township, Eaton County, Michigan (**Figure 1**), is owned and operated by Lansing Board of Water and Light (BWL) and contains a single coal-fired generator capable of producing 165 megawatts of electricity. The CCR generated at Erickson is stored in dewatering tanks (hydro-bins) and three active CCR impoundments: the Forebay, Retention Basin, and Clear Water Pond (CWP). A 33-acre impoundment was physically closed by removal of CCR in 2014 is now referred to as the Former Impoundment (**Figure 2**). The three active impoundments are subject to the CCR Rule. Part §257.93 of the Rule requires that a certification be obtained from a professional engineer describing the statistical method selected to evaluate the groundwater monitoring data at the facility.

The objective of this report is to document the selection of the statistical method for each Appendix III and IV constituent of interest (COI) for each CCR facility. At Erickson, groundwater monitoring has been conducted to collect eight rounds of background sampling plus the initial detection monitoring as specified under CCR Rule Part §257.94. The water quality data collected from the monitoring wells located upgradient of the CCR unit has been compiled and statistically analyzed to develop background threshold values (BTVs) for each COI for each CCR facility. The statistical method chosen to represent background water quality is the upper prediction limit (UPL) and is one of the methods described in the CCR Rule Part §257.93 (f)(3). This background water quality report documents the background sample events and describes the statistics performed to develop the BTVs.

2.0 Facility Description

Erickson Power Station is located in Delta Township, Eaton County, Michigan (**Figure 1**). The Erickson Power Station coal-fired generation unit went into service in 1970. The station generates up to 165 megawatts of electric power from one coal-fired boiler, designated as Unit 1. Historically, fly ash and bottom ash were sluiced from the plant to the 33-acre impoundment system (now physically closed). From the impoundment, the water then flowed hydraulically to the Clear Water Pond (CWP). Water from CWP was sent back to the plant for use. From 2009 through 2014, the ash was removed from the 33-acre impoundment, and a new system was installed within the footprint of the Former Impoundment. It now consists of the Forebay, Retention Basin, and CWP which are currently in use.

The Forebay, Retention Basin, and CWP are subject to CCR Rule. Currently, bottom ash from the coal-fired boiler is sluiced from the plant to dewatering tanks (hydro-bins). The dewatered bottom ash is trucked to a sanitary landfill and the decant water is hydraulically fed through the current impoundment system, which consists of a series of three impoundments: the Forebay, Retention Basin, and CWP. The Forebay and Retention Basin were constructed in 2014 (the CWP was constructed in 1970). Water in the CWP is sent back to the plant. Figure 2 depicts the current impoundment system. There are no regulated outfalls associated with the system.

The operation and monitoring of all the CCR units are described further in the Erickson Station Groundwater Monitoring System Certification (HDR, 2020).

2.1 Monitoring Well Network

The CCR Rule requires, at a minimum, one upgradient and three downgradient monitoring wells per CCR unit to be completed in the uppermost aquifer. Section §257.91 of the Rule states that the operator: “...*may install a multiunit groundwater monitoring system instead of separate groundwater monitoring systems for each CCR unit.*” In addition, the CCR Rule states that downgradient monitoring wells should be installed to: “*accurately represent the quality of groundwater passing the waste boundary of the CCR unit. The downgradient monitoring system must be installed at the waste boundary that ensures detection of groundwater contamination in the uppermost aquifer.*”

The Forebay, Retention Basin, and CWP are separated from the Former Impoundment by embankments. BWL determined monitoring wells would not be installed in the embankments of active impoundments to maintain active embankment structural integrity. Additionally, monitoring wells would not be located within the footprint of the Former Impoundment because it remains a depression that impounds stormwater that falls within it and overflows from the Retention Basin. Based on the CCR requirements, hydrogeological data, site visits, and the embankments separating impoundments, three wells were originally sited to confirm the uppermost aquifer under the impoundments and determine the groundwater flow direction under the Site. These three wells (MW-1, MW-2, and MW-3) were sited to triangulate water table elevations to calculate the groundwater flow direction and gradient. The three wells were installed in October 2019 around the outside of the impoundments to evaluate groundwater conditions at the Site in order to advance CCR compliance. Based on the first few months of groundwater level data from wells MW-1, MW-2, and MW-3, it was confirmed that the groundwater flow direction is northeast and MW-1 is upgradient of the impoundments and MW-2 is downgradient. Due to the configuration of the impoundments relative to the northeastern groundwater flow direction, the closest location for installation of downgradient wells for monitoring the three active CCR impoundments is on the downgradient side of the Former Impoundment (**Figure 2**).

Three new wells were installed in January 2020 (MW-4, MW-5, and MW-6) to comprise a single multiunit monitoring network along the perimeter of the impoundments. The multiunit includes the three CCR impoundments, Forebay, Retention Basin, and CWP, and the non-CCR Former Impoundment. Wells MW-1 and MW-4 serve as upgradient wells and MW-2, MW-5, and MW-6 serve as downgradient wells for the multiunit. Wells are located to ensure the groundwater quality from these wells will detect CCR constituents in groundwater from all three of the CCR impoundments, if present. The sixth well, MW-3 is cross gradient to the impoundments and will be monitored only for water levels.



Figure 1. Vicinity Map for Erickson Power Station



Figure 2. Erickson Power Station – CCR Unit and Monitoring Well Location Map

3.0 Monitoring Methods

3.1 Monitoring Frequency

As stipulated in the CCR Rule, eight background groundwater sampling events were completed to monitor the impoundments between April 14, 2020 and October 12, 2020. This Background Memorandum presents the statistics from the eight events, completed on the following dates:

- ✓ April 14, 2020
- ✓ May 13, 2020
- ✓ June 17, 2020
- ✓ July 14, 2020
- ✓ August 14, 2020
- ✓ September 14, 2020
- ✓ September 28, 2020
- ✓ October 12, 2020

3.2 Water Levels and Sample Collection

Water levels were recorded for each of the monitoring wells and groundwater quality samples were collected from the all of the wells (upgradient and downgradient), to calculate the background water quality the data from the upgradient wells was pooled (MW-1 and MW-4). Groundwater sample collection protocols followed the Groundwater Sample Collection Standard Operating Procedure (SOP) (HDR, 2020). The water samples were collected using a peristaltic pump and dedicated tubing. Water samples were delivered under Chain of Custody to Merit Laboratories, Inc, in Lansing, Michigan. Only the upgradient wells are discussed in this report, for development of BTVs. The downgradient wells will be discussed in the Annual Groundwater Monitoring and Corrective Action Reports (Annual Groundwater Reports).

3.3 Analytical Testing

Groundwater samples were analyzed for the parameters shown in **Table 1**, which include all of the parameters in Appendices III and IV of CCR Rule Part §257. In addition to the parameters listed in **Table 1**, each sample was also analyzed for Total Suspended Solids (TSS).

Table 1. Groundwater quality parameters	
Appendix III Constituents for Detection Monitoring	Appendix IV Constituents for Assessment Monitoring
Boron	Antimony
Calcium	Arsenic
Chloride	Barium
Fluoride	Beryllium
pH	Cadmium
Sulfate	Chromium
Total Dissolved Solids (TDS)	Cobalt
Additional Parameters	Fluoride
Total Suspended Solids (TSS)	Lead
	Lithium
	Mercury
	Molybdenum
	Selenium
	Thallium
	Radium-226 and -228 combined

4.0 Water Levels and Flow Direction

Water levels were measured in the monitoring wells during each sample event. The potentiometric water contours for January and July 2020 are displayed in **Appendix A**, which illustrate that MW-1 and MW-4, chosen for development of BTVs are located upgradient of the CCR unit. Groundwater flow under the CCR unit is generally to the northwest.

5.0 Evaluation of Background Water Quality Data

5.1 Constituents

Laboratory reports from the eight background sampling events are provided in **Appendix B**. The statistical analyses detailed in the below sections pertain to samples collected from background monitoring wells MW-1 and MW-4 between April 12, 2020 and October 12, 2020.

A total of eight groundwater sampling events occurred between April 12, 2020 and October 12, 2020 for constituents listed in Appendix III and Appendix IV of the CCR Rule and for certain physical parameters. Only non-filtered Appendix III and IV sample results were utilized for the statistical analysis. Supplemental water quality parameters were analyzed to help provide context to observed patterns for Appendix III and IV constituents. For example, their results may determine if there are possible conditions that might impact the reliability of the data.

Reporting units, number of observations, number of non-detects (NDs), and percentage of NDs below detection limits (BDL) for each constituent are listed in **Table 2**. Events sampled on September 14, 2020, September 28, 2020 and October 12, 2020 for radium-226, radium-228, and

radium-226+radium-228 (radium-226+228) are not included in the background analysis as the results were not reported by the lab by the date this report was completed. When those results are finalized the radium background values will be updated and this Memo will be amended.

Table 2. Preliminary Data Analysis				
Constituent	Unit	No. Observations	No. BDL	% BDL
Appendix III				
Boron	mg/L	16	0	0%
Calcium	mg/L	16	0	0%
Chloride	mg/L	16	0	0%
Fluoride (Undistilled)	mg/L	16	16	100%
pH	su	16	0	0%
Sulfate	mg/L	16	0	0%
Total Dissolved Solids	mg/L	16	0	0%
Appendix IV				
Antimony	mg/L	16	16	100%
Arsenic	mg/L	16	0	0%
Barium	mg/L	16	0	0%
Beryllium	mg/L	16	16	100%
Cadmium	mg/L	16	16	100%
Chromium	mg/L	16	16	100%
Cobalt	mg/L	16	16	100%
Fluoride (Undistilled)	mg/L	16	16	100%
Lead	mg/L	16	16	100%
Lithium	mg/L	16	2	13%
Mercury	mg/L	16	16	100%
Molybdenum	mg/L	16	15	94%
Radium-226+228	pCi/L	12	0	0%
Selenium	mg/L	16	16	100%
Thallium	mg/L	16	16	100%
Supplemental				
Cond.	mS/cm	16	0	0%
Dissolved Oxygen	mg/L	16	0	0%
Oxidation Reduction Potential	mV	16	0	0%
Radium-226	pCi/L	12	3	25%
Radium-228	pCi/L	12	12	100%
Temperature	°C	16	0	0%
Total Suspended Solids	mg/L	16	6	38%
Turbidity	NTU	16	0	0%

Statistical analysis was performed and the data was analyzed for outliers, data distribution, and trends.

5.2 Outliers

Outliers are values that are not representative of the population from which they are sampled. The data set was screened for outliers using the Dixon's Outlier Test which is suitable for data sets containing less than 25 samples. The outlier test was conducted using a significance of 1 percent. For those constituents which had NDs, the NDs were removed prior to testing for outliers. No outliers were identified for Appendix III and Appendix IV constituents.

5.3 Data Distribution

Groundwater data was fitted to known distribution models using Goodness-of-Fit (GOF) tests incorporated in ProUCL. For data sets comprised of 50 or fewer samples, ProUCL's GOF module incorporates the Shapiro-Wilk to determine normal or lognormal distribution and Anderson-Darling to determine gamma distribution. Note that ProUCL does not provide GOF results for data sets with less than three detected values due to insufficient data. For purposes of estimating background concentration levels, these data sets with less than three detected values will be treated under nonparametric distribution assumptions with the maximum detected value chosen to represent the background concentration levels until more data can be collected.

Appendix III constituents boron, calcium, sulfate, and total dissolved solids and Appendix IV constituent lithium were found to have a nonparametric fit to their respective data sets. Molybdenum only has one detected value and will therefore be treated under nonparametric distribution assumptions. Additional sampling rounds are needed in order to determine if these constituents' data sets are better described using parametric distributions such as normal, lognormal, or gamma. Appendix IV constituents antimony, beryllium, cadmium, chromium, cobalt, fluoride (undistilled), lead, mercury, molybdenum, selenium, and thallium will also be treated under nonparametric distribution assumptions as they all have never detected samples. All remaining constituents have a parametric distribution.

5.4 Serial Correlation

Sources for serial correlation in groundwater samples can be due to temporal effects (i.e., autocorrelation) or seasonal effects (i.e., seasonality). Part §257.93(g)(6) of the CCR Rule requires that if necessary, the statistical method must include procedures to control or correct for seasonal as well as temporal correlation in the data.

5.4.1 Autocorrelation

Autocorrelation occurs when measurements collected at different points in time correlate with one another. A minimum of at least fifty samples is recommended to test for autocorrelation. Constituents will be analyzed for autocorrelation as additional sampling is conducted in order to determine if samples are autocorrelated.

5.4.2 Seasonality

Constituents in groundwater at background well locations may experience predictable recurring increases and decreases in concentrations, termed seasonality. The small data set, sixteen samples total (4 spring, 6 summer, and 6 fall), does not allow for accurate statistical analysis of seasonality. A minimum of eight samples per sampled season (spring, summer, and fall) is required to test for

seasonal differences but at least twenty samples per season are recommended in order to deseasonalize the data. Constituents will be analyzed for seasonality using the Kruskal-Wallis, ANOVA and Log ANOVA tests as additional sampling is conducted in order to determine if samples are affected by seasonality.

5.5 Trends

A key assumption regarding background is constituent concentrations in groundwater should demonstrate stationary conditions through time, free of any trends. Constituents which follow a parametric distribution were analyzed for trends within the data set using a Maximum Likelihood Estimate (MLE) regression. For those that showed statistically significant upwards or downwards trends, trends were checked against results using piecewise linear-linear and a piecewise linear-linear-linear analyses as a visual aid. The linear-linear regression assumes and identifies one structural break within the time series, and the linear-linear-linear regression assumes two structural breaks within the time series.

The Mann-Kendall was used to analyze linear trends within data sets that do not adhere to a specific distribution model (i.e., nonparametric).

The MLE can be applied to data sets that can be fitted to a specific distribution model, do not demonstrate seasonality and contain NDs. MLE results for those constituents or physical parameters with sufficient number of detected values are depicted in **Table 3**.

The MLE regressions depict an increasing trends for arsenic, depth to water, and temperature and a decreasing trend for groundwater elevation. The piecewise regression analyses did not show any additional trends. Based on lack of correlation between trend tests, the small sample size (16) and condensed range of data, the predicted MLE regression trends are considered preliminary and require further statistical analysis with a larger data set.

Table 3. Maximum Likelihood Estimates (MLE) Regression							
Parameter	Unit	N	No. BDL	% BDL	Slope	P-value	Trend
Appendix III							
Chloride	mg/L	16	0	0%	-0.00039	0.3	↔
pH	su	16	0	0%	0.000057	0.7	↔
Appendix IV							
Arsenic	mg/L	16	0	0%	0.0022	0.01	↑
Barium	mg/L	16	0	0%	-0.00035	0.3	↔
Radium-226+228	pCi/L	12	0	0%	0.00030	>0.9	↔
Supplemental							
Radium-226	pCi/L	12	3	25%	-0.0030	0.1	↔
Temperature	°C	16	0	0%	0.0010	0.02	↑
Total Suspended Solids	mg/L	16	6	38%	-0.00062	>0.9	↔
Turbidity	NTU	16	0	0%	-0.0040	0.5	↔

The Mann-Kendall test is suitable for data series with no discernible distributions, no seasonality, and only one value for the MDL. Mann-Kendall results for those constituents or physical parameters with no discernible distributions are depicted in **Table 4**. The Mann-Kendall test depicts an increasing trend for sulfate. Based on lack of correlation between trend tests, small sample size (16), and the condensed range of the data, the decreasing trend is considered preliminary and requires further statistical analysis with a larger data set.

Table 4. Mann-Kendall Tests						
Parameter	Unit	N	No. BDL	% BDL	P-value	Trend
Appendix III						
Boron	mg/L	16	0	0%	0.4	↔
Calcium	mg/L	16	0	0%	0.2	↔
Sulfate	mg/L	16	0	0%	0.03	↑
Total Dissolved Solids	mg/L	16	0	0%	0.3	↔
Appendix IV						
Lithium	mg/L	16	2	13%	0.2	↔
Supplemental						
Cond.	mS/cm	16	0	0%	0.1	↔
Dissolved Oxygen	mg/L	16	0	0%	0.2	↔
Oxidation Reduction Potential	mV	16	0	0%	0.2	↔

5.6 Spatial Variability

Spatial variability refers to identifying whether there are statistically identifiable differences in mean concentrations or variance levels across the well field (i.e., the pooled background data). To evaluate the potential for spatial variability between the background wells, parametric and nonparametric analysis of variance (ANOVA) tests were used to test differences in sample mean or median levels at the 5 percent level of significance. Side-by-side box plots for each constituent were also used to determine if variation is significant from a visual perspective. The ANOVA tests for differences between wells are depicted in **Table 5**. Side-by-side box plots for Appendix III constituents, Appendix IV constituents, and supplemental parameters that were flagged for differences in wells by the ANOVA tests are shown in **Figure 3**, **Figure 4**, and **Figure 5**, respectively.

Potential spatial variability between background wells MW-1 and MW-4 was identified for six Appendix III constituents (boron, calcium, chloride, pH, sulfate, and total dissolved solids), three Appendix IV constituents (arsenic, barium, lithium), and four supplemental parameters (conductivity, depth to water, total suspended solids, and turbidity). The observed spatial variability is indicative of the hydrogeological regime at the site and values between the two wells are within an acceptable order of magnitude of each other. Given the relatively small sample sizes of MW-1 and MW-4 (eight events), the statistically identified variability in concentrations for each constituent are preliminary and considered appropriate for the purpose of calculating background concentrations. The distributional patterns for constituents at the

background wells will continue to be monitored for spatial variability and should be re-evaluated as the data set grows.

Table 5. Tests for Differences Between Wells Conducted at the 5% Level of Significance

Parameter	Unit	Sample Size		Test		
		MW-1	MW-4	Kruskal-Wallis	ANOVA	Log ANOVA
Appendix III						
Boron	mg/L	8	8	✓	✓	✓
Calcium	mg/L	8	8	✓	✓	✓
Chloride	mg/L	8	8	✓	✓	✓
pH	su	8	8	✓	✓	✓
Sulfate	mg/L	8	8	✓	✓	
Total Dissolved Solids	mg/L	8	8	✓	✓	✓
Appendix IV						
Arsenic	mg/L	8	8	✓	✓	✓
Barium	mg/L	8	8	✓	✓	✓
Lithium	mg/L	8	8	✓	✓	✓
Supplemental						
Conductivity	mS/cm	8	8	✓	✓	✓
Total Suspended Solids	mg/L	8	8	✓	✓	✓
Turbidity	NTU	8	8	✓	✓	✓

✓Constituent was flagged during statistical analysis

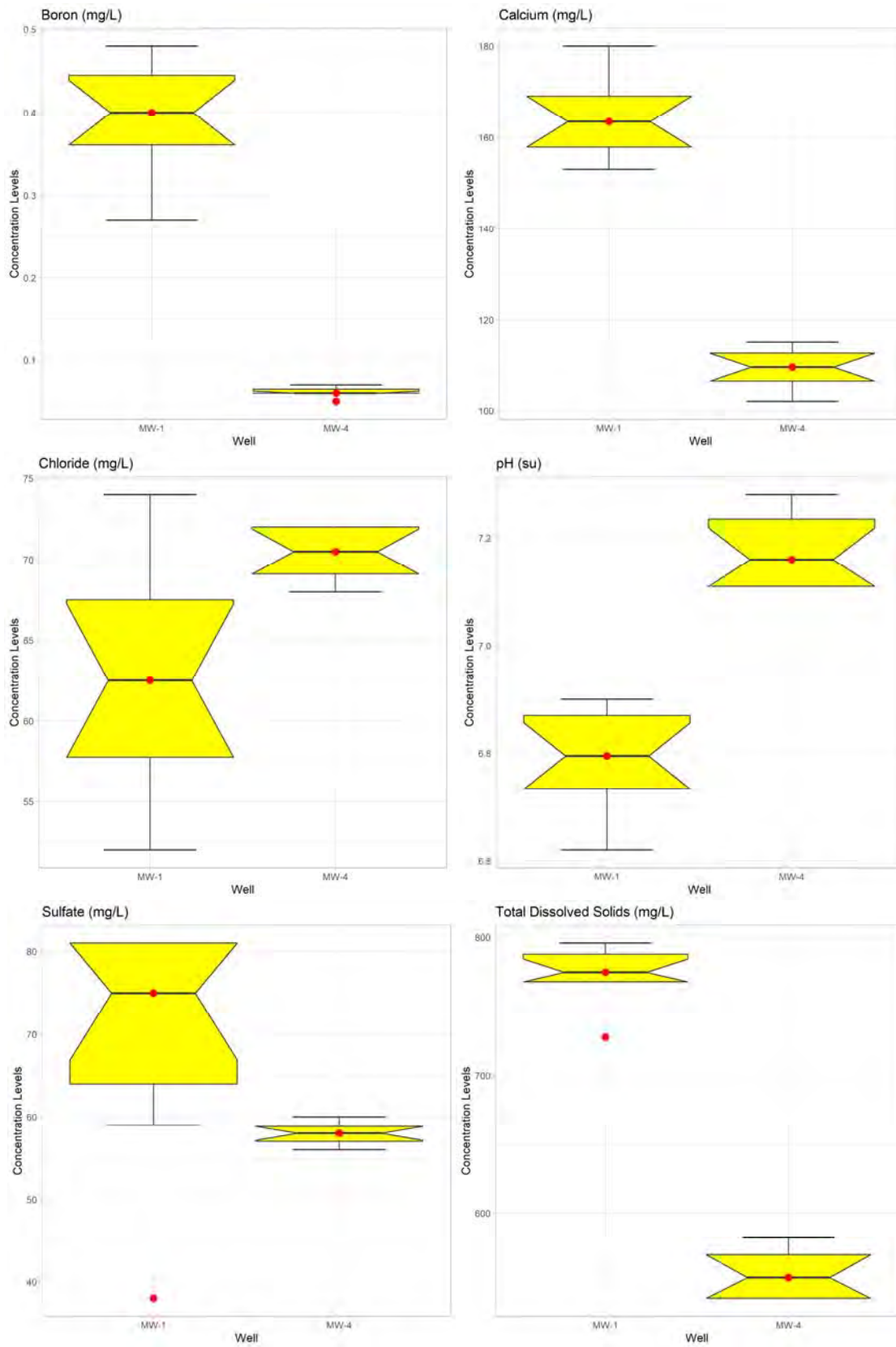


Figure 3. Side-by-Side Boxplots by Well for Appendix III Constituents

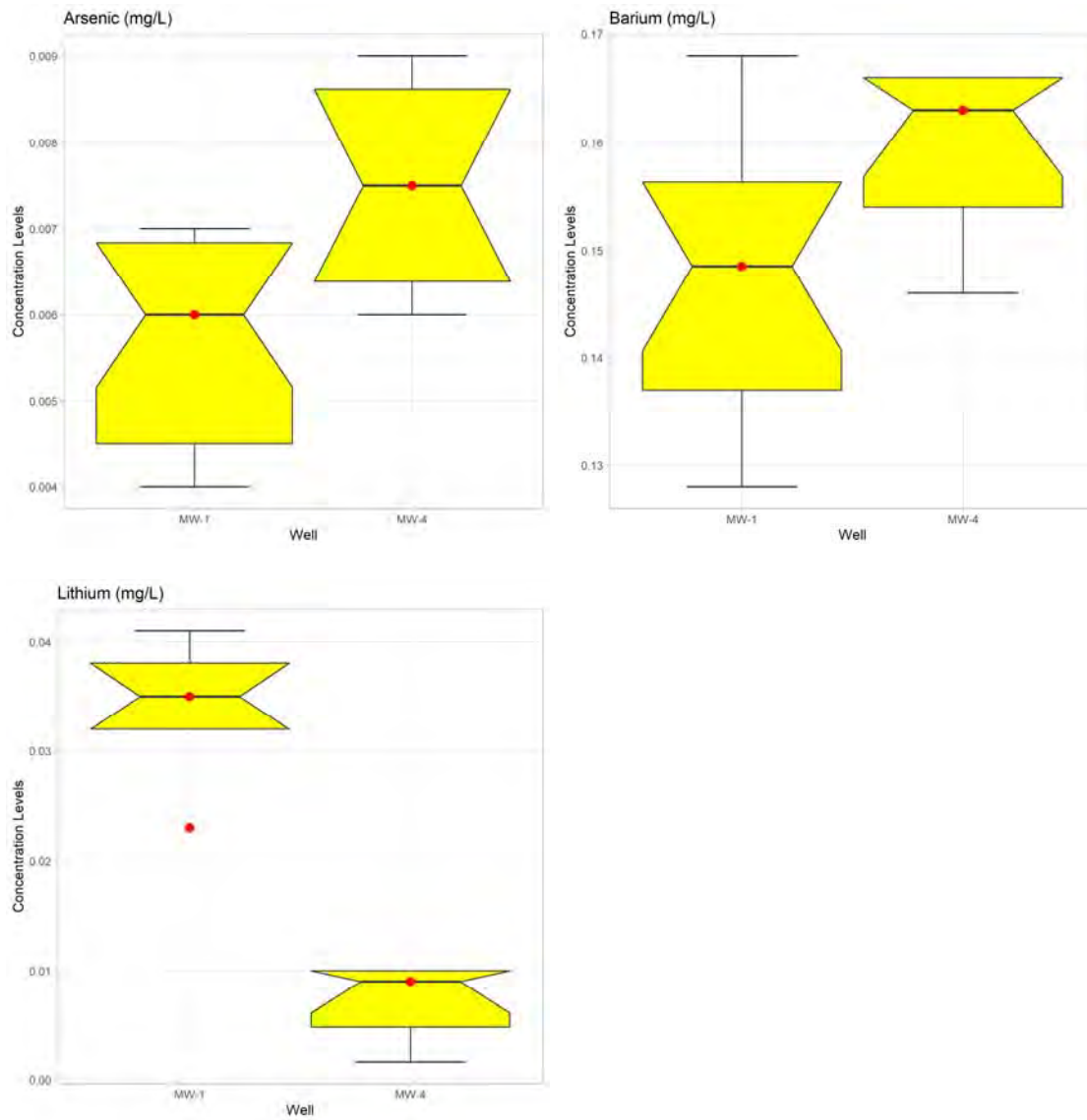


Figure 4. Side-by-Side Boxplots by Well for Appendix IV Constituents

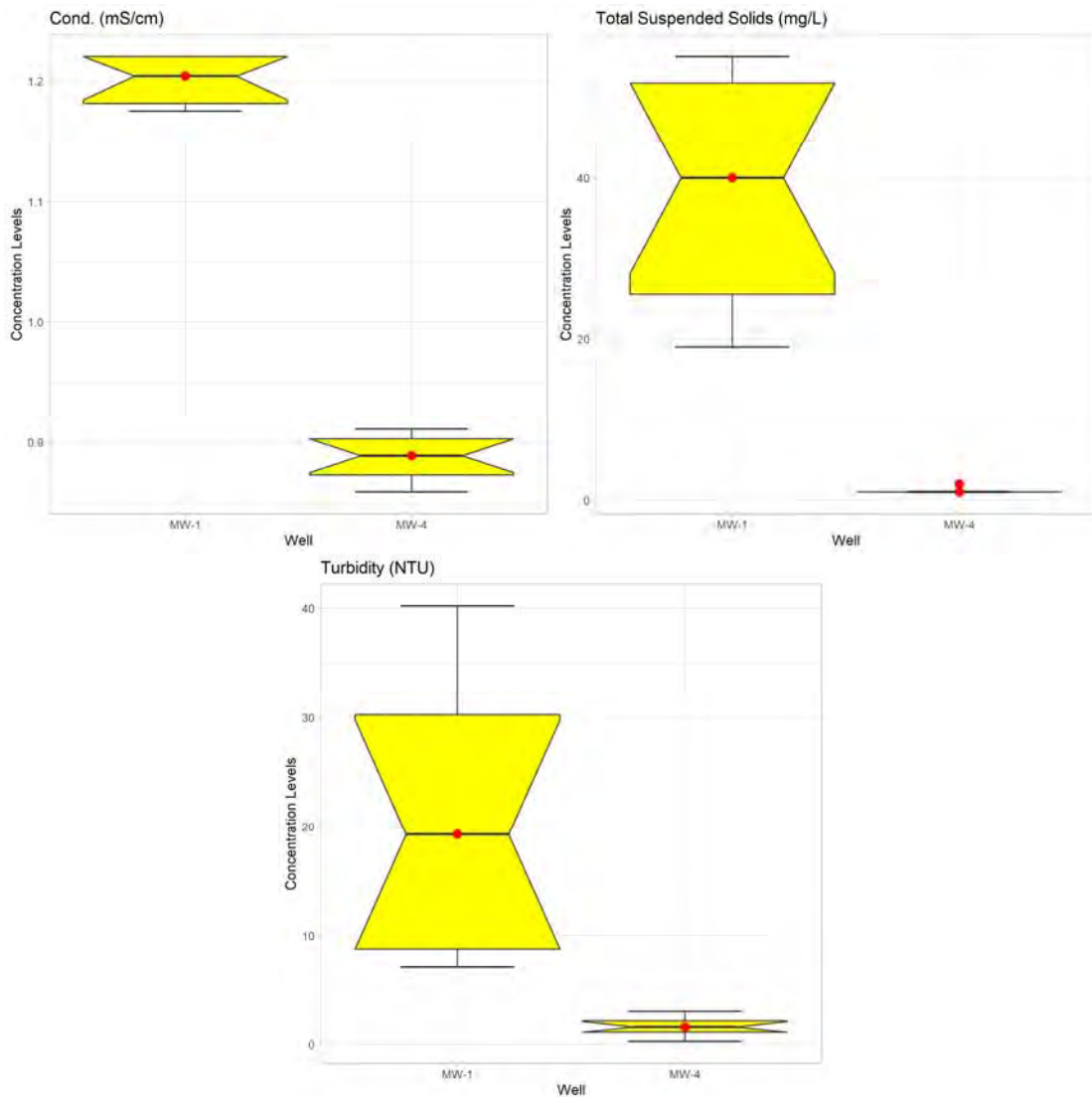


Figure 5. Side-by-Side Boxplots by Well for Field Parameters

5.7 Summary of Statistical Analysis

A summary of statistical results by constituent is depicted in **Table 6**. Based on the small sample size, additional sampling is necessary in order to determine the validity of outliers, whether parametric or nonparametric distributions best explain the data sets, if samples are affected by trends, and if there is spatial variability between the background wells.

Table 6. Summary of Statistical Results by Constituent

Parameter	Outliers	Nonparametric Data Distribution	Trends	Spatial Variability (MW-1 & MW-4)
Appendix III				
Boron		✓		✓
Calcium		✓		✓
Chloride				✓
Fluoride (Undistilled)		✓		
pH				✓
Sulfate		✓	✓	✓
Total Dissolved Solids		✓		✓
Appendix IV				
Antimony		✓		
Arsenic			✓	✓
Barium				
Beryllium		✓		
Cadmium		✓		
Chromium		✓		
Cobalt		✓		
Fluoride (Undistilled)		✓		
Lead		✓		
Lithium		✓		✓
Mercury		✓		
Molybdenum		✓		
Radium-226+228		✓		
Selenium		✓		
Thallium		✓		
Supplemental				
Conductivity		✓		✓
Dissolved Oxygen		✓		
Oxidation Reduction Potential		✓		
Radium-228		✓		
Temperature	✓		✓	
Total Suspended Solids				✓
Turbidity				✓

✓Constituent was flagged during statistical analysis

5.8 Detection Monitoring Background Threshold Values

For the purpose of estimating background threshold values (BTVs) to represent background concentration levels and for future use in evaluating whether samples selected from downgradient wells exhibit statistically significant increases (SSIs) during detection monitoring, all background samples per constituent from MW-1 and MW-4 were used.

The detection monitoring BTVs for Appendix III constituents are displayed in **Table 7**. The BTVs are the upper prediction limit (UPL) values from the background data. For constituents that have all ND background values, the maximum MDL is chosen to represent background and the double quantification rule (DQR) is used to evaluate whether there is an SSI. Under DQR, an SSI is registered for the well-constituent pair if the downgradient concentrations exhibit detects in two consecutive sampling events.

The UPLs are used during detection monitoring of the CCR Rule's implementation. UPLs are one of the statistical methods specified under 257.93(f)(3). The details as to which UPL formula was used per constituent are provided in the Data Management and Statistical Procedures Plan (HDR, 2018). Note that for pH, both the UPL and the lower prediction limit (LPL) are of interest as pH values above or below the prediction limits at the downgradient wells can be considered statistically significant. The test significance level per constituent has been estimated such that the cumulative false positive rate over all constituent/downgradient well pair comparisons that are not under DQR is approximately 10 percent. The number of verification samples per constituent has been selected to provide sufficient power to detect an SSI when an SSI has occurred conditional to the background sample size, its distributional properties, and the total number of statistical test comparisons. The UPLs are specifically designed to be applied to Appendix III constituents sampled at three different downgradient wells.

Table 7. Background Threshold Values for Detection Monitoring for each Appendix III Constituent							
Constituent	Unit	N	No. BDL	% BDL	Statistical Method	No. of Verification Samples	BTVs
Boron	mg/L	16	0	0%	Nonparametric	2	0.480
Calcium	mg/L	16	0	0%	Nonparametric	2	180
Chloride	mg/L	16	0	0%	Parametric	0	87.8
Fluoride (Undistilled)	mg/L	16	16	100%	Nonparametric	na	0.130
pH (LPL)	su	16	0	0%	Parametric	0	6.22
pH (UPL)	su	16	0	0%	Parametric	0	7.82
Sulfate	mg/L	16	0	0%	Nonparametric	2	81.0
Total Dissolved Solids	mg/L	16	0	0%	Nonparametric	2	796

An 'na' indicates that the BTV is based on the maximum MDL and that the DQR is recommended for statistical evaluation.

5.9 Groundwater Protection Standards for Assessment Monitoring

The upper tolerance limits (UTLs) for Appendix IV constituents are displayed in **Table 8**. The Unified Guidance has recommended that the UTL be used as a fixed value similar to a groundwater protection standard where a GWPS or MCL does not exist for the constituent at the location (USEPA, 2009). The CCR requires that if no standard exists, then the background concentration is used (see parts §257.95 (d)(2), §257.95 (h) of the CCR Rule). The UTLs are used during assessment monitoring of the CCR Rule’s implementation.

Constituent	Unit	N	No. BDL	% BDL	Statistical Method	UTL
Appendix IV						
Antimony	mg/L	16	16	100%	Nonparametric	0.00260
Arsenic	mg/L	16	0	0%	Parametric	0.0112
Barium	mg/L	16	0	0%	Parametric	0.187
Beryllium	mg/L	16	16	100%	Nonparametric	0.000220
Cadmium	mg/L	16	16	100%	Nonparametric	0.000190
Chromium	mg/L	16	16	100%	Nonparametric	0.000750
Cobalt	mg/L	16	16	100%	Nonparametric	0.000150
Fluoride (Undistilled)	mg/L	16	16	100%	Nonparametric	0.130
Lead	mg/L	16	16	100%	Nonparametric	0.000190
Lithium	mg/L	16	2	13%	Nonparametric	0.0390
Mercury	mg/L	16	16	100%	Nonparametric	0.0000160
Molybdenum	mg/L	16	15	94%	Nonparametric	0.00500
Radium-226+228	pCi/L	12	0	0%	Parametric	4.31
Selenium	mg/L	16	16	100%	Nonparametric	0.00210
Thallium	mg/L	16	16	100%	Nonparametric	0.000100

5.10 Assessment Monitoring Background Threshold Values

For the purpose of estimating background threshold values (BTVs) to represent background concentration levels and for future use in evaluating whether samples selected from downgradient wells exhibit statistically significant increases (SSIs) during assessment monitoring, all background samples per constituent from MW-1 and MW-4 were used.

The assessment monitoring BTVs for Appendix III and Appendix IV constituents are displayed in **Table 9**. The BTVs are the upper prediction limit (UPL) values from the background data. For constituents that have all ND background values, the maximum MDL is chosen to represent background and the double quantification rule (DQR) is used to evaluate whether there is an SSI. Under DQR, an SSI is registered for the well-constituent pair if the downgradient concentrations exhibit detects in two consecutive sampling events.


The UPLs are used during assessment monitoring of the CCR Rule’s implementation. The details as to which UPL formula was used per constituent are provided in the Data Management and Statistical Procedures Plan (HDR, 2018). Note that for pH, both the UPL and the lower prediction limit (LPL) are of interest as pH values above or below the prediction limits at the downgradient wells can be considered statistically significant. The test significance level per constituent has been estimated such that the cumulative false positive rate over all constituent/downgradient well pair comparisons that are not under DQR is approximately 10 percent. The number of verification samples per constituent has been selected to provide sufficient power to detect an SSI when an SSI has occurred conditional to the background sample size, its distributional properties, and the total number of statistical test comparisons. The UPLs are specifically designed to be applied to the Appendix III and IV constituents sampled at three downgradient wells.

Table 9. Background Threshold Values for Assessment Monitoring for each Appendix III and Appendix IV Constituent							
Constituent	Unit	N	No. BDL	% BDL	Statistical Method	No. of Verification Samples	BTVs
Appendix III							
Boron	mg/L	16	0	0%	Nonparametric	2	0.480
Calcium	mg/L	16	0	0%	Nonparametric	2	180
Chloride	mg/L	16	0	0%	Parametric	0	89.7
Fluoride (Undistilled)	mg/L	16	16	100%	Nonparametric	na	0.130
pH (LPL)	su	16	0	0%	Parametric	0	6.16
pH (UPL)	su	16	0	0%	Parametric	0	7.89
Sulfate	mg/L	16	0	0%	Nonparametric	2	81.0
Total Dissolved Solids	mg/L	16	0	0%	Nonparametric	2	796
Appendix IV							
Antimony	mg/L	16	16	100%	Nonparametric	na	0.00260
Arsenic	mg/L	16	0	0%	Parametric	0	0.0141
Barium	mg/L	16	0	0%	Parametric	0	0.205
Beryllium	mg/L	16	16	100%	Nonparametric	na	0.000220
Cadmium	mg/L	16	16	100%	Nonparametric	na	0.000190
Chromium	mg/L	16	16	100%	Nonparametric	na	0.000750
Cobalt	mg/L	16	16	100%	Nonparametric	na	0.000150
Fluoride (Undistilled)	mg/L	16	16	100%	Nonparametric	na	0.130
Lead	mg/L	16	16	100%	Nonparametric	na	0.000190
Lithium	mg/L	16	2	13%	Nonparametric	2	0.0410
Mercury	mg/L	16	16	100%	Nonparametric	na	0.0000160
Molybdenum	mg/L	16	15	94%	Nonparametric	2	0.00500
Radium-226+228	pCi/L	12	0	0%	Parametric	1	3.74
Selenium	mg/L	16	16	100%	Nonparametric	na	0.00210
Thallium	mg/L	16	16	100%	Nonparametric	na	0.000100

An 'na' indicates that the BTV is based on the maximum MDL and that the DQR is recommended for statistical evaluation.

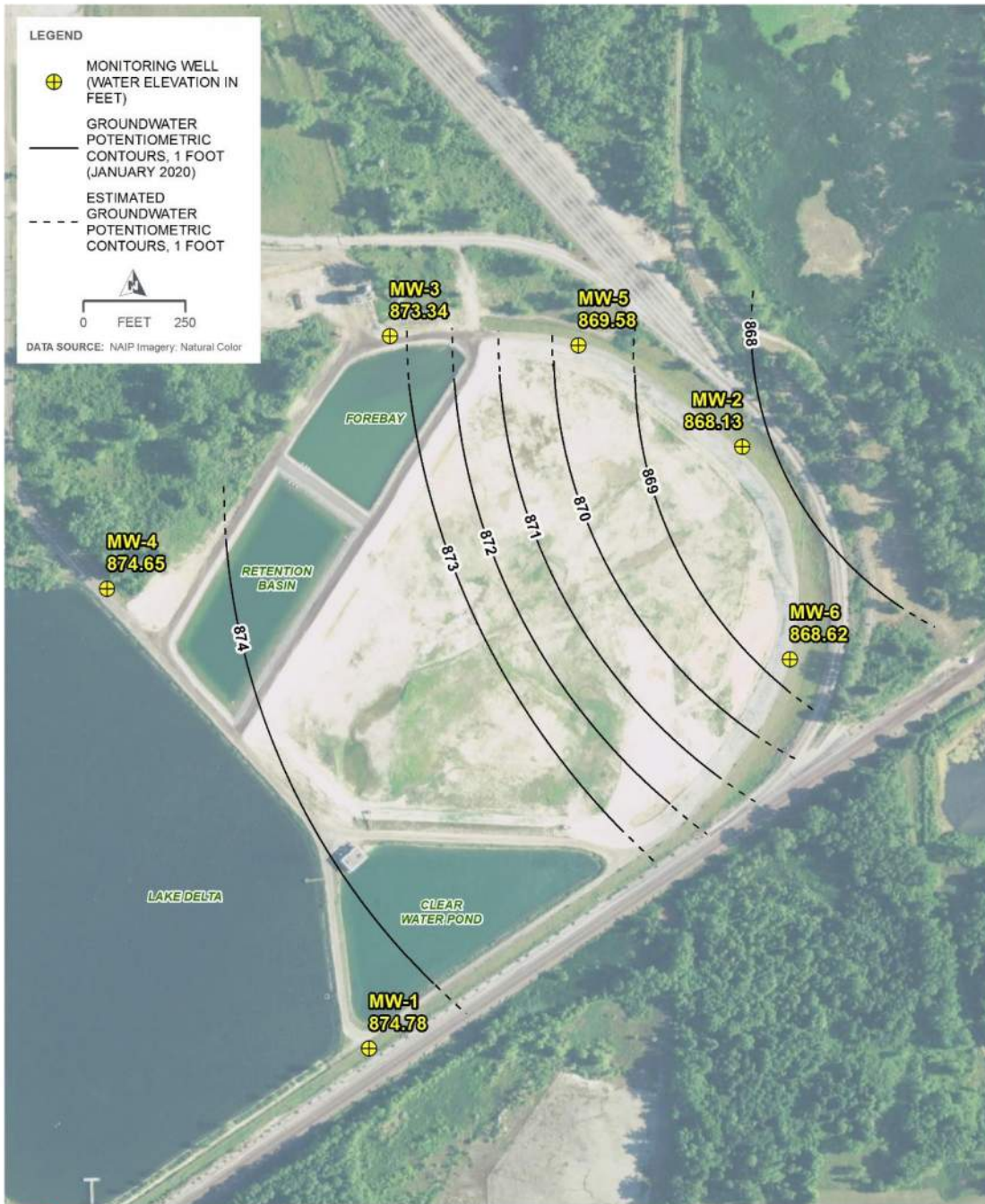
6.0 References

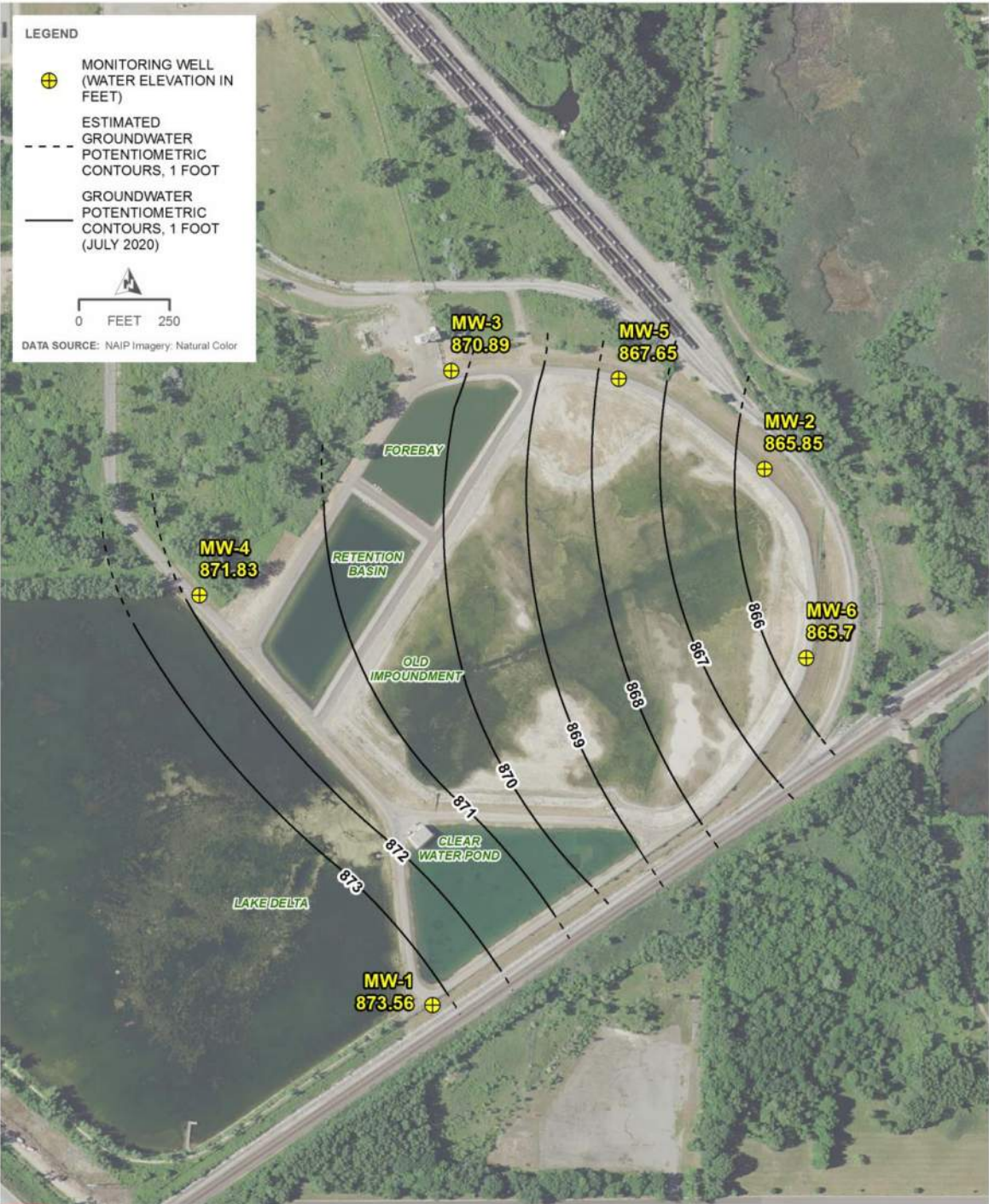
U.S. Environmental Protection Agency (USEPA), 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Unified Guidance. Office of Resource Conservation and Recovery, Program Implementation and Information Division, USEPA, EPA 530/R-09-007, 2009.




A

Groundwater Contour Maps







B

Laboratory Reports



Lansing Board of Water and Light
Environmental Services Laboratory
1232 Haco Dr.
Lansing, Michigan 48901

23 June 2020

BWL - Erickson Station
Attn: Cheryl Louden
3725 S. Canal
Lansing, MI 48917

Project: Erickson GMP

Dear Cheryl Louden,

Enclosed is a copy of the laboratory report for the following work order(s) received by Lansing Board of Water and Light Environmental Services Laboratory:

Work Order
L004070

Received
4/29/2020 7:25:00AM

Account Number

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

Sincerely,

A handwritten signature in blue ink that reads "Jennifer Caporale".

Jennifer Caporale, Supervisor



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 06/23/2020

Sample Name: MW-1

Lab #: L004070-01 Ground Water

Collected: 28-Apr-20 10:56

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory		Analysis Date/Time	By	Method	Notes
	Result	Limit	Units		Limit					
Conductivity	1200	1.0	uS/cm	1		28-Apr-20 10:56	maw	SM 2510B		
Dissolved oxygen	ND	0.100	mg/L	1		28-Apr-20 10:56	maw	FIELD		
Gallons Purged	3.50		Gallons	1		28-Apr-20 10:56	maw	FIELD		
Oxidation Reduction Potential	-43.20	-999.0	mV	1		28-Apr-20 10:56	maw	FIELD		
pH	6.8	7.0	pH Units	1		28-Apr-20 10:56	maw	SM 4500H+B		
Static Head Measurement	13.9		Feet	1		28-Apr-20 10:56	maw	FIELD		
Temperature	11		°C	1		28-Apr-20 10:56	maw	SM 2550B		
Turbidity	28	0.10	NTU	1		28-Apr-20 10:56	maw	SM 2130B		

Sample Name: MW-2

Lab #: L004070-02 Ground Water

Collected: 28-Apr-20 14:01

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory		Analysis Date/Time	By	Method	Notes
	Result	Limit	Units		Limit					
Conductivity	1600	1.0	uS/cm	1		28-Apr-20 14:01	maw	SM 2510B		
Dissolved oxygen	ND	0.100	mg/L	1		28-Apr-20 14:01	maw	FIELD		
Gallons Purged	2.50		Gallons	1		28-Apr-20 14:01	maw	FIELD		
Oxidation Reduction Potential	-42.50	-999.0	mV	1		28-Apr-20 14:01	maw	FIELD		
pH	6.8	7.0	pH Units	1		28-Apr-20 14:01	maw	SM 4500H+B		
Static Head Measurement	18.0		Feet	1		28-Apr-20 14:01	maw	FIELD		
Temperature	12		°C	1		28-Apr-20 14:01	maw	SM 2550B		
Turbidity	72	0.10	NTU	1		28-Apr-20 14:01	maw	SM 2130B		



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 06/23/2020

Sample Name: MW-4

Lab #: L004070-03 Ground Water

Collected: 28-Apr-20 08:31

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory		Analysis Date/Time	By	Method	Notes
	Result	Limit	Units		Limit					
Conductivity	900	1.0	uS/cm	1			28-Apr-20 08:31	maw	SM 2510B	
Dissolved oxygen	0.310	0.100	mg/L	1			28-Apr-20 08:31	maw	FIELD	
Gallons Purged	3.00		Gallons	1			28-Apr-20 08:31	maw	FIELD	
Oxidation Reduction Potential	-76.70	-999.0	mV	1			28-Apr-20 08:31	maw	FIELD	
pH	7.2	7.0	pH Units	1			28-Apr-20 08:31	maw	SM 4500H+B	
Static Head Measurement	15.1		Feet	1			28-Apr-20 08:31	maw	FIELD	
Temperature	10		°C	1			28-Apr-20 08:31	maw	SM 2550B	
Turbidity	2.6	0.10	NTU	1			28-Apr-20 08:31	maw	SM 2130B	

Sample Name: MW-5

Lab #: L004070-05 Ground Water

Collected: 28-Apr-20 19:10

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory		Analysis Date/Time	By	Method	Notes
	Result	Limit	Units		Limit					
Conductivity	1600	1.0	uS/cm	1			28-Apr-20 19:10	maw	SM 2510B	
Dissolved oxygen	0.550	0.100	mg/L	1			28-Apr-20 19:10	maw	FIELD	
Gallons Purged	4.00		Gallons	1			28-Apr-20 19:10	maw	FIELD	
Oxidation Reduction Potential	-33.00	-999.0	mV	1			28-Apr-20 19:10	maw	FIELD	
pH	7.3	7.0	pH Units	1			28-Apr-20 19:10	maw	SM 4500H+B	
Static Head Measurement	16.0		Feet	1			28-Apr-20 19:10	maw	FIELD	
Temperature	12		°C	1			28-Apr-20 19:10	maw	SM 2550B	
Turbidity	180	0.10	NTU	1			28-Apr-20 19:10	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 06/23/2020

Sample Name: MW-6

Lab #: L004070-06 Ground Water

Collected: 28-Apr-20 12:30

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory	Analysis	By	Method	Notes
	Result	Limit	Units		Limit	Date/Time			
Conductivity	950	1.0	uS/cm	1		28-Apr-20 12:30	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		28-Apr-20 12:30	maw	FIELD	
Gallons Purged	2.50		Gallons	1		28-Apr-20 12:30	maw	FIELD	
Oxidation Reduction Potential	-21.90	-999.0	mV	1		28-Apr-20 12:30	maw	FIELD	
pH	6.6	7.0	pH Units	1		28-Apr-20 12:30	maw	SM 4500H+B	
Static Head Measurement	17.4		Feet	1		28-Apr-20 12:30	maw	FIELD	
Temperature	10		°C	1		28-Apr-20 12:30	maw	SM 2550B	
Turbidity	17	0.10	NTU	1		28-Apr-20 12:30	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 06/23/2020

Approved By:

Jennifer Caporale

Notes and Definitions

AL Action Level (Action Level = Regulatory Limit)
MCL Maximum Contaminant Level
PEL Permissible Exposure Limit (Permissible Exposure Limit = Regulatory Limit)
RPD Relative Percent Difference
OT Odor Threshold
ND Non Detect

All drinking water regulatory limits are MCL's with the exception of Lead and Copper unless otherwise noted.



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BOARD OF WATER & LIGHT

ERICKSON GMP

SDG Batch:

13569

Pages 1 - 270



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BOARD OF WATER & LIGHT

PROJECT: ERICKSON GMP

SDG Batch:
13569.01

Prepared by:
Merit Laboratories, Inc.

June 15, 2020

Inorganics Inventory Sheet - SDG: S13569

Laboratory Name: Merit Laboratories, Inc.
City / State: East Lansing, MI
Sample Delivery Group: S13569.01 - .07

Deliverable	References		Pages		Checklist	
	Form	CLP	From	To	Lab	Audit
1. Inventory Sheet (not numbered)	This	DC-2			<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. SDG Case Narrative			1	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Analytical Summary Report			3	34	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. ICP/MS Metals Data			35	161		
Sequence / Injection Log		F.0			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Sheet		F. I			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initial Calibration and Calibration Verification		F. IIA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRDL Standards		F. IIB			<input type="checkbox"/>	<input type="checkbox"/>
Blanks		F. III			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Interference Check Sample		F. IVB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		F. VA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Digest Spike Sample Recovery		F. VB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duplicates		F. VI			<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		F. VII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Serial Dilutions		F. VIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		F. XIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP/MS Tune		F. XIV			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Internal Standard Relative Intensity Summary		F. XV			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument Detection Limits (IDL) & MDLs		F. IX			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Linear Ranges		F. XI			<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP/MS Raw Data					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation / Digestion Log		F. XII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Mercury Data			162	178		
Sequence / Injection Log		F.0			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Sheet		F. I			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initial Calibration and Calibration Verification		F. IIA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRDL Standards		F. IIB			<input type="checkbox"/>	<input type="checkbox"/>
Blanks		F. III			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		F. VA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Digest Spike Sample Recovery		F. VB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duplicates		F. VI			<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		F. VII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		F. XIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Mercury Cold Vapor Raw Data					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation / Digestion Log					<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Ion Chromatography Data			179	261		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Calibration Curve - data and evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Total Suspended Solids Data			262	263		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>

Inorganics Inventory Sheet - SDG: S13569

Deliverable	References		Pages		Checklist	
	Form	CLP	From	To	Lab	Audit
8. Total Dissolved Solids Data			264	265		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Shipping / Receiving Documents			266	270		
Chain-of-Custody					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample log-in sheet					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample Receipt					<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Subcontracted Analysis Report						
GEL Laboratories – Radiological Analysis (Total Pages 48)					<input checked="" type="checkbox"/>	<input type="checkbox"/>



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CASE NARRATIVE
CLIENT: BOARD OF WATER & LIGHT
PROJECT: ERICKSON GMP
Merit IDs: S13569.01-S13569.07

- Field Sampling:** Marc Wahrer performed the fieldwork.
- Analytical Bottles:** All bottles were sent with the appropriate preservation in it. Please see the bottle list attached.
- Sample Receiving:** All samples were received by the laboratory (04/29/2020). Dates and signatures can be found on the Chain of Custody Records. The sample receipts specify the actual tags and bottles received and logged into the laboratory “vlims” system.

ANALYSES

Metals: All metal analyses were performed according to Method 200.8. The metal digestion was performed according to Method 3015A. The QC requirements were followed for this specific project and method-specified criteria were met. *Outliers:* None

Notes: Dilution test not applicable if measured concentration is less than 100 times MDL.

Mercury: All mercury QC requirements were met according to the specifications in Method 245.1. *Outliers:* None

Fluoride: All fluoride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Chloride: All chloride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Sulfate: All Sulfate QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Total Suspended Solids: All total suspended solids QC requirements were met according to the specifications in Method 2540 D. *Outliers:* None

Total Dissolved Solids: All total suspended solids QC requirements were met according to the specifications in Method 2540 C. *Outliers:* None



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Radium 226 & 228: All radiological analysis were subcontracted out to GEL Laboratories. GEL Laboratories analytical report is included.

Data Reporting: The analytical reports are reflective of what is on a given Chain-of-Custody record (COC). Merit's IDs were assigned to the samples as they were delivered and accepted by our log-in staff.

"I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness, for other than the condition detailed above. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature."

Barb Ball
QA Officer

06/15/2020
Date



Analytical Laboratory Report

Report ID: S13569.01(03)
Generated on 05/22/2020

Report to

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX: 517-702-6373
Email: Environmental_Laboratory@LBWL.com

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:

John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S13569.01-S13569.07
Project: Erickson GMP
Collected Date(s): 04/28/2020
Submitted Date/Time: 04/29/2020 11:53
Sampled by: Marc Wahrer
P.O. #:

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

Report Narrative

All metals results are reported as total.



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
E300.0	EPA Method 300.0 Revision 2.1
SM2540C	Standard Method 2540 C 2011
SM2540D	Standard Method 2540 D 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S13569.01	L004070-01 MW-1	Wastewater	04/28/20 10:56
S13569.02	L004070-02 MW-2	Wastewater	04/28/20 14:01
S13569.03	L004070-03 MW-4	Wastewater	04/28/20 08:31
S13569.04	L004070-04 MW-4 Duplicate	Wastewater	04/28/20 08:31
S13569.05	L004070-05 MW-5	Wastewater	04/28/20 19:10
S13569.06	L004070-06 MW-6	Wastewater	04/28/20 12:30
S13569.07	L004070-07 Field Blank	Water	04/28/20 07:25



Analytical Laboratory Report

Lab Sample ID: S13569.01

Sample Tag: L004070-01 MW-1

Collected Date/Time: 04/28/2020 10:56

Matrix: Wastewater

COC Reference: 134281

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.3	IR
2	1L Plastic	None	Yes	4.3	IR
1	125ml Plastic	HNO3	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/01/20 14:30	JRH	
Metal Digestion	Completed	SW3015A	05/05/20 14:30	JRH	

Inorganics

Method: E300.0, Run Date: 04/30/20 10:28, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	74	10	0.13	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 04/30/20 09:28, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	
Sulfate	38	5	0.30	mg/L	5	14808-79-8	

Method: SM2540C, Run Date: 04/29/20 16:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	728	20	2	mg/L	2		

Method: SM2540D, Run Date: 04/30/20 19:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	31	3	1	mg/L	2.00		

Metals

Method: E200.8, Run Date: 05/06/20 12:49, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	0.48	0.04	0.00175	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 05/05/20 18:04, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	162	0.50	0.0433	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 05/06/20 11:42, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.004	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.149	0.005	0.000160	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000950	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000110	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	



Analytical Laboratory Report

Lab Sample ID: S13569.01 (continued)

Sample Tag: L004070-01 MW-1

Method: E200.8, Run Date: 05/06/20 11:42, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.036	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000215	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000850	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 05/01/20 17:27, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 05/22/20 16:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S13569.02

Sample Tag: L004070-02 MW-2

Collected Date/Time: 04/28/2020 14:01

Matrix: Wastewater

COC Reference: 134281

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.3	IR
2	1L Plastic	None	Yes	4.3	IR
1	125ml Plastic	HNO3	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/01/20 14:30	JRH	
Metal Digestion	Completed	SW3015A	05/05/20 14:30	JRH	

Inorganics

Method: E300.0, Run Date: 04/30/20 09:41, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 04/30/20 11:20, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	67	25	0.32	mg/L	25	16887-00-6	
Sulfate	386	25	2.6	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 04/29/20 16:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,170	20	2	mg/L	2		

Method: SM2540D, Run Date: 04/30/20 19:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.05		

Metals

Method: E200.8, Run Date: 05/06/20 12:55, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	3.56	0.04	0.00175	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 05/05/20 18:05, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	251	0.50	0.0433	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 05/06/20 11:53, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.039	0.005	0.000160	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000950	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000110	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	



Analytical Laboratory Report

Lab Sample ID: S13569.02 (continued)

Sample Tag: L004070-02 MW-2

Method: E200.8, Run Date: 05/06/20 11:53, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.055	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	0.010	0.005	0.000215	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000850	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 05/01/20 17:37, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 05/22/20 16:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S13569.03

Sample Tag: L004070-03 MW-4

Collected Date/Time: 04/28/2020 08:31

Matrix: Wastewater

COC Reference: 134281

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.3	IR
2	1L Plastic	None	Yes	4.3	IR
1	125ml Plastic	HNO3	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/01/20 14:30	JRH	
Metal Digestion	Completed	SW3015A	05/05/20 14:30	JRH	

Inorganics

Method: E300.0, Run Date: 04/30/20 11:32, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	70	10	0.13	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 04/30/20 09:54, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	
Sulfate	59	5	0.30	mg/L	5	14808-79-8	

Method: SM2540C, Run Date: 04/29/20 16:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	548	20	2	mg/L	2		

Method: SM2540D, Run Date: 04/30/20 19:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.05		

Metals

Method: E200.8, Run Date: 05/06/20 12:47, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	0.05	0.04	0.00175	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 05/05/20 18:07, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	113	0.50	0.0433	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 05/06/20 11:57, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.006	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.157	0.005	0.000160	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000950	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000110	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	



Analytical Laboratory Report

Lab Sample ID: S13569.03 (continued)

Sample Tag: L004070-03 MW-4

Method: E200.8, Run Date: 05/06/20 11:57, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	Not detected	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000215	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000850	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 05/01/20 17:38, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 05/22/20 16:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S13569.04

Sample Tag: L004070-04 MW-4 Duplicate

Collected Date/Time: 04/28/2020 08:31

Matrix: Wastewater

COC Reference: 134281

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.3	IR
2	1L Plastic	None	Yes	4.3	IR
1	125ml Plastic	HNO3	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/01/20 14:30	JRH	
Metal Digestion	Completed	SW3015A	05/05/20 14:30	JRH	

Inorganics

Method: E300.0, Run Date: 04/30/20 11:45, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	70	10	0.13	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 04/30/20 10:07, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	
Sulfate	60	5	0.30	mg/L	5	14808-79-8	

Method: SM2540C, Run Date: 04/29/20 16:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	546	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/05/20 17:55, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 05/06/20 12:44, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	0.05	0.04	0.00175	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 05/05/20 18:08, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	111	0.50	0.0433	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 05/06/20 12:00, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.006	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.155	0.005	0.000160	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000950	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000110	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	



Analytical Laboratory Report

Lab Sample ID: S13569.04 (continued)

Sample Tag: L004070-04 MW-4 Duplicate

Method: E200.8, Run Date: 05/06/20 12:00, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	Not detected	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000215	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000850	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 05/01/20 17:40, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 05/22/20 16:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S13569.05

Sample Tag: L004070-05 MW-5

Collected Date/Time: 04/28/2020 19:10

Matrix: Wastewater

COC Reference: 134281

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.3	IR
2	1L Plastic	None	Yes	4.3	IR
1	125ml Plastic	HNO3	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/01/20 14:30	JRH	
Metal Digestion	Completed	SW3015A	05/05/20 14:30	JRH	

Inorganics

Method: E300.0, Run Date: 04/30/20 10:20, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 04/30/20 11:58, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	68	25	0.32	mg/L	25	16887-00-6	
Sulfate	591	25	2.6	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 04/29/20 16:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,280	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/05/20 17:55, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	161	3	1	mg/L	4.00		

Metals

Method: E200.8, Run Date: 05/06/20 13:01, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	4.99	0.04	0.00175	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 05/05/20 18:10, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	245	0.50	0.0433	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 05/06/20 12:03, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.005	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.064	0.005	0.000160	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	0.010	0.005	0.0000950	mg/L	5	7440-47-3	
Cobalt	0.006	0.005	0.000110	mg/L	5	7440-48-4	
Lead	0.005	0.003	0.000190	mg/L	5	7439-92-1	



Analytical Laboratory Report

Lab Sample ID: S13569.05 (continued)

Sample Tag: L004070-05 MW-5

Method: E200.8, Run Date: 05/06/20 12:03, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.091	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	0.096	0.005	0.000215	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000850	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 05/01/20 17:42, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 05/22/20 16:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S13569.06

Sample Tag: L004070-06 MW-6

Collected Date/Time: 04/28/2020 12:30

Matrix: Wastewater

COC Reference: 134281

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.3	IR
2	1L Plastic	None	Yes	4.3	IR
1	125ml Plastic	HNO3	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/01/20 14:30	JRH	
Metal Digestion	Completed	SW3015A	05/05/20 14:30	JRH	

Inorganics

Method: E300.0, Run Date: 04/30/20 10:33, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 04/30/20 12:11, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	26	10	0.13	mg/L	10	16887-00-6	
Sulfate	135	10	1.0	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 04/29/20 16:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	642	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/05/20 17:55, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 05/06/20 12:52, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	0.56	0.04	0.00175	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 05/05/20 18:11, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	142	0.50	0.0433	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 05/06/20 12:10, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.042	0.005	0.000160	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000950	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000110	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	



Analytical Laboratory Report

Lab Sample ID: S13569.06 (continued)

Sample Tag: L004070-06 MW-6

Method: E200.8, Run Date: 05/06/20 12:10, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.037	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	0.021	0.005	0.000215	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000850	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 05/01/20 17:44, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 05/22/20 16:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S13569.07

Sample Tag: L004070-07 Field Blank

Collected Date/Time: 04/28/2020 07:25

Matrix: Water

COC Reference: 134281

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.3	IR
2	1L Plastic	None	Yes	4.3	IR
1	125ml Plastic	HNO3	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/01/20 14:30	JRH	
Metal Digestion	Completed	SW3015A	05/05/20 14:30	JRH	

Inorganics

Method: E300.0, Run Date: 04/30/20 12:24, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	2.5	0.03	mg/L	2.5	16887-00-6	

Method: E300.0, Run Date: 04/30/20 10:46, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	0.5	0.06	mg/L	2.5	16984-48-8	
Sulfate	Not detected	2.5	0.15	mg/L	2.5	14808-79-8	

Method: SM2540C, Run Date: 05/01/20 19:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	Not detected	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/05/20 17:55, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 05/06/20 12:42, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	Not detected	0.04	0.000702	mg/L	2	7440-42-8	

Method: E200.8, Run Date: 05/05/20 18:02, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	0.079	0.50	0.0173	mg/L	2	7440-70-2	b

Method: E200.8, Run Date: 05/06/20 11:28, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00102	mg/L	2	7440-36-0	
Arsenic	Not detected	0.002	0.000102	mg/L	2	7440-38-2	
Barium	Not detected	0.005	0.0000640	mg/L	2	7440-39-3	
Beryllium	Not detected	0.001	0.0000860	mg/L	2	7440-41-7	
Cadmium	Not detected	0.0005	0.0000760	mg/L	2	7440-43-9	
Chromium	Not detected	0.005	0.0000380	mg/L	2	7440-47-3	
Cobalt	Not detected	0.005	0.0000440	mg/L	2	7440-48-4	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S13569.07 (continued)

Sample Tag: L004070-07 Field Blank

Method: E200.8, Run Date: 05/06/20 11:28, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lead	Not detected	0.003	0.0000760	mg/L	2	7439-92-1	
Lithium*	Not detected	0.010	0.000654	mg/L	2	7439-93-2	
Molybdenum	Not detected	0.005	0.0000860	mg/L	2	7439-98-7	
Selenium	Not detected	0.005	0.000838	mg/L	2	7782-49-2	
Thallium	Not detected	0.002	0.0000340	mg/L	2	7440-28-0	

Method: E245.1, Run Date: 05/01/20 17:46, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 05/22/20 16:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Quality Control Cover Page

Report ID: S13569.01(03)
Report Date: 05/22/2020
Project: Erickson GMP
Lab Sample ID(s): S13569.01-S13569.07

Report to:

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Sample ID	Sample Tag	Collected	Matrix	Analysis Departments
S13569.01	L004070-01 MW-1	04/28/2020 10:56	Wastewater	Inorganics, Metals
S13569.02	L004070-02 MW-2	04/28/2020 14:01	Wastewater	Inorganics, Metals
S13569.03	L004070-03 MW-4	04/28/2020 08:31	Wastewater	Inorganics, Metals
S13569.04	L004070-04 MW-4 Duplicate	04/28/2020 08:31	Wastewater	Inorganics, Metals
S13569.05	L004070-05 MW-5	04/28/2020 19:10	Wastewater	Inorganics, Metals
S13569.06	L004070-06 MW-6	04/28/2020 12:30	Wastewater	Inorganics, Metals
S13569.07	L004070-07 Field Blank	04/28/2020 07:25	Water	Inorganics, Metals

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager



Quality Control Report

Report ID: QC-S13569-01
Generated on 06/08/2020

Report to

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX: 517-702-6373

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S13569.01-S13569.07
Project: Erickson GMP
Submitted Date/Time: 04/29/2020 11:53
Sampled by: Marc Wahrer
P.O. #:

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-8)
Prep Batch Summary (Pages 9-12)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S13569.01

Sample Tag: L004070-01 MW-1

Collected Date/Time: 04/28/2020 10:56

Matrix: Wastewater

COC Reference: 134281

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	04/30/20 10:28	CL200430-W1-A	CL200430-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	04/30/20 09:28	FL200430-W1-B	FL200430-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	04/30/20 09:28	SFT200430-W1-B	SFT200430-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	04/29/20 16:10	TDS200429	TDS200429	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	04/30/20 19:40	TSS200430	TSS200430	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	05/06/20 11:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/06/20 11:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Barium	E200.8	05/06/20 11:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/06/20 11:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Boron	E200.8	05/06/20 12:49	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/06/20 11:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/05/20 18:04	MT4-20-0505A	MTD-050520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/06/20 11:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/06/20 11:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lead	E200.8	05/06/20 11:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/06/20 11:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	05/01/20 17:27	HG2-HG3-20-0501	AHGD-050120-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/06/20 11:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/06/20 11:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/06/20 11:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S13569.02

Sample Tag: L004070-02 MW-2

Collected Date/Time: 04/28/2020 14:01

Matrix: Wastewater

COC Reference: 134281

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	04/30/20 11:20	CL200430-W1-A	CL200430-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	04/30/20 09:41	FL200430-W1-B	FL200430-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	04/30/20 11:20	SFT200430-W1-A	SFT200430-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	04/29/20 16:10	TDS200429	TDS200429	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	04/30/20 19:40	TSS200430	TSS200430	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	05/06/20 11:53	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/06/20 11:53	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Barium	E200.8	05/06/20 11:53	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/06/20 11:53	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Boron	E200.8	05/06/20 12:55	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/06/20 11:53	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/05/20 18:05	MT4-20-0505A	MTD-050520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/06/20 11:53	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/06/20 11:53	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lead	E200.8	05/06/20 11:53	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/06/20 11:53	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	05/01/20 17:37	HG2-HG3-20-0501	AHGD-050120-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/06/20 11:53	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/06/20 11:53	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/06/20 11:53	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S13569.03

Sample Tag: L004070-03 MW-4

Collected Date/Time: 04/28/2020 08:31

Matrix: Wastewater

COC Reference: 134281

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	04/30/20 11:32	CL200430-W1-A	CL200430-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	04/30/20 09:54	FL200430-W1-B	FL200430-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	04/30/20 09:54	SFT200430-W1-B	SFT200430-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	04/29/20 16:10	TDS200429	TDS200429	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	04/30/20 19:40	TSS200430	TSS200430	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	05/06/20 11:57	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/06/20 11:57	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Barium	E200.8	05/06/20 11:57	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/06/20 11:57	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Boron	E200.8	05/06/20 12:47	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/06/20 11:57	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/05/20 18:07	MT4-20-0505A	MTD-050520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/06/20 11:57	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/06/20 11:57	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lead	E200.8	05/06/20 11:57	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/06/20 11:57	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	05/01/20 17:38	HG2-HG3-20-0501	AHGD-050120-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/06/20 11:57	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/06/20 11:57	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/06/20 11:57	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S13569.04

Sample Tag: L004070-04 MW-4 Duplicate

Collected Date/Time: 04/28/2020 08:31

Matrix: Wastewater

COC Reference: 134281

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	04/30/20 11:45	CL200430-W1-A	CL200430-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	04/30/20 10:07	FL200430-W1-B	FL200430-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	04/30/20 10:07	SFT200430-W1-B	SFT200430-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	04/29/20 16:10	TDS200429	TDS200429	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/05/20 17:55	TSS200505	TSS200505	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	05/06/20 12:00	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/06/20 12:00	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Barium	E200.8	05/06/20 12:00	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/06/20 12:00	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Boron	E200.8	05/06/20 12:44	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/06/20 12:00	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/05/20 18:08	MT4-20-0505A	MTD-050520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/06/20 12:00	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/06/20 12:00	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lead	E200.8	05/06/20 12:00	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/06/20 12:00	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	05/01/20 17:40	HG2-HG3-20-0501	AHGD-050120-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/06/20 12:00	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/06/20 12:00	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/06/20 12:00	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S13569.05

Sample Tag: L004070-05 MW-5

Collected Date/Time: 04/28/2020 19:10

Matrix: Wastewater

COC Reference: 134281

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	04/30/20 11:58	CL200430-W1-A	CL200430-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	04/30/20 10:20	FL200430-W1-B	FL200430-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	04/30/20 11:58	SFT200430-W1-A	SFT200430-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	04/29/20 16:10	TDS200429	TDS200429	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/05/20 17:55	TSS200505	TSS200505	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	05/06/20 12:03	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/06/20 12:03	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Barium	E200.8	05/06/20 12:03	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/06/20 12:03	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Boron	E200.8	05/06/20 13:01	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/06/20 12:03	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/05/20 18:10	MT4-20-0505A	MTD-050520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/06/20 12:03	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/06/20 12:03	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lead	E200.8	05/06/20 12:03	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/06/20 12:03	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	05/01/20 17:42	HG2-HG3-20-0501	AHGD-050120-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/06/20 12:03	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/06/20 12:03	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/06/20 12:03	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S13569.06

Sample Tag: L004070-06 MW-6

Collected Date/Time: 04/28/2020 12:30

Matrix: Wastewater

COC Reference: 134281

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	04/30/20 12:11	CL200430-W1-A	CL200430-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	04/30/20 10:33	FL200430-W1-B	FL200430-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	04/30/20 12:11	SFT200430-W1-A	SFT200430-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	04/29/20 16:10	TDS200429	TDS200429	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/05/20 17:55	TSS200505	TSS200505	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	05/06/20 12:10	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/06/20 12:10	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Barium	E200.8	05/06/20 12:10	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/06/20 12:10	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Boron	E200.8	05/06/20 12:52	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/06/20 12:10	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/05/20 18:11	MT4-20-0505A	MTD-050520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/06/20 12:10	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/06/20 12:10	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lead	E200.8	05/06/20 12:10	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/06/20 12:10	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	05/01/20 17:44	HG2-HG3-20-0501	AHGD-050120-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/06/20 12:10	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/06/20 12:10	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/06/20 12:10	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S13569.07

Sample Tag: L004070-07 Field Blank

Collected Date/Time: 04/28/2020 07:25

Matrix: Water

COC Reference: 134281

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	04/30/20 12:24	CL200430-W1-A	CL200430-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	04/30/20 10:46	FL200430-W1-B	FL200430-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	04/30/20 10:46	SFT200430-W1-B	SFT200430-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	05/01/20 19:45	TDS200501	TDS200501	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/05/20 17:55	TSS200505	TSS200505	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	05/06/20 11:28	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/06/20 11:28	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Barium	E200.8	05/06/20 11:28	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/06/20 11:28	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Boron	E200.8	05/06/20 12:42	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/06/20 11:28	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/05/20 18:02	MT4-20-0505A	MTD-050520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/06/20 11:28	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/06/20 11:28	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lead	E200.8	05/06/20 11:28	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/06/20 11:28	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	05/01/20 17:46	HG2-HG3-20-0501	AHGD-050120-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/06/20 11:28	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/06/20 11:28	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/06/20 11:28	MT4-20-0506A	MTD-050620-1	No	BLK/LCS/MS/MSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: CL200430-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.01	Chloride	E300.0	04/30/20 10:28	CL200430-W1-A
S13569.02	Chloride	E300.0	04/30/20 11:20	CL200430-W1-A
S13569.03	Chloride	E300.0	04/30/20 11:32	CL200430-W1-A
S13569.04	Chloride	E300.0	04/30/20 11:45	CL200430-W1-A
S13569.05	Chloride	E300.0	04/30/20 11:58	CL200430-W1-A
S13569.06	Chloride	E300.0	04/30/20 12:11	CL200430-W1-A
S13569.07	Chloride	E300.0	04/30/20 12:24	CL200430-W1-A

Inorganics, Prep Batch ID: FL200430-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.01	Fluoride (Undistilled)	E300.0	04/30/20 09:28	FL200430-W1-B
S13569.02	Fluoride (Undistilled)	E300.0	04/30/20 09:41	FL200430-W1-B
S13569.03	Fluoride (Undistilled)	E300.0	04/30/20 09:54	FL200430-W1-B
S13569.04	Fluoride (Undistilled)	E300.0	04/30/20 10:07	FL200430-W1-B
S13569.05	Fluoride (Undistilled)	E300.0	04/30/20 10:20	FL200430-W1-B
S13569.06	Fluoride (Undistilled)	E300.0	04/30/20 10:33	FL200430-W1-B
S13569.07	Fluoride (Undistilled)	E300.0	04/30/20 10:46	FL200430-W1-B

Inorganics, Prep Batch ID: SFT200430-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.02	Sulfate	E300.0	04/30/20 11:20	SFT200430-W1-A
S13569.05	Sulfate	E300.0	04/30/20 11:58	SFT200430-W1-A
S13569.06	Sulfate	E300.0	04/30/20 12:11	SFT200430-W1-A

Inorganics, Prep Batch ID: SFT200430-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.01	Sulfate	E300.0	04/30/20 09:28	SFT200430-W1-B
S13569.03	Sulfate	E300.0	04/30/20 09:54	SFT200430-W1-B
S13569.04	Sulfate	E300.0	04/30/20 10:07	SFT200430-W1-B
S13569.07	Sulfate	E300.0	04/30/20 10:46	SFT200430-W1-B

Inorganics, Prep Batch ID: TDS200429

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.01	Total Dissolved Solids	SM2540C	04/29/20 16:10	TDS200429
S13569.02	Total Dissolved Solids	SM2540C	04/29/20 16:10	TDS200429
S13569.03	Total Dissolved Solids	SM2540C	04/29/20 16:10	TDS200429
S13569.04	Total Dissolved Solids	SM2540C	04/29/20 16:10	TDS200429
S13569.05	Total Dissolved Solids	SM2540C	04/29/20 16:10	TDS200429
S13569.06	Total Dissolved Solids	SM2540C	04/29/20 16:10	TDS200429

Inorganics, Prep Batch ID: TDS200501

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.07	Total Dissolved Solids	SM2540C	05/01/20 19:45	TDS200501

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TSS200430

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.01	Total Suspended Solids	SM2540D	04/30/20 19:40	TSS200430
S13569.02	Total Suspended Solids	SM2540D	04/30/20 19:40	TSS200430
S13569.03	Total Suspended Solids	SM2540D	04/30/20 19:40	TSS200430

Inorganics, Prep Batch ID: TSS200505

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.04	Total Suspended Solids	SM2540D	05/05/20 17:55	TSS200505
S13569.05	Total Suspended Solids	SM2540D	05/05/20 17:55	TSS200505
S13569.06	Total Suspended Solids	SM2540D	05/05/20 17:55	TSS200505
S13569.07	Total Suspended Solids	SM2540D	05/05/20 17:55	TSS200505

Metals, Prep Batch ID: HGD-050120-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.01	Mercury	E245.1	05/01/20 17:27	HG2-HG3-20-0501A
S13569.02	Mercury	E245.1	05/01/20 17:37	HG2-HG3-20-0501A
S13569.03	Mercury	E245.1	05/01/20 17:38	HG2-HG3-20-0501A
S13569.04	Mercury	E245.1	05/01/20 17:40	HG2-HG3-20-0501A
S13569.05	Mercury	E245.1	05/01/20 17:42	HG2-HG3-20-0501A
S13569.06	Mercury	E245.1	05/01/20 17:44	HG2-HG3-20-0501A
S13569.07	Mercury	E245.1	05/01/20 17:46	HG2-HG3-20-0501A

Metals, Prep Batch ID: MTD-050520-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.01	Calcium	E200.8	05/05/20 18:04	MT4-20-0505A
S13569.02	Calcium	E200.8	05/05/20 18:05	MT4-20-0505A
S13569.03	Calcium	E200.8	05/05/20 18:07	MT4-20-0505A
S13569.04	Calcium	E200.8	05/05/20 18:08	MT4-20-0505A
S13569.05	Calcium	E200.8	05/05/20 18:10	MT4-20-0505A
S13569.06	Calcium	E200.8	05/05/20 18:11	MT4-20-0505A
S13569.07	Calcium	E200.8	05/05/20 18:02	MT4-20-0505A

Metals, Prep Batch ID: MTD-050620-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.01	Antimony	E200.8	05/06/20 11:42	MT4-20-0506A
S13569.01	Arsenic	E200.8	05/06/20 11:42	MT4-20-0506A
S13569.01	Barium	E200.8	05/06/20 11:42	MT4-20-0506A
S13569.01	Beryllium	E200.8	05/06/20 11:42	MT4-20-0506A
S13569.01	Boron	E200.8	05/06/20 12:49	MT4-20-0506A
S13569.01	Cadmium	E200.8	05/06/20 11:42	MT4-20-0506A
S13569.01	Chromium	E200.8	05/06/20 11:42	MT4-20-0506A
S13569.01	Cobalt	E200.8	05/06/20 11:42	MT4-20-0506A
S13569.01	Lead	E200.8	05/06/20 11:42	MT4-20-0506A
S13569.01	Lithium	E200.8	05/06/20 11:42	MT4-20-0506A
S13569.01	Molybdenum	E200.8	05/06/20 11:42	MT4-20-0506A
S13569.01	Selenium	E200.8	05/06/20 11:42	MT4-20-0506A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-050620-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.01	Thallium	E200.8	05/06/20 11:42	MT4-20-0506A
S13569.02	Antimony	E200.8	05/06/20 11:53	MT4-20-0506A
S13569.02	Arsenic	E200.8	05/06/20 11:53	MT4-20-0506A
S13569.02	Barium	E200.8	05/06/20 11:53	MT4-20-0506A
S13569.02	Beryllium	E200.8	05/06/20 11:53	MT4-20-0506A
S13569.02	Boron	E200.8	05/06/20 12:55	MT4-20-0506A
S13569.02	Cadmium	E200.8	05/06/20 11:53	MT4-20-0506A
S13569.02	Chromium	E200.8	05/06/20 11:53	MT4-20-0506A
S13569.02	Cobalt	E200.8	05/06/20 11:53	MT4-20-0506A
S13569.02	Lead	E200.8	05/06/20 11:53	MT4-20-0506A
S13569.02	Lithium	E200.8	05/06/20 11:53	MT4-20-0506A
S13569.02	Molybdenum	E200.8	05/06/20 11:53	MT4-20-0506A
S13569.02	Selenium	E200.8	05/06/20 11:53	MT4-20-0506A
S13569.02	Thallium	E200.8	05/06/20 11:53	MT4-20-0506A
S13569.03	Antimony	E200.8	05/06/20 11:57	MT4-20-0506A
S13569.03	Arsenic	E200.8	05/06/20 11:57	MT4-20-0506A
S13569.03	Barium	E200.8	05/06/20 11:57	MT4-20-0506A
S13569.03	Beryllium	E200.8	05/06/20 11:57	MT4-20-0506A
S13569.03	Boron	E200.8	05/06/20 12:47	MT4-20-0506A
S13569.03	Cadmium	E200.8	05/06/20 11:57	MT4-20-0506A
S13569.03	Chromium	E200.8	05/06/20 11:57	MT4-20-0506A
S13569.03	Cobalt	E200.8	05/06/20 11:57	MT4-20-0506A
S13569.03	Lead	E200.8	05/06/20 11:57	MT4-20-0506A
S13569.03	Lithium	E200.8	05/06/20 11:57	MT4-20-0506A
S13569.03	Molybdenum	E200.8	05/06/20 11:57	MT4-20-0506A
S13569.03	Selenium	E200.8	05/06/20 11:57	MT4-20-0506A
S13569.03	Thallium	E200.8	05/06/20 11:57	MT4-20-0506A
S13569.04	Antimony	E200.8	05/06/20 12:00	MT4-20-0506A
S13569.04	Arsenic	E200.8	05/06/20 12:00	MT4-20-0506A
S13569.04	Barium	E200.8	05/06/20 12:00	MT4-20-0506A
S13569.04	Beryllium	E200.8	05/06/20 12:00	MT4-20-0506A
S13569.04	Boron	E200.8	05/06/20 12:44	MT4-20-0506A
S13569.04	Cadmium	E200.8	05/06/20 12:00	MT4-20-0506A
S13569.04	Chromium	E200.8	05/06/20 12:00	MT4-20-0506A
S13569.04	Cobalt	E200.8	05/06/20 12:00	MT4-20-0506A
S13569.04	Lead	E200.8	05/06/20 12:00	MT4-20-0506A
S13569.04	Lithium	E200.8	05/06/20 12:00	MT4-20-0506A
S13569.04	Molybdenum	E200.8	05/06/20 12:00	MT4-20-0506A
S13569.04	Selenium	E200.8	05/06/20 12:00	MT4-20-0506A
S13569.04	Thallium	E200.8	05/06/20 12:00	MT4-20-0506A
S13569.05	Antimony	E200.8	05/06/20 12:03	MT4-20-0506A
S13569.05	Arsenic	E200.8	05/06/20 12:03	MT4-20-0506A
S13569.05	Barium	E200.8	05/06/20 12:03	MT4-20-0506A
S13569.05	Beryllium	E200.8	05/06/20 12:03	MT4-20-0506A
S13569.05	Boron	E200.8	05/06/20 13:01	MT4-20-0506A
S13569.05	Cadmium	E200.8	05/06/20 12:03	MT4-20-0506A
S13569.05	Chromium	E200.8	05/06/20 12:03	MT4-20-0506A
S13569.05	Cobalt	E200.8	05/06/20 12:03	MT4-20-0506A
S13569.05	Lead	E200.8	05/06/20 12:03	MT4-20-0506A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-050620-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S13569.05	Lithium	E200.8	05/06/20 12:03	MT4-20-0506A
S13569.05	Molybdenum	E200.8	05/06/20 12:03	MT4-20-0506A
S13569.05	Selenium	E200.8	05/06/20 12:03	MT4-20-0506A
S13569.05	Thallium	E200.8	05/06/20 12:03	MT4-20-0506A
S13569.06	Antimony	E200.8	05/06/20 12:10	MT4-20-0506A
S13569.06	Arsenic	E200.8	05/06/20 12:10	MT4-20-0506A
S13569.06	Barium	E200.8	05/06/20 12:10	MT4-20-0506A
S13569.06	Beryllium	E200.8	05/06/20 12:10	MT4-20-0506A
S13569.06	Boron	E200.8	05/06/20 12:52	MT4-20-0506A
S13569.06	Cadmium	E200.8	05/06/20 12:10	MT4-20-0506A
S13569.06	Chromium	E200.8	05/06/20 12:10	MT4-20-0506A
S13569.06	Cobalt	E200.8	05/06/20 12:10	MT4-20-0506A
S13569.06	Lead	E200.8	05/06/20 12:10	MT4-20-0506A
S13569.06	Lithium	E200.8	05/06/20 12:10	MT4-20-0506A
S13569.06	Molybdenum	E200.8	05/06/20 12:10	MT4-20-0506A
S13569.06	Selenium	E200.8	05/06/20 12:10	MT4-20-0506A
S13569.06	Thallium	E200.8	05/06/20 12:10	MT4-20-0506A
S13569.07	Antimony	E200.8	05/06/20 11:28	MT4-20-0506A
S13569.07	Arsenic	E200.8	05/06/20 11:28	MT4-20-0506A
S13569.07	Barium	E200.8	05/06/20 11:28	MT4-20-0506A
S13569.07	Beryllium	E200.8	05/06/20 11:28	MT4-20-0506A
S13569.07	Boron	E200.8	05/06/20 12:42	MT4-20-0506A
S13569.07	Cadmium	E200.8	05/06/20 11:28	MT4-20-0506A
S13569.07	Chromium	E200.8	05/06/20 11:28	MT4-20-0506A
S13569.07	Cobalt	E200.8	05/06/20 11:28	MT4-20-0506A
S13569.07	Lead	E200.8	05/06/20 11:28	MT4-20-0506A
S13569.07	Lithium	E200.8	05/06/20 11:28	MT4-20-0506A
S13569.07	Molybdenum	E200.8	05/06/20 11:28	MT4-20-0506A
S13569.07	Selenium	E200.8	05/06/20 11:28	MT4-20-0506A
S13569.07	Thallium	E200.8	05/06/20 11:28	MT4-20-0506A

Form 0: Sequence Log

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	16:48:34 Tue 05-May-20	Blank	Liquid	
002	16:49:17 Tue 05-May-20	Std-0.0	Liquid	
003	16:50:00 Tue 05-May-20	Std-0.20	Liquid	
004	16:50:43 Tue 05-May-20	Std-0.50	Liquid	
005	16:51:26 Tue 05-May-20	Std-1.0	Liquid	
006	16:52:09 Tue 05-May-20	Std-2.0	Liquid	
007	16:52:52 Tue 05-May-20	Std-5.0	Liquid	
008	16:53:35 Tue 05-May-20	ICV-2.0	Liquid	ICV
009	16:54:22 Tue 05-May-20	CCV-2.0	Liquid	CCV
010	16:55:06 Tue 05-May-20	ICB	Liquid	ICB
011	16:55:50 Tue 05-May-20	CCB	Liquid	CCB
012	16:56:34 Tue 05-May-20	BS-0.05	Liquid	BS
013	17:08:48 Tue 05-May-20	050520_1 LCS-1.0	Liquid	LCS
014	17:21:07 Tue 05-May-20	050520_1 LRB	Liquid	LRB
015	17:21:53 Tue 05-May-20	13482.01s	Liquid	S
016	17:22:36 Tue 05-May-20	13537.01s	Liquid	S
017	17:23:19 Tue 05-May-20	13538.01s	Liquid	S
018	17:24:01 Tue 05-May-20	13556.01s	Liquid	S
019	17:24:44 Tue 05-May-20	13604.01s	Liquid	S
020	17:27:12 Tue 05-May-20	rinse	Liquid	
021	17:27:59 Tue 05-May-20	13618.01s	Liquid	S
022	17:28:45 Tue 05-May-20	rinse	Liquid	
023	17:32:00 Tue 05-May-20	rinse	Liquid	
024	17:35:21 Tue 05-May-20	13618.01s -d	Liquid	S
025	17:36:08 Tue 05-May-20	rinse	Liquid	
026	17:36:52 Tue 05-May-20	rinse	Liquid	
027	17:42:09 Tue 05-May-20	rinse	Liquid	
028	17:42:56 Tue 05-May-20	13625.01 dil	Liquid	DIL
029	17:43:39 Tue 05-May-20	13625.01s	Liquid	S
030	17:44:25 Tue 05-May-20	rinse	Liquid	
031	17:45:12 Tue 05-May-20	13625.02s	Liquid	S
032	17:52:44 Tue 05-May-20	13625.02 dil	Liquid	S
033	17:56:34 Tue 05-May-20	rinse	Liquid	
034	17:57:21 Tue 05-May-20	13604.01 MS-2.0	Liquid	MS
035	17:58:06 Tue 05-May-20	13604.01 MSD	Liquid	MSD
036	17:59:29 Tue 05-May-20	CCV2-2.0	Liquid	CCV
037	18:00:14 Tue 05-May-20	CCB2	Liquid	CCB
038	18:02:11 Tue 05-May-20	13569.07s	Liquid	S
039	18:04:14 Tue 05-May-20	13569.01s	Liquid	S
040	18:05:00 Tue 05-May-20	rinse	Liquid	
041	18:05:46 Tue 05-May-20	13569.02s	Liquid	S
042	18:06:32 Tue 05-May-20	rinse	Liquid	
043	18:07:19 Tue 05-May-20	13569.03s	Liquid	S
044	18:08:05 Tue 05-May-20	rinse	Liquid	
045	18:08:52 Tue 05-May-20	13569.04s	Liquid	S
046	18:09:38 Tue 05-May-20	rinse	Liquid	
047	18:10:25 Tue 05-May-20	13569.05s	Liquid	S
048	18:11:11 Tue 05-May-20	rinse	Liquid	
049	18:11:57 Tue 05-May-20	13569.06s	Liquid	S
050	18:12:43 Tue 05-May-20	rinse	Liquid	
051	18:13:29 Tue 05-May-20	13586.01s	Liquid	S
052	18:14:15 Tue 05-May-20	rinse	Liquid	
053	18:15:01 Tue 05-May-20	13586.02s	Liquid	S
054	18:15:47 Tue 05-May-20	rinse	Liquid	
055	18:22:26 Tue 05-May-20	13586.02 MS-2.0	Liquid	MS
056	18:27:10 Tue 05-May-20	13586.02 MSD	Liquid	MSD

Form 0: Sequence Log

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	18:23:55 Tue 05-May-20	rinse	Liquid	
058	18:25:25 Tue 05-May-20	13569.01 dil	Liquid	DIL
059	18:26:12 Tue 05-May-20	CCV3-2.0	Liquid	CCV
060	18:26:56 Tue 05-May-20	CCB3	Liquid	CCB
061	18:29:50 Tue 05-May-20	13237.07 dil	Liquid	DIL
062	18:35:35 Tue 05-May-20	13237.07s	Liquid	
063	18:48:06 Tue 05-May-20	CCV4-2.0	Liquid	CCV
064	18:48:51 Tue 05-May-20	CCB4	Liquid	CCB

Form 0: Sequence Log

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	10:47:19 Wed 06-May-20	Blank	Liquid	
002	10:48:37 Wed 06-May-20	Std-0.0	Liquid	
003	10:49:55 Wed 06-May-20	Std-0.0001	Liquid	
004	10:51:13 Wed 06-May-20	Std-0.0005	Liquid	
005	10:52:31 Wed 06-May-20	Std-0.005	Liquid	
006	10:53:50 Wed 06-May-20	Std-0.02	Liquid	
007	10:55:08 Wed 06-May-20	Std-0.05	Liquid	
008	10:56:27 Wed 06-May-20	Std-0.2	Liquid	
009	10:58:21 Wed 06-May-20	ICV-0.1	Liquid	ICV
010	10:59:38 Wed 06-May-20	CCV-0.1	Liquid	CCV
011	11:05:14 Wed 06-May-20	rinse	Liquid	
012	11:06:32 Wed 06-May-20	ICB	Liquid	ICB
013	11:07:50 Wed 06-May-20	CCB	Liquid	CCB
014	11:09:17 Wed 06-May-20	BS-0.0001	Liquid	BS
015	11:10:51 Wed 06-May-20	BS-0.0005	Liquid	BS
016	11:14:46 Wed 06-May-20	BS-0.001	Liquid	BS
017	11:16:03 Wed 06-May-20	BS-0.001	Liquid	
018	11:17:21 Wed 06-May-20	BS-0.001	Liquid	BS
019	11:18:41 Wed 06-May-20	Solu-AB	Liquid	AB
020	11:21:16 Wed 06-May-20	Solu-AA	Liquid	AA
021	11:23:02 Wed 06-May-20	050620_1 LCS-0.05	Liquid	LCS
022	11:24:23 Wed 06-May-20	Rinse	Liquid	
023	11:25:41 Wed 06-May-20	050620_1 LRB	Liquid	LRB
024	11:28:48 Wed 06-May-20	13569.07s	Liquid	S
025	11:41:06 Wed 06-May-20	13569.01 dil	Liquid	DIL
026	11:42:22 Wed 06-May-20	13569.01s	Liquid	S
027	11:51:41 Wed 06-May-20	Rinse	Liquid	
028	11:53:12 Wed 06-May-20	13569.02s	Liquid	S
029	11:56:11 Wed 06-May-20	Rinse	Liquid	
030	11:57:32 Wed 06-May-20	13569.03s	Liquid	S
031	11:58:53 Wed 06-May-20	Rinse	Liquid	
032	12:00:18 Wed 06-May-20	13569.04s	Liquid	S
033	12:01:38 Wed 06-May-20	Rinse	Liquid	
034	12:03:03 Wed 06-May-20	13569.05s	Liquid	S
035	12:09:11 Wed 06-May-20	Rinse	Liquid	
036	12:10:32 Wed 06-May-20	13569.06s	Liquid	S
037	12:11:52 Wed 06-May-20	Rinse	Liquid	
038	12:13:18 Wed 06-May-20	13664.02s	Liquid	S
039	12:14:39 Wed 06-May-20	Rinse	Liquid	
040	12:15:59 Wed 06-May-20	13665.02s	Liquid	S
041	12:17:20 Wed 06-May-20	Rinse	Liquid	
042	12:18:40 Wed 06-May-20	13666.01s	Liquid	S
043	12:23:24 Wed 06-May-20	13569.06 MS-0.05	Liquid	MS
044	12:26:20 Wed 06-May-20	13569.06 MSD-0.05	Liquid	MSD
045	12:29:14 Wed 06-May-20	CCV2-0.1	Liquid	CCV
046	12:39:20 Wed 06-May-20	Rinse	Liquid	
047	12:40:38 Wed 06-May-20	CCB2	Liquid	CCB
048	12:42:17 Wed 06-May-20	13569.07s	Liquid	S
049	12:44:13 Wed 06-May-20	13569.04s	Liquid	S
050	12:45:34 Wed 06-May-20	Rinse	Liquid	
051	12:47:10 Wed 06-May-20	13569.03s	Liquid	S
052	12:48:31 Wed 06-May-20	Rinse	Liquid	
053	12:49:53 Wed 06-May-20	13569.01s	Liquid	S
054	12:51:13 Wed 06-May-20	Rinse	Liquid	
055	12:52:57 Wed 06-May-20	13569.06s	Liquid	S
056	12:54:18 Wed 06-May-20	Rinse	Liquid	

Form 0: Sequence Log

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	12:55:39 Wed 06-May-20	13569.02s	Liquid	S
058	12:59:19 Wed 06-May-20	Rinse	Liquid	
059	13:00:40 Wed 06-May-20	13569.05 dil	Liquid	DIL
060	13:01:59 Wed 06-May-20	13569.05s	Liquid	S
061	13:04:15 Wed 06-May-20	Rinse	Liquid	
062	13:05:36 Wed 06-May-20	13569.06 MS-0.05	Liquid	MS
063	13:06:55 Wed 06-May-20	13569.06 MSD-0.05	Liquid	MSD
064	13:08:30 Wed 06-May-20	CCV3-0.1	Liquid	CCV
065	13:09:58 Wed 06-May-20	Rinse	Liquid	
066	13:11:16 Wed 06-May-20	CCB3	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

Lab Sample ID: S13569.01

Sample Tag: L004070-01 MW-1

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	162	0.50	0.0433	mg/L	5	05/05/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

Lab Sample ID: S13569.02

Sample Tag: L004070-02 MW-2

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	251	0.50	0.0433	mg/L	5	05/05/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

Lab Sample ID: S13569.03

Sample Tag: L004070-03 MW-4

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	113	0.50	0.0433	mg/L	5	05/05/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

Lab Sample ID: S13569.04

Sample Tag: L004070-04 MW-4 Duplicate

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	111	0.50	0.0433	mg/L	5	05/05/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

Lab Sample ID: S13569.05

Sample Tag: L004070-05 MW-5

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	245	0.50	0.0433	mg/L	5	05/05/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

Lab Sample ID: S13569.06

Sample Tag: L004070-06 MW-6

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	142	0.50	0.0433	mg/L	5	05/05/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

Lab Sample ID: S13569.07

Sample Tag: L004070-07 Field Blank

Date Collected: 04/28/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	0.079	0.50	0.0173	mg/L	2	05/05/2020	b

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

Lab Sample ID: S13569.01

Sample Tag: L004070-01 MW-1

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000950	mg/L	5	05/06/2020	
7440-42-8	Boron	0.48	0.04	0.00175	mg/L	5	05/06/2020	
7440-38-2	Arsenic	0.004	0.002	0.000255	mg/L	5	05/06/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	05/06/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000215	mg/L	5	05/06/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	05/06/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	05/06/2020	
7440-39-3	Barium	0.149	0.005	0.000160	mg/L	5	05/06/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000850	mg/L	5	05/06/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	05/06/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	05/06/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000110	mg/L	5	05/06/2020	
7439-93-2	Lithium	0.036	0.010	0.00163	mg/L	5	05/06/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

Lab Sample ID: S13569.02

Sample Tag: L004070-02 MW-2

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000950	mg/L	5	05/06/2020	
7440-42-8	Boron	3.56	0.04	0.00175	mg/L	5	05/06/2020	
7440-38-2	Arsenic	Not detected	0.002	0.000255	mg/L	5	05/06/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	05/06/2020	
7439-98-7	Molybdenum	0.010	0.005	0.000215	mg/L	5	05/06/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	05/06/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	05/06/2020	
7440-39-3	Barium	0.039	0.005	0.000160	mg/L	5	05/06/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000850	mg/L	5	05/06/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	05/06/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	05/06/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000110	mg/L	5	05/06/2020	
7439-93-2	Lithium	0.055	0.010	0.00163	mg/L	5	05/06/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

Lab Sample ID: S13569.03

Sample Tag: L004070-03 MW-4

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000950	mg/L	5	05/06/2020	
7440-42-8	Boron	0.05	0.04	0.00175	mg/L	5	05/06/2020	
7440-38-2	Arsenic	0.006	0.002	0.000255	mg/L	5	05/06/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	05/06/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000215	mg/L	5	05/06/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	05/06/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	05/06/2020	
7440-39-3	Barium	0.157	0.005	0.000160	mg/L	5	05/06/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000850	mg/L	5	05/06/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	05/06/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	05/06/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000110	mg/L	5	05/06/2020	
7439-93-2	Lithium	Not detected	0.010	0.00163	mg/L	5	05/06/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

Lab Sample ID: S13569.04

Sample Tag: L004070-04 MW-4 Duplicate

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000950	mg/L	5	05/06/2020	
7440-42-8	Boron	0.05	0.04	0.00175	mg/L	5	05/06/2020	
7440-38-2	Arsenic	0.006	0.002	0.000255	mg/L	5	05/06/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	05/06/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000215	mg/L	5	05/06/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	05/06/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	05/06/2020	
7440-39-3	Barium	0.155	0.005	0.000160	mg/L	5	05/06/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000850	mg/L	5	05/06/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	05/06/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	05/06/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000110	mg/L	5	05/06/2020	
7439-93-2	Lithium	Not detected	0.010	0.00163	mg/L	5	05/06/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

Lab Sample ID: S13569.05

Sample Tag: L004070-05 MW-5

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	0.010	0.005	0.0000950	mg/L	5	05/06/2020	
7440-42-8	Boron	4.99	0.04	0.00175	mg/L	5	05/06/2020	
7440-38-2	Arsenic	0.005	0.002	0.000255	mg/L	5	05/06/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	05/06/2020	
7439-98-7	Molybdenum	0.096	0.005	0.000215	mg/L	5	05/06/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	05/06/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	05/06/2020	
7440-39-3	Barium	0.064	0.005	0.000160	mg/L	5	05/06/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000850	mg/L	5	05/06/2020	
7439-92-1	Lead	0.005	0.003	0.000190	mg/L	5	05/06/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	05/06/2020	
7440-48-4	Cobalt	0.006	0.005	0.000110	mg/L	5	05/06/2020	
7439-93-2	Lithium	0.091	0.010	0.00163	mg/L	5	05/06/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

Lab Sample ID: S13569.06

Sample Tag: L004070-06 MW-6

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000950	mg/L	5	05/06/2020	
7440-42-8	Boron	0.56	0.04	0.00175	mg/L	5	05/06/2020	
7440-38-2	Arsenic	Not detected	0.002	0.000255	mg/L	5	05/06/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	05/06/2020	
7439-98-7	Molybdenum	0.021	0.005	0.000215	mg/L	5	05/06/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	05/06/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	05/06/2020	
7440-39-3	Barium	0.042	0.005	0.000160	mg/L	5	05/06/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000850	mg/L	5	05/06/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	05/06/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	05/06/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000110	mg/L	5	05/06/2020	
7439-93-2	Lithium	0.037	0.010	0.00163	mg/L	5	05/06/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

Lab Sample ID: S13569.07

Sample Tag: L004070-07 Field Blank

Date Collected: 04/28/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000380	mg/L	2	05/06/2020	
7440-42-8	Boron	Not detected	0.04	0.000702	mg/L	2	05/06/2020	
7440-38-2	Arsenic	Not detected	0.002	0.000102	mg/L	2	05/06/2020	
7782-49-2	Selenium	Not detected	0.005	0.000838	mg/L	2	05/06/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.0000860	mg/L	2	05/06/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.0000760	mg/L	2	05/06/2020	
7440-36-0	Antimony	Not detected	0.005	0.00102	mg/L	2	05/06/2020	
7440-39-3	Barium	Not detected	0.005	0.0000640	mg/L	2	05/06/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000340	mg/L	2	05/06/2020	
7439-92-1	Lead	Not detected	0.003	0.0000760	mg/L	2	05/06/2020	
7440-41-7	Beryllium	Not detected	0.001	0.0000860	mg/L	2	05/06/2020	
7440-48-4	Cobalt	Not detected	0.005	0.0000440	mg/L	2	05/06/2020	
7439-93-2	Lithium	Not detected	0.010	0.000654	mg/L	2	05/06/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

Note/Qualifier Key

b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
008 ICV-2.0	ICV	1	Na	2.16	2.0	108	90/110	mg/L	Liquid
			Mg	2.09	2.0	105	90/110		
			K	2.20	2.0	110	90/110		
			Ca	2.09	2.0	105	90/110		
009 CCV-2.0	CCV	1	Na	2.13	2.0	107	90/110	mg/L	Liquid
			Mg	2.05	2.0	103	90/110		
			K	2.14	2.0	107	90/110		
			Ca	2.15	2.0	108	90/110		
036 CCV2-2.0	CCV	1	Na	2.11	2.0	106	90/110	mg/L	Liquid
			Mg	2.02	2.0	101	90/110		
			K	2.18	2.0	109	90/110		
			Ca	2.14	2.0	107	90/110		
059 CCV3-2.0	CCV	1	Na	2.16	2.0	108	90/110	mg/L	Liquid
			Mg	2.06	2.0	103	90/110		
			K	2.12	2.0	106	90/110		
			Ca	2.09	2.0	105	90/110		
063 CCV4-2.0	CCV	1	Na	2.01	2.0	101	90/110	mg/L	Liquid
			Mg	1.97	2.0	99	90/110		
			K	2.10	2.0	105	90/110		
			Ca	2.03	2.0	102	90/110		

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
009 ICV-0.1	ICV	1	Li	0.102	0.1	102	90/110	mg/L	Liquid
			Be	0.105	0.1	105	90/110		
			B	0.104	0.1	104	90/110		
			Cr	0.0989	0.1	99	90/110		
			Co	0.100	0.1	100	90/110		
			As	0.0973	0.1	97	90/110		
			Mo	0.101	0.1	101	90/110		
			Cd	0.0997	0.1	100	90/110		
			Sb	0.0899	0.1	90	90/110		
			Ba	0.101	0.1	101	90/110		
			Tl	0.104	0.1	104	90/110		
			Pb	0.105	0.1	105	90/110		
			Se	0.0992	0.1	99	90/110		
010 CCV-0.1	CCV	1	Li	0.108	0.1	108	90/110	mg/L	Liquid
			Be	0.109	0.1	109	90/110		
			B	0.106	0.1	106	90/110		
			Cr	0.0990	0.1	99	90/110		
			Co	0.101	0.1	101	90/110		
			As	0.0962	0.1	96	90/110		
			Mo	0.104	0.1	104	90/110		
			Cd	0.102	0.1	102	90/110		
			Sb	0.0928	0.1	93	90/110		
			Ba	0.101	0.1	101	90/110		
			Tl	0.102	0.1	102	90/110		
			Pb	0.102	0.1	102	90/110		
			Se	0.100	0.1	100	90/110		
045 CCV2-0.1	CCV	1	Li	0.0998	0.1	100	90/110	mg/L	Liquid
			Be	0.0986	0.1	99	90/110		
			B	0.102	0.1	102	90/110		
			Cr	0.103	0.1	103	90/110		
			Co	0.105	0.1	105	90/110		
			As	0.0971	0.1	97	90/110		
			Mo	0.100	0.1	100	90/110		
			Cd	0.101	0.1	101	90/110		
			Sb	0.0899	0.1	90	90/110		
			Ba	0.0984	0.1	98	90/110		
			Tl	0.106	0.1	106	90/110		
			Pb	0.106	0.1	106	90/110		
			Se	0.0972	0.1	97	90/110		
064 CCV3-0.1	CCV	1	B	0.107	0.1	107	90/110	mg/L	Liquid

Form 3: Blanks

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
010 ICB	ICB	1	Na	<0.05	0.011042	mg/L	Liquid
			Mg	<0.05	0.011756		
			K	<0.05	0.002201		
			Ca	<0.05	0.013833		
011 CCB	CCB	1	Na	<0.05	0.003129	mg/L	Liquid
			Mg	<0.05	0.002712		
			K	<0.05	-0.003117		
			Ca	<0.05	0.004686		
014 050520_1 LRB	LRB	1	Na	<0.05	0.002766	mg/L	Liquid
			Mg	<0.05	0.000310		
			K	<0.05	-0.001693		
			Ca	<0.05	-0.001262		
037 CCB2	CCB	1	Na	<0.05	0.012249	mg/L	Liquid
			Mg	<0.05	0.012299		
			K	<0.05	0.010554		
			Ca	<0.05	0.007050		
060 CCB3	CCB	1	Na	<0.05	0.009765	mg/L	Liquid
			Mg	<0.05	0.011139		
			K	<0.05	0.008518		
			Ca	<0.05	0.000455		
064 CCB4	CCB	1	Na	<0.05	0.009205	mg/L	Liquid
			Mg	<0.05	0.010691		
			K	<0.05	0.012626		
			Ca	<0.05	-0.010301		

Form 3: Blanks

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
012 ICB	ICB	1	Li	<0.002	0.000146	mg/L	Liquid
			Be	<0.0002	-0.000029		
			B	<0.008	0.000209		
			Cr	<0.001	0.000060		
			Co	<0.001	0.000046		
			As	<0.0004	0.000272		
			Mo	<0.001	0.000532		
			Cd	<0.0001	0.000050		
			Sb	<0.001	0.000692		
			Ba	<0.001	0.000055		
			Tl	<0.0004	0.000065		
			Pb	<0.0006	0.000022		
			Se	<0.001	-0.000796		
013 CCB	CCB	1	Li	<0.002	0.000151	mg/L	Liquid
			Be	<0.0002	-0.000039		
			B	<0.008	0.000211		
			Cr	<0.001	0.000036		
			Co	<0.001	0.000031		
			As	<0.0004	0.000046		
			Mo	<0.001	0.000413		
			Cd	<0.0001	0.000047		
			Sb	<0.001	0.000508		
			Ba	<0.001	0.000025		
			Tl	<0.0004	0.000050		
			Pb	<0.0006	0.000006		
			Se	<0.001	0.000337		
023 050620_1 LRB	LRB	1	Li	<0.002	0.000058	mg/L	Liquid
			Be	<0.0002	-0.000034		
			B	<0.008	0.000277		
			Cr	<0.001	0.000030		
			Co	<0.001	0.000028		
			As	<0.0004	0.000133		
			Mo	<0.001	0.000838		
			Cd	<0.0001	0.000013		
			Sb	<0.001	0.000090		
			Ba	<0.001	0.000025		
			Tl	<0.0004	0.000052		
			Pb	<0.0006	0.000023		
			Se	<0.001	-0.000172		
047 CCB2	CCB	1	Li	<0.002	-0.000071	mg/L	Liquid
			Be	<0.0002	-0.000052		
			B	<0.008	0.000341		
			Cr	<0.001	0.000022		
			Co	<0.001	0.000008		
			As	<0.0004	0.000078		
			Mo	<0.001	0.000140		
			Cd	<0.0001	-0.000005		
			Sb	<0.001	0.000293		
			Ba	<0.001	-0.000001		
			Tl	<0.0004	0.000011		
			Pb	<0.0006	-0.000026		
			Se	<0.001	-0.000018		
066 CCB3	CCB	1	B	<0.008	0.001682	mg/L	Liquid

Form 4B: ICP Interference Check Sample

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
019 Solu-AB	AB	1	Cr	0.0210	0.02	105	65/135	mg/L	Liquid
			Co	0.0207	0.02	104	65/135		
			As	0.0204	0.02	102	65/135		
			Mo	0.201	0.20	101	65/135		
			Cd	0.0208	0.02	104	65/135		
020 Solu-AA	AA	1	Li	<0.010	0.0	N/A	N/A	mg/L	Liquid
			Be	<0.001	0.0	N/A	N/A		
			B	<0.04	0.0	N/A	N/A		
			Cr	<0.005	0.0	N/A	N/A		
			Co	<0.005	0.0	N/A	N/A		
			As	<0.002	0.0	N/A	N/A		
			Mo	<0.005	0.0	N/A	N/A		
			Cd	<0.0005	0.0	N/A	N/A		
			Sb	<0.005	0.0	N/A	N/A		
			Ba	<0.005	0.0	N/A	N/A		
			Tl	<0.002	0.0	N/A	N/A		
			Pb	<0.003	0.0	N/A	N/A		
			Se	<0.005	0.0	N/A	N/A		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
012 BS-0.05		1	Na	0.0517	ND	0.05	103	70/130	mg/L	Liquid
			Mg	0.0518	ND	0.05	104	70/130		
			K	0.0437	ND	0.05	87	70/130		
			Ca	0.0515	ND	0.05	103	70/130		
034 13604.01 MS-2.0 019 13604.01s		50	Na	152	46.9	100.0	105	75/125	mg/L	Liquid
			Mg	117	15.5	100.0	102	75/125		
			K	122	14.0	100.0	108	75/125		
			Ca	162	50.3	100.0	112	75/125		
055 13586.02 MS-2.0 053 13586.02s		5	Na	36.1	27.0	10.0	91	75/125	mg/L	Liquid
			Mg	26.5	15.8	10.0	107	75/125		
			K	22.1	11.5	10.0	106	75/125		
			Ca	43.8	34.3	10.0	95	75/125		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
014 BS-0.0001		1	Be	0.000073	ND	0.0001	73	70/130	mg/L	Liquid
			As	0.000073	ND	0.0001	73	70/130		
			Cd	0.000123	ND	0.0001	123	70/130		
			Tl	0.000128	ND	0.0001	128	70/130		
			Pb	0.000089	ND	0.0001	89	70/130		
015 BS-0.0005		1	Li	0.000431	ND	0.0005	86	70/130	mg/L	Liquid
			Be	0.000427	ND	0.0005	85	70/130		
			Cr	0.000504	ND	0.0005	101	70/130		
			Co	0.000518	ND	0.0005	104	70/130		
			As	0.000525	ND	0.0005	105	70/130		
			Cd	0.000517	ND	0.0005	103	70/130		
			Ba	0.000554	ND	0.0005	111	70/130		
			Tl	0.000481	ND	0.0005	96	70/130		
			Pb	0.000434	ND	0.0005	87	70/130		
016 BS-0.001		1	Li	0.00115	ND	0.001	115	70/130	mg/L	Liquid
			Be	0.000904	ND	0.001	90	70/130		
			B	0.00127	ND	0.001	127	70/130		
			Cr	0.00105	ND	0.001	105	70/130		
			Co	0.00102	ND	0.001	102	70/130		
			As	0.00109	ND	0.001	109	70/130		
			Mo	0.00105	ND	0.001	105	70/130		
			Cd	0.00107	ND	0.001	107	70/130		
			Sb	0.00128	ND	0.001	128	70/130		
			Ba	0.00106	ND	0.001	106	70/130		
			Tl	0.000977	ND	0.001	98	70/130		
			Pb	0.000940	ND	0.001	94	70/130		
			018 BS-0.001		1	Se	0.00121	ND		
043 13569.06	036 13569.06s	5	Li	0.304	0.037	0.25	107	75/125	mg/L	Liquid
			Be	0.264	<0.001	0.25	106	75/125		
			Cr	0.257	<0.005	0.25	103	75/125		
			Co	0.253	<0.005	0.25	101	75/125		
			As	0.247	<0.002	0.25	99	75/125		
			Mo	0.266	0.021	0.25	98	75/125		
			Cd	0.249	<0.0005	0.25	100	75/125		
			Sb	0.196	<0.005	0.25	78	75/125		
			Ba	0.281	0.042	0.25	96	75/125		
			Tl	0.236	<0.002	0.25	94	75/125		
			Pb	0.237	<0.003	0.25	95	75/125		
			Se	0.262	<0.005	0.25	105	75/125		
			062 13569.06	055 13569.06s	5	B	0.855	0.56			0.25	118	75/125	mg/L	Liquid

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
035 13604.01 MSD	034 13604.01 MS-2.0	50	Na	147	152	3	0/20	mg/L	Liquid
			Mg	113	117	3	0/20		
			K	118	122	3	0/20		
			Ca	160	162	1	0/20		
056 13586.02 MSD	055 13586.02 MS-2.0	5	Na	36.5	36.1	1	0/20	mg/L	Liquid
			Mg	25.5	26.5	4	0/20		
			K	21.7	22.1	2	0/20		
			Ca	43.8	43.8	0	0/20		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
044 13569.06	043 13569.06 MS-0.05	5	Li	0.297	0.304	2	0/20	mg/L	Liquid
			Be	0.258	0.264	2	0/20		
			Cr	0.257	0.257	0	0/20		
			Co	0.256	0.253	1	0/20		
			As	0.250	0.247	1	0/20		
			Mo	0.272	0.266	2	0/20		
			Cd	0.246	0.249	1	0/20		
			Sb	0.201	0.196	3	0/20		
			Ba	0.279	0.281	1	0/20		
			Tl	0.235	0.236	0	0/20		
			Pb	0.237	0.237	0	0/20		
			Se	0.258	0.262	2	0/20		
063 13569.06	062 13569.06 MS-0.05	5	B	0.855	0.855	0	0/20	mg/L	Liquid

Form 7: Laboratory Control Sample

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
013 050520_1 LCS-1.0	1	Na	1.01	1.0	101	85/115	mg/L	Liquid
		Mg	0.988	1.0	99	85/115		
		K	1.05	1.0	105	85/115		
		Ca	1.09	1.0	109	85/115		

Form 7: Laboratory Control Sample

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
021 050620_1 LCS-0.05	1	Li	0.0500	0.05	100	85/115	mg/L	Liquid
		Be	0.0494	0.05	99	85/115		
		B	0.0488	0.05	98	85/115		
		Cr	0.0520	0.05	104	85/115		
		Co	0.0523	0.05	105	85/115		
		As	0.0489	0.05	98	85/115		
		Mo	0.0501	0.05	100	85/115		
		Cd	0.0514	0.05	103	85/115		
		Sb	0.0502	0.05	100	85/115		
		Ba	0.0511	0.05	102	85/115		
		Tl	0.0471	0.05	94	85/115		
		Pb	0.0491	0.05	98	85/115		
		Se	0.0479	0.05	96	85/115		

Form 8: Serial Dilutions

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%D</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
028 13625.01 dil	029 13625.01s	10	Na	94.6	95.2	1	0/10	mg/L	Liquid
			Mg	36.9	36.2	2	0/10		
			K	1.65	1.68	2	0/10		
			Ca	114	116	2	0/10		
058 13569.01 dil	039 13569.01s	50	Na	49.6	51.1	3	0/10	mg/L	Liquid
			Mg	43.8	43.1	2	0/10		
			K	1.76	1.75	1	0/10		
			Ca	159	162	2	0/10		
061 13237.07 dil	062 13237.07s	25	Na	12.2	12.0	2	0/10	mg/L	Liquid
			Mg	23.7	24.0	1	0/10		
			K	8.90	9.33	5	0/10		
			Ca	39.3	38.8	1	0/10		

Form 8: Serial Dilutions

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%D</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
025 13569.01 dil	026 13569.01s	50	Li	0.0440	0.036	22*	0/10	mg/L	Liquid
			Be	<0.00001	<0.001	NC	0/10		
			Cr	0.00360	<0.005	NC	0/10		
			Co	0.00274	<0.005	NC	0/10		
			As	0.00949	0.004	137*	0/10		
			Mo	0.00854	<0.005	NC	0/10		
			Cd	0.000811	<0.0005	NC	0/10		
			Sb	0.000293	<0.005	NC	0/10		
			Ba	0.150	0.149	1	0/10		
			Tl	0.000725	<0.002	NC	0/10		
			Pb	<0.00003	<0.003	NC	0/10		
			Se	<0.00005	<0.005	NC	0/10		
059 13569.05 dil	060 13569.05s	25	B	4.91	4.99	2	0/10	mg/L	Liquid

Form 13: Analysis Run Log

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Blank	16:48:34 Tue	Liquid	Ca, K, Mg, Na
002 Std-0.0	16:49:17 Tue	Liquid	Ca, K, Mg, Na
003 Std-0.20	16:50:00 Tue	Liquid	Ca, K, Mg, Na
004 Std-0.50	16:50:43 Tue	Liquid	Ca, K, Mg, Na
005 Std-1.0	16:51:26 Tue	Liquid	Ca, K, Mg, Na
006 Std-2.0	16:52:09 Tue	Liquid	Ca, K, Mg, Na
007 Std-5.0	16:52:52 Tue	Liquid	Ca, K, Mg, Na
008 ICV-2.0	16:53:35 Tue	Liquid	Ca, K, Mg, Na
009 CCV-2.0	16:54:22 Tue	Liquid	Ca, K, Mg, Na
010 ICB	16:55:06 Tue	Liquid	Ca, K, Mg, Na
011 CCB	16:55:50 Tue	Liquid	Ca, K, Mg, Na
012 BS-0.05	16:56:34 Tue	Liquid	Ca, K, Mg, Na
013 050520_1 LCS-1.0	17:08:48 Tue	Liquid	Ca, K, Mg, Na
014 050520_1 LRB	17:21:07 Tue	Liquid	Ca, K, Mg, Na
015 13482.01s	17:21:53 Tue	Liquid	Ca, K, Mg, Na
016 13537.01s	17:22:36 Tue	Liquid	Ca, K, Mg, Na
017 13538.01s	17:23:19 Tue	Liquid	Ca, K, Mg, Na
018 13556.01s	17:24:01 Tue	Liquid	Ca, K, Mg, Na
019 13604.01s	17:24:44 Tue	Liquid	Ca, K, Mg, Na
020 rinse	17:27:12 Tue	Liquid	Ca, K, Mg, Na
021 13618.01s	17:27:59 Tue	Liquid	K
022 rinse	17:28:45 Tue	Liquid	Ca, K, Mg, Na
023 rinse	17:32:00 Tue	Liquid	Ca, K, Mg, Na
024 13618.01s -d	17:35:21 Tue	Liquid	Ca, Mg, Na
025 rinse	17:36:08 Tue	Liquid	Ca, K, Mg, Na
026 rinse	17:36:52 Tue	Liquid	Ca, K, Mg, Na
027 rinse	17:42:09 Tue	Liquid	Ca, K, Mg, Na
028 13625.01 dil	17:42:56 Tue	Liquid	Ca, K, Mg, Na
029 13625.01s	17:43:39 Tue	Liquid	Ca, K, Mg, Na
030 rinse	17:44:25 Tue	Liquid	Ca, K, Mg, Na
031 13625.02s	17:45:12 Tue	Liquid	Ca, K, Mg
032 13625.02 dil	17:52:44 Tue	Liquid	Na
033 rinse	17:56:34 Tue	Liquid	Ca, K, Mg, Na
034 13604.01 MS-2.0	17:57:21 Tue	Liquid	Ca, K, Mg, Na
035 13604.01 MSD	17:58:06 Tue	Liquid	Ca, K, Mg, Na
036 CCV2-2.0	17:59:29 Tue	Liquid	Ca, K, Mg, Na
037 CCB2	18:00:14 Tue	Liquid	Ca, K, Mg, Na
038 13569.07s	18:02:11 Tue	Liquid	Ca, K, Mg, Na
039 13569.01s	18:04:14 Tue	Liquid	Ca, K, Mg, Na
040 rinse	18:05:00 Tue	Liquid	Ca, K, Mg, Na
041 13569.02s	18:05:46 Tue	Liquid	Ca, K, Mg, Na
042 rinse	18:06:32 Tue	Liquid	Ca, K, Mg, Na
043 13569.03s	18:07:19 Tue	Liquid	Ca, K, Mg, Na
044 rinse	18:08:05 Tue	Liquid	Ca, K, Mg, Na
045 13569.04s	18:08:52 Tue	Liquid	Ca, K, Mg, Na
046 rinse	18:09:38 Tue	Liquid	Ca, K, Mg, Na
047 13569.05s	18:10:25 Tue	Liquid	Ca, K, Mg, Na
048 rinse	18:11:11 Tue	Liquid	Ca, K, Mg, Na
049 13569.06s	18:11:57 Tue	Liquid	Ca, K, Mg, Na
050 rinse	18:12:43 Tue	Liquid	Ca, K, Mg, Na
051 13586.01s	18:13:29 Tue	Liquid	Ca, K, Mg, Na
052 rinse	18:14:15 Tue	Liquid	Ca, K, Mg, Na
053 13586.02s	18:15:01 Tue	Liquid	Ca, K, Mg, Na
054 rinse	18:15:47 Tue	Liquid	Ca, K, Mg, Na
055 13586.02 MS-2.0	18:22:26 Tue	Liquid	Ca, K, Mg, Na
056 13586.02 MSD	18:23:10 Tue	Liquid	Ca, K, Mg, Na

Form 13: Analysis Run Log

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
057 rinse	18:23:55 Tue	Liquid	Ca, K, Mg, Na
058 13569.01 dil	18:25:25 Tue	Liquid	Ca, K, Mg, Na
059 CCV3-2.0	18:26:12 Tue	Liquid	Ca, K, Mg, Na
060 CCB3	18:26:56 Tue	Liquid	Ca, K, Mg, Na
061 13237.07 dil	18:29:50 Tue	Liquid	Ca, K, Mg, Na
062 13237.07s	18:35:35 Tue	Liquid	Ca, K, Mg, Na
063 CCV4-2.0	18:48:06 Tue	Liquid	Ca, K, Mg, Na
064 CCB4	18:48:51 Tue	Liquid	Ca, K, Mg, Na

Form 13: Analysis Run Log

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Blank	10:47:19 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
002 Std-0.0	10:48:37 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
003 Std-0.0001	10:49:55 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
004 Std-0.0005	10:51:13 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
005 Std-0.005	10:52:31 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
006 Std-0.02	10:53:50 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
007 Std-0.05	10:55:08 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
008 Std-0.2	10:56:27 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
009 ICV-0.1	10:58:21 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
010 CCV-0.1	10:59:38 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
011 rinse	11:05:14 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
012 ICB	11:06:32 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
013 CCB	11:07:50 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
014 BS-0.0001	11:09:17 Wed	Liquid	As, Be, Cd, Pb, Tl
015 BS-0.0005	11:10:51 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Pb, Tl
016 BS-0.001	11:14:46 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Tl
017 BS-0.001	11:16:03 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
018 BS-0.001	11:17:21 Wed	Liquid	Se
019 Solu-AB	11:18:41 Wed	Liquid	As, Cd, Co, Cr, Mo
020 Solu-AA	11:21:16 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
021 050620_1 LCS-0.05	11:23:02 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
022 Rinse	11:24:23 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
023 050620_1 LRB	11:25:41 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
024 13569.07s	11:28:48 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
025 13569.01 dil	11:41:06 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
026 13569.01s	11:42:22 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
027 Rinse	11:51:41 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
028 13569.02s	11:53:12 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
029 Rinse	11:56:11 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
030 13569.03s	11:57:32 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
031 Rinse	11:58:53 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
032 13569.04s	12:00:18 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
033 Rinse	12:01:38 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
034 13569.05s	12:03:03 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
035 Rinse	12:09:11 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
036 13569.06s	12:10:32 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
037 Rinse	12:11:52 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
038 13664.02s	12:13:18 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
039 Rinse	12:14:39 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
040 13665.02s	12:15:59 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
041 Rinse	12:17:20 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
042 13666.01s	12:18:40 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
043 13569.06 MS-0.05	12:23:24 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
044 13569.06 MSD-0.05	12:26:20 Wed	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
045 CCV2-0.1	12:29:14 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
046 Rinse	12:39:20 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
047 CCB2	12:40:38 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
048 13569.07s	12:42:17 Wed	Liquid	B
049 13569.04s	12:44:13 Wed	Liquid	B
050 Rinse	12:45:34 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
051 13569.03s	12:47:10 Wed	Liquid	B
052 Rinse	12:48:31 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
053 13569.01s	12:49:53 Wed	Liquid	B
054 Rinse	12:51:13 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
055 13569.06s	12:52:57 Wed	Liquid	B
056 Rins	12:54:18 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl

Form 13: Analysis Run Log

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
057 13569.02s	12:55:39 Wed	Liquid	B
058 Rinse	12:59:19 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
059 13569.05 dil	13:00:40 Wed	Liquid	B
060 13569.05s	13:01:59 Wed	Liquid	B
061 Rinse	13:04:15 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
062 13569.06 MS-0.05	13:05:36 Wed	Liquid	B
063 13569.06 MSD-0.05	13:06:55 Wed	Liquid	B
064 CCV3-0.1	13:08:30 Wed	Liquid	B
065 Rinse	13:09:58 Wed	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
066 CCB3	13:11:16 Wed	Liquid	B

Performance Check Report

Sample ID: STD Performance Check

Sample Date/Time: Tuesday, May 05, 2020 15:31:20

Sample Description:

Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\STD Performance Check.mth

Dataset File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\DataSet\Optimize2020\STD Performance Check.694

MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun

Conditions File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac

Dual Detector Mode: Pulse

Acq. Dead Time (ns): 35

Current Dead Time (ns): 35

Torch Z position (mm): 0.00

Summary

Analyte	Mass	Meas. Intens.	Mean	Net Intens.	Mean	Net Intens.	SD	Net Intens.	RSD	Mode	
Be	9.0		6698.8		6698.837		96.076		1.4	Standard	
In	114.9		64003.1		64003.061		543.688		0.8	Standard	
U	238.1		71289.0		71289.034		289.053		0.4	Standard	
[	CeO	155.9		1823.2		0.021		0.001		2.8	Standard
>	Ce	139.9		86015.7		86015.659		749.447		0.9	Standard
]	Ce++	70.0		2052.4		0.024		0.001		3.6	Standard
	Bkgd	220.0		1.3		1.300		0.477		36.7	Standard

Current Conditions File Data

Current Value	Description
0.92	Nebulizer Gas Flow STD/KED [NEB]
1.20	Auxiliary Gas Flow
18.00	Plasma Gas Flow
-12.00	Deflector Voltage
1600.00	ICP RF Power
-1675.00	Analog Stage Voltage
1300.00	Pulse Stage Voltage
-4.00	Quadrupole Rod Offset STD [QRO]
-15.00	Cell Rod Offset STD [CRO]
14.00	Discriminator Threshold
-9.00	Cell Entrance/Exit Voltage STD
0.00	RPa
0.45	RPq
0.92	DRC Mode NEB
-9.00	DRC Mode QRO
-2.00	DRC Mode CRO
-7.00	DRC Mode Cell Entrance/Exit Voltage
0.60	Cell Gas A
200.00	Axial Field Voltage
-13.00	KED Mode CRO
-12.00	KED Mode QRO
-8.00	KED Mode Cell Entrance Voltage
-32.00	KED Mode Cell Exit Voltage
4.00	KED Cell Gas A
0.00	KED RPa
0.25	KED RPq
475.00	KED Mode Axial Field Voltage

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\daily optimization.swz

Start Time: 5/5/2020 3:26:06 PM

End Time: 5/5/2020 3:33:25 PM

Laser Torch Alignment - [Passed]

Vertical	Horizontal	Intensity
0.29 mm	-0.15 mm	156113.36

Nebulizer Gas Flow STD/KED [NEB] - [Passed] Optimum value(s): 0.92

Obtained Intensity (In 115): 73070.40

Obtained Formula (CeO 156 / Ce 140): 0.0237 (=2165.16 / 91309.88)

QID STD/DRC - Optimum value(s): Correlation Coefficient = 0.979; Intercept = -12.12

KED Mode QID - Optimum value(s): Correlation Coefficient = 0.980; Intercept = -12.63

Mass Calibration and Resolution - [Passed] Optimum value(s): N/A

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.705)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.701)

Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.705)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.720)

STD Performance Check - [Passed] Optimum value(s): N/A

Obtained Intensity (Be 9): 6698.84

Obtained Intensity (In 115): 64003.06

Obtained Intensity (U 238): 71289.03

Obtained Intensity (Bkgd 220): 1.30

Obtained Formula (CeO 156 / Ce 140): 0.021 (=1823.18 / 86015.66)

Obtained Formula (Ce++ 70 / Ce 140): 0.024 (=2052.41 / 86015.66)

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\daily optimization.swz

Optimization Status

Start Time: 5/5/2020 3:26:06 PM

Torch Alignment

Optimization Settings:

Method: Torch Alignment.mth.

Intensity Criterion: In 115 Maximum

Optimization Results:

	Vertical	Horizontal	Intensity
[Passed]	0.29 mm	-0.15 mm	156113.36

Nebulizer Gas Flow STD/KED [NEB]

Optimization Settings:

Method: Optimize.mth.

Initial Try - Start/End/Step: 0.9/0.96/0.01.

Intensity Criterion: In 115 Maximum

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (In 115): 73070.40

Obtained Formula (CeO 156 / Ce 140): 0.0237 (=2165.16 / 91309.88)

[Passed] Optimum value(s): 0.92

QID STD/DRC

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.979; Intercept = -12.12

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-12.5	27694.8
Mg	24	41	-13.5	60367.3
In	115	41	-10.5	69946.8
Ce	140	41	-10.5	89209.7
Pb	208	41	-8	42354.7
U	238	41	-7.5	73733.8

QID Mode QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.980; Intercept = -12.63

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-12.5	22641.9
Mg	24	41	-13	85056.5
In	115	41	-10.5	76633
Ce	140	41	-10	55752.6
Pb	208	41	-5.5	30300.1
U	238	41	-7.5	67237.9

Mass Calibration and Resolution

Optimization Settings:

Method: Tuning.mth.

MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun

Iterations: 6

Target accuracy (+/- amu): 0.05 for Mass Cal. and 0.03 for Resolution

Peak height (%) for Res. Opt.: 10

Optimization Results:

Initial Try

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.705)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.701)

Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.705)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.720)

[Passed] Optimum value(s): N/A

STD Performance Check

Optimization Settings:

Method: STD Performance Check.mth.

Intensity Criterion: Be 9 > 2000

Intensity Criterion: In 115 > 30000

Intensity Criterion: U 238 > 30000

Intensity Criterion: Bkgd 220 <= 5

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Formula Criterion: Ce++ 70 / Ce 140 <= 0.03

Optimization Results:

Initial Try

Obtained Intensity (Be 9): 6698.84

Obtained Intensity (In 115): 64003.06

Obtained Intensity (U 238): 71289.03

Obtained Intensity (Bkgd 220): 1.30

Obtained Formula (CeO 156 / Ce 140): 0.021 (=1823.18 / 86015.66)

Obtained Formula (Ce++ 70 / Ce 140): 0.024 (=2052.41 / 86015.66)

[Passed] Optimum value(s): N/A

End Time: 5/5/2020 3:33:25 PM

Performance Check Report

Sample ID: STD Performance Check

Sample Date/Time: Wednesday, May 06, 2020 10:32:39

Sample Description:

Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\STD Performance Check.mth

Dataset File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\DataSet\Optimize2020\STD Performance Check.700

MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun

Conditions File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac

Dual Detector Mode: Pulse

Acq. Dead Time (ns): 35

Current Dead Time (ns): 35

Torch Z position (mm): 0.00

Summary

Analyte	Mass	Meas. Intens.	Mean	Net Intens.	Mean	Net Intens. SD	Net Intens. RSD	Mode
Be	9.0		7518.7		7518.712	92.534	1.2	Standard
In	114.9		77799.2		77799.218	731.433	0.9	Standard
U	238.1		75964.2		75964.175	513.743	0.7	Standard
[	CeO	155.9	2216.6		0.024	0.000	1.9	Standard
|>	Ce	139.9	93182.7		93182.724	487.578	0.5	Standard
[	Ce++	70.0	1309.9		0.014	0.000	1.6	Standard
	Bkgd	220.0	0.8		0.767	0.279	36.4	Standard

Current Conditions File Data

Current Value	Description
0.94	Nebulizer Gas Flow STD/KED [NEB]
1.20	Auxiliary Gas Flow
18.00	Plasma Gas Flow
-12.00	Deflector Voltage
1600.00	ICP RF Power
-1675.00	Analog Stage Voltage
1300.00	Pulse Stage Voltage
-4.00	Quadrupole Rod Offset STD [QRO]
-15.00	Cell Rod Offset STD [CRO]
14.00	Discriminator Threshold
-9.00	Cell Entrance/Exit Voltage STD
0.00	RPa
0.45	RPq
0.94	DRC Mode NEB
-9.00	DRC Mode QRO
-2.00	DRC Mode CRO
-7.00	DRC Mode Cell Entrance/Exit Voltage
0.60	Cell Gas A
200.00	Axial Field Voltage
-13.00	KED Mode CRO
-12.00	KED Mode QRO
-8.00	KED Mode Cell Entrance Voltage
-32.00	KED Mode Cell Exit Voltage
4.00	KED Cell Gas A
0.00	KED RPa
0.25	KED RPq
475.00	KED Mode Axial Field Voltage

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\daily optimization.swz

Start Time: 5/6/2020 10:27:28 AM

End Time: 5/6/2020 10:34:45 AM

Torch Alignment - [Passed]

Vertical	Horizontal	Intensity
0.76 mm	-0.11 mm	56823.79

Nebulizer Gas Flow STD/KED [NEB] - [Passed] Optimum value(s): 0.94

Obtained Intensity (In 115): 77825.41

Obtained Formula (CeO 156 / Ce 140): 0.0231 (=2320.19 / 100368.35)

QID STD/DRC - Optimum value(s): Correlation Coefficient = 1.000; Intercept = -13.54

KED Mode QID - Optimum value(s): Correlation Coefficient = 1.000; Intercept = -12.65

Mass Calibration and Resolution - [Passed] Optimum value(s): N/A

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.708)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.697)

Target/Obtained mass (114.904/114.875), Target/Obtained resolution (0.7/0.699)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.712)

STD Performance Check - [Passed] Optimum value(s): N/A

Obtained Intensity (Be 9): 7518.71

Obtained Intensity (In 115): 77799.22

Obtained Intensity (U 238): 75964.17

Obtained Intensity (Bkgd 220): 0.77

Obtained Formula (CeO 156 / Ce 140): 0.024 (=2216.57 / 93182.72)

Obtained Formula (Ce++ 70 / Ce 140): 0.014 (=1309.93 / 93182.72)

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\wizard\SmartTune\daily optimization.swz

Optimization Status

Start Time: 5/6/2020 10:27:28 AM

Torch Alignment

Optimization Settings:

Method: Torch Alignment.mth.

Intensity Criterion: In 115 Maximum

Optimization Results:

	Vertical	Horizontal	Intensity
[Passed]	0.76 mm	-0.11 mm	56823.79

Nebulizer Gas Flow STD/KED [NEB]

Optimization Settings:

Method: Optimize.mth.

Initial Try - Start/End/Step: 0.9/0.96/0.01.

Intensity Criterion: In 115 Maximum

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

obtained Intensity (In 115): 77825.41

obtained Formula (CeO 156 / Ce 140): 0.0231 (=2320.19 / 100368.35)

[Passed] Optimum value(s): 0.94

QID STD/DRC

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 1.000; Intercept = -13.54

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-13	35179.3
Mg	24	41	-12	57708.3
In	115	41	-10	77783.2
Ce	140	41	-9.5	95929
Pb	208	41	-8	41748.9
U	238	41	-8	75905.1

KED Mode QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 1.000; Intercept = -12.65

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-13	24240.5
Mg	24	41	-13.5	71659.3
In	115	41	-11	83587.8
Ce	140	41	-9	60343.2
Pb	208	41	-6	30324.2
U	238	41	-7.5	71389.9

Mass Calibration and Resolution

Optimization Settings:

Method: Tuning.mth.

MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun

Iterations: 6

Target accuracy (+/- amu): 0.05 for Mass Cal. and 0.03 for Resolution

Peak height (%) for Res. Opt.: 10

Optimization Results:

Initial Try

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.708)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.697)

Target/Obtained mass (114.904/114.875), Target/Obtained resolution (0.7/0.699)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.712)

[Passed] Optimum value(s): N/A

STD Performance Check

Optimization Settings:

Method: STD Performance Check.mth.

Intensity Criterion: Be 9 > 2000

Intensity Criterion: In 115 > 30000

Intensity Criterion: U 238 > 30000

Intensity Criterion: Bkgd 220 <= 5

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Formula Criterion: Ce++ 70 / Ce 140 <= 0.03

Optimization Results:

Initial Try

Obtained Intensity (Be 9): 7518.71

Obtained Intensity (In 115): 77799.22

Obtained Intensity (U 238): 75964.17

Obtained Intensity (Bkgd 220): 0.77

Obtained Formula (CeO 156 / Ce 140): 0.024 (=2216.57 / 93182.72)

Obtained Formula (Ce++ 70 / Ce 140): 0.014 (=1309.93 / 93182.72)

[Passed] Optimum value(s): N/A

End Time: 5/6/2020 10:34:45 AM

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	59180	70-125	41426-73975	80-120	47344-71016	0

Seq ID	QC Type	Rh
001		100
002		96
003		107
004		109
005		104
006		100
007		107
008	ICV	103
009	CCV	103
010	ICB	99
011	CCB	98
012	BS	102
013	LCS	103
014	LRB	99
015	S	102
016	S	84
017	S	100
018	S	105
019	S	105
020		100
021	S	96
022		98
023		100
024	S	106
025		98
026		97
027		100
028	DIL	106
029	S	100
030		100
031	S	105
032	S	107
033		102
034	MS	103
035	MSD	105
036	CCV	101
037	CCB	98
038	S	104
039	S	102
040	Page 79 of 260	

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0505A

Instrument ID: PE NEXION

Analysis Date: 05/05/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	59180	70-125	41426-73975	80-120	47344-71016	0

Seq ID	QC Type	Rh
041	S	103
042		98
043	S	102
044		100
045	S	103
046		99
047	S	102
048		100
049	S	106
050		102
051	S	106
052		99
053	S	106
054		102
055	MS	103
056	MSD	104
057		99
058	DIL	105
059	CCV	102
060	CCB	101
061	DIL	109
062	S	109
063	CCV	107
064	CCB	102

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Li	173721	70-125	121605-217151	80-120	138977-208465	0
Y	311124	70-125	217787-388905	80-120	248899-373349	0
Re	1235572	70-125	864900-1544465	80-120	988458-1482686	0
Rh-1	2954148	70-125	2067904-3692685	80-120	2363318-3544978	0

Seq ID	QC Type	Li	Y	Re	Rh-1
001		100	100	100	100
002		98	98	101	100
003		107	104	105	105
004		107	106	109	107
005		108	106	111	110
006		111	108	110	108
007		106	105	107	107
008		108	109	112	106
009	ICV	101	108	109	107
010	CCV	97	106	109	104
011		99	96	100	98
012	ICB	92	95	100	98
013	CCB	95	99	101	96
014	BS	104	104	108	106
015	BS	103	105	107	105
016	BS	104	105	106	107
017		104	103	106	102
018	BS	105	106	108	106
019	AB	106	104	107	107
020	AA	118	116	121	118
021	LCS	108	108	111	108
022		95	100	102	101
023	LRB	100	100	102	101
024	S	105	108	112	108
025	DIL	102	110	107	105
026	S	106	104	106	100
027		102	100	101	102
028	S	106	109	105	101
029		106	102	99	105
030	S	109	106	105	102
031		107	103	101	101
032	S	112	105	101	104
033		107	100	99	103
034	S	101	112	103	99
035		102	102	100	100
036	S	110	107	104	103
037		105	103	100	101
038	S	111	107	103	104
039		106	101	96	102
040	S	109	109	104	106

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0506A

Instrument ID: PE NEXION

Analysis Date: 05/06/20

Analyst: CCM

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Li	173721	70-125	121605-217151	80-120	138977-208465	0
Y	311124	70-125	217787-388905	80-120	248899-373349	0
Re	1235572	70-125	864900-1544465	80-120	988458-1482686	0
Rh-1	2954148	70-125	2067904-3692685	80-120	2363318-3544978	0

Seq ID	QC Type	Li	Y	Re	Rh-1
041		104	102	97	102
042	S	110	107	104	107
043	MS	109	111	104	104
044	MSD	110	111	104	103
045	CCV	118	112	106	110
046		101	101	95	100
047	CCB	107	101	98	99
048	S	111	107	104	103
049	S	111	111	104	100
050		105	100	97	100
051	S	105	105	104	100
052		106	100	97	98
053	S	107	107	101	99
054		102	102	99	100
055	S	111	108	103	100
056		103	104	98	103
057	S	112	112	104	103
058		111	104	99	106
059	DIL	113	111	102	105
060	S	108	108	98	98
061		114	109	98	108
062	MS	107	105	99	99
063	MSD	110	108	99	99
064	CCV	115	116	107	116
065		111	106	98	101
066	CCB	110	102	95	105

Form 9

Analysis Date varies
 Analytical Method 6020A/6020/200.8
 Digestion Date varies
 Spiked Value varies (ug/L)
 Estimated Limit varies (ug/L)

Element/Mass	Date	Spike (ug/l)	MDL (ug/l)	Prep Batch
Al-27	4/9/2012	0.50	0.189	MTD-040212-1
Sb-121	3/20/2012	1.00	0.105	MTD-032012-3
As-75	3/20/2012	0.05	0.032	MTD-032012-2
Ba-137	3/20/2012	0.50	0.202	MTD-032012-2
Be-9	4/10/2012	0.10	0.079	MTD-041012-1
B-10	3/20/2012	1.00	0.589	MTD-032012-3
B-11	3/20/2012	1.00	0.277	MTD-032012-3
Cd-111	3/20/2012	0.05	0.038	MTD-032012-2
Cd-114	3/20/2012	0.10	0.030	MTD-032012-2
Cr-52	3/20/2012	0.10	0.023	MTD-032012-2
Cr-53	3/20/2012	0.10	0.054	MTD-032012-2
Co-59	3/20/2012	0.10	0.035	MTD-032012-2
Cu-65	3/20/2012	0.50	0.068	MTD-032012-2
Fe-56	4/9/2012	2.00	0.470	MTD-040912-1
Fe-57	4/9/2012	2.00	0.824	MTD-040912-1
Pb-208	3/20/2012	0.10	0.052	MTD-032012-2
Li-7	3/20/2012	1.00	0.166	MTD-032012-3
Mn-55	3/20/2012	0.10	0.187	MTD-032012-2
Mo-95	4/9/2012	0.50	0.442	MTD-040212-1
Ni-60	4/13/2012	0.10	0.035	MTD-041012-1
Se-78	3/20/2012	0.10	0.058	MTD-032012-2
Se-82	3/20/2012	0.50	0.475	MTD-032012-2
Ag-107	3/20/2012	0.10	0.025	MTD-032012-2
Sr-88	3/20/2012	0.10	0.016	MTD-032012-2
Tl-205	4/9/2012	0.50	0.089	MTD-040212-1
Sn-118	3/20/2012	0.10	0.079	MTD-032012-2
Ti-47	3/20/2012	0.50	0.124	MTD-032012-2
V-51	3/20/2012	0.05	0.018	MTD-032012-2
Zn-66	4/9/2012	2.00	0.366	MTD-040912-1

Element/Mass	Date	Spike (mg/l)	MDL (mg/l)	Prep Batch
Ca-43	4/16/2012	0.01	0.0101	MTD-041012-4
Ca-44	4/16/2012	0.01	0.0041	MTD-041012-4
Mg-24	4/16/2012	0.01	0.0006	MTD-041012-4
K-39	4/16/2012	0.01	0.0030	MTD-041012-4
Na-23	4/16/2012	0.10	0.0101	MTD-041012-4

Linear Range June 2012

		Prep Batch	Run Batch
Aluminum	5.0ppm	MTD-061912-5	MT3-12-0619C
Antimony	5.0ppm	MTD-061912-5	MT3-12-0619C
Arsenic	1.0ppm	MTD-061912-5	MT3-12-0619C
Barium	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-10	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-11	5.0ppm	MTD-061912-5	MT3-12-0619C
Beryllium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-111	5.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-114	5.0ppm	MTD-061912-5	MT3-12-0619C
Chromium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cobalt	2.0ppm	MTD-061912-5	MT3-12-0619C
Copper	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-56	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-57	2.0ppm	MTD-061912-5	MT3-12-0619C
Lead	5.0ppm	MTD-061912-5	MT3-12-0619C
Lithium	2.0ppm	MTD-061912-5	MT3-12-0619C
Manganese	1.0ppm	MTD-061912-5	MT3-12-0619C
Molybdenum	1.0ppm	MTD-061912-5	MT3-12-0619C
Nickel	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-78	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-82	5.0ppm	MTD-061912-5	MT3-12-0619C
Silver	1.0ppm	MTD-061912-5	MT3-12-0619C
Strontium-86	5.0ppm	MTD-061912-5	MT3-12-0619C
Thallium	5.0ppm	MTD-061912-5	MT3-12-0619C
Tin	1.0ppm	MTD-061912-5	MT3-12-0619C
Titanium	1.0ppm	MTD-061912-5	MT3-12-0619C
Vanadium	1.0ppm	MTD-061912-5	MT3-12-0619C
Zinc	2.0ppm	MTD-061912-5	MT3-12-0619C

Sodium-23	50ppm	MTD-061912-5	MT3-12-0619B
Magnesium-24	50ppm	MTD-061912-5	MT3-12-0619B
Potassium-39	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-43	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-44	50ppm	MTD-061912-5	MT3-12-0619B

Maximum spiking levels are instated to ensure the safety and longevity of the instrument. Any sample results above this level result in extended wash runs and sample dilution.

Metals Quantitation Summary Report

Sequence #: 001
Method: 01-MINERALS.mth
Acq Time: 16:48:34 Tue 05-May-20
Sample Name: Blank
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	12601.111	0	mg/L	3
Mg	24	4576.667	0	mg/L	3
K	39	163014.444	0	mg/L	3
Ca	44	6200.000	0	mg/L	3

Metals Quantitation Summary Report

Sequence #: 002
Method: 01-MINERALS.mth
Acq Time: 16:49:17 Tue 05-May-20
Sample Name: Std-0.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	12620.000	0.000519	mg/L		3
Mg	24	4696.667	0.000473	mg/L		3
K	39	163562.222	0.007687	mg/L		3
Ca	44	6341.111	0.013839	mg/L		3

Metals Quantitation Summary Report

Sequence #: 003
Method: 01-MINERALS.mth
Acq Time: 16:50:00 Tue 05-May-20
Sample Name: Std-0.20
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	259524.444	0.207796	mg/L		3
Mg	24	149170.000	0.198201	mg/L		3
K	39	369127.778	0.187473	mg/L		3
Ca	44	13801.111	0.225608	mg/L		3

Metals Quantitation Summary Report

Sequence #: 004
Method: 01-MINERALS.mth
Acq Time: 16:50:43 Tue 05-May-20
Sample Name: Std-0.50
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	591790.000	0.481279	mg/L	3
Mg	24	345864.444	0.462251	mg/L	3
K	39	680464.444	0.478624	mg/L	3
Ca	44	23738.889	0.526979	mg/L	3

Metals Quantitation Summary Report

Sequence #: 005
Method: 01-MINERALS.mth
Acq Time: 16:51:26 Tue 05-May-20
Sample Name: Std-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1161617.778	1.002776	mg/L		3
Mg	24	722260.000	1.019030	mg/L		3
K	39	1166086.667	0.993716	mg/L		3
Ca	44	39914.444	1.089866	mg/L		3

Metals Quantitation Summary Report

Sequence #: 006
Method: 01-MINERALS.mth
Acq Time: 16:52:09 Tue 05-May-20
Sample Name: Std-2.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2405658.889	2.151599	mg/L		3
Mg	24	1419207.778	2.068733	mg/L		3
K	39	2269247.778	2.160431	mg/L		3
Ca	44	68630.000	2.092240	mg/L		3

Metals Quantitation Summary Report

Sequence #: 007
Method: 01-MINERALS.mth
Acq Time: 16:52:52 Tue 05-May-20
Sample Name: Std-5.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	5875267.778	4.940365	mg/L		3
Mg	24	3631275.556	4.972548	mg/L		3
K	39	5318566.667	4.939723	mg/L		3
Ca	44	164044.444	4.941408	mg/L		3

Metals Quantitation Summary Report

Sequence #: 008
Method: 01-MINERALS.mth
Acq Time: 16:53:35 Tue 05-May-20
Sample Name: ICV-2.0
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 04/29/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2470265.556	2.167574	mg/L		3
Mg	24	1468848.889	2.099686	mg/L		3
K	39	2363068.889	2.204284	mg/L		3
Ca	44	70315.556	2.097865	mg/L		3

Metals Quantitation Summary Report

Sequence #: 009
Method: 01-MINERALS.mth
Acq Time: 16:54:22 Tue 05-May-20
Sample Name: CCV-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 04/29/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2438906.667	2.130790	mg/L		3
Mg	24	1446286.667	2.058800	mg/L		3
K	39	2311082.222	2.149695	mg/L		3
Ca	44	72142.222	2.153664	mg/L		3

Metals Quantitation Summary Report

Sequence #: 010
Method: 01-MINERALS.mth
Acq Time: 16:55:06 Tue 05-May-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	24312.222	0.011042	mg/L		3
Mg	24	12310.000	0.011756	mg/L		3
K	39	162517.778	0.002201	mg/L		3
Ca	44	6502.222	0.013833	mg/L		3

Metals Quantitation Summary Report

Sequence #: 011
Method: 01-MINERALS.mth
Acq Time: 16:55:50 Tue 05-May-20
Sample Name: CCB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	15621.111	0.003129	mg/L	3
Mg	24	6234.444	0.002712	mg/L	3
K	39	156124.444	-0.003117	mg/L	3
Ca	44	6182.222	0.004686	mg/L	3

Metals Quantitation Summary Report

Sequence #: 012
Method: 01-MINERALS.mth
Acq Time: 16:56:34 Tue 05-May-20
Sample Name: BS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	71021.111	0.051723	mg/L		3
Mg	24	40516.667	0.051876	mg/L		3
K	39	208862.222	0.043732	mg/L		3
Ca	44	7855.556	0.051521	mg/L		3

Metals Quantitation Summary Report

Sequence #: 013
Method: 01-MINERALS.mth
Acq Time: 17:08:48 Tue 05-May-20
Sample Name: 050520_1 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1169601.111	1.018112	mg/L		3
Mg	24	695681.111	0.988696	mg/L		3
K	39	1218502.222	1.055011	mg/L		3
Ca	44	39720.000	1.092484	mg/L		3

Metals Quantitation Summary Report

Sequence #: 014
Method: 01-MINERALS.mth
Acq Time: 17:21:07 Tue 05-May-20
Sample Name: 050520_1 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	15393.333	0.002766	mg/L		3
Mg	24	4708.889	0.000310	mg/L		3
K	39	158812.222	-0.001693	mg/L		3
Ca	44	6064.444	-0.001262	mg/L		3

Metals Quantitation Summary Report

Sequence #: 036
Method: 01-MINERALS.mth
Acq Time: 17:59:29 Tue 05-May-20
Sample Name: CCV2-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 04/29/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2386894.444	2.119437	mg/L		3
Mg	24	1400531.111	2.027586	mg/L		3
K	39	2306030.000	2.180912	mg/L		3
Ca	44	70694.444	2.142061	mg/L		3

Metals Quantitation Summary Report

Sequence #: 037
Method: 01-MINERALS.mth
Acq Time: 18:00:14 Tue 05-May-20
Sample Name: CCB2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	25397.778	0.012249	mg/L		3
Mg	24	12552.222	0.012299	mg/L		3
K	39	168877.778	0.010554	mg/L		3
Ca	44	6248.889	0.007050	mg/L		3

Metals Quantitation Summary Report

Sequence #: 038
Method: 01-MINERALS.mth
Acq Time: 18:02:11 Tue 05-May-20
Sample Name: 13569.07s
Sample Type: Sample
Matrix: Liquid
Comments: Field Blank
Dilution: 2

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	14878.889	0.003023	mg/L		3
Mg	24	6357.778	0.004474	mg/L		3
K	39	164662.222	-0.010710	mg/L		3
Ca	44	7693.333	0.079084	mg/L		3

Metals Quantitation Summary Report

Sequence #: 039
Method: 01-MINERALS.mth
Acq Time: 18:04:14 Tue 05-May-20
Sample Name: 13569.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	11514832.222	51.141802	mg/L		3
Mg	24	5952335.556	43.101485	mg/L		3
K	39	510881.111	1.754561	mg/L		3
Ca	44	989405.556	162.964943	mg/L		3

Metals Quantitation Summary Report

Sequence #: 041
Method: 01-MINERALS.mth
Acq Time: 18:05:46 Tue 05-May-20
Sample Name: 13569.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	9843295.556	43.159644	mg/L		3
Mg	24	8711570.000	62.210092	mg/L		3
K	39	381111.111	1.069083	mg/L		3
Ca	44	1546626.667	251.841163	mg/L		3

Metals Quantitation Summary Report

Sequence #: 043
Method: 01-MINERALS.mth
Acq Time: 18:07:19 Tue 05-May-20
Sample Name: 13569.03s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	6748786.667	29.864689	mg/L		3
Mg	24	5511398.889	39.682260	mg/L		3
K	39	476856.667	1.570886	mg/L		3
Ca	44	693237.778	113.318349	mg/L		3

Metals Quantitation Summary Report

Sequence #: 045
Method: 01-MINERALS.mth
Acq Time: 18:08:52 Tue 05-May-20
Sample Name: 13569.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	6807737.778	29.822628	mg/L		3
Mg	24	5626773.333	40.050478	mg/L		3
K	39	470725.556	1.519986	mg/L		3
Ca	44	689990.000	111.708516	mg/L		3

Metals Quantitation Summary Report

Sequence #: 047
Method: 01-MINERALS.mth
Acq Time: 18:10:25 Tue 05-May-20
Sample Name: 13569.05s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	19864103.333	88.326849	mg/L		3
Mg	24	8717970.000	63.030779	mg/L		3
K	39	1617223.333	7.370066	mg/L		3
Ca	44	1490082.222	245.824194	mg/L		3

Metals Quantitation Summary Report

Sequence #: 049
Method: 01-MINERALS.mth
Acq Time: 18:11:57 Tue 05-May-20
Sample Name: 13569.06s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	8516270.000	36.362555	mg/L		3
Mg	24	4251204.444	29.520870	mg/L		3
K	39	1431684.444	6.145013	mg/L		3
Ca	44	898797.778	142.066793	mg/L		3

Metals Quantitation Summary Report

Sequence #: 058
Method: 01-MINERALS.mth
Acq Time: 18:25:25 Tue 05-May-20
Sample Name: 13569.01 dil
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 50

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1163894.444	49.640638	mg/L		3
Mg	24	630736.667	43.895543	mg/L		3
K	39	206658.889	1.761457	mg/L		3
Ca	44	105988.889	159.714874	mg/L		3

Metals Quantitation Summary Report

Sequence #: 059
Method: 01-MINERALS.mth
Acq Time: 18:26:12 Tue 05-May-20
Sample Name: CCV3-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 04/29/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	2461331.111	2.164710	mg/L	3
Mg	24	1437604.444	2.060392	mg/L	3
K	39	2276647.778	2.129541	mg/L	3
Ca	44	69883.333	2.092557	mg/L	3

Metals Quantitation Summary Report

Sequence #: 060
Method: 01-MINERALS.mth
Acq Time: 18:26:56 Tue 05-May-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	23548.889	0.009765	mg/L	3
Mg	24	12191.111	0.011139	mg/L	3
K	39	173162.222	0.008518	mg/L	3
Ca	44	6283.333	0.000455	mg/L	3

Metals Quantitation Summary Report

Sequence #: 063
Method: 01-MINERALS.mth
Acq Time: 18:48:06 Tue 05-May-20
Sample Name: CCV4-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 04/29/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2398592.222	2.013948	mg/L		3
Mg	24	1444110.000	1.975614	mg/L		3
K	39	2363570.000	2.106021	mg/L		3
Ca	44	71531.111	2.036027	mg/L		3

Metals Quantitation Summary Report

Sequence #: 064
Method: 01-MINERALS.mth
Acq Time: 18:48:51 Tue 05-May-20
Sample Name: CCB4
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	23130.000	0.009205	mg/L	3
Mg	24	12020.000	0.010691	mg/L	3
K	39	178032.222	0.012626	mg/L	3
Ca	44	5986.667	-0.010301	mg/L	3

Metals Quantitation Summary Report

Sequence #: 001

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 10:47:19 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: Blank

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	9778.352	0	mg/L	3
Be	9	66.667	0	mg/L	3
B	10	40.000	0	mg/L	3
Cr	52	178.334	0	mg/L	3
Co	59	55.000	0	mg/L	3
As	75	138.334	0	mg/L	3
Mo	95	390.548	0	mg/L	3
Cd	114	198.045	0	mg/L	3
Sb	121	373.338	0	mg/L	3
Ba	137	138.334	0	mg/L	3
Tl	205	168.334	0	mg/L	3
Pb	208	1680.378	0	mg/L	3
Se	82	-6.784	0	mg/L	3

Metals Quantitation Summary Report

Sequence #: 002

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 10:48:37 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: Std-0.0

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	9896.762	0.000095	mg/L	3
Be	9	75.000	0.000012	mg/L	3
B	10	35.000	-0.000033	mg/L	3
Cr	52	185.001	0.000004	mg/L	3
Co	59	68.333	0.000002	mg/L	3
As	75	155.001	0.000072	mg/L	3
Mo	95	375.570	-0.000003	mg/L	3
Cd	114	203.090	0.000003	mg/L	3
Sb	121	353.338	-0.000004	mg/L	3
Ba	137	133.334	-0.000001	mg/L	3
Tl	205	131.667	-0.000001	mg/L	3
Pb	208	1660.376	-0.000001	mg/L	3
Se	82	-69.068	-0.000381	mg/L	3

Metals Quantitation Summary Report

Sequence #: 003

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 10:49:55 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: Std-0.0001

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	10724.054	0.000061	mg/L		3
Be	9	171.668	0.000105	mg/L		3
B	10	58.333	0.000089	mg/L		3
Cr	52	493.342	0.000098	mg/L		3
Co	59	941.698	0.000131	mg/L		3
As	75	183.335	0.000134	mg/L		3
Mo	95	521.761	0.000047	mg/L		3
Cd	114	582.752	0.000123	mg/L		3
Sb	121	905.029	0.000169	mg/L		3
Ba	137	405.006	0.000144	mg/L		3
Tl	205	2921.966	0.000090	mg/L		3
Pb	208	4527.381	0.000088	mg/L		3
Se	82	-0.287	0.000033	mg/L		3

Metals Quantitation Summary Report

Sequence #: 004

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 10:51:13 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: Std-0.0005

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	12610.565	0.000667	mg/L	3
Be	9	561.678	0.000513	mg/L	3
B	10	2011.809	0.011761	mg/L	3
Cr	52	1836.785	0.000515	mg/L	3
Co	59	3557.110	0.000506	mg/L	3
As	75	326.670	0.000596	mg/L	3
Mo	95	1561.726	0.000462	mg/L	3
Cd	114	1799.602	0.000509	mg/L	3
Sb	121	1916.795	0.000488	mg/L	3
Ba	137	1086.708	0.000507	mg/L	3
Tl	205	14662.524	0.000458	mg/L	3
Pb	208	16507.300	0.000452	mg/L	3
Se	82	17.447	0.000147	mg/L	3

Metals Quantitation Summary Report

Sequence #: 005

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 10:52:31 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: Std-0.005

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	27220.944	0.005031	mg/L		3
Be	9	5005.878	0.005074	mg/L		3
B	10	898.362	0.005019	mg/L		3
Cr	52	17061.888	0.005272	mg/L		3
Co	59	36566.742	0.005283	mg/L		3
As	75	1656.763	0.004987	mg/L		3
Mo	95	12179.636	0.004740	mg/L		3
Cd	114	16166.418	0.005114	mg/L		3
Sb	121	16557.930	0.005198	mg/L		3
Ba	137	9883.420	0.005250	mg/L		3
Tl	205	153343.672	0.004746	mg/L		3
Pb	208	156865.145	0.004681	mg/L		3
Se	82	774.239	0.004540	mg/L		3

Metals Quantitation Summary Report

Sequence #: 006

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 10:53:50 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: Std-0.02

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	76407.138	0.019239	mg/L	3
Be	9	19731.957	0.019655	mg/L	3
B	10	3510.432	0.019843	mg/L	3
Cr	52	66949.847	0.020563	mg/L	3
Co	59	142204.404	0.020243	mg/L	3
As	75	6286.384	0.019997	mg/L	3
Mo	95	48893.062	0.019180	mg/L	3
Cd	114	65044.376	0.020453	mg/L	3
Sb	121	65170.015	0.020491	mg/L	3
Ba	137	38003.848	0.020107	mg/L	3
Tl	205	607328.237	0.019018	mg/L	3
Pb	208	634608.023	0.019317	mg/L	3
Se	82	3353.562	0.019638	mg/L	3

Metals Quantitation Summary Report

Sequence #: 007

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 10:55:08 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: Std-0.05

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	170366.061	0.048963	mg/L	3
Be	9	48062.576	0.050092	mg/L	3
B	10	8452.520	0.050242	mg/L	3
Cr	52	165262.499	0.051959	mg/L	3
Co	59	344678.170	0.050179	mg/L	3
As	75	14952.828	0.049362	mg/L	3
Mo	95	126251.338	0.050976	mg/L	3
Cd	114	157311.608	0.050611	mg/L	3
Sb	121	158957.963	0.051273	mg/L	3
Ba	137	93206.441	0.050561	mg/L	3
Tl	205	1508748.113	0.048815	mg/L	3
Pb	208	1552920.574	0.048944	mg/L	3
Se	82	8196.933	0.048642	mg/L	3

Metals Quantitation Summary Report

Sequence #: 008

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 10:56:27 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: Std-0.2

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	671725.477	0.200334	mg/L	3
Be	9	193110.413	0.200010	mg/L	3
B	10	33831.795	0.199955	mg/L	3
Cr	52	656965.063	0.199447	mg/L	3
Co	59	1423397.044	0.199924	mg/L	3
As	75	62389.300	0.200160	mg/L	3
Mo	95	511840.166	0.199845	mg/L	3
Cd	114	643031.061	0.199799	mg/L	3
Sb	121	640362.197	0.199628	mg/L	3
Ba	137	381520.632	0.199843	mg/L	3
Tl	205	6517765.289	0.200401	mg/L	3
Pb	208	6689106.944	0.200340	mg/L	3
Se	82	33564.005	0.200388	mg/L	3

Metals Quantitation Summary Report

Sequence #: 009

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 10:58:21 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: ICV-0.1

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments: Spex-std made 04/29/

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	327707.103	0.102490	mg/L	3
Be	9	95971.830	0.105466	mg/L	3
B	10	16631.372	0.104319	mg/L	3
Cr	52	321903.431	0.098972	mg/L	3
Co	59	706583.276	0.100505	mg/L	3
As	75	30034.875	0.097329	mg/L	3
Mo	95	257544.230	0.101728	mg/L	3
Cd	114	317134.933	0.099740	mg/L	3
Sb	121	285117.133	0.089943	mg/L	3
Ba	137	192348.100	0.101972	mg/L	3
Tl	205	3305669.440	0.104818	mg/L	3
Pb	208	3427727.382	0.105869	mg/L	3
Se	82	16733.270	0.099289	mg/L	3

Metals Quantitation Summary Report

Sequence #: 010

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 10:59:38 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name:CCV-0.1

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments: IV-std made 04/29/20

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	333945.859	0.108874	mg/L	3
Be	9	96048.773	0.109737	mg/L	3
B	10	16346.023	0.106675	mg/L	3
Cr	52	316779.359	0.099094	mg/L	3
Co	59	698011.497	0.101058	mg/L	3
As	75	29201.505	0.096286	mg/L	3
Mo	95	259057.746	0.104164	mg/L	3
Cd	114	320683.564	0.102624	mg/L	3
Sb	121	289057.665	0.092809	mg/L	3
Ba	137	188173.727	0.101589	mg/L	3
Tl	205	3242085.247	0.102701	mg/L	3
Pb	208	3322679.737	0.102527	mg/L	3
Se	82	16496.066	0.100671	mg/L	3

Metals Quantitation Summary Report

Sequence #: 011

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 11:05:14 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name:rinse

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	9801.700	0.000048	mg/L	3
Be	9	55.000	-0.000013	mg/L	3
B	10	88.334	0.000316	mg/L	3
Cr	52	348.338	0.000062	mg/L	3
Co	59	455.007	0.000064	mg/L	3
As	75	178.335	0.000170	mg/L	3
Mo	95	1990.730	0.000720	mg/L	3
Cd	114	310.641	0.000043	mg/L	3
Sb	121	2728.596	0.000843	mg/L	3
Ba	137	201.668	0.000041	mg/L	3
Tl	205	2600.240	0.000084	mg/L	3
Pb	208	2813.803	0.000038	mg/L	3
Se	82	-79.434	-0.000473	mg/L	3

Metals Quantitation Summary Report

Sequence #: 012

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 11:06:32 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: ICB

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	9388.084	0.000146	mg/L	3
Be	9	36.667	-0.000029	mg/L	3
B	10	66.667	0.000209	mg/L	3
Cr	52	340.004	0.000060	mg/L	3
Co	59	336.671	0.000046	mg/L	3
As	75	205.001	0.000272	mg/L	3
Mo	95	1556.794	0.000532	mg/L	3
Cd	114	329.313	0.000050	mg/L	3
Sb	121	2286.850	0.000692	mg/L	3
Ba	137	223.335	0.000055	mg/L	3
Tl	205	2048.481	0.000065	mg/L	3
Pb	208	2320.423	0.000022	mg/L	3
Se	82	-131.155	-0.000796	mg/L	3

Metals Quantitation Summary Report

Sequence #: 013

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 11:07:50 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: CCB

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	9771.688	0.000151	mg/L	3
Be	9	30.000	-0.000039	mg/L	3
B	10	70.000	0.000211	mg/L	3
Cr	52	283.336	0.000036	mg/L	3
Co	59	256.669	0.000031	mg/L	3
As	75	150.001	0.000046	mg/L	3
Mo	95	1343.576	0.000413	mg/L	3
Cd	114	332.178	0.000047	mg/L	3
Sb	121	1845.119	0.000508	mg/L	3
Ba	137	180.001	0.000025	mg/L	3
Tl	205	1620.092	0.000050	mg/L	3
Pb	208	1878.721	0.000006	mg/L	3
Se	82	44.558	0.000337	mg/L	3

Metals Quantitation Summary Report

Sequence #: 014

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 11:09:17 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: BS-0.0001

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Be	9	135.001	0.000073	mg/L		3
As	75	165.001	0.000073	mg/L		3
Cd	114	582.017	0.000123	mg/L		3
Tl	205	4162.273	0.000128	mg/L		3
Pb	208	4665.740	0.000089	mg/L		3

Metals Quantitation Summary Report

Sequence #: 015

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 11:10:51 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: BS-0.0005

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11434.576	0.000431	mg/L		3
Be	9	465.008	0.000427	mg/L		3
Cr	52	1768.444	0.000504	mg/L		3
Co	59	3580.449	0.000518	mg/L		3
As	75	300.003	0.000525	mg/L		3
Cd	114	1803.258	0.000517	mg/L		3
Ba	137	1153.380	0.000554	mg/L		3
Tl	205	15069.613	0.000481	mg/L		3
Pb	208	15578.437	0.000434	mg/L		3

Metals Quantitation Summary Report

Sequence #: 016

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 11:14:46 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: BS-0.001

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	13870.069	0.001159	mg/L	3
Be	9	916.696	0.000904	mg/L	3
B	10	250.002	0.001271	mg/L	3
Cr	52	3522.102	0.001050	mg/L	3
Co	59	7086.758	0.001024	mg/L	3
As	75	475.008	0.001099	mg/L	3
Mo	95	3021.255	0.001057	mg/L	3
Cd	114	3536.365	0.001072	mg/L	3
Sb	121	4355.664	0.001282	mg/L	3
Ba	137	2101.822	0.001063	mg/L	3
Tl	205	30153.483	0.000977	mg/L	3
Pb	208	31348.200	0.000940	mg/L	3

Metals Quantitation Summary Report

Sequence #: 017
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:16:03 Wed 06-May-20
Sample Name: BS-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	13503.081	0.001048	mg/L	3
Be	9	930.030	0.000922	mg/L	3
B	10	238.335	0.001200	mg/L	3
Cr	52	3488.760	0.001068	mg/L	3
Co	59	7186.809	0.001064	mg/L	3
As	75	453.341	0.001064	mg/L	3
Mo	95	3060.191	0.001104	mg/L	3
Cd	114	3278.653	0.001016	mg/L	3
Sb	121	4455.695	0.001350	mg/L	3
Ba	137	2096.821	0.001090	mg/L	3
Tl	205	30280.394	0.000981	mg/L	3
Pb	208	31296.411	0.000937	mg/L	3
Se	82	212.810	0.001348	mg/L	3

Metals Quantitation Summary Report

Sequence #: 018
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:17:21 Wed 06-May-20
Sample Name: BS-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Se	82	199.555	0.001210	mg/L	3

Metals Quantitation Summary Report

Sequence #: 019

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 11:18:41 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: Solu-AB

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	66018.914	0.021044	mg/L		3
Co	59	140127.314	0.020702	mg/L		3
As	75	6203.014	0.020499	mg/L		3
Mo	95	491489.158	0.201857	mg/L		3
Cd	114	64119.729	0.020896	mg/L		3

Metals Quantitation Summary Report

Sequence #: 020

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 11:21:16 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: Solu-AA

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11251.120	-0.000091	mg/L	3
Be	9	20.000	-0.000055	mg/L	3
B	10	100.000	0.000286	mg/L	3
Cr	52	365.005	0.000045	mg/L	3
Co	59	220.002	0.000021	mg/L	3
As	75	161.668	0.000003	mg/L	3
Mo	95	5208.374	0.001749	mg/L	3
Cd	114	251.767	0.000006	mg/L	3
Sb	121	705.017	0.000080	mg/L	3
Ba	137	250.002	0.000044	mg/L	3
Tl	205	676.683	0.000014	mg/L	3
Pb	208	1858.722	-0.000005	mg/L	3
Se	82	-69.238	-0.000310	mg/L	3

Metals Quantitation Summary Report

Sequence #: 021
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:23:02 Wed 06-May-20
Sample Name: 050620_1 LCS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	176392.528	0.050083	mg/L	3
Be	9	48059.112	0.049496	mg/L	3
B	10	8310.751	0.048831	mg/L	3
Cr	52	170239.274	0.052083	mg/L	3
Co	59	369480.395	0.052328	mg/L	3
As	75	15249.810	0.048953	mg/L	3
Mo	95	127754.812	0.050168	mg/L	3
Cd	114	164484.578	0.051469	mg/L	3
Sb	121	160136.449	0.050236	mg/L	3
Ba	137	96904.228	0.051130	mg/L	3
Tl	205	1517751.928	0.047162	mg/L	3
Pb	208	1622674.468	0.049104	mg/L	3
Se	82	8188.418	0.047930	mg/L	3

Metals Quantitation Summary Report

Sequence #: 023

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 11:25:41 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 050620_1 LRB

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	9933.462	0.000058	mg/L		3
Be	9	35.000	-0.000034	mg/L		3
B	10	83.334	0.000277	mg/L		3
Cr	52	270.003	0.000030	mg/L		3
Co	59	240.002	0.000028	mg/L		3
As	75	176.668	0.000133	mg/L		3
Mo	95	2357.180	0.000838	mg/L		3
Cd	114	236.724	0.000013	mg/L		3
Sb	121	636.681	0.000090	mg/L		3
Ba	137	183.335	0.000025	mg/L		3
Tl	205	1695.101	0.000052	mg/L		3
Pb	208	2408.762	0.000023	mg/L		3
Se	82	-37.556	-0.000172	mg/L		3

Metals Quantitation Summary Report

Sequence #: 024
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:28:48 Wed 06-May-20
Sample Name: 13569.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 2

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	10593.945	0.000224	mg/L	3
Be	9	25.000	-0.000095	mg/L	3
Cr	52	296.670	0.000063	mg/L	3
Co	59	136.667	0.000022	mg/L	3
As	75	195.001	0.000288	mg/L	3
Mo	95	1301.745	0.000696	mg/L	3
Cd	114	228.895	0.000009	mg/L	3
Sb	121	488.342	0.000053	mg/L	3
Ba	137	193.335	0.000046	mg/L	3
Tl	205	728.352	0.000033	mg/L	3
Pb	208	1227.022	-0.000039	mg/L	3
Se	82	-106.050	-0.001147	mg/L	3

Metals Quantitation Summary Report

Sequence #: 025

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 11:41:06 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 13569.01 dil

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 50

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	12740.695	0.044057	mg/L	3
Be	9	21.667	-0.002529	mg/L	3
Cr	52	435.007	0.003603	mg/L	3
Co	59	453.341	0.002740	mg/L	3
As	75	211.668	0.009490	mg/L	3
Mo	95	870.205	0.008542	mg/L	3
Cd	114	270.360	0.000811	mg/L	3
Sb	121	430.007	0.000293	mg/L	3
Ba	137	5951.242	0.150897	mg/L	3
Tl	205	631.681	0.000725	mg/L	3
Pb	208	1505.367	-0.000471	mg/L	3
Se	82	-28.117	-0.008025	mg/L	3

Metals Quantitation Summary Report

Sequence #: 026

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 11:42:22 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 13569.01s

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 5

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	33669.648	0.036122	mg/L	3
Be	9	28.333	-0.000221	mg/L	3
Cr	52	1121.711	0.001500	mg/L	3
Co	59	2838.616	0.002063	mg/L	3
As	75	380.005	0.004010	mg/L	3
Mo	95	1685.690	0.002643	mg/L	3
Cd	114	295.136	0.000149	mg/L	3
Sb	121	370.005	-0.000026	mg/L	3
Ba	137	54369.943	0.149950	mg/L	3
Tl	205	471.675	0.000048	mg/L	3
Pb	208	3410.531	0.000261	mg/L	3
Se	82	-7.385	-0.000082	mg/L	3

Metals Quantitation Summary Report

Sequence #: 028
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:53:12 Wed 06-May-20
Sample Name: 13569.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	45642.825	0.054655	mg/L	3
Be	9	15.000	-0.000289	mg/L	3
Cr	52	315.003	0.000186	mg/L	3
Co	59	5274.310	0.003686	mg/L	3
As	75	261.669	0.001798	mg/L	3
Mo	95	5601.902	0.010172	mg/L	3
Cd	114	273.524	0.000092	mg/L	3
Sb	121	345.004	-0.000095	mg/L	3
Ba	137	14779.308	0.038546	mg/L	3
Tl	205	341.671	0.000027	mg/L	3
Pb	208	1507.035	-0.000040	mg/L	3
Se	82	-33.013	-0.000730	mg/L	3

Metals Quantitation Summary Report

Sequence #: 030

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 11:57:32 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 13569.03s

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 5

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	16721.479	0.009102	mg/L	3
Be	9	13.333	-0.000302	mg/L	3
Cr	52	263.336	0.000117	mg/L	3
Co	59	733.352	0.000489	mg/L	3
As	75	520.009	0.006193	mg/L	3
Mo	95	2410.453	0.004024	mg/L	3
Cd	114	202.482	-0.000011	mg/L	3
Sb	121	316.670	-0.000127	mg/L	3
Ba	137	58390.770	0.157433	mg/L	3
Tl	205	248.336	0.000012	mg/L	3
Pb	208	752.006	-0.000162	mg/L	3
Se	82	37.461	0.001330	mg/L	3

Metals Quantitation Summary Report

Sequence #: 032
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:00:18 Wed 06-May-20
Sample Name: 13569.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	16809.909	0.008463	mg/L	3
Be	9	18.333	-0.000280	mg/L	3
Cr	52	211.668	0.000039	mg/L	3
Co	59	781.688	0.000530	mg/L	3
As	75	536.677	0.006564	mg/L	3
Mo	95	2206.836	0.003661	mg/L	3
Cd	114	223.905	0.000026	mg/L	3
Sb	121	285.003	-0.000173	mg/L	3
Ba	137	57108.926	0.155603	mg/L	3
Tl	205	178.334	0.000001	mg/L	3
Pb	208	763.673	-0.000156	mg/L	3
Se	82	-54.550	-0.001495	mg/L	3

Metals Quantitation Summary Report

Sequence #: 034

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 12:03:03 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 13569.05s

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 5

Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	66122.975	0.090963	mg/L		3
Be	9	51.667	-0.000084	mg/L		3
Cr	52	7048.409	0.010163	mg/L		3
Co	59	8189.014	0.005582	mg/L		3
As	75	491.675	0.005293	mg/L		3
Mo	95	50456.913	0.095528	mg/L		3
Cd	114	365.554	0.000219	mg/L		3
Sb	121	515.009	0.000148	mg/L		3
Ba	137	25060.299	0.063793	mg/L		3
Tl	205	1235.054	0.000178	mg/L		3
Pb	208	32883.102	0.005102	mg/L		3
Se	82	122.231	0.004121	mg/L		3

Metals Quantitation Summary Report

Sequence #: 036

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 12:10:32 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 13569.06s

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 5

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	35851.744	0.037258	mg/L	3
Be	9	8.333	-0.000329	mg/L	3
Cr	52	328.337	0.000212	mg/L	3
Co	59	808.356	0.000535	mg/L	3
As	75	166.668	0.000294	mg/L	3
Mo	95	11222.803	0.021473	mg/L	3
Cd	114	385.498	0.000274	mg/L	3
Sb	121	293.336	-0.000172	mg/L	3
Ba	137	16018.992	0.042332	mg/L	3
Tl	205	283.336	0.000018	mg/L	3
Pb	208	1738.714	-0.000002	mg/L	3
Se	82	16.224	0.000659	mg/L	3

Metals Quantitation Summary Report

Sequence #: 043

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 12:23:24 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 13569.06 MS-0.05

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 5

Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	213614.393	0.304981	mg/L		3
Be	9	51785.604	0.264364	mg/L		3
Cr	52	172742.005	0.257834	mg/L		3
Co	59	366293.674	0.253107	mg/L		3
As	75	15800.407	0.247578	mg/L		3
Mo	95	139222.527	0.266892	mg/L		3
Cd	114	163339.041	0.249494	mg/L		3
Sb	121	128147.298	0.196083	mg/L		3
Ba	137	109123.734	0.281184	mg/L		3
Tl	205	1425100.123	0.236887	mg/L		3
Pb	208	1468285.490	0.237628	mg/L		3
Se	82	8631.861	0.262525	mg/L		3

Metals Quantitation Summary Report

Sequence #: 044

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 12:26:20 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 13569.06 MSD-0.05

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 5

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	210731.449	0.297444	mg/L	3
Be	9	51052.813	0.258425	mg/L	3
Cr	52	171853.609	0.257086	mg/L	3
Co	59	370663.666	0.256863	mg/L	3
As	75	15973.934	0.250973	mg/L	3
Mo	95	141968.330	0.272794	mg/L	3
Cd	114	160940.156	0.246318	mg/L	3
Sb	121	131500.800	0.201725	mg/L	3
Ba	137	108092.446	0.279018	mg/L	3
Tl	205	1416182.245	0.235158	mg/L	3
Pb	208	1471257.536	0.237858	mg/L	3
Se	82	8444.892	0.258575	mg/L	3

Metals Quantitation Summary Report

Sequence #: 045

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 12:29:14 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: CCV2-0.1

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments: IV-std made 04/29/20

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	372939.135	0.099872	mg/L	3
Be	9	105082.724	0.098607	mg/L	3
B	10	19166.253	0.102580	mg/L	3
Cr	52	351295.684	0.103803	mg/L	3
Co	59	769733.501	0.105266	mg/L	3
As	75	31167.316	0.097105	mg/L	3
Mo	95	264668.596	0.100528	mg/L	3
Cd	114	334326.462	0.101066	mg/L	3
Sb	121	296502.654	0.089927	mg/L	3
Ba	137	193076.931	0.098424	mg/L	3
Tl	205	3266864.535	0.106387	mg/L	3
Pb	208	3351973.182	0.106304	mg/L	3
Se	82	16948.379	0.097262	mg/L	3

Metals Quantitation Summary Report

Sequence #: 046

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 12:39:20 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: Rinse

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	10538.913	0.000193	mg/L		3
Be	9	10.000	-0.000063	mg/L		3
B	10	93.334	0.000334	mg/L		3
Cr	52	228.335	0.000016	mg/L		3
Co	59	138.334	0.000013	mg/L		3
As	75	183.335	0.000157	mg/L		3
Mo	95	728.780	0.000142	mg/L		3
Cd	114	216.288	0.000006	mg/L		3
Sb	121	1376.734	0.000339	mg/L		3
Ba	137	131.667	-0.000004	mg/L		3
Tl	205	560.011	0.000015	mg/L		3
Pb	208	825.341	-0.000027	mg/L		3
Se	82	-47.831	-0.000266	mg/L		3

Metals Quantitation Summary Report

Sequence #: 047

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 12:40:38 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: CCB2

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	10200.320	-0.000071	mg/L		3
Be	9	20.000	-0.000052	mg/L		3
B	10	100.000	0.000341	mg/L		3
Cr	52	246.669	0.000022	mg/L		3
Co	59	106.667	0.000008	mg/L		3
As	75	161.668	0.000078	mg/L		3
Mo	95	724.488	0.000140	mg/L		3
Cd	114	184.953	-0.000005	mg/L		3
Sb	121	1241.721	0.000293	mg/L		3
Ba	137	136.667	-0.000001	mg/L		3
Tl	205	478.341	0.000011	mg/L		3
Pb	208	880.342	-0.000026	mg/L		3
Se	82	-12.529	-0.000018	mg/L		3

Metals Quantitation Summary Report

Sequence #: 048

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 12:42:17 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 13569.07s

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 2

Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	10	86.667	0.000501	mg/L		3

Metals Quantitation Summary Report

Sequence #: 049
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:44:13 Wed 06-May-20
Sample Name: 13569.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
B	11	8959.478	0.049227	mg/L	3

Metals Quantitation Summary Report

Sequence #: 051
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:47:10 Wed 06-May-20
Sample Name: 13569.03s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
B	10	1621.759	0.047838	mg/L	3

Metals Quantitation Summary Report

Sequence #: 053
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:49:53 Wed 06-May-20
Sample Name: 13569.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
B	10	16177.512	0.480000	mg/L	3

Metals Quantitation Summary Report

Sequence #: 055
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:52:57 Wed 06-May-20
Sample Name: 13569.06s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
B	10	19832.107	0.564313	mg/L	3

Metals Quantitation Summary Report

Sequence #: 057
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:55:39 Wed 06-May-20
Sample Name: 13569.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
B	10	125583.476	3.568901	mg/L	3

Metals Quantitation Summary Report

Sequence #: 059

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 13:00:40 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 13569.05 dil

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 25

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
B	11	178983.384	4.915376	mg/L	3

Metals Quantitation Summary Report

Sequence #: 060

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 13:01:59 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 13569.05s

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 5

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
B	11	868189.279	4.997121	mg/L	3

Metals Quantitation Summary Report

Sequence #: 062

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 13:05:36 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 13569.06 MS-0.05

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 5

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
B	10	28946.024	0.855487	mg/L	3

Metals Quantitation Summary Report

Sequence #: 063

Operator:

Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P

Acq Mode: Data Acquisition

Acq Time: 13:06:55 Wed 06-May-20

Cal Title: 20-0506A.cal

Sample Name: 13569.06 MSD-0.05

Cal Type: External Calibration

Sample Type: Sample

Last Calib: mtd-050620-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 5

Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
B	10	29759.483	0.855660	mg/L	3

Metals Quantitation Summary Report

Sequence #: 064
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 13:08:30 Wed 06-May-20
Sample Name: CCV3-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 04/29/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
B	10	19409.845	0.107218	mg/L	3

Metals Quantitation Summary Report

Sequence #: 066
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 13:11:16 Wed 06-May-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass	Concentration	Units	RSD %	Rep
B	10	335.004	0.001682	mg/L	3

DATE 5/5/20

Metals Digestion 3015A \ 3050B

PREP BATCH MTD-050520-1

TIME START 14:30

TIME FINISH 15:00

ANALYST [Signature]

Pipet Calibration:

Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria	Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria
2	1	1.000	1.002	Bias: Mean \pm 2% of nominal value Precision: RSD \leq 1% of nominal value	3	1	0.500	0.501	Bias: Mean \pm 2% of nominal value Precision: RSD \leq 1% of nominal value
	2		1.001			2		0.501	
	3		1.000			3		0.503	

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	FINAL VOLUME (ml)	REMARKS	% TOTAL SOLIDS	DILUTION FACTOR
LCS-050520-1	----	50	50		—	1
LRB-050520-1	----	50	50		—	1
13482.01		1.0				50
13537.01						
13538.01						
13556.01						
13604.01						
01MS						
01MSD						
13618.01						
13625.01		25				2
02		25				
02MS		25				
02MSD		25				
13569.01		10				5
02						
03						
04						
05						
06						
07		25		field blank		2
13586.01		10				5
02						
02MS						
02MSD						
13234.07						

NOTES: 1) Spike values (unless otherwise stated):

LCS = 0.05 ppm = 50 mls + 0.50 mls of 5ppm Spiking Solution
 Samples: Water = 0.05 ppm = 50 mls + 0.50 mls of 5ppm Spiking Solution
 Soil = 0.10 ppm = 50 mls + 1.0 mls of 5ppm Spiking Solution
 Spiking Solution - Date Prepared: 4/29/20

2) Spike values for minerals (Ca-Mg-K-Na)

LCS = 1.0 ppm = 50 mls + 0.50 mls HM Stock Solution
 Samples (Water or Soil) = 2.0 ppm = 50 mls + 1.0 mls HM Stock Solution
 High Purity Stock Solution (HM) - Lot # 1927522-500

5/12/20
[Signature]

3) HNO₃ Lot # 0000245675

4) Centrifuge Tube Lot # 191210-060

5) Balance ID: Ma 298841

Reviewed by CCM On 5-6-20

Metals Digestion 3015A 3050B

DATE 5-6-20

PREP BATCH MTD-050620-1

TIME START 10:00

TIME FINISH 10:30

ANALYST CCM

Pipet Calibration:

Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria	Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria
2	1	1.0	1.000	Bias: Mean \pm 2% of nominal value Precision: RSD \leq 1% of nominal value	3	1	0.5	0.500	Bias: Mean \pm 2% of nominal value Precision: RSD \leq 1% of nominal value
	2	1	1.003			2	1	0.499	
	3	1	1.003			3	1	0.500	

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	FINAL VOLUME (ml)	REMARKS	% TOTAL SOLIDS	DILUTION FACTOR
LCS-050620-1	----	50	50		—	1
LRB-050620-1	----	50	50		—	1
13569.01		10				5
.02						
.03						
.04						
.05						
.06						
.06 MS						
.06 MSD						
.07		25				2
13664.02		10				5
13665.02						
13666.01						

NOTES: 1) Spike values (unless otherwise stated):
 LCS = 0.05 ppm = 50 mls / 0.50 mls of 5ppm Spiking Solution
 Samples: Water = 0.05 ppm = 50 mls / 0.50 mls of 5ppm Spiking Solution
 Soil = 0.10 ppm = 50 mls / 1.0 mls of 5ppm Spiking Solution
 Spiking Solution - Date Prepared: 4-29-20

2) Spike values for minerals (Ca-Mg-K-Na)
 LCS = 1.0 ppm = 50 mls / 0.50 mls HM Stock Solution
 Samples (Water or Soil) = 2.0 ppm = 50 mls / 1.0 mls HM Stock Solution
 High Purity Stock Solution (HM)- Lot = 1927522-500

3) HNO₃ Lot # 0000245675 4) Centrifuge Tube Lot # 191210-060

5) Balance ID: M1 24684/04/5/120
 Reviewed by [Signature] On 5/6/20

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	5/1/2020 4:25:22 PM	Calibration Blank	Liquid	
002	5/1/2020 4:27:13 PM	Standard #1	Liquid	
003	5/1/2020 4:29:05 PM	Standard #2	Liquid	
004	5/1/2020 4:30:57 PM	Standard #3	Liquid	
005	5/1/2020 4:32:48 PM	Standard #4	Liquid	
006	5/1/2020 4:34:40 PM	Standard #5	Liquid	
007	5/1/2020 4:36:32 PM	Standard #6	Liquid	
008	5/1/2020 4:39:10 PM	Standard #7	Liquid	
009	5/1/2020 4:41:56 PM	Standard #8	Liquid	
010	5/1/2020 4:45:00 PM	ICV-5.0 ppb	Liquid	ICV
011	5/1/2020 4:46:52 PM	ICB	Liquid	ICB
012	5/1/2020 4:48:43 PM	CCV1-2.0 ppb	Liquid	CCV
013	5/1/2020 4:50:35 PM	CCB1	Liquid	CCB
014	5/1/2020 4:55:14 PM	BS-0.10	Liquid	BS
015	5/1/2020 4:57:05 PM	050120_1 LCS-2.0	Liquid	LCS
016	5/1/2020 4:58:55 PM	050120_1 LRB	Liquid	LRB
017	5/1/2020 5:01:59 PM	13492.01s	Liquid	S
018	5/1/2020 5:03:46 PM	13499.01s	Liquid	S
019	5/1/2020 5:05:33 PM	13516.01s tclp	Liquid	S
020	5/1/2020 5:07:21 PM	13518.01s tclp	Liquid	S
021	5/1/2020 5:09:09 PM	13533.01s	Liquid	S
022	5/1/2020 5:10:58 PM	13533.01 MS-2.0	Liquid	MS
023	5/1/2020 5:12:47 PM	13533.01 MSD	Liquid	MSD
024	5/1/2020 5:14:34 PM	13533.02s	Liquid	S
025	5/1/2020 5:16:21 PM	13559.01s	Liquid	S
026	5/1/2020 5:18:08 PM	13567.01s	Liquid	S
027	5/1/2020 5:19:56 PM	13586.01s	Liquid	S
028	5/1/2020 5:21:44 PM	13586.02s	Liquid	S
029	5/1/2020 5:23:36 PM	CCV2-2.0 ppb	Liquid	CCV
030	5/1/2020 5:25:28 PM	CCB2	Liquid	CCB
031	5/1/2020 5:27:16 PM	13569.01s	Liquid	S
032	5/1/2020 5:37:02 PM	13569.02s	Liquid	S
033	5/1/2020 5:38:49 PM	13569.03s	Liquid	S
034	5/1/2020 5:40:36 PM	13569.04s	Liquid	S
035	5/1/2020 5:42:23 PM	13569.05s	Liquid	S
036	5/1/2020 5:44:11 PM	13569.06s	Liquid	S
037	5/1/2020 5:46:00 PM	13569.07s	Liquid	S
038	5/1/2020 5:47:48 PM	13570.02s	Liquid	S
039	5/1/2020 5:49:38 PM	13592.01s	Liquid	S
040	5/1/2020 5:51:25 PM	13592.01 MS-2.0	Liquid	MS
041	5/1/2020 5:53:13 PM	13592.01 MSD	Liquid	MSD
042	5/1/2020 5:55:05 PM	CCV3-2.0 ppb	Liquid	CCV
043	5/1/2020 5:56:56 PM	CCB3	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

Lab Sample ID: S13569.01

Sample Tag: L004070-01 MW-1

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

Lab Sample ID: S13569.02

Sample Tag: L004070-02 MW-2

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

Lab Sample ID: S13569.03

Sample Tag: L004070-03 MW-4

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

Lab Sample ID: S13569.04

Sample Tag: L004070-04 MW-4 Duplicate

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

Lab Sample ID: S13569.05

Sample Tag: L004070-05 MW-5

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

Lab Sample ID: S13569.06

Sample Tag: L004070-06 MW-6

Date Collected: 04/28/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

Lab Sample ID: S13569.07

Sample Tag: L004070-07 Field Blank

Date Collected: 04/28/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

Note/Qualifier Key

b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
010 ICV-5.0 ppb	ICV	1.0	Hg	5.200	5.0	104	90/110	ug/L	Liquid
012 CCV1-2.0 ppb	CCV	1.0	Hg	2.046	2.0	102	90/110	ug/L	Liquid
029 CCV2-2.0 ppb	CCV	1.0	Hg	1.938	2.0	97	90/110	ug/L	Liquid
042 CCV3-2.0 ppb	CCV	1.0	Hg	1.919	2.0	96	90/110	ug/L	Liquid

Form 3: Blanks

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
011 ICB	ICB	1.0	Hg	<0.03	-0.0150	ug/L	Liquid
013 CCB1	CCB	1.0	Hg	<0.03	-0.0102	ug/L	Liquid
016 050120_1 LRB	LRB	1.0	Hg	<0.03	-0.0092	ug/L	Liquid
030 CCB2	CCB	1.0	Hg	<0.03	-0.0125	ug/L	Liquid
043 CCB3	CCB	1.0	Hg	<0.03	-0.0100	ug/L	Liquid

Form 5A: Matrix Spike Sample Recovery

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
014 BS-0.10		1.0	Hg	0.105	ND	0.10	105	70/130	ug/L	Liquid
022 13533.01 MS-2.0	021 13533.01s	1.0	Hg	1.901	<0.2	2.0	95	80/120	ug/L	Liquid
040 13592.01 MS-2.0	039 13592.01s	1.0	Hg	1.733	<0.2	2.0	87	80/120	ug/L	Liquid

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
023 13533.01 MSD	022 13533.01 MS-2.0	1.0	Hg	1.969	1.901	4	0/20	ug/L	Liquid
041 13592.01 MSD	040 13592.01 MS-2.0	1.0	Hg	1.765	1.733	2	0/20	ug/L	Liquid

Form 7: Laboratory Control Sample

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
015 050120_1 LCS-2.0	1.0	Hg	1.951	2.0	98	85/115	ug/L	Liquid

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0501A

Instrument ID: HG QuickTrace

Analysis Date: 05/01/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Calibration Blank	5/1/2020 4:25:22 PM	Liquid	Hg
002 Standard #1	5/1/2020 4:27:13 PM	Liquid	Hg
003 Standard #2	5/1/2020 4:29:05 PM	Liquid	Hg
004 Standard #3	5/1/2020 4:30:57 PM	Liquid	Hg
005 Standard #4	5/1/2020 4:32:48 PM	Liquid	Hg
006 Standard #5	5/1/2020 4:34:40 PM	Liquid	Hg
007 Standard #6	5/1/2020 4:36:32 PM	Liquid	Hg
008 Standard #7	5/1/2020 4:39:10 PM	Liquid	Hg
009 Standard #8	5/1/2020 4:41:56 PM	Liquid	Hg
010 ICV-5.0 ppb	5/1/2020 4:45:00 PM	Liquid	Hg
011 ICB	5/1/2020 4:46:52 PM	Liquid	Hg
012 CCV1-2.0 ppb	5/1/2020 4:48:43 PM	Liquid	Hg
013 CCB1	5/1/2020 4:50:35 PM	Liquid	Hg
014 BS-0.10	5/1/2020 4:55:14 PM	Liquid	Hg
015 050120_1 LCS-2.0	5/1/2020 4:57:05 PM	Liquid	Hg
016 050120_1 LRB	5/1/2020 4:58:55 PM	Liquid	Hg
017 13492.01s	5/1/2020 5:01:59 PM	Liquid	Hg
018 13499.01s	5/1/2020 5:03:46 PM	Liquid	Hg
019 13516.01s tclp	5/1/2020 5:05:33 PM	Liquid	Hg
020 13518.01s tclp	5/1/2020 5:07:21 PM	Liquid	Hg
021 13533.01s	5/1/2020 5:09:09 PM	Liquid	Hg
022 13533.01 MS-2.0	5/1/2020 5:10:58 PM	Liquid	Hg
023 13533.01 MSD	5/1/2020 5:12:47 PM	Liquid	Hg
024 13533.02s	5/1/2020 5:14:34 PM	Liquid	Hg
025 13559.01s	5/1/2020 5:16:21 PM	Liquid	Hg
026 13567.01s	5/1/2020 5:18:08 PM	Liquid	Hg
027 13586.01s	5/1/2020 5:19:56 PM	Liquid	Hg
028 13586.02s	5/1/2020 5:21:44 PM	Liquid	Hg
029 CCV2-2.0 ppb	5/1/2020 5:23:36 PM	Liquid	Hg
030 CCB2	5/1/2020 5:25:28 PM	Liquid	Hg
031 13569.01s	5/1/2020 5:27:16 PM	Liquid	Hg
032 13569.02s	5/1/2020 5:37:02 PM	Liquid	Hg
033 13569.03s	5/1/2020 5:38:49 PM	Liquid	Hg
034 13569.04s	5/1/2020 5:40:36 PM	Liquid	Hg
035 13569.05s	5/1/2020 5:42:23 PM	Liquid	Hg
036 13569.06s	5/1/2020 5:44:11 PM	Liquid	Hg
037 13569.07s	5/1/2020 5:46:00 PM	Liquid	Hg
038 13570.02s	5/1/2020 5:47:48 PM	Liquid	Hg
039 13592.01s	5/1/2020 5:49:38 PM	Liquid	Hg
040 13592.01 MS-2.0	5/1/2020 5:51:25 PM	Liquid	Hg
041 13592.01 MSD	5/1/2020 5:53:13 PM	Liquid	Hg
042 CCV3-2.0 ppb	5/1/2020 5:55:05 PM	Liquid	Hg
043 CCB3	5/1/2020 5:56:56 PM	Liquid	Hg

Mercury Summary Report

Element	Seq #	Acquisition Time	Sample Name	Peak	Concentration	Units	Matrix	Dilution	Sample Wt.	Sample Vol.
Hg	001	5/1/2020 4:25:22 PM	Calibration Blank	39.1500	0.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	002	5/1/2020 4:27:13 PM	Standard #1	981.0000	0.1000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	003	5/1/2020 4:29:05 PM	Standard #2	1903.0000	0.2000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	004	5/1/2020 4:30:57 PM	Standard #3	4463.0000	0.5000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	005	5/1/2020 4:32:48 PM	Standard #4	8897.0000	1.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	006	5/1/2020 4:34:40 PM	Standard #5	17260.0000	2.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	007	5/1/2020 4:36:32 PM	Standard #6	51750.0000	6.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	008	5/1/2020 4:39:10 PM	Standard #7	69070.0000	8.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	009	5/1/2020 4:41:56 PM	Standard #8	86750.0000	10.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	010	5/1/2020 4:45:00 PM	ICV-5.0 ppb	45030.0000	5.2000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	011	5/1/2020 4:46:52 PM	ICB	-27.9400	-0.0150	ug/L	Liquid	1.0	1.0000	1.0000
Hg	012	5/1/2020 4:48:43 PM	CCV1-2.0 ppb	17780.0000	2.0460	ug/L	Liquid	1.0	1.0000	1.0000
Hg	013	5/1/2020 4:50:35 PM	CCB1	13.5500	-0.0102	ug/L	Liquid	1.0	1.0000	1.0000
Hg	014	5/1/2020 4:55:14 PM	BS-0.10	1011.0000	0.1053	ug/L	Liquid	1.0	1.0000	1.0000
Hg	015	5/1/2020 4:57:05 PM	050120_1 LCS-2.0	16960.0000	1.9510	ug/L	Liquid	1.0	1.0000	1.0000
Hg	016	5/1/2020 4:58:55 PM	050120_1 LRB	21.5300	-0.0092	ug/L	Liquid	1.0	1.0000	1.0000
Hg	029	5/1/2020 5:23:36 PM	CCV2-2.0 ppb	16850.0000	1.9380	ug/L	Liquid	1.0	1.0000	1.0000
Hg	030	5/1/2020 5:25:28 PM	CCB2	-7.1030	-0.0125	ug/L	Liquid	1.0	1.0000	1.0000
Hg	031	5/1/2020 5:27:16 PM	13569.01s	34.9700	-0.0077	ug/L	Liquid	1.0	1.0000	1.0000
Hg	032	5/1/2020 5:37:02 PM	13569.02s	3.4170	-0.0113	ug/L	Liquid	1.0	1.0000	1.0000
Hg	033	5/1/2020 5:38:49 PM	13569.03s	35.4900	-0.0076	ug/L	Liquid	1.0	1.0000	1.0000
Hg	034	5/1/2020 5:40:36 PM	13569.04s	25.7500	-0.0087	ug/L	Liquid	1.0	1.0000	1.0000
Hg	035	5/1/2020 5:42:23 PM	13569.05s	119.3000	0.0021	ug/L	Liquid	1.0	1.0000	1.0000
Hg	036	5/1/2020 5:44:11 PM	13569.06s	29.7800	-0.0083	ug/L	Liquid	1.0	1.0000	1.0000
Hg	037	5/1/2020 5:46:00 PM	13569.07s	33.8700	-0.0078	ug/L	Liquid	1.0	1.0000	1.0000
Hg	042	5/1/2020 5:55:05 PM	CCV3-2.0 ppb	16680.0000	1.9190	ug/L	Liquid	1.0	1.0000	1.0000
Hg	043	5/1/2020 5:56:56 PM	CCB3	14.5100	-0.0100	ug/L	Liquid	1.0	1.0000	1.0000

Mercury Digestion
Method # 245.1, 7471B, 7470A (OHIO VAP)

TIME START: 1430
 TIME FINISH: 1630
 PREP BATCH: HGD-050120-1
 BALANCE ID: M2

Beginning End
 block #1 95 °C block #1 95 °C ID # p42479
 block #2 _____ °C block #2 _____ °C ID # _____
 block #3 _____ °C block #3 _____ °C ID # _____

DATE 5/1/20
 ANALYST [Signature]
 REVIEWED BY CCM
 REVIEW DATE 5-4-20

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	%TOT. SOLIDS	DRY SAMPLE WT.	DILUTION FACTOR	FINAL VOLUME	REMARKS
LCS 050120-1	-----	25	-----	-----	1	25g	
LRB 050120-1	-----	25	-----	-----	1	25g	
13492.01		25			1		
13499.01		25			1		
13516.01		12.5			2		tcp
13518.01		0.528			47		tcp
13533.01		25			1		drinking water
01MS							
01MSD							
02							
13559.01							
13567.01							
13569.01							
02							
03							
04							
05							
06							
07							fb
13570.02		12.5			2		
13586.01		25			1		
02							
13592.01							
01MS							
01MSD							

NOTES: 1) Spike values (unless otherwise stated):
 2.0 ppb for LCS: 0.50 ml of HPS solution, 2.0 ppb for liquid samples: 0.50 ml of HPS solution & 0.002 ppm for solid samples: 0.50 ml of HPS solution (Date Prepared: 4/30/20 Exp)
 Centrifuge Tube Lot # 191216-060
 HNO₃ Lot # 0000215675 248841
 H₂SO₄ Lot # 000022875
2019061317 3/4/20 6/1/20

Pipet Calibration:

Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Notes
1	<u>0.500</u>	<u>0.505</u>	
2		<u>0.504</u>	
3		<u>0.503</u>	

Ics-1100 A Dionex IC/Meth 300.0

043020

























#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:58:12 AM...	1.0000
2		1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:29 A...	1.0000
3		1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:17 A...	1.0000
4		1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:36:06 A...	1.0000
5		1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:55 A...	1.0000
6		1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:43 A...	1.0000
7		Blank	Unknown		1	Norm Method	Anion	Finished	4/30/2020 9:25:14 AM...	1.0000
8		BSpike 11705BS1	Check Standard		2	Norm Method	Anion	Finished	4/30/2020 9:37:30 AM...	1.0000
9		LCS 11705LCS1	Check Standard		3	Norm Method	Anion	Finished	4/30/2020 9:50:19 AM...	1.0000
10		LOD 1132LOD1	Unknown		4	Norm Method	Anion	Finished	4/30/2020 10:03:08 A...	1.0000
11		LOQ 1132LOQ1	Unknown		5	Norm Method	Anion	Finished	4/30/2020 10:15:56 A...	1.0000
12		13569.01	Unknown		6	Norm Method	Anion	Finished	4/30/2020 10:28:51 A...	1.0000
13		13569.01 dup	Unknown		7	Norm Method	Anion	Finished	4/30/2020 10:41:43 A...	1.0000
14		13569.01 MS 12969...	Unknown		8	Norm Method	Anion	Finished	4/30/2020 10:54:32 A...	1.0000
15		13569.01 MSD 1296...	Unknown		9	Norm Method	Anion	Finished	4/30/2020 11:07:20 A...	1.0000
16		13569.02	Unknown		10	Norm Method	Anion	Finished	4/30/2020 11:20:09 A...	1.0000
17		13569.03	Unknown		11	Norm Method	Anion	Finished	4/30/2020 11:32:57 A...	1.0000
18		13569.04	Unknown		12	Norm Method	Anion	Finished	4/30/2020 11:45:46 A...	1.0000
19		13569.05	Unknown		13	Norm Method	Anion	Finished	4/30/2020 11:58:35 A...	1.0000
20		13569.06	Unknown		14	Norm Method	Anion	Finished	4/30/2020 12:11:23 P...	1.0000
21		13569.07	Unknown		15	Norm Method	Anion	Finished	4/30/2020 12:24:12 P...	1.0000
22		BSpike 11705BS1	Check Standard		16	Norm Method	Anion	Finished	4/30/2020 12:37:00 P...	1.0000
23		13575.04	Unknown		17	Norm Method	Anion	Finished	4/30/2020 12:49:48 P...	1.0000
24		13575.05	Unknown		18	Norm Method	Anion	Finished	4/30/2020 1:02:37 PM...	1.0000

CAL INT ICSA0316 20 CAL

CL 200430-WI-A
SFT 200430-WI-A

043020



#	ECD_1	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
7		1.0000	1.0000		Jeff Phifer	
8		1.0000	1.0000		Jeff Phifer	
9		1.0000	1.0000		Jeff Phifer	
10		1.0000	1.0000		Jeff Phifer	
11		1.0000	1.0000		Jeff Phifer	
12		10.0000	1.0000		Jeff Phifer	
13		10.0000	1.0000		Jeff Phifer	
14		1.0000	1.0000		Jeff Phifer	
15		1.0000	1.0000		Jeff Phifer	
16		25.0000	1.0000		Jeff Phifer	
17		10.0000	1.0000		Jeff Phifer	
18		10.0000	1.0000		Jeff Phifer	
19		25.0000	1.0000		Jeff Phifer	
20		10.0000	1.0000		Jeff Phifer	
21		2.5000	1.0000		Jeff Phifer	
22		1.0000	1.0000		Jeff Phifer	
23		25.0000	1.0000		Jeff Phifer	
24		25.0000	1.0000		Jeff Phifer	




043020

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
25		13575.06	Unknown		19	Norm Method	Anion	Finished	4/30/2020 1:15:27 PM...	1.0000
26		13575.07	Unknown		20	Norm Method	Anion	Finished	4/30/2020 1:28:16 PM...	1.0000
27		BSpoke 11705BS1	Check Standard		21	Norm Method	Anion	Finished	4/30/2020 1:41:04 PM...	1.0000
28	Loading...	Blank	Unknown		22	Norm Method	Anion	Finished	4/30/2020 1:53:53 PM...	1.0000

[Click here to add a new injection](#)

043020



#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
25		25.0000	1.0000		Jeff Phifer	
26		5.0000	1.0000		Jeff Phifer	
27		1.0000	1.0000		Jeff Phifer	
28	Loading...	1.0000	1.0000		Jeff Phifer	
Click here to add a new injection						

Stage	Time min	Command	Value	Comment
Norm Method	03/08/11 13:39	Jeff Phifer	Method 300.0	
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait		
		Sampler.Inject		Sampler.CycleTimeState, Hold,
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000			Duration = 10.000 [min]
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

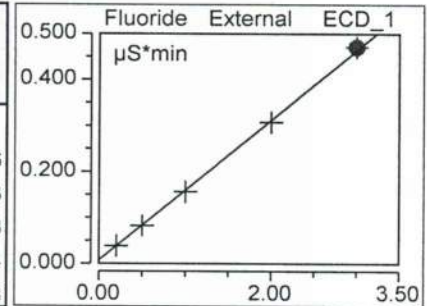
Calibration Batch Report
CAL ID# ICSA031620CAL

Sequence:	043020	Injection Volu. 2,500.00
Instrument Method:	Norm Method	Operator: Jeff Phifer
Inj. Date / Time:	16-Mar-2020 / 11:01	Column: AS4A-SC 038777

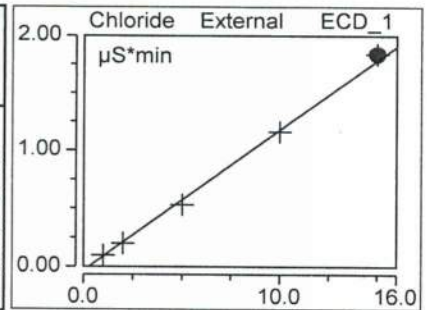
JP

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.01	0.007	0.152	0.000	0.9998
Chloride	Area	Lin, WithOffset, 1/A	0.02	-0.033	0.121	0.000	0.9987
Nitrite	Area	Lin, WithOffset, 1/A	0.03	-0.003	0.227	0.000	0.9997
Bromide	Area	Lin, WithOffset, 1/A	0.05	-0.001	0.043	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.07	-0.001	0.260	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.33	-0.007	0.079	0.000	0.9996
AVERAGE:				-0.0064	0.1471	0.0000	0.9996

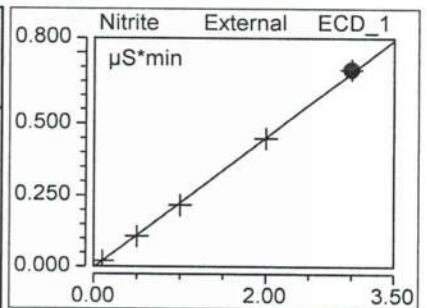
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
1130Cal1	ECD_1 1.118	ECD_1 0.0386	ECD_1 0.506	ECD_1 0.206
1130Cal2	1.118	0.0822	1.190	0.493
1130Cal3	1.118	0.1559	2.362	0.978
1130Cal4	1.118	0.3073	4.834	1.974
1130Cal5	1.118	0.4705	7.546	3.048
Average	1.118			
Rel. Std. Dev.	0.000 %			



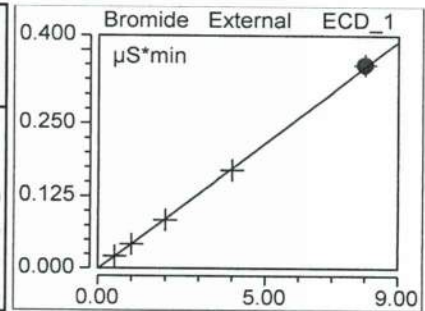
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Chloride	Chloride	Chloride	Chloride	Chloride
1130Cal1	ECD_1 1.651	ECD_1 0.0980	ECD_1 1.539	ECD_1 1.086
1130Cal2	1.651	0.2000	3.158	1.929
1130Cal3	1.661	0.5307	8.559	4.662
1130Cal4	1.664	1.1594	18.897	9.858
1130Cal5	1.664	1.8377	29.851	15.464
Average	1.658			
Rel. Std. Dev.	0.412 %			



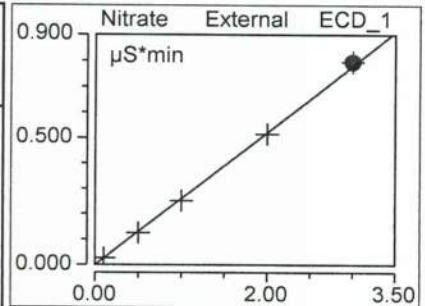
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Nitrite	Nitrite	Nitrite	Nitrite	Nitrite
1130Cal1	ECD_1 1.944	ECD_1 0.0206	ECD_1 0.280	ECD_1 0.105
1130Cal2	1.948	0.1071	1.441	0.486
1130Cal3	1.954	0.2163	2.949	0.967
1130Cal4	1.954	0.4487	6.229	1.989
1130Cal5	1.948	0.6905	9.755	3.054
Average	1.950			
Rel. Std. Dev.	0.229 %			



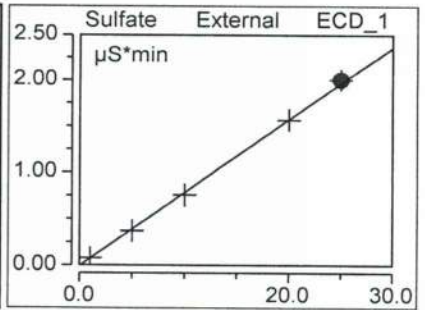
Injection Name	Ret. Time min	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
Bromide	Bromide	Bromide	Bromide	Bromide
1130Cal1	ECD_1 2.871	ECD_1 0.0210	ECD_1 0.228	ECD_1 0.511
1130Cal2	2.868	0.0422	0.461	0.999
1130Cal3	2.884	0.0843	0.917	1.969
1130Cal4	2.874	0.1696	1.866	3.936
1130Cal5	2.848	0.3497	3.898	8.085
Average	2.869			
Rel. Std. Dev.	0.469 %			



Injection Name	Ret. Time min	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
Nitrate	Nitrate	Nitrate	Nitrate	Nitrate
1130Cal1	ECD_1 3.244	ECD_1 0.0266	ECD_1 0.254	ECD_1 0.105
1130Cal2	3.234	0.1249	1.182	0.483
1130Cal3	3.248	0.2515	2.359	0.970
1130Cal4	3.228	0.5145	4.808	1.982
1130Cal5	3.194	0.7947	7.457	3.060
Average	3.230			
Rel. Std. Dev.	0.659 %			



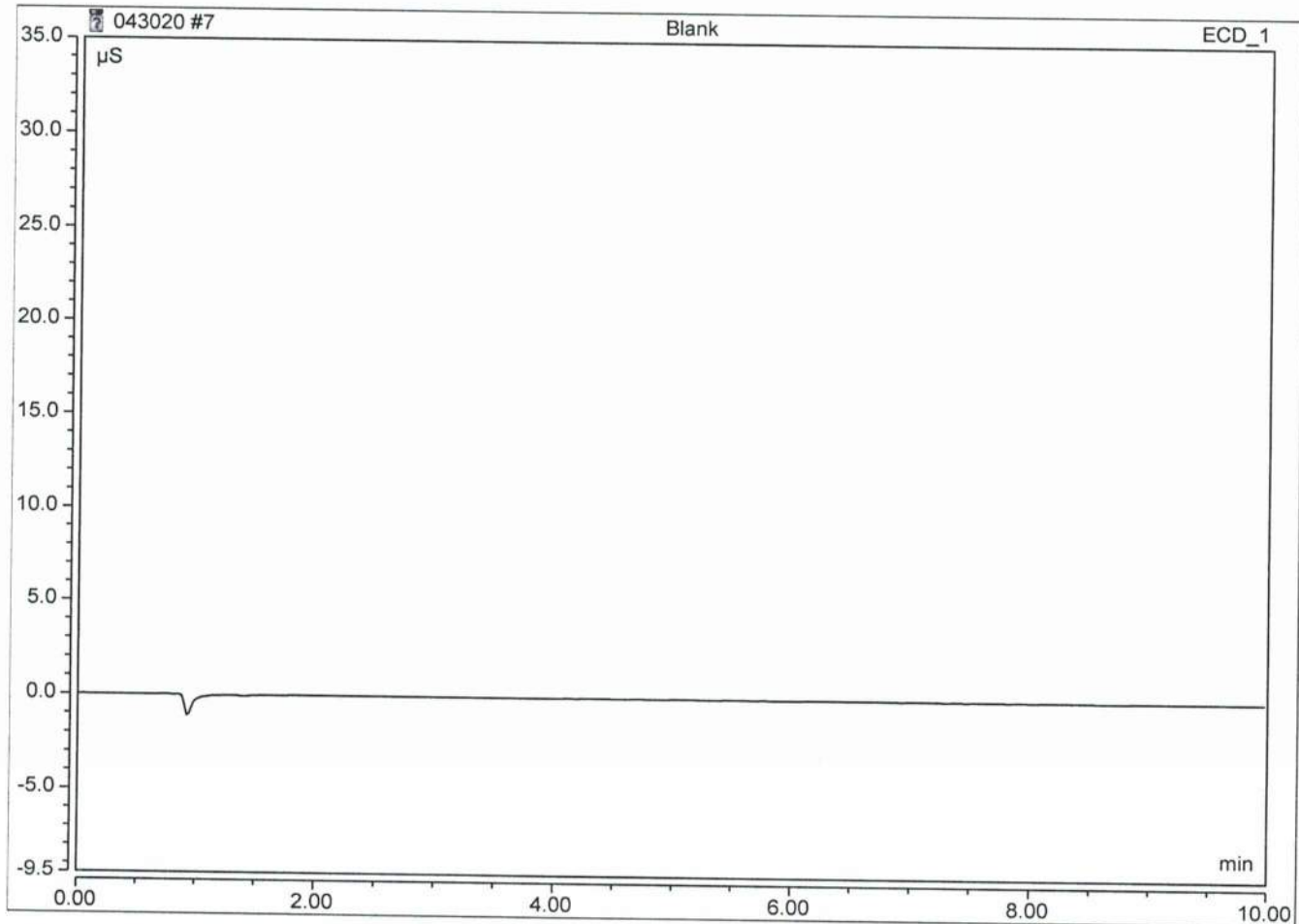
Injection Name	Ret. Time min	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
1130Cal1	ECD_1 6.768	ECD_1 0.0763	ECD_1 0.333	ECD_1 1.054
1130Cal2	6.754	0.3712	1.645	4.800
1130Cal3	6.744	0.7553	3.326	9.676
1130Cal4	6.721	1.5656	6.872	19.966
1130Cal5	6.718	2.0017	8.764	25.504
Average	6.741			
Rel. Std. Dev.	0.319 %			



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 09:25	Operator:	Jeff Phifer

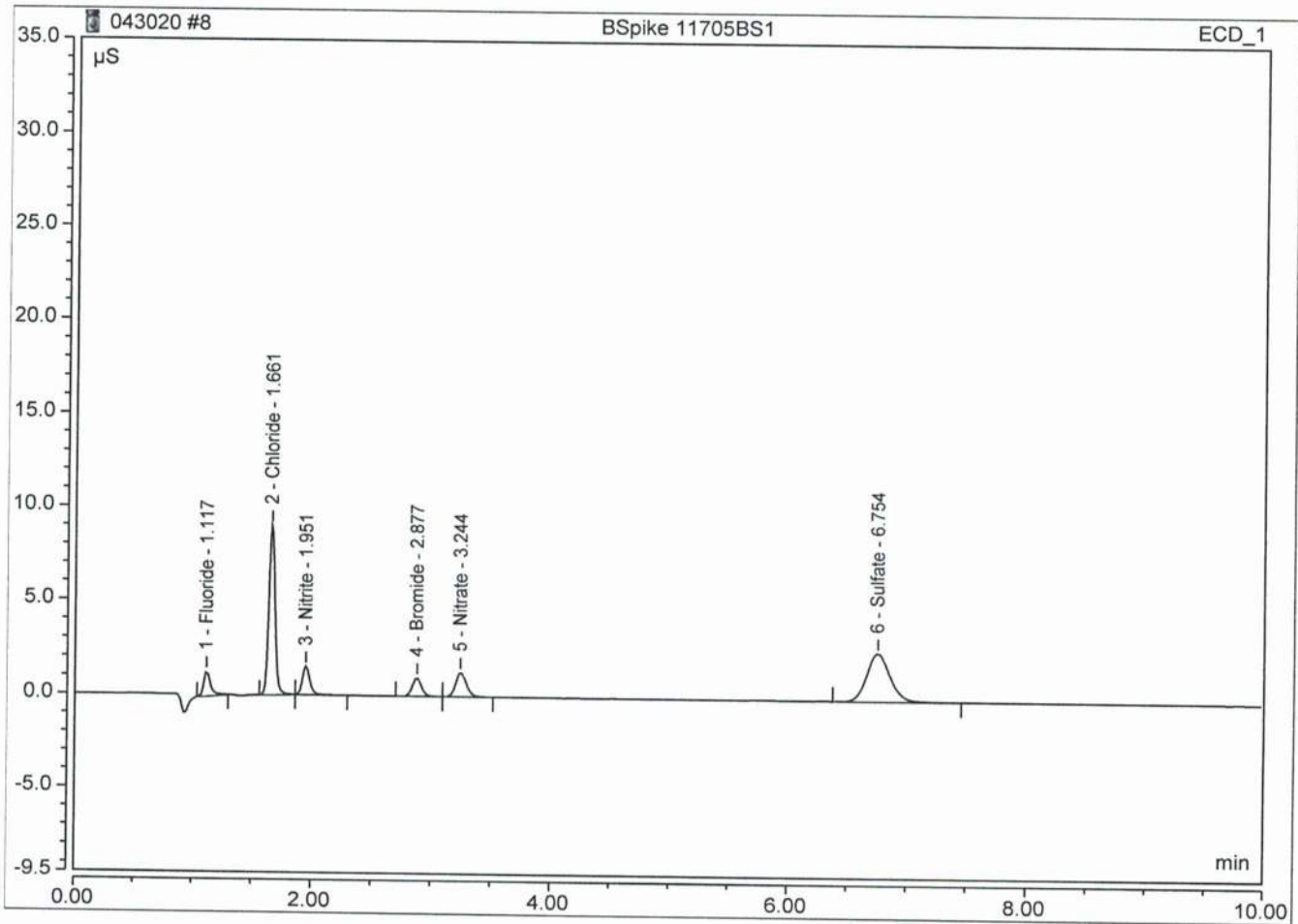
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	BSpike 11705BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 09:37	Operator:	Jeff Phifer

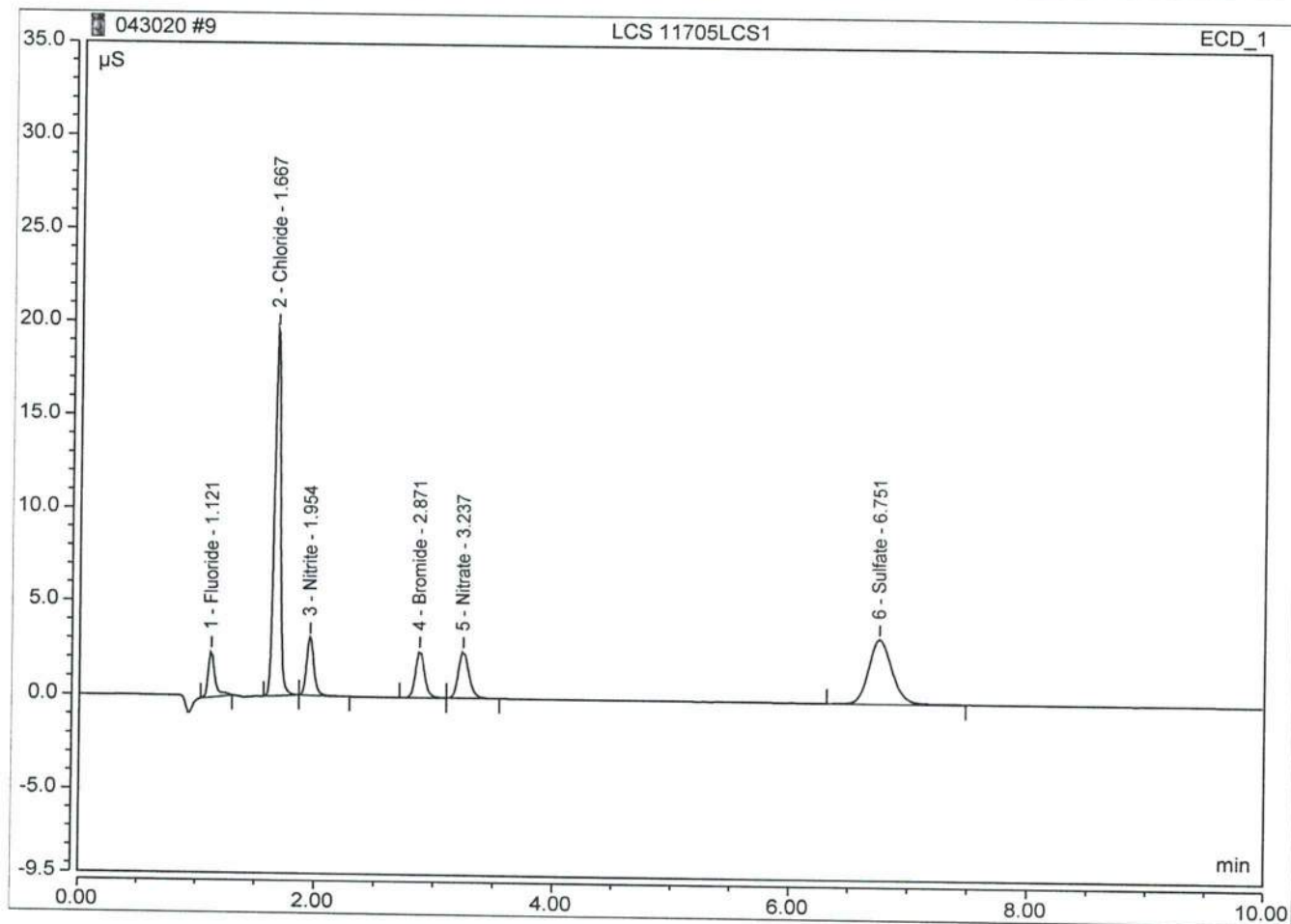
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.086	1.308	0.5 0.5169 104?
2	1.66	Chloride	BMB	0.544	9.026	5 4.7753 96?
3	1.95	Nitrite	BMB	0.107	1.493	0.5 0.4835 96?
4	2.88	Bromide	BMB	0.087	0.973	2 2.0417 102?
5	3.24	Nitrate	BMB	0.131	1.283	0.5 0.5084 102?
6	6.75	Sulfate	BMB	0.573	2.542	7.5 7.3578 99?
TOTAL:				1.53	16.62	15.68



Peak Integration Report

Sample Name:	LCS 11705LCS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 09:50	Operator:	Jeff Phifer

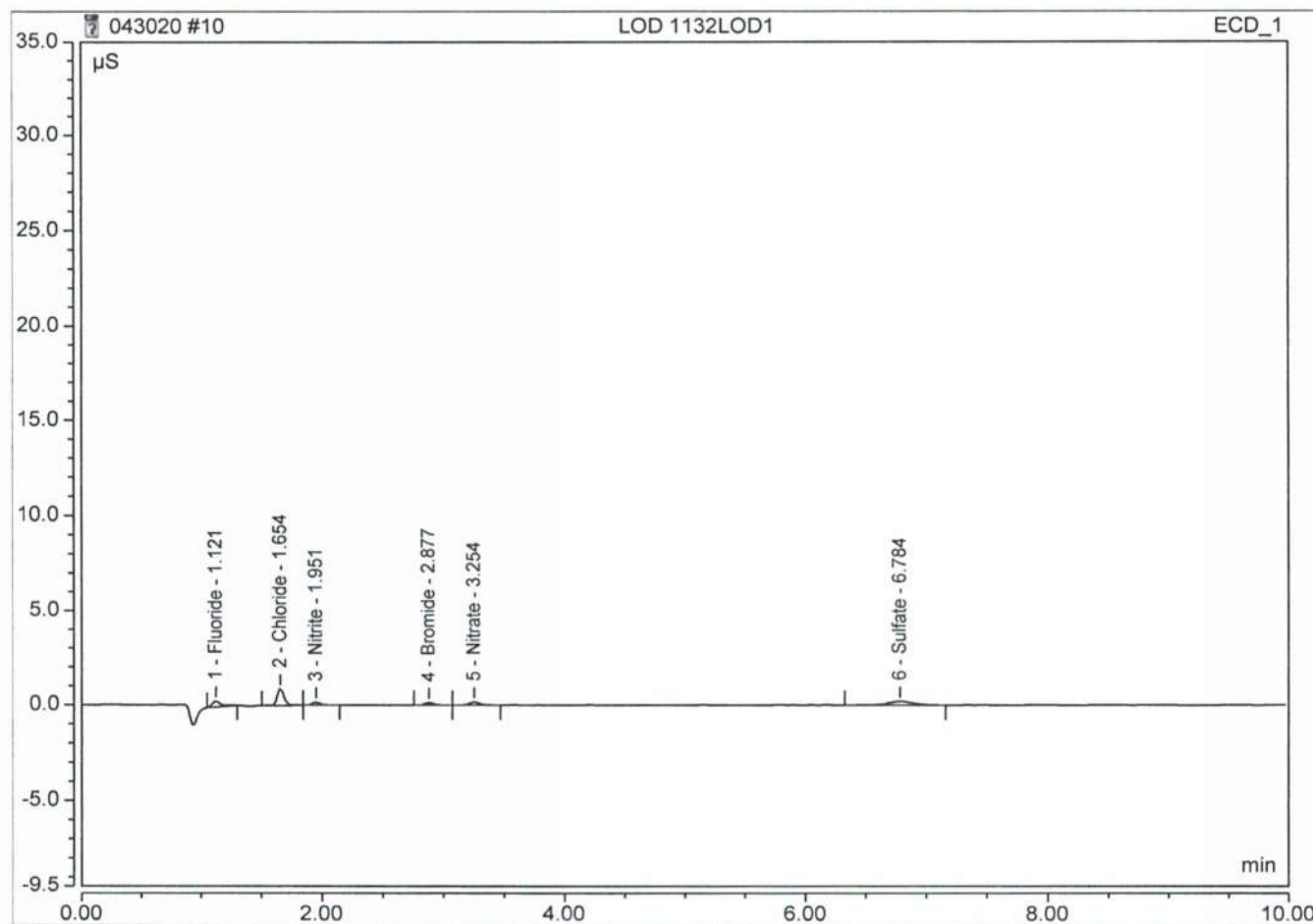
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.158	2.430	0.9894
2	1.67	Chloride	BMB	1.174	19.655	9.9790
3	1.95	Nitrite	BMB	0.216	3.076	0.9644
4	2.87	Bromide	BMB	0.219	2.447	5.0683
5	3.24	Nitrate	BMB	0.251	2.439	0.9663
6	6.75	Sulfate	BMB	0.764	3.391	9.7841
TOTAL:				2.78	33.44	27.75



Peak Integration Report

Sample Name:	LOD 1132LOD1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 10:03	Operator:	Jeff Phifer

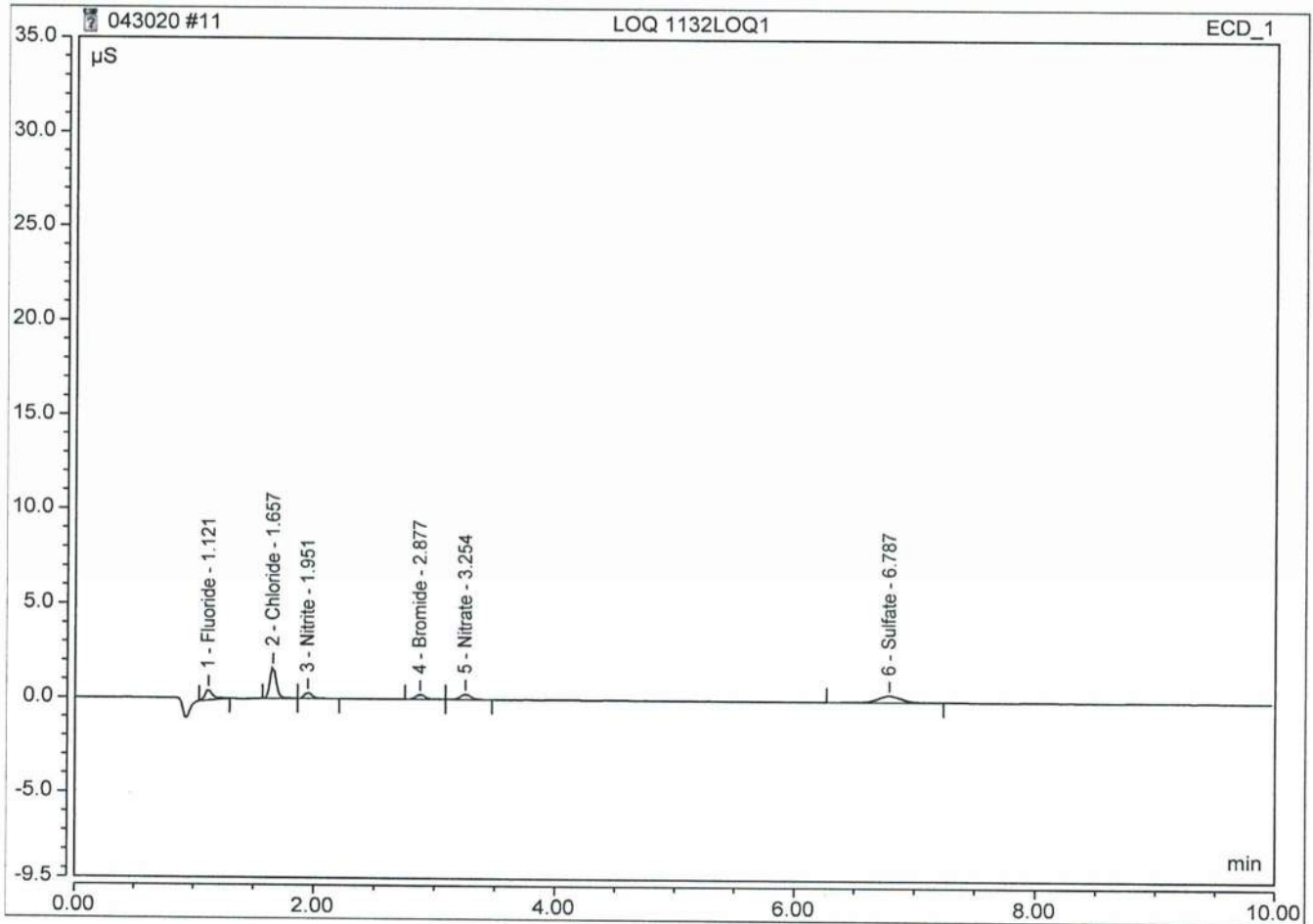
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.023	0.294	0.1
2	1.65	Chloride	BMB	0.054	0.858	0.5
3	1.95	Nitrite	BMB	0.011	0.154	0.05
4	2.88	Bromide	BMB	0.012	0.129	0.25
5	3.25	Nitrate	BMB	0.016	0.160	0.05
6	6.78	Sulfate	BMB	0.046	0.196	0.5
TOTAL:				0.16	1.79	1.92



Peak Integration Report

Sample Name:	LOQ 1132LOQ1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 10:15	Operator:	Jeff Phifer

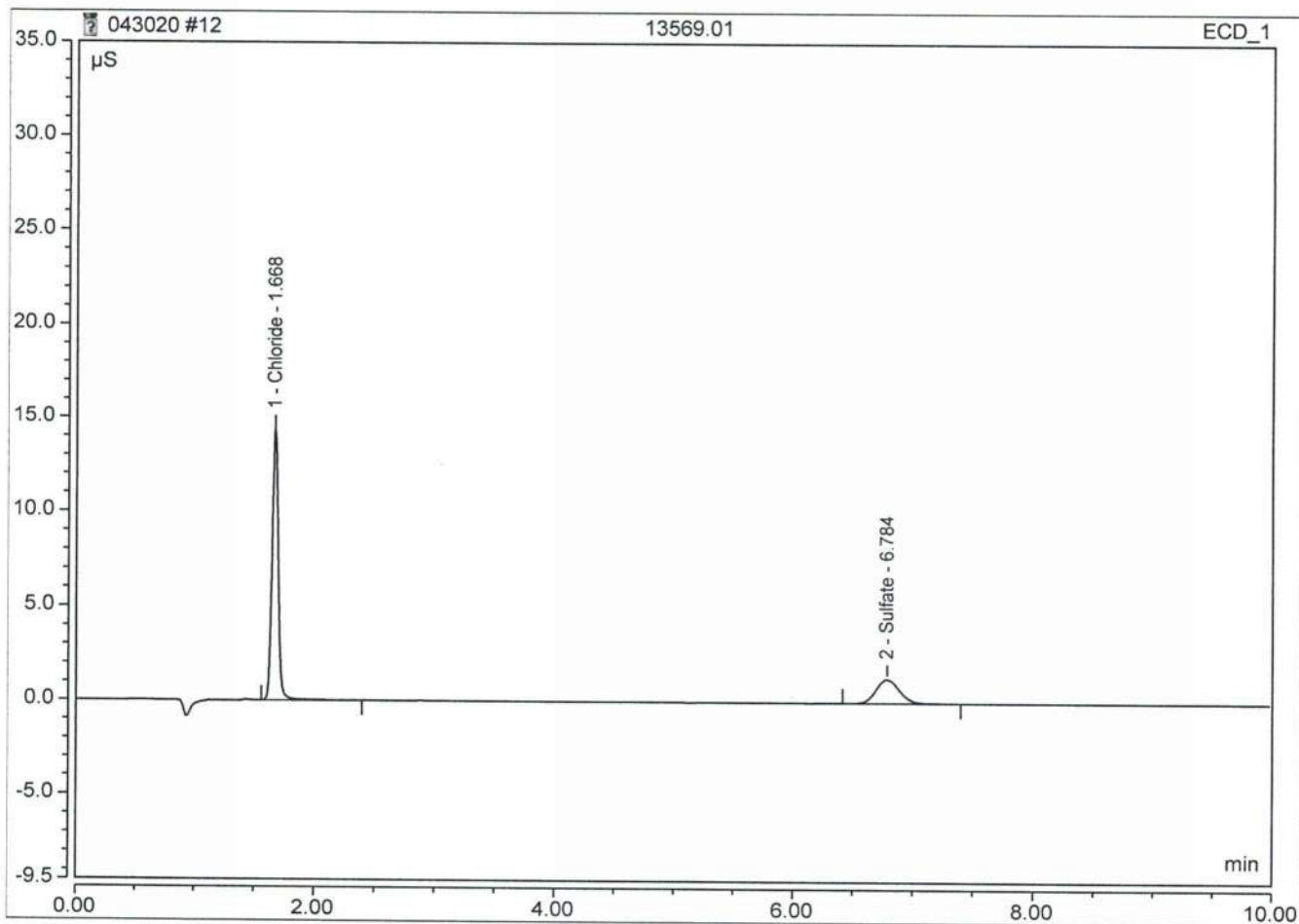
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.038	0.522	0.2006
2	1.66	Chloride	BMB	0.103	1.663	1.1266
3	1.95	Nitrite	BMB	0.022	0.297	0.1122
4	2.88	Bromide	BMB	0.022	0.244	0.5353
5	3.25	Nitrate	BMB	0.028	0.270	0.1092
6	6.79	Sulfate	BMB	0.083	0.357	1.1413
TOTAL:				0.30	3.35	3.23



Peak Integration Report

Sample Name:	13569.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 10:28	Operator:	Jeff Phifer

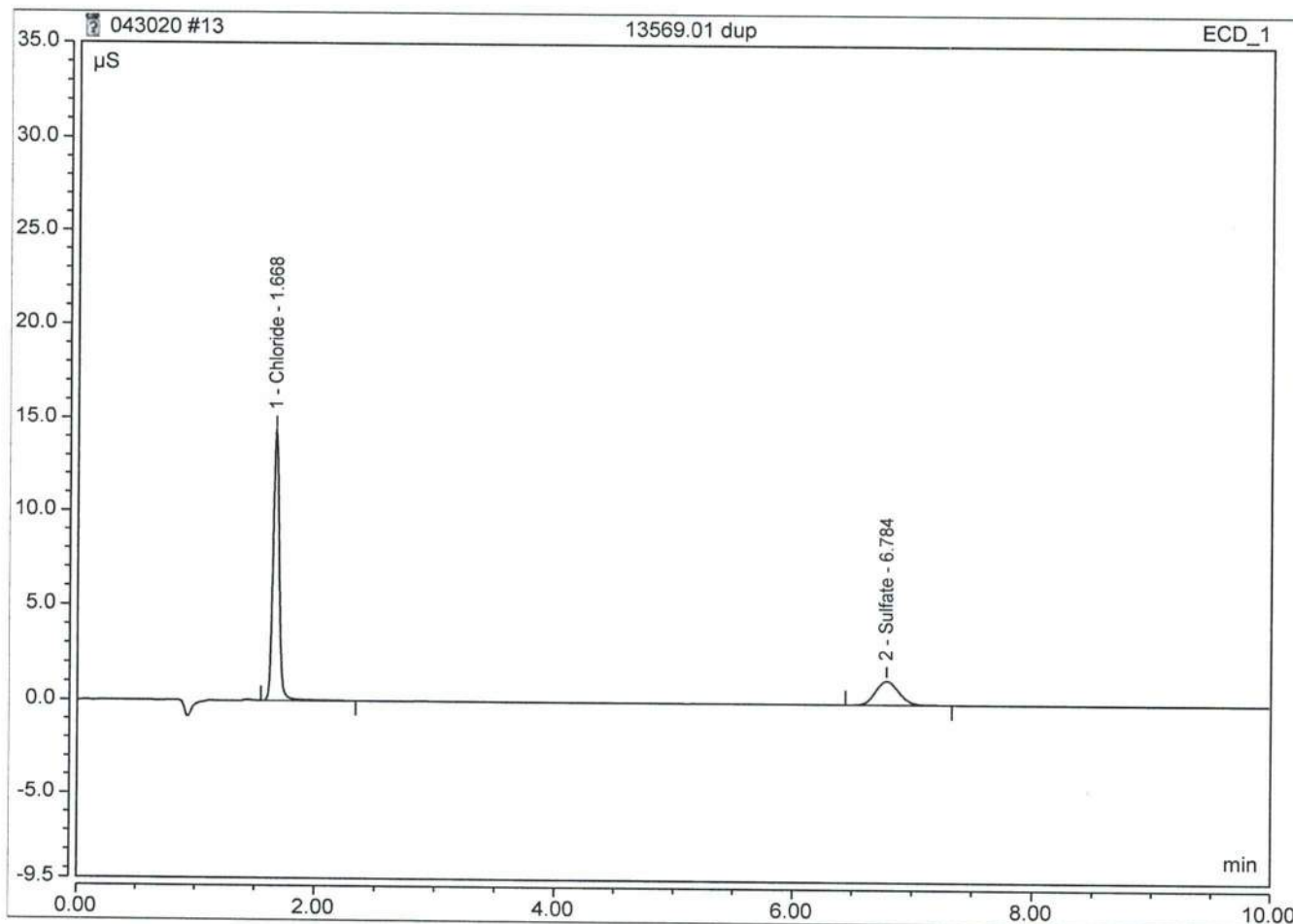
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.67	Chloride	BMB	0.868	14.344	74.4622
2	6.78	Sulfate	BMB	0.291	1.280	37.7717
TOTAL:				1.16	15.62	112.23



Peak Integration Report

Sample Name:	13569.01 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 10:41	Operator:	Jeff Phifer

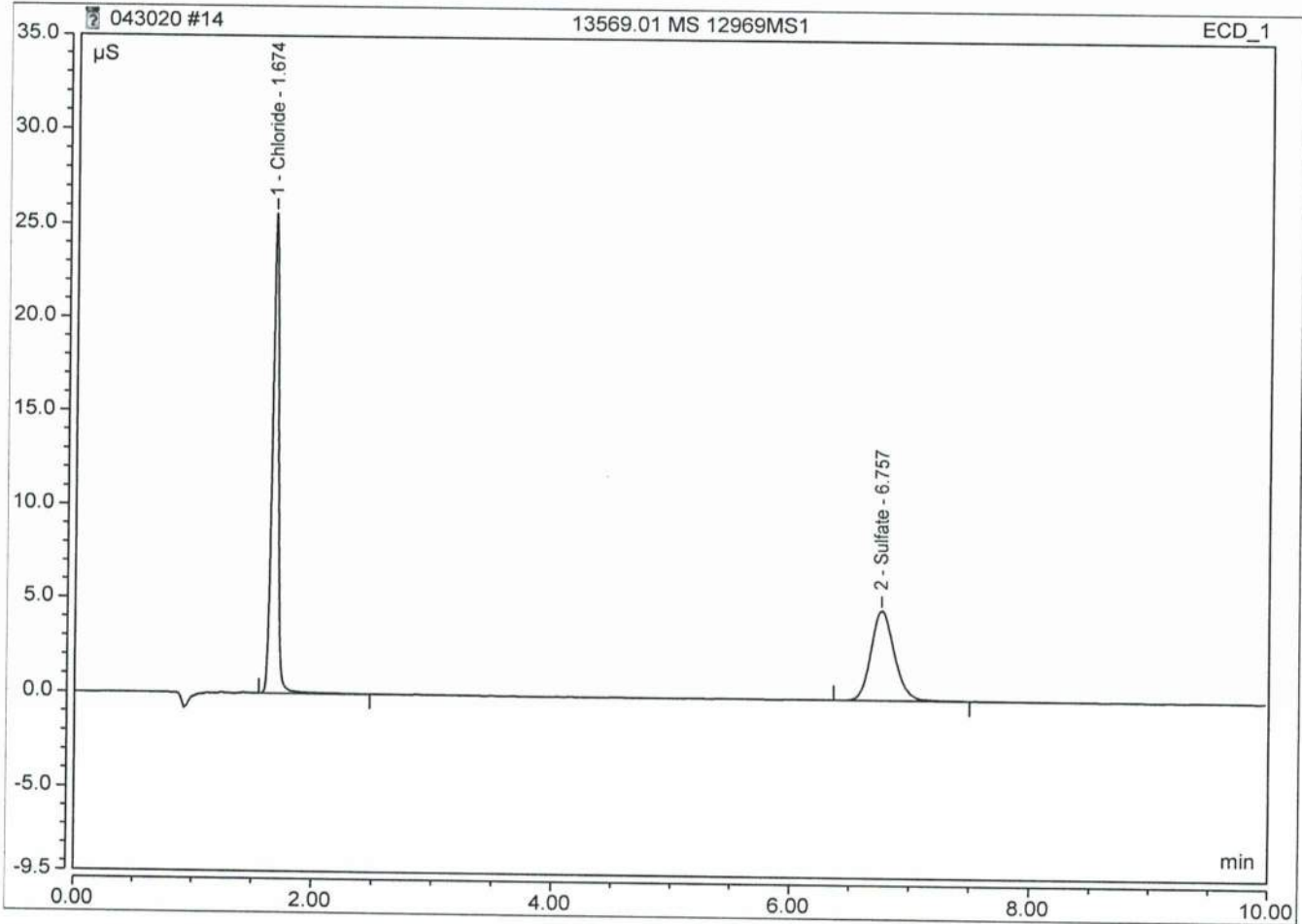
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.67	Chloride	BMB	0.866	14.360	74.3251
2	6.78	Sulfate	BMB	0.287	1.271	37.3504
TOTAL:				1.15	15.63	111.68



Peak Integration Report

Sample Name:	13569.01 MS 12969MS1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 10:54	Operator:	Jeff Phifer

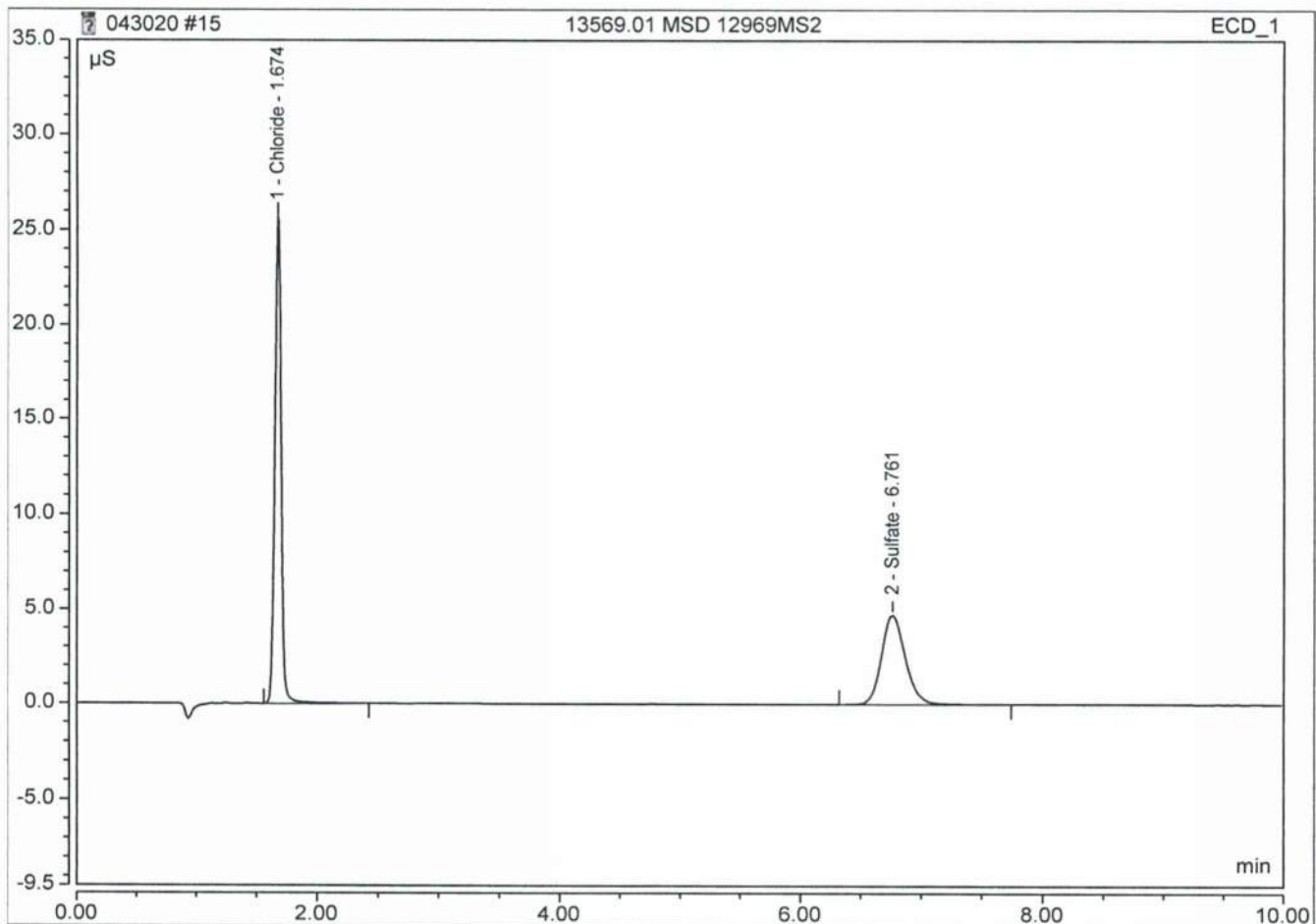
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.67	Chloride	BMB	1.561	25.652	5 13.1770 -7.4 = 116.2
2	6.76	Sulfate	BMB	1.065	4.724	10 13.6079 -3.8 = 98.2
TOTAL:				2.63	30.38	26.78



Peak Integration Report

Sample Name:	13569.01 MSD 12969MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 11:07	Operator:	Jeff Phifer

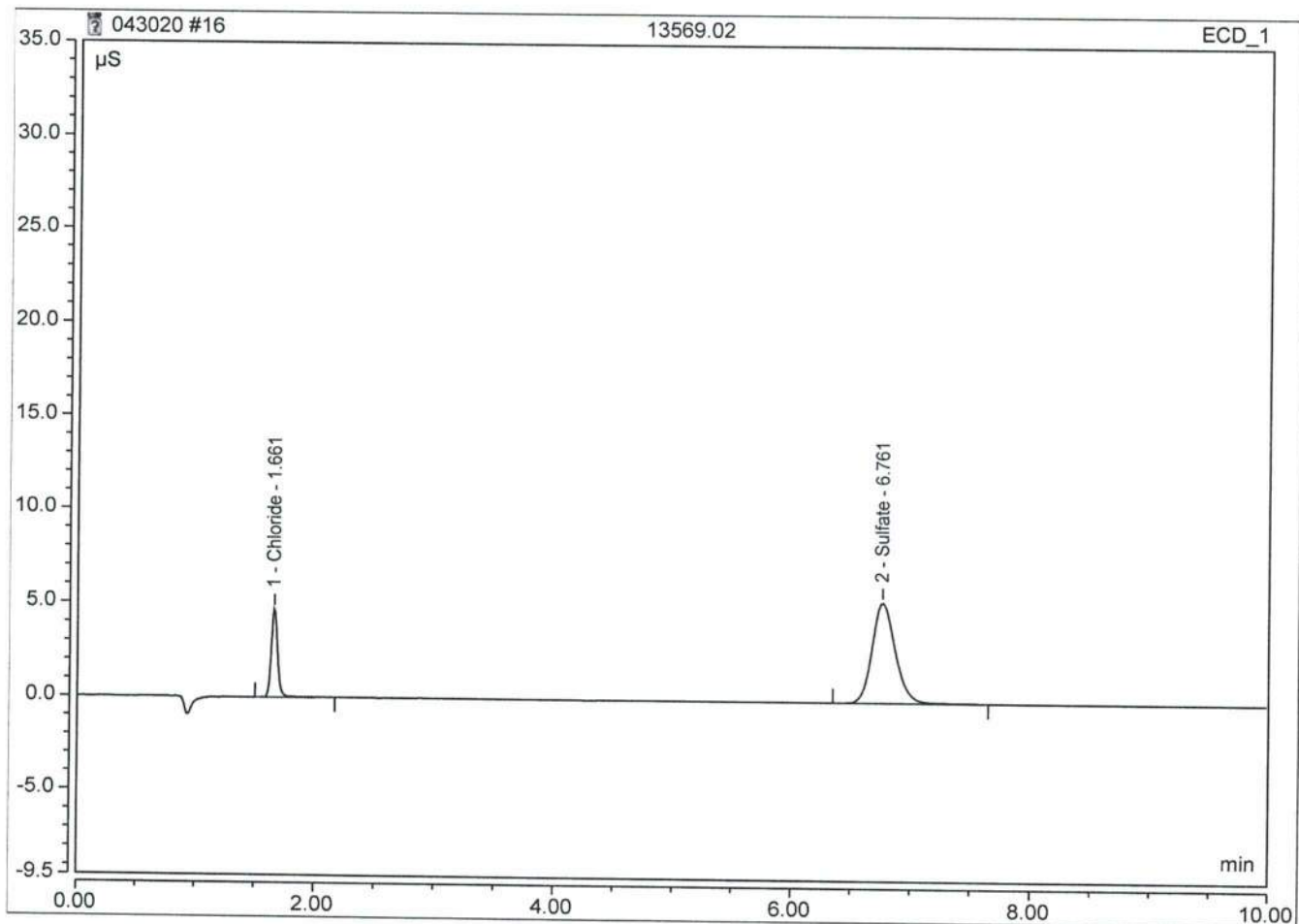
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.67	Chloride	BMB	1.556	25.670	5 13.1358 - 7.4 = 1148
2	6.76	Sulfate	BMB	1.073	4.729	10 13.7049 - 3.9 = 993
TOTAL:				2.63	30.40	26.84



Peak Integration Report

Sample Name:	13569.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 11:20	Operator:	Jeff Phifer

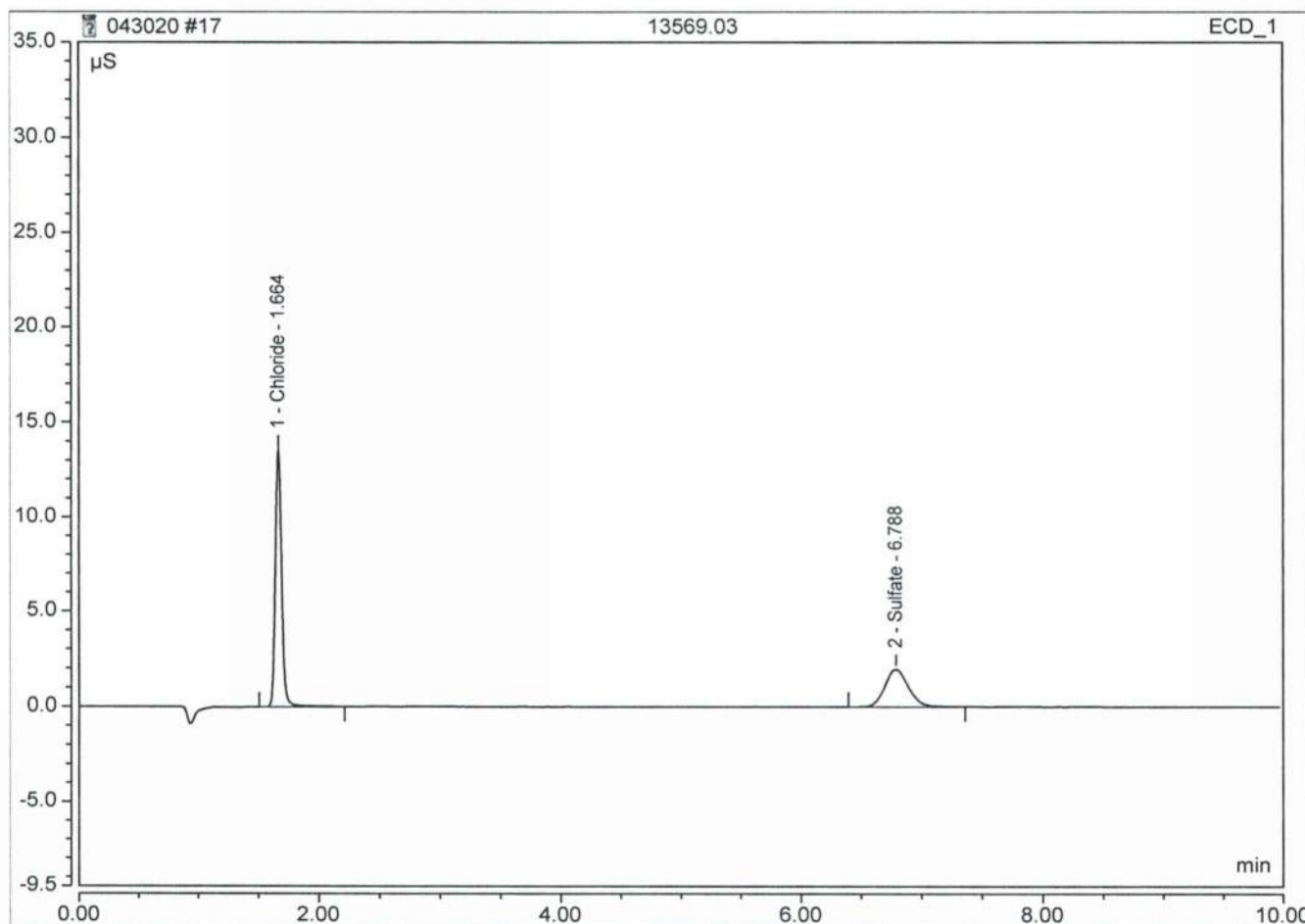
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	0.293	4.705	67.3758
2	6.76	Sulfate	BMB	1.210	5.342	386.2336
TOTAL:				1.50	10.05	453.61



Peak Integration Report

Sample Name:	13569.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 11:32	Operator:	Jeff Phifer

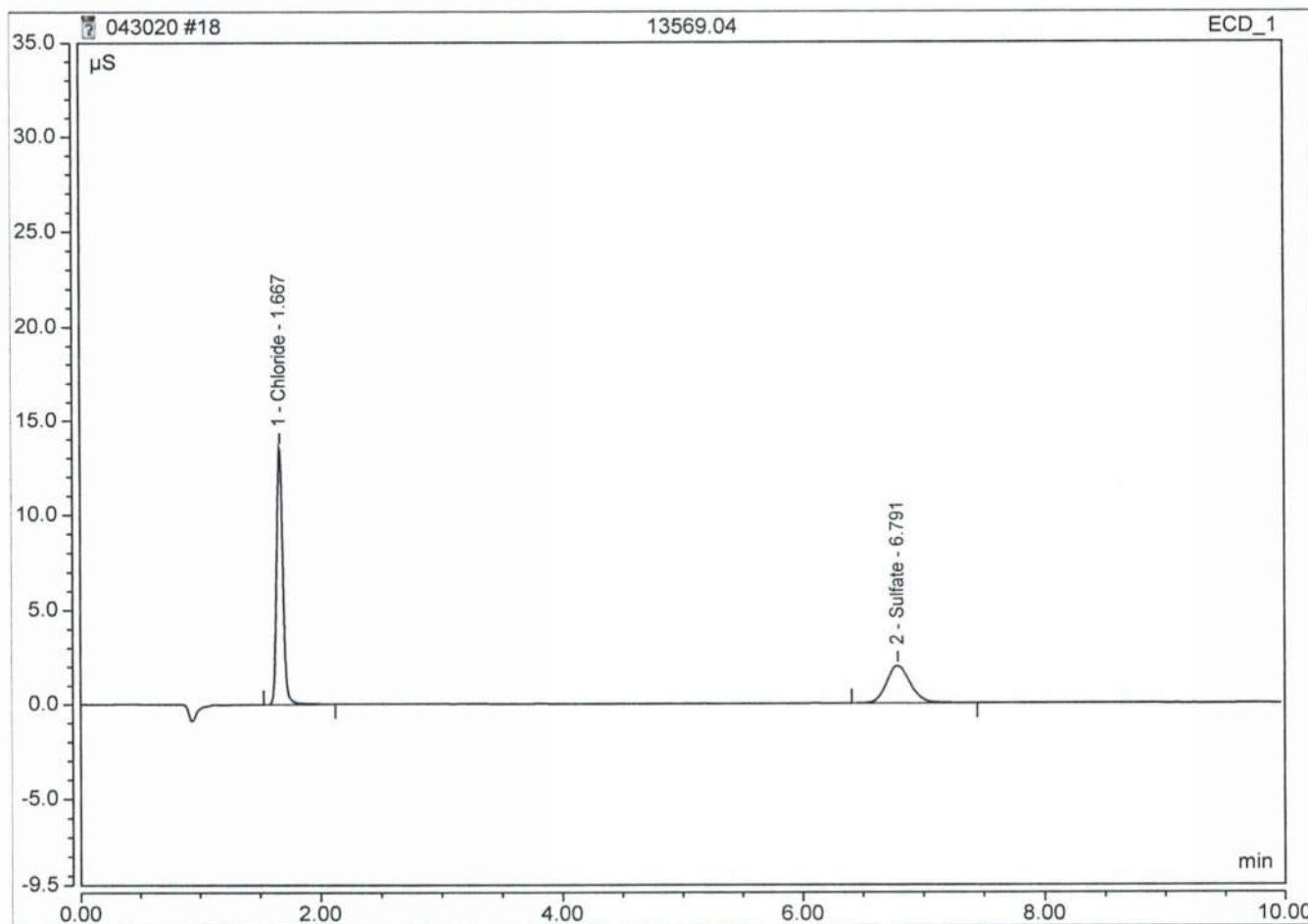
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	0.820	13.556	70.5724
2	6.79	Sulfate	BMB	0.440	1.953	56.7658
TOTAL:				1.26	15.51	127.34



Peak Integration Report

Sample Name:	13569.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 11:45	Operator:	Jeff Phifer

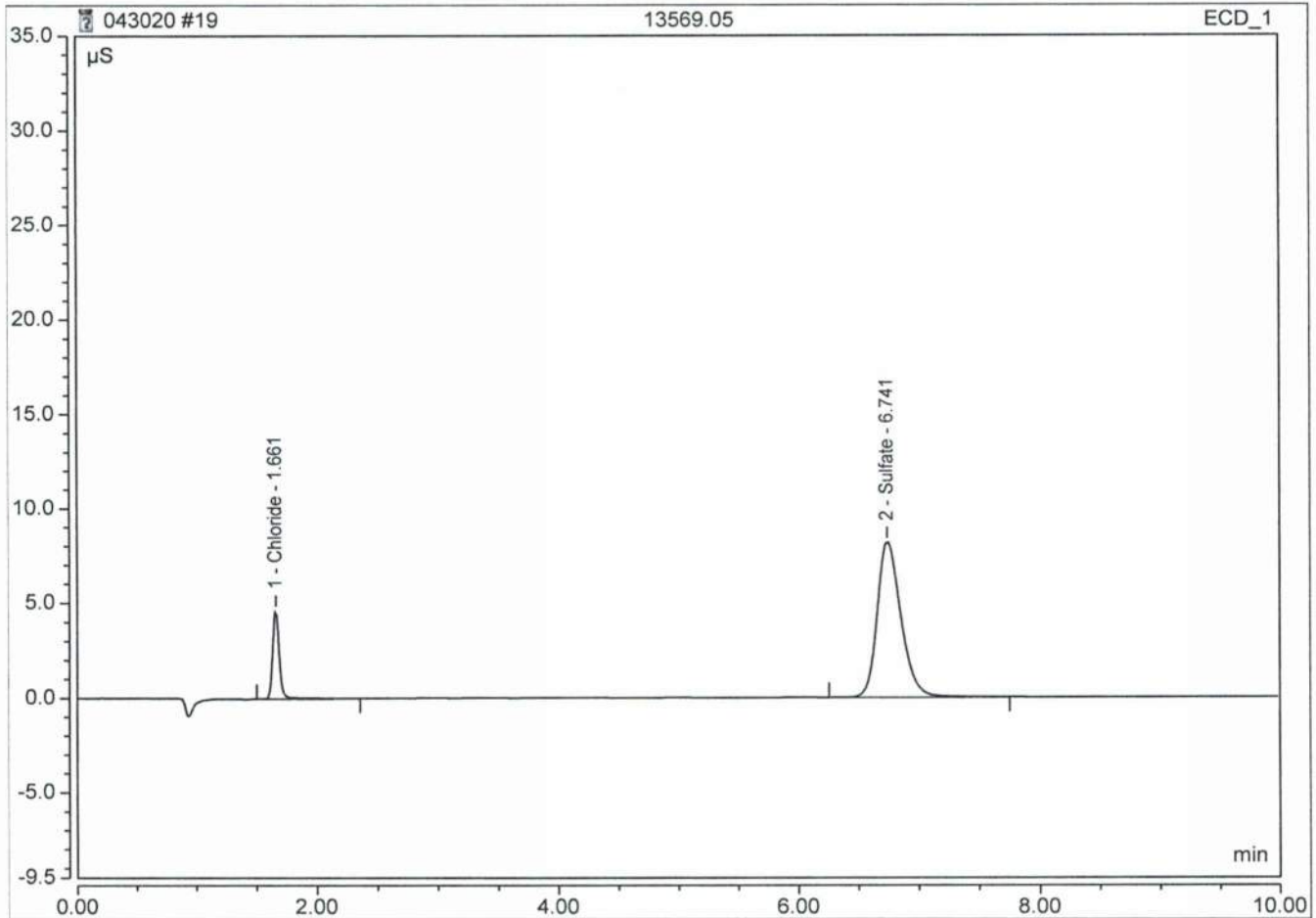
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.67	Chloride	BMB	0.818	13.570	70.3726
2	6.79	Sulfate	BMB	0.452	1.989	58.2229
TOTAL:				1.27	15.56	128.60



Peak Integration Report

Sample Name:	13569.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 11:58	Operator:	Jeff Phifer

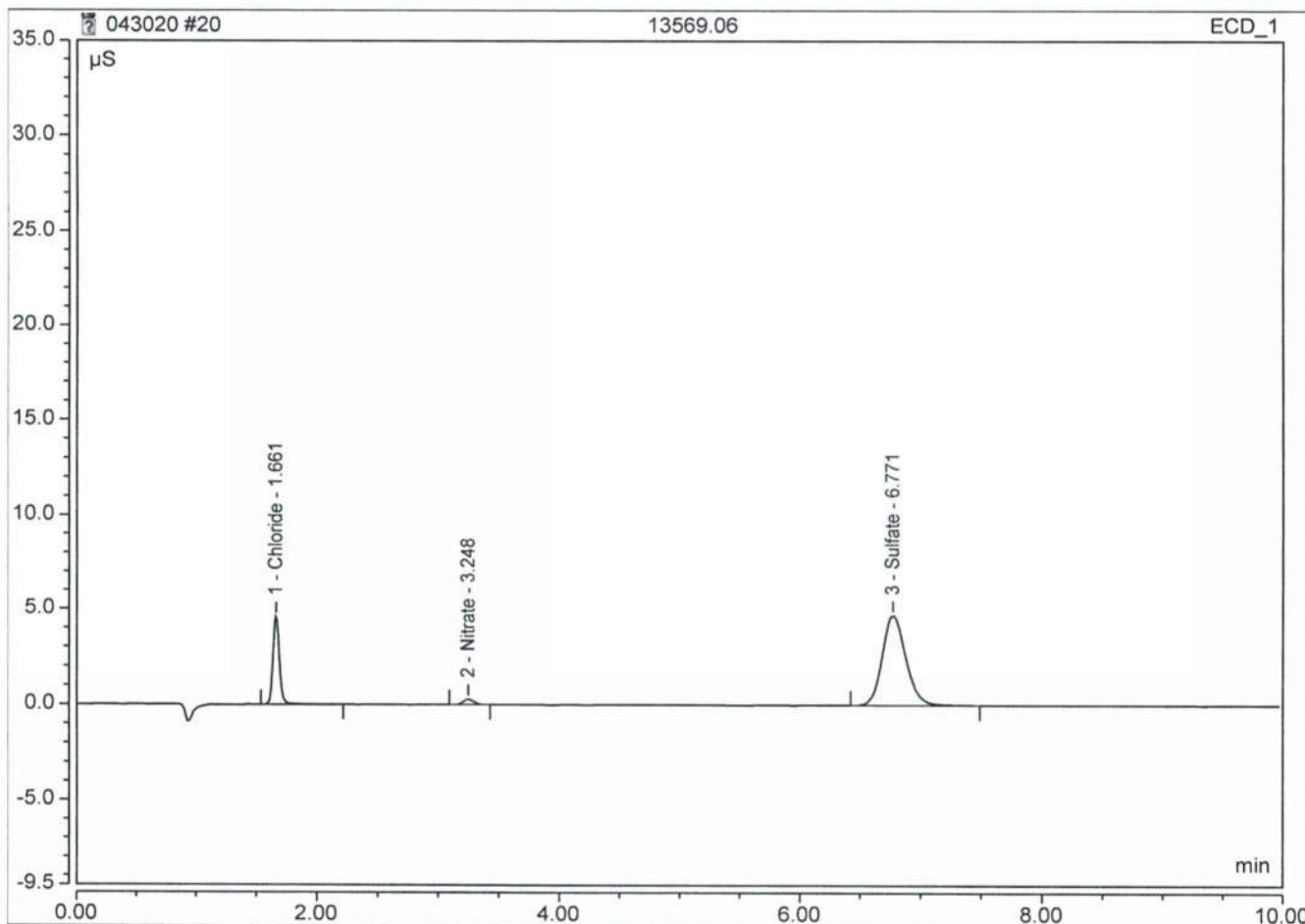
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	0.297	4.665	68.2985
2	6.74	Sulfate	BMB	1.856	8.195	591.2960
TOTAL:				2.15	12.86	659.59



Peak Integration Report

Sample Name:	13569.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 12:11	Operator:	Jeff Phifer

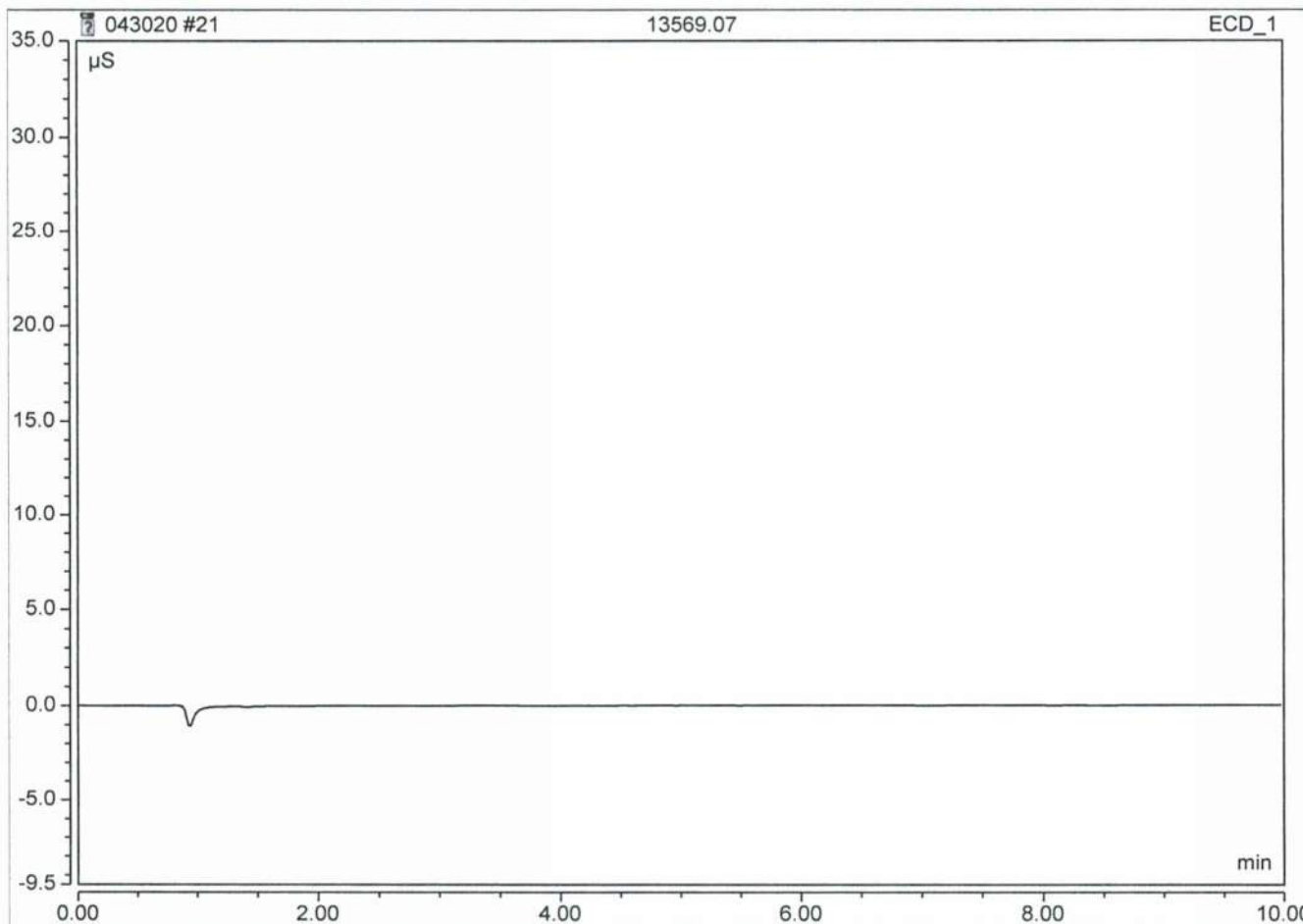
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	0.285	4.592	26.3528
2	3.25	Nitrate	BMB	0.029	0.290	1.1606
3	6.77	Sulfate	BMB	1.057	4.693	135.1041
TOTAL:				1.37	9.58	162.62



Peak Integration Report

Sample Name:	13569.07	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	2.5000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 12:24	Operator:	Jeff Phifer

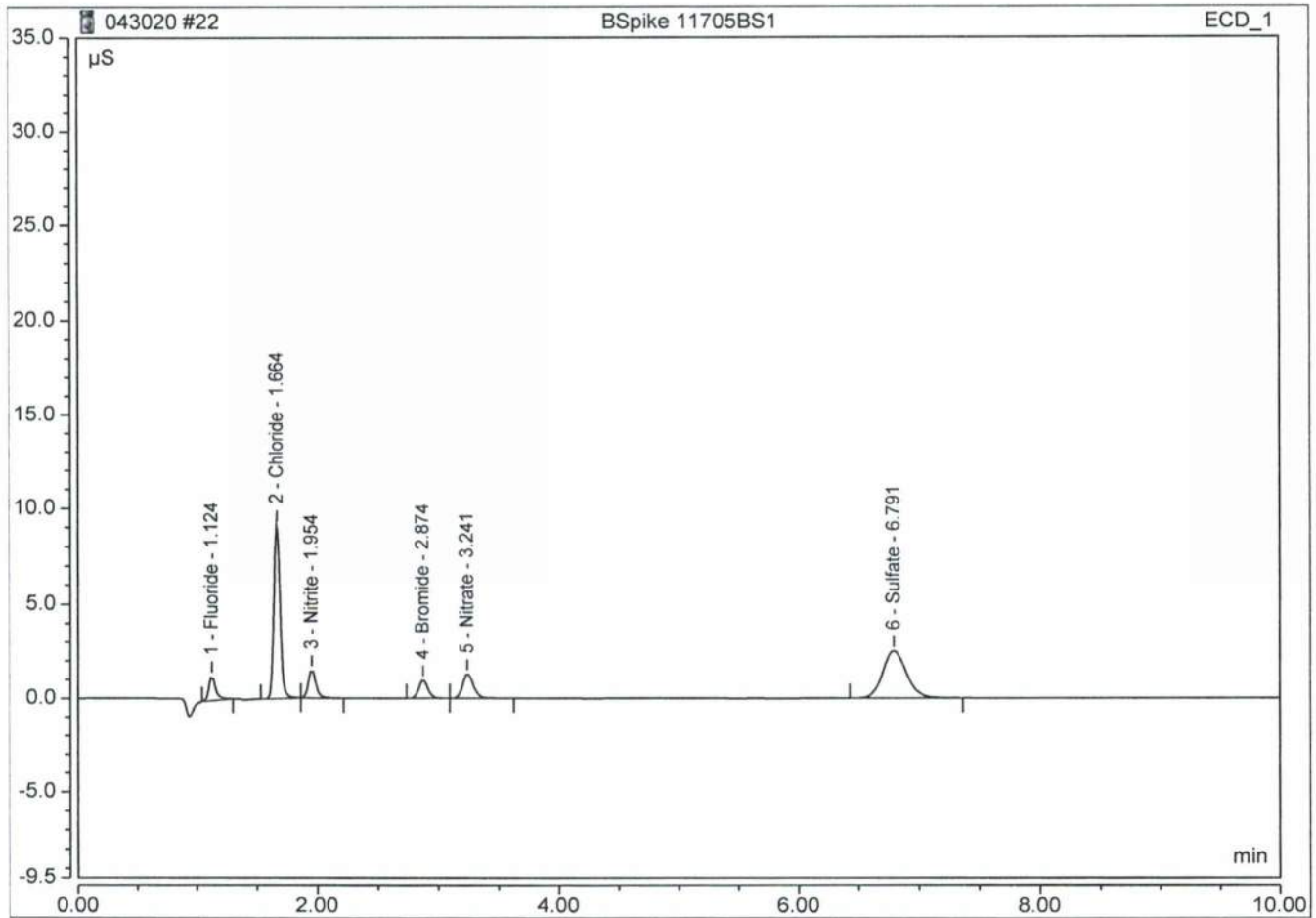
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	BSpoke 11705BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 12:37	Operator:	Jeff Phifer

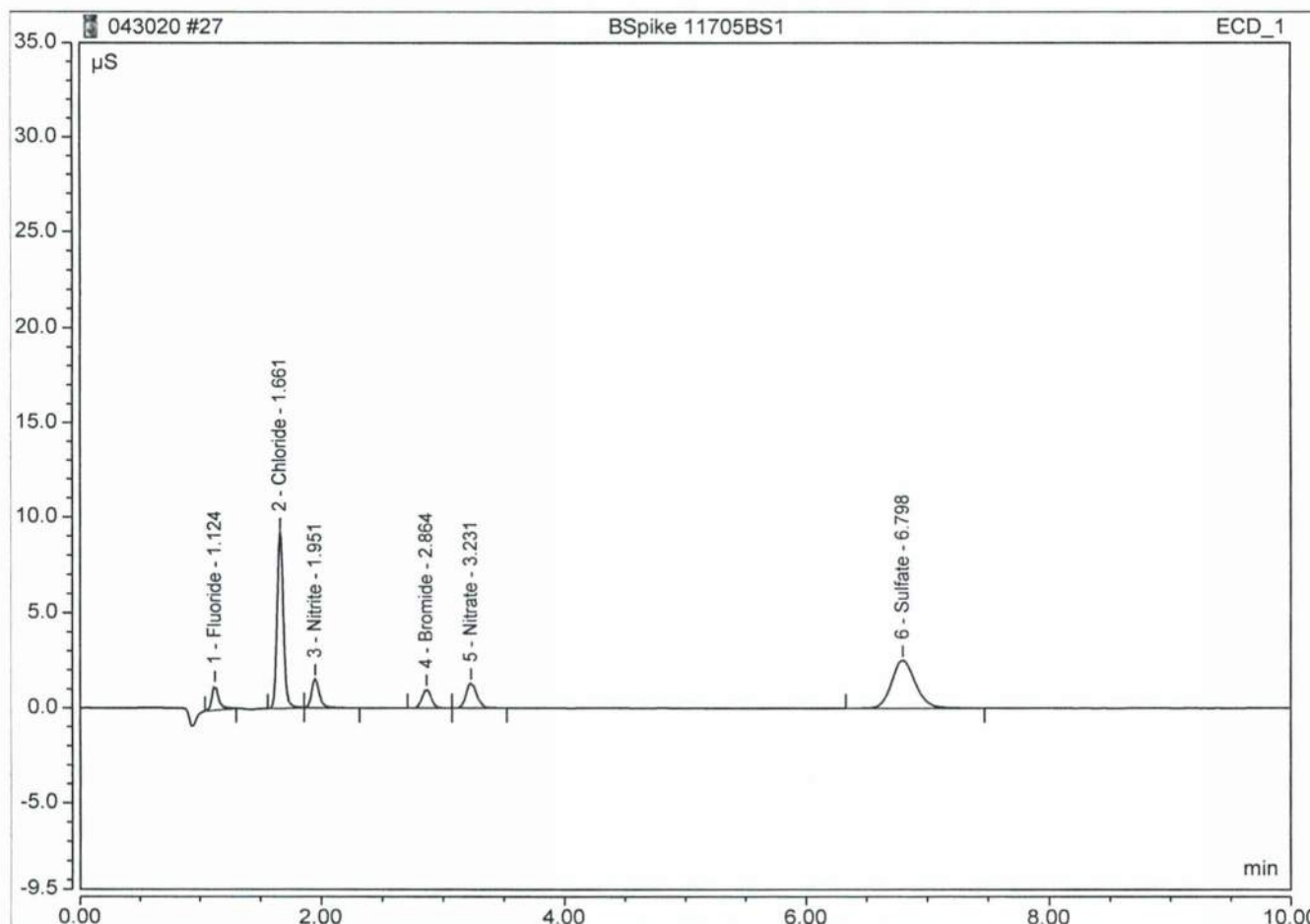
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.085	1.296	0.5 1020
2	1.66	Chloride	BMB	0.550	9.122	5 965
3	1.95	Nitrite	BMB	0.106	1.494	0.5 960
4	2.87	Bromide	BMB	0.089	0.984	2 1048
5	3.24	Nitrate	BMB	0.135	1.302	0.5 1045
6	6.79	Sulfate	BMB	0.571	2.527	7.5 975
TOTAL:				1.54	16.72	15.75



Peak Integration Report

Sample Name:	BSpike 11705BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 13:41	Operator:	Jeff Phifer

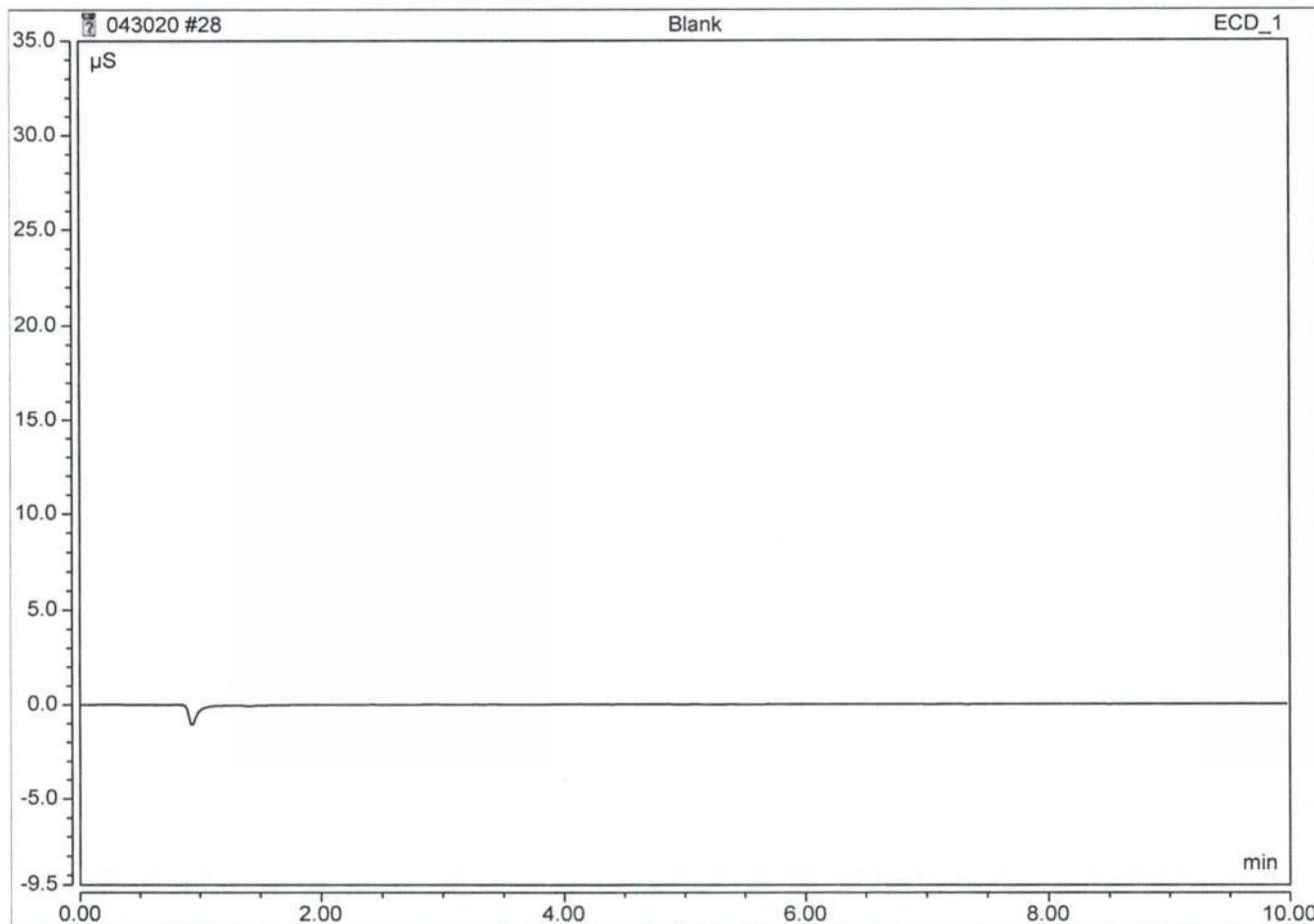
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}^*\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.084	1.286	0.5035
2	1.66	Chloride	BMB	0.552	9.171	4.8392
3	1.95	Nitrite	BMB	0.109	1.508	0.4922
4	2.86	Bromide	BMB	0.089	0.990	2.0688
5	3.23	Nitrate	BMB	0.134	1.311	0.5187
6	6.80	Sulfate	BMB	0.572	2.525	7.3477
TOTAL:				1.54	16.79	15.77



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	30-Apr-2020 / 13:53	Operator:	Jeff Phifer


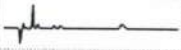




No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Ics-1100 A Dionex IC/Meth 300.0

031620







(view cur.)
all ions (new guard col) JH

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:58:12 AM...	1.0000
2		1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:29 A...	1.0000
3		1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:17 A...	1.0000
4		1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:36:06 A...	1.0000
5		1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:55 A...	1.0000
6		1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:43 A...	1.0000

[Click here to add a new injection](#)

CALID# IC5A031620 CAL

031620

#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
Click here to add a new injection						



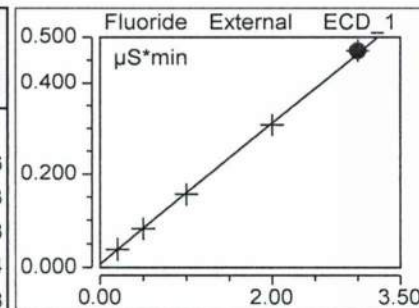
Norm Method	03/08/11 13:39	Jeff Phifer	Method 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mM]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run			Duration = 10.000 [min]	
	0.000			
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Calibration Batch Report
CAL ID# IC3A031620CAL

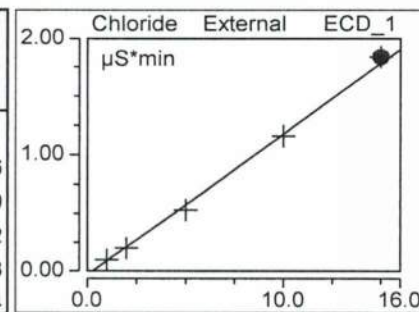
Sequence:	031620	Injection Volu. 2,500.00
Instrument Method:	Norm Method	Operator: Jeff Phifer
Inj. Date / Time:	16-Mar-2020 / 11:01	Column: AS4A-SC 038777

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.007	0.152	0.000	0.9998
Chloride	Area	Lin, WithOffset, 1/A	0.04	-0.033	0.121	0.000	0.9987
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.003	0.227	0.000	0.9997
Bromide	Area	Lin, WithOffset, 1/A	0.15	-0.001	0.043	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.17	-0.001	0.260	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.46	-0.007	0.079	0.000	0.9996
AVERAGE:				-0.0064	0.1471	0.0000	0.9996

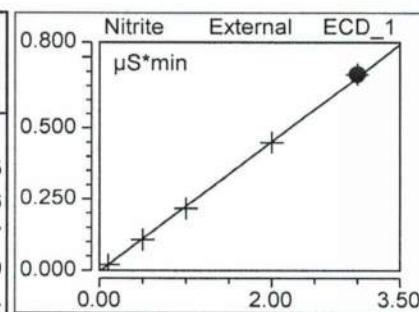
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
1130Cal1	ECD_1 1.118	ECD_1 0.0386	ECD_1 0.506	ECD_1 0.206
1130Cal2	1.118	0.0822	1.190	0.493
1130Cal3	1.118	0.1559	2.362	0.978
1130Cal4	1.118	0.3073	4.834	1.974
1130Cal5	1.118	0.4705	7.546	3.048
Average	1.118			
Rel. Std. Dev.	0.000 %			



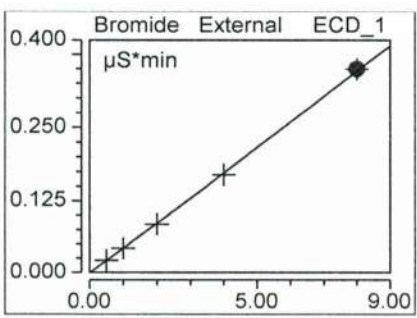
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Chloride	Chloride	Chloride	Chloride	Chloride
1130Cal1	ECD_1 1.651	ECD_1 0.0980	ECD_1 1.539	ECD_1 1.086
1130Cal2	1.651	0.2000	3.158	1.929
1130Cal3	1.661	0.5307	8.559	4.662
1130Cal4	1.664	1.1594	18.897	9.858
1130Cal5	1.664	1.8377	29.851	15.464
Average	1.658			
Rel. Std. Dev.	0.412 %			



Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Nitrite	Nitrite	Nitrite	Nitrite	Nitrite
1130Cal1	ECD_1 1.944	ECD_1 0.0206	ECD_1 0.280	ECD_1 0.105
1130Cal2	1.948	0.1071	1.441	0.486
1130Cal3	1.954	0.2163	2.949	0.967
1130Cal4	1.954	0.4487	6.229	1.989
1130Cal5	1.948	0.6905	9.755	3.054
Average	1.950			
Rel. Std. Dev.	0.229 %			

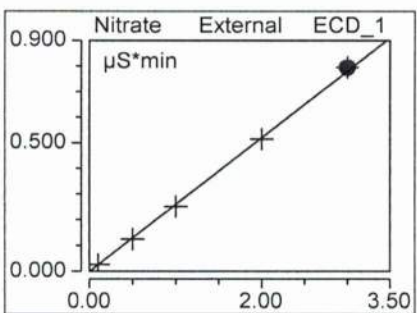


Injection Name	Ret. Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Bromide	Bromide	Bromide	Bromide	Bromide
1130Cal1	ECD_1 2.871	ECD_1 0.0210	ECD_1 0.228	ECD_1 0.511
1130Cal2	2.868	0.0422	0.461	0.999
1130Cal3	2.884	0.0843	0.917	1.969
1130Cal4	2.874	0.1696	1.866	3.936
1130Cal5	2.848	0.3497	3.898	8.085
Average	2.869			
Rel. Std. Dev.	0.469 %			

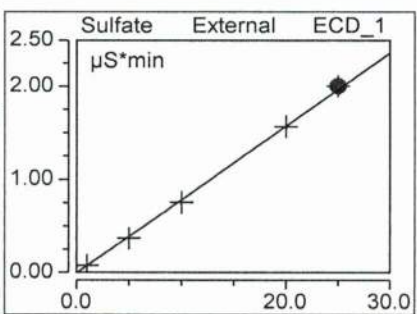


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Injection Name	Ret. Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Nitrate	Nitrate	Nitrate	Nitrate	Nitrate
1130Cal1	ECD_1 3.244	ECD_1 0.0266	ECD_1 0.254	ECD_1 0.105
1130Cal2	3.234	0.1249	1.182	0.483
1130Cal3	3.248	0.2515	2.359	0.970
1130Cal4	3.228	0.5145	4.808	1.982
1130Cal5	3.194	0.7947	7.457	3.060
Average	3.230			
Rel. Std. Dev.	0.659 %			



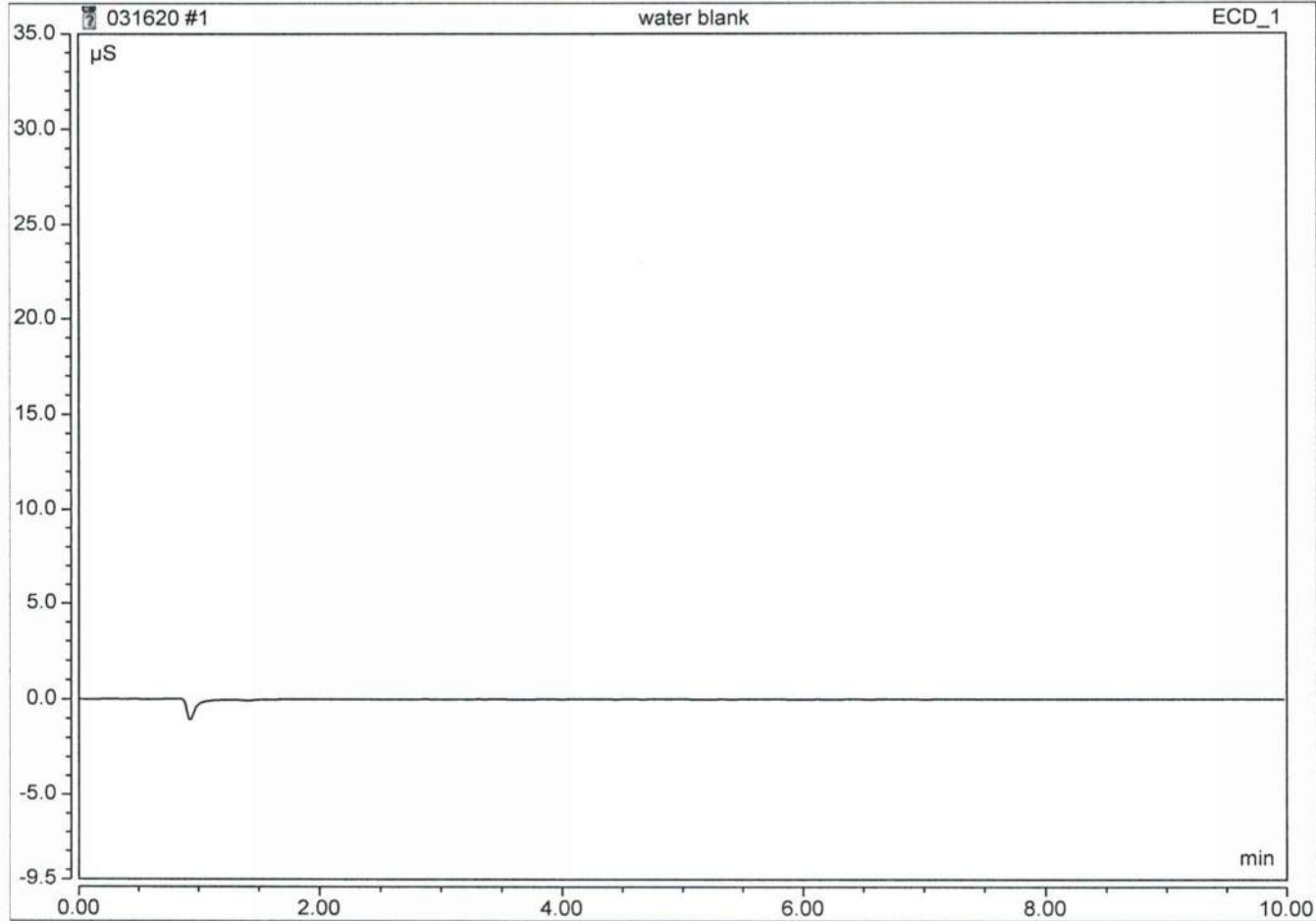
Injection Name	Ret. Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
1130Cal1	ECD_1 6.768	ECD_1 0.0763	ECD_1 0.333	ECD_1 1.054
1130Cal2	6.754	0.3712	1.645	4.800
1130Cal3	6.744	0.7553	3.326	9.676
1130Cal4	6.721	1.5656	6.872	19.966
1130Cal5	6.718	2.0017	8.764	25.504
Average	6.741			
Rel. Std. Dev.	0.319 %			



Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 09:58	Operator:	Jeff Phifer

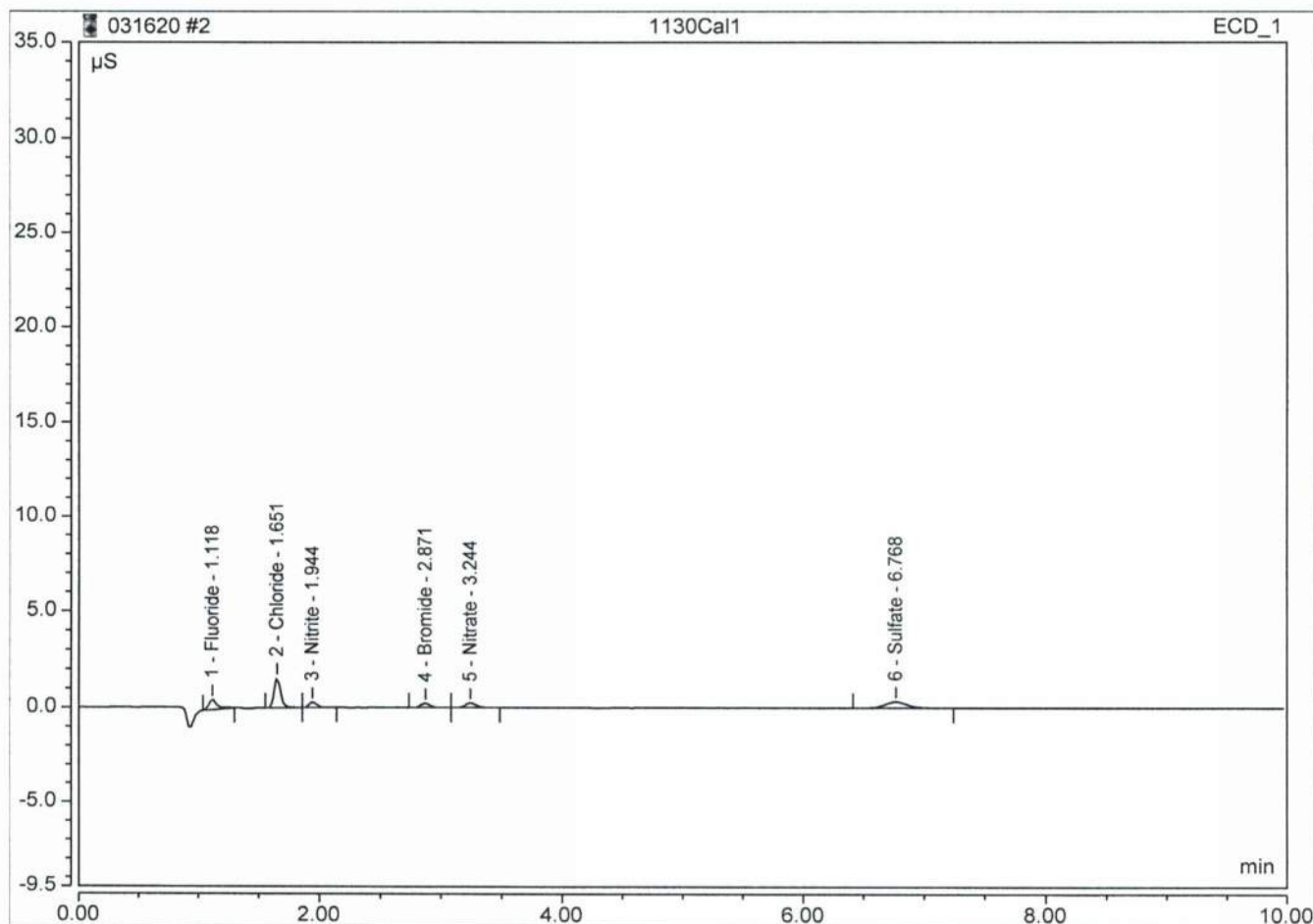
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	1130Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:10	Operator:	Jeff Phifer

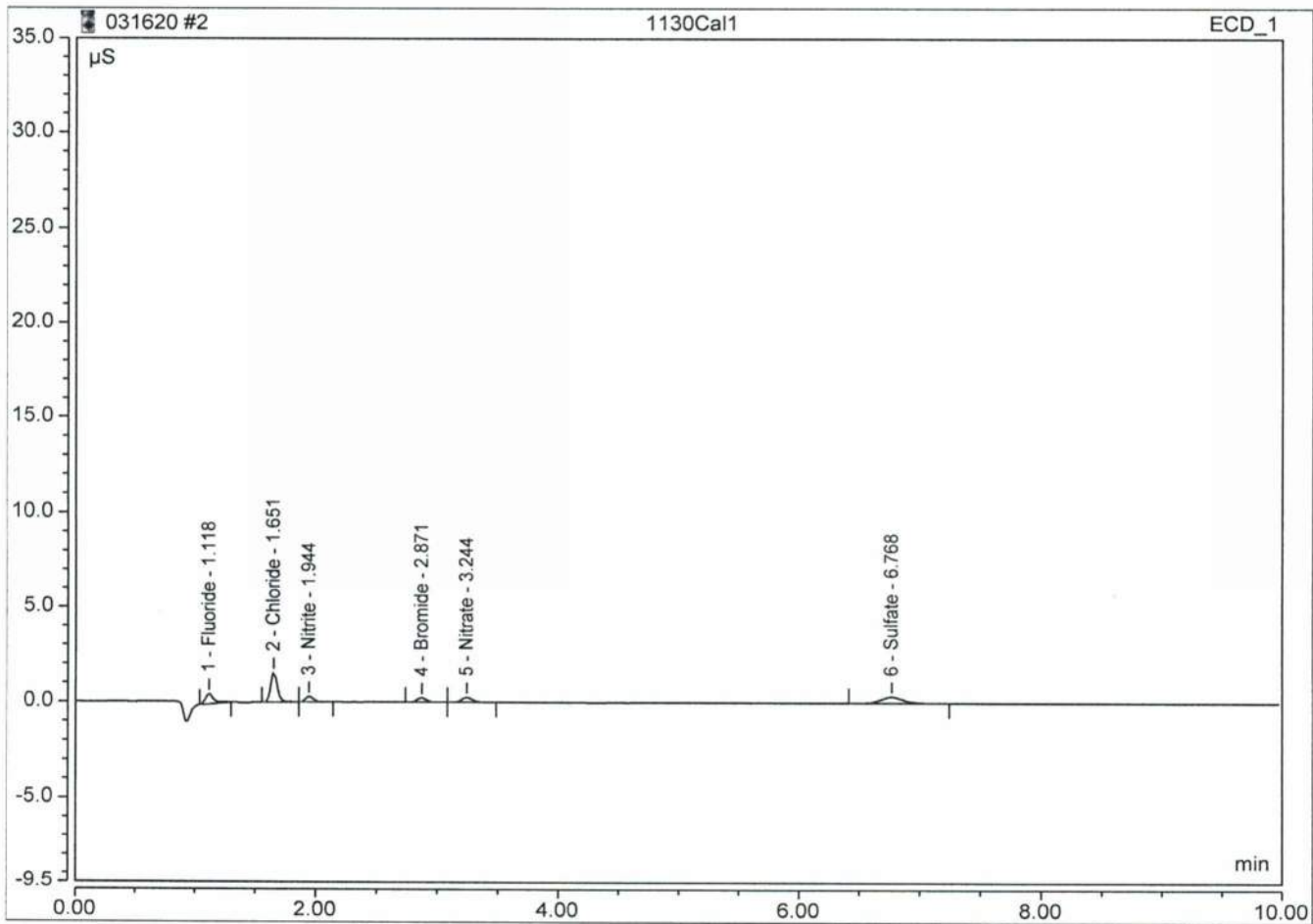
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.039	0.506	0.2 0.2064
2	1.65	Chloride	BMB	0.098	1.539	1 1.0862
3	1.94	Nitrite	BMB	0.021	0.280	0.1 0.1050
4	2.87	Bromide	BMB	0.021	0.228	0.5 0.5111
5	3.24	Nitrate	BMB	0.027	0.254	0.1 0.1053
6	6.77	Sulfate	BMB	0.076	0.333	1 1.0540
TOTAL:				0.28	3.14	3.07



Peak Integration Report

Sample Name:	1130Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:10	Operator:	Jeff Phifer

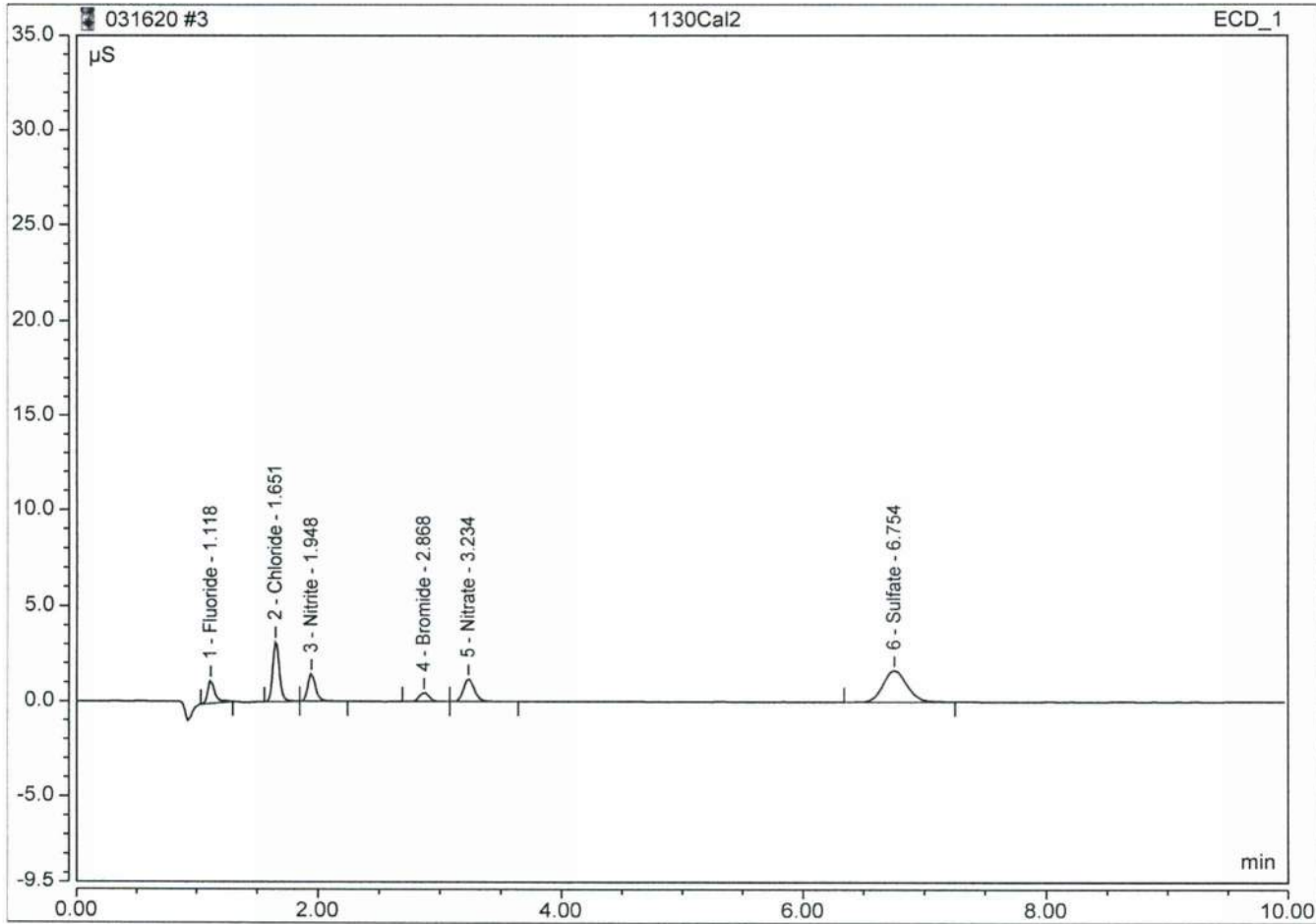
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.039	0.506	n.a.
2	1.65	Chloride	BMB	0.098	1.539	n.a.
3	1.94	Nitrite	BMB	0.021	0.280	n.a.
4	2.87	Bromide	BMB	0.021	0.228	n.a.
5	3.24	Nitrate	BMB	0.027	0.254	n.a.
6	6.77	Sulfate	BMB	0.076	0.333	n.a.
TOTAL:				0.28	3.14	0.00



Peak Integration Report

Sample Name:	1130Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:23	Operator:	Jeff Phifer

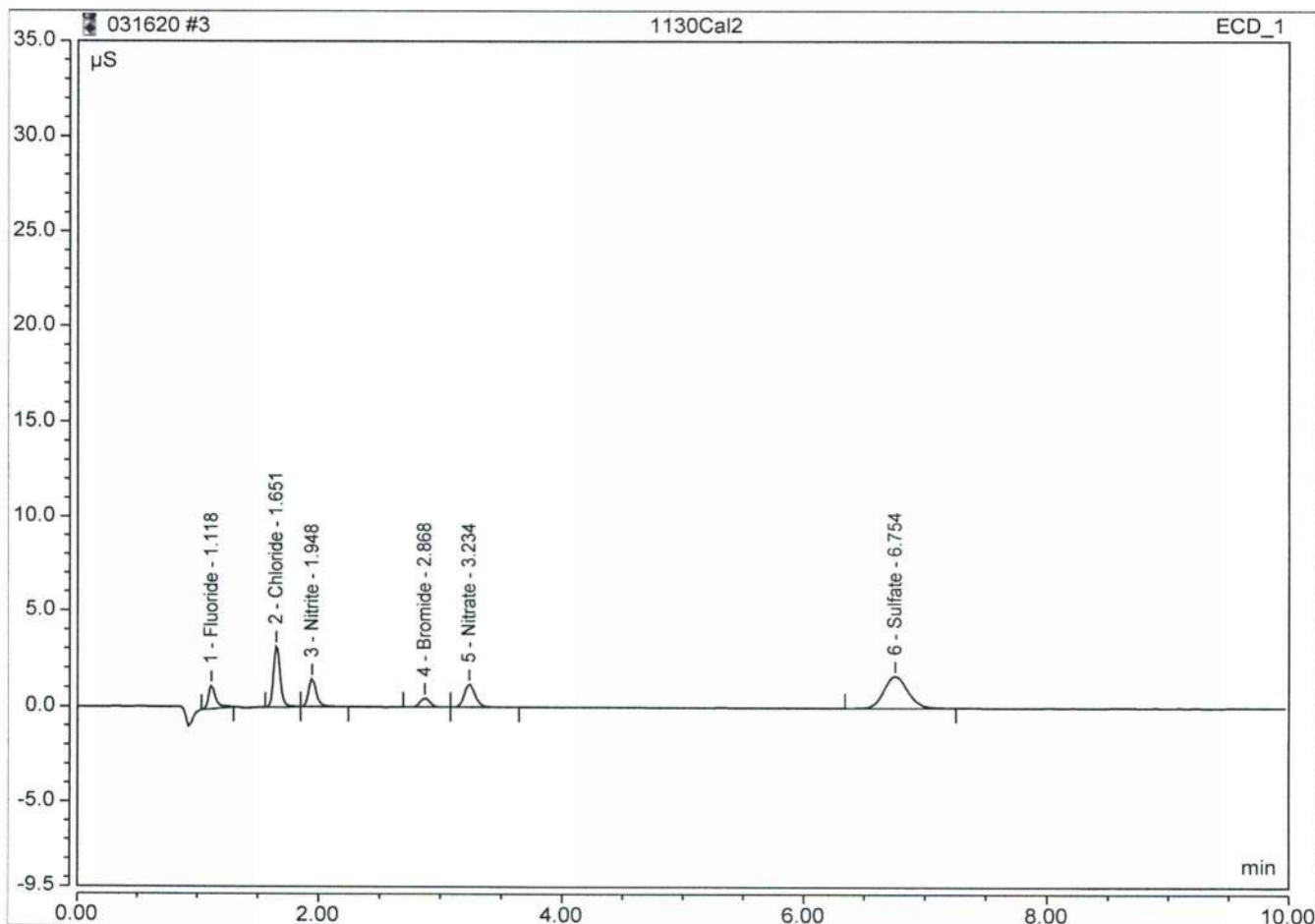
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.082	1.190	0.5 0.4934
2	1.65	Chloride	BMB	0.200	3.158	2 1.9291
3	1.95	Nitrite	BMB	0.107	1.441	0.5 0.4857
4	2.87	Bromide	BMB	0.042	0.461	1 0.9986
5	3.23	Nitrate	BMB	0.125	1.182	0.5 0.4831
6	6.75	Sulfate	BMB	0.371	1.645	5 4.7996
TOTAL:				0.93	9.08	9.19



Peak Integration Report

Sample Name:	1130Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:23	Operator:	Jeff Phifer

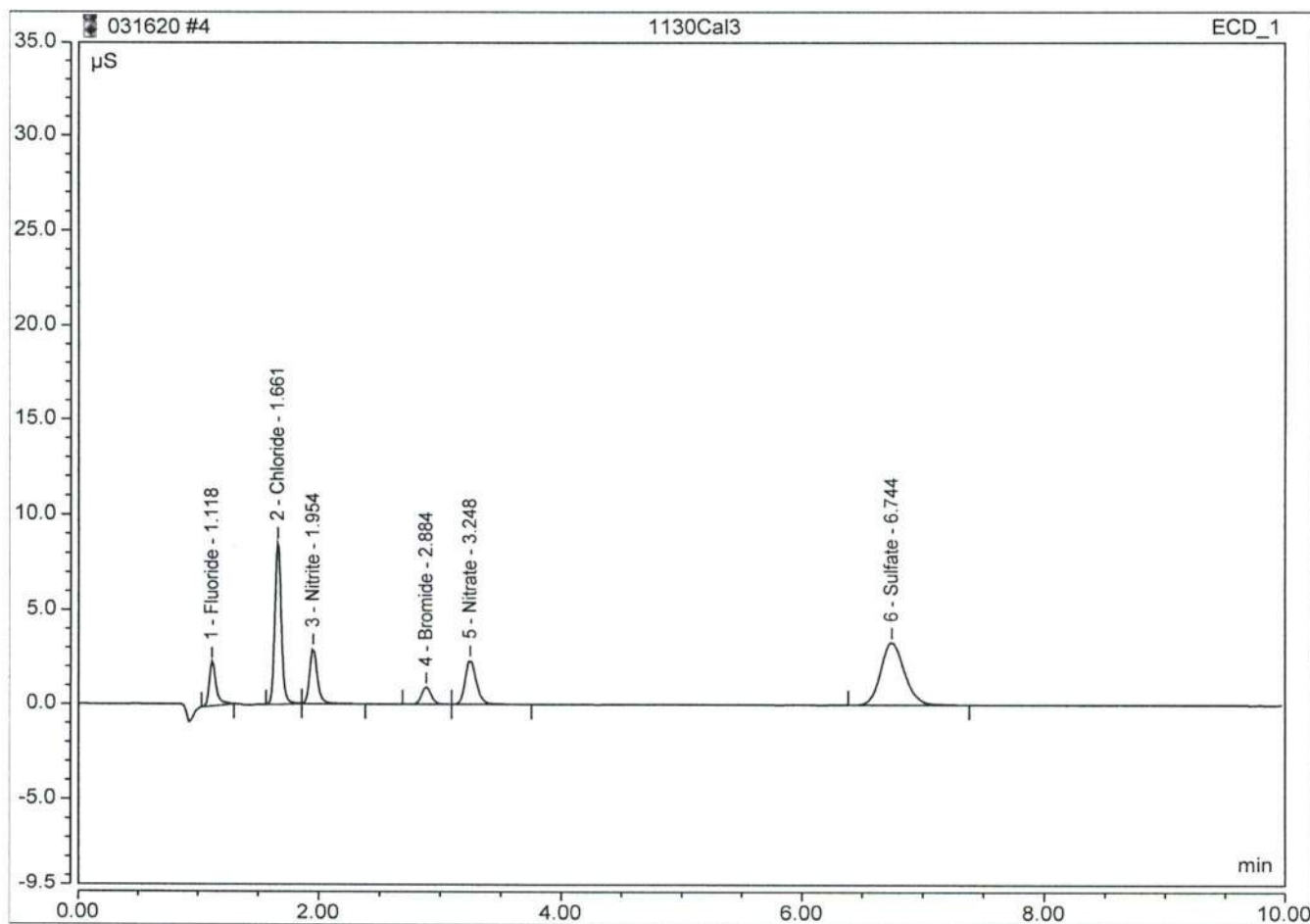
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.082	1.190	0.5000
2	1.65	Chloride	BMB	0.200	3.158	2.0000
3	1.95	Nitrite	BMB	0.107	1.441	0.5000
4	2.87	Bromide	BMB	0.042	0.461	1.0000
5	3.23	Nitrate	BMB	0.125	1.182	0.5000
6	6.75	Sulfate	BMB	0.371	1.645	5.0000
TOTAL:				0.93	9.08	9.50



Peak Integration Report

Sample Name:	1130Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:36	Operator:	Jeff Phifer

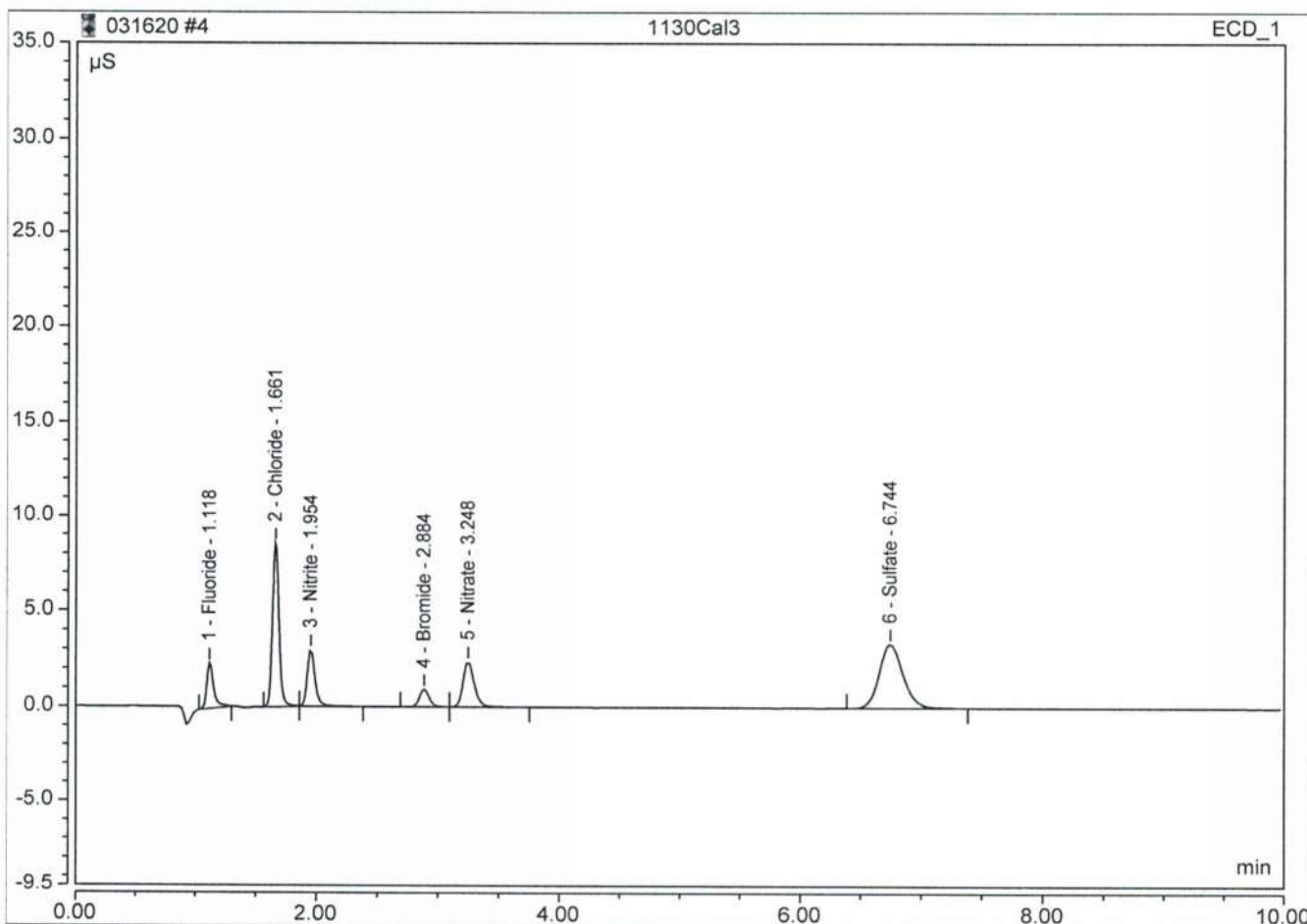
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.156	2.362	1 0.9783
2	1.66	Chloride	BMB	0.531	8.559	5 4.6623
3	1.95	Nitrite	BMB	0.216	2.949	1 0.9666
4	2.88	Bromide	BMB	0.084	0.917	2 1.9694
5	3.25	Nitrate	BMB	0.252	2.359	1 0.9702
6	6.74	Sulfate	BMB	0.755	3.326	10 9.6764
TOTAL:				1.99	20.47	19.22



Peak Integration Report

Sample Name:	1130Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:36	Operator:	Jeff Phifer

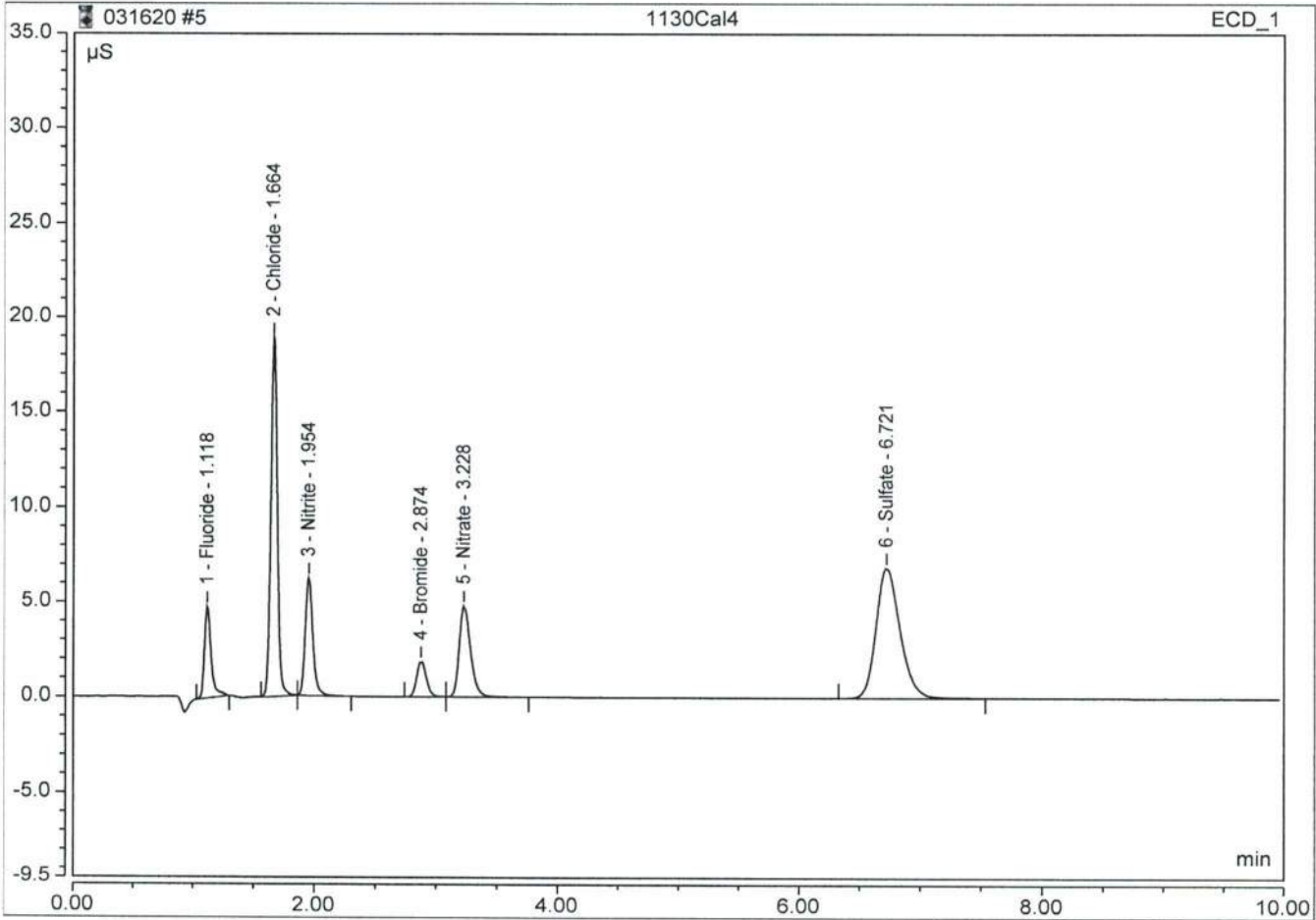
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.156	2.362	1.0013
2	1.66	Chloride	BMB	0.531	8.559	5.0249
3	1.95	Nitrite	BMB	0.216	2.949	1.0014
4	2.88	Bromide	BMB	0.084	0.917	1.9993
5	3.25	Nitrate	BMB	0.252	2.359	1.0042
6	6.74	Sulfate	BMB	0.755	3.326	10.0555
TOTAL:				1.99	20.47	20.09



Peak Integration Report

Sample Name:	1130Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:48	Operator:	Jeff Phifer

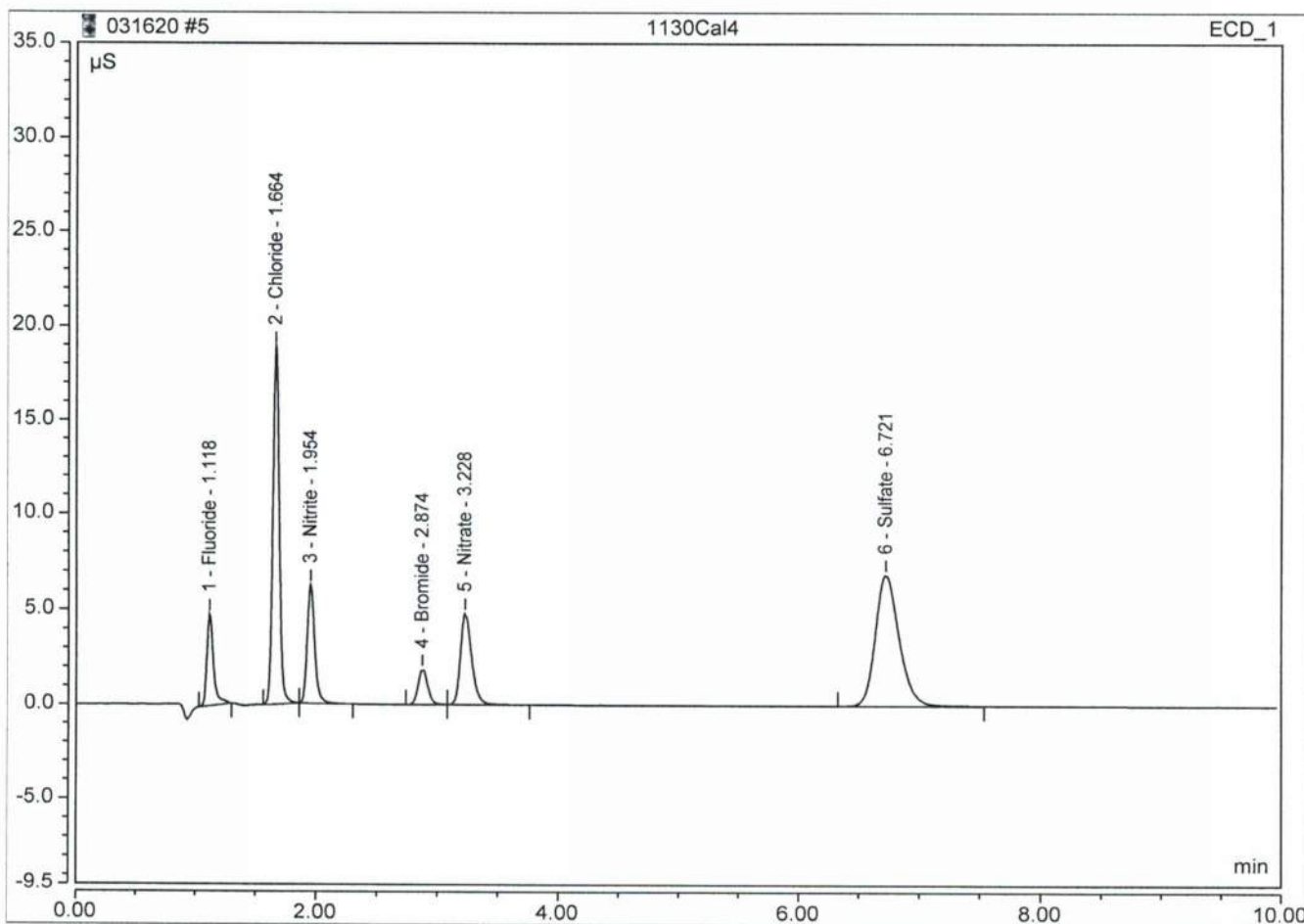
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.307	4.834	2 1.9744
2	1.66	Chloride	BMB	1.159	18.897	10 9.8582
3	1.95	Nitrite	BMB	0.449	6.229	2 1.9892
4	2.87	Bromide	BMB	0.170	1.866	4 3.9361
5	3.23	Nitrate	BMB	0.515	4.808	2 1.9818
6	6.72	Sulfate	BMB	1.566	6.872	20 19.9659
TOTAL:				4.17	43.50	39.71



Peak Integration Report

Sample Name:	1130Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:48	Operator:	Jeff Phifer

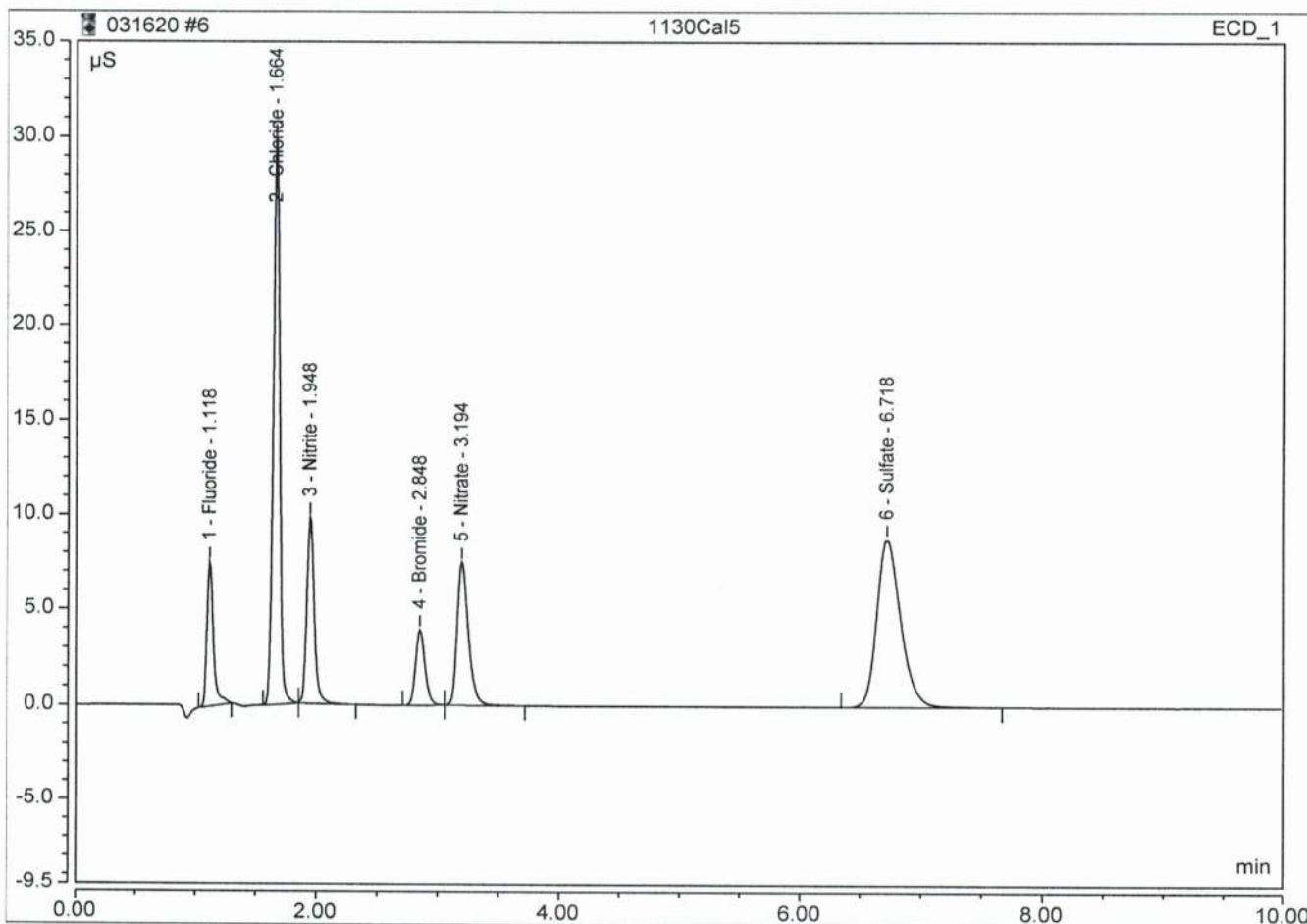
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.307	4.834	2.0102
2	1.66	Chloride	BMB	1.159	18.897	10.2226
3	1.95	Nitrite	BMB	0.449	6.229	2.0251
4	2.87	Bromide	BMB	0.170	1.866	4.0058
5	3.23	Nitrate	BMB	0.515	4.808	2.0216
6	6.72	Sulfate	BMB	1.566	6.872	20.2999
TOTAL:				4.17	43.50	40.59



Peak Integration Report

Sample Name:	1130Cal5	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 11:01	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.470	7.546	3 3.0476
2	1.66	Chloride	BMB	1.838	29.851	15 15.4642
3	1.95	Nitrite	BMB	0.690	9.755	3 3.0536
4	2.85	Bromide	BMB	0.350	3.898	8 8.0849
5	3.19	Nitrate	BMB	0.795	7.457	3 3.0595
6	6.72	Sulfate	BMB	2.002	8.764	25 25.5041
TOTAL:				6.14	67.27	58.21



ICS-1100 B Dionex IC / Meth 300.0

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:57:49 AM -C
	1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:09 AM -C
	1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:01 AM -C
	1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:35:53 AM -C
	1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:45 AM -C
	1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:35 AM -C
	Blank	Unknown		1	Norm Method	Anion	Finished	4/30/2020 8:25:10 AM -C
	BSpoke 11705BS1	Check Standard		2	Norm Method	Anion	Finished	4/30/2020 8:37:29 AM -C
	LCS 11705LCS1	Check Standard		3	Norm Method	Anion	Finished	4/30/2020 8:50:20 AM -C
	LOD 1132LOD1	Unknown		4	Norm Method	Anion	Finished	4/30/2020 9:03:12 AM -C
	LOQ 1132LOQ1	Unknown		5	Norm Method	Anion	Finished	4/30/2020 9:16:04 AM -C
	13569.01	Unknown		6	Norm Method	Anion	Finished	4/30/2020 9:28:56 AM -C
	13569.02	Unknown		7	Norm Method	Anion	Finished	4/30/2020 9:41:47 AM -C
	13569.03	Unknown		8	Norm Method	Anion	Finished	4/30/2020 9:54:39 AM -C
	13569.04	Unknown		9	Norm Method	Anion	Finished	4/30/2020 10:07:29 AM -C
	13569.05	Unknown		10	Norm Method	Anion	Finished	4/30/2020 10:20:21 AM -C
	13569.06	Unknown		11	Norm Method	Anion	Finished	4/30/2020 10:33:13 AM -C
	13569.07	Unknown		12	Norm Method	Anion	Finished	4/30/2020 10:46:05 AM -C
	13575.06	Unknown		13	Norm Method	Anion	Finished	4/30/2020 10:58:57 AM -C
	13575.07	Unknown		14	Norm Method	Anion	Finished	4/30/2020 11:11:48 AM -C
	13569.01 dup	Unknown		15	Norm Method	Anion	Finished	4/30/2020 11:24:39 AM -C
	13569.01 MS 12970MS	Unknown		16	Norm Method	Anion	Finished	4/30/2020 11:37:31 AM -C
	13569.01 MSD 12970M	Unknown		17	Norm Method	Anion	Finished	4/30/2020 11:50:23 AM -C
	BSpoke 11705BS1	Check Standard		18	Norm Method	Anion	Finished	4/30/2020 12:03:14 PM -C

CALIB# ICS B 031620 CAL
 Chromeleon 7,
 Version 7.2.19.0270 Thermo Fisher Scientific

SFT 200430 WL-B
NTRA 200430 WL-B
FL 200430 WL-B

Sequence: 043020
Last Update Operator: pcuser

	Blank	Unknown	19	Norm Method	Anion	Finished	4/30/2020 12:16:05 PM
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Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	2.5000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

Sequence: 043020
Last Update Operator: pcuser



1.0000	1.0000	1.0000		Jeff Phifer	
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Norm Method	16/06/15 12:18	Jeff Phifer	METHOD 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mM]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Calibration Batch Report
CAL ID# ICSB031620CAL

Sequence:	043020	Injection Vol.	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	16-Mar-2020 / 11:01	Column:	AS4A-SC 040144

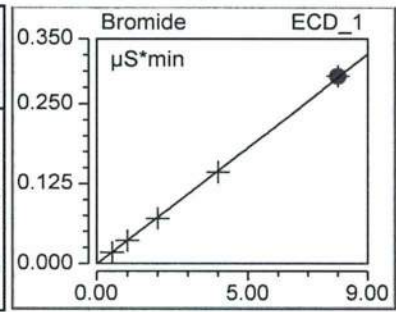
Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.023	0.122	0.000	0.9999
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.025	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.193	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	-0.001	0.036	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.004	0.064	0.000	0.9997
AVERAGE:				-0.0017	0.1217	0.0000	0.9996

Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	1.087	0.0469	0.474	0.199
1130Cal2	1.088	0.0842	1.010	0.505
1130Cal3	1.088	0.1447	1.902	0.999
1130Cal4	1.088	0.2638	3.720	1.974
1130Cal5	1.088	0.3918	5.690	3.022
Average	1.087			
Rel. Std. Dev.	0.007 %			

Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	1.647	0.0837	1.369	1.083
1130Cal2	1.648	0.1692	2.803	1.934
1130Cal3	1.654	0.4442	7.527	4.674
1130Cal4	1.658	0.9621	16.388	9.834
1130Cal5	1.661	1.5282	25.842	15.474
Average	1.653			
Rel. Std. Dev.	0.363 %			

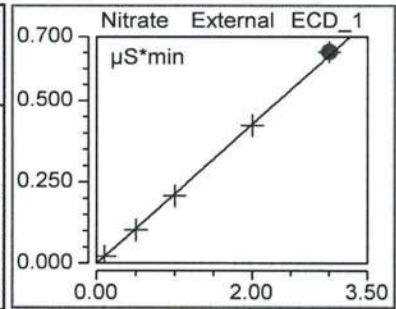
Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	1.964	0.0180	0.249	0.106
1130Cal2	1.964	0.0909	1.255	0.483
1130Cal3	1.968	0.1837	2.564	0.963
1130Cal4	1.971	0.3820	5.338	1.989
1130Cal5	1.968	0.5890	8.308	3.060
Average	1.967			
Rel. Std. Dev.	0.144 %			

Injection Name	Ret. Time min ECD 1	Area $\mu\text{S} \cdot \text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	Bromide 2.957	Bromide 0.0176	Bromide 0.183	Bromide 0.507
1130Cal2	2.954	0.0358	0.371	1.006
1130Cal3	2.958	0.0707	0.738	1.967
1130Cal4	2.961	0.1430	1.493	3.955
1130Cal5	2.938	0.2925	3.112	8.064
Average	2.953			
Rel. Std. Dev.	0.313 %			

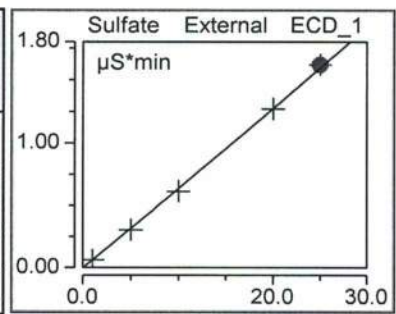


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Injection Name	Ret. Time min ECD 1	Area $\mu\text{S} \cdot \text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	Nitrate 3.351	Nitrate 0.0215	Nitrate 0.195	Nitrate 0.105
1130Cal2	3.341	0.1029	0.922	0.486
1130Cal3	3.341	0.2071	1.848	0.972
1130Cal4	3.334	0.4230	3.741	1.982
1130Cal5	3.301	0.6525	5.776	3.055
Average	3.333			
Rel. Std. Dev.	0.575 %			



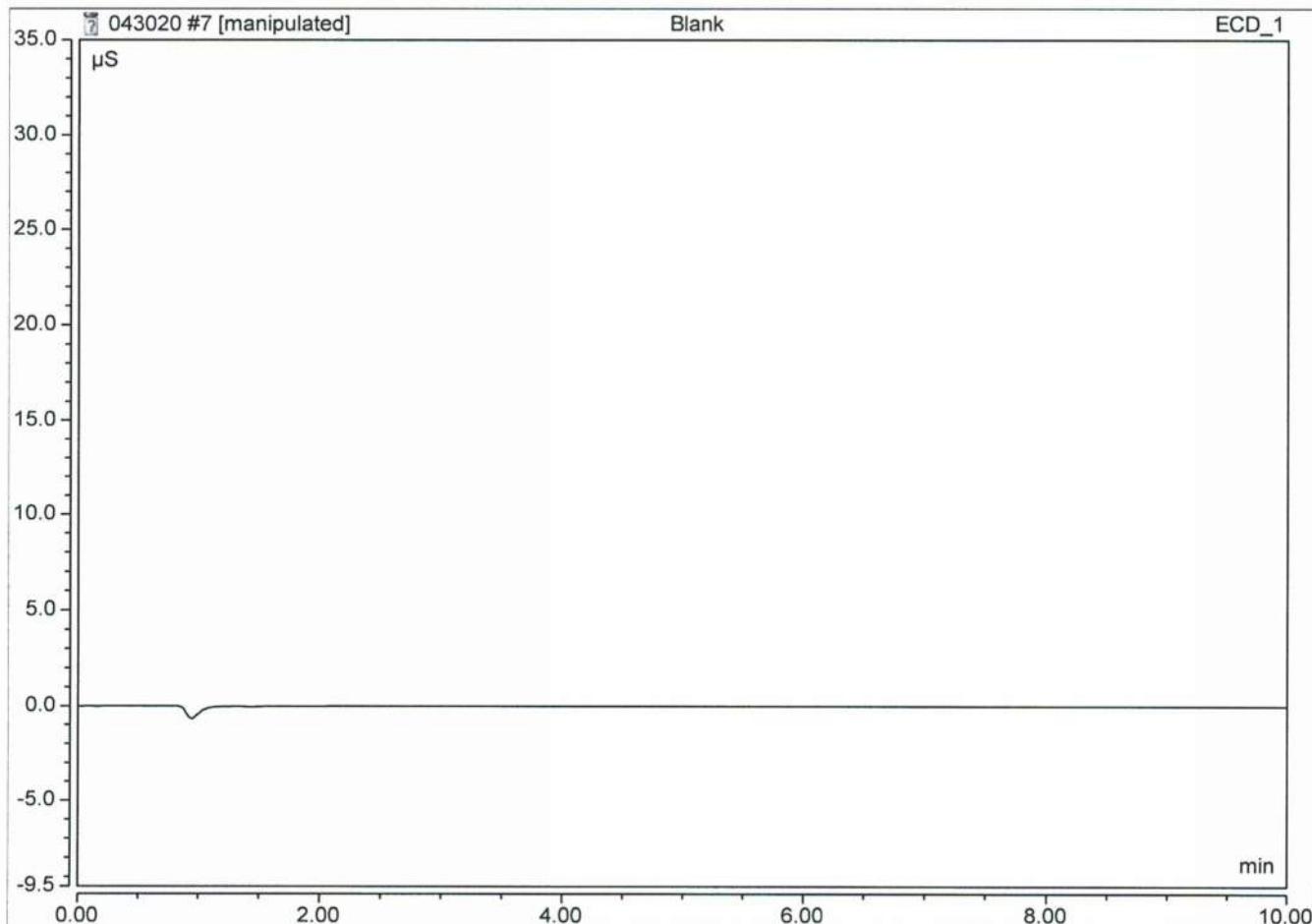
Injection Name	Ret. Time min ECD 1	Area $\mu\text{S} \cdot \text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	Sulfate 7.057	Sulfate 0.0628	Sulfate 0.254	Sulfate 1.044
1130Cal2	7.048	0.3053	1.246	4.843
1130Cal3	7.028	0.6158	2.526	9.709
1130Cal4	7.018	1.2715	5.210	19.984
1130Cal5	7.011	1.6185	6.632	25.419
Average	7.032			
Rel. Std. Dev.	0.281 %			



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 08:25	Operator:	Jeff Phifer

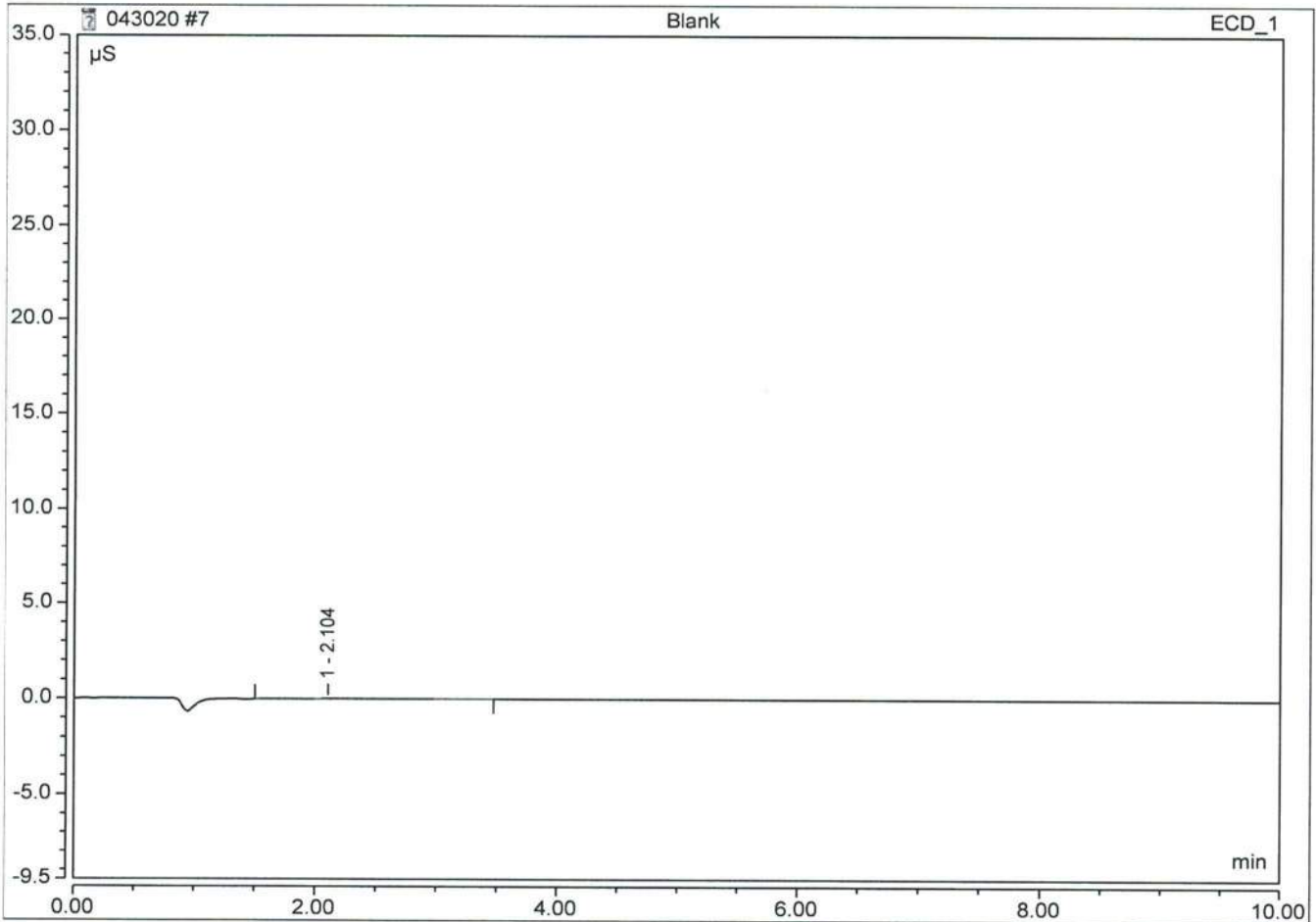
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 08:25	Operator:	Jeff Phifer

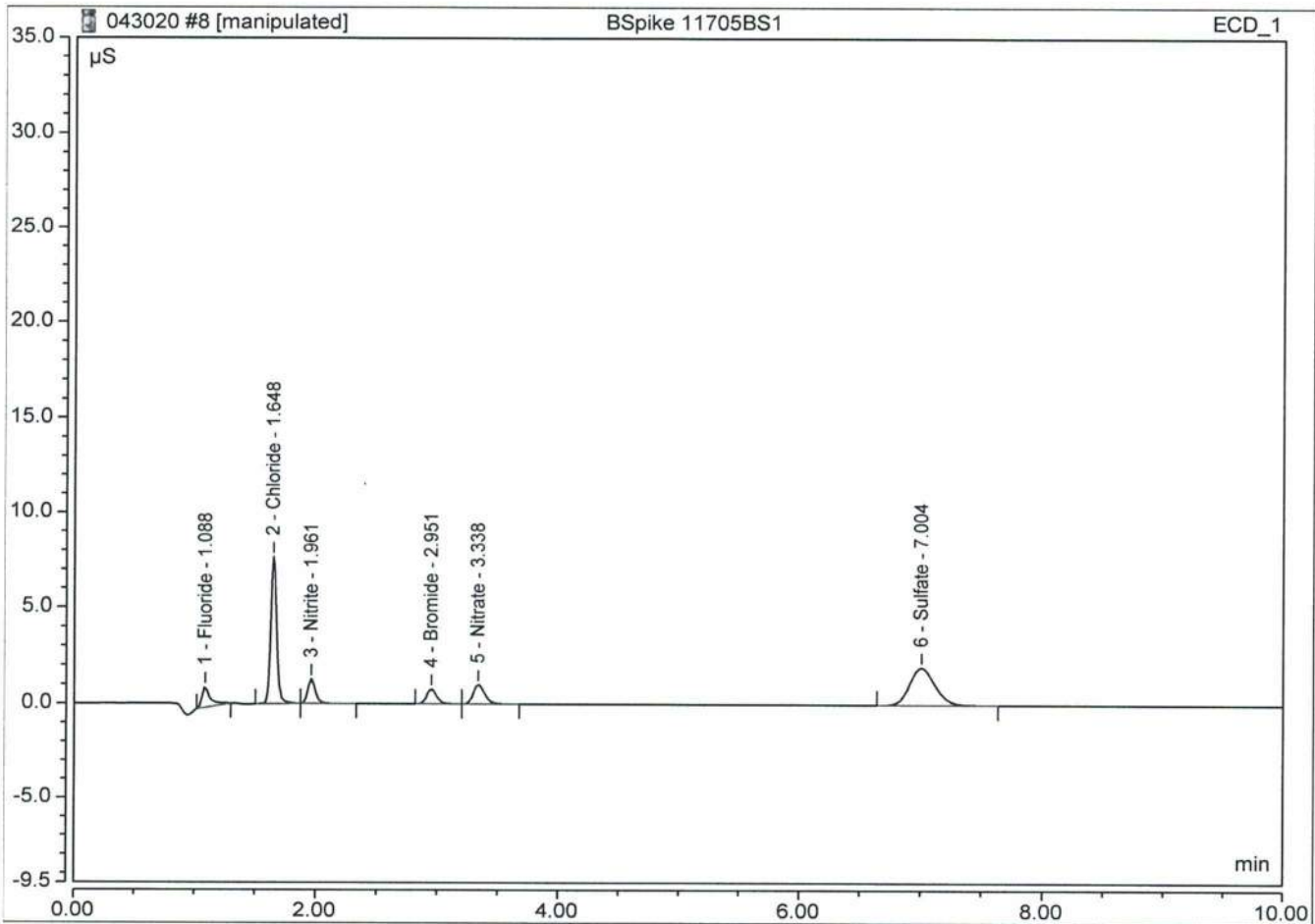
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	BSpike 11705BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 08:37	Operator:	Jeff Phifer

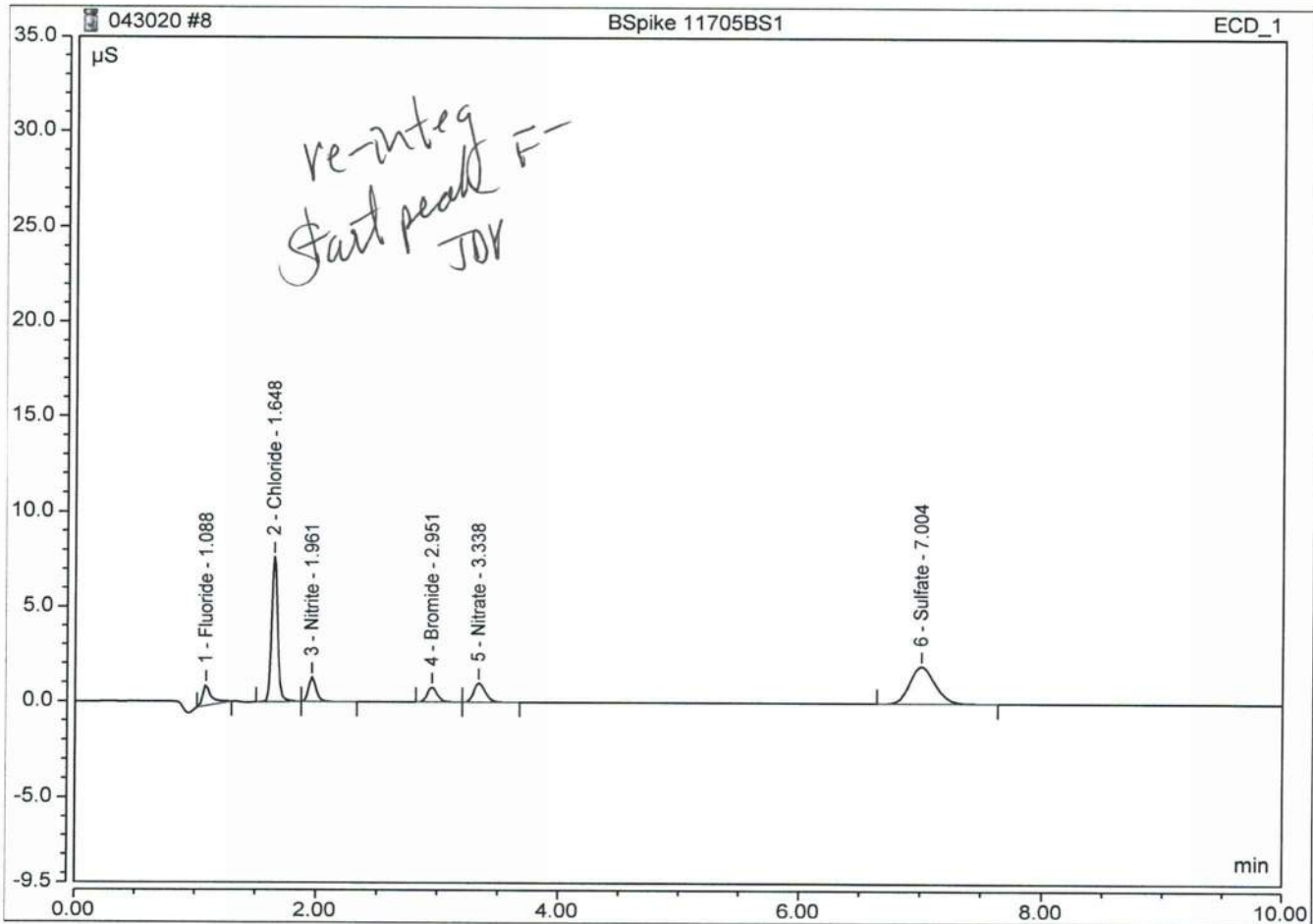
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB*	0.085	1.059	0.5 0.5137 102%
2	1.65	Chloride	BMB	0.454	7.662	5 4.7702 96%
3	1.96	Nitrite	BMB	0.091	1.271	0.5 0.4858 96%
4	2.95	Bromide	BMB	0.073	0.768	2 2.0308 102%
5	3.34	Nitrate	BMB	0.110	0.996	0.5 0.5172 104%
6	7.00	Sulfate	BMB	0.468	1.945	7.5 7.3886 99%
TOTAL:				1.28	13.70	15.71



Peak Integration Report

Sample Name:	BSpike 11705BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 08:37	Operator:	Jeff Phifer

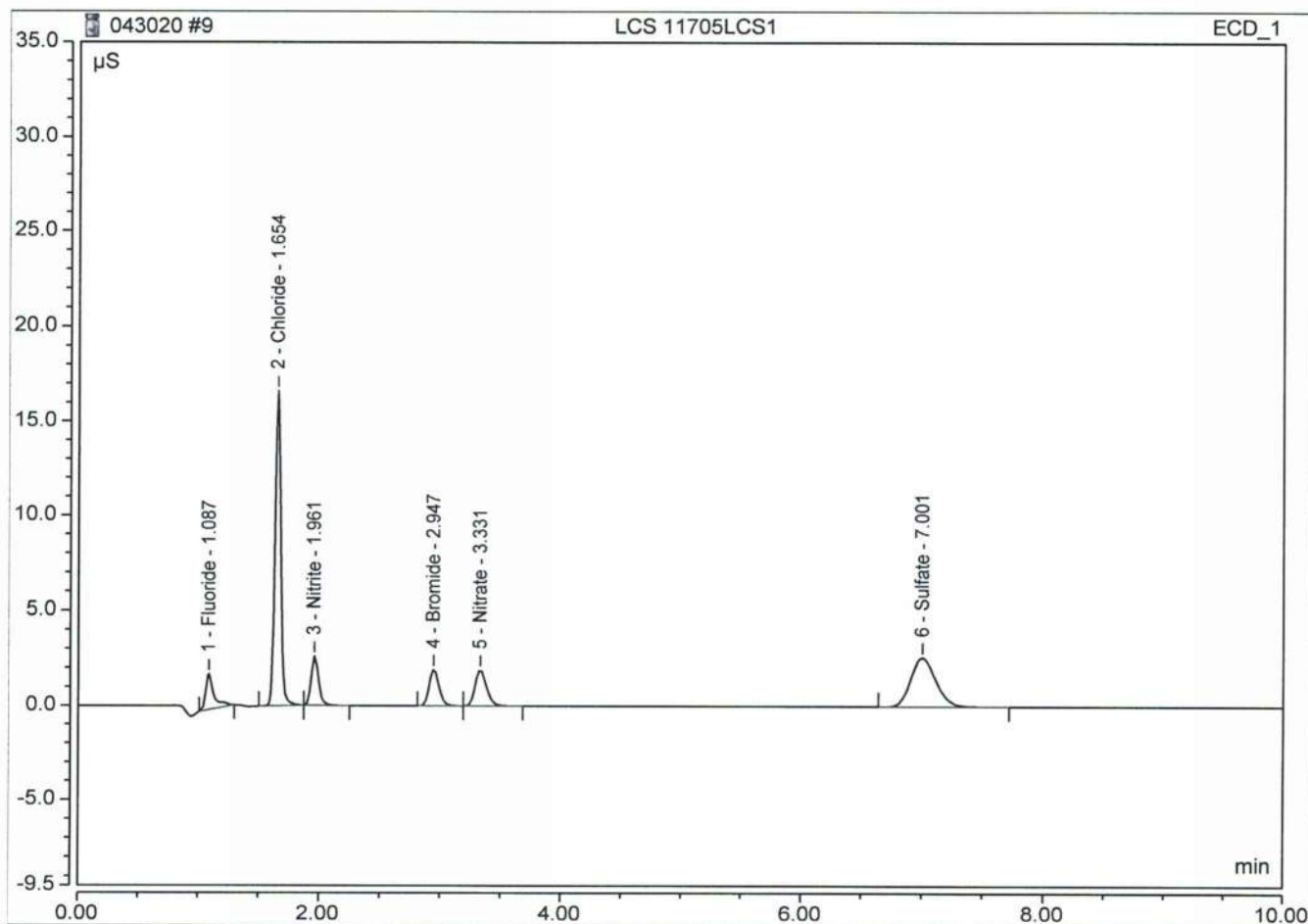
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.089	1.077	0.5429
2	1.65	Chloride	BMB	0.454	7.662	4.7702
3	1.96	Nitrite	BMB	0.091	1.271	0.4858
4	2.95	Bromide	BMB	0.073	0.768	2.0308
5	3.34	Nitrate	BMB	0.110	0.996	0.5172
6	7.00	Sulfate	BMB	0.468	1.945	7.3886
TOTAL:				1.28	13.72	15.74



Peak Integration Report

Sample Name:	LCS 11705LCS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 08:50	Operator:	Jeff Phifer

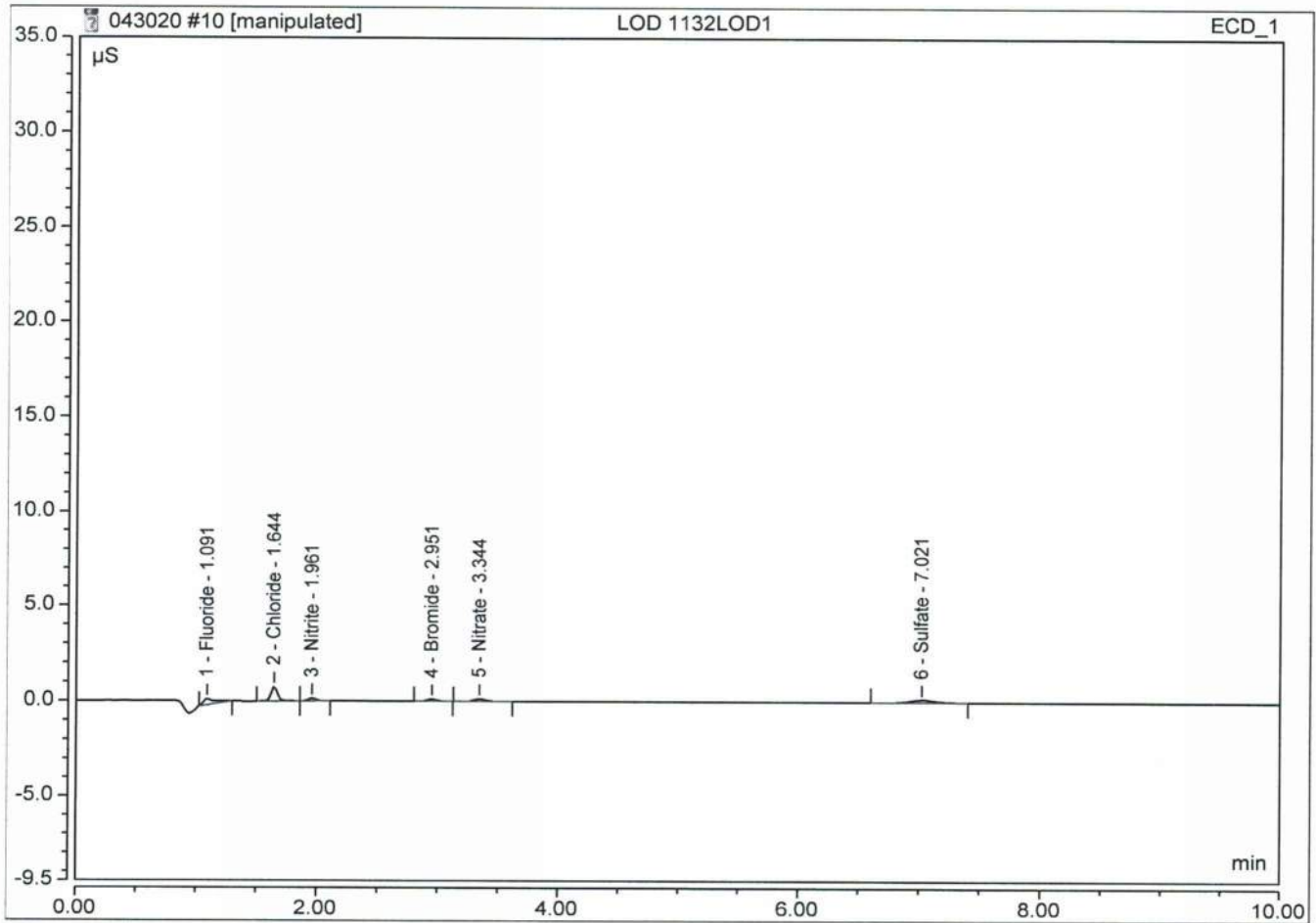
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.147	1.892	1025
2	1.65	Chloride	BMB	0.973	16.632	990
3	1.96	Nitrite	BMB	0.185	2.598	970
4	2.95	Bromide	BMB	0.182	1.926	1015
5	3.33	Nitrate	BMB	0.209	1.893	980
6	7.00	Sulfate	BMB	0.625	2.597	982
TOTAL:				2.32	27.54	27.80



Peak Integration Report

Sample Name:	LOD 1132LOD1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 09:03	Operator:	Jeff Phifer

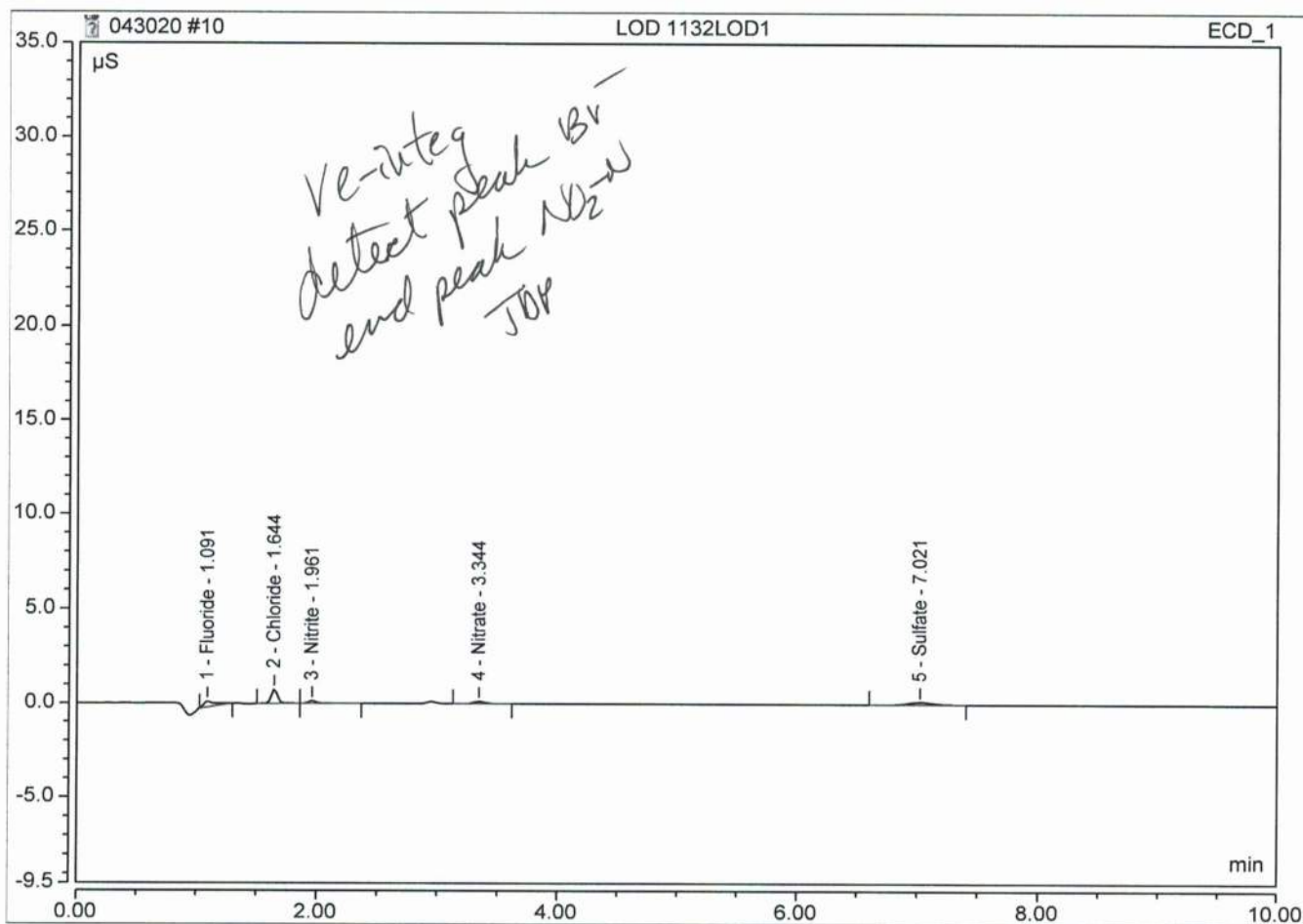
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.035	0.306	0.1 0.1000
2	1.64	Chloride	BMb	0.047	0.748	0.5 0.7133
3	1.96	Nitrite	bMB*	0.010	0.134	0.05 0.0620
4	2.95	Bromide	BMB*	0.010	0.101	0.25 0.2834
5	3.34	Nitrate	BMB	0.014	0.124	0.05 0.0681
6	7.02	Sulfate	BMB	0.035	0.144	0.5 0.6069
TOTAL:				0.15	1.56	1.83



Peak Integration Report

Sample Name:	LOD 1132LOD1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 09:03	Operator:	Jeff Phifer

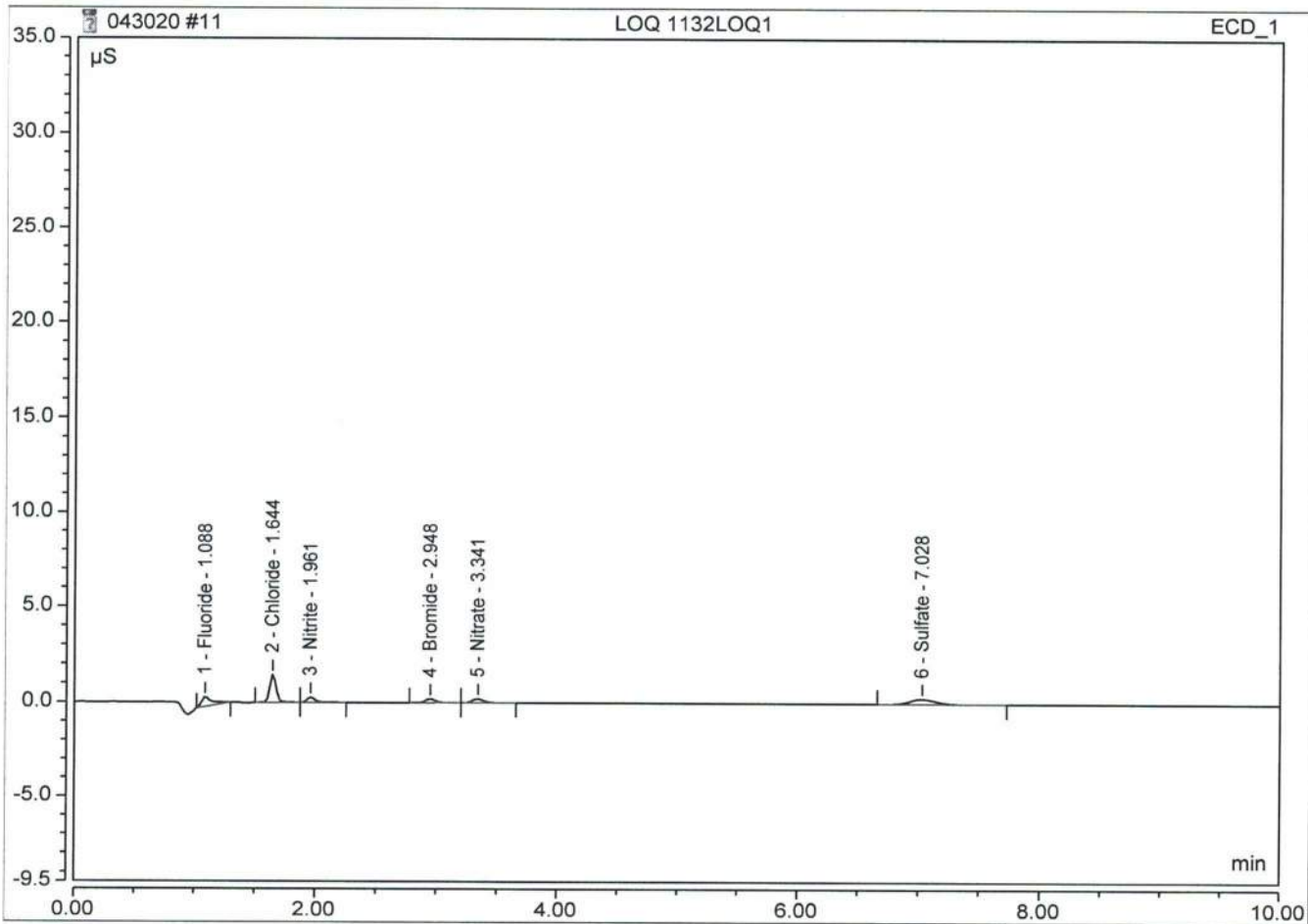
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.035	0.306	0.1000
2	1.64	Chloride	BMB	0.047	0.748	0.7133
3	1.96	Nitrite	BMB	0.010	0.135	0.0650
4	3.34	Nitrate	BMB	0.014	0.124	0.0681
5	7.02	Sulfate	BMB	0.035	0.144	0.6069
TOTAL:				0.14	1.46	1.55



Peak Integration Report

Sample Name:	LOQ 1132LOQ1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 09:16	Operator:	Jeff Phifer

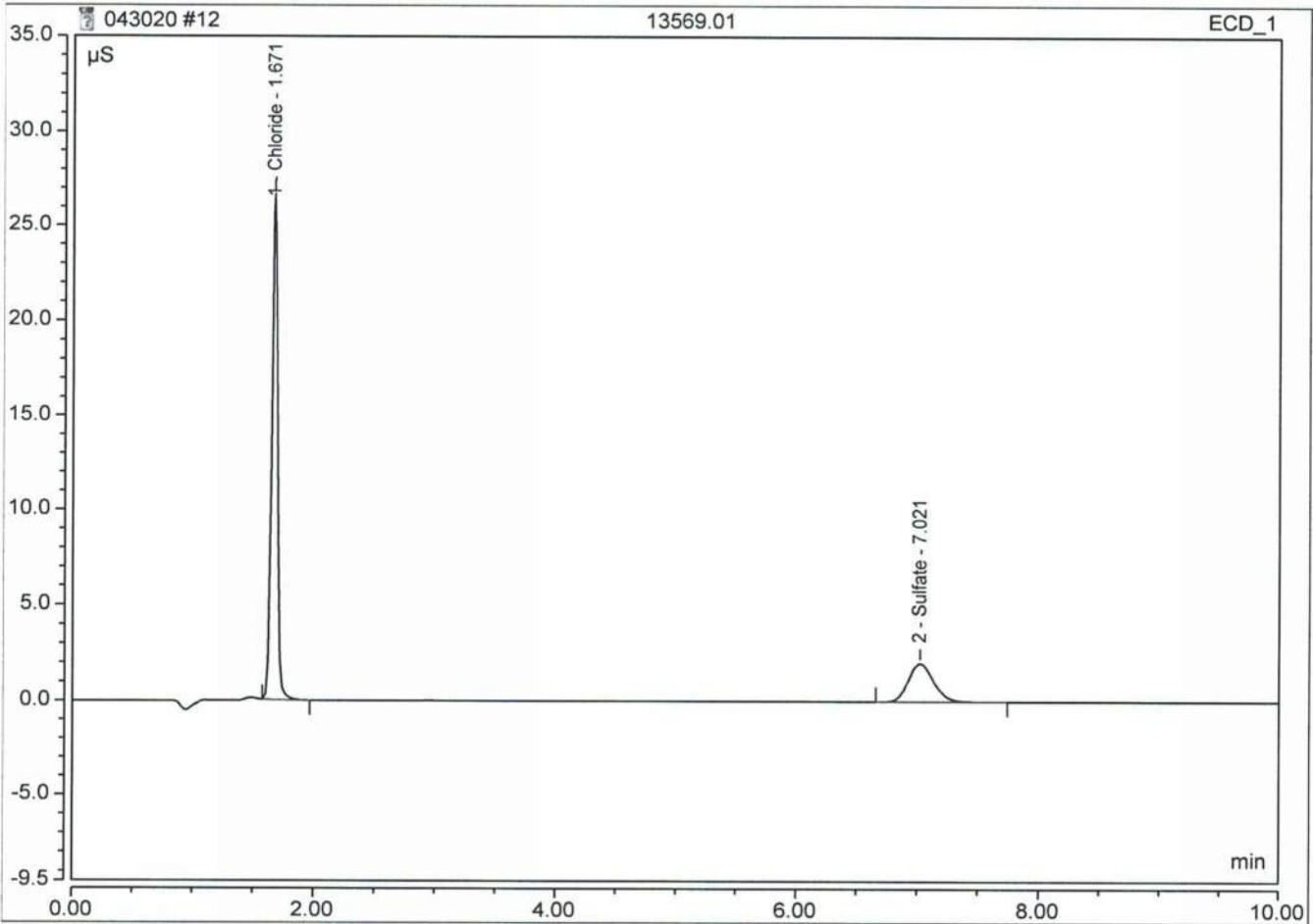
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.050	0.499	0.2
2	1.64	Chloride	BMB	0.089	1.452	1
3	1.96	Nitrite	BMB	0.019	0.259	0.1
4	2.95	Bromide	BMB	0.019	0.198	0.5
5	3.34	Nitrate	BMB	0.023	0.211	0.1
6	7.03	Sulfate	BMB	0.067	0.274	1
TOTAL:				0.27	2.89	3.24



Peak Integration Report

Sample Name:	13569.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 09:28	Operator:	Jeff Phifer

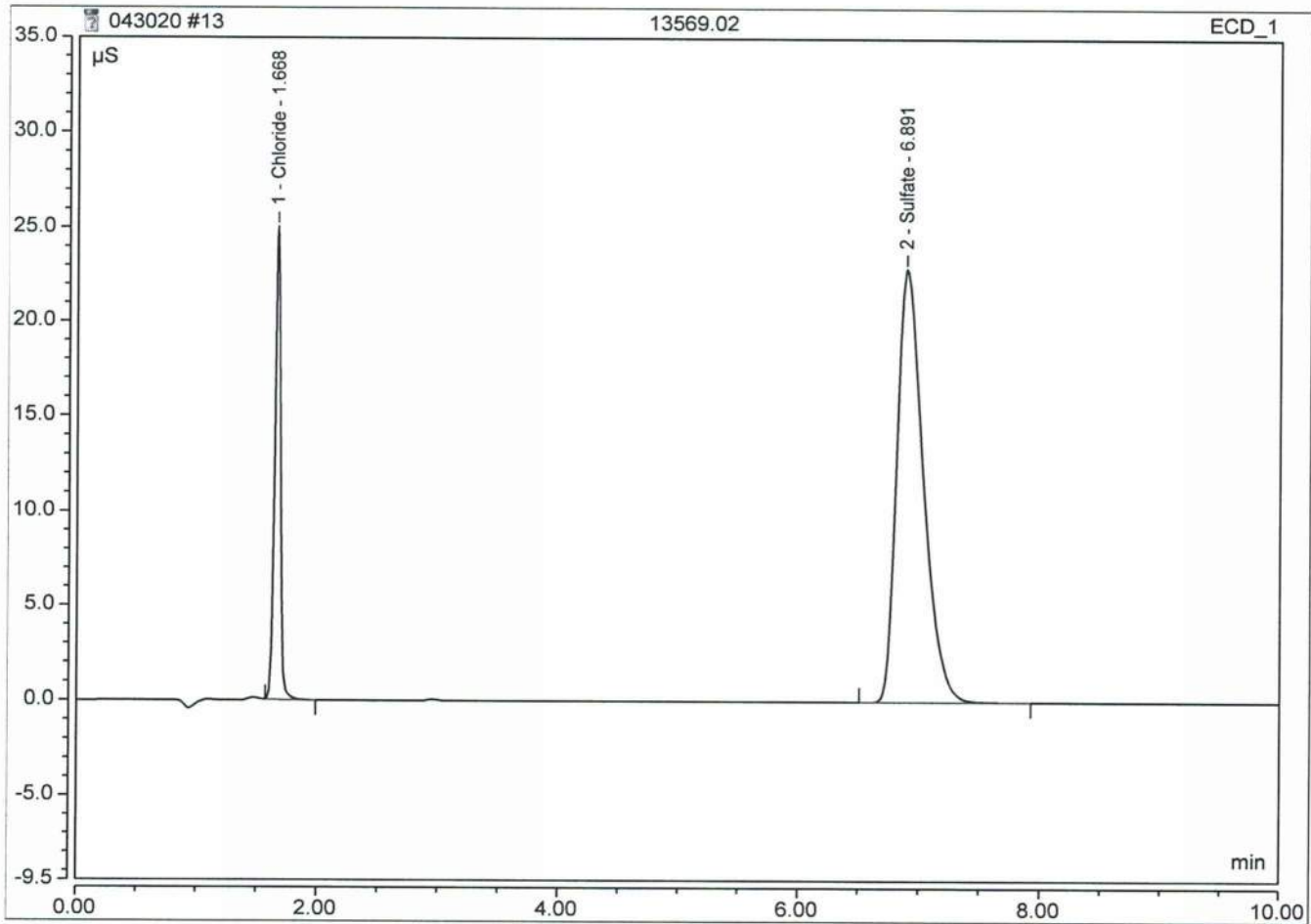
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.67	Chloride	BMB	1.540	26.631	77.9793
2	7.02	Sulfate	BMB	0.486	2.015	38.4065
TOTAL:				2.03	28.65	116.39



Peak Integration Report

Sample Name:	13569.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 09:41	Operator:	Jeff Phifer

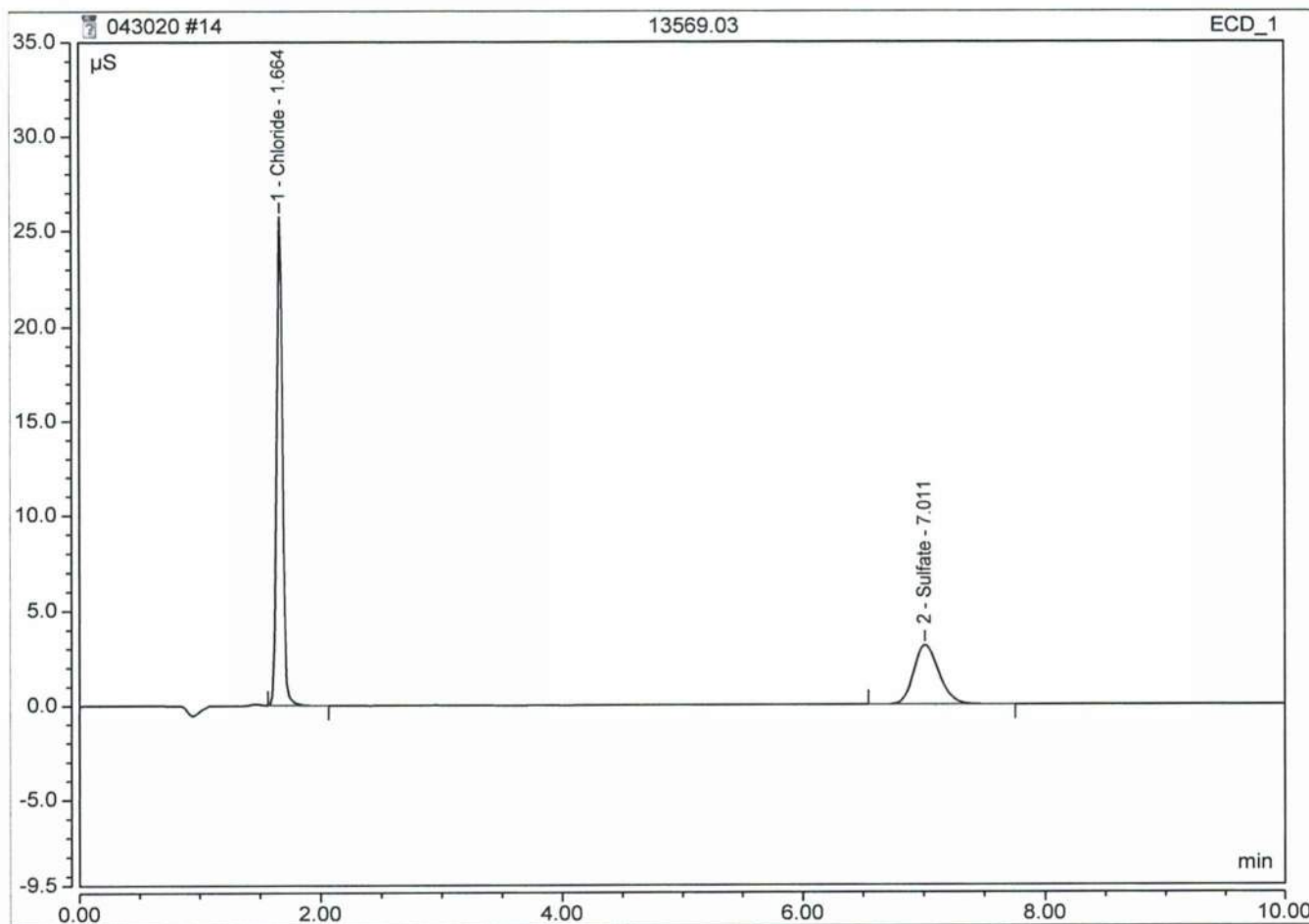
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.67	Chloride	BMB	1.447	25.011	73.3332
2	6.89	Sulfate	BMB	5.783	22.885	453.3998
TOTAL:				7.23	47.90	526.73



Peak Integration Report

Sample Name:	13569.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 09:54	Operator:	Jeff Phifer

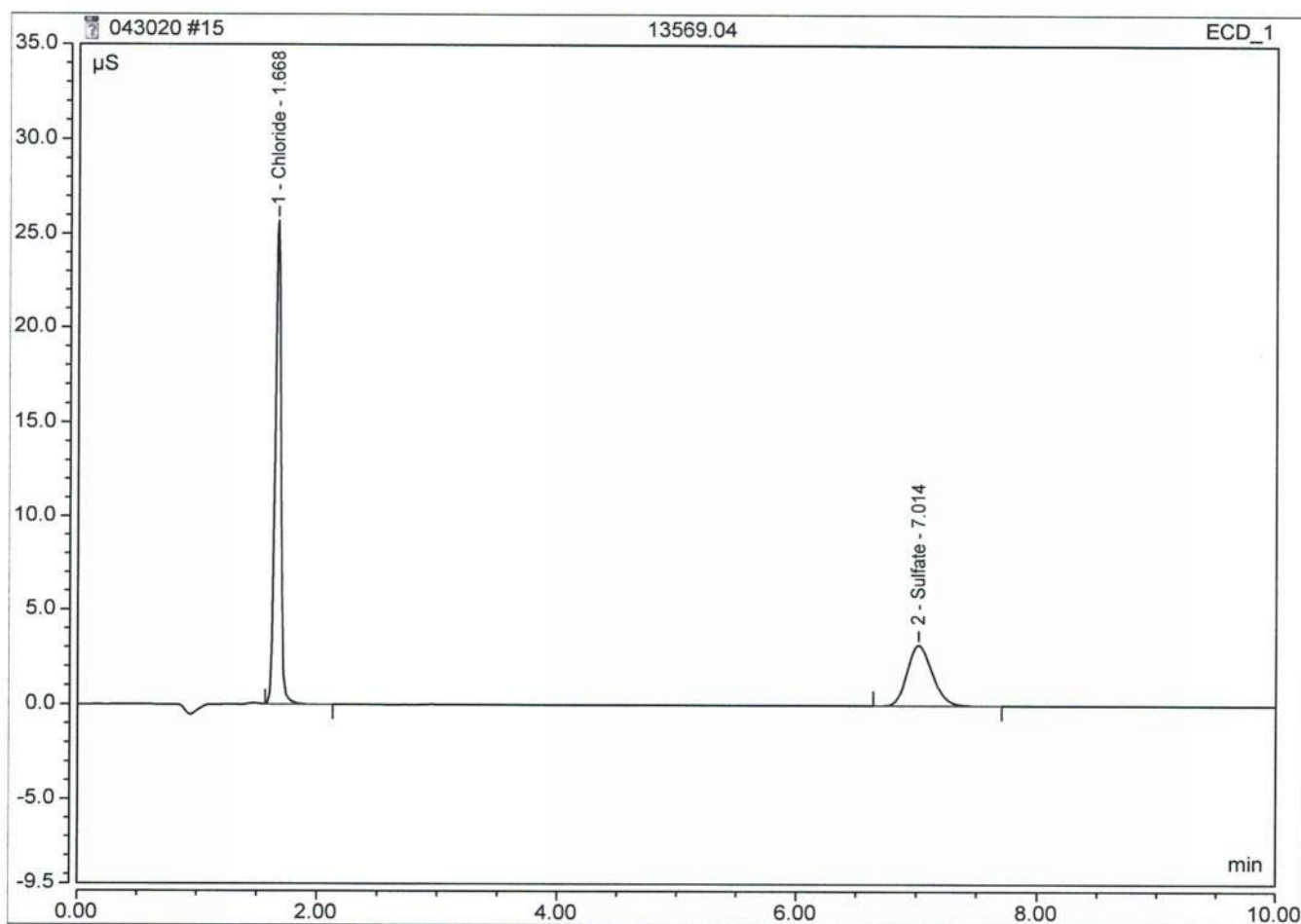
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.66	Chloride	BMB	1.493	25.721	75.6420
2	7.01	Sulfate	BMB	0.755	3.135	59.4759
TOTAL:				2.25	28.86	135.12



Peak Integration Report

Sample Name:	13569.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 10:07	Operator:	Jeff Phifer

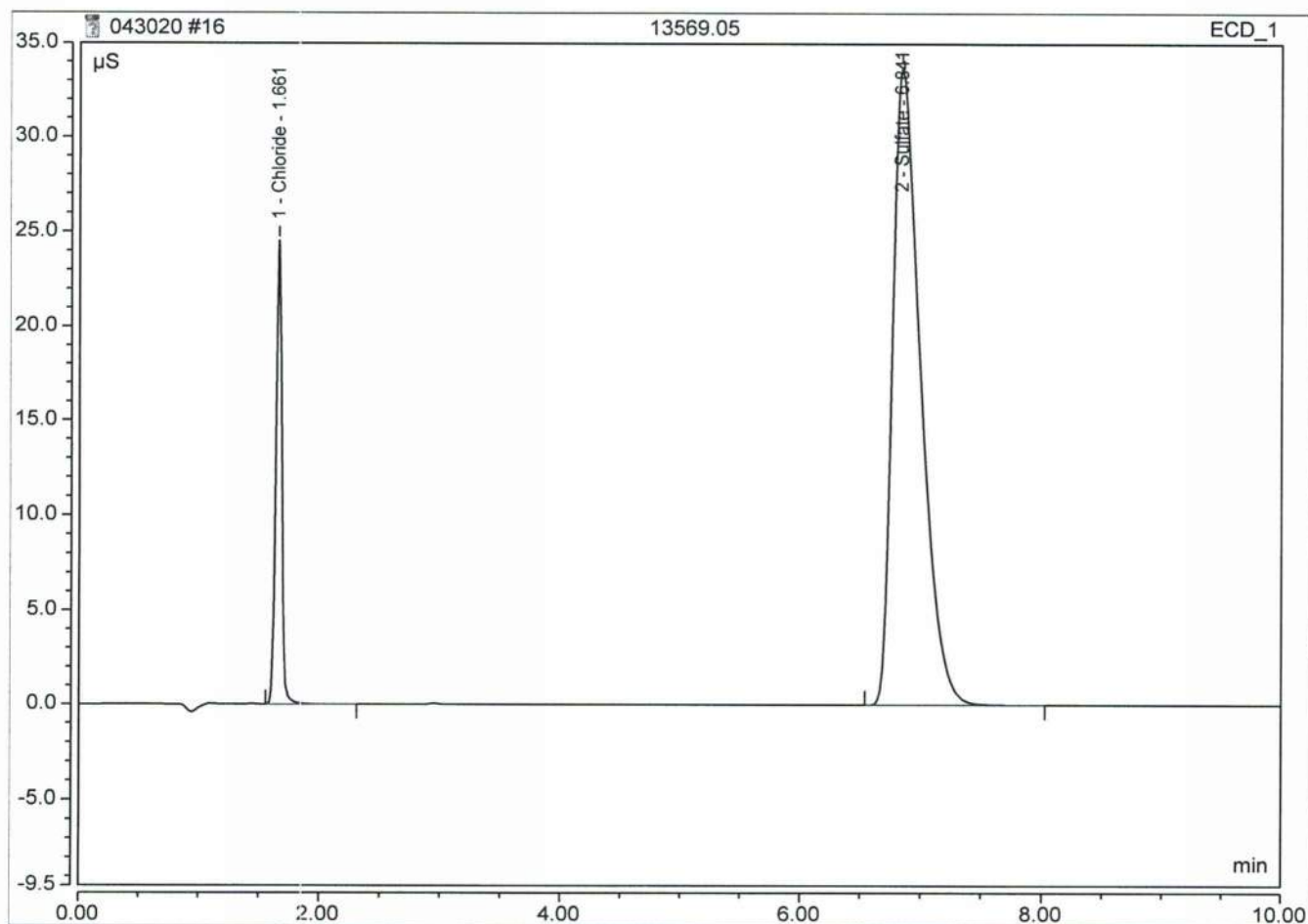
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.67	Chloride	BMB	1.494	25.707	75.6618
2	7.01	Sulfate	BMB	0.766	3.186	60.3266
TOTAL:				2.26	28.89	135.99



Peak Integration Report

Sample Name:	13569.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 10:20	Operator:	Jeff Phifer

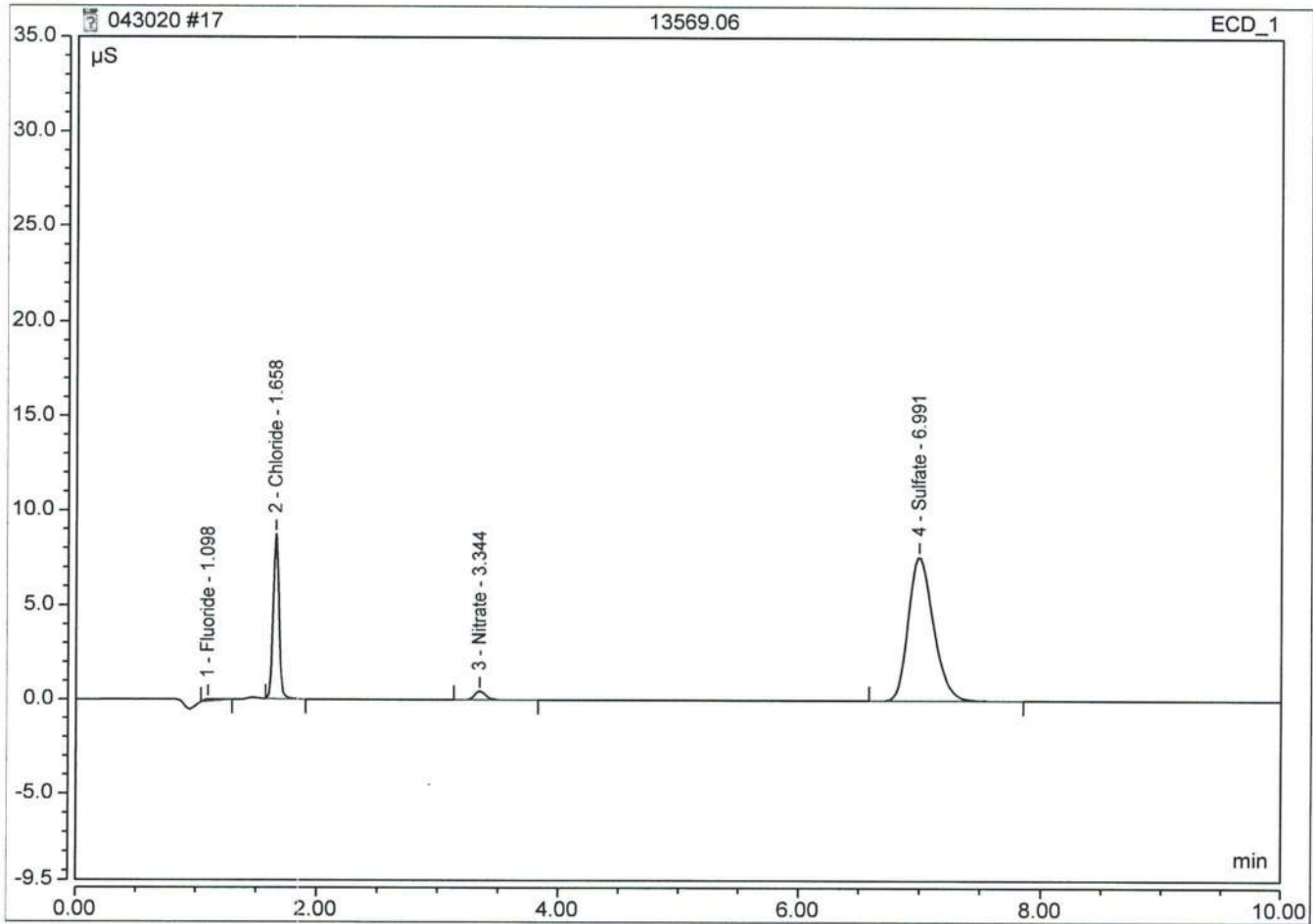
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.66	Chloride	BMB	1.440	24.523	72.9926
2	6.84	Sulfate	BMB	9.000	33.737	705.3862
TOTAL:				10.44	58.26	778.38



Peak Integration Report

Sample Name:	13569.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 10:33	Operator:	Jeff Phifer

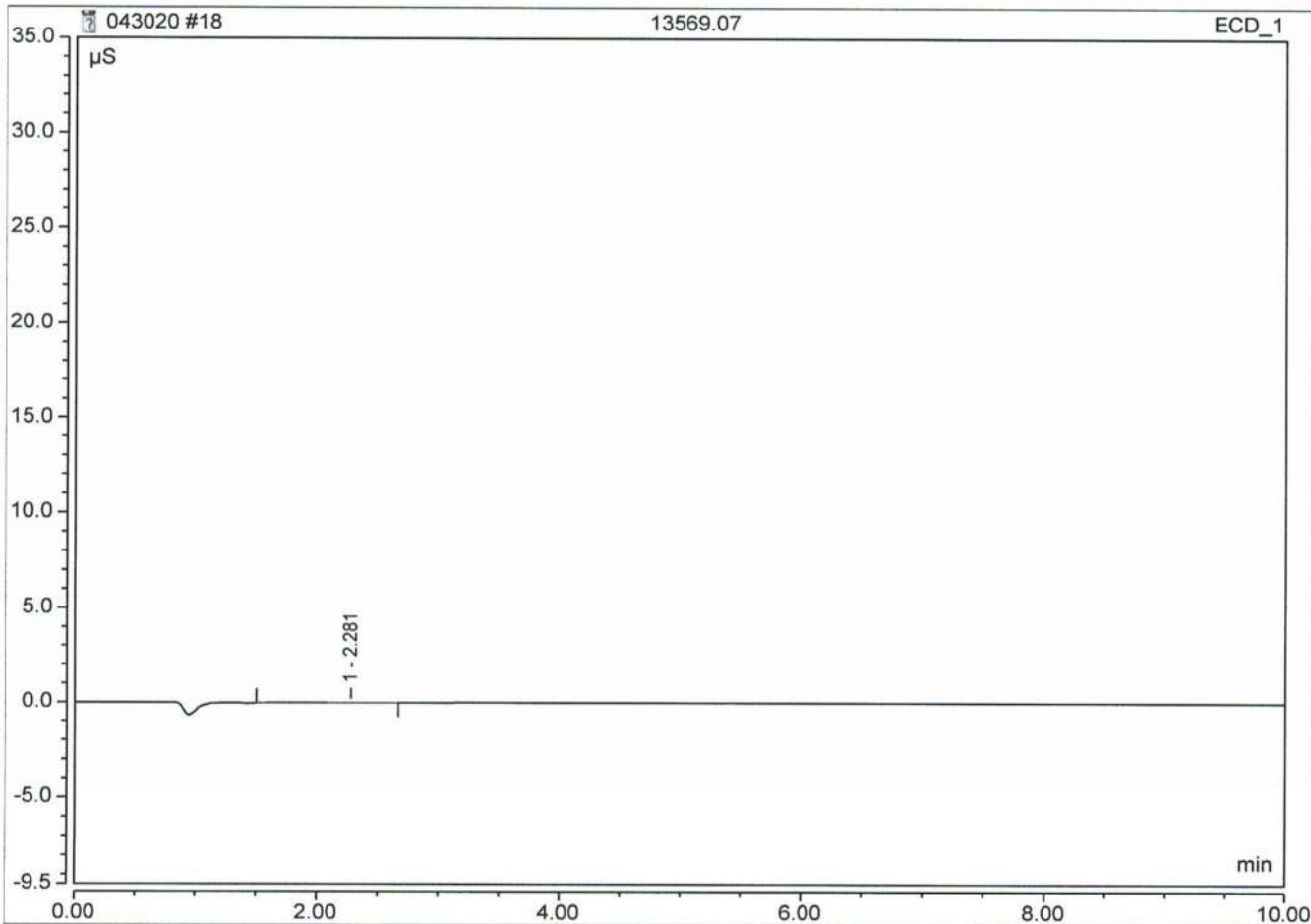
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.10	Fluoride	BMB	0.016	0.127	n.a.
2	1.66	Chloride	BMB	0.499	8.715	26.1121
3	3.34	Nitrate	BMB	0.051	0.461	1.2194
4	6.99	Sulfate	BMB	1.838	7.623	144.2898
TOTAL:				2.40	16.93	171.62



Peak Integration Report

Sample Name:	13569.07	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	2.5000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 10:46	Operator:	Jeff Phifer

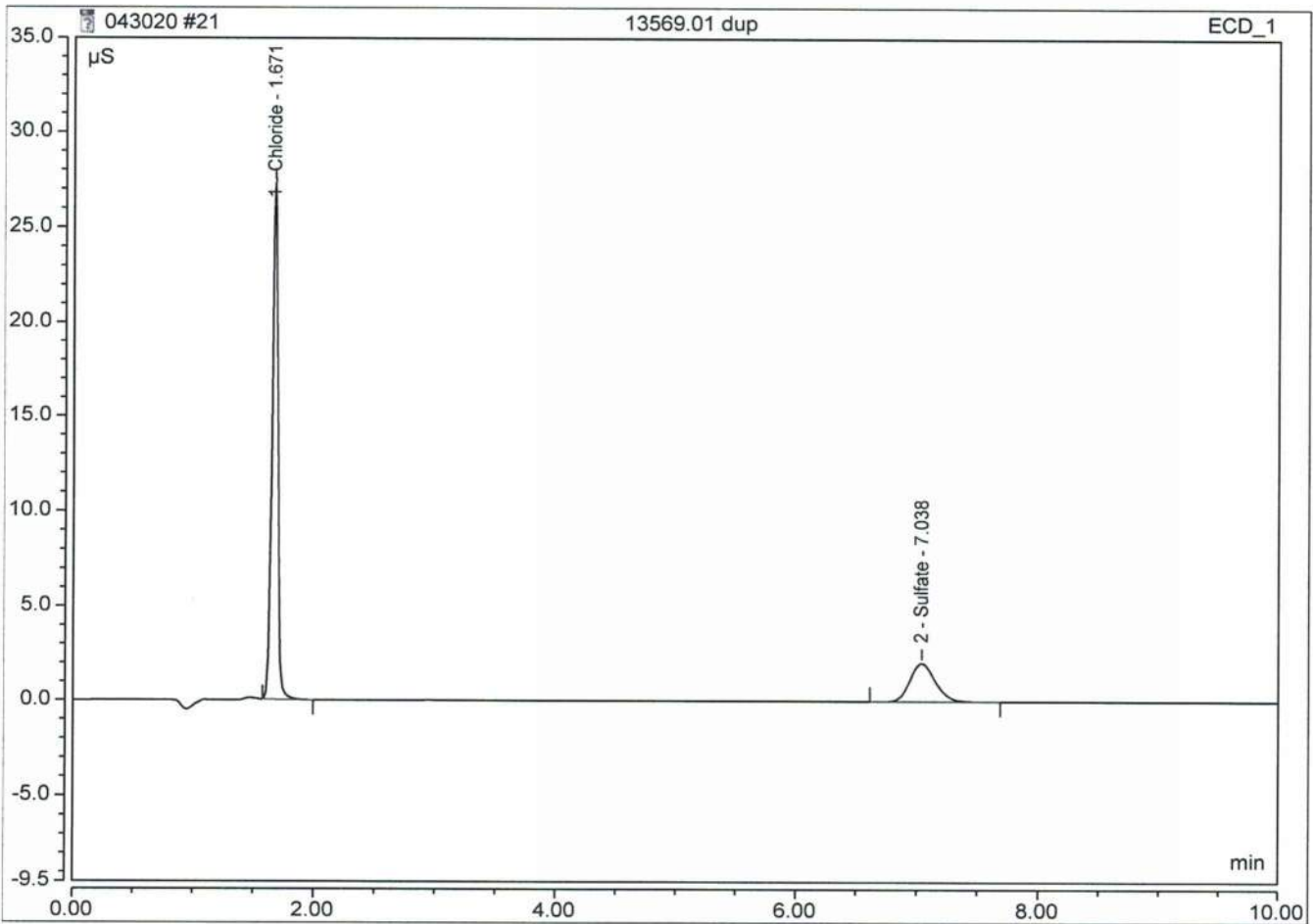
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	13569.01 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 11:24	Operator:	Jeff Phifer

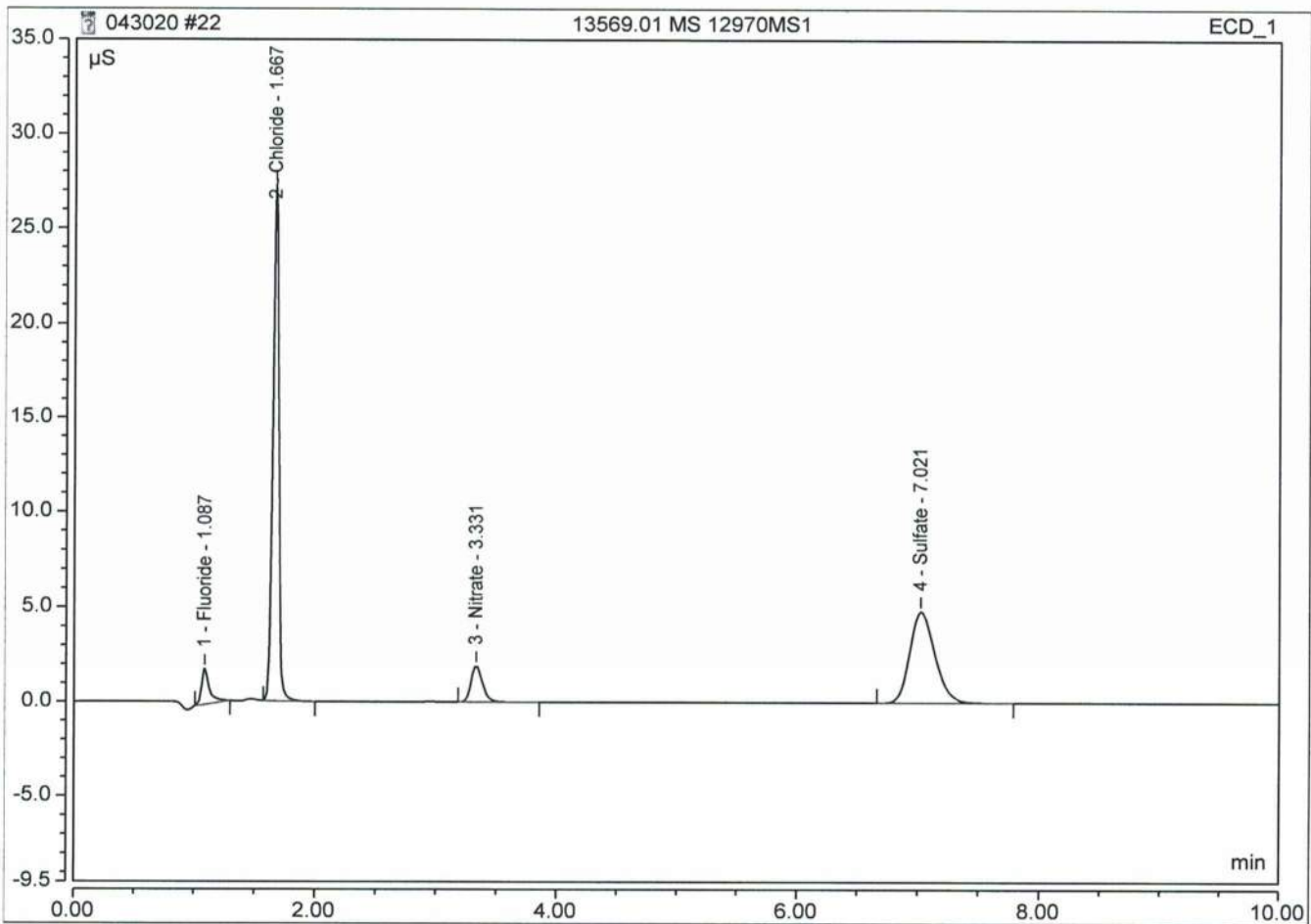
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.67	Chloride	BMB	1.583	27.278	80.0839
2	7.04	Sulfate	BMB	0.493	2.041	38.9128
TOTAL:				2.08	29.32	119.00



Peak Integration Report

Sample Name:	13569.01 MS 12970MS1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 11:37	Operator:	Jeff Phifer

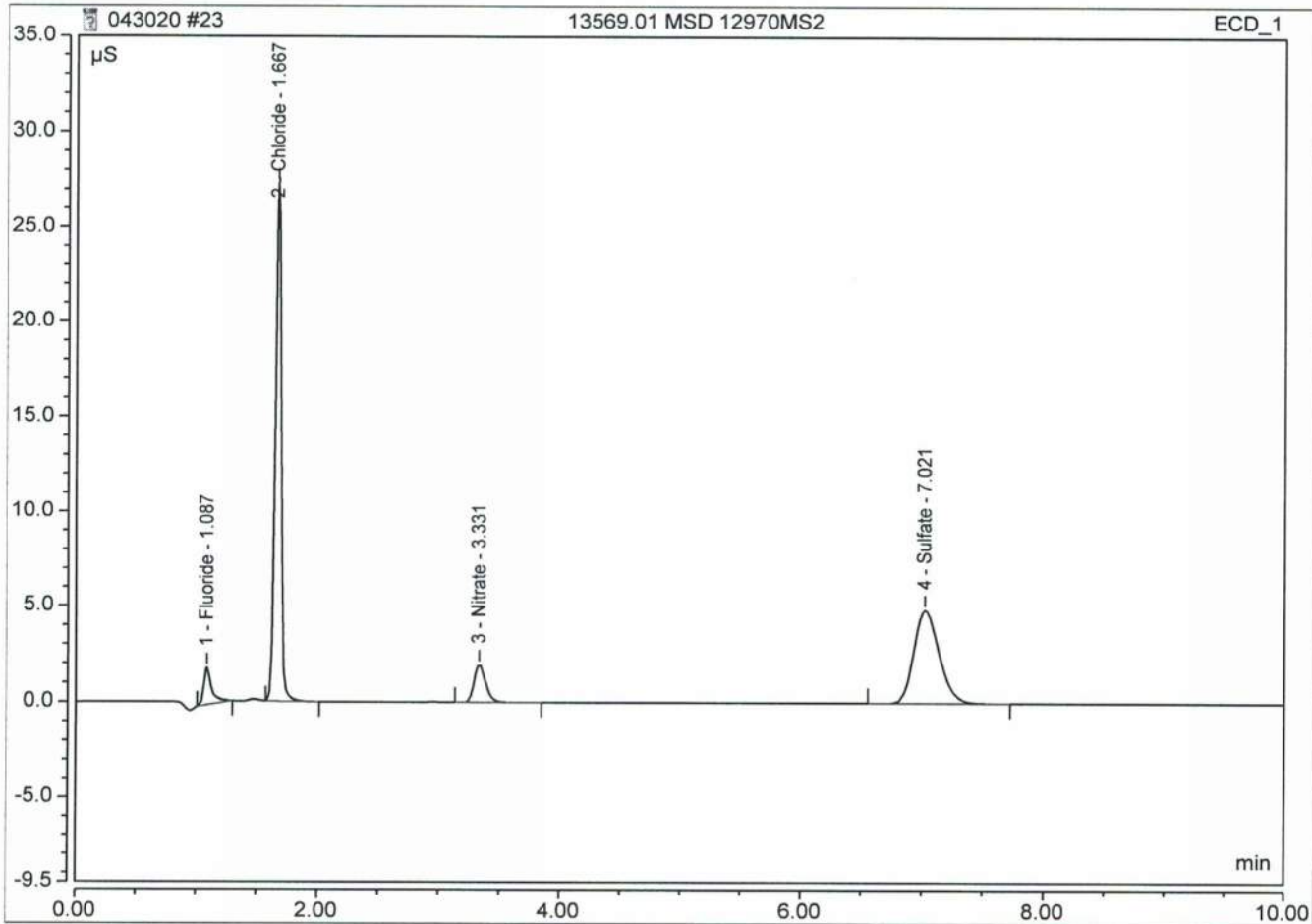
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.143	1.907	1 0.9877 - Mo = 99%
2	1.67	Chloride	BMB	1.586	27.276	1 16.0454
3	3.33	Nitrate	BMB	0.214	1.938	1 1.0033 - Mo = 100%
4	7.02	Sulfate	BMB	1.163	4.837	10 18.2845 - 7.7 = 106%
TOTAL:				3.11	35.96	36.32



Peak Integration Report

Sample Name:	13569.01 MSD 12970MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 11:50	Operator:	Jeff Phifer

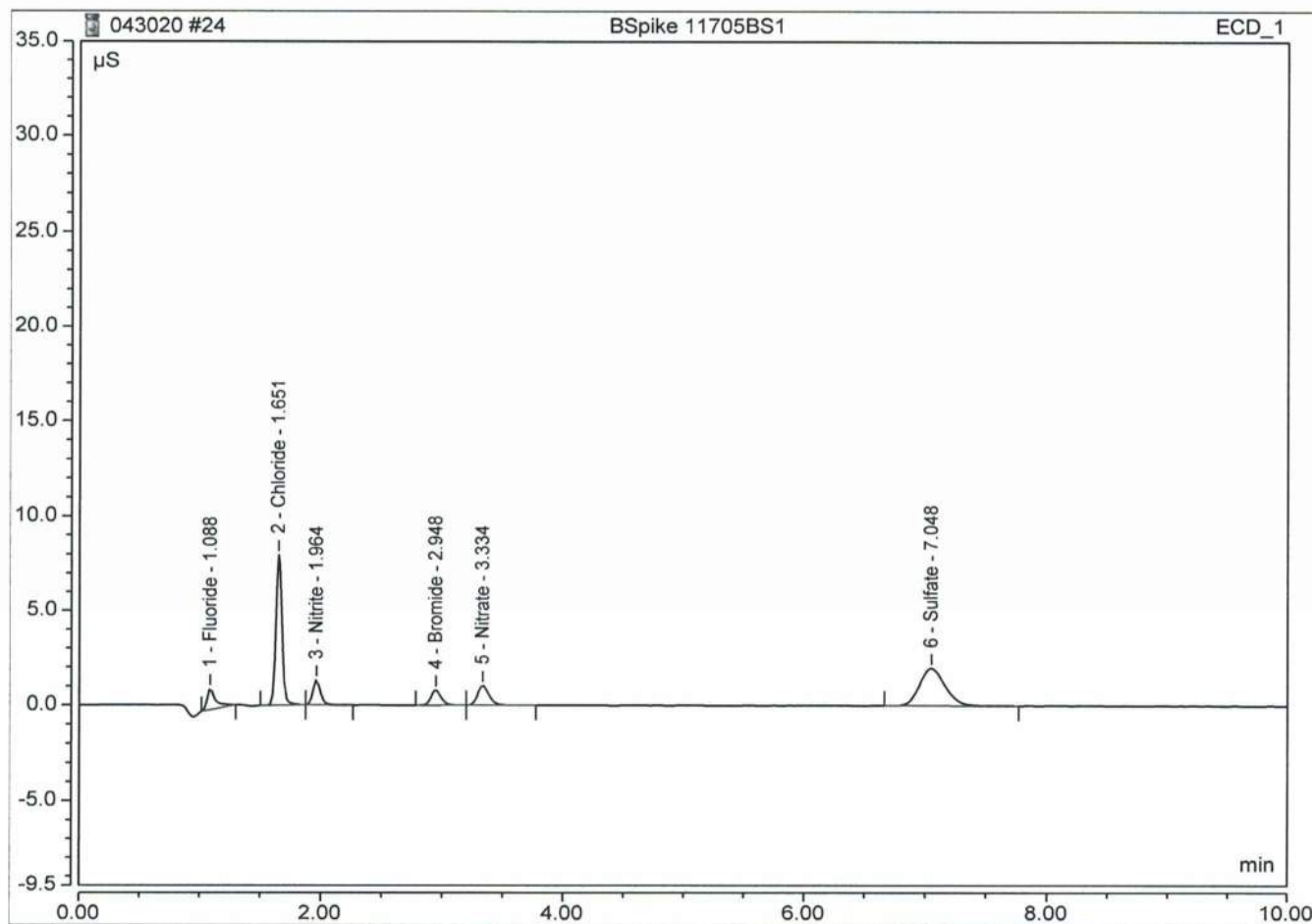
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.144	1.911	0.9901 - No = 995
2	1.67	Chloride	BMB	1.582	27.287	16.0142 - No = 1015
3	3.33	Nitrate	BMB	0.215	1.945	1.0088 - No = 1065
4	7.02	Sulfate	BMB	1.166	4.842	18.3253 - 7.7 = 1065
TOTAL:				3.11	35.98	36.34



Peak Integration Report

Sample Name:	BSpike 11705BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 12:03	Operator:	Jeff Phifer

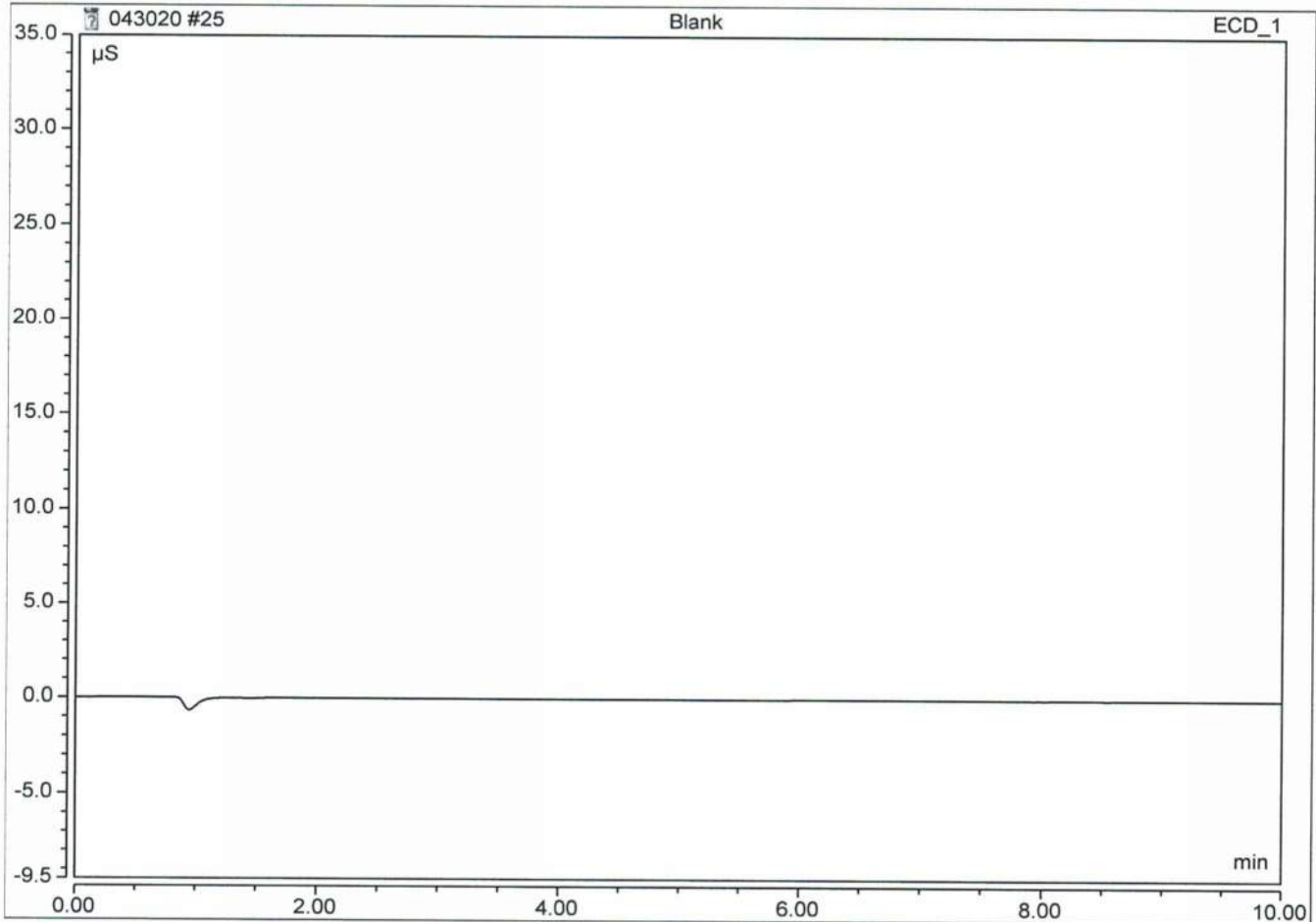
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.090	1.094	0.5 0.5512 110%
2	1.65	Chloride	BMB	0.470	7.967	5 4.9306 98%
3	1.96	Nitrite	BMB	0.094	1.309	0.5 0.4983 100%
4	2.95	Bromide	BMB	0.076	0.794	2 2.0986 105%
5	3.33	Nitrate	BMB	0.113	1.031	0.5 0.5348 106%
6	7.05	Sulfate	BMB	0.477	1.972	7.5 7.5272 100%
TOTAL:				1.32	14.17	16.14



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	30-Apr-2020 / 12:16	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Sequence: 031620

Last Update Operator: pcuser

(new Calib)

~~ICS-1100B~~
ICS B Dionex IC / Meth 300.0

all ions

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:57:49 AM -C
	1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:09 AM
	1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:01 AM
	1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:35:53 AM
	1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:45 AM
	1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:35 AM

CALIB ICS B 031620 CAL



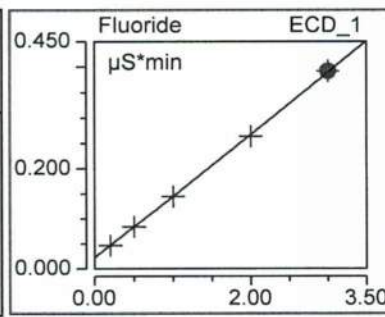
Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

Calibration Batch Report
CAL ID# ICSB031620CAL

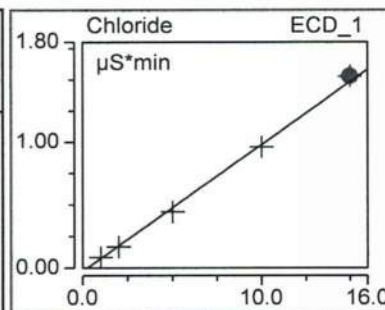
Sequence:	031620	Injection Vol:	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	16-Mar-2020 / 11:01	Column:	AS4A-SC 040144

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.023	0.122	0.000	0.9999
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.025	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.193	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	-0.001	0.036	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.004	0.064	0.000	0.9997
AVERAGE:				-0.0017	0.1217	0.0000	0.9996

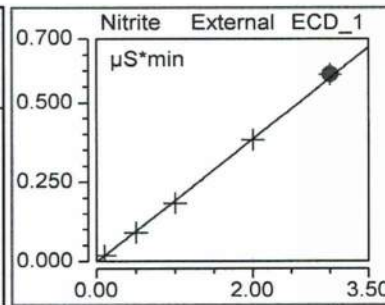
Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	Fluoride 1.087	Fluoride 0.0469	Fluoride 0.474	Fluoride 0.199
1130Cal2	1.088	0.0842	1.010	0.505
1130Cal3	1.088	0.1447	1.902	0.999
1130Cal4	1.088	0.2638	3.720	1.974
1130Cal5	1.088	0.3918	5.690	3.022
Average	1.087			
Rel. Std. Dev.	0.007 %			



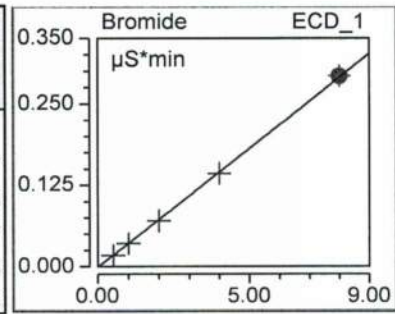
Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	Chloride 1.647	Chloride 0.0837	Chloride 1.369	Chloride 1.083
1130Cal2	1.648	0.1692	2.803	1.934
1130Cal3	1.654	0.4442	7.527	4.674
1130Cal4	1.658	0.9621	16.388	9.834
1130Cal5	1.661	1.5282	25.842	15.474
Average	1.653			
Rel. Std. Dev.	0.363 %			



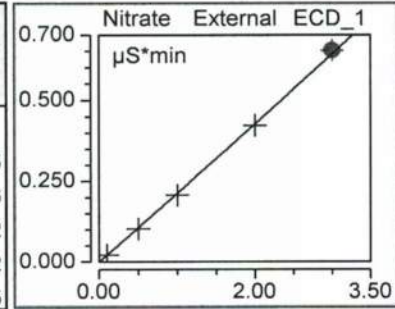
Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	Nitrite 1.964	Nitrite 0.0180	Nitrite 0.249	Nitrite 0.106
1130Cal2	1.964	0.0909	1.255	0.483
1130Cal3	1.968	0.1837	2.564	0.963
1130Cal4	1.971	0.3820	5.338	1.989
1130Cal5	1.968	0.5890	8.308	3.060
Average	1.967			
Rel. Std. Dev.	0.144 %			



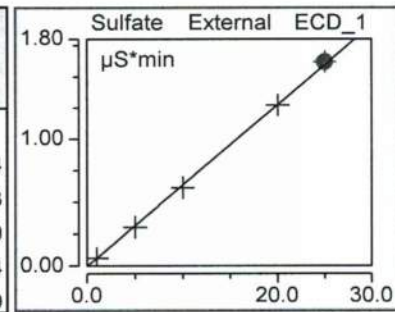
Injection Name	Ret. Time min ECD 1	Area $\mu\text{S} \cdot \text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	Bromide 2.957	Bromide 0.0176	Bromide 0.183	Bromide 0.507
1130Cal2	2.954	0.0358	0.371	1.006
1130Cal3	2.958	0.0707	0.738	1.967
1130Cal4	2.961	0.1430	1.493	3.955
1130Cal5	2.938	0.2925	3.112	8.064
Average	2.953			
Rel. Std. Dev.	0.313 %			



Injection Name	Ret. Time min ECD 1	Area $\mu\text{S} \cdot \text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	Nitrate 3.351	Nitrate 0.0215	Nitrate 0.195	Nitrate 0.105
1130Cal2	3.341	0.1029	0.922	0.486
1130Cal3	3.341	0.2071	1.848	0.972
1130Cal4	3.334	0.4230	3.741	1.982
1130Cal5	3.301	0.6525	5.776	3.055
Average	3.333			
Rel. Std. Dev.	0.575 %			



Injection Name	Ret. Time min ECD 1	Area $\mu\text{S} \cdot \text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	Sulfate 7.057	Sulfate 0.0628	Sulfate 0.254	Sulfate 1.044
1130Cal2	7.048	0.3053	1.246	4.843
1130Cal3	7.028	0.6158	2.526	9.709
1130Cal4	7.018	1.2715	5.210	19.984
1130Cal5	7.011	1.6185	6.632	25.419
Average	7.032			
Rel. Std. Dev.	0.281 %			



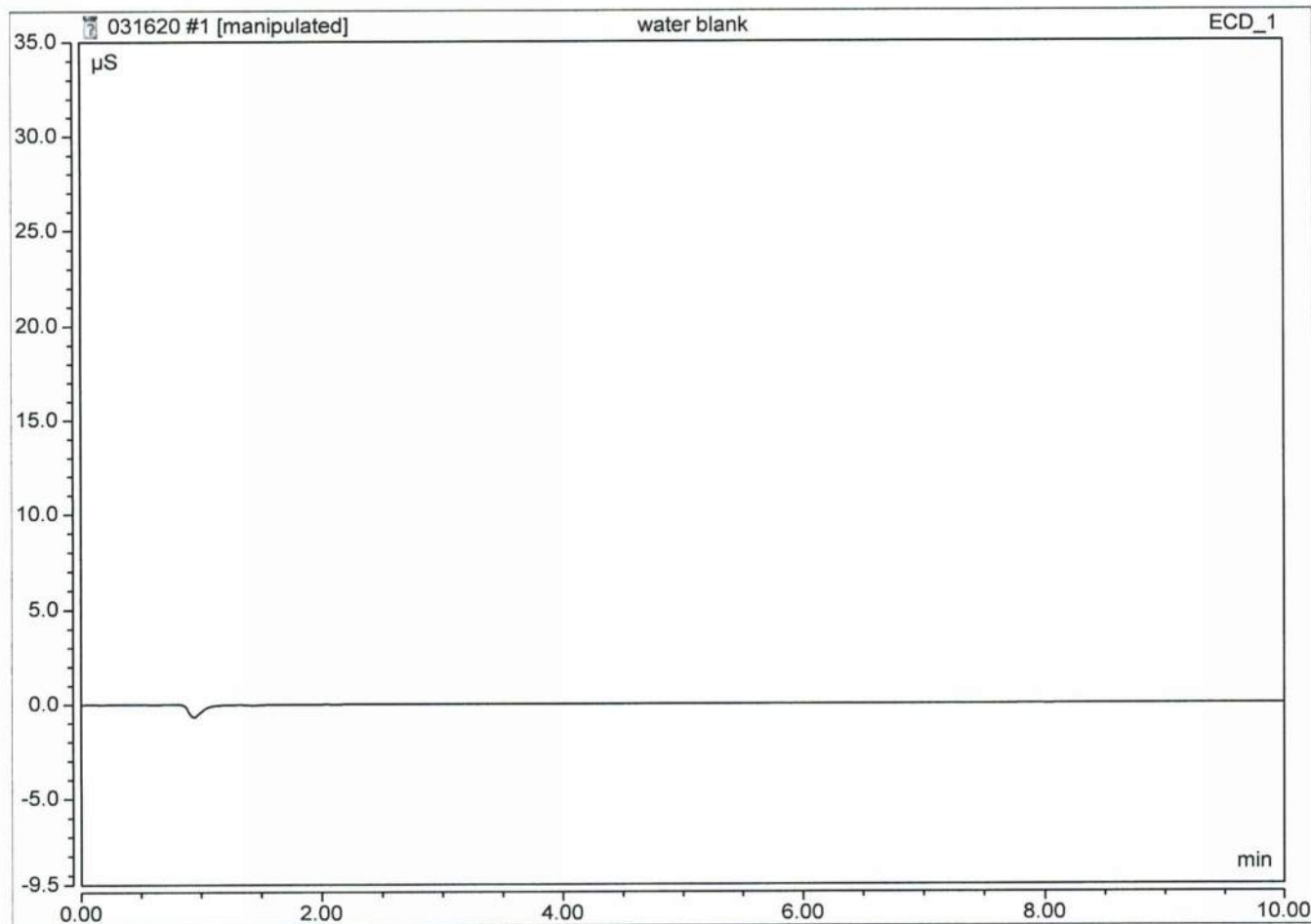
Norm Method	16/06/15 12:18	Jeff Phifer	METHOD 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run			Duration = 10.000 [min]	
	0.000			
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

JP 3.16.20

Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 09:57	Operator:	Jeff Phifer

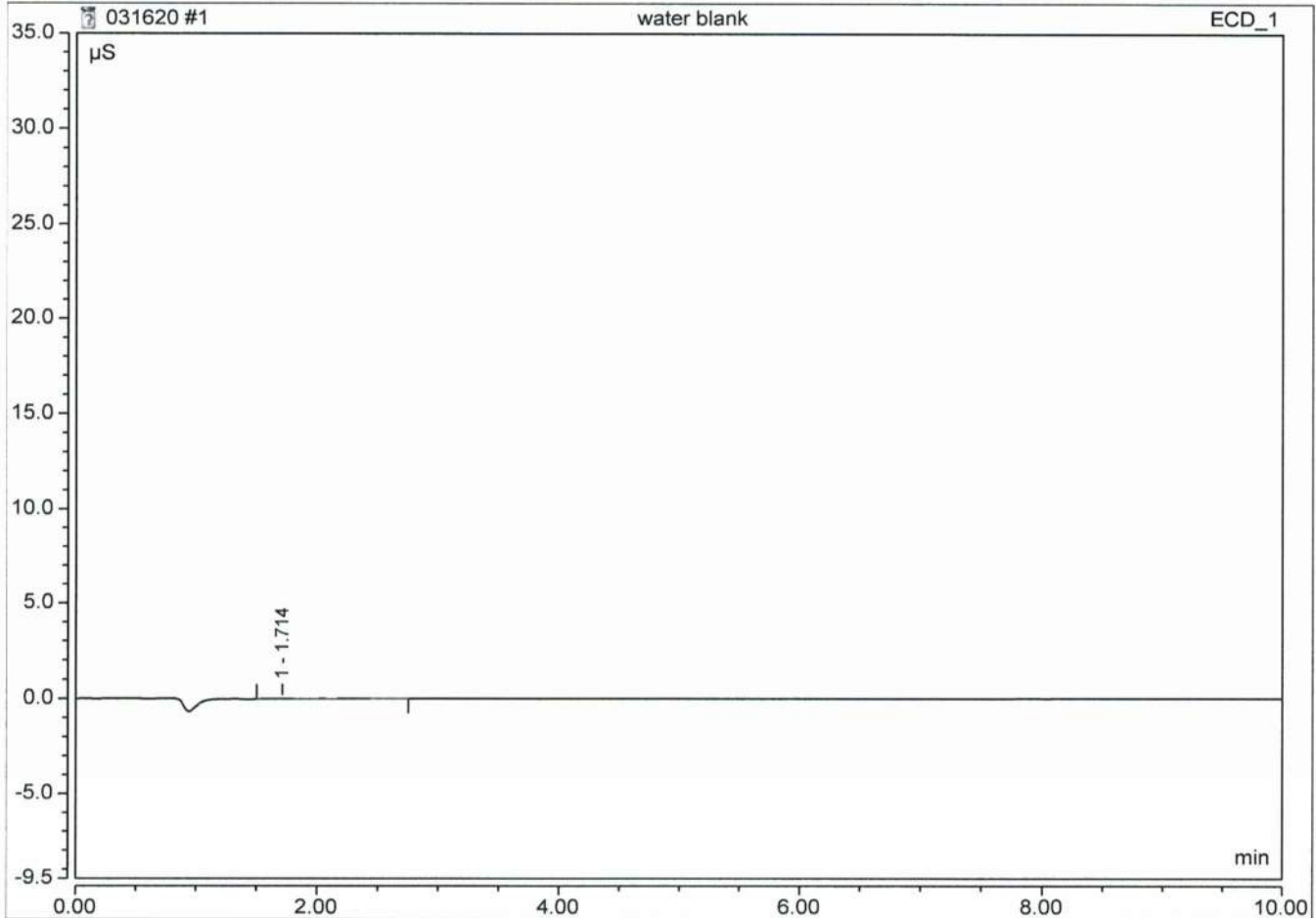
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 09:57	Operator:	Jeff Phifer

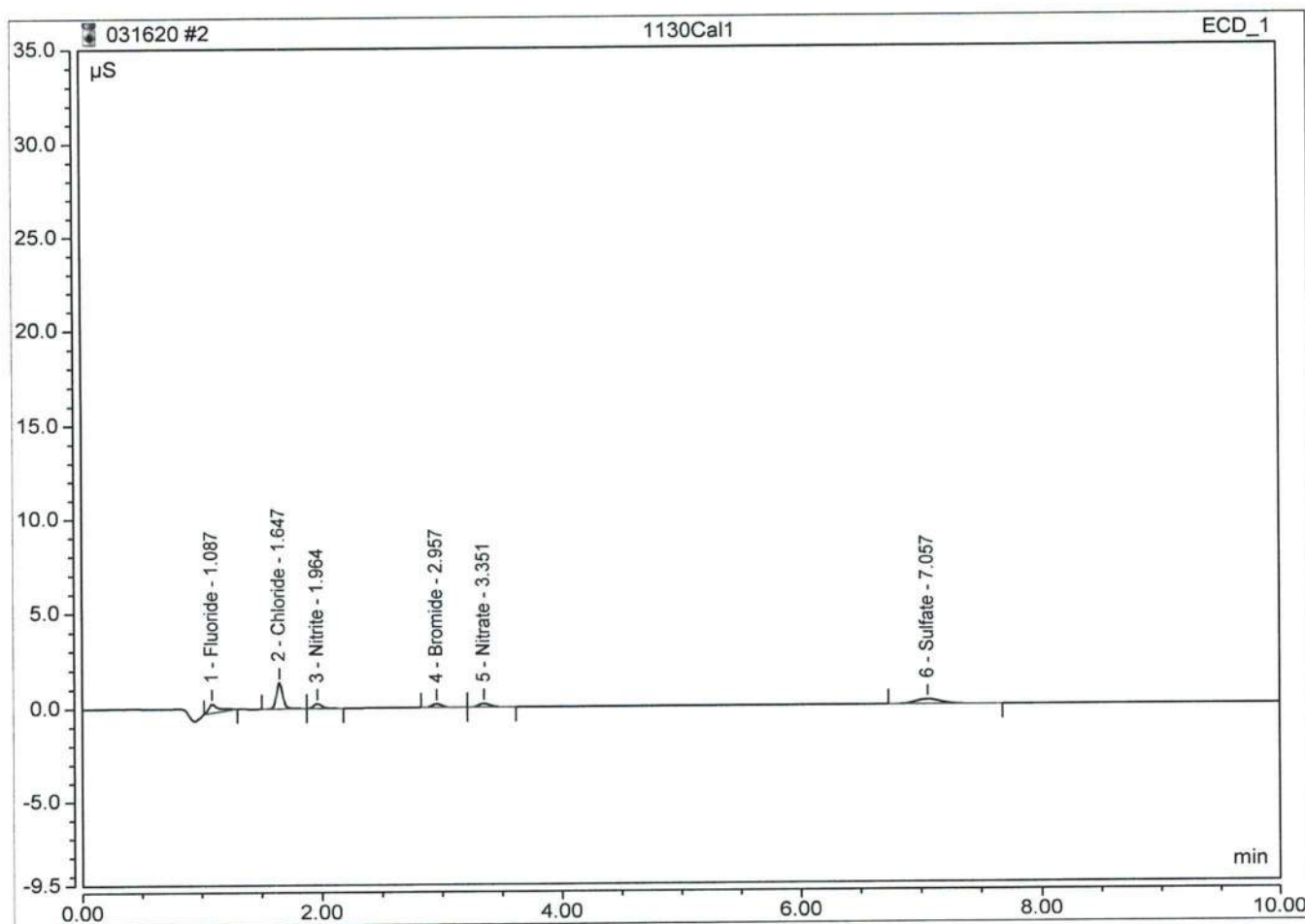
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	1130Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:10	Operator:	Jeff Phifer

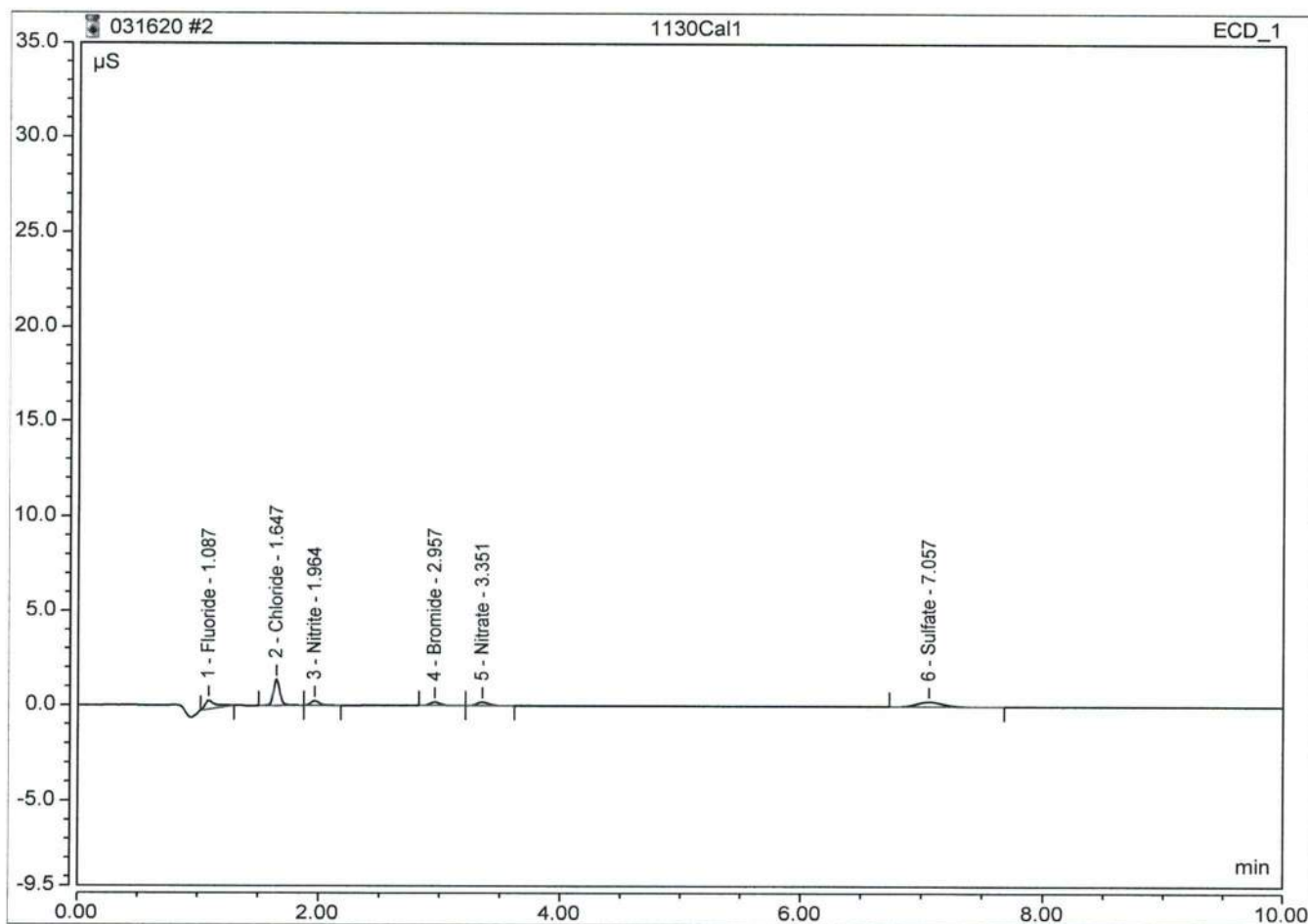
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.047	0.474	0.2 0.1992
2	1.65	Chloride	BMB	0.084	1.369	1 1.0830
3	1.96	Nitrite	BMB	0.018	0.249	0.1 0.1057
4	2.96	Bromide	BMB	0.018	0.183	0.5 0.5067
5	3.35	Nitrate	BMB	0.022	0.195	0.1 0.1047
6	7.06	Sulfate	BMB	0.063	0.254	1 1.0444
TOTAL:				0.25	2.72	3.04



Peak Integration Report

Sample Name:	1130Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:10	Operator:	Jeff Phifer

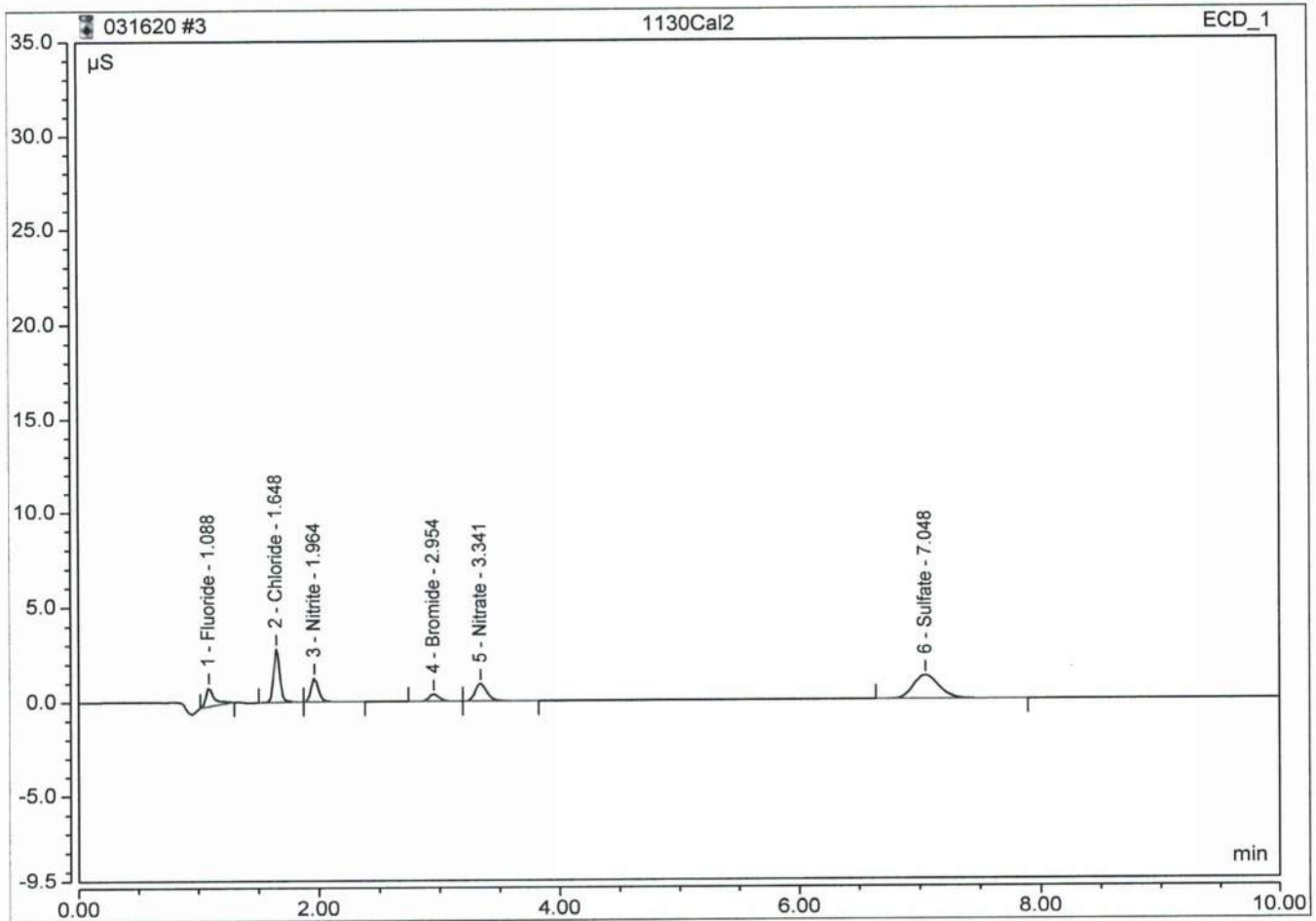
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.047	0.474	n.a.
2	1.65	Chloride	BMB	0.084	1.369	n.a.
3	1.96	Nitrite	BMB	0.018	0.249	n.a.
4	2.96	Bromide	BMB	0.018	0.183	n.a.
5	3.35	Nitrate	BMB	0.022	0.195	n.a.
6	7.06	Sulfate	BMB	0.063	0.254	n.a.
TOTAL:				0.25	2.72	0.00



Peak Integration Report

Sample Name:	1130Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:23	Operator:	Jeff Phifer

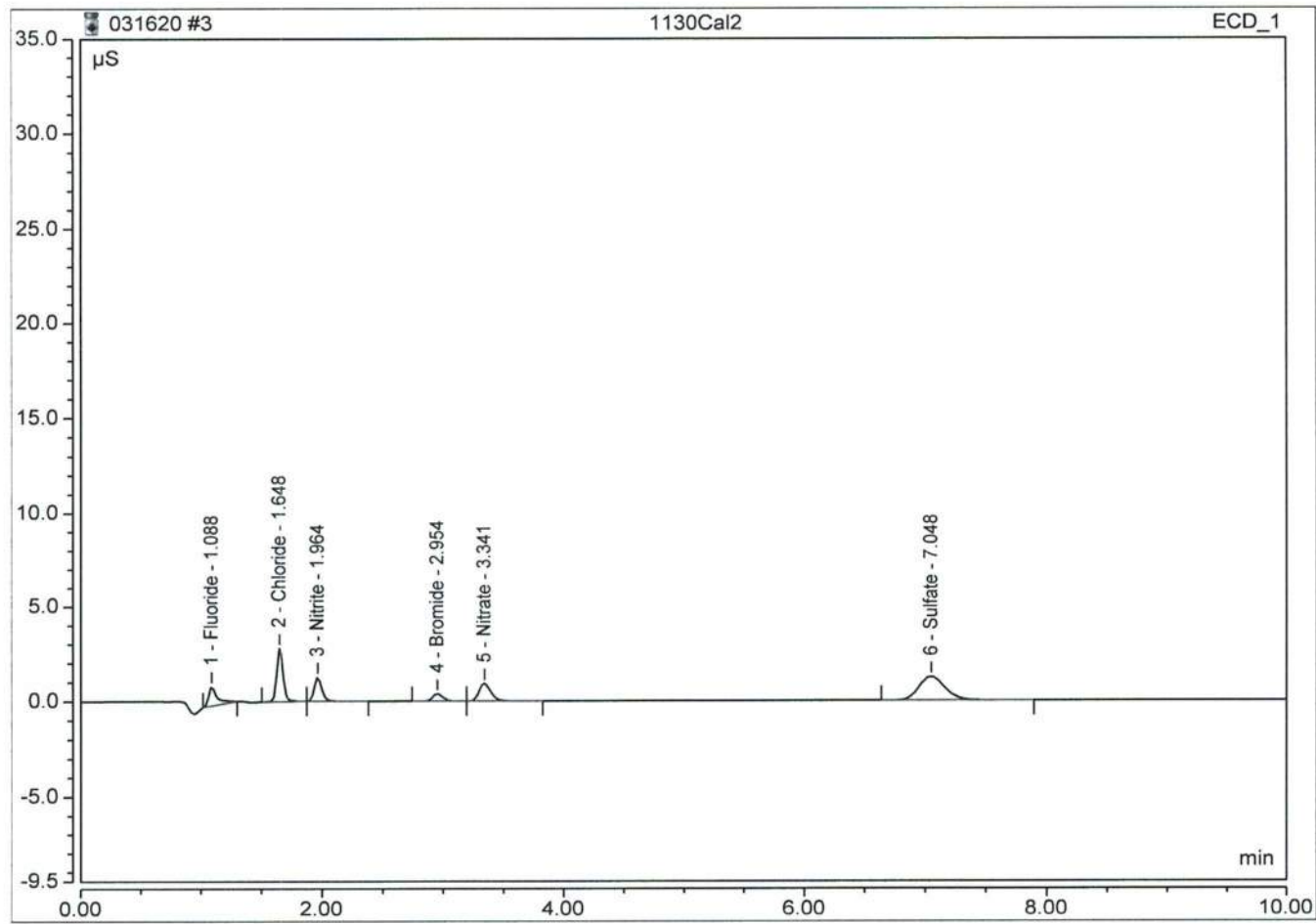
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.084	1.010	0.5 0.5050
2	1.65	Chloride	BMB	0.169	2.803	2 1.9341
3	1.96	Nitrite	BMB	0.091	1.255	0.5 0.4828
4	2.95	Bromide	BMB	0.036	0.371	1 1.0060
5	3.34	Nitrate	BMB	0.103	0.922	0.5 0.4855
6	7.05	Sulfate	BMB	0.305	1.246	5 4.8434
TOTAL:				0.79	7.61	9.26



Peak Integration Report

Sample Name:	1130Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:23	Operator:	Jeff Phifer

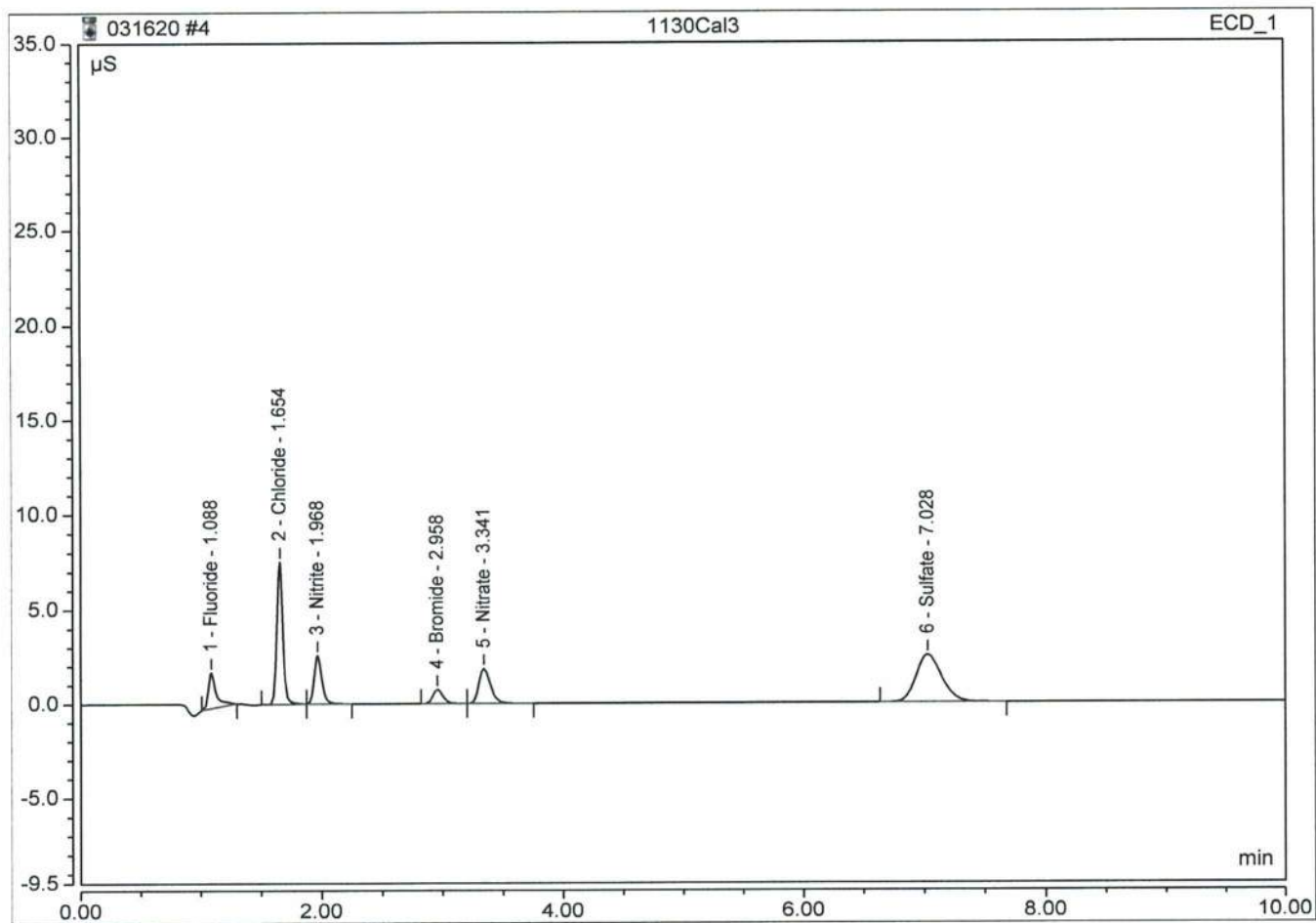
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.084	1.010	0.5000
2	1.65	Chloride	BMB	0.169	2.803	2.0000
3	1.96	Nitrite	BMB	0.091	1.255	0.5000
4	2.95	Bromide	BMB	0.036	0.371	1.0000
5	3.34	Nitrate	BMB	0.103	0.922	0.5000
6	7.05	Sulfate	BMB	0.305	1.246	5.0000
TOTAL:				0.79	7.61	9.50



Peak Integration Report

Sample Name:	1130Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:35	Operator:	Jeff Phifer

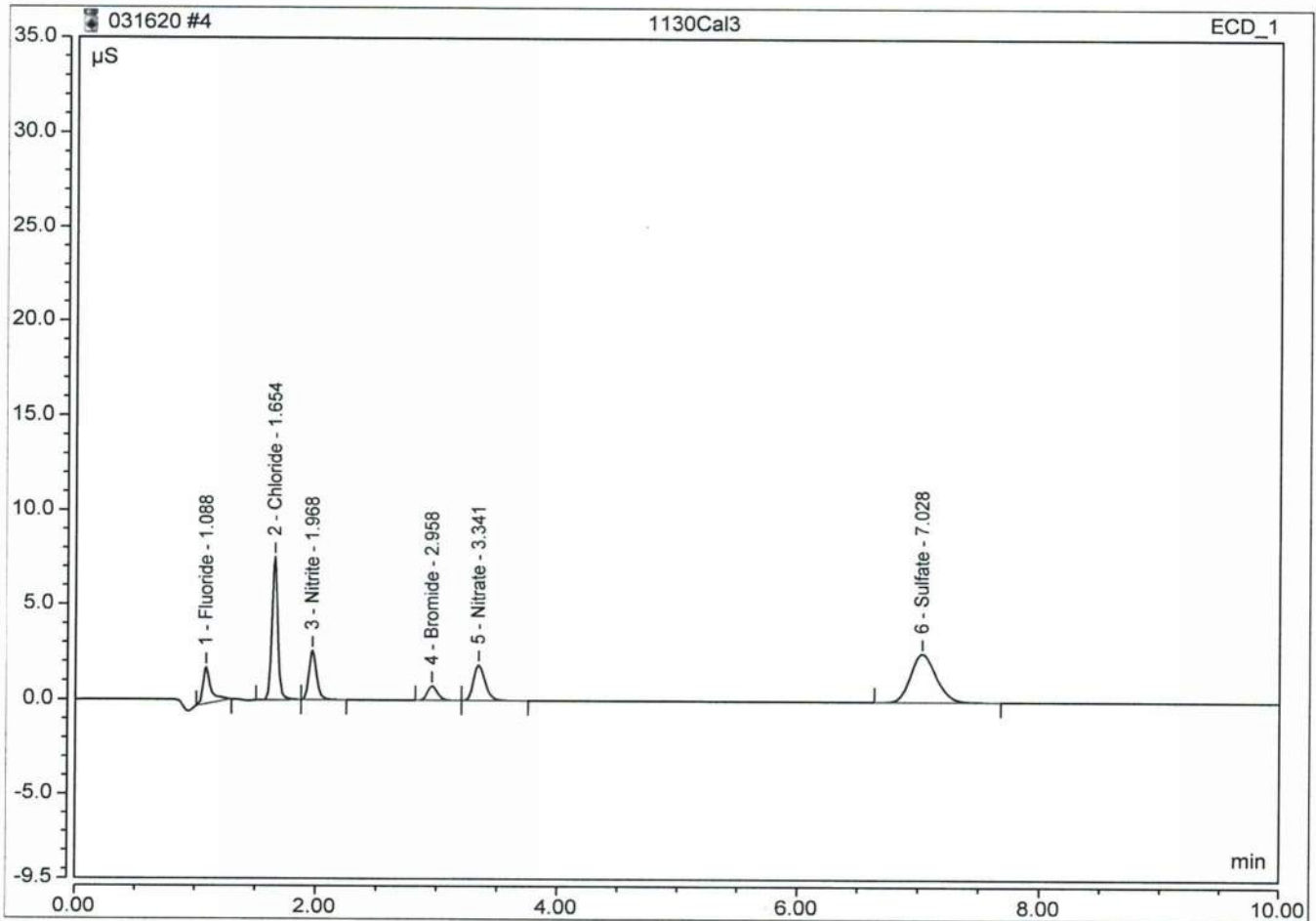
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.145	1.902	1 0.9994
2	1.65	Chloride	BMB	0.444	7.527	5 4.6743
3	1.97	Nitrite	BMB	0.184	2.564	1 0.9629
4	2.96	Bromide	BMB	0.071	0.738	2 1.9674
5	3.34	Nitrate	BMB	0.207	1.848	1 0.9723
6	7.03	Sulfate	BMB	0.616	2.526	10 9.7093
TOTAL:				1.67	17.10	19.29



Peak Integration Report

Sample Name:	1130Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:35	Operator:	Jeff Phifer

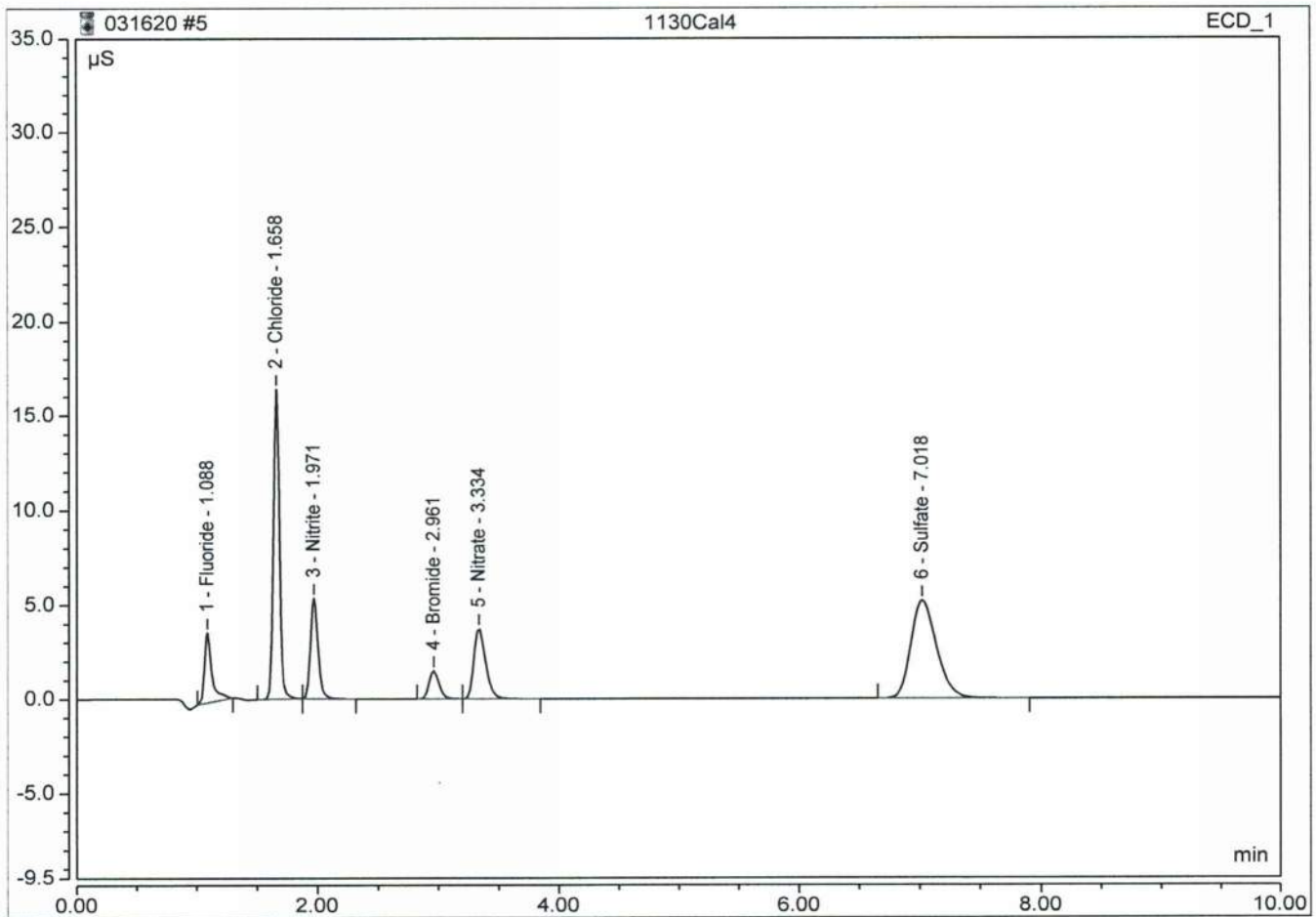
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.145	1.902	0.9971
2	1.65	Chloride	BMB	0.444	7.527	5.0227
3	1.97	Nitrite	BMB	0.184	2.564	1.0025
4	2.96	Bromide	BMB	0.071	0.738	1.9941
5	3.34	Nitrate	BMB	0.207	1.848	1.0030
6	7.03	Sulfate	BMB	0.616	2.526	10.0331
TOTAL:				1.67	17.10	20.05



Peak Integration Report

Sample Name:	1130Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:48	Operator:	Jeff Phifer

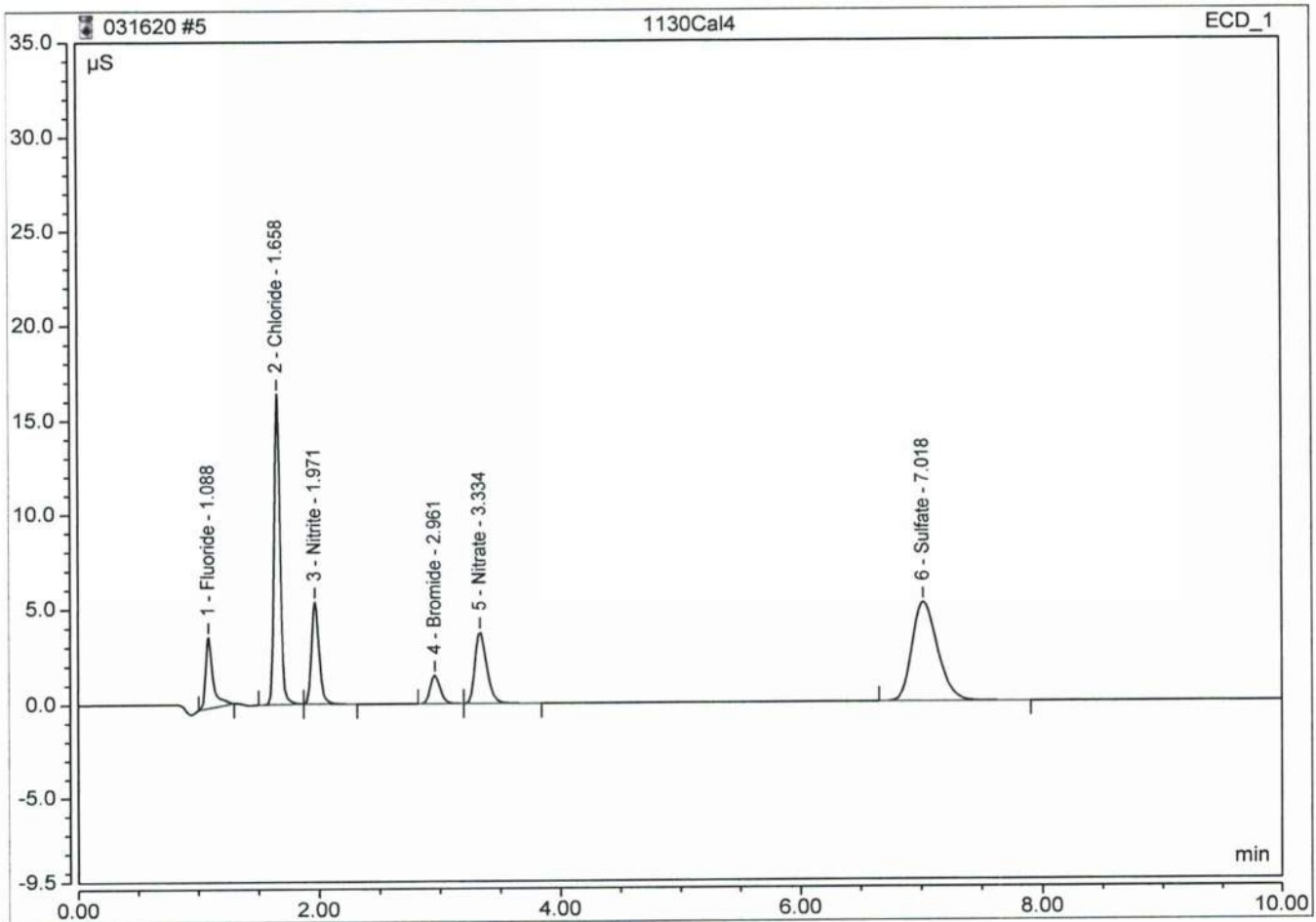
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.264	3.720	2 1.9744
2	1.66	Chloride	BMB	0.962	16.388	10 9.8345
3	1.97	Nitrite	BMB	0.382	5.338	2 1.9887
4	2.96	Bromide	BMB	0.143	1.493	4 3.9554
5	3.33	Nitrate	BMB	0.423	3.741	2 1.9822
6	7.02	Sulfate	BMB	1.272	5.210	20 19.9837
TOTAL:				3.45	35.89	39.72



Peak Integration Report

Sample Name:	1130Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:48	Operator:	Jeff Phifer

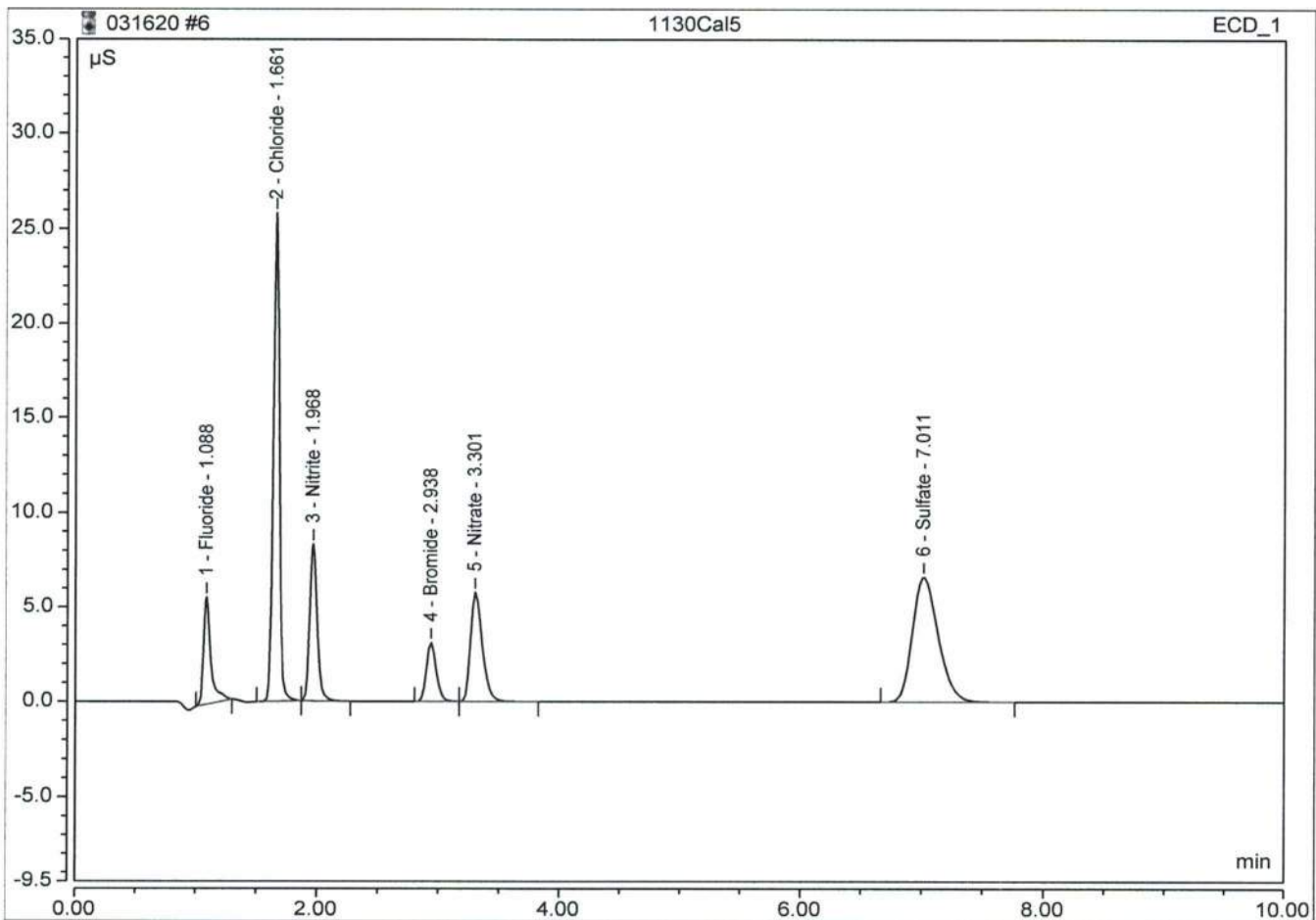
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.264	3.720	1.9908
2	1.66	Chloride	BMB	0.962	16.388	10.2059
3	1.97	Nitrite	BMB	0.382	5.338	2.0289
4	2.96	Bromide	BMB	0.143	1.493	4.0085
5	3.33	Nitrate	BMB	0.423	3.741	2.0191
6	7.02	Sulfate	BMB	1.272	5.210	20.2608
TOTAL:				3.45	35.89	40.51



Peak Integration Report

Sample Name:	1130Cal5	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 11:01	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.392	5.690	3 3.0220
2	1.66	Chloride	BMB	1.528	25.842	15 15.4741
3	1.97	Nitrite	BMB	0.589	8.308	3 3.0599
4	2.94	Bromide	BMB	0.292	3.112	8 8.0645
5	3.30	Nitrate	BMB	0.653	5.776	3 3.0552
6	7.01	Sulfate	BMB	1.618	6.632	25 25.4192
TOTAL:				5.07	55.36	58.09



Total Suspended Solids

TSS: VLIMS Code: 4630; EPA Method: 2540D

Date Started: 30 APR 20
 Time Started: 1940
 Analyst: JB
 Batch ID: TSS 200430
 Temperature: 104°C
 Time in Oven: ~~16:00~~ 89:00

Date Finished: 04 MAY 20
 Time Finished: 1240
 Reviewed by: BB
 Review Date: 5/11/2020
 Balance ID: I1
 Oven ID/Thermometer ID: OVS/AC10848

Merit #	Tin #	MLs sample	g. Filter	g. dry solids + filter 103°C	g. reweigh 15 min. 103°C	TSS mg/L	DF	TVSS Y/N	TVSS Tin #
Blank	A62UP	1000	0.1145	0.1141		0.40 ND	1.00	N	
LCS Lot									
8915-09	UQ	100	0.1157	0.1217		60	10.0		
13452.01	UQ	100	0.1144	0.1229		170	20.0		
Dup									
13452.01	UQ	100	0.1153	0.1236		166	20.0		
13457.04	UT	650	0.1146	0.1231		13.08 13	1.54		
13481.01	U4	100	0.1149	0.1192		43	10.0		
13499.01	UV	400	0.1152	0.1253		25.25 25	2.50		
13521.01	UW	650	0.1204	0.1274		10.77 11	1.54		
13539.01	UX	1000	0.1136	0.1147		1.10 ND	1.00		
13568.01	UY	970	0.1194	0.1225		3.20 3	1.03		
13569.01	UZ	500	0.1212	0.1369		31.40 31	2.00		
.02	VO	950	0.1201	0.1227		2.74 ND	1.05		
.03	VI	950	0.1156	0.1171		1.58 ND	1.05		

LCS value = 59.2
 % Rec = 101.4%
 % RPD = 2.4%

Acceptance Criteria (mg/L): 46.9 - 67.0
 Acceptance Criteria (%): 79.2 - 113%
 Acceptance Criteria: ± 5% of average

Total Suspended Solids

TSS: VLIMS Code: 4630; EPA Method: 2540D

Date Started: 05 MAY 20
 Time Started: 1755
 Analyst: AB
 Batch ID: TSS200505
 Temperature: 104°C
 Time in Oven: 42:20

Date Finished: 07 MAY 20
 Time Finished: 1215
 Reviewed by: BB
 Review Date: 5/11/2020
 Balance ID: J1
 Oven ID/Thermometer ID: OV5/AC10868

Merit #	Tin #	MLs sample	g. Filter	g. dry solids + filter 103°C	g. reweigh 15 min. 103°C	TSS mg/L	DF	TVSS Y/N	TVSS Tin #
Blank	F62V2	1000	0.1153	0.1150		0.3 ND	1.00	N	
LCS Lot									
895-09	V3	100	0.1200	0.1254		54	10.0		
13570.02	V4	75	0.1212	0.1297		113.3 113	13.3		
Dup									
13570.02	V5	75	0.1152	0.1239		116	13.3		
13569.04	V6	1000	0.1151	0.1172		2.1 ND	1.00		
¹⁰⁰⁰ 05 MAY 20	V7 F62V7	250 500	0.1148	0.1551		161.7 161	4.00		
.06	F62V8	1000	0.1146	0.1158		1.2 ND	1.00		
.07	V9	1000	0.1141	0.1138		-0.3 ND	1.00		
13572.02	VA	50	0.1202	0.1257		110	20.0		
13575.01	VB	400	0.1198	0.1308		27.5 28	2.50		
.06	F62R2	200	0.1145	0.1248		51.5 52	5.00		
.07	R3	100	0.1153	0.1644		491	10.0		
.08	R4	500	0.1160	0.1278		23.6 24	2.00		

LCS value = 59.2 mg/L
 % Rec = 91.2%
 % RPD = 2.4%

Acceptance Criteria (mg/L): 46.9 - 67.0 mg/L
 Acceptance Criteria (%): 79.2 - 113%
 Acceptance Criteria: ± 5% of average

Total Dissolved Solids

TDS: VLIMS Code: 4615; EPA Method: 2540C

Date Started: 29 APR 20
 Time Started: 1610
 Analyst: AB
 Batch ID: TDS200429
 Temperature: 180°C
 Time in Oven: 47:00

Date Finished: 01 MAY 20
 Time Finished: 1510
 Reviewed by: BB
 Review Date: 5/11/2020
 Balance ID: I7
 Oven ID/Thermometer ID: OV2/TC10365

Merit #	Tin #	sample (mls)	Tin (grams)	dry solids + tin 180°C (grams)	reweigh 15 min. 180°C (grams)	Cond.	TDS (mg/L)
Blank	A0500531	50	3.7995	3.7998			6 ND
LCS Lot							
8200-09	532	25	3.8955	3.9014			236
13440.01	533	25	3.8150	3.9536			5540* 5544
Dup							
.01	534	25	3.8855	4.0233			5512
.02	535	25	3.7604	3.9193			6360* 6356
.03	536	25	3.8671	4.0168			5990* 5988
.04	537	25	3.8311	4.0203			7570* 7568
13569.01	538	50	3.8027	3.8391			728
.02	539	50	3.6943	3.7530			1170* 1174
.03	540	50	3.7806	3.8080			548
.04	541	50	3.7302	3.7575			546
.05	542	50	3.7591	3.8232			1280* 1282
.06	543	50	3.7115	3.7436			642

LCS value = 205 mg/L
 % Rec = 115.1%
 % RPD = 0.6%

Acceptance Criteria (mg/L): 160-250 mg/L
 Acceptance Criteria (%): 78.0-122%
 Acceptance Criteria: ± 5% of average

Total Dissolved Solids

TDS: VLIMS Code: 4615; EPA Method: 2540C

Date Started: 01 MAY 20
 Time Started: 1945
 Analyst: JPB
 Batch ID: TDS200501
 Temperature: 18°C
 Time in Oven: 89:05

Date Finished: 05 MAY 20
 Time Finished: 1250
 Reviewed by: BB
 Review Date: 5/11/2020
 Balance ID: II
 Oven ID/Thermometer ID: OV2/AC/0365

Merit #	Tin #	sample (mls)	Tin (grams)	dry solids + tin 180°C (grams)	reweigh 15 min. 180°C (grams)	Cond.	TDS (mg/L)
Blank	A0500544	50	3.7660	3.7664			8 / ND
LCS Lot 8915-09	545	25	3.7278	3.7341			252
13613.01	546	25	3.7519	3.8903			5540* 5536
Dup .01	547	25	3.7156	3.8526			5480 6350*
.02	548	25	3.7304	3.8891			6348 3740*
.03	549	25	3.7369	3.8305			3744
.04	550	25	3.8077	3.9343			5060* 5069
.05	551	25	3.7166	3.8043			3510* 3508
.06	552	25	3.7131	3.8281			4600
13569.07	553	50	3.7868	3.7870			4/ND
13586.01	554	50	3.8011	3.8232			442
	.02	555	50	3.7628	3.7781		306
13607.01	556	50	3.6939	3.7493			1110* 1108

WB {

LCS value = 242 mg/L
 % Rec = 104.1%
 % RPD = 1.0%

Acceptance Criteria (mg/L): 197-287 mg/L
 Acceptance Criteria (%): 81.4-119%
 Acceptance Criteria: ± 5% of average



2680 East Lansing Dr., East Lansing, MI 48823
 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME **John Laverty**
 COMPANY **Merit Laboratories**
 ADDRESS **2680 East Lansing Drive**
 CITY **East Lansing** STATE **MI** ZIP CODE **48823**
 PHONE NO. **517-332-0167** FAX NO. **517-332-4034** P.O. NO.
 E-MAIL ADDRESS **johnlaverty@meritlabs.com** QUOTE NO.

CONTACT NAME **Julie Teague** SAME
 COMPANY **Merit Laboratories**
 ADDRESS **2680 East Lansing Drive**
 CITY **East Lansing** STATE **MI** ZIP CODE **48823**
 PHONE NO. **517-332-0167** E-MAIL ADDRESS **juliet@meritlabs.com**

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME **S13569** SAMPLER(S) - PLEASE PRINT/SIGN NAME
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Radium 226*	Radium 228**							Certifications		Project Locations		Special Instructions
	DATE	TIME																			<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES		☐ Detroit	☐ New York	☐ Other
	04/28/20	1056	S13569.01	ww	2			2					✓	✓											* E903.1 Mod.
	04/28/20	1401	S13569.02	ww	2			2					✓	✓											** E904.0/SW 9320 Mod.
	04/28/20	0831	S13569.03	ww	2			2					✓	✓											
	04/28/20	0831	S13569.04	ww	2			2					✓	✓											Please use calculation product & provide Radium 226/228 combined results on the report
	04/28/20	1910	S13569.05	ww	2			2					✓	✓											
	04/28/20	1230	S13569.06	ww	2			2					✓	✓											
	04/28/20	0725	S13569.07 (Field Blank)	L	2			2					✓	✓											
																									** Subcontracted to GEL Laboratories, Inc. 2040 Savage Road Charleston, SC 29407

RELINQUISHED BY: Sampler DATE TIME
 SIGNATURE/ORGANIZATION
 RECEIVED BY: DATE TIME
 SIGNATURE/ORGANIZATION
 RELINQUISHED BY: DATE TIME
 SIGNATURE/ORGANIZATION
 RECEIVED BY: DATE TIME
 SIGNATURE/ORGANIZATION

RELINQUISHED BY: DATE TIME
 SIGNATURE/ORGANIZATION
 RECEIVED BY: DATE TIME
 SIGNATURE/ORGANIZATION
 SEAL NO. SEAL INTACT INITIALS
 YES NO
 SEAL NO. SEAL INTACT INITIALS
 YES NO
 NOTES: TEMP. ON ARRIVAL _____

Merit Laboratories Login Checklist

Lab Set ID:S13569

Client:BWL01 (Board of Water & Light)

Project: Erickson GMP

Submitted:04/29/2020 11:53 Login User: SRS

Attention: Jennifer Caporale

Address: Board of Water & Light

P.O. Box 13007

Lansing, MI 48901

Phone: 517-702-6372

FAX:517-702-6373

Email: Environmental_Laboratory@LBWL.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.3
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to: GEL
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S13569 Initials: SRS

Attention: Jennifer Caporale
 Address: Board of Water & Light
 P.O. Box 13007
 Lansing, MI 48901

Client: BWL01 (Board of Water & Light)

Project: Erickson GMP

Submitted: 04/29/2020 11:53 Login User:

Phone: 517-702-6372 FAX: 517-702-6373
 Email: Environmental_Laboratory@LBWL.com

Lab ID	125 ml Plastic HNO ₃	250 ml Plastic HNO ₃	1 L Plastic HNO ₃	250 ml Plastic H ₂ SO ₄	125 ml Amber H ₂ SO ₄	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber PbCO ₃ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S13569.01	X								X					
S13569.01			X						X					
S13569.01			X						X					
S13569.02	X								X					
S13569.02			X						X					
S13569.02			X						X					
S13569.03	X								X					
S13569.03			X						X					
S13569.03			X						X					
S13569.04	X								X					
S13569.04			X						X					
S13569.04			X						X					
S13569.05	X								X					
S13569.05			X						X					
S13569.05			X						X					
S13569.06	X								X					
S13569.06			X						X					
S13569.06			X						X					
S13569.07	X								X					
S13569.07			X						X					
S13569.07			X						X					

Sample Set Receipt

Report to
 Attention: Jennifer Caporale
 Address: Board of Water & Light
 P.O. Box 13007
 Lansing, MI 48901

Invoice to
 Attention: Kelly Gleason
 Address: Board of Water & Light
 PO Box 13007
 Lansing, MI 48901

Phone: 517-702-6372 FAX: 517-702-6373
 Email: Environmental_Laboratory@LBWL.com

Phone: 517-702-6372 FAX: 517-702-6373
 Email: kelly.gleason@lbwl.com

Contacts:

Set ID: S13569 Location: BWL01 (Board of Water & Light) PO #: Login by: SRS
 Project: Erickson GMP Backlog Note:
 Submitted: 04/29/2020 11:53 Due Date: 05/13/2020 Rush: No Collected by: Marc Wahrer QC Level: 3 Custom Limits Present: No
 Approved by: Site: Work Order#: Bill to Acct: Bill to Dept:

Sample ID	Sample Tag	Matrix	Date/Time Collected	COC Ref
S13569.01	L004070-01 MW-1	Wastewater	04/28/2020 10:56	134281
S13569.02	L004070-02 MW-2	Wastewater	04/28/2020 14:01	134281
S13569.03	L004070-03 MW-4	Wastewater	04/28/2020 08:31	134281
S13569.04	L004070-04 MW-4 Duplicate	Wastewater	04/28/2020 08:31	134281
S13569.05	L004070-05 MW-5	Wastewater	04/28/2020 19:10	134281
S13569.06	L004070-06 MW-6	Wastewater	04/28/2020 12:30	134281
S13569.07	L004070-07 Field Blank	Water	04/28/2020 07:25	134281

Samples: S13569.01-07

Analysis Code	Analysis Title	Method	Units	Holding Date
2140WMS	Calcium	E200.8	mg/L	10/25/2020
2145WMS	Chromium	E200.8	mg/L	10/25/2020
2130WMS	Boron	E200.8	mg/L	10/25/2020
2115WMS	Arsenic	E200.8	mg/L	10/25/2020
2205WMS	Selenium	E200.8	mg/L	10/25/2020
2190WMS	Molybdenum	E200.8	mg/L	10/25/2020
2135WMS	Cadmium	E200.8	mg/L	10/25/2020
2110WMS	Antimony	E200.8	mg/L	10/25/2020
2120WMS	Barium	E200.8	mg/L	10/25/2020
2225WMS	Thallium	E200.8	mg/L	10/25/2020
2165WMS	Lead	E200.8	mg/L	10/25/2020
2125WMS	Beryllium	E200.8	mg/L	10/25/2020
2150WMS	Cobalt	E200.8	mg/L	10/25/2020
2170WMS	Lithium	E200.8	mg/L	10/25/2020
2185W	Mercury	E245.1	mg/L	05/26/2020
4630	Total Suspended Solids	SM2540D	mg/L	05/05/2020
4615	Total Dissolved Solids	SM2540C	mg/L	05/05/2020
4425W	Chloride	E300.0	mg/L	05/26/2020
4530W	Sulfate	E300.0	mg/L	05/26/2020
4455W	Fluoride (Undistilled)	E300.0	mg/L	05/26/2020
MISCSUB	Misc. Special Project			01/22/2023
1605W	Metal Digestion	SW3015A		10/25/2020
1605HGW	Mercury Digestion	E245.1		05/26/2020
SUBCONT	Subcontracting			01/22/2023



May 22, 2020

John Laverty
Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan 48823

Re: Routine Analysis
Work Order: 510535
SDG: S13569

Dear John Laverty:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 04, 2020. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. This package is revised to include level IV fractions.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4707.

Sincerely,

Samuel Hogan for
Katelyn Gray
Project Manager

Purchase Order: GELP19-0247
Enclosures

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General Narrative

This package is revised to include level IV fractions.

**Case Narrative
for
Merit Laboratories, Inc.
SDG: S13569
Work Order: 510535**

May 22, 2020

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample Receipt The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on May 04, 2020 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Sample Identification The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
510535001	S13569.01
510535002	S13569.02
510535003	S13569.03
510535004	S13569.04
510535005	S13569.05
510535006	S13569.06
510535007	S13569.07 (Field Blank)

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: Radiochemistry.



Samuel Hogan for
Katelyn Gray
Project Manager

Chain of Custody and Supporting Documentation

List of current GEL Certifications as of 22 May 2020

State	Certification
Alaska	17-018
Alaska Drinking Water	SC00012
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-165
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-20-17
Utah NELAP	SC000122020-32
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

Radiological Analysis

Case Narrative

**Radiochemistry
Technical Case Narrative
Merit Laboratories, Inc.
SDG #: S13569
Work Order #: 510535**

Product: Radium-226+Radium-228 Calculation

Analytical Method: Calculation

Analytical Procedure: GL-RAD-D-003 REV# 44

Analytical Batch: 1994505

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
510535001	S13569.01
510535002	S13569.02
510535003	S13569.03
510535004	S13569.04
510535005	S13569.05
510535006	S13569.06
510535007	S13569.07 (Field Blank)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: GFPC Ra228, Liquid

Analytical Method: EPA 904.0/SW846 9320 Modified

Analytical Procedure: GL-RAD-A-009 REV# 17

Analytical Batch: 1994400

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
510535001	S13569.01
510535002	S13569.02
510535003	S13569.03
510535004	S13569.04
510535005	S13569.05
510535006	S13569.06
510535007	S13569.07 (Field Blank)
1204555327	Method Blank (MB)
1204555328	510535004(S13569.04) Sample Duplicate (DUP)
1204555329	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: Lucas Cell, Ra226, Liquid

Analytical Method: EPA 903.1 Modified

Analytical Procedure: GL-RAD-A-008 REV# 15

Analytical Batch: 1992354

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
510535001	S13569.01
510535002	S13569.02
510535003	S13569.03
510535004	S13569.04
510535005	S13569.05
510535006	S13569.06
510535007	S13569.07 (Field Blank)
1204550964	Method Blank (MB)
1204550965	509722001(NonSDG) Sample Duplicate (DUP)
1204550966	509722001(NonSDG) Matrix Spike (MS)
1204550967	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Sample 1204550966 (Non SDG 509722001MS) was recounted due to high recovery. The recount is reported.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report for

MERI001 Merit Laboratories, Inc.

Client SDG: S13569 GEL Work Order: 510535

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:



Name: Theresa Austin

Date: 20 MAY 2020

Title: Group Leader

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 20, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S13569.01	Project: MERI00119
Sample ID: 510535001	Client ID: MERI001
Matrix: Waste Water	
Collect Date: 28-APR-20 10:56	
Receive Date: 04-MAY-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.518	+/-0.745	1.28	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.61	+/-0.864			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		1.10	+/-0.438	0.323	1.00	pCi/L			MXH8	05/08/20	1112	1992354	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			91.9	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 20, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S13569.02	Project: MERI00119
Sample ID: 510535002	Client ID: MERI001
Matrix: Waste Water	
Collect Date: 28-APR-20 14:01	
Receive Date: 04-MAY-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	1.05	+/-0.780	1.19	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.86	+/-0.893			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.813	+/-0.434	0.500	1.00	pCi/L			MXH8	05/08/20	1112	1992354	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			79.3	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 20, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S13569.03	Project: MERI00119
Sample ID: 510535003	Client ID: MERI001
Matrix: Waste Water	
Collect Date: 28-APR-20 08:31	
Receive Date: 04-MAY-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	1.08	+/-0.802	1.24	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.92	+/-0.885			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.839	+/-0.376	0.306	1.00	pCi/L			MXH8	05/08/20	1112	1992354	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			88.3	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: May 20, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S13569.04	Project: MERI00119
Sample ID: 510535004	Client ID: MERI001
Matrix: Waste Water	
Collect Date: 28-APR-20 08:31	
Receive Date: 04-MAY-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	1.38	+/-1.05	1.66	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		2.33	+/-1.13			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.953	+/-0.416	0.422	1.00	pCi/L			MXH8	05/08/20	1111	1992354	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			85.3	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 20, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S13569.05 Project: MERI00119
 Sample ID: 510535005 Client ID: MERI001
 Matrix: Waste Water
 Collect Date: 28-APR-20 19:10
 Receive Date: 04-MAY-20
 Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.187	+/-0.775	1.42	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.29	+/-0.921			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		1.10	+/-0.498	0.568	1.00	pCi/L			MXH8	05/08/20	1111	1992354	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			89	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 20, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S13569.06	Project: MERI00119
Sample ID: 510535006	Client ID: MERI001
Matrix: Waste Water	
Collect Date: 28-APR-20 12:30	
Receive Date: 04-MAY-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.384	+/-0.738	1.31	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.596	+/-0.779			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.212	+/-0.249	0.405	1.00	pCi/L			MXH8	05/08/20	1111	1992354	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			88.2	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 20, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S13569.07 (Field Blank) Project: MERI00119
Sample ID: 510535007 Client ID: MERI001
Matrix: Waste Water
Collect Date: 28-APR-20 07:25
Receive Date: 04-MAY-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.625	+/-0.790	1.34	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.890	+/-0.820			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.265	+/-0.222	0.289	1.00	pCi/L			MXH8	05/08/20	1144	1992354	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			87.9	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: May 20, 2020

Page 1 of 2

Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan

Contact: John Laverty

Workorder: 510535

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	1994400										
QC1204555328	510535004	DUP									
Radium-228	U	1.38		2.09	pCi/L	40.9		(0% - 100%)	JXK3	05/08/20	08:55
	Uncertainty	+/-1.05		+/-0.918							
QC1204555329	LCS										
Radium-228	57.1			50.2	pCi/L		88	(75%-125%)		05/08/20	08:55
	Uncertainty			+/-3.24							
QC1204555327	MB										
Radium-228			U	0.416	pCi/L					05/08/20	08:55
	Uncertainty			+/-0.754							
Rad Ra-226											
Batch	1992354										
QC1204550965	509722001	DUP									
Radium-226		0.602		0.700	pCi/L	15.1		(0% - 100%)	MXH8	05/08/20	11:44
	Uncertainty	+/-0.337		+/-0.460							
QC1204550967	LCS										
Radium-226	27.1			27.9	pCi/L		103	(75%-125%)		05/08/20	11:43
	Uncertainty			+/-2.08							
QC1204550964	MB										
Radium-226			U	0.236	pCi/L					05/08/20	11:44
	Uncertainty			+/-0.288							
QC1204550966	509722001	MS									
Radium-226	27.1	0.602		30.0	pCi/L		109	(75%-125%)		05/08/20	12:31
	Uncertainty	+/-0.337		+/-2.53							

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 510535

Page 2 of 2

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J											
J											
K											
L											
M											
M											
N/A											
N1											
ND											
NJ											
Q											
R											
U											
UI											
UJ											
UL											
X											
Y											
^											
h											

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Gas Flow Raw Data

Batch 1994400 Check-list

This check-list was completed on 11-MAY-20 by Nat Long

This batch was reviewed by Kenshalla Oston on 11-MAY-20 and Nat Long on 11-MAY-20.

Batch ID:
1994400

Product:
GFC28RAL

Description: Gas Flow Radium 228
GL-RAD-A-009

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
11	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
12	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-228 in Liquid

Batch ID: 1994400

Analyst: Jennie Kill-Bowden (JXK3)

Method: EPA 904.0/SW846 9320 Modified

Lab SOP: GL-RAD-A-009 REV# 17

Instrument: GFC-51204863

Due Dates for Lab: 12-MAY-2020

Package:

SDG: 14-MAY-2020

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1204555329	Radium-228 SPIKE	1918-A	.2	mL

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	Ac-228 Ingrow (date)	Ac-228 Separation (date)
1	510382001	05-MAY-2020	3	300	05/06/20 13:58	05/08/20 07:10
2	510535001	05-MAY-2020	3	300	05/06/20 13:58	05/08/20 07:10
3	510535002	05-MAY-2020	3	300	05/06/20 13:58	05/08/20 07:10
4	510535003	05-MAY-2020	3	300	05/06/20 13:58	05/08/20 07:10
5	510535004	05-MAY-2020	3	300	05/06/20 13:58	05/08/20 07:10
6	510535005	05-MAY-2020	3	300	05/06/20 13:58	05/08/20 07:10
7	510535006	05-MAY-2020	3	300	05/06/20 13:58	05/08/20 07:10
8	510535007	05-MAY-2020	3	300	05/06/20 13:58	05/08/20 07:10
9	1204555327 MB	05-MAY-2020	3	300	05/06/20 13:58	05/08/20 07:10
10	1204555328 DUP (510535004)	05-MAY-2020	3	300	05/06/20 13:58	05/08/20 07:10
11	1204555329 LCS	05-MAY-2020	3	300	05/06/20 13:58	05/08/20 07:10

Reagent/Solvent Lot ID	Description	Amount	Comments:
WORK 0487-G	Barium-133 TRACER	.1 mL	
REGNT 2947553	RGF-Neodymium 500mg/L	.2 mL	Pipet Id: RAD-GFC-1795419
REGNT 3015436.14	HNO3, JT Baker	5 mL	Data Entry Date2: 05-MAY-2020 00:00
REGNT 3053163.4	RGF-Acetic Acid	10 mL	
REGNT 3062070.5	RGF-Hydrofluoric Acid	4 mL	
REGNT 3064966	RGF-50% Potassium Carbonate	2 mL	
REGNT 3067699	7M Nitric Acid	25 mL	
REGNT 3069758	Lot #DGA0012	2 g	
REGNT 3069850	Barium Carrier Ra228 REG	1 mL	
REGNT 3070133	RGF-2M Hydrochloric Acid	20 mL	
REGNT 3071153	RGF-Neodymium Substrate	5 mL	
REGNT 3071232	1M Citric Acid	5 mL	
REGNT 3072339	RGF-1.5M Ammonium Sulfate	10 mL	

Radium-228 Liquid

Filename : RA228.XLS
 File type : Excel
 Version # : 1.4.2

Tracer S/N : 0487-G
 Tracer Exp Date : 2/27/2021
 Tracer Volume Added: 0.10

Batch : 1994400
 Analyst : JEN02186
 Prep Date : 5/5/2020
 Ra-228 Method Uncertainty : 0.1268

Procedure Code : GFC28RAL
 Parmname : Radium-228
 Required MDA : 3 pCi/L
 Ra-228 Abundance : 1.00
 Halflife of Ra-228 : 5.75 years
 Halflife of Ac-228 : 6.15 hours

Geometry: 25mm Filter

Sample Characteristics					Tracer Calculations		Tracer Samp.		Tracer	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Tracer Ref. Activity (CPM)	Tracer Ref. Count Uncertainty (%)	Tracer Samp. Activity (CPM)	Tracer Samp. Count Uncertainty (%)	Tracer Aliquot (mL)	Tracer Aliquot StDev. (mL)
1	510382001.1	0.3000	1.8459E-05	4/28/2020 11:00	299.8	3.33%	282.8	3.43%	0.1	0.000200
2	510535001.1	0.3000	1.8459E-05	4/28/2020 10:56	299.8	3.33%	275.4	3.48%	0.1	0.000200
3	510535002.1	0.3000	1.8459E-05	4/28/2020 14:01	299.8	3.33%	237.6	3.75%	0.1	0.000200
4	510535003.1	0.3000	1.8459E-05	4/28/2020 8:31	299.8	3.33%	264.6	3.55%	0.1	0.000200
5	510535004.1	0.3000	1.8459E-05	4/28/2020 8:31	299.8	3.33%	255.8	3.61%	0.1	0.000200
6	510535005.1	0.3000	1.8459E-05	4/28/2020 19:10	299.8	3.33%	266.8	3.53%	0.1	0.000200
7	510535006.1	0.3000	1.8459E-05	4/28/2020 12:30	299.8	3.33%	264.3	3.55%	0.1	0.000200
8	510535007.1	0.3000	1.8459E-05	4/28/2020 7:25	299.8	3.33%	263.6	3.56%	0.1	0.000200
9	1204555327.1	0.3000	1.8459E-05	5/5/2020 0:00	299.8	3.33%	231.3	3.80%	0.1	0.000200
10	1204555328.1	0.3000	1.8459E-05	4/28/2020 8:31	299.8	3.33%	243.1	3.70%	0.1	0.000200
11	1204555329.1	0.3000	1.8459E-05	5/5/2020 0:00	299.8	3.33%	281.0	3.44%	0.1	0.000200

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-009
 Instrument SOP: GL-RAD-I-016

Count raw Data														Calculated	Sample
Pos.	Detector ID	Counting Time (min.)	Gross Counts		Beta cpm	Count Start Date/Time	Ac-228 Ingrowth Date/Time	Ac-228 Decay Date/Time	Ra-228 Decay	Ac-228 Decay	Ac-228 Ingrowth	Ac-228 Count Correction	Recovery %	Recovery Error %	
			Alpha	Beta											
1	6C	60	9	98	1.633	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.821	0.990	1.057	94.3%	2.41%	
2	7A	60	6	48	0.800	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	91.9%	2.42%	
3	7B	60	11	38	0.633	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	79.3%	2.52%	
4	7C	60	15	51	0.850	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	88.3%	2.45%	
5	8A	60	9	77	1.283	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	85.3%	2.47%	
6	9A	60	11	51	0.850	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	89.0%	2.44%	
7	9B	60	1	42	0.700	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	88.2%	2.45%	
8	9C	60	7	47	0.783	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	87.9%	2.45%	
9	9D	60	6	34	0.567	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.999	0.821	0.990	1.057	77.1%	2.54%	
10	10A	60	10	58	0.967	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.821	0.990	1.057	81.1%	2.50%	
11	10C	60	17	984	16.400	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.999	0.821	0.990	1.057	93.7%	2.41%	

Calibration Data								
Pos.	Counted on	Calibration Date	Calibration Due Date	Detector Efficiency (cpm/dpm)	Detector Efficiency Error (cpm/dpm)	Bkg cpm	Weekly Bkg Count Start Date/Time	Bkg Count Time (min.)
1	PIC	6/1/2019	5/31/2020	0.6546	0.01970	1.319	5/1/2020 11:50	1000
2	PIC	6/1/2019	5/31/2020	0.6638	0.00594	0.639	5/1/2020 11:50	1000
3	PIC	6/1/2019	5/31/2020	0.6492	0.00627	0.359	5/1/2020 11:50	1000
4	PIC	6/1/2019	5/31/2020	0.6585	0.00790	0.531	5/1/2020 11:50	1000
5	PIC	6/1/2019	5/31/2020	0.6425	0.01579	0.898	5/1/2020 11:51	1000
6	PIC	6/1/2019	5/31/2020	0.6820	0.00758	0.792	5/1/2020 11:51	1000
7	PIC	6/1/2019	5/31/2020	0.6541	0.00754	0.587	5/1/2020 11:51	1000
8	PIC	6/1/2019	5/31/2020	0.6473	0.00584	0.602	5/1/2020 11:51	1000
9	PIC	6/1/2019	5/31/2020	0.6557	0.02610	0.459	5/1/2020 11:51	1000
10	PIC	6/1/2019	5/31/2020	0.6631	0.00651	0.394	5/1/2020 10:58	1000
11	PIC	6/1/2019	5/31/2020	0.6602	0.00638	0.514	5/1/2020 10:58	1000

Notes:

- 1 - Results are decay corrected to Sample Date/Time
- 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
- 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : N/A
Spike Exp Date : N/A
Spike Activity (dpm/ml): N/A
Spike Volume Added: N/A

LCS S/N : 1918-A
LCS Exp Date : 1/3/2021
LCS Activity (dpm/ml): 189.98
LCS Volume Added: 0.20

Results																
Pos.	Decision Level pCi/L	Critical Level pCi/L	Required MDA pCi/L	MDA pCi/L	Sample Act. Conc. pCi/L	Sample Act. Error %	Net Count Rate CPM	Net Count Rate Error CPM	2 SIGMA Counting Uncertainty pCi/L	2 SIGMA Total Prop. Uncertainty pCi/L	Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery
1	1.1291	0.7971	3	1.7530	0.9978	53.84%	0.3143	0.1689	1.0511	1.0817		SAMPLE				
2	0.7958	0.5619	3	1.2844	0.5176	73.46%	0.1610	0.1182	0.7448	0.7562		SAMPLE				
3	0.7069	0.4991	3	1.1886	1.0451	38.17%	0.2743	0.1045	0.7801	0.8239		SAMPLE				
4	0.7613	0.5375	3	1.2436	1.0761	38.09%	0.3190	0.1212	0.8016	0.8468		SAMPLE				
5	1.0500	0.7413	3	1.6615	1.3787	38.85%	0.3853	0.1493	1.0469	1.1044		SAMPLE				
6	0.8906	0.6288	3	1.4191	0.1874	210.89%	0.0580	0.1223	0.7746	0.7761		SAMPLE				
7	0.8072	0.5699	3	1.3098	0.3844	97.99%	0.1130	0.1107	0.7381	0.7445		SAMPLE				
8	0.8284	0.5849	3	1.3421	0.6252	64.50%	0.1813	0.1169	0.7897	0.8054		SAMPLE				
9	0.8109	0.5725	3	1.3383	0.4161	92.50%	0.1077	0.0995	0.7539	0.7615		MB				
10	0.7083	0.5001	3	1.1824	2.0867	22.58%	0.5727	0.1285	0.9176	1.0593	510535004.1	DUP	40.9%			
11	0.7018	0.4955	3	1.1489	50.2102	4.13%	15.8860	0.5233	3.2418	13.1243		LCS			57.0501	88.0%

SampleID	Instr	Time (min.)	Alpha Counts	Beta Counts	Count Start Time	Count End Time	Machine	Batch ID
510382001	6C	60	9	98	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535001	7A	60	6	48	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535002	7B	60	11	38	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535003	7C	60	15	51	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535004	8A	60	9	77	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535005	9A	60	11	51	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535006	9B	60	1	42	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535007	9C	60	7	47	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
1204555327	9D	60	6	34	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
1204555328	10A	60	10	58	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
1204555329	10C	60	17	984	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400

ASSAY 8-May-20 7:30:59

Protocol id 9 Ba-133_1
Time limit
Count limit
Isotope Ba-133_1
Protocol date 5/8/2020
Run id. 1140

Samp_ID	POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR	% RECOVERY	COUNT TIME
REF		1	94	1	180	899.5	299.79	3.33	07:30:59
510382001		2	94	2	180	848.5	282.77	3.43	94.32 07:34:13
510535001		3	94	3	180	826.5	275.43	3.48	91.87 07:37:27
510535002		4	94	4	180	713	237.63	3.75	79.27 07:40:41
510535003		5	94	5	180	794	264.63	3.55	88.27 07:43:55
510535004		1	11	1	180	767.5	255.77	3.61	85.32 07:47:38
510535005		2	11	2	180	800.5	266.79	3.53	88.99 07:50:52
510535006		3	11	3	180	793	264.27	3.55	88.15 07:54:06
510535007		4	11	4	180	791	263.6	3.56	87.93 07:57:20
1204555327		5	11	5	180	694	231.28	3.8	77.15 08:00:34
1204555328		1	6	1	180	729.5	243.13	3.7	81.10 08:04:10
1204555329		2	6	2	180	843	280.96	3.44	93.72 08:07:24

END OF ASSAY

Continuing Calibration Data

Gas Flow Proportional Counter Checks for 08-May-2020

Detectors LB4100 A1 through J4 and PIC 1A through 14D and G5400W 1W through 1Z

Short Name	Status	Parmname	Run Time	Count Time	CPM or dec	Low Limit	High Limit	Stdev
LB4100E1	Above	Alpha bkg	08-May 04:12	60	0.667	-5.45E-2	0.290	+9.57
LB4100E2	Above	Beta bkg	08-May 04:12	60	2.183	0.950	2.756	+1.10
LB4100E3	Above	Alpha bkg	08-May 04:12	60	2.167	-4.47E-2	0.174	+57.59
LB4100E3	Above	Alpha eff	08-May 05:43	5	9456	8069	9112	+4.98
LB4100E3	Below	Alpha XTalk	08-May 05:43	5	0.215	0.219	0.280	-3.48
LB4100E3	Above	Beta bkg	08-May 04:12	60	2.100	-1.31E+0	6.766	-0.47
LB4100E3	Above	Beta XTalk	08-May 05:20	5	4.72E-4	8.54E-5	4.65E-4	+3.12
LB4100E4	Above	Alpha eff	08-May 05:43	5	10495	9271	10370	+3.68
LB4100E4	need 2nd	Alpha XTalk	08-May 05:43	5	0.229	0.227	0.265	-2.72
LB4100E4	Above	Beta bkg	08-May 06:24	60	2.533	0.326	2.646	+2.71
LB4100F1	Above	Beta bkg	08-May 04:12	60	4.267	0.531	1.960	+12.68
LB4100F1	need 2nd	Beta eff	08-May 05:20	5	40610	39670	44120	-1.73
LB4100F2	Above	Alpha eff	08-May 05:59	5	5791	4050	5774	+3.06
LB4100F2	need 2nd	Beta eff	08-May 05:20	5	16103	15950	17170	-2.25
LB4100G3	Above	Alpha eff	08-May 05:20	5	8127	6620	7779	+4.80
LB4100G3	Below	Alpha XTalk	08-May 05:20	5	0.299	0.309	0.375	-3.83
LB4100G3	Above	Beta bkg	08-May 04:12	60	3.750	0.810	1.674	+17.42
LB4100I2	Below	Beta eff	08-May 05:58	5	15556	15820	17140	-4.20
LB4100I3	Below	Alpha eff	08-May 05:52	5	8715	8847	10310	-3.54
LB4100I3	Below	Beta eff	08-May 06:29	5	13877	14200	16900	-3.72
LB4100I4	Below	Alpha eff	08-May 05:52	5	9689	9961	12040	-3.78
LB4100I4	Below	Beta eff	08-May 06:29	5	16349	17000	20440	-4.13
PIC2A	Above	Beta bkg	08-May 05:33	60	6.100	-6.28E-1	1.918	+12.86
PIC3C	Above	Alpha bkg	08-May 08:03	60	0.333	0.073	0.397	+1.82
PIC4B	Above	Alpha bkg	08-May 05:34	60	0.450	-5.36E-2	0.301	+5.52
PIC4B	Below	Alpha XTalk	08-May 05:25	5	0.298	0.298	0.434	-3.03
PIC6A	Above	Beta bkg	08-May 08:13	60	2.217	0.899	2.245	+2.87
PIC7D	Above	Alpha bkg	08-May 07:03	60	0.317	-3.52E-2	0.285	+3.60
PIC8D	Above	Beta bkg	08-May 07:03	60	2.833	-1.28E-1	2.383	+4.08

PIC12A	Above	Alpha bkg	08-May 07:16	60	0.800	-4.90E-2	0.296	+11.77
PIC12A	Above	Beta bkg	08-May 07:16	60	3.017	0.074	1.397	+10.35
PIC12D	Above	Beta bkg	08-May 08:24	60	2.133	0.482	2.608	+1.66
PIC13A	Below	Alpha eff	08-May 08:49	5	10362	10440	11160	-3.65
PIC14A	Above	Alpha bkg	08-May 08:24	60	0.367	-7.76E-2	0.378	+2.85
PIC14D	Above	Beta bkg	08-May 08:24	60	1.450	-1.63E-1	1.414	+3.14

INSTRUMENTS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

The following detectors may not have properly transferred to the LIMS system

LB4100B1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC3A	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC6D	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC13C	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk

Reviewed by R. Seinh-Harmon

Date 5-8-20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: GFPC

Batch ID: 1994400

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
1204555327	MB	JXK3	PIC9D	MAY-08-20 08:55:04	DONE	25mm Filter	01-JUN-19 00:00
1204555328	DUP	JXK3	PIC10A	MAY-08-20 08:55:08	DONE	25mm Filter	01-JUN-19 00:00
1204555329	LCS	JXK3	PIC10C	MAY-08-20 08:55:12	DONE	25mm Filter	01-JUN-19 00:00
510382001	SAMPLE	JXK3	PIC6C	MAY-08-20 08:55:15	DONE	25mm Filter	01-JUN-19 00:00
510535001	SAMPLE	JXK3	PIC7A	MAY-08-20 08:55:23	DONE	25mm Filter	01-JUN-19 00:00
510535002	SAMPLE	JXK3	PIC7B	MAY-08-20 08:55:25	DONE	25mm Filter	01-JUN-19 00:00
510535003	SAMPLE	JXK3	PIC7C	MAY-08-20 08:55:30	DONE	25mm Filter	01-JUN-19 00:00
510535004	SAMPLE	JXK3	PIC8A	MAY-08-20 08:55:34	DONE	25mm Filter	01-JUN-19 00:00
510535005	SAMPLE	JXK3	PIC9A	MAY-08-20 08:55:38	DONE	25mm Filter	01-JUN-19 00:00
510535006	SAMPLE	JXK3	PIC9B	MAY-08-20 08:55:42	DONE	25mm Filter	01-JUN-19 00:00
510535007	SAMPLE	JXK3	PIC9C	MAY-08-20 08:55:48	DONE	25mm Filter	01-JUN-19 00:00

Lucas Cell Raw Data

Batch 1992354 Check-list

This check-list was completed on 11-MAY-20 by Lyndsey Pace

This batch was reviewed by Elizabeth Krouse on 09-MAY-20, Gregory Ramsay on 11-MAY-20 and Lyndsey Pace on 11-MAY-20.

Batch ID:
1992354

Product:
LUC26RAL

Description: Lucas Cell Radium 226
GL-RAD-A-008

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the matrix spike (MS/MSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-226 in Liquid

Batch ID: 1992354
Analyst: Michael Hance (MXH8)
Method: EPA 903.1 Modified
Lab SOP: GL-RAD-A-008 REV# 15
Instrument: GFC-2525244

Due Dates for Lab: 12-MAY-2020 **Package:** **SDG:** 14-MAY-2020

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1204550967	Radium-226 SPIKE	1715-E	.1	mL
MS	1204550966	Radium-226 SPIKE	1715-E	.1	mL

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	End Degas (date)	CELL #	End Transfer (date)	Start Count Time (date)	Background Counts	Total Counts
1	509722001	05-MAY-2020	1	500	05/05/20 13:20	705	05/08/20 07:35	05/08/20 10:35	1	15
2	509722002	05-MAY-2020	1	500	05/05/20 13:20	807	05/08/20 07:35	05/08/20 10:35	1	3
3	509722003	05-MAY-2020	1	500	05/05/20 13:20	101	05/08/20 08:10	05/08/20 11:12	1	13
4	510382001	05-MAY-2020	1	500	05/05/20 13:20	201	05/08/20 08:10	05/08/20 11:12	3	26
5	510535001	05-MAY-2020	1	500	05/05/20 13:20	306	05/08/20 08:10	05/08/20 11:12	1	27
6	510535002	05-MAY-2020	1	500	05/05/20 13:20	406	05/08/20 08:10	05/08/20 11:12	3	21
7	510535003	05-MAY-2020	1	500	05/05/20 13:20	501	05/08/20 08:10	05/08/20 11:12	1	22
8	510535004	05-MAY-2020	1	500	05/05/20 13:20	603	05/08/20 08:10	05/08/20 11:11	3	28
9	510535005	05-MAY-2020	1	500	05/05/20 13:20	706	05/08/20 08:10	05/08/20 11:11	5	31
10	510535006	05-MAY-2020	1	500	05/05/20 13:20	806	05/08/20 08:10	05/08/20 11:11	2	7
11	510535007	05-MAY-2020	1	500	05/05/20 13:20	106	05/08/20 08:40	05/08/20 11:44	1	8
12	1204550964 MB	05-MAY-2020	1	500	05/05/20 13:20	207	05/08/20 08:40	05/08/20 11:44	4	10
13	1204550965 DUP (509722001)	05-MAY-2020	1	500	05/05/20 13:20	307	05/08/20 08:40	05/08/20 11:44	3	16
14	1204550966 MS (509722001)	05-MAY-2020	1	500	05/05/20 13:20	404	05/08/20 08:40	05/08/20 12:31	1	545
15	1204550967 LCS	05-MAY-2020	1	500	05/05/20 13:20	601	05/08/20 08:40	05/08/20 11:43	1	689

Reagent/Solvent Lot ID	Description	Amount	Comments:
			Spike Pipet ID: RAD-RA226-2766953 Bkg Count Time: 30 Minutes Sample Count Time: 30 Minutes Data Entry Date2: 05-MAY-2020 00:00

Radium-226 Liquid

Filename : RA226.XLS
 File type : Excel
 Version # : 1.3.2

Batch : 1992354
 Analyst : MIC02086
 Prep Date : 5/5/2020
 Ra-226 Method Uncertainty : 0.073648

Procedure Code : LUC26RAL
 Parmname : Radium-226
 Required MDA : 1 pCi/L
 Halfife of Ra-226 : 1600 years
 Ra-226 Abundance : 1.00
 Halfife of Rn-222 : 3.8235 days

Batch counted on : LUCAS CELL DETECTOR
 BKG Count time : 30 min

Sample Characteristics					Count Raw Data						Background	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Cell Number	Counting Time (min.)	Gross Counts	Gross CPM	Background Counts	Background CPM	Count Time (min.)	Cell Efficiency (cpm/dpm)
1	509722001.1	0.5000	2.0256E-05	4/15/2020 11:40	705	30	15	0.500	1	0.033	30	1.8190
2	509722002.1	0.5000	2.0256E-05	4/15/2020 11:45	807	30	3	0.100	1	0.033	30	1.4400
3	509722003.1	0.5000	2.0256E-05	4/15/2020 11:25	101	30	13	0.433	1	0.033	30	1.6775
4	510382001.1	0.5000	2.0256E-05	4/28/2020 11:00	201	30	26	0.867	3	0.100	30	1.8130
5	510535001.1	0.5000	2.0256E-05	4/28/2020 10:56	306	30	27	0.900	1	0.033	30	1.8401
6	510535002.1	0.5000	2.0256E-05	4/28/2020 14:01	406	30	21	0.700	3	0.100	30	1.7190
7	510535003.1	0.5000	2.0256E-05	4/28/2020 8:31	501	30	22	0.733	1	0.033	30	1.9440
8	510535004.1	0.5000	2.0256E-05	4/28/2020 8:31	603	30	28	0.933	3	0.100	30	2.0370
9	510535005.1	0.5000	2.0256E-05	4/28/2020 19:10	706	30	31	1.033	5	0.167	30	1.8320
10	510535006.1	0.5000	2.0256E-05	4/28/2020 12:30	806	30	7	0.233	2	0.067	30	1.8350
11	510535007.1	0.5000	2.0256E-05	4/28/2020 7:25	106	30	8	0.267	1	0.033	30	2.0437
12	1204550964.1	0.5000	2.0256E-05	5/5/2020 0:00	207	30	10	0.333	4	0.133	30	1.9650
13	1204550965.1	0.5000	2.0256E-05	4/15/2020 11:40	307	30	16	0.533	3	0.100	30	1.4343
14	1204550966.1	0.5000	2.0256E-05	4/15/2020 11:40	404	30	545	18.167	1	0.033	30	1.4090
15	1204550967.1	0.5000	2.0256E-05	5/5/2020 0:00	601	30	689	22.967	1	0.033	30	1.9070

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-008
 Instrument SOP: GL-RAD-I-007

Cell Efficiency Error (%)	Cell Calibration Date	Cell Calibration Due Date	De-Gas Date/Time	Rn-222 Ingrow End Date/Time	Count Start Date/Time	Rn-222 Corrections			Ra-226 Decay
						De-Gas to Ingrowth	Ingrowth to Count	During Count	
4.200%	11/1/2019	10/31/2020	5/5/2020 13:20	5/8/2020 7:35	5/8/2020 10:35	0.394	0.978	1.002	1.000
7.500%	3/31/2020	3/31/2021	5/5/2020 13:20	5/8/2020 7:35	5/8/2020 10:35	0.394	0.978	1.002	1.000
5.924%	5/1/2020	4/30/2021	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:12	0.396	0.977	1.002	1.000
8.000%	8/1/2019	7/31/2020	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:12	0.396	0.977	1.002	1.000
6.024%	1/20/2020	12/31/2020	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:12	0.396	0.977	1.002	1.000
3.600%	3/1/2020	1/31/2021	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:12	0.396	0.977	1.002	1.000
2.200%	6/1/2019	5/31/2020	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:12	0.396	0.977	1.002	1.000
8.000%	7/1/2019	6/30/2020	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:11	0.396	0.977	1.002	1.000
0.500%	11/1/2019	10/31/2020	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:11	0.396	0.977	1.002	1.000
3.200%	3/31/2020	3/31/2021	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:11	0.396	0.977	1.002	1.000
5.285%	5/1/2020	4/30/2021	5/5/2020 13:20	5/8/2020 8:40	5/8/2020 11:44	0.399	0.977	1.002	1.000
4.300%	8/1/2019	7/31/2020	5/5/2020 13:20	5/8/2020 8:40	5/8/2020 11:44	0.399	0.977	1.002	1.000
1.764%	1/20/2020	12/31/2020	5/5/2020 13:20	5/8/2020 8:40	5/8/2020 11:44	0.399	0.977	1.002	1.000
2.400%	3/1/2020	1/31/2021	5/5/2020 13:20	5/8/2020 8:40	5/8/2020 12:31	0.399	0.971	1.002	1.000
4.600%	7/1/2019	6/30/2020	5/5/2020 13:20	5/8/2020 8:40	5/8/2020 11:43	0.399	0.977	1.002	1.000

- Notes:
 1 - Results are decay corrected to Sample Date/Time
 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : 1715-E
Spike Exp Date : 6/18/2020
Spike Activity (dpm/ml): 300.31
Spike Volume Added: 0.10

LCS S/N : 1715-E
LCS Exp Date : 6/18/2020
LCS Activity (dpm/ml): 300.31
LCS Volume Added: 0.10

Results Pos.	Decision	Critical	Required	Sample Act.		Net Count	Net Count	2 SIGMA	2 SIGMA	Sample	Sample	RPD	RER	Nominal	Recovery
	Level	Level	MDA	MDA	Conc.	Error	Rate	Rate Error	Counting							Total Prop.	QC	Type	pCi/L	pCi/L
	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	CPM	CPM	Uncertainty	Uncertainty						
1	0.1416	0.1000	1	0.3289	0.6016	28.88%	0.4667	0.1333	0.3369	0.3514	SAMPLE				
2	0.1789	0.1263	1	0.4154	0.1086	100.28%	0.0667	0.0667	0.2128	0.2140	SAMPLE				
3	0.1526	0.1077	1	0.3543	0.5556	31.74%	0.4000	0.1247	0.3395	0.3548	SAMPLE				
4	0.2445	0.1726	1	0.4737	0.9852	24.74%	0.7667	0.1795	0.4521	0.4985	SAMPLE				
5	0.1391	0.0982	1	0.3230	1.0973	21.22%	0.8667	0.1764	0.4377	0.4832	SAMPLE				
6	0.2578	0.1820	1	0.4996	0.8132	27.45%	0.6000	0.1633	0.4338	0.4531	SAMPLE				
7	0.1316	0.0929	1	0.3057	0.8389	22.94%	0.7000	0.1599	0.3755	0.3962	SAMPLE				
8	0.2176	0.1536	1	0.4216	0.9530	23.66%	0.8333	0.1856	0.4160	0.4629	SAMPLE				
9	0.3123	0.2205	1	0.5681	1.1020	23.08%	0.8667	0.2000	0.4985	0.5233	SAMPLE				
10	0.1972	0.1392	1	0.4054	0.2116	60.09%	0.1667	0.1000	0.2488	0.2510	SAMPLE				
11	0.1245	0.0879	1	0.2892	0.2646	43.18%	0.2333	0.1000	0.2222	0.2271	SAMPLE				
12	0.2590	0.1829	1	0.4837	0.2358	62.51%	0.2000	0.1247	0.2883	0.2909	MB				
13	0.3074	0.2170	1	0.5956	0.7001	33.58%	0.4333	0.1453	0.4601	0.4717	509722001.1	DUP	15.1%		
14	0.1817	0.1283	1	0.4220	29.9980	4.92%	18.1333	0.7789	2.5255	5.2077	509722001.1	MS		27.0555	108.7%
15	0.1334	0.0942	1	0.3099	27.8617	5.98%	22.9333	0.8756	2.0850	5.1800		LCS		27.0548	103.0%

Continuing Calibration Data



Ludlum Alpha Scintillation Counter Checks for 08-MAY-2020

Short Name	Parmname	Run Time	Count Time	Counts	CPM	Stdev	Status	Comments
LUCAS1	EFF	07:10	1	1.25E+05	125022	-1.53		
LUCAS2	EFF	07:33	1	1.37E+05	136623	2.47		
LUCAS3	EFF	07:26	1	1.38E+05	137816	1.64		
LUCAS4	EFF	07:25	1	1.30E+05	129776	0.23		
LUCAS5	EFF	07:22	1	1.32E+05	132448	-0.04		
LUCAS6	EFF	07:21	1	1.34E+05	134434	-0.91		
LUCAS7	EFF	07:18	1	1.37E+05	136608	1.1		
LUCAS8	EFF	07:15	1	1.34E+05	134205	-1.08		

Reviewed by: 
Elizabeth Krouse

Date: 08-MAY-20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: LUCAS CELL DETECTOR

Batch ID: 1992354

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
509722001	SAMPLE	MXH8	LUCAS7	MAY-08-20 10:35:00	DONE	Lucas Cell	01-NOV-19 00:00
509722002	SAMPLE	MXH8	LUCAS8	MAY-08-20 10:35:00	DONE	Lucas Cell	31-MAR-20 00:00
510535004	SAMPLE	MXH8	LUCAS6	MAY-08-20 11:11:00	DONE	Lucas Cell	01-JUL-19 00:00
510535005	SAMPLE	MXH8	LUCAS7	MAY-08-20 11:11:00	DONE	Lucas Cell	01-NOV-19 00:00
510535006	SAMPLE	MXH8	LUCAS8	MAY-08-20 11:11:00	DONE	Lucas Cell	31-MAR-20 00:00
509722003	SAMPLE	MXH8	LUCAS1	MAY-08-20 11:12:00	DONE	Lucas Cell	01-MAY-20 00:00
510382001	SAMPLE	MXH8	LUCAS2	MAY-08-20 11:12:00	DONE	Lucas Cell	01-AUG-19 00:00
510535001	SAMPLE	MXH8	LUCAS3	MAY-08-20 11:12:00	DONE	Lucas Cell	20-JAN-20 00:00
510535002	SAMPLE	MXH8	LUCAS4	MAY-08-20 11:12:00	DONE	Lucas Cell	01-MAR-20 00:00
510535003	SAMPLE	MXH8	LUCAS5	MAY-08-20 11:12:00	DONE	Lucas Cell	01-JUN-19 00:00
1204550967	LCS	MXH8	LUCAS6	MAY-08-20 11:43:00	DONE	Lucas Cell	01-JUL-19 00:00
510535007	SAMPLE	MXH8	LUCAS1	MAY-08-20 11:44:00	DONE	Lucas Cell	01-MAY-20 00:00
1204550964	MB	MXH8	LUCAS2	MAY-08-20 11:44:00	DONE	Lucas Cell	01-AUG-19 00:00
1204550965	DUP	MXH8	LUCAS3	MAY-08-20 11:44:00	DONE	Lucas Cell	20-JAN-20 00:00
1204550966	MS	MXH8	LUCAS4	MAY-08-20 12:31:00	DONE	Lucas Cell	01-MAR-20 00:00



Environmental Laboratory
 1232 Haco Drive
 Lansing
 Michigan, 48910

CHAIN OF CUSTODY


Page 1 of 1

Phone: (517)702-6372

Lab Work Order Number L004070

Client Name BWL - Erickson Station		Project Name Erickson GMP		Requested Analyses							Requested Turn Around		
Client Contact Cheryl Louden		Project Number [none]		Metals, Hg	TSS	TDS, Cl-, SO4-, F-	Radium 226	Radium 228	Field Data				Rush requests subject to additional charge. Rush requests subject to lab approval.
Address 3725 S. Canal		Project Description											
City Lansing		PO Number											
State/Zip MI, 48917		Shipped By											
Phone (517) 702-6396	Fax (517) 702-6373	Tracking Number											
Sampler Marc Wahrer													

Sample Name or Field ID	Sampled Date	Sampled Time	Sample Type Grab/Composite	Matrix Code	Container Count	Preservation Code										Sample	Comments	
						b	a											
MW-1	04/28/2020	10:56	G	GW	5	1	1	1	1	1	1	X						
MW-2	04/28/2020	14:01	G	GW	5	1	1	1	1	1	1	X						
MW-4	04/28/2020	08:31	G	GW	5	1	1	1	1	1	1	X						
MW-4 Duplicate - Field Duplicate	04/28/2020	08:31	G	GW	5	1	1	1	1	1	1							
MW-5	04/28/2020	19:10	G	GW	5	1	1	1	1	1	1	X						
MW-6	04/28/2020	12:30	G	GW	5	1	1	1	1	1	1	X						
Field Blank	04/28/2020	07:25	G	GW	5	1	1	1	1	1	1							

Relinquished By  04/29/2020 08:37:36 am SigPlus1	Date/Time 4/29/2020 7:25	Received By Kelly Gleason	Date/Time 4/29/2020 7:25	Comments
Relinquished By	Date/Time	Received By	Date/Time	
Relinquished By	Date/Time	Received By	Date/Time	
Cooler Numbers and Temperatures Default Cooler at 1 °C				



Lansing Board of Water and Light
Environmental Services Laboratory
1232 Haco Dr.
Lansing, Michigan 48901

13 August 2020

BWL - Erickson Station
Attn: Cheryl Louden
3725 S. Canal
Lansing, MI 48917

Project: Erickson GMP

Dear Cheryl Louden,

Enclosed is a copy of the laboratory report for the following work order(s) received by Lansing Board of Water and Light Environmental Services Laboratory:

Work Order
L005063

Received
5/27/2020 6:25:00AM

Account Number
30926 10021

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

Sincerely,

A handwritten signature in blue ink that reads "Jennifer Caporale".

Jennifer Caporale, Supervisor



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 08/13/2020

Sample Name: MW-1

Lab #: L005063-01 Ground Water

Collected: 26-May-20 12:56

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory		Analysis Date/Time	By	Method	Notes
	Result	Limit	Units		Limit					
Conductivity	1200	1.0	uS/cm	1		26-May-20 12:56	maw	SM 2510B		
Dissolved oxygen	ND	0.100	mg/L	1		26-May-20 12:56	maw	FIELD		
Gallons Purged	3.00		Gallons	1		26-May-20 12:56	maw	FIELD		
Oxidation Reduction Potential	-28.50	-999.0	mV	1		26-May-20 12:56	maw	FIELD		
pH	6.6	7.0	pH Units	1		26-May-20 12:56	maw	SM 4500H+B		
Static Head Measurement	13.7		Feet	1		26-May-20 12:56	maw	FIELD		
Temperature	15		°C	1		26-May-20 12:56	maw	SM 2550B		
Turbidity	40	0.10	NTU	1		26-May-20 12:56	maw	SM 2130B		

Sample Name: MW-2

Lab #: L005063-02 Ground Water

Collected: 26-May-20 16:27

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory		Analysis Date/Time	By	Method	Notes
	Result	Limit	Units		Limit					
Conductivity	1600	1.0	uS/cm	1		26-May-20 16:27	maw	SM 2510B		
Dissolved oxygen	ND	0.100	mg/L	1		26-May-20 16:27	maw	FIELD		
Gallons Purged	3.00		Gallons	1		26-May-20 16:27	maw	FIELD		
Oxidation Reduction Potential	36.00	-999.0	mV	1		26-May-20 16:27	maw	FIELD		
pH	6.5	7.0	pH Units	1		26-May-20 16:27	maw	SM 4500H+B		
Static Head Measurement	17.6		Feet	1		26-May-20 16:27	maw	FIELD		
Temperature	14		°C	1		26-May-20 16:27	maw	SM 2550B		
Turbidity	8.3	0.10	NTU	1		26-May-20 16:27	maw	SM 2130B		



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 08/13/2020

Sample Name: MW-4

Lab #: L005063-03 Ground Water

Collected: 26-May-20 10:46

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	890	1.0	uS/cm	1		26-May-20 10:46	maw	SM 2510B	
Dissolved oxygen	0.290	0.100	mg/L	1		26-May-20 10:46	maw	FIELD	
Gallons Purged	3.00		Gallons	1		26-May-20 10:46	maw	FIELD	
Oxidation Reduction Potential	-45.20	-999.0	mV	1		26-May-20 10:46	maw	FIELD	
pH	7.1	7.0	pH Units	1		26-May-20 10:46	maw	SM 4500H+B	
Static Head Measurement	14.6		Feet	1		26-May-20 10:46	maw	FIELD	
Temperature	14		°C	1		26-May-20 10:46	maw	SM 2550B	
Turbidity	0.26	0.10	NTU	1		26-May-20 10:46	maw	SM 2130B	

Sample Name: MW-5

Lab #: L005063-04 Ground Water

Collected: 26-May-20 17:05

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	1900	1.0	uS/cm	1		26-May-20 17:05	maw	SM 2510B	
Dissolved oxygen	0.650	0.100	mg/L	1		26-May-20 17:05	maw	FIELD	
Gallons Purged	5.00		Gallons	1		26-May-20 17:05	maw	FIELD	
Oxidation Reduction Potential	28.70	-999.0	mV	1		26-May-20 17:05	maw	FIELD	
pH	7.0	7.0	pH Units	1		26-May-20 17:05	maw	SM 4500H+B	
Static Head Measurement	16.2		Feet	1		26-May-20 17:05	maw	FIELD	
Temperature	14		°C	1		26-May-20 17:05	maw	SM 2550B	
Turbidity	70	0.10	NTU	1		26-May-20 17:05	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 08/13/2020

Sample Name: MW-6

Lab #: L005063-05 Ground Water

Collected: 26-May-20 14:51

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	900	1.0	uS/cm	1		26-May-20 14:51	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		26-May-20 14:51	maw	FIELD	
Gallons Purged	3.00		Gallons	1		26-May-20 14:51	maw	FIELD	
Oxidation Reduction Potential	102.4	-999.0	mV	1		26-May-20 14:51	maw	FIELD	
pH	6.4	7.0	pH Units	1		26-May-20 14:51	maw	SM 4500H+B	
Static Head Measurement	16.6		Feet	1		26-May-20 14:51	maw	FIELD	
Temperature	14		°C	1		26-May-20 14:51	maw	SM 2550B	
Turbidity	18	0.10	NTU	1		26-May-20 14:51	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 08/13/2020

Approved By:

Jennifer Caporale

Notes and Definitions

AL Action Level (Action Level = Regulatory Limit)
MCL Maximum Contaminant Level
PEL Permissible Exposure Limit (Permissible Exposure Limit = Regulatory Limit)
RPD Relative Percent Difference
OT Odor Threshold
ND Non Detect

All drinking water regulatory limits are MCL's with the exception of Lead and Copper unless otherwise noted.



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ERICKSON GMP

SDG Batch:

14264

Pages 1 - 254



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BOARD OF WATER & LIGHT

PROJECT: ERICKSON GMP

SDG Batch:
14264.01

Prepared by:
Merit Laboratories, Inc.

July 29, 2020

Inorganics Inventory Sheet - SDG: S14264

Laboratory Name: Merit Laboratories, Inc.
City / State: East Lansing, MI
Sample Delivery Group: S14264.01 - .07

Deliverable	References		Pages		Checklist	
	Form	CLP	From	To	Lab	Audit
1. Inventory Sheet (not numbered)	This	DC-2			<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. SDG Case Narrative			1	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Analytical Summary Report			3	34	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. ICP/MS Metals Data			35	150		
Sequence / Injection Log		F.0			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Sheet		F. I			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initial Calibration and Calibration Verification		F. IIA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRDL Standards		F. IIB			<input type="checkbox"/>	<input type="checkbox"/>
Blanks		F. III			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Interference Check Sample		F. IVB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		F. VA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Digest Spike Sample Recovery		F. VB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duplicates		F. VI			<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		F. VII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Serial Dilutions		F. VIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		F. XIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP/MS Tune		F. XIV			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Internal Standard Relative Intensity Summary		F. XV			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument Detection Limits (IDL) & MDLs		F. IX			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Linear Ranges		F. XI			<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP/MS Raw Data					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation / Digestion Log		F. XII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Mercury Data			151	167		
Sequence / Injection Log		F.0			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Sheet		F. I			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initial Calibration and Calibration Verification		F. IIA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRDL Standards		F. IIB			<input type="checkbox"/>	<input type="checkbox"/>
Blanks		F. III			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		F. VA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Digest Spike Sample Recovery		F. VB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duplicates		F. VI			<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		F. VII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		F. XIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Mercury Cold Vapor Raw Data					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation / Digestion Log					<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Ion Chromatography Data			168	246		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Calibration Curve - data and evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Total Suspended Solids Data			247	248		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>

Inorganics Inventory Sheet - SDG: S14264

Deliverable	References		Pages		Checklist	
	Form	CLP	From	To	Lab	Audit
8. Total Dissolved Solids Data			249	249		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Shipping / Receiving Documents			250	254		
Chain-of-Custody					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample log-in sheet					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample Receipt					<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Subcontracted Analysis Report						
GEL Laboratories – Radiological Analysis (Total Pages 51)					<input checked="" type="checkbox"/>	<input type="checkbox"/>



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CASE NARRATIVE
CLIENT: BOARD OF WATER & LIGHT
PROJECT: ERICKSON GMP
Merit IDs: S14264.01-S14264.07

- Field Sampling:** Marc Wahrer performed the fieldwork.
- Analytical Bottles:** All bottles were sent with the appropriate preservation in it. Please see the bottle list attached.
- Sample Receiving:** All samples were received by the laboratory (05/27/2020). Dates and signatures can be found on the Chain of Custody Records. The sample receipts specify the actual tags and bottles received and logged into the laboratory “vlims” system.

ANALYSES

- Metals:** All metal analyses were performed according to Method 200.8. The metal digestion was performed according to Method 3015A. The QC requirements were followed for this specific project and method-specified criteria were met. *Outliers:* None
- Mercury:** All mercury QC requirements were met according to the specifications in Method 245.1. *Outliers:* None
- Fluoride:** All fluoride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None
- Chloride:** All chloride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None
- Sulfate:** All Sulfate QC requirements were met according to the specifications in Method 300.0. *Outliers:* None
- Total Suspended Solids:** All total suspended solids QC requirements were met according to the specifications in Method 2540 D. *Outliers:* None
- Total Dissolved Solids:** All total suspended solids QC requirements were met according to the specifications in Method 2540 C. *Outliers:* None
- Radium 226 & 228:** All radiological analysis were subcontracted out to GEL Laboratories. GEL Laboratories analytical report is included.



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Data Reporting:

The analytical reports are reflective of what is on a given Chain-of-Custody record (COC). Merit's IDs were assigned to the samples as they were delivered and accepted by our log-in staff.

"I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness, for other than the condition detailed above. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature."

Barb Ball
QA Officer

07/29/2020

Date



Report ID: S14264.01(02)
Generated on 06/25/2020
Replaces report S14264.01(01) generated on 06/05/2020

Report to
Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX: 517-702-6373
Email: Environmental_Laboratory@LBWL.com

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary
Lab Sample ID(s): S14264.01-S14264.07
Project: Erickson GMP
Collected Date(s): 05/26/2020
Submitted Date/Time: 05/27/2020 11:18
Sampled by: Marc Wahrer
P.O. #:

Table of Contents
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Sample Summary (Page 5)

Maya Murshak
Technical Director



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

Report Narrative

All analyses completed

All metal results are reported as totals.



Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
E300.0	EPA Method 300.0 Revision 2.1
SM2540C	Standard Method 2540 C 2011
SM2540D	Standard Method 2540 D 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007



Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S14264.01	L005063-01 MW-1	Wastewater	05/26/20 12:56
S14264.02	L005063-02 MW-2	Wastewater	05/26/20 16:27
S14264.03	L005063-03 MW-4	Wastewater	05/26/20 10:46
S14264.04	L005063-05 MW-5	Wastewater	05/26/20 17:05
S14264.05	L005063-06 MW-6	Wastewater	05/26/20 14:51
S14264.06	L005063-06 MW-4 Duplicate	Wastewater	05/26/20 10:46
S14264.07	L005063-07 Field Blank	Water	05/26/20 08:05



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S14264.01

Sample Tag: L005063-01 MW-1

Collected Date/Time: 05/26/2020 12:56

Matrix: Wastewater

COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 09:53, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 09:04, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	52	10	0.13	mg/L	10	16887-00-6	
Sulfate	69	10	1.0	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	794	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/27/20 18:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	45	3	1	mg/L	2.78		

Metals

Method: E200.8, Run Date: 05/29/20 13:05, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	180	2.5	0.433	mg/L	50	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:16, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	0.005	0.002	0.000650	mg/L	5	7440-38-2	
Barium	0.150	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	0.27	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	
Lithium*	0.023	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000350	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S14264.01 (continued)

Sample Tag: L005063-01 MW-1

Method: E200.8, Run Date: 05/28/20 20:16, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:38, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 06/19/20 09:26, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S14264.02

Sample Tag: L005063-02 MW-2

Collected Date/Time: 05/26/2020 16:27

Matrix: Wastewater

COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 09:17, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	68	10	0.13	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 05/28/20 10:06, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 12:55, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	386	25	2.6	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,180	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/27/20 18:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	1	3	1	mg/L	1.00		b

Metals

Method: E200.8, Run Date: 05/29/20 13:10, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	256	2.5	0.433	mg/L	50	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:18, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000650	mg/L	5	7440-38-2	
Barium	0.043	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	3.38	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S14264.02 (continued)

Sample Tag: L005063-02 MW-2

Method: E200.8, Run Date: 05/28/20 20:18, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	
Lithium*	0.047	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	0.008	0.005	0.000350	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:40, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 06/19/20 09:26, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S14264.03

Sample Tag: L005063-03 MW-4

Collected Date/Time: 05/26/2020 10:46

Matrix: Wastewater

COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 10:19, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 09:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	72	10	0.13	mg/L	10	16887-00-6	
Sulfate	57	10	1.0	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	566	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/27/20 18:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	1	3	1	mg/L	1.00		b

Metals

Method: E200.8, Run Date: 05/29/20 13:12, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	115	2.5	0.433	mg/L	50	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:20, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	0.006	0.002	0.000650	mg/L	5	7440-38-2	
Barium	0.165	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	0.06	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	
Lithium*	0.009	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000350	mg/L	5	7439-98-7	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S14264.03 (continued)

Sample Tag: L005063-03 MW-4

Method: E200.8, Run Date: 05/28/20 20:20, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:42, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 06/19/20 09:59, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S14264.04

Sample Tag: L005063-05 MW-5

Collected Date/Time: 05/26/2020 17:05

Matrix: Wastewater

COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 09:42, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	82	10	0.13	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 05/28/20 10:31, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 13:07, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	930	100	10	mg/L	100	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,770	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/27/20 18:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	21	3	1	mg/L	1.11		

Metals

Method: E200.8, Run Date: 05/29/20 13:15, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	320	2.5	0.433	mg/L	50	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:22, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	0.002	0.002	0.000650	mg/L	5	7440-38-2	
Barium	0.056	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	5.19	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S14264.04 (continued)

Sample Tag: L005063-05 MW-5

Method: E200.8, Run Date: 05/28/20 20:22, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.051	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	0.051	0.005	0.000350	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:47, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 06/19/20 09:59, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Lab Sample ID: S14264.05

Sample Tag: L005063-06 MW-6

Collected Date/Time: 05/26/2020 14:51

Matrix: Wastewater

COC Reference: 124126

Sample Containers

Table with 6 columns: #, Type, Preservative(s), Refrigerated?, Arrival Temp. (C), Thermometer #. Rows include 1L Plastic and 125ml Plastic containers.

Extraction / Prep.

Table with 6 columns: Parameter, Result, Method, Run Date, Analyst, Flags. Rows include Mercury Digestion and Metal Digestion.

Inorganics

Method: E300.0, Run Date: 05/28/20 10:44, Analyst: JDP

Table with 8 columns: Parameter, Result, RL, MDL, Units, Dilution, CAS#, Flags. Row for Fluoride (Undistilled).

Method: E300.0, Run Date: 05/28/20 09:55, Analyst: JDP

Table with 8 columns: Parameter, Result, RL, MDL, Units, Dilution, CAS#, Flags. Rows for Chloride and Sulfate.

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Table with 8 columns: Parameter, Result, RL, MDL, Units, Dilution, CAS#, Flags. Row for Total Dissolved Solids.

Method: SM2540D, Run Date: 05/27/20 18:15, Analyst: ASB

Table with 8 columns: Parameter, Result, RL, MDL, Units, Dilution, CAS#, Flags. Row for Total Suspended Solids.

Metals

Method: E200.8, Run Date: 05/29/20 13:17, Analyst: JRH

Table with 8 columns: Parameter, Result, RL, MDL, Units, Dilution, CAS#, Flags. Row for Calcium*.

Method: E200.8, Run Date: 05/28/20 20:27, Analyst: JRH

Table with 8 columns: Parameter, Result, RL, MDL, Units, Dilution, CAS#, Flags. Rows for Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Lead, Lithium*, Molybdenum, and Selenium.



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S14264.05 (continued)

Sample Tag: L005063-06 MW-6

Method: E200.8, Run Date: 05/28/20 20:27, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:49, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 06/19/20 09:59, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S14264.06

Sample Tag: L005063-06 MW-4 Duplicate

Collected Date/Time: 05/26/2020 10:46

Matrix: Wastewater

COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 10:57, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 10:08, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	72	10	0.13	mg/L	10	16887-00-6	
Sulfate	56	10	1.0	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	562	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/27/20 18:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	1	3	1	mg/L	1.00		b

Metals

Method: E200.8, Run Date: 05/29/20 13:19, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	114	2.5	0.433	mg/L	50	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:29, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	0.007	0.002	0.000650	mg/L	5	7440-38-2	
Barium	0.168	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	0.06	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	
Lithium*	0.009	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	0.005	0.005	0.000350	mg/L	5	7439-98-7	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S14264.06 (continued)

Sample Tag: L005063-06 MW-4 Duplicate

Method: E200.8, Run Date: 05/28/20 20:29, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:51, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 06/19/20 09:59, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S14264.07

Sample Tag: L005063-07 Field Blank

Collected Date/Time: 05/26/2020 08:05

Matrix: Water

COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 11:10, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	0.5	0.06	mg/L	2.5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 10:21, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	2.5	0.03	mg/L	2.5	16887-00-6	
Sulfate	Not detected	2.5	0.26	mg/L	2.5	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	Not detected	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/29/20 12:27, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 05/29/20 12:58, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	Not detected	0.5	0.0433	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:31, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000650	mg/L	5	7440-38-2	
Barium	Not detected	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	Not detected	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	
Lithium*	Not detected	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000350	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S14264.07 (continued)

Sample Tag: L005063-07 Field Blank

Method: E200.8, Run Date: 05/28/20 20:31, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:53, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 06/19/20 09:59, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Quality Control Cover Page

Report ID: S14264.01(02)
Report Date: 06/25/2020
Project: Erickson GMP
Lab Sample ID(s): S14264.01-S14264.07

Report to:

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Sample ID	Sample Tag	Collected	Matrix	Analysis Departments
S14264.01	L005063-01 MW-1	05/26/2020 12:56	Wastewater	Inorganics, Metals
S14264.02	L005063-02 MW-2	05/26/2020 16:27	Wastewater	Inorganics, Metals
S14264.03	L005063-03 MW-4	05/26/2020 10:46	Wastewater	Inorganics, Metals
S14264.04	L005063-05 MW-5	05/26/2020 17:05	Wastewater	Inorganics, Metals
S14264.05	L005063-06 MW-6	05/26/2020 14:51	Wastewater	Inorganics, Metals
S14264.06	L005063-06 MW-4 Duplicate	05/26/2020 10:46	Wastewater	Inorganics, Metals
S14264.07	L005063-07 Field Blank	05/26/2020 08:05	Water	Inorganics, Metals

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager



Quality Control Report

Report ID: QC-S14264-01
Generated on 07/09/2020

Report to
Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: 517-702-6372 FAX: 517-702-6373

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S14264.01-S14264.07
Project: Erickson GMP
Submitted Date/Time: 05/27/2020 11:18
Sampled by: Marc Wahrer
P.O. #:

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-8)
Prep Batch Summary (Pages 9-12)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S14264.01

Sample Tag: L005063-01 MW-1

Collected Date/Time: 05/26/2020 12:56

Matrix: Wastewater

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	05/28/20 09:04	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 09:53	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 09:04	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B	TSS200527B	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 13:05	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:38	HG2-HG3-20-0601A	AHGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S14264.02

Sample Tag: L005063-02 MW-2

Collected Date/Time: 05/26/2020 16:27

Matrix: Wastewater

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	05/28/20 09:17	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 10:06	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 12:55	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B	TSS200527B	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 13:10	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:40	HG2-HG3-20-0601A	AHGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S14264.03

Sample Tag: L005063-03 MW-4

Collected Date/Time: 05/26/2020 10:46

Matrix: Wastewater

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	05/28/20 09:30	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 10:19	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 09:30	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B	TSS200527B	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 13:12	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:42	HG2-HG3-20-0601A	AHGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S14264.04

Sample Tag: L005063-05 MW-5

Collected Date/Time: 05/26/2020 17:05

Matrix: Wastewater

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	05/28/20 09:42	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 10:31	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 13:07	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B	TSS200527B	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 13:15	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:47	HG2-HG3-20-0601A	AHGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S14264.05

Sample Tag: L005063-06 MW-6

Collected Date/Time: 05/26/2020 14:51

Matrix: Wastewater

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	05/28/20 09:55	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 10:44	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 09:55	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B	TSS200527B	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 13:17	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:49	HG2-HG3-20-0601A	AHGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S14264.06

Sample Tag: L005063-06 MW-4 Duplicate

Collected Date/Time: 05/26/2020 10:46

Matrix: Wastewater

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	05/28/20 10:08	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 10:57	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 10:08	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B	TSS200527B	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 13:19	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:51	HG2-HG3-20-0601A	AHGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S14264.07

Sample Tag: L005063-07 Field Blank

Collected Date/Time: 05/26/2020 08:05

Matrix: Water

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	05/28/20 10:21	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 11:10	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 10:21	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/29/20 12:27	TSS200529	TSS200529	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 12:58	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:53	HG2-HG3-20-0601A	AHGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: CL200528-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Chloride	E300.0	05/28/20 09:04	CL200528-W1-A
S14264.02	Chloride	E300.0	05/28/20 09:17	CL200528-W1-A
S14264.03	Chloride	E300.0	05/28/20 09:30	CL200528-W1-A
S14264.04	Chloride	E300.0	05/28/20 09:42	CL200528-W1-A
S14264.05	Chloride	E300.0	05/28/20 09:55	CL200528-W1-A
S14264.06	Chloride	E300.0	05/28/20 10:08	CL200528-W1-A
S14264.07	Chloride	E300.0	05/28/20 10:21	CL200528-W1-A

Inorganics, Prep Batch ID: FL200528-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Fluoride (Undistilled)	E300.0	05/28/20 09:53	FL200528-W1-B
S14264.02	Fluoride (Undistilled)	E300.0	05/28/20 10:06	FL200528-W1-B
S14264.03	Fluoride (Undistilled)	E300.0	05/28/20 10:19	FL200528-W1-B
S14264.04	Fluoride (Undistilled)	E300.0	05/28/20 10:31	FL200528-W1-B
S14264.05	Fluoride (Undistilled)	E300.0	05/28/20 10:44	FL200528-W1-B
S14264.06	Fluoride (Undistilled)	E300.0	05/28/20 10:57	FL200528-W1-B
S14264.07	Fluoride (Undistilled)	E300.0	05/28/20 11:10	FL200528-W1-B

Inorganics, Prep Batch ID: SFT200528-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Sulfate	E300.0	05/28/20 09:04	SFT200528-W1-A
S14264.02	Sulfate	E300.0	05/28/20 12:55	SFT200528-W1-A
S14264.03	Sulfate	E300.0	05/28/20 09:30	SFT200528-W1-A
S14264.04	Sulfate	E300.0	05/28/20 13:07	SFT200528-W1-A
S14264.05	Sulfate	E300.0	05/28/20 09:55	SFT200528-W1-A
S14264.06	Sulfate	E300.0	05/28/20 10:08	SFT200528-W1-A
S14264.07	Sulfate	E300.0	05/28/20 10:21	SFT200528-W1-A

Inorganics, Prep Batch ID: TDS200601A

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A
S14264.02	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A
S14264.03	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A
S14264.04	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A
S14264.05	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A
S14264.06	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A
S14264.07	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A

Inorganics, Prep Batch ID: TSS200527B

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B
S14264.02	Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B
S14264.03	Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B
S14264.04	Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B
S14264.05	Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B
S14264.06	Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TSS200529

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.07	Total Suspended Solids	SM2540D	05/29/20 12:27	TSS200529

Metals, Prep Batch ID: HGD-052920-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Mercury	E245.1	06/01/20 16:38	HG2-HG3-20-0601A
S14264.02	Mercury	E245.1	06/01/20 16:40	HG2-HG3-20-0601A
S14264.03	Mercury	E245.1	06/01/20 16:42	HG2-HG3-20-0601A
S14264.04	Mercury	E245.1	06/01/20 16:47	HG2-HG3-20-0601A
S14264.05	Mercury	E245.1	06/01/20 16:49	HG2-HG3-20-0601A
S14264.06	Mercury	E245.1	06/01/20 16:51	HG2-HG3-20-0601A
S14264.07	Mercury	E245.1	06/01/20 16:53	HG2-HG3-20-0601A

Metals, Prep Batch ID: MTD-052820-3

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Antimony	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Arsenic	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Barium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Beryllium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Boron	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Cadmium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Calcium	E200.8	05/29/20 13:05	MT5-20-0529A
S14264.01	Chromium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Cobalt	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Lead	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Lithium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Molybdenum	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Selenium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Thallium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.02	Antimony	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Arsenic	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Barium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Beryllium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Boron	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Cadmium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Calcium	E200.8	05/29/20 13:10	MT5-20-0529A
S14264.02	Chromium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Cobalt	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Lead	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Lithium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Molybdenum	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Selenium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Thallium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.03	Antimony	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Arsenic	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Barium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Beryllium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Boron	E200.8	05/28/20 20:20	MT5-20-0528A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-052820-3 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.03	Cadmium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Calcium	E200.8	05/29/20 13:12	MT5-20-0529A
S14264.03	Chromium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Cobalt	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Lead	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Lithium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Molybdenum	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Selenium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Thallium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.04	Antimony	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Arsenic	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Barium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Beryllium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Boron	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Cadmium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Calcium	E200.8	05/29/20 13:15	MT5-20-0529A
S14264.04	Chromium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Cobalt	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Lead	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Lithium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Molybdenum	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Selenium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Thallium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.05	Antimony	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Arsenic	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Barium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Beryllium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Boron	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Cadmium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Calcium	E200.8	05/29/20 13:17	MT5-20-0529A
S14264.05	Chromium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Cobalt	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Lead	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Lithium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Molybdenum	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Selenium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Thallium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.06	Antimony	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Arsenic	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Barium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Beryllium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Boron	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Cadmium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Calcium	E200.8	05/29/20 13:19	MT5-20-0529A
S14264.06	Chromium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Cobalt	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Lead	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Lithium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Molybdenum	E200.8	05/28/20 20:29	MT5-20-0528A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-052820-3 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.06	Selenium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Thallium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.07	Antimony	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Arsenic	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Barium	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Beryllium	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Boron	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Cadmium	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Calcium	E200.8	05/29/20 12:58	MT5-20-0529A
S14264.07	Chromium	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Cobalt	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Lead	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Lithium	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Molybdenum	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Selenium	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Thallium	E200.8	05/28/20 20:31	MT5-20-0528A

Form 0: Sequence Log

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	18:26:15 Thu 28-May-20	Blank	Liquid	
002	18:28:29 Thu 28-May-20	Std-0.0001	Liquid	
003	18:30:43 Thu 28-May-20	Std-0.0005	Liquid	
004	18:32:57 Thu 28-May-20	Std-0.001	Liquid	
005	18:35:11 Thu 28-May-20	Std-0.005	Liquid	
006	18:37:26 Thu 28-May-20	Std-0.02	Liquid	
007	18:39:40 Thu 28-May-20	Std-0.05	Liquid	
008	18:41:54 Thu 28-May-20	Std-0.2	Liquid	
009	18:44:23 Thu 28-May-20	rinse	Liquid	
010	19:06:40 Thu 28-May-20	ICV-0.1	Liquid	ICV
011	19:11:03 Thu 28-May-20	CCV-0.1	Liquid	CCV
012	19:13:54 Thu 28-May-20	rinse	Liquid	
013	19:18:23 Thu 28-May-20	CCB	Liquid	CCB
014	19:21:13 Thu 28-May-20	ICB	Liquid	ICB
015	19:23:28 Thu 28-May-20	BS-0.0001	Liquid	BS
016	19:25:42 Thu 28-May-20	BS-0.0005	Liquid	BS
017	19:30:30 Thu 28-May-20	Solu-AB	Liquid	AB
018	19:32:45 Thu 28-May-20	Solu-AA	Liquid	AA
019	19:37:35 Thu 28-May-20	052820_3 LCS-0.05	Liquid	LCS
020	19:39:49 Thu 28-May-20	Rinse	Liquid	
021	19:42:04 Thu 28-May-20	052820_3 LRB	Liquid	LRB
022	19:52:04 Thu 28-May-20	BS-0.001	Liquid	BS
023	19:55:15 Thu 28-May-20	14291.01 dil	Liquid	S
024	19:57:49 Thu 28-May-20	14291.01s	Liquid	
025	20:00:03 Thu 28-May-20	Rinse	Liquid	
026	20:02:45 Thu 28-May-20	14291.02s	Liquid	
027	20:11:40 Thu 28-May-20	14291.02s	Liquid	S
028	20:13:54 Thu 28-May-20	14291.03s	Liquid	S
029	20:16:08 Thu 28-May-20	14264.01s	Liquid	S
030	20:18:22 Thu 28-May-20	14264.02s	Liquid	S
031	20:20:35 Thu 28-May-20	14264.03s	Liquid	S
032	20:22:49 Thu 28-May-20	14264.04s	Liquid	S
033	20:25:05 Thu 28-May-20	14264.04s	Liquid	DIL
034	20:27:19 Thu 28-May-20	14264.05s	Liquid	S
035	20:29:33 Thu 28-May-20	14264.06s	Liquid	S
036	20:31:47 Thu 28-May-20	14264.07s	Liquid	S
037	20:34:01 Thu 28-May-20	14264.07 MS-0.05	Liquid	MS
038	20:36:15 Thu 28-May-20	14264.07 MSD	Liquid	MSD
039	20:39:55 Thu 28-May-20	CCV2-0.1	Liquid	CCV
040	20:42:46 Thu 28-May-20	Rinse	Liquid	
041	20:47:15 Thu 28-May-20	CCB2	Liquid	CCB

Form 0: Sequence Log

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	12:22:49	Fri 29-May-20 Blank	Liquid	
002	12:24:01	Fri 29-May-20 Std-0.20	Liquid	
003	12:25:13	Fri 29-May-20 Std-0.50	Liquid	
004	12:26:25	Fri 29-May-20 Std-1.0	Liquid	
005	12:27:37	Fri 29-May-20 Std-2.0	Liquid	
006	12:28:48	Fri 29-May-20 Std-5.0	Liquid	
007	12:31:11	Fri 29-May-20 CCV-2.0	Liquid	CCV
008	12:35:56	Fri 29-May-20 ICV-2.0	Liquid	ICV
009	12:37:08	Fri 29-May-20 ICB	Liquid	ICB
010	12:38:20	Fri 29-May-20 CCB	Liquid	CCB
011	12:39:31	Fri 29-May-20 BS-0.05	Liquid	BS
012	12:46:09	Fri 29-May-20 052820_3 LCS-1.0	Liquid	LCS
013	12:47:21	Fri 29-May-20 052820_3 LRB	Liquid	LRB
014	12:48:32	Fri 29-May-20 14250.01s	Liquid	S
015	12:57:01	Fri 29-May-20 rinse	Liquid	
016	12:58:13	Fri 29-May-20 14264.07s	Liquid	S
017	13:05:07	Fri 29-May-20 14264.01s	Liquid	S
018	13:08:03	Fri 29-May-20 14264.01 dil	Liquid	DIL
019	13:09:14	Fri 29-May-20 rinse	Liquid	
020	13:10:25	Fri 29-May-20 14264.02s	Liquid	S
021	13:11:37	Fri 29-May-20 rinse	Liquid	
022	13:12:48	Fri 29-May-20 14264.03s	Liquid	S
023	13:14:00	Fri 29-May-20 rinse	Liquid	
024	13:15:11	Fri 29-May-20 14264.04s	Liquid	S
025	13:16:22	Fri 29-May-20 rinse	Liquid	
026	13:17:34	Fri 29-May-20 14264.05s	Liquid	S
027	13:18:46	Fri 29-May-20 rinse	Liquid	
028	13:19:57	Fri 29-May-20 14264.06s	Liquid	S
029	13:21:09	Fri 29-May-20 rinse	Liquid	
030	13:22:20	Fri 29-May-20 14278.01s	Liquid	S
031	13:23:31	Fri 29-May-20 14278.01 MS-2.0	Liquid	MS
032	13:24:42	Fri 29-May-20 14278.01 MSD	Liquid	MSD
033	13:35:34	Fri 29-May-20 CCV2-2.0	Liquid	CCV
034	13:36:46	Fri 29-May-20 CCB2	Liquid	CCB
035	13:40:58	Fri 29-May-20 052920_2 LCS-1.0	Liquid	LCS
036	13:42:10	Fri 29-May-20 052920_2 LRB	Liquid	LRB
037	13:44:19	Fri 29-May-20 14279.01 dil diss	Liquid	DIL
038	13:45:29	Fri 29-May-20 14279.01s diss	Liquid	S
039	13:46:41	Fri 29-May-20 rinse	Liquid	
040	13:47:53	Fri 29-May-20 14279.02s diss	Liquid	S
041	13:49:04	Fri 29-May-20 rinse	Liquid	
042	13:50:16	Fri 29-May-20 14279.03s diss	Liquid	S
043	13:51:27	Fri 29-May-20 rinse	Liquid	
044	13:52:39	Fri 29-May-20 14279.04s diss	Liquid	S
045	13:53:50	Fri 29-May-20 CCV3-2.0	Liquid	CCV
046	13:55:02	Fri 29-May-20 CCB3	Liquid	CCB
047	14:18:53	Fri 29-May-20 14313.01s	Liquid	S
048	14:20:04	Fri 29-May-20 rinse	Liquid	
049	14:21:15	Fri 29-May-20 14314.01s	Liquid	S
050	14:22:27	Fri 29-May-20 rinse	Liquid	
051	14:23:38	Fri 29-May-20 14315.01s	Liquid	S
052	14:24:50	Fri 29-May-20 rinse	Liquid	
053	14:26:00	Fri 29-May-20 14315.02s	Liquid	S
054	14:27:12	Fri 29-May-20 rinse	Liquid	
055	14:28:23	Fri 29-May-20 14315.03s	Liquid	S
056	14:29:35	Fri 29-May-20 rinse	Liquid	

Form 0: Sequence Log

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	14:30:46 Fri 29-May-20	14315.04s	Liquid	S
058	14:31:57 Fri 29-May-20	rinse	Liquid	
059	14:33:08 Fri 29-May-20	14315.05s	Liquid	S
060	14:34:20 Fri 29-May-20	rinse	Liquid	
061	14:35:30 Fri 29-May-20	14315.06s	Liquid	S
062	14:36:42 Fri 29-May-20	rinse	Liquid	
063	14:37:52 Fri 29-May-20	14316.02s	Liquid	S
064	14:39:03 Fri 29-May-20	14316.02 MS-2.0	Liquid	MS
065	14:40:13 Fri 29-May-20	14316.02 MSD	Liquid	MSD
066	14:44:11 Fri 29-May-20	CCV3-2.0	Liquid	CCV
067	14:45:23 Fri 29-May-20	CCB3	Liquid	CCB
068	14:46:43 Fri 29-May-20	14316.01s	Liquid	S
069	14:47:55 Fri 29-May-20	rinse	Liquid	
070	14:49:05 Fri 29-May-20	14316.03s	Liquid	DIL
071	14:50:16 Fri 29-May-20	rinse	Liquid	
072	14:51:51 Fri 29-May-20	14316.03s	Liquid	S
073	14:53:03 Fri 29-May-20	rinse	Liquid	
074	14:54:14 Fri 29-May-20	14316.04s	Liquid	S
075	14:55:26 Fri 29-May-20	rinse	Liquid	
076	14:56:37 Fri 29-May-20	14317.01s	Liquid	S
077	14:57:49 Fri 29-May-20	rinse	Liquid	
078	14:58:59 Fri 29-May-20	14317.02s	Liquid	S
079	15:00:11 Fri 29-May-20	rinse	Liquid	
080	15:01:22 Fri 29-May-20	14317.03s	Liquid	S
081	15:02:33 Fri 29-May-20	rinse	Liquid	
082	15:03:44 Fri 29-May-20	14330.01s	Liquid	S
083	15:04:54 Fri 29-May-20	14317.03 MS-2.0	Liquid	MS
084	15:06:05 Fri 29-May-20	14317.03 MSD	Liquid	MSD
085	15:07:17 Fri 29-May-20	CCV4-2.0	Liquid	CCV
086	15:09:12 Fri 29-May-20	CCB4	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

Lab Sample ID: S14264.01

Sample Tag: L005063-01 MW-1

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000750	mg/L	5	05/28/2020	
7440-42-8	Boron	0.27	0.04	0.00450	mg/L	5	05/28/2020	
7440-38-2	Arsenic	0.005	0.002	0.000650	mg/L	5	05/28/2020	
7782-49-2	Selenium	Not detected	0.005	0.00190	mg/L	5	05/28/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000350	mg/L	5	05/28/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000100	mg/L	5	05/28/2020	
7440-36-0	Antimony	Not detected	0.005	0.000300	mg/L	5	05/28/2020	
7440-39-3	Barium	0.150	0.005	0.000400	mg/L	5	05/28/2020	
7440-28-0	Thallium	Not detected	0.002	0.000100	mg/L	5	05/28/2020	
7439-92-1	Lead	Not detected	0.003	0.0000500	mg/L	5	05/28/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000150	mg/L	5	05/28/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000150	mg/L	5	05/28/2020	
7439-93-2	Lithium	0.023	0.005	0.00135	mg/L	5	05/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

Lab Sample ID: S14264.01

Sample Tag: L005063-01 MW-1

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	180	2.5	0.433	mg/L	50	05/29/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

Lab Sample ID: S14264.02

Sample Tag: L005063-02 MW-2

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000750	mg/L	5	05/28/2020	
7440-42-8	Boron	3.38	0.04	0.00450	mg/L	5	05/28/2020	
7440-38-2	Arsenic	Not detected	0.002	0.000650	mg/L	5	05/28/2020	
7782-49-2	Selenium	Not detected	0.005	0.00190	mg/L	5	05/28/2020	
7439-98-7	Molybdenum	0.008	0.005	0.000350	mg/L	5	05/28/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000100	mg/L	5	05/28/2020	
7440-36-0	Antimony	Not detected	0.005	0.000300	mg/L	5	05/28/2020	
7440-39-3	Barium	0.043	0.005	0.000400	mg/L	5	05/28/2020	
7440-28-0	Thallium	Not detected	0.002	0.000100	mg/L	5	05/28/2020	
7439-92-1	Lead	Not detected	0.003	0.0000500	mg/L	5	05/28/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000150	mg/L	5	05/28/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000150	mg/L	5	05/28/2020	
7439-93-2	Lithium	0.047	0.005	0.00135	mg/L	5	05/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

Lab Sample ID: S14264.02

Sample Tag: L005063-02 MW-2

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	256	2.5	0.433	mg/L	50	05/29/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

Lab Sample ID: S14264.03

Sample Tag: L005063-03 MW-4

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000750	mg/L	5	05/28/2020	
7440-42-8	Boron	0.06	0.04	0.00450	mg/L	5	05/28/2020	
7440-38-2	Arsenic	0.006	0.002	0.000650	mg/L	5	05/28/2020	
7782-49-2	Selenium	Not detected	0.005	0.00190	mg/L	5	05/28/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000350	mg/L	5	05/28/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000100	mg/L	5	05/28/2020	
7440-36-0	Antimony	Not detected	0.005	0.000300	mg/L	5	05/28/2020	
7440-39-3	Barium	0.165	0.005	0.000400	mg/L	5	05/28/2020	
7440-28-0	Thallium	Not detected	0.002	0.000100	mg/L	5	05/28/2020	
7439-92-1	Lead	Not detected	0.003	0.0000500	mg/L	5	05/28/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000150	mg/L	5	05/28/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000150	mg/L	5	05/28/2020	
7439-93-2	Lithium	0.009	0.005	0.00135	mg/L	5	05/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

Lab Sample ID: S14264.03

Sample Tag: L005063-03 MW-4

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	115	2.5	0.433	mg/L	50	05/29/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

Lab Sample ID: S14264.04

Sample Tag: L005063-05 MW-5

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000750	mg/L	5	05/28/2020	
7440-42-8	Boron	5.19	0.04	0.00450	mg/L	5	05/28/2020	
7440-38-2	Arsenic	0.002	0.002	0.000650	mg/L	5	05/28/2020	
7782-49-2	Selenium	Not detected	0.005	0.00190	mg/L	5	05/28/2020	
7439-98-7	Molybdenum	0.051	0.005	0.000350	mg/L	5	05/28/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000100	mg/L	5	05/28/2020	
7440-36-0	Antimony	Not detected	0.005	0.000300	mg/L	5	05/28/2020	
7440-39-3	Barium	0.056	0.005	0.000400	mg/L	5	05/28/2020	
7440-28-0	Thallium	Not detected	0.002	0.000100	mg/L	5	05/28/2020	
7439-92-1	Lead	Not detected	0.003	0.0000500	mg/L	5	05/28/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000150	mg/L	5	05/28/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000150	mg/L	5	05/28/2020	
7439-93-2	Lithium	0.051	0.005	0.00135	mg/L	5	05/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

Lab Sample ID: S14264.04

Sample Tag: L005063-05 MW-5

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	320	2.5	0.433	mg/L	50	05/29/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

Lab Sample ID: S14264.05

Sample Tag: L005063-06 MW-6

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000750	mg/L	5	05/28/2020	
7440-42-8	Boron	0.49	0.04	0.00450	mg/L	5	05/28/2020	
7440-38-2	Arsenic	Not detected	0.002	0.000650	mg/L	5	05/28/2020	
7782-49-2	Selenium	Not detected	0.005	0.00190	mg/L	5	05/28/2020	
7439-98-7	Molybdenum	0.021	0.005	0.000350	mg/L	5	05/28/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000100	mg/L	5	05/28/2020	
7440-36-0	Antimony	Not detected	0.005	0.000300	mg/L	5	05/28/2020	
7440-39-3	Barium	0.050	0.005	0.000400	mg/L	5	05/28/2020	
7440-28-0	Thallium	Not detected	0.002	0.000100	mg/L	5	05/28/2020	
7439-92-1	Lead	Not detected	0.003	0.0000500	mg/L	5	05/28/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000150	mg/L	5	05/28/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000150	mg/L	5	05/28/2020	
7439-93-2	Lithium	0.038	0.005	0.00135	mg/L	5	05/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

Lab Sample ID: S14264.05

Sample Tag: L005063-06 MW-6

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	143	2.5	0.433	mg/L	50	05/29/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

Lab Sample ID: S14264.06

Sample Tag: L005063-06 MW-4 Duplicate

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000750	mg/L	5	05/28/2020	
7440-42-8	Boron	0.06	0.04	0.00450	mg/L	5	05/28/2020	
7440-38-2	Arsenic	0.007	0.002	0.000650	mg/L	5	05/28/2020	
7782-49-2	Selenium	Not detected	0.005	0.00190	mg/L	5	05/28/2020	
7439-98-7	Molybdenum	0.005	0.005	0.000350	mg/L	5	05/28/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000100	mg/L	5	05/28/2020	
7440-36-0	Antimony	Not detected	0.005	0.000300	mg/L	5	05/28/2020	
7440-39-3	Barium	0.168	0.005	0.000400	mg/L	5	05/28/2020	
7440-28-0	Thallium	Not detected	0.002	0.000100	mg/L	5	05/28/2020	
7439-92-1	Lead	Not detected	0.003	0.0000500	mg/L	5	05/28/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000150	mg/L	5	05/28/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000150	mg/L	5	05/28/2020	
7439-93-2	Lithium	0.009	0.005	0.00135	mg/L	5	05/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

Lab Sample ID: S14264.06

Sample Tag: L005063-06 MW-4 Duplicate

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	114	2.5	0.433	mg/L	50	05/29/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

Lab Sample ID: S14264.07

Sample Tag: L005063-07 Field Blank

Date Collected: 05/26/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000750	mg/L	5	05/28/2020	
7440-42-8	Boron	Not detected	0.04	0.00450	mg/L	5	05/28/2020	
7440-38-2	Arsenic	Not detected	0.002	0.000650	mg/L	5	05/28/2020	
7782-49-2	Selenium	Not detected	0.005	0.00190	mg/L	5	05/28/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000350	mg/L	5	05/28/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000100	mg/L	5	05/28/2020	
7440-36-0	Antimony	Not detected	0.005	0.000300	mg/L	5	05/28/2020	
7440-39-3	Barium	Not detected	0.005	0.000400	mg/L	5	05/28/2020	
7440-28-0	Thallium	Not detected	0.002	0.000100	mg/L	5	05/28/2020	
7439-92-1	Lead	Not detected	0.003	0.0000500	mg/L	5	05/28/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000150	mg/L	5	05/28/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000150	mg/L	5	05/28/2020	
7439-93-2	Lithium	Not detected	0.005	0.00135	mg/L	5	05/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

Lab Sample ID: S14264.07

Sample Tag: L005063-07 Field Blank

Date Collected: 05/26/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	Not detected	0.5	0.0433	mg/L	5	05/29/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

Note/Qualifier Key

b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
010 ICV-0.1	ICV	1	Cr	0.0994	0.1	99	90/110	mg/L	Liquid
			Co	0.0984	0.1	98	90/110		
			As	0.0999	0.1	100	90/110		
			Mo	0.0980	0.1	98	90/110		
			Cd	0.0992	0.1	99	90/110		
			Sb	0.0949	0.1	95	90/110		
			Ba	0.100	0.1	100	90/110		
			Tl	0.101	0.1	101	90/110		
			Pb	0.0970	0.1	97	90/110		
			Li	0.100	0.1	100	90/110		
			Be	0.100	0.1	100	90/110		
			B	0.0956	0.1	96	90/110		
			Se	0.0974	0.1	97	90/110		
011 CCV-0.1	CCV	1	Cr	0.100	0.1	100	90/110	mg/L	Liquid
			Co	0.0996	0.1	100	90/110		
			As	0.0975	0.1	98	90/110		
			Mo	0.101	0.1	101	90/110		
			Cd	0.0973	0.1	97	90/110		
			Sb	0.0985	0.1	99	90/110		
			Ba	0.0998	0.1	100	90/110		
			Tl	0.102	0.1	102	90/110		
			Pb	0.100	0.1	100	90/110		
			Li	0.101	0.1	101	90/110		
			Be	0.100	0.1	100	90/110		
			B	0.100	0.1	100	90/110		
			Se	0.0951	0.1	95	90/110		
039 CCV2-0.1	CCV	1	Cr	0.101	0.1	101	90/110	mg/L	Liquid
			Co	0.101	0.1	101	90/110		
			As	0.104	0.1	104	90/110		
			Mo	0.102	0.1	102	90/110		
			Cd	0.105	0.1	105	90/110		
			Sb	0.106	0.1	106	90/110		
			Ba	0.104	0.1	104	90/110		
			Tl	0.101	0.1	101	90/110		
			Pb	0.0990	0.1	99	90/110		
			Li	0.102	0.1	102	90/110		
			Be	0.105	0.1	105	90/110		
			B	0.103	0.1	103	90/110		
			Se	0.102	0.1	102	90/110		

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
007 CCV-2.0	CCV	1	Na	2.05	2.0	103	90/110	mg/L	Liquid
			Mg	2.00	2.0	100	90/110		
			K	2.00	2.0	100	90/110		
			Ca	2.00	2.0	100	90/110		
008 ICV-2.0	ICV	1	Na	1.99	2.0	100	90/110	mg/L	Liquid
			Mg	2.02	2.0	101	90/110		
			K	1.97	2.0	99	90/110		
			Ca	1.98	2.0	99	90/110		
033 CCV2-2.0	CCV	1	Na	2.06	2.0	103	90/110	mg/L	Liquid
			Mg	1.98	2.0	99	90/110		
			K	2.01	2.0	101	90/110		
			Ca	2.00	2.0	100	90/110		
045 CCV3-2.0	CCV	1	Na	2.10	2.0	105	90/110	mg/L	Liquid
			Mg	2.10	2.0	105	90/110		
			K	2.07	2.0	104	90/110		
			Ca	2.04	2.0	102	90/110		
066 CCV3-2.0	CCV	1	Na	2.06	2.0	103	90/110	mg/L	Liquid
			Mg	2.00	2.0	100	90/110		
			K	2.01	2.0	101	90/110		
			Ca	2.01	2.0	101	90/110		
085 CCV4-2.0	CCV	1	Na	2.04	2.0	102	90/110	mg/L	Liquid
			Mg	1.99	2.0	100	90/110		
			K	2.01	2.0	101	90/110		
			Ca	1.99	2.0	100	90/110		

Form 3: Blanks

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
013 CCB	CCB	1	Cr	<0.001	0.000004	mg/L	Liquid
			Co	<0.001	0.000003		
			As	<0.0004	0.000105		
			Mo	<0.001	0.000470		
			Cd	<0.0001	-0.000003		
			Sb	<0.001	0.000895		
			Ba	<0.001	-0.000000		
			Tl	<0.0004	0.000025		
			Pb	<0.0006	0.000011		
			Li	<0.001	0.000129		
			Be	<0.0002	0.000107		
			B	<0.008	0.000242		
			Se	<0.001	0.000205		
014 ICB	ICB	1	Cr	<0.001	0.000002	mg/L	Liquid
			Co	<0.001	0.000001		
			As	<0.0004	0.000084		
			Mo	<0.001	0.000271		
			Cd	<0.0001	-0.000004		
			Sb	<0.001	0.000568		
			Ba	<0.001	-0.000001		
			Tl	<0.0004	0.000021		
			Pb	<0.0006	0.000007		
			Li	<0.001	-0.000010		
			Be	<0.0002	0.000002		
			B	<0.008	0.000130		
			Se	<0.001	-0.000067		
021 052820_3 LRB	LRB	1	Cr	<0.001	-0.000004	mg/L	Liquid
			Co	<0.001	-0.000002		
			As	<0.0004	0.000084		
			Mo	<0.001	0.000833		
			Cd	<0.0001	0.000002		
			Sb	<0.001	0.000529		
			Ba	<0.001	0.000001		
			Tl	<0.0004	-0.000005		
			Pb	<0.0006	0.000004		
			Li	<0.001	-0.000009		
			Be	<0.0002	0.000006		
			B	<0.008	0.000104		
			Se	<0.001	0.000108		
041 CCB2	CCB	1	Cr	<0.001	0.000000	mg/L	Liquid
			Co	<0.001	0.000000		
			As	<0.0004	0.000106		
			Mo	<0.001	0.000452		
			Cd	<0.0001	-0.000001		
			Sb	<0.001	0.000693		
			Ba	<0.001	0.000003		
			Tl	<0.0004	-0.000002		
			Pb	<0.0006	0.000009		
			Li	<0.001	-0.000001		
			Be	<0.0002	0.000000		
			B	<0.008	0.000366		
			Se	<0.001	-0.000087		

Form 3: Blanks

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
009 ICB	ICB	1	Na	<0.05	-0.000180	mg/L	Liquid
			Mg	<0.05	-0.000094		
			K	<0.05	-0.001263		
			Ca	<0.05	-0.006847		
010 CCB	CCB	1	Na	<0.05	-0.000263	mg/L	Liquid
			Mg	<0.05	-0.000097		
			K	<0.05	-0.002573		
			Ca	<0.05	-0.004919		
013 052820_3 LRB	LRB	1	Na	<0.05	-0.000197	mg/L	Liquid
			Mg	<0.05	-0.000057		
			K	<0.05	-0.001478		
			Ca	<0.05	-0.005164		
034 CCB2	CCB	1	Na	<0.05	0.015869	mg/L	Liquid
			Mg	<0.05	0.001040		
			K	<0.05	0.005266		
			Ca	<0.05	-0.001005		
036 052920_2 LRB	LRB	1	Na	<0.05	0.005651	mg/L	Liquid
			Mg	<0.05	0.002628		
			K	<0.05	0.005085		
			Ca	<0.05	-0.000622		
046 CCB3	CCB	1	Na	<0.05	0.015976	mg/L	Liquid
			Mg	<0.05	0.000376		
			K	<0.05	0.006687		
			Ca	<0.05	-0.010878		
067 CCB3	CCB	1	Na	<0.05	0.015716	mg/L	Liquid
			Mg	<0.05	0.000053		
			K	<0.05	0.004709		
			Ca	<0.05	-0.009173		
086 CCB4	CCB	1	Na	<0.05	0.015840	mg/L	Liquid
			Mg	<0.05	0.000268		
			K	<0.05	0.004726		
			Ca	<0.05	-0.005521		

Form 4B: ICP Interference Check Sample

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
017 Solu-AB	AB	1	Cr	0.0223	0.02	112	65/135	mg/L	Liquid
			Co	0.0224	0.02	112	65/135		
			As	0.0226	0.02	113	65/135		
			Mo	0.217	0.20	109	65/135		
			Cd	0.0216	0.02	108	65/135		
018 Solu-AA	AA	1	Cr	<0.005	0.0	N/A	N/A	mg/L	Liquid
			Co	<0.005	0.0	N/A	N/A		
			As	<0.002	0.0	N/A	N/A		
			Cd	<0.0005	0.0	N/A	N/A		
			Sb	<0.005	0.0	N/A	N/A		
			Ba	<0.005	0.0	N/A	N/A		
			Tl	<0.002	0.0	N/A	N/A		
			Pb	<0.003	0.0	N/A	N/A		
			Li	<0.010	0.0	N/A	N/A		
			Be	<0.001	0.0	N/A	N/A		
			B	<0.04	0.0	N/A	N/A		
			Se	<0.005	0.0	N/A	N/A		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
015 BS-0.0001		1	Cr	0.00011	ND	0.0001	110	70/130	mg/L	Liquid
			Co	0.00010	ND	0.0001	100	70/130		
			Cd	0.00009	ND	0.0001	90	70/130		
			Ba	0.00009	ND	0.0001	90	70/130		
			Tl	0.00010	ND	0.0001	100	70/130		
			Pb	0.00010	ND	0.0001	100	70/130		
			Li	0.00011	ND	0.0001	110	70/130		
			Be	0.00010	ND	0.0001	100	70/130		
			B	0.00011	ND	0.0001	110	70/130		
			Se	0.00011	ND	0.0001	110	70/130		
016 BS-0.0005		1	Cr	0.00054	ND	0.0005	108	70/130	mg/L	Liquid
			Co	0.00052	ND	0.0005	104	70/130		
			As	0.00053	ND	0.0005	106	70/130		
			Mo	0.00063	ND	0.0005	126	70/130		
			Cd	0.00050	ND	0.0005	100	70/130		
			Ba	0.00053	ND	0.0005	106	70/130		
			Tl	0.00053	ND	0.0005	106	70/130		
			Pb	0.00049	ND	0.0005	98	70/130		
			Li	0.00054	ND	0.0005	108	70/130		
			Be	0.00050	ND	0.0005	100	70/130		
			B	0.00051	ND	0.0005	102	70/130		
			Se	0.00052	ND	0.0005	104	70/130		
			022 BS-0.001		1	Cr	0.00105	ND			0.001	105	70/130	mg/L	Liquid
Co	0.00103	ND				0.001	103	70/130		
As	0.00106	ND				0.001	106	70/130		
Mo	0.00118	ND				0.001	118	70/130		
Cd	0.00100	ND				0.001	100	70/130		
Sb	0.00128	ND				0.001	128	70/130		
Ba	0.00098	ND				0.001	98	70/130		
Tl	0.00107	ND				0.001	107	70/130		
Pb	0.00102	ND				0.001	102	70/130		
Li	0.00104	ND				0.001	104	70/130		
Be	0.00100	ND				0.001	100	70/130		
B	0.00098	ND				0.001	98	70/130		
Se	0.00090	ND				0.001	90	70/130		
037 14264.07	036 14264.07s	5	Cr	0.244	<0.005	0.25	98	75/125	mg/L	Liquid
			Co	0.242	<0.005	0.25	97	75/125		
			As	0.245	<0.002	0.25	98	75/125		
			Mo	0.231	<0.005	0.25	92	75/125		
			Cd	0.250	<0.0005	0.25	100	75/125		
			Sb	0.237	<0.005	0.25	95	75/125		
			Ba	0.254	<0.005	0.25	102	75/125		
			Tl	0.252	<0.002	0.25	101	75/125		
			Pb	0.242	<0.003	0.25	97	75/125		
			Li	0.259	<0.005	0.25	104	75/125		
			Be	0.256	<0.001	0.25	102	75/125		
			B	0.256	<0.04	0.25	102	75/125		
			Se	0.243	<0.005	0.25	97	75/125		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
011 BS-0.05		1	Na	0.0508	ND	0.05	102	70/130	mg/L	Liquid
			Mg	0.0494	ND	0.05	99	70/130		
			K	0.0482	ND	0.05	96	70/130		
			Ca	0.0414	ND	0.05	83	70/130		
031 14278.01 MS-2.0 030 14278.01s		50	Na	147	48.1	100.0	99	75/125	mg/L	Liquid
			Mg	117	17.1	100.0	100	75/125		
			K	110	10.5	100.0	100	75/125		
			Ca	191	89.0	100.0	102	75/125		
064 14316.02 MS-2.0 063 14316.02s		50	Na	262	177	100.0	85	75/125	mg/L	Liquid
			Mg	118	21.6	100.0	96	75/125		
			K	104	6.73	100.0	97	75/125		
			Ca	199	100	100.0	99	75/125		
083 14317.03 MS-2.0 080 14317.03s		50	Na	112	13.0	100.0	99	75/125	mg/L	Liquid
			Mg	120	20.7	100.0	99	75/125		
			K	107	7.17	100.0	100	75/125		
			Ca	193	96.2	100.0	97	75/125		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
038 14264.07 MSD	037 14264.07 MS-0.05	5	Cr	0.249	0.244	2	0/20	mg/L	Liquid
			Co	0.250	0.242	3	0/20		
			As	0.251	0.245	2	0/20		
			Mo	0.249	0.231	8	0/20		
			Cd	0.255	0.250	2	0/20		
			Sb	0.247	0.237	4	0/20		
			Ba	0.252	0.254	1	0/20		
			Tl	0.261	0.252	4	0/20		
			Pb	0.250	0.242	3	0/20		
			Li	0.259	0.259	0	0/20		
			Be	0.252	0.256	2	0/20		
			B	0.255	0.256	0	0/20		
			Se	0.243	0.243	0	0/20		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
032 14278.01 MSD	031 14278.01 MS-2.0	50	Na	149	147	1	0/20	mg/L	Liquid
			Mg	118	117	1	0/20		
			K	110	110	0	0/20		
			Ca	189	191	1	0/20		
065 14316.02 MSD	064 14316.02 MS-2.0	50	Na	270	262	3	0/20	mg/L	Liquid
			Mg	122	118	3	0/20		
			K	109	104	5	0/20		
			Ca	204	199	2	0/20		
084 14317.03 MSD	083 14317.03 MS-2.0	50	Na	116	112	4	0/20	mg/L	Liquid
			Mg	122	120	2	0/20		
			K	107	107	0	0/20		
			Ca	200	193	4	0/20		

Form 7: Laboratory Control Sample

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
019 052820_3 LCS-0.05	1	Cr	0.0500	0.05	100	85/115	mg/L	Liquid
		Co	0.0506	0.05	101	85/115		
		As	0.0495	0.05	99	85/115		
		Mo	0.0489	0.05	98	85/115		
		Cd	0.0503	0.05	101	85/115		
		Sb	0.0458	0.05	92	85/115		
		Ba	0.0494	0.05	99	85/115		
		Tl	0.0502	0.05	100	85/115		
		Pb	0.0485	0.05	97	85/115		
		Li	0.0472	0.05	94	85/115		
		Be	0.0483	0.05	97	85/115		
		B	0.0478	0.05	96	85/115		
		Se	0.0483	0.05	97	85/115		

Form 7: Laboratory Control Sample

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
012 052820_3 LCS-1.0	1	Na	1.01	1.0	101	85/115	mg/L	Liquid
		Mg	1.00	1.0	100	85/115		
		K	0.994	1.0	99	85/115		
		Ca	1.02	1.0	102	85/115		
035 052920_2 LCS-1.0	1	Na	1.04	1.0	104	85/115	mg/L	Liquid
		Mg	1.00	1.0	100	85/115		
		K	1.00	1.0	100	85/115		
		Ca	1.04	1.0	104	85/115		

Form 8: Serial Dilutions

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%D</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
033 14264.04s	032 14264.04s	5	Cr	<0.005	<0.005	NC	0/10	mg/L	Liquid
			Co	<0.005	<0.005	NC	0/10		
			As	0.002	0.002	0	0/10		
			Mo	0.052	0.051	2	0/10		
			Cd	<0.0005	<0.0005	NC	0/10		
			Sb	<0.005	<0.005	NC	0/10		
			Ba	0.055	0.056	2	0/10		
			Tl	<0.002	<0.002	NC	0/10		
			Pb	<0.003	<0.003	NC	0/10		
			Li	0.049	0.051	4	0/10		
			Be	<0.001	<0.001	NC	0/10		
			B	5.31	5.19	2	0/10		
			Se	<0.005	<0.005	NC	0/10		

Form 8: Serial Dilutions

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%D</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
018 14264.01 dil	017 14264.01s	5	Na	41.0	41.5	1	0/10	mg/L	Liquid
			Mg	51.1	51.0	0	0/10		
			K	1.74	<2.5	NC	0/10		
			Ca	170	180	6	0/10		
037 14279.01 dil	038 14279.01s diss	10	Na	8.95	8.92	0	0/10	mg/L	Liquid
			Mg	22.3	22.2	0	0/10		
			K	2.64	2.49	6	0/10		
			Ca	110	107	3	0/10		
070 14316.03s	072 14316.03s	50	Na	238	230	3	0/10	mg/L	Liquid
			Mg	23.9	23.5	2	0/10		
			Ca	123	125	2	0/10		

Form 13: Analysis Run Log

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Blank	18:26:15 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
002 Std-0.0001	18:28:29 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
003 Std-0.0005	18:30:43 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
004 Std-0.001	18:32:57 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
005 Std-0.005	18:35:11 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
006 Std-0.02	18:37:26 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
007 Std-0.05	18:39:40 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
008 Std-0.2	18:41:54 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
009 rinse	18:44:23 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
010 ICV-0.1	19:06:40 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
011 CCV-0.1	19:11:03 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
012 rinse	19:13:54 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
013 CCB	19:18:23 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
014 ICB	19:21:13 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
015 BS-0.0001	19:23:28 Thu	Liquid	B, Ba, Be, Cd, Co, Cr, Li, Pb, Se, Tl
016 BS-0.0005	19:25:42 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Se, Tl
017 Solu-AB	19:30:30 Thu	Liquid	As, Cd, Co, Cr, Mo
018 Solu-AA	19:32:45 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Pb, Sb, Se, Tl
019 052820_3 LCS-0.05	19:37:35 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
020 Rinse	19:39:49 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
021 052820_3 LRB	19:42:04 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
022 BS-0.001	19:52:04 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
023 14291.01 dil	19:55:15 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
024 14291.01s	19:57:49 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
025 Rinse	20:00:03 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
026 14291.02s	20:02:45 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
027 14291.02s	20:11:40 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
028 14291.03s	20:13:54 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
029 14264.01s	20:16:08 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
030 14264.02s	20:18:22 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
031 14264.03s	20:20:35 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
032 14264.04s	20:22:49 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
033 14264.04s	20:25:05 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
034 14264.05s	20:27:19 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
035 14264.06s	20:29:33 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
036 14264.07s	20:31:47 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
037 14264.07 MS-0.05	20:34:01 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
038 14264.07 MSD	20:36:15 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
039 CCV2-0.1	20:39:55 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
040 Rinse	20:42:46 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
041 CCB2	20:47:15 Thu	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl

Form 13: Analysis Run Log

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Blank	12:22:49 Fri	Liquid	Ca, K, Mg, Na
002 Std-0.20	12:24:01 Fri	Liquid	Ca, K, Mg, Na
003 Std-0.50	12:25:13 Fri	Liquid	Ca, K, Mg, Na
004 Std-1.0	12:26:25 Fri	Liquid	Ca, K, Mg, Na
005 Std-2.0	12:27:37 Fri	Liquid	Ca, K, Mg, Na
006 Std-5.0	12:28:48 Fri	Liquid	Ca, K, Mg, Na
007 CCV-2.0	12:31:11 Fri	Liquid	Ca, K, Mg, Na
008 ICV-2.0	12:35:56 Fri	Liquid	Ca, K, Mg, Na
009 ICB	12:37:08 Fri	Liquid	Ca, K, Mg, Na
010 CCB	12:38:20 Fri	Liquid	Ca, K, Mg, Na
011 BS-0.05	12:39:31 Fri	Liquid	Ca, K, Mg, Na
012 052820_3 LCS-1.0	12:46:09 Fri	Liquid	Ca, K, Mg, Na
013 052820_3 LRB	12:47:21 Fri	Liquid	Ca, K, Mg, Na
014 14250.01s	12:48:32 Fri	Liquid	Ca, K, Mg, Na
015 rinse	12:57:01 Fri	Liquid	Ca, K, Mg, Na
016 14264.07s	12:58:13 Fri	Liquid	Ca, K, Mg, Na
017 14264.01s	13:05:07 Fri	Liquid	Ca, K, Mg, Na
018 14264.01 dil	13:08:03 Fri	Liquid	Ca, K, Mg, Na
019 rinse	13:09:14 Fri	Liquid	Ca, K, Mg, Na
020 14264.02s	13:10:25 Fri	Liquid	Ca, K, Mg, Na
021 rinse	13:11:37 Fri	Liquid	Ca, K, Mg, Na
022 14264.03s	13:12:48 Fri	Liquid	Ca, K, Mg, Na
023 rinse	13:14:00 Fri	Liquid	Ca, K, Mg, Na
024 14264.04s	13:15:11 Fri	Liquid	Ca, K, Mg, Na
025 rinse	13:16:22 Fri	Liquid	Ca, K, Mg, Na
026 14264.05s	13:17:34 Fri	Liquid	Ca, K, Mg, Na
027 rinse	13:18:46 Fri	Liquid	Ca, K, Mg, Na
028 14264.06s	13:19:57 Fri	Liquid	Ca, K, Mg, Na
029 rinse	13:21:09 Fri	Liquid	Ca, K, Mg, Na
030 14278.01s	13:22:20 Fri	Liquid	Ca, K, Mg, Na
031 14278.01 MS-2.0	13:23:31 Fri	Liquid	Ca, K, Mg, Na
032 14278.01 MSD	13:24:42 Fri	Liquid	Ca, K, Mg, Na
033 CCV2-2.0	13:35:34 Fri	Liquid	Ca, K, Mg, Na
034 CCB2	13:36:46 Fri	Liquid	Ca, K, Mg, Na
035 052920_2 LCS-1.0	13:40:58 Fri	Liquid	Ca, K, Mg, Na
036 052920_2 LRB	13:42:10 Fri	Liquid	Ca, K, Mg, Na
037 14279.01 dil diss	13:44:19 Fri	Liquid	Ca, K, Mg, Na
038 14279.01s diss	13:45:29 Fri	Liquid	Ca, K, Mg, Na
039 rinse	13:46:41 Fri	Liquid	Ca, K, Mg, Na
040 14279.02s diss	13:47:53 Fri	Liquid	Ca, K, Mg, Na
041 rinse	13:49:04 Fri	Liquid	Ca, K, Mg, Na
042 14279.03s diss	13:50:16 Fri	Liquid	Ca, K, Mg, Na
043 rinse	13:51:27 Fri	Liquid	Ca, K, Mg, Na
044 14279.04s diss	13:52:39 Fri	Liquid	Ca, K, Mg, Na
045 CCV3-2.0	13:53:50 Fri	Liquid	Ca, K, Mg, Na
046 CCB3	13:55:02 Fri	Liquid	Ca, K, Mg, Na
047 14313.01s	14:18:53 Fri	Liquid	Ca, K, Mg, Na
048 rinse	14:20:04 Fri	Liquid	Ca, K, Mg, Na
049 14314.01s	14:21:15 Fri	Liquid	Ca, K, Mg, Na
050 rinse	14:22:27 Fri	Liquid	Ca, K, Mg, Na
051 14315.01s	14:23:38 Fri	Liquid	Ca, K, Mg, Na
052 rinse	14:24:50 Fri	Liquid	Ca, K, Mg, Na
053 14315.02s	14:26:00 Fri	Liquid	Ca, K, Mg, Na
054 rinse	14:27:12 Fri	Liquid	Ca, K, Mg, Na
055 14315.03s	14:28:23 Fri	Liquid	Ca, K, Mg, Na
056 rins	14:29:35 Fri	Liquid	Ca, K, Mg, Na

Form 13: Analysis Run Log

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
057 14315.04s	14:30:46 Fri	Liquid	Ca,K,Mg,Na
058 rinse	14:31:57 Fri	Liquid	Ca,K,Mg,Na
059 14315.05s	14:33:08 Fri	Liquid	Ca,K,Mg,Na
060 rinse	14:34:20 Fri	Liquid	Ca,K,Mg,Na
061 14315.06s	14:35:30 Fri	Liquid	Ca,K,Mg,Na
062 rinse	14:36:42 Fri	Liquid	Ca,K,Mg,Na
063 14316.02s	14:37:52 Fri	Liquid	Ca,K,Mg,Na
064 14316.02 MS-2.0	14:39:03 Fri	Liquid	Ca,K,Mg,Na
065 14316.02 MSD	14:40:13 Fri	Liquid	Ca,K,Mg,Na
066 CCV3-2.0	14:44:11 Fri	Liquid	Ca,K,Mg,Na
067 CCB3	14:45:23 Fri	Liquid	Ca,K,Mg,Na
068 14316.01s	14:46:43 Fri	Liquid	Ca,K,Mg,Na
069 rinse	14:47:55 Fri	Liquid	Ca,K,Mg,Na
070 14316.03s	14:49:05 Fri	Liquid	Ca,Mg,Na
071 rinse	14:50:16 Fri	Liquid	Ca,K,Mg,Na
072 14316.03s	14:51:51 Fri	Liquid	Ca,K,Mg,Na
073 rinse	14:53:03 Fri	Liquid	Ca,K,Mg,Na
074 14316.04s	14:54:14 Fri	Liquid	Ca,K,Mg,Na
075 rinse	14:55:26 Fri	Liquid	Ca,K,Mg,Na
076 14317.01s	14:56:37 Fri	Liquid	Ca,K,Mg,Na
077 rinse	14:57:49 Fri	Liquid	Ca,K,Mg,Na
078 14317.02s	14:58:59 Fri	Liquid	Ca,K,Mg,Na
079 rinse	15:00:11 Fri	Liquid	Ca,K,Mg,Na
080 14317.03s	15:01:22 Fri	Liquid	Ca,K,Mg,Na
081 rinse	15:02:33 Fri	Liquid	Ca,K,Mg,Na
082 14330.01s	15:03:44 Fri	Liquid	Ca,K,Mg,Na
083 14317.03 MS-2.0	15:04:54 Fri	Liquid	Ca,K,Mg,Na
084 14317.03 MSD	15:06:05 Fri	Liquid	Ca,K,Mg,Na
085 CCV4-2.0	15:07:17 Fri	Liquid	Ca,K,Mg,Na
086 CCB4	15:09:12 Fri	Liquid	Ca,K,Mg,Na

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\wizard\SmartTune\Tune 2018\daily Optimiza

Start Time: 5/28/2020 3:24:47 PM

End Time: 5/28/2020 3:34:45 PM

Torch Alignment - [Passed]

Vertical:	2.09 mm
Horizontal:	-0.28 mm
Intensity:	154920.48

[STD/KED] Nebulizer Gas Flow - [Passed] Optimum value(s): 1.06

Obtained Intensity (In 115): 150779.53

Obtained Formula (CeO 156 / Ce 140): 0.0196 (=2425.21 / 123719.42)

Mass Calibration and Resolution - [Passed] Optimum value(s): N/A

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.719)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.705)

Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.717)

Target/Obtained mass (207.977/208.025), Target/Obtained resolution (0.7/0.706)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.707)

[KED] QID - Optimum value(s): Correlation Coefficient = 0.995; Intercept = -14.93

[STD/DRC] QID - Optimum value(s): Correlation Coefficient = 0.997; Intercept = -17.97

[STD] Performance Check - [Passed] Optimum value(s): N/A

Obtained Intensity (Be 9): 14558.55

Obtained Intensity (In 115): 145251.32

Obtained Intensity (U 238): 198311.28

Obtained Intensity (Bkgd 220): 0.20

Obtained Formula (Ce++ 70 / Ce 140): 0.022 (=2486.02 / 115500.87)

Obtained Formula (CeO 156 / Ce 140): 0.020 (=2256.24 / 115500.87)

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\Tune 2018\daily Optimiza

Optimization Status

Start Time: 5/28/2020 3:24:47 PM

Torch Alignment

Optimization Settings:

Method: Torch Alignment.mth.
Intensity Criterion: In 115 Maximum

Optimization Results:

[Passed]

Vertical: 2.09 mm
Horizontal: -0.28 mm
Intensity: 154920.48

[STD/KED] Nebulizer Gas Flow

Optimization Settings:

Method: Optimize.mth.
Initial Try - Start/End/Step: 0.9/1.2/0.02.
Intensity Criterion: In 115 Maximum
Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (In 115): 150779.53
Obtained Formula (CeO 156 / Ce 140): 0.0196 (=2425.21 / 123719.42)

[Passed] Optimum value(s): 1.06

Mass Calibration and Resolution

Optimization Settings:

Method: Tuning.mth.
MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\defaultNEW.tun
Iterations: 6
Target accuracy (+/- amu): 0.05 for Mass Cal. and 0.03 for Resolution
Peak height (%) for Res. Opt.: 10

Optimization Results:

Initial Try

Target/Obtained mass (7.016/6.975), Target/Obtained resolution (0.7/0.705)
Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.706)
Target/Obtained mass (114.904/114.875), Target/Obtained resolution (0.7/0.709)
Target/Obtained mass (207.977/207.925), Target/Obtained resolution (0.7/0.706) - <Target not ac
Target/Obtained mass (238.05/238.025), Target/Obtained resolution (0.7/0.699)
[Failed]

Retry 1

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.719)
Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.705)
Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.717)
Target/Obtained mass (207.977/208.025), Target/Obtained resolution (0.7/0.706)
Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.707)

[Passed] Optimum value(s): N/A

[KED] QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.995; Intercept = -14.93

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-15.5	47864
Mg	24	41	-16.5	131668
In	115	41	-13.5	206879
Ce	140	41	-13	138189
Pb	208	41	-11.5	62259.4
U	238	41	-11	140544

[STD/DRC] QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.997; Intercept = -17.97

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-17	69376
Mg	24	41	-15	105867
In	115	41	-12.5	151754
Ce	140	41	-11	117243
Pb	208	41	-8	95063.2
U	238	41	-7.5	205191

[STD] Performance Check

Optimization Settings:

Method: STD Performance Check.mth.

Intensity Criterion: Be 9 > 4000

Intensity Criterion: In 115 > 40000

Intensity Criterion: U 238 > 35000

Intensity Criterion: Bkgd 220 <= 1

Formula Criterion: Ce++ 70 / Ce 140 <= 0.05

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (Be 9): 14558.55

Obtained Intensity (In 115): 145251.32

Obtained Intensity (U 238): 198311.28

Obtained Intensity (Bkgd 220): 0.20

Obtained Formula (Ce++ 70 / Ce 140): 0.022 (=2486.02 / 115500.87)

Obtained Formula (CeO 156 / Ce 140): 0.020 (=2256.24 / 115500.87)

[Passed] Optimum value(s): N/A

End Time: 5/28/2020 3:34:45 PM

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\wizard\SmartTune\Tune 2018\daily Optimiza

Start Time: 5/29/2020 11:55:14 AM

End Time: 5/29/2020 12:04:30 PM

Torch Alignment - [Passed]

Vertical:	1.96 mm
Horizontal:	-0.01 mm
Intensity:	141662.93

[STD/KED] Nebulizer Gas Flow - [Passed] Optimum value(s): 1.06

Obtained Intensity (In 115): 143477.91

Obtained Formula (CeO 156 / Ce 140): 0.0183 (=2194.17 / 120018.04)

Mass Calibration and Resolution - [Passed] Optimum value(s): N/A

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.721)

Target/Obtained mass (23.985/24.025), Target/Obtained resolution (0.7/0.693)

Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.706)

Target/Obtained mass (207.977/207.975), Target/Obtained resolution (0.7/0.699)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.700)

[KED] QID - Optimum value(s): Correlation Coefficient = 0.998; Intercept = -15.82

[STD/DRC] QID - Optimum value(s): Correlation Coefficient = 0.991; Intercept = -17.31

[STD] Performance Check - [Passed] Optimum value(s): N/A

Obtained Intensity (Be 9): 13996.45

Obtained Intensity (In 115): 144000.94

Obtained Intensity (U 238): 187311.67

Obtained Intensity (Bkgd 220): 0.23

Obtained Formula (Ce++ 70 / Ce 140): 0.023 (=2590.30 / 112795.08)

Obtained Formula (CeO 156 / Ce 140): 0.019 (=2104.76 / 112795.08)

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\wizard\SmartTune\Tune 2018\daily Optimiza

Optimization Status

Start Time: 5/29/2020 11:55:14 AM

Torch Alignment

Optimization Settings:

Method: Torch Alignment.mth.
Intensity Criterion: In 115 Maximum

Optimization Results:

[Passed]

Vertical: 1.96 mm
Horizontal: -0.01 mm
Intensity: 141662.93

[STD/KED] Nebulizer Gas Flow

Optimization Settings:

Method: Optimize.mth.
Initial Try - Start/End/Step: 0.9/1.2/0.02.
Intensity Criterion: In 115 Maximum
Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (In 115): 143477.91
Obtained Formula (CeO 156 / Ce 140): 0.0183 (=2194.17 / 120018.04)

[Passed] Optimum value(s): 1.06

Mass Calibration and Resolution

Optimization Settings:

Method: Tuning.mth.
MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\defaultNEW.tun
Iterations: 6
Target accuracy (+/- amu): 0.05 for Mass Cal. and 0.03 for Resolution
Peak height (%) for Res. Opt.: 10

Optimization Results:

Initial Try

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.721)
Target/Obtained mass (23.985/24.025), Target/Obtained resolution (0.7/0.693)
Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.706)
Target/Obtained mass (207.977/207.975), Target/Obtained resolution (0.7/0.699)
Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.700)

[Passed] Optimum value(s): N/A

[KED] QID

Optimization Settings:

Method: QID Calibration.mth.
Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:
Initial Try

Optimum value(s): Correlation Coefficient = 0.998; Intercept = -15.82

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-16	45251.6
Mg	24	41	-16	142168
In	115	41	-13.5	184366
Ce	140	41	-12.5	127664
Pb	208	41	-11.5	61990.2
U	238	41	-11	133598

[STD/DRC] QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.991; Intercept = -17.31

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-16.5	65252.7
Mg	24	41	-15.5	106524
In	115	41	-11.5	146705
Ce	140	41	-11.5	115473
Pb	208	41	-8	91206.2
U	238	41	-8	194057

[STD] Performance Check

Optimization Settings:

Method: STD Performance Check.mth.

Intensity Criterion: Be 9 > 4000

Intensity Criterion: In 115 > 40000

Intensity Criterion: U 238 > 35000

Intensity Criterion: Bkgd 220 <= 1

Formula Criterion: Ce++ 70 / Ce 140 <= 0.05

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (Be 9): 13996.45

Obtained Intensity (In 115): 144000.94

Obtained Intensity (U 238): 187311.67

Obtained Intensity (Bkgd 220): 0.23

Obtained Formula (Ce++ 70 / Ce 140): 0.023 (=2590.30 / 112795.08)

Obtained Formula (CeO 156 / Ce 140): 0.019 (=2104.76 / 112795.08)

[Passed] Optimum value(s): N/A

End Time: 5/29/2020 12:04:30 PM

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	308374	70-125	215862-385468	80-120	246699-370049	2
Re	212533	70-125	148773-265666	80-120	170026-255040	2
Rh-1	948742	70-125	664119-1185928	80-120	758994-1138490	2

Seq ID	QC Type	Rh	Re	Rh-1
001		100	100	100
002		103	104	101
003		101	102	102
004		100	102	100
005		101	101	100
006		100	102	101
007		99	101	103
008		99	99	99
009		114	111	113
010	ICV	99	103	100
011	CCV	100	102	99
012		99	102	101
013	CCB	98	100	98
014	ICB	98	99	100
015	BS	99	102	102
016	BS	99	102	99
017	AB	92	101	97
018	AA	93	102	99
019	LCS	99	103	103
020		98	102	101
021	LRB	99	100	101
022	BS	101	102	100
023	DIL	81	91	83
024	S	54***	62***	55***
025		100	102	101
026	S	55***	63***	56***
027	S	80	93	83
028	S	79	92	79
029	S	93	102	93
030	S	91	100	92
031	S	94	101	95
032	S	86	98	88
033	S	93	101	95
034	S	91	103	94
035	S	92	99	95
036	S	98	102	98
037	MS	97	104	97
038	MSD	96	101	98
039	CCV	93	101	95
040	Page 76 of 264	101	95	

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0528A

Instrument ID: PE NEXION 2

Analysis Date: 05/28/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	308374	70-125	215862-385468	80-120	246699-370049	2
Re	212533	70-125	148773-265666	80-120	170026-255040	2
Rh-1	948742	70-125	664119-1185928	80-120	758994-1138490	2

Seq ID	QC Type	Rh	Re	Rh-1
041	CCB	99	101	99

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	12908	70-125	9036-16135	80-120	10326-15490	0

Seq ID	QC Type	Rh
001		100
002		103
003		105
004		102
005		102
006		103
007	CCV	104
008	ICV	102
009	ICB	101
010	CCB	104
011	BS	105
012	LCS	103
013	LRB	103
014	S	102
015		104
016	S	104
017	S	101
018	DIL	104
019		105
020	S	105
021		102
022	S	104
023		104
024	S	103
025		102
026	S	105
027		103
028	S	104
029		102
030	S	101
031	MS	102
032	MSD	104
033	CCV	103
034	CCB	103
035	LCS	104
036	LRB	102
037	DIL	104
038	S	104
039		104
040	SPage 78 of 264	

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	12908	70-125	9036-16135	80-120	10326-15490	0

Seq ID	QC Type	Rh
041		105
042	S	106
043		106
044	S	103
045	CCV	103
046	CCB	103
047	S	105
048		104
049	S	102
050		105
051	S	106
052		105
053	S	101
054		104
055	S	106
056		104
057	S	105
058		103
059	S	105
060		105
061	S	104
062		105
063	S	104
064	MS	105
065	MSD	102
066	CCV	105
067	CCB	103
068	S	103
069		105
070	DIL	106
071		103
072	S	103
073		106
074	S	103
075		106
076	S	105
077		104
078	S	100
079		104
080	SPage 79 of 264	

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0529A

Instrument ID: PE NEXION 2

Analysis Date: 05/29/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	12908	70-125	9036-16135	80-120	10326-15490	0

Seq ID	QC Type	Rh
081		103
082	S	103
083	MS	105
084	MSD	102
085	CCV	103
086	CCB	103

Form 9

Analysis Date varies
 Analytical Method 6020A/6020/200.8
 Digestion Date varies
 Spiked Value varies (ug/L)
 Estimated Limit varies (ug/L)

Element/Mass	Date	Spike (ug/l)	MDL (ug/l)	Prep Batch
Al-27	4/9/2012	0.50	0.189	MTD-040212-1
Sb-121	3/20/2012	1.00	0.105	MTD-032012-3
As-75	3/20/2012	0.05	0.032	MTD-032012-2
Ba-137	3/20/2012	0.50	0.202	MTD-032012-2
Be-9	4/10/2012	0.10	0.079	MTD-041012-1
B-10	3/20/2012	1.00	0.589	MTD-032012-3
B-11	3/20/2012	1.00	0.277	MTD-032012-3
Cd-111	3/20/2012	0.05	0.038	MTD-032012-2
Cd-114	3/20/2012	0.10	0.030	MTD-032012-2
Cr-52	3/20/2012	0.10	0.023	MTD-032012-2
Cr-53	3/20/2012	0.10	0.054	MTD-032012-2
Co-59	3/20/2012	0.10	0.035	MTD-032012-2
Cu-65	3/20/2012	0.50	0.068	MTD-032012-2
Fe-56	4/9/2012	2.00	0.470	MTD-040912-1
Fe-57	4/9/2012	2.00	0.824	MTD-040912-1
Pb-208	3/20/2012	0.10	0.052	MTD-032012-2
Li-7	3/20/2012	1.00	0.166	MTD-032012-3
Mn-55	3/20/2012	0.10	0.187	MTD-032012-2
Mo-95	4/9/2012	0.50	0.442	MTD-040212-1
Ni-60	4/13/2012	0.10	0.035	MTD-041012-1
Se-78	3/20/2012	0.10	0.058	MTD-032012-2
Se-82	3/20/2012	0.50	0.475	MTD-032012-2
Ag-107	3/20/2012	0.10	0.025	MTD-032012-2
Sr-88	3/20/2012	0.10	0.016	MTD-032012-2
Tl-205	4/9/2012	0.50	0.089	MTD-040212-1
Sn-118	3/20/2012	0.10	0.079	MTD-032012-2
Ti-47	3/20/2012	0.50	0.124	MTD-032012-2
V-51	3/20/2012	0.05	0.018	MTD-032012-2
Zn-66	4/9/2012	2.00	0.366	MTD-040912-1

Element/Mass	Date	Spike (mg/l)	MDL (mg/l)	Prep Batch
Ca-43	4/16/2012	0.01	0.0101	MTD-041012-4
Ca-44	4/16/2012	0.01	0.0041	MTD-041012-4
Mg-24	4/16/2012	0.01	0.0006	MTD-041012-4
K-39	4/16/2012	0.01	0.0030	MTD-041012-4
Na-23	4/16/2012	0.10	0.0101	MTD-041012-4

Linear Range June 2012

		Prep Batch	Run Batch
Aluminum	5.0ppm	MTD-061912-5	MT3-12-0619C
Antimony	5.0ppm	MTD-061912-5	MT3-12-0619C
Arsenic	1.0ppm	MTD-061912-5	MT3-12-0619C
Barium	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-10	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-11	5.0ppm	MTD-061912-5	MT3-12-0619C
Beryllium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-111	5.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-114	5.0ppm	MTD-061912-5	MT3-12-0619C
Chromium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cobalt	2.0ppm	MTD-061912-5	MT3-12-0619C
Copper	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-56	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-57	2.0ppm	MTD-061912-5	MT3-12-0619C
Lead	5.0ppm	MTD-061912-5	MT3-12-0619C
Lithium	2.0ppm	MTD-061912-5	MT3-12-0619C
Manganese	1.0ppm	MTD-061912-5	MT3-12-0619C
Molybdenum	1.0ppm	MTD-061912-5	MT3-12-0619C
Nickel	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-78	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-82	5.0ppm	MTD-061912-5	MT3-12-0619C
Silver	1.0ppm	MTD-061912-5	MT3-12-0619C
Strontium-86	5.0ppm	MTD-061912-5	MT3-12-0619C
Thallium	5.0ppm	MTD-061912-5	MT3-12-0619C
Tin	1.0ppm	MTD-061912-5	MT3-12-0619C
Titanium	1.0ppm	MTD-061912-5	MT3-12-0619C
Vanadium	1.0ppm	MTD-061912-5	MT3-12-0619C
Zinc	2.0ppm	MTD-061912-5	MT3-12-0619C

Sodium-23	50ppm	MTD-061912-5	MT3-12-0619B
Magnesium-24	50ppm	MTD-061912-5	MT3-12-0619B
Potassium-39	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-43	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-44	50ppm	MTD-061912-5	MT3-12-0619B

Maximum spiking levels are instated to ensure the safety and longevity of the instrument. Any sample results above this level result in extended wash runs and sample dilution.

Metals Quantitation Summary Report

Sequence #: 001
Method: 15-BWL.mth
Acq Time: 18:26:15 Thu 28-May-20
Sample Name: Blank
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	224.446	0	mg/L	3
Co	59	27.778	0	mg/L	3
As	75	5.667	0	mg/L	3
Mo	95	274.447	0	mg/L	3
Cd	111	10.000	0	mg/L	3
Sb	121	322.226	0	mg/L	3
Ba	137	16.667	0	mg/L	3
Tl	205	207.779	0	mg/L	3
Pb	208	418.112	0	mg/L	3
Li	7	3597.120	0	mg/L	3
Be	9	0.000	0	mg/L	3
B	11	342.004	0	mg/L	3
Se	78	3138.432	0	mg/L	3

Metals Quantitation Summary Report

Sequence #: 002
Method: 15-BWL.mth
Acq Time: 18:28:29 Thu 28-May-20
Sample Name: Std-0.0001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	665.571	0.000110	mg/L	3
Co	59	852.248	0.000092	mg/L	3
As	75	35.667	0.000091	mg/L	3
Mo	95	456.674	0.000063	mg/L	3
Cd	111	123.334	0.000083	mg/L	3
Sb	121	603.346	0.000104	mg/L	3
Ba	137	183.335	0.000102	mg/L	3
Tl	205	1884.569	0.000096	mg/L	3
Pb	208	2062.625	0.000087	mg/L	3
Li	7	4295.092	0.000145	mg/L	3
Be	9	128.667	0.000105	mg/L	3
B	11	404.672	0.000050	mg/L	3
Se	78	3203.529	0.000052	mg/L	3

Metals Quantitation Summary Report

Sequence #: 003
Method: 15-BWL.mth
Acq Time: 18:30:43 Thu 28-May-20
Sample Name: Std-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	2237.953	0.000518	mg/L	3
Co	59	4535.165	0.000515	mg/L	3
As	75	159.334	0.000478	mg/L	3
Mo	95	1468.965	0.000437	mg/L	3
Cd	111	680.016	0.000501	mg/L	3
Sb	121	1780.111	0.000568	mg/L	3
Ba	137	798.911	0.000489	mg/L	3
Tl	205	9361.957	0.000536	mg/L	3
Pb	208	9390.919	0.000487	mg/L	3
Li	7	6095.745	0.000535	mg/L	3
Be	9	653.348	0.000529	mg/L	3
B	11	939.364	0.000507	mg/L	3
Se	78	3459.347	0.000475	mg/L	3

Metals Quantitation Summary Report

Sequence #: 004
Method: 15-BWL.mth
Acq Time: 18:32:57 Thu 28-May-20
Sample Name: Std-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	4272.862	0.001052	mg/L	3
Co	59	9371.962	0.001078	mg/L	3
As	75	324.004	0.000998	mg/L	3
Mo	95	2769.159	0.000923	mg/L	3
Cd	111	1334.507	0.000998	mg/L	3
Sb	121	3289.268	0.001168	mg/L	3
Ba	137	1833.451	0.001144	mg/L	3
Tl	205	18669.974	0.001083	mg/L	3
Pb	208	19119.679	0.001017	mg/L	3
Li	7	8453.613	0.001089	mg/L	3
Be	9	1283.391	0.001061	mg/L	3
B	11	1458.074	0.000977	mg/L	3
Se	78	3665.488	0.000979	mg/L	3

Metals Quantitation Summary Report

Sequence #: 005
Method: 15-BWL.mth
Acq Time: 18:35:11 Thu 28-May-20
Sample Name: Std-0.005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	20371.181	0.005199	mg/L		3
Co	59	44784.541	0.005127	mg/L		3
As	75	1615.425	0.005015	mg/L		3
Mo	95	12730.115	0.004578	mg/L		3
Cd	111	6905.002	0.005162	mg/L		3
Sb	121	15410.539	0.005898	mg/L		3
Ba	137	8084.509	0.005047	mg/L		3
Tl	205	90163.676	0.005337	mg/L		3
Pb	208	92478.321	0.005062	mg/L		3
Li	7	26835.182	0.005187	mg/L		3
Be	9	6391.430	0.005260	mg/L		3
B	11	6374.088	0.005259	mg/L		3
Se	78	5868.842	0.005028	mg/L		3

Metals Quantitation Summary Report

Sequence #: 006
Method: 15-BWL.mth
Acq Time: 18:37:26 Thu 28-May-20
Sample Name: Std-0.02
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	77720.845	0.020131	mg/L	3
Co	59	175389.074	0.020219	mg/L	3
As	75	6191.008	0.019396	mg/L	3
Mo	95	51992.235	0.019134	mg/L	3
Cd	111	25627.419	0.019299	mg/L	3
Sb	121	48732.981	0.019047	mg/L	3
Ba	137	32483.566	0.020442	mg/L	3
Tl	205	345008.925	0.020253	mg/L	3
Pb	208	361097.244	0.019633	mg/L	3
Li	7	94285.845	0.020037	mg/L	3
Be	9	24482.301	0.019943	mg/L	3
B	11	23170.111	0.019704	mg/L	3
Se	78	13064.755	0.018094	mg/L	3

Metals Quantitation Summary Report

Sequence #: 007
Method: 15-BWL.mth
Acq Time: 18:39:40 Thu 28-May-20
Sample Name: Std-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	195746.968	0.051308	mg/L	3
Co	59	437138.866	0.050912	mg/L	3
As	75	15461.697	0.048974	mg/L	3
Mo	95	133434.747	0.049779	mg/L	3
Cd	111	63899.304	0.048636	mg/L	3
Sb	121	123790.713	0.049087	mg/L	3
Ba	137	80407.903	0.051138	mg/L	3
Tl	205	862992.983	0.051366	mg/L	3
Pb	208	901138.134	0.049712	mg/L	3
Li	7	237128.766	0.050769	mg/L	3
Be	9	61062.954	0.048944	mg/L	3
B	11	59000.936	0.049801	mg/L	3
Se	78	28836.929	0.046115	mg/L	3

Metals Quantitation Summary Report

Sequence #: 008
Method: 15-BWL.mth
Acq Time: 18:41:54 Thu 28-May-20
Sample Name: Std-0.2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	763888.565	0.199655	mg/L	3
Co	59	1721244.709	0.199747	mg/L	3
As	75	63470.367	0.200317	mg/L	3
Mo	95	537793.646	0.200153	mg/L	3
Cd	111	264246.899	0.200407	mg/L	3
Sb	121	506127.558	0.200300	mg/L	3
Ba	137	315107.398	0.199669	mg/L	3
Tl	205	3289804.331	0.199625	mg/L	3
Pb	208	3558467.737	0.200107	mg/L	3
Li	7	889594.236	0.199799	mg/L	3
Be	9	241041.287	0.200263	mg/L	3
B	11	227614.553	0.200073	mg/L	3
Se	78	110826.790	0.201161	mg/L	3

Metals Quantitation Summary Report

Sequence #: 009
Method: 15-BWL.mth
Acq Time: 18:44:23 Thu 28-May-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 05/27/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	700.039	0.000106	mg/L	3
Co	59	1244.589	0.000127	mg/L	3
As	75	215.668	0.000581	mg/L	3
Mo	95	7580.929	0.002371	mg/L	3
Cd	111	154.446	0.000098	mg/L	3
Sb	121	5775.614	0.001877	mg/L	3
Ba	137	110.001	0.000052	mg/L	3
Tl	205	2480.352	0.000130	mg/L	3
Pb	208	3630.783	0.000171	mg/L	3
Li	7	4120.628	0.000055	mg/L	3
Be	9	6.667	0.000006	mg/L	3
B	11	347.338	-0.000022	mg/L	3
Se	78	3276.684	0.000037	mg/L	3

Metals Quantitation Summary Report

Sequence #: 010
Method: 15-BWL.mth
Acq Time: 19:06:40 Thu 28-May-20
Sample Name: ICV-0.1
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 05/27/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	380007.387	0.099498	mg/L	3
Co	59	846561.228	0.098433	mg/L	3
As	75	31600.581	0.099932	mg/L	3
Mo	95	263154.121	0.098085	mg/L	3
Cd	111	130616.689	0.099265	mg/L	3
Sb	121	239665.301	0.094983	mg/L	3
Ba	137	158011.557	0.100326	mg/L	3
Tl	205	1737532.032	0.101763	mg/L	3
Pb	208	1787568.200	0.097024	mg/L	3
Li	7	451560.318	0.100470	mg/L	3
Be	9	121152.295	0.100115	mg/L	3
B	11	109596.331	0.095690	mg/L	3
Se	78	55567.895	0.097416	mg/L	3

Metals Quantitation Summary Report

Sequence #: 011
Method: 15-BWL.mth
Acq Time: 19:11:03 Thu 28-May-20
Sample Name: CCV-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 05/27/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	386693.351	0.100616	mg/L	3
Co	59	862012.650	0.099608	mg/L	3
As	75	31045.030	0.097547	mg/L	3
Mo	95	272981.545	0.101106	mg/L	3
Cd	111	128910.212	0.097335	mg/L	3
Sb	121	250318.646	0.098572	mg/L	3
Ba	137	158306.103	0.099876	mg/L	3
Tl	205	1745840.057	0.102838	mg/L	3
Pb	208	1832363.352	0.100010	mg/L	3
Li	7	451786.712	0.101563	mg/L	3
Be	9	120599.681	0.100686	mg/L	3
B	11	113593.552	0.100174	mg/L	3
Se	78	53798.647	0.095109	mg/L	3

Metals Quantitation Summary Report

Sequence #: 012
Method: 15-BWL.mth
Acq Time: 19:13:54 Thu 28-May-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	270.003	0.000013	mg/L	3
Co	59	62.222	0.000004	mg/L	3
As	75	110.000	0.000331	mg/L	3
Mo	95	4699.663	0.001655	mg/L	3
Cd	111	10.000	0.000000	mg/L	3
Sb	121	6388.097	0.002413	mg/L	3
Ba	137	22.222	0.000004	mg/L	3
Tl	205	1905.683	0.000100	mg/L	3
Pb	208	1040.348	0.000033	mg/L	3
Li	7	3629.352	0.000003	mg/L	3
Be	9	43.333	0.000036	mg/L	3
B	11	733.352	0.000339	mg/L	3
Se	78	3494.375	0.000621	mg/L	3

Metals Quantitation Summary Report

Sequence #: 013
Method: 15-BWL.mth
Acq Time: 19:18:23 Thu 28-May-20
Sample Name: CCB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	233.335	0.000004	mg/L	3
Co	59	52.222	0.000003	mg/L	3
As	75	38.333	0.000105	mg/L	3
Mo	95	1510.080	0.000470	mg/L	3
Cd	111	6.667	-0.000003	mg/L	3
Sb	121	2536.892	0.000895	mg/L	3
Ba	137	15.556	-0.000000	mg/L	3
Tl	205	622.236	0.000025	mg/L	3
Pb	208	610.337	0.000011	mg/L	3
Li	7	4085.036	0.000129	mg/L	3
Be	9	126.668	0.000107	mg/L	3
B	11	604.013	0.000242	mg/L	3
Se	78	3179.281	0.000205	mg/L	3

Metals Quantitation Summary Report

Sequence #: 014
Method: 15-BWL.mth
Acq Time: 19:21:13 Thu 28-May-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	226.668	0.000002	mg/L	3
Co	59	35.556	0.000001	mg/L	3
As	75	32.000	0.000084	mg/L	3
Mo	95	992.257	0.000271	mg/L	3
Cd	111	4.444	-0.000004	mg/L	3
Sb	121	1738.995	0.000568	mg/L	3
Ba	137	15.556	-0.000001	mg/L	3
Tl	205	552.233	0.000021	mg/L	3
Pb	208	539.224	0.000007	mg/L	3
Li	7	3564.889	-0.000010	mg/L	3
Be	9	2.667	0.000002	mg/L	3
B	11	492.675	0.000130	mg/L	3
Se	78	3114.944	-0.000067	mg/L	3

Metals Quantitation Summary Report

Sequence #: 015
Method: 15-BWL.mth
Acq Time: 19:23:28 Thu 28-May-20
Sample Name: BS-0.0001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	647.793	0.000112	mg/L		3
Co	59	915.585	0.000104	mg/L		3
Cd	111	131.112	0.000093	mg/L		3
Ba	137	150.001	0.000085	mg/L		3
Tl	205	1942.355	0.000102	mg/L		3
Pb	208	2279.309	0.000101	mg/L		3
Li	7	4156.162	0.000110	mg/L		3
Be	9	118.000	0.000096	mg/L		3
B	11	475.341	0.000110	mg/L		3
Se	78	3247.760	0.000107	mg/L		3

Metals Quantitation Summary Report

Sequence #: 016
Method: 15-BWL.mth
Acq Time: 19:25:42 Thu 28-May-20
Sample Name: BS-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	2293.518	0.000541	mg/L	3
Co	59	4521.827	0.000521	mg/L	3
As	75	174.334	0.000532	mg/L	3
Mo	95	1966.802	0.000630	mg/L	3
Cd	111	674.460	0.000504	mg/L	3
Ba	137	855.581	0.000531	mg/L	3
Tl	205	9168.498	0.000527	mg/L	3
Pb	208	9472.051	0.000494	mg/L	3
Li	7	5961.245	0.000537	mg/L	3
Be	9	602.013	0.000500	mg/L	3
B	11	920.696	0.000511	mg/L	3
Se	78	3398.381	0.000518	mg/L	3

Metals Quantitation Summary Report

Sequence #: 017
Method: 15-BWL.mth
Acq Time: 19:30:30 Thu 28-May-20
Sample Name: Solu-AB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	79421.306	0.022363	mg/L	3
Co	59	179028.221	0.022428	mg/L	3
As	75	6660.553	0.022680	mg/L	3
Mo	95	542196.460	0.217892	mg/L	3
Cd	111	26398.815	0.021610	mg/L	3

Metals Quantitation Summary Report

Sequence #: 018
Method: 15-BWL.mth
Acq Time: 19:32:45 Thu 28-May-20
Sample Name: Solu-AA
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	373.338	0.000046	mg/L	3
Co	59	288.892	0.000032	mg/L	3
As	75	40.333	0.000118	mg/L	3
Cd	111	201.113	0.000155	mg/L	3
Sb	121	761.131	0.000194	mg/L	3
Ba	137	344.449	0.000222	mg/L	3
Tl	205	403.339	0.000011	mg/L	3
Pb	208	740.339	0.000017	mg/L	3
Li	7	3776.055	0.000050	mg/L	3
Be	9	1.333	0.000001	mg/L	3
B	11	404.006	0.000058	mg/L	3
Se	78	3154.883	0.000097	mg/L	3

Metals Quantitation Summary Report

Sequence #: 019
Method: 15-BWL.mth
Acq Time: 19:37:35 Thu 28-May-20
Sample Name: 052820_3 LCS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	191749.435	0.050055	mg/L	3
Co	59	437013.992	0.050690	mg/L	3
As	75	15709.301	0.049553	mg/L	3
Mo	95	131780.670	0.048949	mg/L	3
Cd	111	66414.056	0.050344	mg/L	3
Sb	121	116109.988	0.045839	mg/L	3
Ba	137	78071.766	0.049435	mg/L	3
Tl	205	861322.169	0.050297	mg/L	3
Pb	208	897616.158	0.048575	mg/L	3
Li	7	219939.225	0.047263	mg/L	3
Be	9	59977.662	0.048304	mg/L	3
B	11	56431.261	0.047848	mg/L	3
Se	78	29916.948	0.048315	mg/L	3

Metals Quantitation Summary Report

Sequence #: 020
Method: 15-BWL.mth
Acq Time: 19:39:49 Thu 28-May-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	284.447	0.000017	mg/L	3
Co	59	124.445	0.000011	mg/L	3
As	75	66.667	0.000195	mg/L	3
Mo	95	5338.775	0.001906	mg/L	3
Cd	111	45.556	0.000027	mg/L	3
Sb	121	3228.143	0.001165	mg/L	3
Ba	137	53.333	0.000024	mg/L	3
Tl	205	613.351	0.000024	mg/L	3
Pb	208	1233.689	0.000044	mg/L	3
Li	7	3712.706	0.000020	mg/L	3
Be	9	7.333	0.000006	mg/L	3
B	11	581.345	0.000206	mg/L	3
Se	78	3425.086	0.000489	mg/L	3

Metals Quantitation Summary Report

Sequence #: 021
Method: 15-BWL.mth
Acq Time: 19:42:04 Thu 28-May-20
Sample Name: 052820_3 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	205.557	-0.000004	mg/L	3
Co	59	13.333	-0.000002	mg/L	3
As	75	32.000	0.000084	mg/L	3
Mo	95	2505.776	0.000833	mg/L	3
Cd	111	12.222	0.000002	mg/L	3
Sb	121	1651.207	0.000529	mg/L	3
Ba	137	18.889	0.000001	mg/L	3
Tl	205	128.889	-0.000005	mg/L	3
Pb	208	494.779	0.000004	mg/L	3
Li	7	3591.563	-0.000009	mg/L	3
Be	9	7.333	0.000006	mg/L	3
B	11	465.341	0.000104	mg/L	3
Se	78	3227.776	0.000108	mg/L	3

Metals Quantitation Summary Report

Sequence #: 022
Method: 15-BWL.mth
Acq Time: 19:52:04 Thu 28-May-20
Sample Name: BS-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	4302.870	0.001050	mg/L	3
Co	59	9065.098	0.001033	mg/L	3
As	75	347.338	0.001062	mg/L	3
Mo	95	3495.983	0.001181	mg/L	3
Cd	111	1345.619	0.000998	mg/L	3
Sb	121	3612.679	0.001283	mg/L	3
Ba	137	1587.866	0.000981	mg/L	3
Tl	205	18369.582	0.001071	mg/L	3
Pb	208	19119.698	0.001022	mg/L	3
Li	7	8280.179	0.001047	mg/L	3
Be	9	1214.719	0.001002	mg/L	3
B	11	1458.741	0.000975	mg/L	3
Se	78	3628.549	0.000899	mg/L	3

Metals Quantitation Summary Report

Sequence #: 029
Method: 15-BWL.mth
Acq Time: 20:16:08 Thu 28-May-20
Sample Name: 14264.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	1255.611	0.001462	mg/L	3
Co	59	3348.170	0.002059	mg/L	3
As	75	275.669	0.004556	mg/L	3
Mo	95	1448.963	0.002373	mg/L	3
Cd	111	10.000	0.000003	mg/L	3
Sb	121	236.669	-0.000133	mg/L	3
Ba	137	44415.621	0.150241	mg/L	3
Tl	205	64.445	-0.000043	mg/L	3
Pb	208	2212.636	0.000487	mg/L	3
Li	7	22380.863	0.023066	mg/L	3
Be	9	8.000	0.000036	mg/L	3
B	11	57257.917	0.269186	mg/L	3
Se	78	3094.263	0.001901	mg/L	3

Metals Quantitation Summary Report

Sequence #: 030
Method: 15-BWL.mth
Acq Time: 20:18:22 Thu 28-May-20
Sample Name: 14264.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	240.002	0.000052	mg/L	3
Co	59	6129.092	0.003877	mg/L	3
As	75	72.334	0.001161	mg/L	3
Mo	95	3947.212	0.007537	mg/L	3
Cd	111	18.889	0.000041	mg/L	3
Sb	121	218.891	-0.000159	mg/L	3
Ba	137	12321.981	0.042678	mg/L	3
Tl	205	96.667	-0.000033	mg/L	3
Pb	208	678.115	0.000072	mg/L	3
Li	7	41960.446	0.046834	mg/L	3
Be	9	2.667	0.000012	mg/L	3
B	11	716350.213	3.389231	mg/L	3
Se	78	3029.469	0.001281	mg/L	3

Metals Quantitation Summary Report

Sequence #: 031
Method: 15-BWL.mth
Acq Time: 20:20:35 Thu 28-May-20
Sample Name: 14264.03s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	275.558	0.000090	mg/L	3
Co	59	534.454	0.000312	mg/L	3
As	75	383.338	0.006314	mg/L	3
Mo	95	2337.970	0.004101	mg/L	3
Cd	111	8.889	-0.000002	mg/L	3
Sb	121	235.558	-0.000139	mg/L	3
Ba	137	49397.485	0.165584	mg/L	3
Tl	205	38.889	-0.000051	mg/L	3
Pb	208	333.667	-0.000024	mg/L	3
Li	7	11300.024	0.009265	mg/L	3
Be	9	0.000	0.000000	mg/L	3
B	11	12318.644	0.055094	mg/L	3
Se	78	3044.403	0.000531	mg/L	3

Metals Quantitation Summary Report

Sequence #: 032
Method: 15-BWL.mth
Acq Time: 20:22:49 Thu 28-May-20
Sample Name: 14264.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	1809.004	0.002425	mg/L	3
Co	59	2968.086	0.001962	mg/L	3
As	75	112.334	0.001948	mg/L	3
Mo	95	23859.910	0.050518	mg/L	3
Cd	111	38.889	0.000132	mg/L	3
Sb	121	301.114	0.000052	mg/L	3
Ba	137	15445.017	0.056163	mg/L	3
Tl	205	388.894	0.000057	mg/L	3
Pb	208	5623.127	0.001481	mg/L	3
Li	7	43577.490	0.051238	mg/L	3
Be	9	20.000	0.000094	mg/L	3
B	11	1049536.648	5.196095	mg/L	3
Se	78	2977.198	0.002149	mg/L	3

Metals Quantitation Summary Report

Sequence #: 033
Method: 15-BWL.mth
Acq Time: 20:25:05 Thu 28-May-20
Sample Name: 14264.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	534.455	0.002263	mg/L	3
Co	59	680.016	0.002019	mg/L	3
As	75	26.333	0.001769	mg/L	3
Mo	95	5497.725	0.051908	mg/L	3
Cd	111	10.000	0.000014	mg/L	3
Sb	121	183.335	-0.001237	mg/L	3
Ba	137	3253.704	0.054576	mg/L	3
Tl	205	88.889	-0.000180	mg/L	3
Pb	208	1418.140	0.001371	mg/L	3
Li	7	11807.101	0.049470	mg/L	3
Be	9	6.667	0.000145	mg/L	3
B	11	231310.192	5.319760	mg/L	3
Se	78	2971.298	-0.000524	mg/L	3

Metals Quantitation Summary Report

Sequence #: 034
Method: 15-BWL.mth
Acq Time: 20:27:19 Thu 28-May-20
Sample Name: 14264.05s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	426.673	0.000316	mg/L	3
Co	59	832.247	0.000510	mg/L	3
As	75	30.333	0.000433	mg/L	3
Mo	95	10565.018	0.020917	mg/L	3
Cd	111	44.445	0.000146	mg/L	3
Sb	121	155.556	-0.000298	mg/L	3
Ba	137	14585.220	0.050283	mg/L	3
Tl	205	48.889	-0.000048	mg/L	3
Pb	208	1433.696	0.000272	mg/L	3
Li	7	35476.245	0.038367	mg/L	3
Be	9	7.333	0.000032	mg/L	3
B	11	106017.989	0.493304	mg/L	3
Se	78	3073.057	0.001283	mg/L	3

Metals Quantitation Summary Report

Sequence #: 035
Method: 15-BWL.mth
Acq Time: 20:29:33 Thu 28-May-20
Sample Name: 14264.06s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	293.336	0.000123	mg/L	3
Co	59	508.898	0.000303	mg/L	3
As	75	414.673	0.006986	mg/L	3
Mo	95	2646.912	0.004817	mg/L	3
Cd	111	7.778	-0.000006	mg/L	3
Sb	121	177.779	-0.000252	mg/L	3
Ba	137	49272.641	0.168598	mg/L	3
Tl	205	24.444	-0.000055	mg/L	3
Pb	208	369.223	-0.000013	mg/L	3
Li	7	11404.553	0.009489	mg/L	3
Be	9	1.333	0.000006	mg/L	3
B	11	12302.640	0.055449	mg/L	3
Se	78	2971.035	0.000048	mg/L	3

Metals Quantitation Summary Report

Sequence #: 036
Method: 15-BWL.mth
Acq Time: 20:31:47 Thu 28-May-20
Sample Name: 14264.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	193.335	-0.000036	mg/L		3
Co	59	8.889	-0.000011	mg/L		3
As	75	8.333	0.000044	mg/L		3
Mo	95	580.012	0.000585	mg/L		3
Cd	111	5.556	-0.000016	mg/L		3
Sb	121	172.223	-0.000288	mg/L		3
Ba	137	41.111	0.000079	mg/L		3
Tl	205	17.778	-0.000057	mg/L		3
Pb	208	287.000	-0.000038	mg/L		3
Li	7	3769.386	0.000280	mg/L		3
Be	9	0.667	0.000003	mg/L		3
B	11	1298.059	0.004302	mg/L		3
Se	78	2987.553	-0.000823	mg/L		3

Metals Quantitation Summary Report

Sequence #: 037
Method: 15-BWL.mth
Acq Time: 20:34:01 Thu 28-May-20
Sample Name: 14264.07 MS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	182691.299	0.244124	mg/L	3
Co	59	407972.849	0.242314	mg/L	3
As	75	15200.750	0.245453	mg/L	3
Mo	95	121799.310	0.231598	mg/L	3
Cd	111	64443.934	0.250074	mg/L	3
Sb	121	117575.189	0.237656	mg/L	3
Ba	137	78546.475	0.254691	mg/L	3
Tl	205	874836.774	0.252769	mg/L	3
Pb	208	906057.276	0.242608	mg/L	3
Li	7	228421.021	0.259391	mg/L	3
Be	9	60442.263	0.256796	mg/L	3
B	11	57207.665	0.256021	mg/L	3
Se	78	28558.993	0.243551	mg/L	3

Metals Quantitation Summary Report

Sequence #: 038
Method: 15-BWL.mth
Acq Time: 20:36:15 Thu 28-May-20
Sample Name: 14264.07 MSD
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	183917.586	0.249450	mg/L	3
Co	59	415973.869	0.250688	mg/L	3
As	75	15339.231	0.251385	mg/L	3
Mo	95	129365.420	0.249700	mg/L	3
Cd	111	64957.359	0.255868	mg/L	3
Sb	121	120463.559	0.247162	mg/L	3
Ba	137	76886.360	0.252993	mg/L	3
Tl	205	878995.336	0.261935	mg/L	3
Pb	208	905927.846	0.250158	mg/L	3
Li	7	229896.366	0.259577	mg/L	3
Be	9	59702.495	0.252263	mg/L	3
B	11	57462.684	0.255761	mg/L	3
Se	78	28702.344	0.243507	mg/L	3

Metals Quantitation Summary Report

Sequence #: 039
Method: 15-BWL.mth
Acq Time: 20:39:55 Thu 28-May-20
Sample Name: CCV2-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 05/27/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	367716.187	0.101998	mg/L	3
Co	59	821451.815	0.101203	mg/L	3
As	75	31253.484	0.104703	mg/L	3
Mo	95	260130.161	0.102728	mg/L	3
Cd	111	131588.852	0.105938	mg/L	3
Sb	121	252696.557	0.106103	mg/L	3
Ba	137	156058.900	0.104967	mg/L	3
Tl	205	1712002.621	0.101779	mg/L	3
Pb	208	1798331.775	0.099089	mg/L	3
Li	7	438644.740	0.102519	mg/L	3
Be	9	121677.342	0.105618	mg/L	3
B	11	112568.494	0.103217	mg/L	3
Se	78	55647.319	0.102746	mg/L	3

Metals Quantitation Summary Report

Sequence #: 040
Method: 15-BWL.mth
Acq Time: 20:42:46 Thu 28-May-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	261.114	0.000012	mg/L	3
Co	59	47.778	0.000003	mg/L	3
As	75	87.000	0.000266	mg/L	3
Mo	95	4814.145	0.001750	mg/L	3
Cd	111	13.333	0.000003	mg/L	3
Sb	121	4454.029	0.001695	mg/L	3
Ba	137	28.889	0.000008	mg/L	3
Tl	205	617.791	0.000024	mg/L	3
Pb	208	1123.684	0.000038	mg/L	3
Li	7	3598.231	0.000043	mg/L	3
Be	9	23.333	0.000020	mg/L	3
B	11	868.693	0.000502	mg/L	3
Se	78	3387.654	0.000797	mg/L	3

Metals Quantitation Summary Report

Sequence #: 041
Method: 15-BWL.mth
Acq Time: 20:47:15 Thu 28-May-20
Sample Name: CCB2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0528A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	223.335	0.000000	mg/L	3
Co	59	31.111	0.000000	mg/L	3
As	75	39.000	0.000106	mg/L	3
Mo	95	1477.854	0.000452	mg/L	3
Cd	111	8.889	-0.000001	mg/L	3
Sb	121	2056.815	0.000693	mg/L	3
Ba	137	21.111	0.000003	mg/L	3
Tl	205	172.223	-0.000002	mg/L	3
Pb	208	581.447	0.000009	mg/L	3
Li	7	3541.551	-0.000001	mg/L	3
Be	9	0.000	0.000000	mg/L	3
B	11	750.020	0.000366	mg/L	3
Se	78	3048.558	-0.000087	mg/L	3

Metals Quantitation Summary Report

Sequence #: 001
Method: 01-MINERALS.mth
Acq Time: 12:22:49 Fri 29-May-20
Sample Name: Blank
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	7826.667	0	mg/L		3
Mg	24	4266.667	0	mg/L		3
K	39	109816.667	0	mg/L		3
Ca	44	4796.667	0	mg/L		3

Metals Quantitation Summary Report

Sequence #: 002
Method: 01-MINERALS.mth
Acq Time: 12:24:01 Fri 29-May-20
Sample Name: Std-0.20
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	212683.333	0.196891	mg/L		3
Mg	24	140331.667	0.195157	mg/L		3
K	39	305043.333	0.191168	mg/L		3
Ca	44	9388.333	0.196561	mg/L		3

Metals Quantitation Summary Report

Sequence #: 003
Method: 01-MINERALS.mth
Acq Time: 12:25:13 Fri 29-May-20
Sample Name: Std-0.50
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	550961.667	0.508616	mg/L		3
Mg	24	358855.000	0.495516	mg/L		3
K	39	624768.333	0.492680	mg/L		3
Ca	44	16476.667	0.489635	mg/L		3

Metals Quantitation Summary Report

Sequence #: 004
Method: 01-MINERALS.mth
Acq Time: 12:26:25 Fri 29-May-20
Sample Name: Std-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	1065660.000	1.025269	mg/L	3
Mg	24	706638.333	1.015799	mg/L	3
K	39	1120391.667	1.009299	mg/L	3
Ca	44	27683.333	1.010438	mg/L	3

Metals Quantitation Summary Report

Sequence #: 005
Method: 01-MINERALS.mth
Acq Time: 12:27:37 Fri 29-May-20
Sample Name: Std-2.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2087280.000	2.007541	mg/L		3
Mg	24	1380386.667	1.981892	mg/L		3
K	39	2064105.000	1.945629	mg/L		3
Ca	44	48791.667	1.937121	mg/L		3

Metals Quantitation Summary Report

Sequence #: 006
Method: 01-MINERALS.mth
Acq Time: 12:28:48 Fri 29-May-20
Sample Name: Std-5.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	5222510.000	4.991193	mg/L		3
Mg	24	3508136.667	5.004725	mg/L		3
K	39	5193370.000	5.020974	mg/L		3
Ca	44	119736.667	5.024238	mg/L		3

Metals Quantitation Summary Report

Sequence #: 007
Method: 01-MINERALS.mth
Acq Time: 12:31:11 Fri 29-May-20
Sample Name: CCV-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 05/27/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2163455.000	2.054708	mg/L		3
Mg	24	1410593.333	2.000246	mg/L		3
K	39	2146858.333	2.000927	mg/L		3
Ca	44	50906.667	2.001950	mg/L		3

Metals Quantitation Summary Report

Sequence #: 008
Method: 01-MINERALS.mth
Acq Time: 12:35:56 Fri 29-May-20
Sample Name: ICV-2.0
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 05/27/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	2073156.667	1.990831	mg/L	3
Mg	24	1411841.667	2.024486	mg/L	3
K	39	2096406.667	1.974527	mg/L	3
Ca	44	49870.000	1.981731	mg/L	3

Metals Quantitation Summary Report

Sequence #: 009
Method: 01-MINERALS.mth
Acq Time: 12:37:08 Fri 29-May-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	7696.667	-0.000180	mg/L	3
Mg	24	4231.667	-0.000094	mg/L	3
K	39	109320.000	-0.001263	mg/L	3
Ca	44	4676.667	-0.006847	mg/L	3

Metals Quantitation Summary Report

Sequence #: 010
Method: 01-MINERALS.mth
Acq Time: 12:38:20 Fri 29-May-20
Sample Name: CCB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	7840.000	-0.000263	mg/L	3
Mg	24	4356.667	-0.000097	mg/L	3
K	39	111271.667	-0.002573	mg/L	3
Ca	44	4861.667	-0.004919	mg/L	3

Metals Quantitation Summary Report

Sequence #: 011
Method: 01-MINERALS.mth
Acq Time: 12:39:31 Fri 29-May-20
Sample Name: BS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	62103.333	0.050808	mg/L		3
Mg	24	39615.000	0.049429	mg/L		3
K	39	164585.000	0.048293	mg/L		3
Ca	44	5981.667	0.041408	mg/L		3

Metals Quantitation Summary Report

Sequence #: 012
Method: 01-MINERALS.mth
Acq Time: 12:46:09 Fri 29-May-20
Sample Name: 052820_3 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1065543.333	1.015509	mg/L		3
Mg	24	705236.667	1.004083	mg/L		3
K	39	1115733.333	0.994141	mg/L		3
Ca	44	28326.667	1.026948	mg/L		3

Metals Quantitation Summary Report

Sequence #: 013
Method: 01-MINERALS.mth
Acq Time: 12:47:21 Fri 29-May-20
Sample Name: 052820_3 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	7838.333	-0.000197	mg/L		3
Mg	24	4345.000	-0.000057	mg/L		3
K	39	111365.000	-0.001478	mg/L		3
Ca	44	4811.667	-0.005164	mg/L		3

Metals Quantitation Summary Report

Sequence #: 015
Method: 01-MINERALS.mth
Acq Time: 12:57:01 Fri 29-May-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	16973.333	0.008400	mg/L		3
Mg	24	4596.667	0.000233	mg/L		3
K	39	119521.667	0.005325	mg/L		3
Ca	44	4901.667	-0.003514	mg/L		3

Metals Quantitation Summary Report

Sequence #: 016
Method: 01-MINERALS.mth
Acq Time: 12:58:13 Fri 29-May-20
Sample Name: 14264.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	8668.333	0.002589	mg/L		3
Mg	24	5518.333	0.007726	mg/L		3
K	39	115813.333	0.008949	mg/L		3
Ca	44	6601.667	0.352645	mg/L		3

Metals Quantitation Summary Report

Sequence #: 017
Method: 01-MINERALS.mth
Acq Time: 13:05:07 Fri 29-May-20
Sample Name: 14264.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	8490846.667	41.525870	mg/L		3
Mg	24	6989418.333	51.015214	mg/L		3
K	39	420833.333	1.567615	mg/L		3
Ca	44	810020.000	180.216186	mg/L		3

Metals Quantitation Summary Report

Sequence #: 018
Method: 01-MINERALS.mth
Acq Time: 13:08:03 Fri 29-May-20
Sample Name: 14264.01 dil
Sample Type: Sample
Matrix: Liquid
Comments: 50/1=50
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	871855.000	41.058341	mg/L		3
Mg	24	725770.000	51.156655	mg/L		3
K	39	149525.000	1.744080	mg/L		3
Ca	44	83555.000	170.709602	mg/L		3

Metals Quantitation Summary Report

Sequence #: 020
Method: 01-MINERALS.mth
Acq Time: 13:10:25 Fri 29-May-20
Sample Name: 14264.02s
Sample Type: Sample
Matrix: Liquid
Comments: 50/1=50
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	955256.667	44.676983	mg/L		3
Mg	24	957368.333	67.076440	mg/L		3
K	39	134943.333	0.979378	mg/L		3
Ca	44	123948.333	256.555664	mg/L		3

Metals Quantitation Summary Report

Sequence #: 022
Method: 01-MINERALS.mth
Acq Time: 13:12:48 Fri 29-May-20
Sample Name: 14264.03s
Sample Type: Sample
Matrix: Liquid
Comments: 50/1=50
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	598330.000	27.886210	mg/L		3
Mg	24	569686.667	39.850424	mg/L		3
K	39	146666.667	1.564070	mg/L		3
Ca	44	58346.667	115.244582	mg/L		3

Metals Quantitation Summary Report

Sequence #: 024
Method: 01-MINERALS.mth
Acq Time: 13:15:11 Fri 29-May-20
Sample Name: 14264.04s
Sample Type: Sample
Matrix: Liquid
Comments: 50/1=50
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2264948.333	107.810337	mg/L		3
Mg	24	1212926.667	86.158214	mg/L		3
K	39	224655.000	5.486233	mg/L		3
Ca	44	151630.000	320.341248	mg/L		3

Metals Quantitation Summary Report

Sequence #: 026
Method: 01-MINERALS.mth
Acq Time: 13:17:34 Fri 29-May-20
Sample Name: 14264.05s
Sample Type: Sample
Matrix: Liquid
Comments: 50/1=50
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	677821.667	31.419040	mg/L		3
Mg	24	421290.000	29.182876	mg/L		3
K	39	235115.000	5.798349	mg/L		3
Ca	44	71993.333	143.638763	mg/L		3

Metals Quantitation Summary Report

Sequence #: 028
Method: 01-MINERALS.mth
Acq Time: 13:19:57 Fri 29-May-20
Sample Name: 14264.06s
Sample Type: Sample
Matrix: Liquid
Comments: 50/1=50
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	598131.667	27.994205	mg/L		3
Mg	24	567035.000	39.827842	mg/L		3
K	39	146491.667	1.583695	mg/L		3
Ca	44	57841.667	114.649481	mg/L		3

Metals Quantitation Summary Report

Sequence #: 033
Method: 01-MINERALS.mth
Acq Time: 13:35:34 Fri 29-May-20
Sample Name: CCV2-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 05/27/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2166456.667	2.066592	mg/L		3
Mg	24	1396878.333	1.989068	mg/L		3
K	39	2155606.667	2.018465	mg/L		3
Ca	44	50865.000	2.009384	mg/L		3

Metals Quantitation Summary Report

Sequence #: 034
Method: 01-MINERALS.mth
Acq Time: 13:36:46 Fri 29-May-20
Sample Name: CCB2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052820-3
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	24525.000	0.015869	mg/L		3
Mg	24	5091.667	0.001040	mg/L		3
K	39	117993.333	0.005266	mg/L		3
Ca	44	4900.000	-0.001005	mg/L		3

Metals Quantitation Summary Report

Sequence #: 035
Method: 01-MINERALS.mth
Acq Time: 13:40:58 Fri 29-May-20
Sample Name: 052920_2 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052920-2
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1111920.000	1.046250	mg/L		3
Mg	24	717036.667	1.007747	mg/L		3
K	39	1136463.333	1.000457	mg/L		3
Ca	44	29033.333	1.042035	mg/L		3

Metals Quantitation Summary Report

Sequence #: 036
Method: 01-MINERALS.mth
Acq Time: 13:42:10 Fri 29-May-20
Sample Name: 052920_2 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052920-2
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	13971.667	0.005651	mg/L		3
Mg	24	6216.667	0.002628	mg/L		3
K	39	117050.000	0.005085	mg/L		3
Ca	44	4878.333	-0.000622	mg/L		3

Metals Quantitation Summary Report

Sequence #: 045
Method: 01-MINERALS.mth
Acq Time: 13:53:50 Fri 29-May-20
Sample Name: CCV3-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 05/27/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052920-2
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2214940.000	2.105772	mg/L		3
Mg	24	1481233.333	2.102344	mg/L		3
K	39	2221915.000	2.077513	mg/L		3
Ca	44	51905.000	2.048282	mg/L		3

Metals Quantitation Summary Report

Sequence #: 046
Method: 01-MINERALS.mth
Acq Time: 13:55:02 Fri 29-May-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052920-2
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	24733.333	0.015976	mg/L		3
Mg	24	4656.667	0.000376	mg/L		3
K	39	119821.667	0.006687	mg/L		3
Ca	44	4690.000	-0.010878	mg/L		3

Metals Quantitation Summary Report

Sequence #: 066
Method: 01-MINERALS.mth
Acq Time: 14:44:11 Fri 29-May-20
Sample Name: CCV3-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 05/27/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052920-2
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2213676.667	2.062965	mg/L		3
Mg	24	1444125.000	2.009481	mg/L		3
K	39	2204076.667	2.017481	mg/L		3
Ca	44	52146.667	2.014307	mg/L		3

Metals Quantitation Summary Report

Sequence #: 067
Method: 01-MINERALS.mth
Acq Time: 14:45:23 Fri 29-May-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052920-2
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	24541.667	0.015716	mg/L		3
Mg	24	4445.000	0.000053	mg/L		3
K	39	118223.333	0.004709	mg/L		3
Ca	44	4745.000	-0.009173	mg/L		3

Metals Quantitation Summary Report

Sequence #: 085
Method: 01-MINERALS.mth
Acq Time: 15:07:17 Fri 29-May-20
Sample Name: CCV4-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 05/27/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052920-2
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2142948.333	2.048821	mg/L		3
Mg	24	1399401.667	1.997646	mg/L		3
K	39	2149366.667	2.017540	mg/L		3
Ca	44	50408.333	1.994687	mg/L		3

Metals Quantitation Summary Report

Sequence #: 086
Method: 01-MINERALS.mth
Acq Time: 15:09:12 Fri 29-May-20
Sample Name: CCB4
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0529A.cal
Cal Type: External Calibration
Last Calib: MTD-052920-2
Bkg File:
Int Correct:
Blank File: Blank.011

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	24698.333	0.015840	mg/L		3
Mg	24	4600.000	0.000268	mg/L		3
K	39	118350.000	0.004726	mg/L		3
Ca	44	4833.333	-0.005521	mg/L		3

Metals Digestion 3015A | 3050B

DATE 5/28/20

PREP BATCH MTD-052820-3

TIME START 1900

TIME FINISH 1930

ANALYST DB

Pipet Calibration:

Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria	Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria
2	1			Bias: Mean \pm 2% of nominal value Precision: RSD \leq 1% of nominal value	3	1			Bias: Mean \pm 2% of nominal value Precision: RSD \leq 1% of nominal value
	2					2			
	3					3			

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	FINAL VOLUME (ml)	REMARKS	% TOTAL SOLIDS	DILUTION FACTOR
LCS-052820.3	----	50	50		—	1
LRB-052820.3	----	50	50		—	1
14291.01		10				5
02						
03						
14264.01						
02						
03						
04						
05						
06						
07						
07MS						
07MSD						
14250.01		25				2
14278.01		1.0				50
01MS				cat		
01MS0				cat		

NOTES: 1) Spike values (unless otherwise stated):
 LCS = 0.05 ppm = 50 mls / 0.50 mls of 5ppm Spiking Solution
 Samples: Water = 0.05 ppm = 50 mls / 0.50 mls of 5ppm Spiking Solution
 Soil = 0.10 ppm = 50 mls / 1.0 mls of 5ppm Spiking Solution
 Spiking Solution - Date Prepared: 5/10/20

2) Spike values for minerals (Ca-Mg-K-Na)
 LCS = 1.0 ppm = 50 mls / 0.50 mls HM Stock Solution
 Samples (Water or Soil) = 2.0 ppm = 50 mls / 1.0 mls HM Stock Solution
 High Purity Stock Solution (HM) - Lot # 19127522-500

3) HNO₃ Lot # 0000245675 4) Centrifuge Tube Lot # 191210-060

5) Balance ID: M2 24884 DB 5/16/20
 Reviewed by CCM On 5-27-20

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	6/1/2020 3:23:26 PM	Calibration Blank	Liquid	
002	6/1/2020 3:25:18 PM	Standard #1	Liquid	
003	6/1/2020 3:27:10 PM	Standard #2	Liquid	
004	6/1/2020 3:29:01 PM	Standard #3	Liquid	
005	6/1/2020 3:30:53 PM	Standard #4	Liquid	
006	6/1/2020 3:32:45 PM	Standard #5	Liquid	
007	6/1/2020 3:34:36 PM	Standard #6	Liquid	
008	6/1/2020 3:37:17 PM	Standard #7	Liquid	
009	6/1/2020 3:40:04 PM	Standard #8	Liquid	
010	6/1/2020 3:42:53 PM	6	Liquid	
011	6/1/2020 3:53:20 PM	ICV-5.0 ppb	Liquid	ICV
012	6/1/2020 3:55:57 PM	ICB	Liquid	ICB
013	6/1/2020 3:57:48 PM	CCV1-2.0 ppb	Liquid	CCV
014	6/1/2020 3:59:40 PM	CCB1	Liquid	CCB
015	6/1/2020 4:01:32 PM	BS-0.10	Liquid	BS
016	6/1/2020 4:04:32 PM	060120_1 LCS-2.0	Liquid	LCS
017	6/1/2020 4:06:23 PM	060120_1 LRB	Liquid	LRB
018	6/1/2020 4:08:11 PM	14359.01s	Soil	S
019	6/1/2020 4:10:01 PM	14359.02s	Soil	S
020	6/1/2020 4:11:48 PM	14359.03s	Soil	S
021	6/1/2020 4:13:35 PM	14347.02s	Soil	S
022	6/1/2020 4:15:22 PM	14347.03s	Soil	S
023	6/1/2020 4:17:10 PM	14347.03 MS-2.0	Soil	MS
024	6/1/2020 4:18:58 PM	14347.03 MSD	Soil	MSD
025	6/1/2020 4:20:50 PM	CCV2-2.0 ppb	Liquid	
026	6/1/2020 4:22:42 PM	CCV2-2.0 ppb	Liquid	CCV
027	6/1/2020 4:26:10 PM	CCV2-2.0 ppb	Liquid	CCV
028	6/1/2020 4:28:01 PM	CCB2	Liquid	CCB
029	6/1/2020 4:29:52 PM	052920_1 LCS-2.0	Liquid	LCS
030	6/1/2020 4:31:43 PM	052920_1 LRB	Liquid	LRB
031	6/1/2020 4:33:29 PM	14275.01s	Liquid	S
032	6/1/2020 4:35:16 PM	14275.02s	Liquid	S
033	6/1/2020 4:37:04 PM	14275.03s	Liquid	S
034	6/1/2020 4:38:51 PM	14264.01s	Liquid	S
035	6/1/2020 4:40:40 PM	14264.02s	Liquid	S
036	6/1/2020 4:42:29 PM	14264.03s	Liquid	S
037	6/1/2020 4:44:18 PM	14264.03 MS-2.0	Liquid	MS
038	6/1/2020 4:46:04 PM	14264.03 MSD	Liquid	MSD
039	6/1/2020 4:47:51 PM	14264.04s	Liquid	S
040	6/1/2020 4:49:39 PM	14264.05s	Liquid	S
041	6/1/2020 4:51:27 PM	14264.06s	Liquid	S
042	6/1/2020 4:53:15 PM	14264.07s	Liquid	S
043	6/1/2020 4:55:07 PM	CCV3-2.0 ppb	Liquid	CCV
044	6/1/2020 4:56:58 PM	CCB3	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

Lab Sample ID: S14264.01

Sample Tag: L005063-01 MW-1

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	06/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

Lab Sample ID: S14264.02

Sample Tag: L005063-02 MW-2

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	06/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

Lab Sample ID: S14264.03

Sample Tag: L005063-03 MW-4

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	06/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

Lab Sample ID: S14264.04

Sample Tag: L005063-05 MW-5

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	06/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

Lab Sample ID: S14264.05

Sample Tag: L005063-06 MW-6

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	06/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

Lab Sample ID: S14264.06

Sample Tag: L005063-06 MW-4 Duplicate

Date Collected: 05/26/2020

Matrix: Wastewater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	06/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

Lab Sample ID: S14264.07

Sample Tag: L005063-07 Field Blank

Date Collected: 05/26/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	06/01/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

Note/Qualifier Key

b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
011 ICV-5.0 ppb	ICV	1.0	Hg	5.317	5.0	106	90/110	ug/L	Liquid
013 CCV1-2.0 ppb	CCV	1.0	Hg	2.137	2.0	107	90/110	ug/L	Liquid
026 CCV2-2.0 ppb	CCV	1.0	Hg	2.041	2.0	102	90/110	ug/L	Liquid
027 CCV2-2.0 ppb	CCV	1.0	Hg	2.129	2.0	107	90/110	ug/L	Liquid
043 CCV3-2.0 ppb	CCV	1.0	Hg	2.018	2.0	101	90/110	ug/L	Liquid

Form 3: Blanks

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
012 ICB	ICB	1.0	Hg	<0.03	-0.0303	ug/L	Liquid
014 CCB1	CCB	1.0	Hg	<0.03	-0.0310	ug/L	Liquid
017 060120_1 LRB	LRB	1.0	Hg	<0.03	-0.0322	ug/L	Liquid
028 CCB2	CCB	1.0	Hg	<0.03	-0.0311	ug/L	Liquid
030 052920_1 LRB	LRB	1.0	Hg	<0.03	-0.0308	ug/L	Liquid
044 CCB3	CCB	1.0	Hg	<0.03	-0.0308	ug/L	Liquid

Form 5A: Matrix Spike Sample Recovery

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
015 BS-0.10		1.0	Hg	0.092	ND	0.10	92	70/130	ug/L	Liquid
023 14347.03 MS-2.0	022 14347.03s	75.1	Hg	198.5	33.60	150.2	110	80/120	ug/kg	Soil
037 14264.03 MS-2.0	036 14264.03s	1.0	Hg	1.874	<0.2	2.0	94	80/120	ug/L	Liquid

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
024 14347.03 MSD	023 14347.03 MS-2.0	76.7	Hg	189.3	198.5	5	0/20	ug/kg	Soil
038 14264.03 MSD	037 14264.03 MS-2.0	1.0	Hg	2.070	1.874	10	0/20	ug/L	Liquid

Form 7: Laboratory Control Sample

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
016 060120_1 LCS-2.0	1.0	Hg	1.996	2.0	100	85/115	ug/L	Liquid
029 052920_1 LCS-2.0	1.0	Hg	1.937	2.0	97	85/115	ug/L	Liquid

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0601A

Instrument ID: HG QuickTrace

Analysis Date: 06/01/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Calibration Blank	6/1/2020 3:23:26 PM	Liquid	Hg
002 Standard #1	6/1/2020 3:25:18 PM	Liquid	Hg
003 Standard #2	6/1/2020 3:27:10 PM	Liquid	Hg
004 Standard #3	6/1/2020 3:29:01 PM	Liquid	Hg
005 Standard #4	6/1/2020 3:30:53 PM	Liquid	Hg
006 Standard #5	6/1/2020 3:32:45 PM	Liquid	Hg
007 Standard #6	6/1/2020 3:34:36 PM	Liquid	Hg
008 Standard #7	6/1/2020 3:37:17 PM	Liquid	Hg
009 Standard #8	6/1/2020 3:40:04 PM	Liquid	Hg
010 6	6/1/2020 3:42:53 PM	Liquid	Hg
011 ICV-5.0 ppb	6/1/2020 3:53:20 PM	Liquid	Hg
012 ICB	6/1/2020 3:55:57 PM	Liquid	Hg
013 CCV1-2.0 ppb	6/1/2020 3:57:48 PM	Liquid	Hg
014 CCB1	6/1/2020 3:59:40 PM	Liquid	Hg
015 BS-0.10	6/1/2020 4:01:32 PM	Liquid	Hg
016 060120_1 LCS-2.0	6/1/2020 4:04:32 PM	Liquid	Hg
017 060120_1 LRB	6/1/2020 4:06:23 PM	Liquid	Hg
018 14359.01s	6/1/2020 4:08:11 PM	Soil	Hg
019 14359.02s	6/1/2020 4:10:01 PM	Soil	Hg
020 14359.03s	6/1/2020 4:11:48 PM	Soil	Hg
021 14347.02s	6/1/2020 4:13:35 PM	Soil	Hg
022 14347.03s	6/1/2020 4:15:22 PM	Soil	Hg
023 14347.03 MS-2.0	6/1/2020 4:17:10 PM	Soil	Hg
024 14347.03 MSD	6/1/2020 4:18:58 PM	Soil	Hg
025 CCV2-2.0 ppb	6/1/2020 4:20:50 PM	Liquid	Hg
026 CCV2-2.0 ppb	6/1/2020 4:22:42 PM	Liquid	Hg
027 CCV2-2.0 ppb	6/1/2020 4:26:10 PM	Liquid	Hg
028 CCB2	6/1/2020 4:28:01 PM	Liquid	Hg
029 052920_1 LCS-2.0	6/1/2020 4:29:52 PM	Liquid	Hg
030 052920_1 LRB	6/1/2020 4:31:43 PM	Liquid	Hg
031 14275.01s	6/1/2020 4:33:29 PM	Liquid	Hg
032 14275.02s	6/1/2020 4:35:16 PM	Liquid	Hg
033 14275.03s	6/1/2020 4:37:04 PM	Liquid	Hg
034 14264.01s	6/1/2020 4:38:51 PM	Liquid	Hg
035 14264.02s	6/1/2020 4:40:40 PM	Liquid	Hg
036 14264.03s	6/1/2020 4:42:29 PM	Liquid	Hg
037 14264.03 MS-2.0	6/1/2020 4:44:18 PM	Liquid	Hg
038 14264.03 MSD	6/1/2020 4:46:04 PM	Liquid	Hg
039 14264.04s	6/1/2020 4:47:51 PM	Liquid	Hg
040 14264.05s	6/1/2020 4:49:39 PM	Liquid	Hg
041 14264.06s	6/1/2020 4:51:27 PM	Liquid	Hg
042 14264.07s	6/1/2020 4:53:15 PM	Liquid	Hg
043 CCV3-2.0 ppb	6/1/2020 4:55:07 PM	Liquid	Hg
044 CCB3	6/1/2020 4:56:58 PM	Liquid	Hg

Mercury Summary Report

Element	Seq #	Acquisition Time	Sample Name	Peak	Concentration	Units	Matrix	Dilution	Sample Wt.	Sample Vol.
Hg	001	6/1/2020 3:23:26 PM	Calibration Blank	46.7600	0.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	002	6/1/2020 3:25:18 PM	Standard #1	1655.0000	0.1000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	003	6/1/2020 3:27:10 PM	Standard #2	3084.0000	0.2000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	004	6/1/2020 3:29:01 PM	Standard #3	7443.0000	0.5000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	005	6/1/2020 3:30:53 PM	Standard #4	14360.0000	1.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	006	6/1/2020 3:32:45 PM	Standard #5	27490.0000	2.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	007	6/1/2020 3:34:36 PM	Standard #6	78460.0000	6.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	008	6/1/2020 3:37:17 PM	Standard #7	114700.0000	8.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	009	6/1/2020 3:40:04 PM	Standard #8	134200.0000	10.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	010	6/1/2020 3:42:53 PM	6	82280.0000	6.1580	ug/L	Liquid	1.0	1.0000	1.0000
Hg	011	6/1/2020 3:53:20 PM	ICV-5.0 ppb	71120.0000	5.3170	ug/L	Liquid	1.0	1.0000	1.0000
Hg	012	6/1/2020 3:55:57 PM	ICB	49.8600	-0.0303	ug/L	Liquid	1.0	1.0000	1.0000
Hg	013	6/1/2020 3:57:48 PM	CCV1-2.0 ppb	28850.0000	2.1370	ug/L	Liquid	1.0	1.0000	1.0000
Hg	014	6/1/2020 3:59:40 PM	CCB1	40.9900	-0.0310	ug/L	Liquid	1.0	1.0000	1.0000
Hg	015	6/1/2020 4:01:32 PM	BS-0.10	1669.0000	0.0916	ug/L	Liquid	1.0	1.0000	1.0000
Hg	016	6/1/2020 4:04:32 PM	060120_1 LCS-2.0	26980.0000	1.9960	ug/L	Liquid	1.0	1.0000	1.0000
Hg	017	6/1/2020 4:06:23 PM	060120_1 LRB	24.4200	-0.0322	ug/L	Liquid	1.0	1.0000	1.0000
Hg	025	6/1/2020 4:20:50 PM	CCV2-2.0 ppb	29830.0000	2.2110	ug/L	Liquid	1.0	1.0000	1.0000
Hg	026	6/1/2020 4:22:42 PM	CCV2-2.0 ppb	27580.0000	2.0410	ug/L	Liquid	1.0	1.0000	1.0000
Hg	027	6/1/2020 4:26:10 PM	CCV2-2.0 ppb	28750.0000	2.1290	ug/L	Liquid	1.0	1.0000	1.0000
Hg	028	6/1/2020 4:28:01 PM	CCB2	39.6300	-0.0311	ug/L	Liquid	1.0	1.0000	1.0000
Hg	029	6/1/2020 4:29:52 PM	052920_1 LCS-2.0	26190.0000	1.9370	ug/L	Liquid	1.0	1.0000	1.0000
Hg	030	6/1/2020 4:31:43 PM	052920_1 LRB	43.5900	-0.0308	ug/L	Liquid	1.0	1.0000	1.0000
Hg	034	6/1/2020 4:38:51 PM	14264.01s	102.6000	-0.0263	ug/L	Liquid	1.0	1.0000	1.0000
Hg	035	6/1/2020 4:40:40 PM	14264.02s	73.8400	-0.0285	ug/L	Liquid	1.0	1.0000	1.0000
Hg	036	6/1/2020 4:42:29 PM	14264.03s	64.5500	-0.0292	ug/L	Liquid	1.0	1.0000	1.0000
Hg	037	6/1/2020 4:44:18 PM	14264.03 MS-2.0	25360.0000	1.8740	ug/L	Liquid	1.0	1.0000	1.0000
Hg	038	6/1/2020 4:46:04 PM	14264.03 MSD	27960.0000	2.0700	ug/L	Liquid	1.0	1.0000	1.0000
Hg	039	6/1/2020 4:47:51 PM	14264.04s	127.6000	-0.0244	ug/L	Liquid	1.0	1.0000	1.0000
Hg	040	6/1/2020 4:49:39 PM	14264.05s	79.6000	-0.0281	ug/L	Liquid	1.0	1.0000	1.0000
Hg	041	6/1/2020 4:51:27 PM	14264.06s	60.7700	-0.0295	ug/L	Liquid	1.0	1.0000	1.0000
Hg	042	6/1/2020 4:53:15 PM	14264.07s	97.0700	-0.0267	ug/L	Liquid	1.0	1.0000	1.0000
Hg	043	6/1/2020 4:55:07 PM	CCV3-2.0 ppb	27280.0000	2.0180	ug/L	Liquid	1.0	1.0000	1.0000
Hg	044	6/1/2020 4:56:58 PM	CCB3	43.6300	-0.0308	ug/L	Liquid	1.0	1.0000	1.0000

Mercury Digestion
Method # 245.1, 7471B, 7470A (OHIO VAP)

TIME START: 1100
 TIME FINISH: 1300
 PREP BATCH: HGP-052920-1
 BALANCE ID: M2

Beginning End
 block #1 95 °C block #1 95 °C ID # P43479
 block #2 _____ °C block #2 _____ °C ID # _____
 block #3 _____ °C block #3 _____ °C ID # _____

DATE 5/29/20
 ANALYST [Signature]
 REVIEWED BY ccm
 REVIEW DATE 6-1-20

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	%TOT. SOLIDS	DRY SAMPLE WT.	DILUTION FACTOR	FINAL VOLUME	REMARKS
LCS052920-1	-----	25	-----	-----	1	25g	
LRB052920-1	-----	25	-----	-----	1	25g	
14097.02		25			1		
14249.01		12.5			2		tcp
02							
03							
14264.01		25			1		
02							
03							
04							
05							
06							
07							
14268.01		25					Drinking water
14275.01							
02							
03							
14289.01							
14296.01		0.612			41		
14310.02		25			1		
14331.01							
14343.02							
14097.02dp		25					
14264.03MS							
03MSD							
14331.01MS							
01MSD							

NOTES: 1) Spike values (unless otherwise stated):
 2.0 ppb for LCS: 0.50 ml of HPS solution, 2.0 ppb for liquid samples: 0.50 ml of HPS solution & 0.002 ppm for solid samples: 0.50 ml of HPS solution
 Centrifuge Tube Lot # 191127-068 (Date Prepared: _____ Exp _____)
 HNO₃ Lot # 000024841
 H₂SO₄ Lot # 2019061317

Pipet Calibration:

Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Notes
1	0.500	0.504	
2		0.504	
3		0.501	

ICS-1100 A Dionex IC Meth 300.0

052820

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:58:12 AM...	1.0000
2		1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:29 A...	1.0000
3		1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:17 A...	1.0000
4		1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:36:06 A...	1.0000
5		1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:55 A...	1.0000
6		1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:43 A...	1.0000
7		Blank	Unknown		1	Norm Method	Anion	Finished	5/28/2020 8:26:40 AM...	1.0000
8		BSpike 11712BS1	Check Standard		2	Norm Method	Anion	Finished	5/28/2020 8:38:56 AM...	1.0000
9		LCS 11712LCS1	Check Standard		3	Norm Method	Anion	Finished	5/28/2020 8:51:45 AM...	1.0000
10		14264.01	Unknown		4	Norm Method	Anion	Finished	5/28/2020 9:04:34 AM...	1.0000
11		14264.02	Unknown		5	Norm Method	Anion	Finished	5/28/2020 9:17:22 AM...	1.0000
12		14264.03	Unknown		6	Norm Method	Anion	Finished	5/28/2020 9:30:10 AM...	1.0000
13		14264.04	Unknown		7	Norm Method	Anion	Finished	5/28/2020 9:42:59 AM...	1.0000
14		14264.05	Unknown		8	Norm Method	Anion	Finished	5/28/2020 9:55:47 AM...	1.0000
15		14264.06	Unknown		9	Norm Method	Anion	Finished	5/28/2020 10:08:36 A...	1.0000
16		14264.07	Unknown		10	Norm Method	Anion	Finished	5/28/2020 10:21:25 A...	1.0000
17		14278.01	Unknown		11	Norm Method	Anion	Finished	5/28/2020 10:34:13 A...	1.0000
18		14279.01	Unknown		12	Norm Method	Anion	Finished	5/28/2020 10:47:01 A...	1.0000
19		14279.02	Unknown		13	Norm Method	Anion	Finished	5/28/2020 10:59:49 A...	1.0000
20		14264.01 dup	Unknown		14	Norm Method	Anion	Finished	5/28/2020 11:12:38 A...	1.0000
21		14264.01 MS 12988...	Unknown		15	Norm Method	Anion	Finished	5/28/2020 11:25:26 A...	1.0000
22		14264.01 MSD 1298...	Unknown		16	Norm Method	Anion	Finished	5/28/2020 11:38:15 A...	1.0000
23		BSpike 11712BS1	Check Standard		17	Norm Method	Anion	Finished	5/28/2020 11:51:03 A...	1.0000
24		14295.01	Unknown		18	Norm Method	Anion	Finished	5/28/2020 12:03:51 P...	1.0000

CAL ID# ICSA 031620CAL

CL200528-WL-A NTRA200528-WL-A
SFT200528-WL-A NTRI200528-WL-A





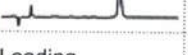
#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
7		1.0000	1.0000		Jeff Phifer	
8		1.0000	1.0000		Jeff Phifer	
9		1.0000	1.0000		Jeff Phifer	
10		10.0000	1.0000		Jeff Phifer	
11		10.0000	1.0000		Jeff Phifer	
12		10.0000	1.0000		Jeff Phifer	
13		10.0000	1.0000		Jeff Phifer	
14		10.0000	1.0000		Jeff Phifer	
15		10.0000	1.0000		Jeff Phifer	
16		2.5000	1.0000		Jeff Phifer	
17		10.0000	1.0000		Jeff Phifer	
18		10.0000	1.0000		Jeff Phifer	
19		10.0000	1.0000		Jeff Phifer	
20		10.0000	1.0000		Jeff Phifer	
21		1.0000	1.0000		Jeff Phifer	
22		1.0000	1.0000		Jeff Phifer	
23		1.0000	1.0000		Jeff Phifer	
24		5.0000	1.0000		Jeff Phifer	

052820

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
25		14295.01	Unknown		19	Norm Method	Anion	Finished	5/28/2020 12:16:40 P...	1.0000
26		14279.03	Unknown		20	Norm Method	Anion	Finished	5/28/2020 12:29:28 P...	1.0000
27		14279.04	Unknown		21	Norm Method	Anion	Finished	5/28/2020 12:42:17 P...	1.0000
28		14264.02	Unknown		22	Norm Method	Anion	Finished	5/28/2020 12:55:05 P...	1.0000
29		14264.04	Unknown		23	Norm Method	Anion	Finished	5/28/2020 1:07:54 PM...	1.0000
30	Loading...	14295.01	Unknown		24	Norm Method	Anion	Finished	5/28/2020 1:20:42 PM...	1.0000
31	Loading...	BSpike 11712BS1	Check Standard		25	Norm Method	Anion	Finished	5/28/2020 1:38:00 PM...	1.0000
32	Loading...	Blank	Unknown		26	Norm Method	Anion	Finished	5/28/2020 1:50:30 PM...	1.0000
Click here to add a new injection										

052820



#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
25		10.0000	1.0000		Jeff Phifer	
26		10.0000	1.0000		Jeff Phifer	
27		10.0000	1.0000		Jeff Phifer	
28		25.0000	1.0000		Jeff Phifer	
29		100.0000	1.0000		Jeff Phifer	
30	Loading...	50.0000	1.0000		Jeff Phifer	
31	Loading...	1.0000	1.0000		Jeff Phifer	
32	Loading...	1.0000	1.0000		Jeff Phifer	
Click here to add a new injection						

Norm Method	03/08/11 13:39	Jeff Phifer	Method 300.0	
Stage	Time	Command	Value	Comment
Instrument Setup	min			
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mM]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run			Duration = 10.000 [min]	
	0.000			
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

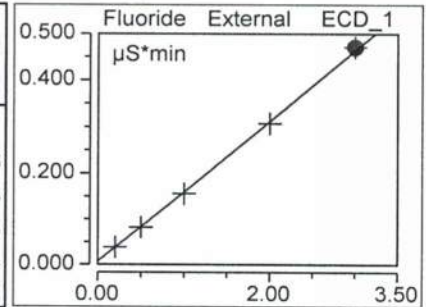
JP 5.28.20

Calibration Batch Report
CAL ID# ICSA031620CAL

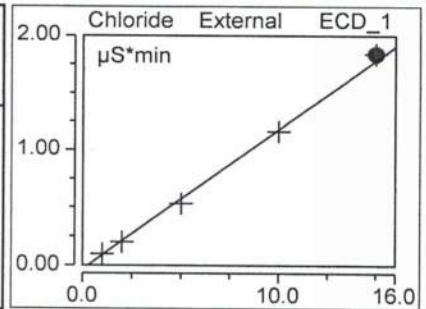
Sequence: 052820	Injection Volu: 2,500.00
Instrument Method: Norm Method	Operator: Jeff Phifer
Inj. Date / Time: 16-Mar-2020 / 11:01	Column: AS4A-SC 038777

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.01	0.007	0.152	0.000	0.9998
Chloride	Area	Lin, WithOffset, 1/A	0.02	-0.033	0.121	0.000	0.9987
Nitrite	Area	Lin, WithOffset, 1/A	0.03	-0.003	0.227	0.000	0.9997
Bromide	Area	Lin, WithOffset, 1/A	0.07	-0.001	0.043	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.09	-0.001	0.260	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.33	-0.007	0.079	0.000	0.9996
AVERAGE:				-0.0064	0.1471	0.0000	0.9996

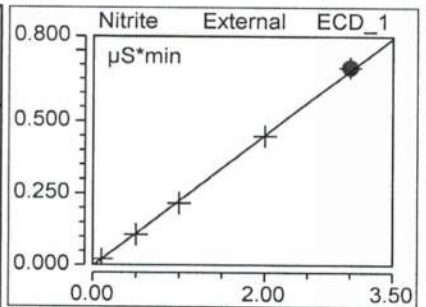
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
1130Cal1	ECD_1 1.118	ECD_1 0.0386	ECD_1 0.506	ECD_1 0.206
1130Cal2	1.118	0.0822	1.190	0.493
1130Cal3	1.118	0.1559	2.362	0.978
1130Cal4	1.118	0.3073	4.834	1.974
1130Cal5	1.118	0.4705	7.546	3.048
Average	1.118			
Rel. Std. Dev.	0.000 %			



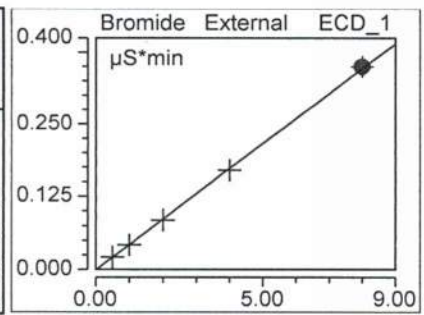
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Chloride	Chloride	Chloride	Chloride	Chloride
1130Cal1	ECD_1 1.651	ECD_1 0.0980	ECD_1 1.539	ECD_1 1.086
1130Cal2	1.651	0.2000	3.158	1.929
1130Cal3	1.661	0.5307	8.559	4.662
1130Cal4	1.664	1.1594	18.897	9.858
1130Cal5	1.664	1.8377	29.851	15.464
Average	1.658			
Rel. Std. Dev.	0.412 %			



Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Nitrite	Nitrite	Nitrite	Nitrite	Nitrite
1130Cal1	ECD_1 1.944	ECD_1 0.0206	ECD_1 0.280	ECD_1 0.105
1130Cal2	1.948	0.1071	1.441	0.486
1130Cal3	1.954	0.2163	2.949	0.967
1130Cal4	1.954	0.4487	6.229	1.989
1130Cal5	1.948	0.6905	9.755	3.054
Average	1.950			
Rel. Std. Dev.	0.229 %			

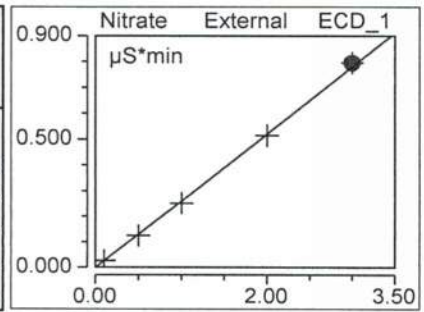


Injection Name	Ret. Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Bromide	Bromide	Bromide	Bromide	Bromide
1130Cal1	ECD_1 2.871	ECD_1 0.0210	ECD_1 0.228	ECD_1 0.511
1130Cal2	2.868	0.0422	0.461	0.999
1130Cal3	2.884	0.0843	0.917	1.969
1130Cal4	2.874	0.1696	1.866	3.936
1130Cal5	2.848	0.3497	3.898	8.085
Average	2.869			
Rel. Std. Dev.	0.469 %			

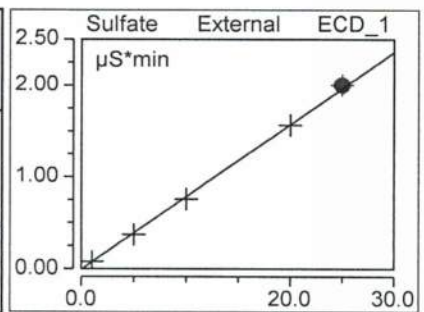


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Injection Name	Ret. Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Nitrate	Nitrate	Nitrate	Nitrate	Nitrate
1130Cal1	ECD_1 3.244	ECD_1 0.0266	ECD_1 0.254	ECD_1 0.105
1130Cal2	3.234	0.1249	1.182	0.483
1130Cal3	3.248	0.2515	2.359	0.970
1130Cal4	3.228	0.5145	4.808	1.982
1130Cal5	3.194	0.7947	7.457	3.060
Average	3.230			
Rel. Std. Dev.	0.659 %			



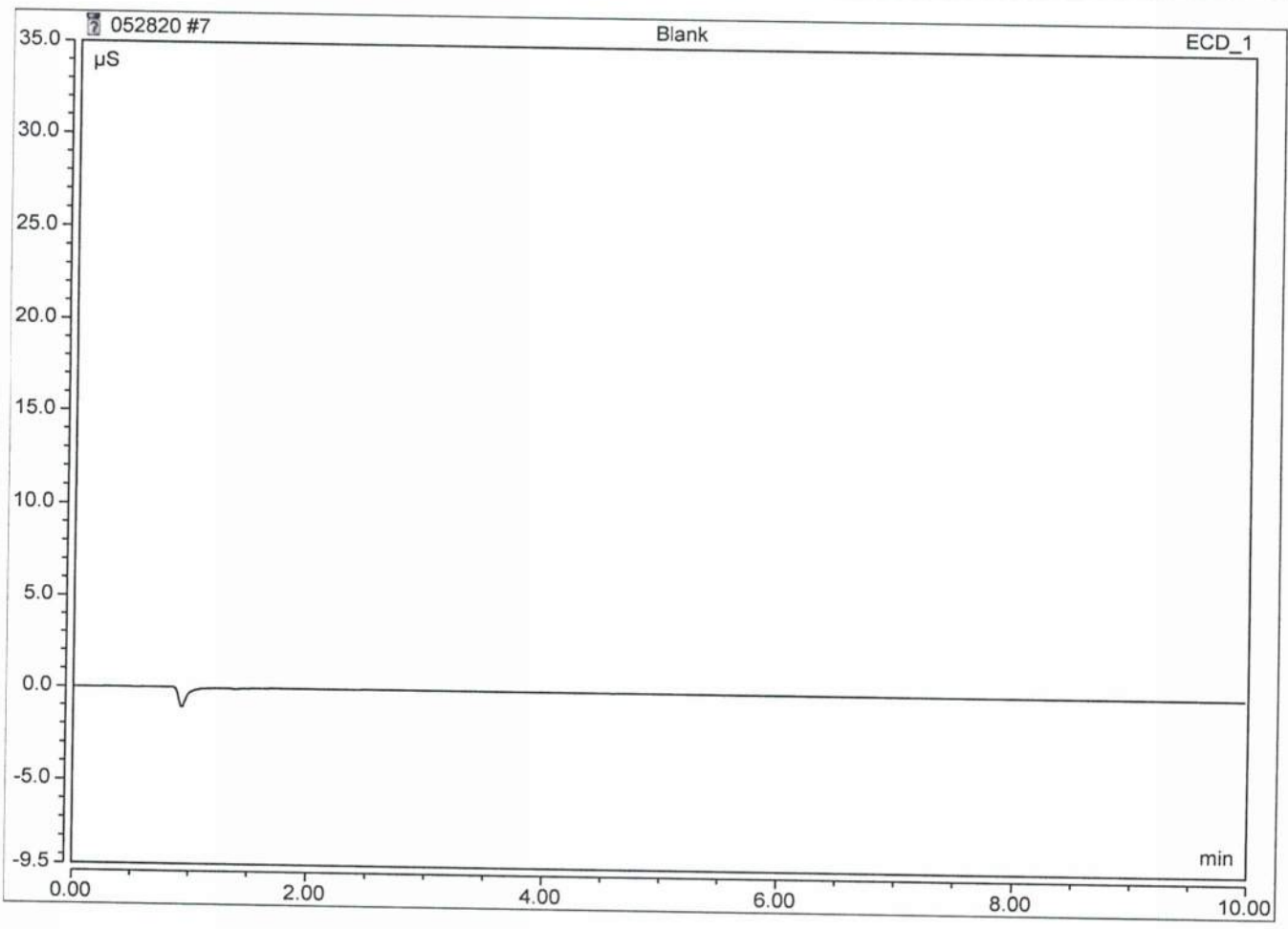
Injection Name	Ret. Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
1130Cal1	ECD_1 6.768	ECD_1 0.0763	ECD_1 0.333	ECD_1 1.054
1130Cal2	6.754	0.3712	1.645	4.800
1130Cal3	6.744	0.7553	3.326	9.676
1130Cal4	6.721	1.5656	6.872	19.966
1130Cal5	6.718	2.0017	8.764	25.504
Average	6.741			
Rel. Std. Dev.	0.319 %			



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 08:26	Operator:	Jeff Phifer

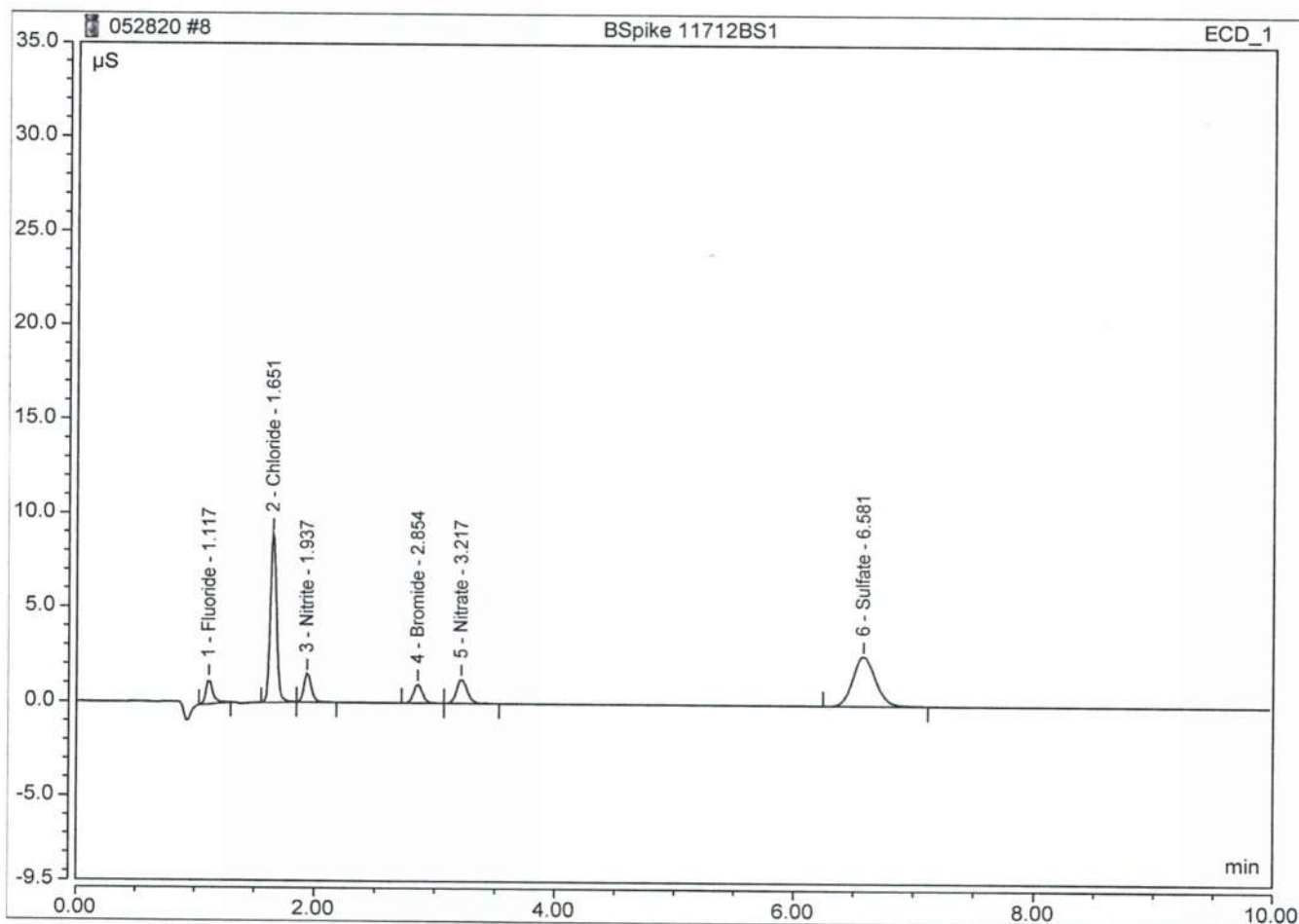
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	BSpike 11712BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 08:38	Operator:	Jeff Phifer

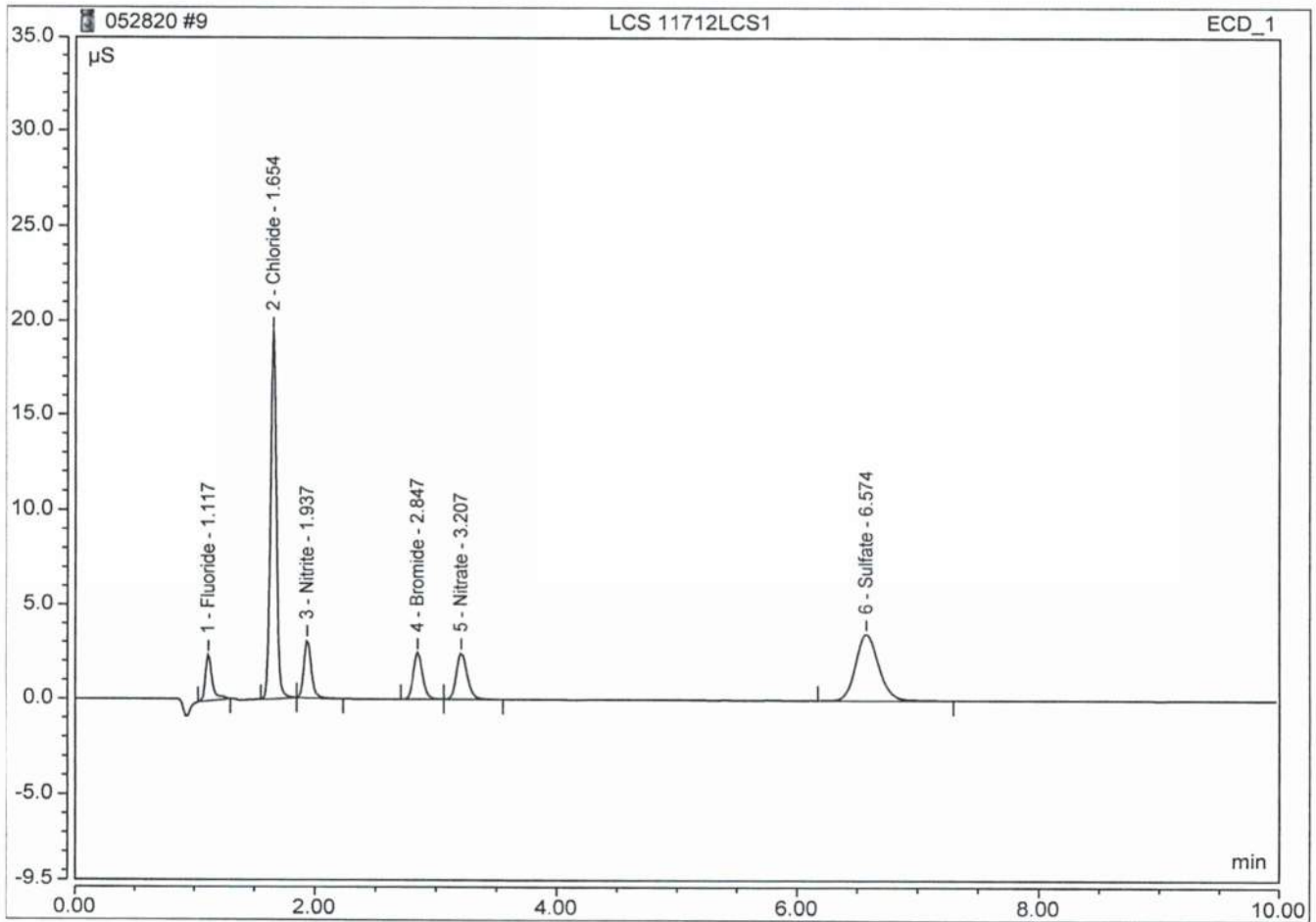
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.086	1.286	0.5158
2	1.65	Chloride	BMB	0.540	8.952	5 4.7431 94%
3	1.94	Nitrite	BMB	0.105	1.482	0.5 0.4783 96%
4	2.85	Bromide	BMB	0.087	0.972	2.0356
5	3.22	Nitrate	BMB	0.127	1.247	0.5 0.4930 98%
6	6.58	Sulfate	BMB	0.571	2.596	7.5 7.3373 97%
TOTAL:				1.52	16.54	15.60



Peak Integration Report

Sample Name:	LCS 11712LCS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 08:51	Operator:	Jeff Phifer

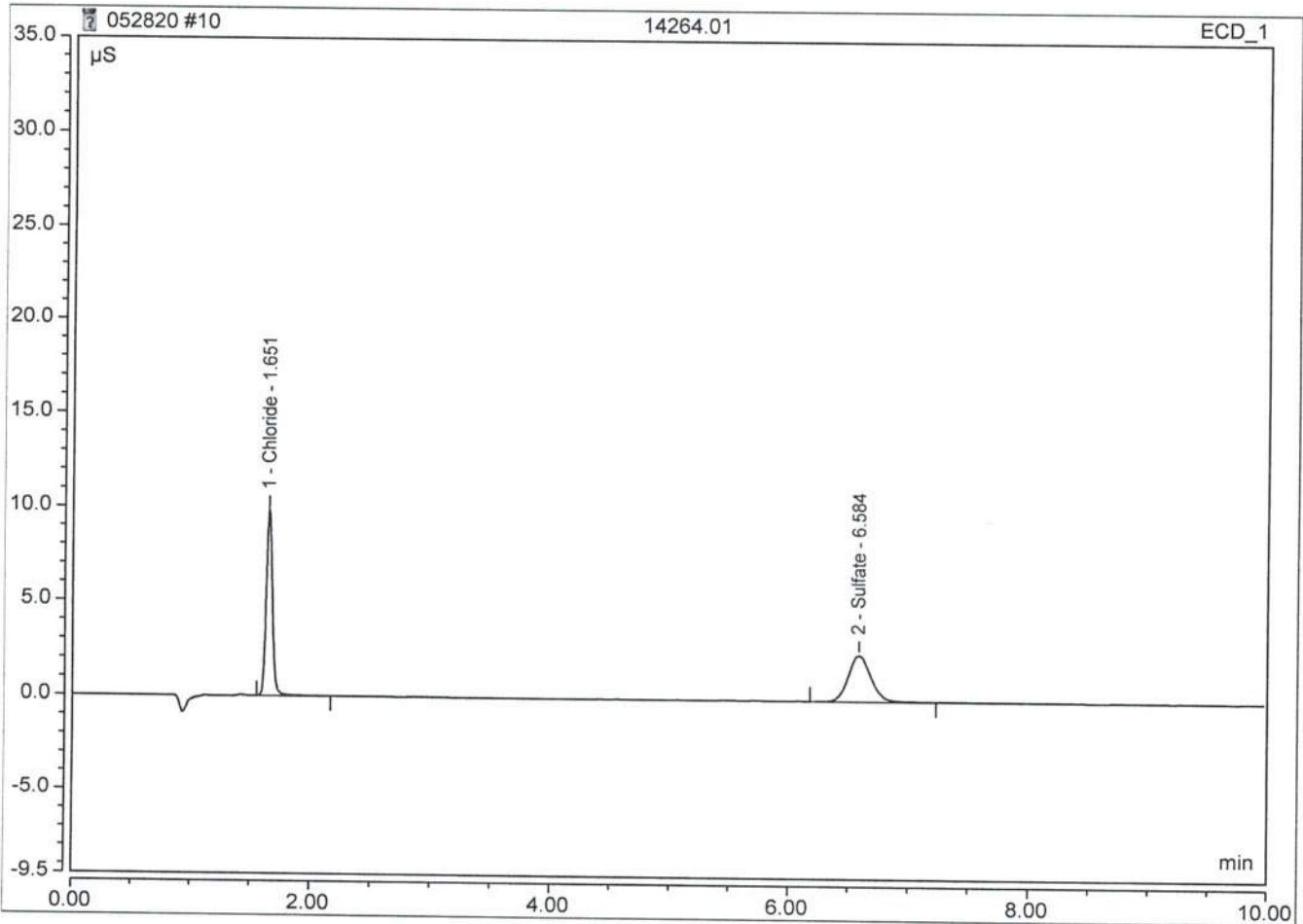
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.159	2.412	0.9957
2	1.65	Chloride	BMB	1.163	19.428	10 9.8868 99%
3	1.94	Nitrite	BMB	0.217	3.071	1 0.9681 7%
4	2.85	Bromide	BMB	0.217	2.443	5.0342
5	3.21	Nitrate	BMB	0.250	2.438	1 0.9642 9%
6	6.57	Sulfate	BMB	0.767	3.488	10 9.8253 98%
TOTAL:				2.77	33.28	27.67



Peak Integration Report

Sample Name:	14264.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 09:04	Operator:	Jeff Phifer

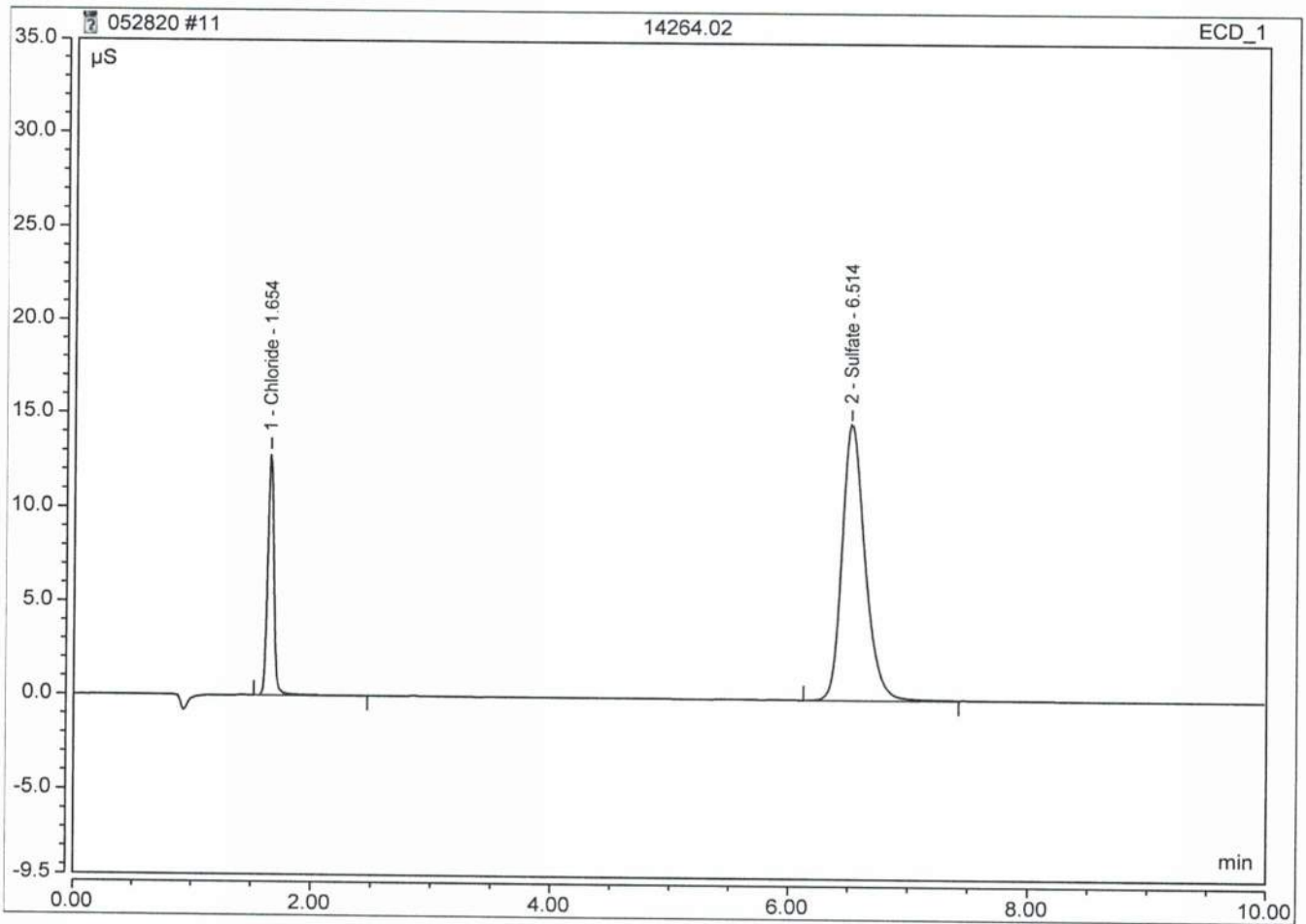
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.599	9.855	52.2976
2	6.58	Sulfate	BMB	0.536	2.435	68.9760
TOTAL:				1.14	12.29	121.27



Peak Integration Report

Sample Name:	14264.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 09:17	Operator:	Jeff Phifer

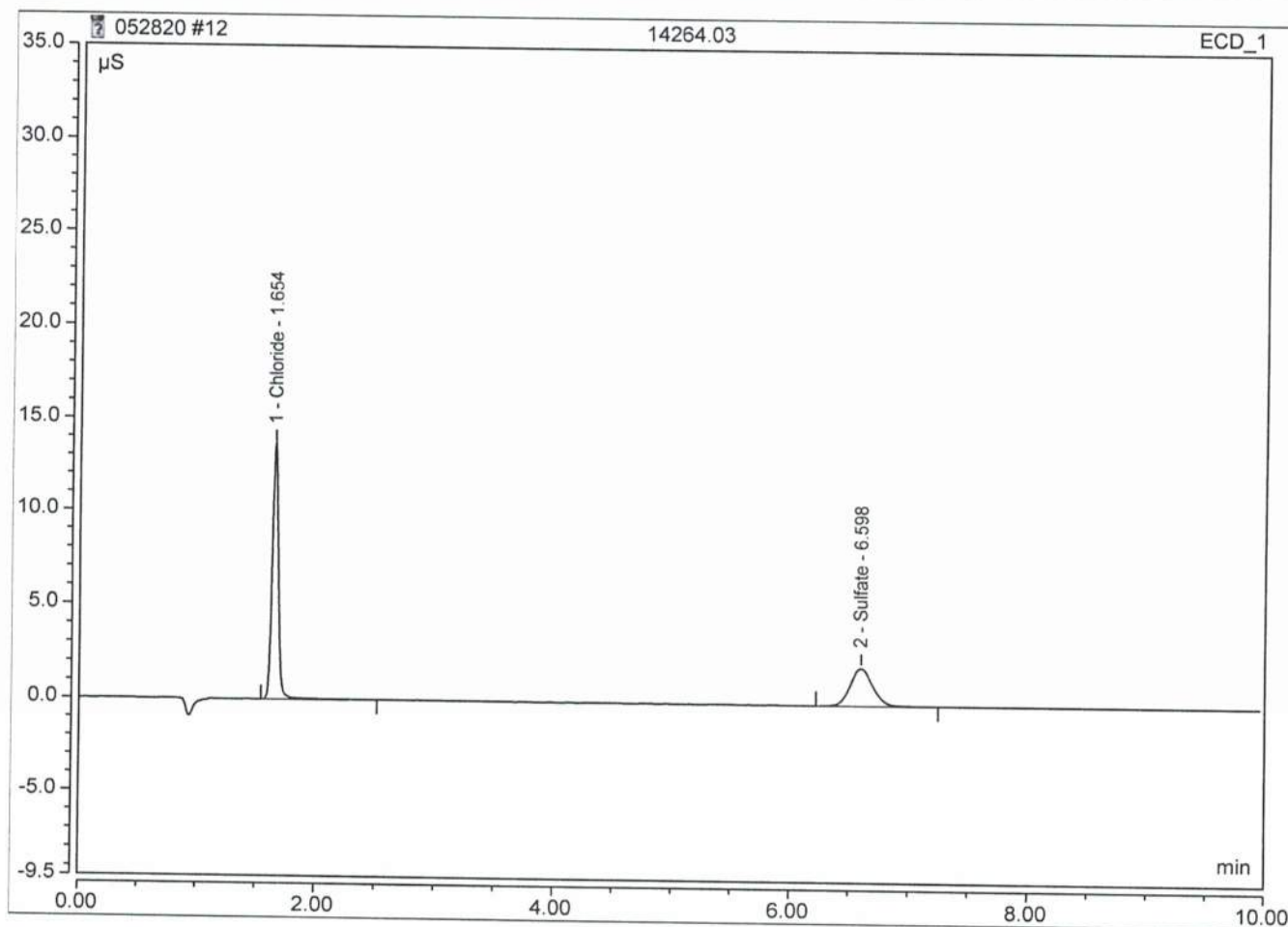
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.789	12.932	67.9495
2	6.51	Sulfate	BMB	3.272	14.673	416.4015
TOTAL:				4.06	27.60	484.35



Peak Integration Report

Sample Name:	14264.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 09:30	Operator:	Jeff Phifer

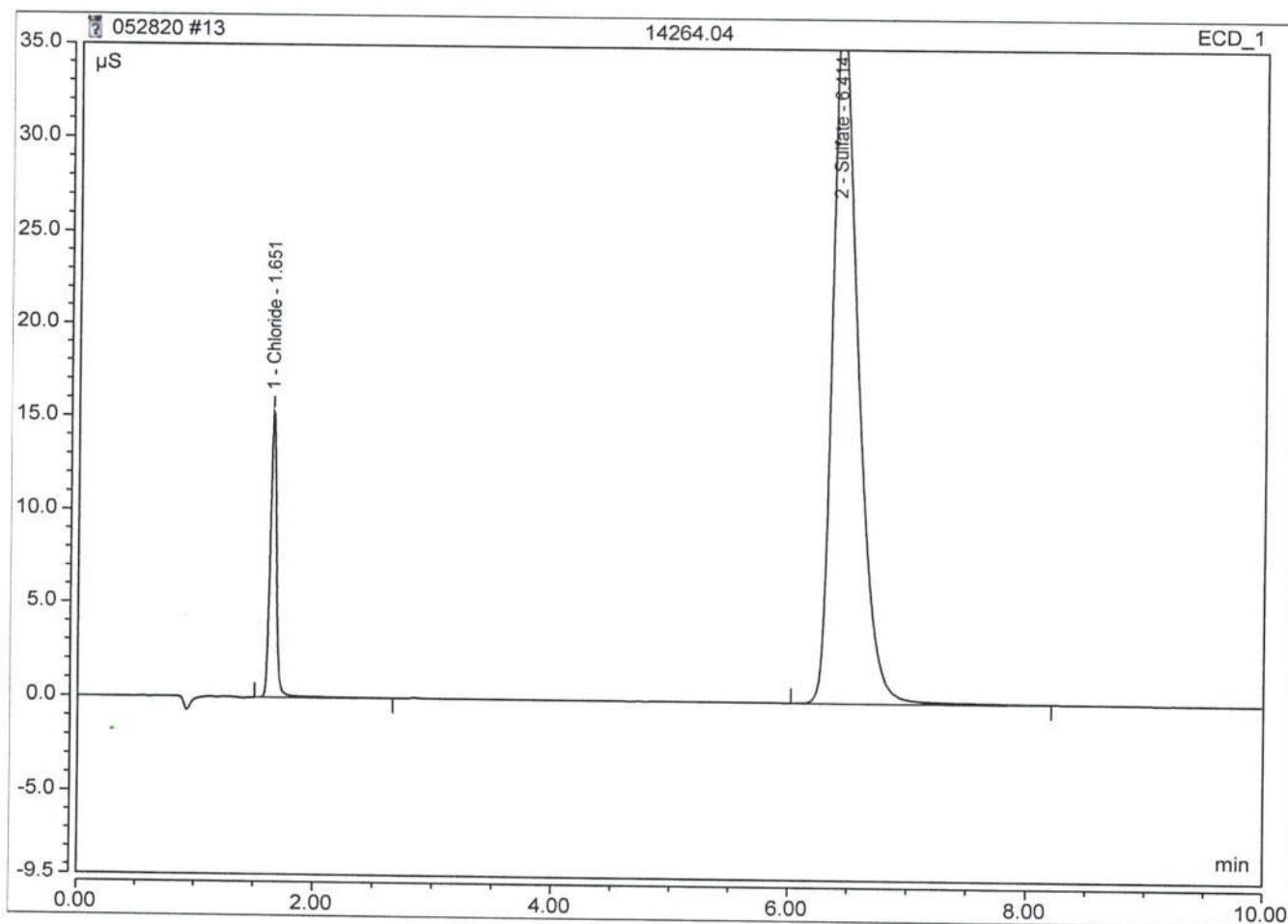
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.832	13.641	71.5495
2	6.60	Sulfate	BMB	0.444	2.006	57.1920
TOTAL:				1.28	15.65	128.74



Peak Integration Report

Sample Name:	14264.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 09:42	Operator:	Jeff Phifer

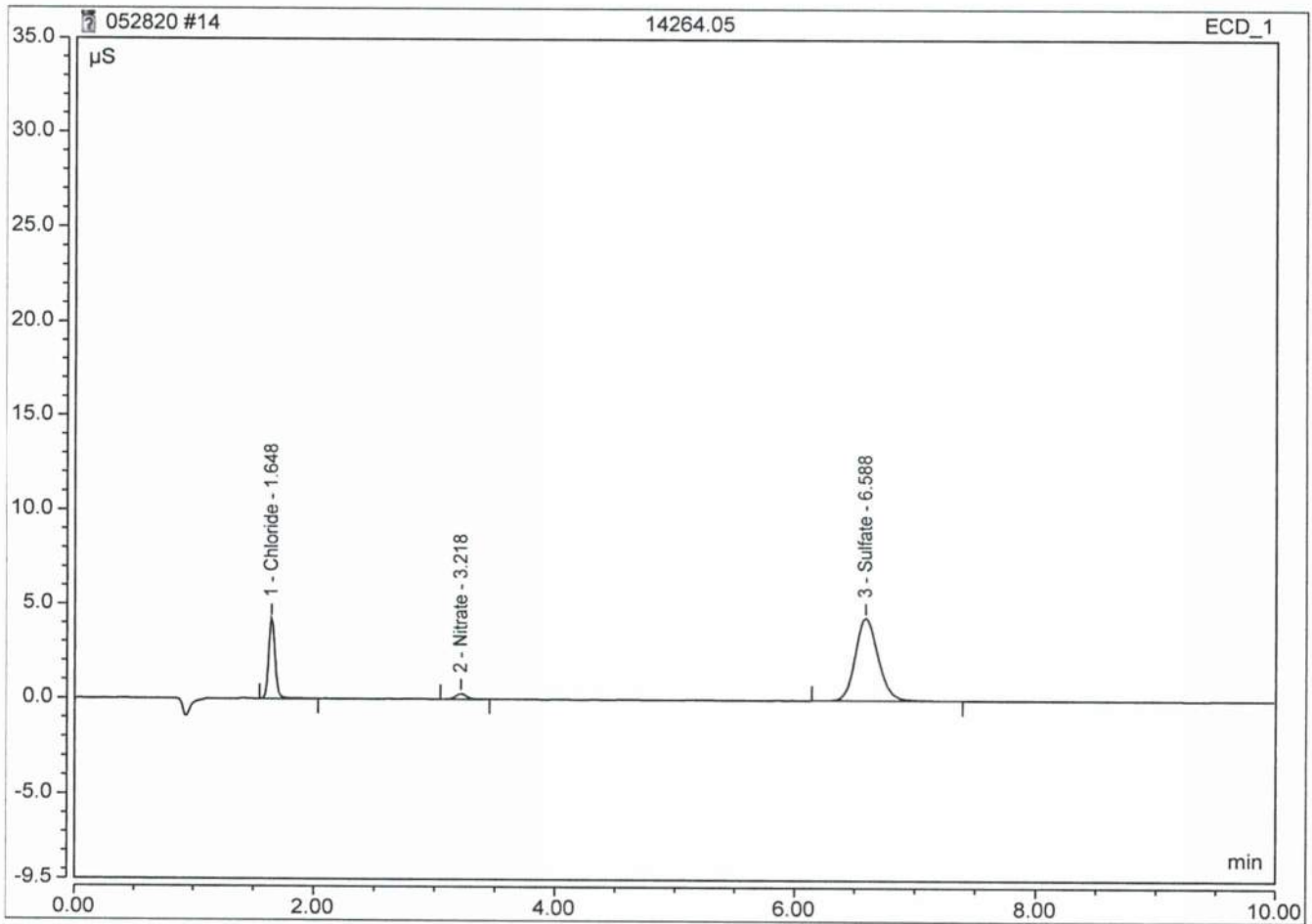
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.954	15.353	81.5865
2	6.41	Sulfate	BMB	9.198	37.518	1168.8590
TOTAL:				10.15	52.87	1250.45



Peak Integration Report

Sample Name:	14264.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 09:55	Operator:	Jeff Phifer

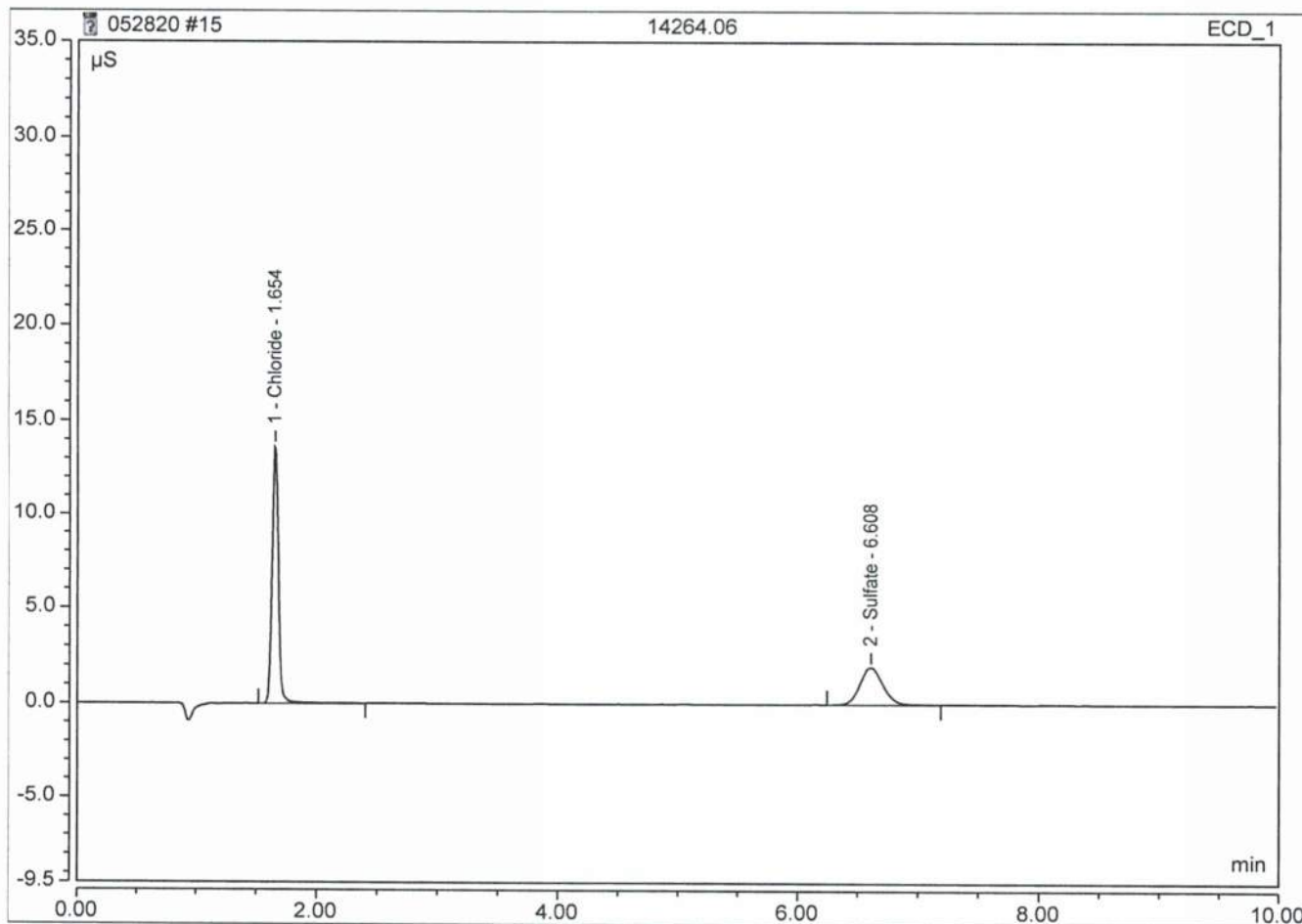
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.263	4.264	24.5000
2	3.22	Nitrate	BMB	0.030	0.290	1.1723
3	6.59	Sulfate	BMB	0.960	4.365	122.7905
TOTAL:				1.25	8.92	148.46



Peak Integration Report

Sample Name:	14264.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 10:08	Operator:	Jeff Phifer

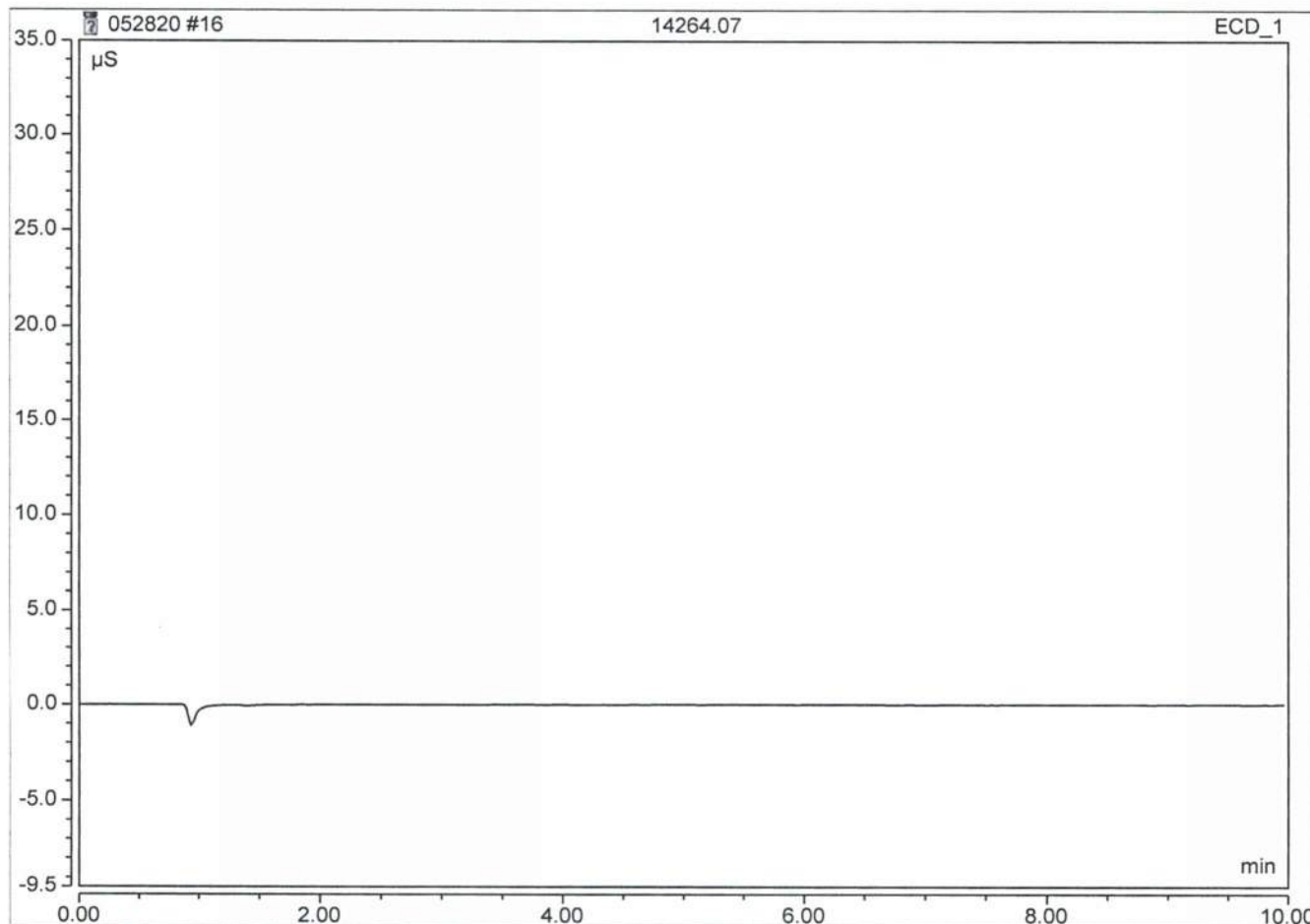
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.835	13.697	71.7984
2	6.61	Sulfate	BMB	0.438	1.989	56.4698
TOTAL:				1.27	15.69	128.27



Peak Integration Report

Sample Name:	14264.07	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	2.5000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 10:21	Operator:	Jeff Phifer

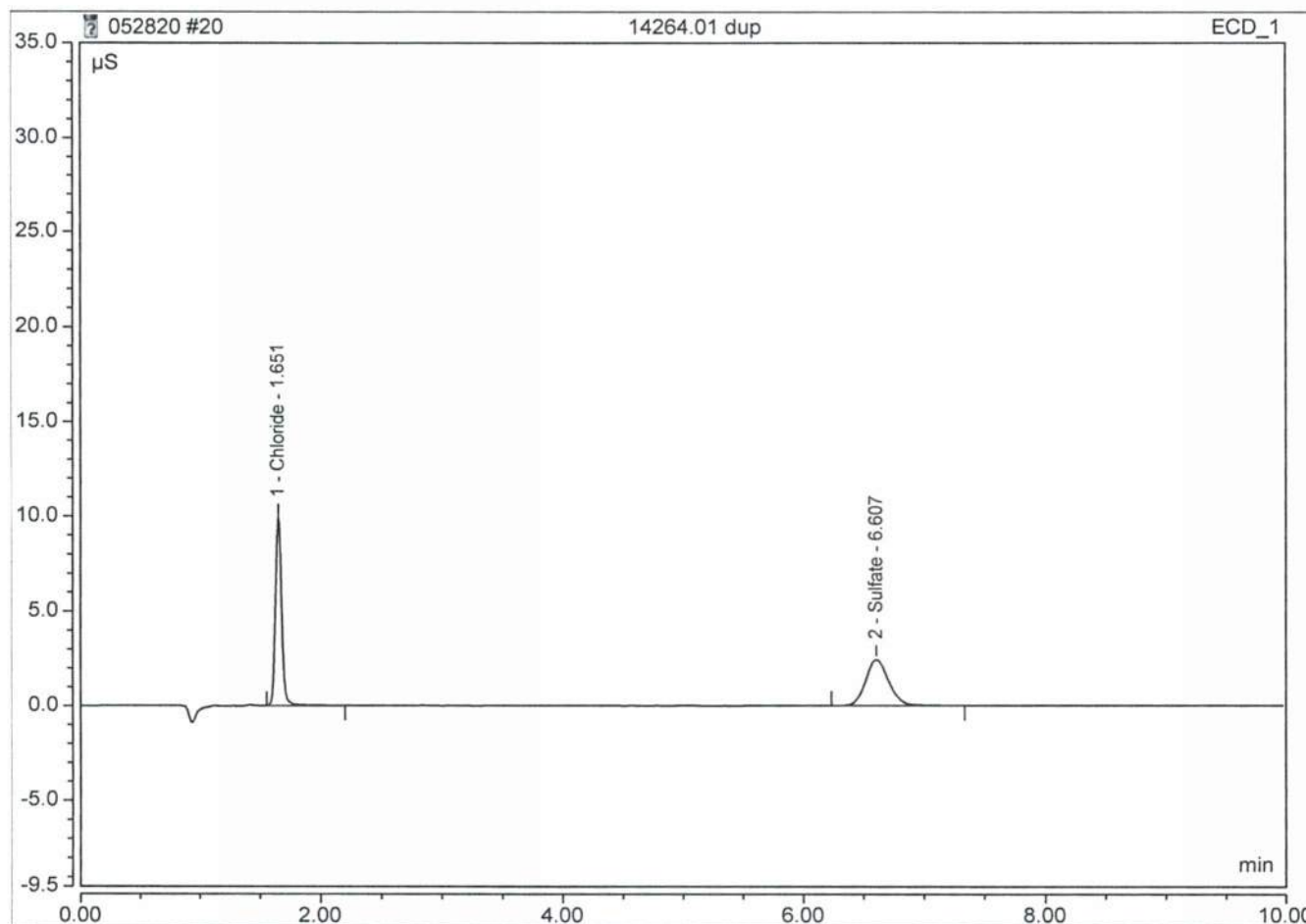
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	14264.01 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 11:12	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.600	9.874	52.3678
2	6.61	Sulfate	BMB	0.539	2.436	69.3125
TOTAL:				1.14	12.31	121.68

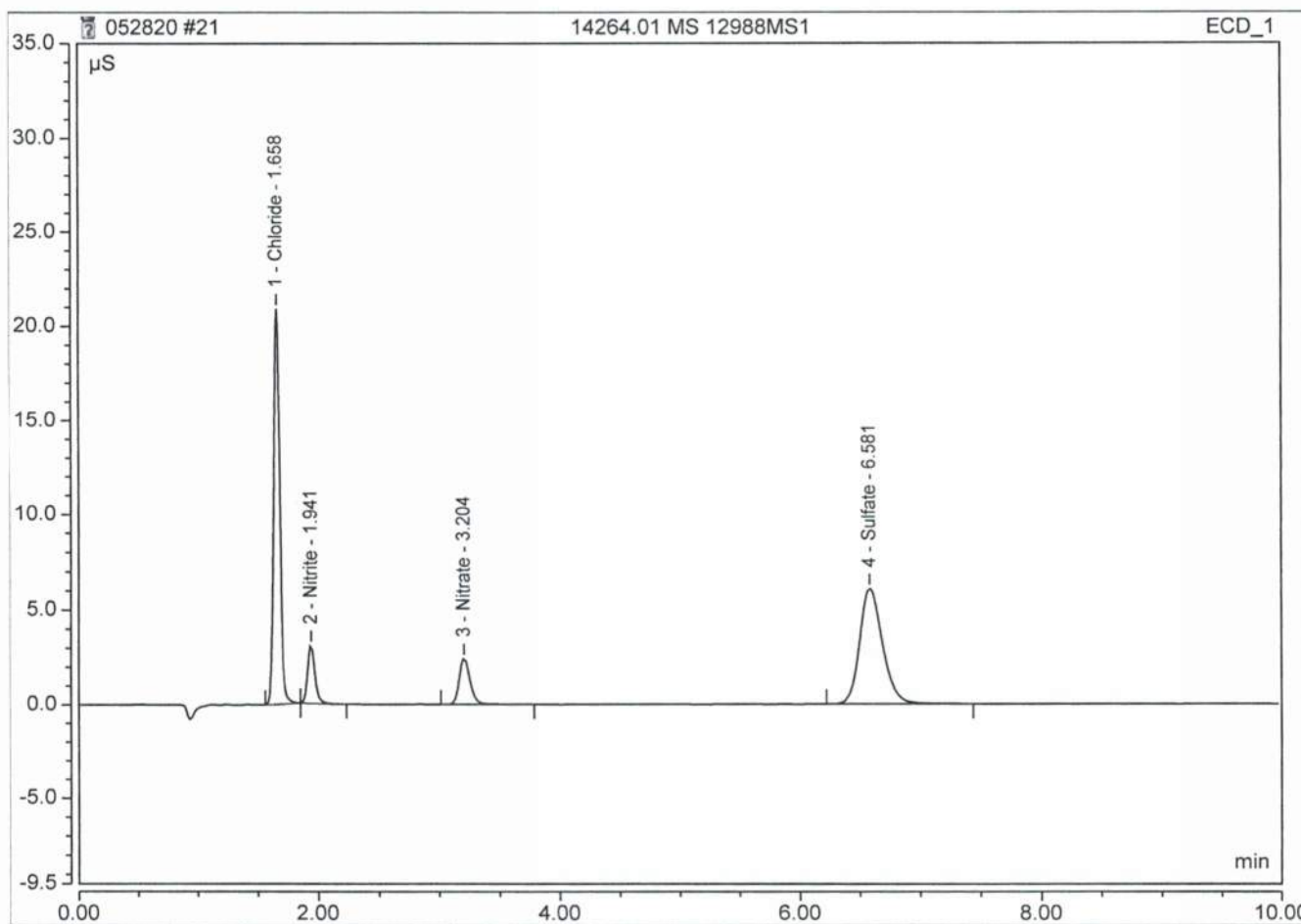


Peak Integration Report

Sample Name:	14264.01 MS 12988MS1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 11:25	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	1.246	20.922	5 10.5773 - 5.2 ~
2	1.94	Nitrite	BMB	0.216	3.088	1 0.9659 - No ~
3	3.20	Nitrate	BMB	0.257	2.466	1 0.9895 - No ~
4	6.58	Sulfate	BMB	1.344	6.104	10 17.1527 - 6.9 =
TOTAL:				3.06	32.58	29.69

1086
 965
 995
 1035

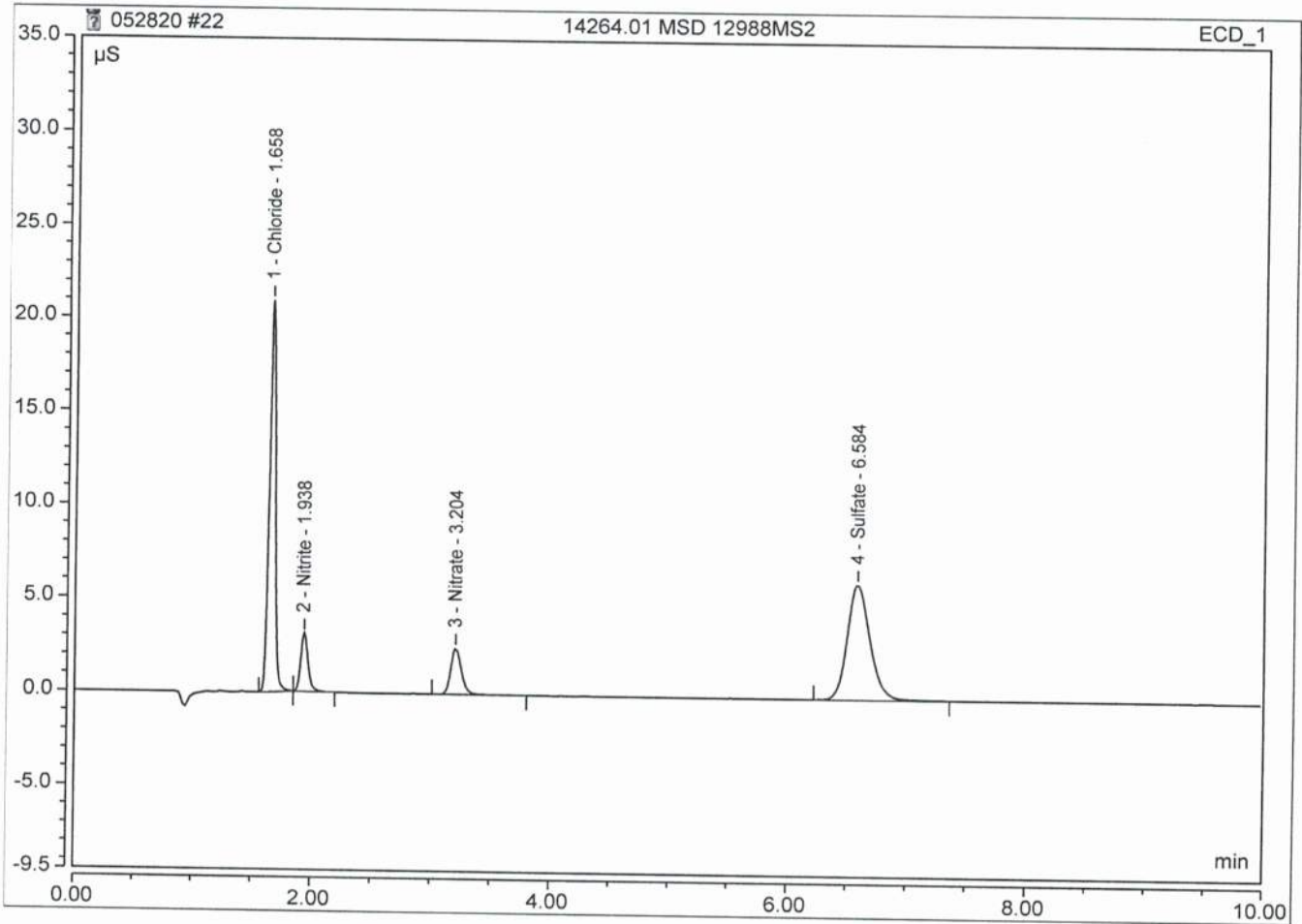


Peak Integration Report

Sample Name:	14264.01 MSD 12988MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 11:38	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	1.246	20.955	5
2	1.94	Nitrite	BMB	0.216	3.092	1
3	3.20	Nitrate	BMB	0.256	2.465	1
4	6.58	Sulfate	BMB	1.343	6.105	10
TOTAL:				3.06	32.62	29.67

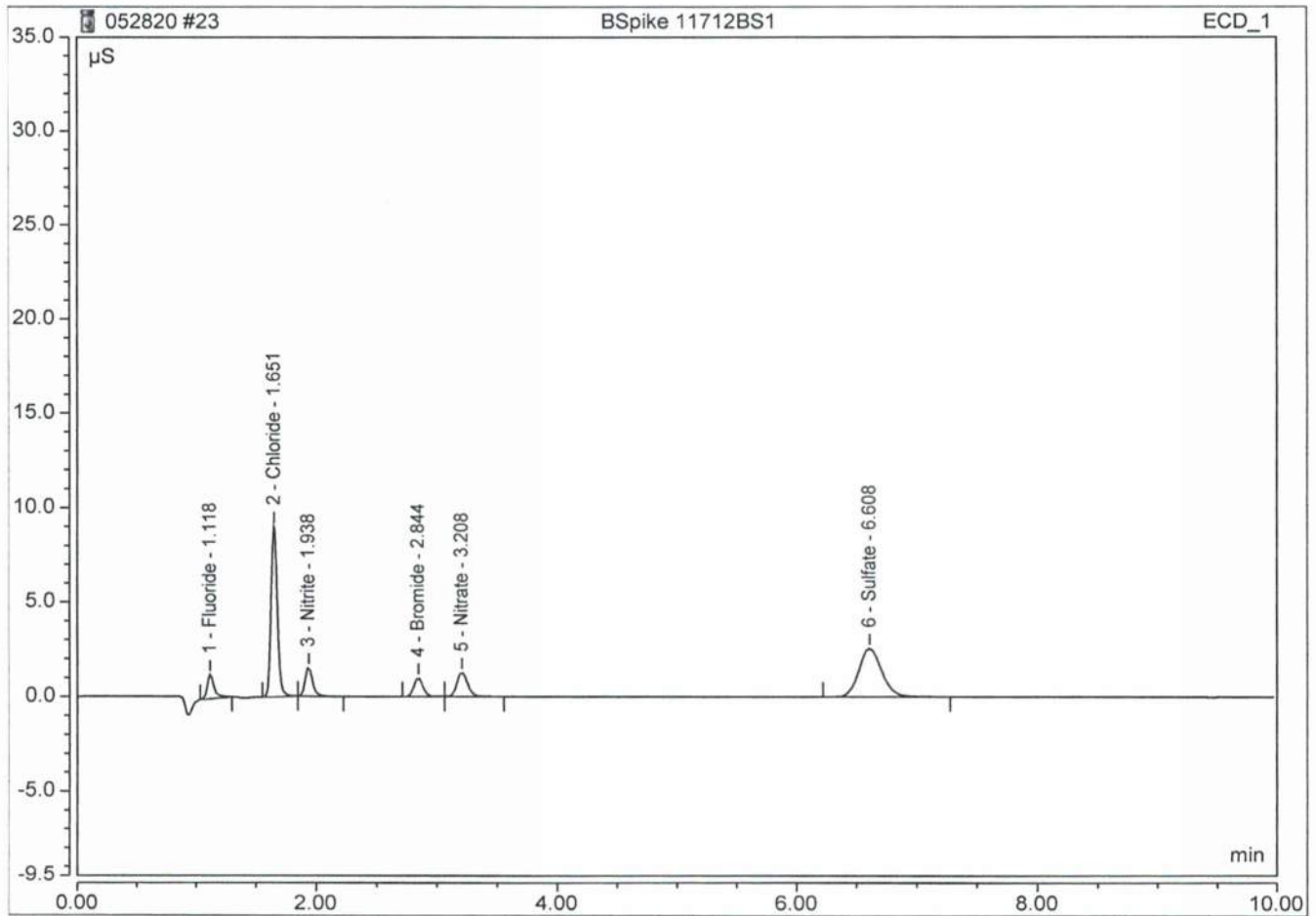
1086
 976
 995
 1025



Peak Integration Report

Sample Name:	BSpike 11712BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 11:51	Operator:	Jeff Phifer

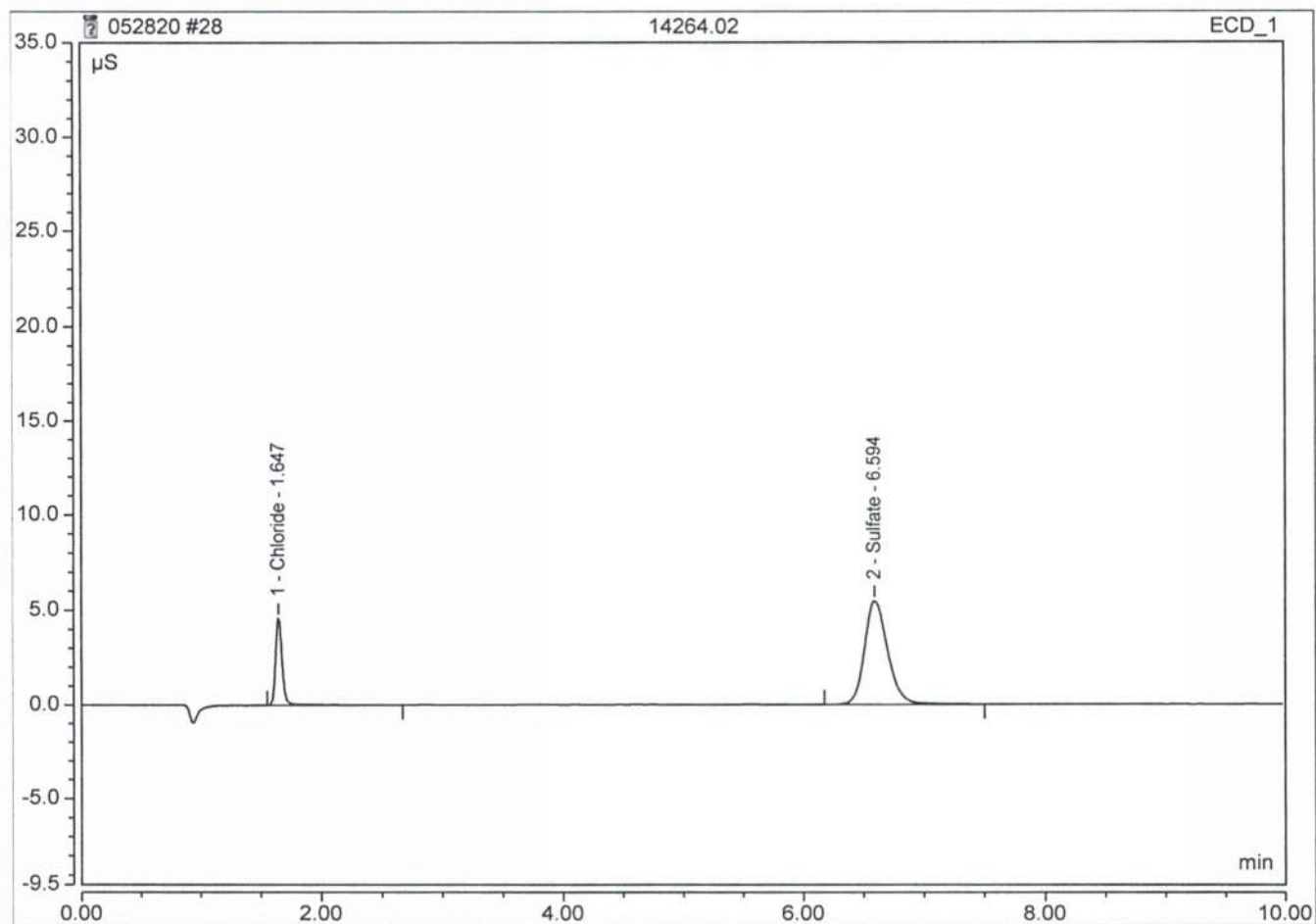
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.083	1.256	0.5012
2	1.65	Chloride	BMB	0.547	9.014	5 4.7954 960
3	1.94	Nitrite	BMB	0.107	1.493	0.5 0.4866 986
4	2.84	Bromide	BMB	0.087	0.979	2.0329
5	3.21	Nitrate	BMB	0.130	1.263	0.5 0.5010 1005
6	6.61	Sulfate	BMB	0.565	2.560	7.5 7.2564 965
TOTAL:				1.52	16.57	15.57



Peak Integration Report

Sample Name:	14264.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 12:55	Operator:	Jeff Phifer

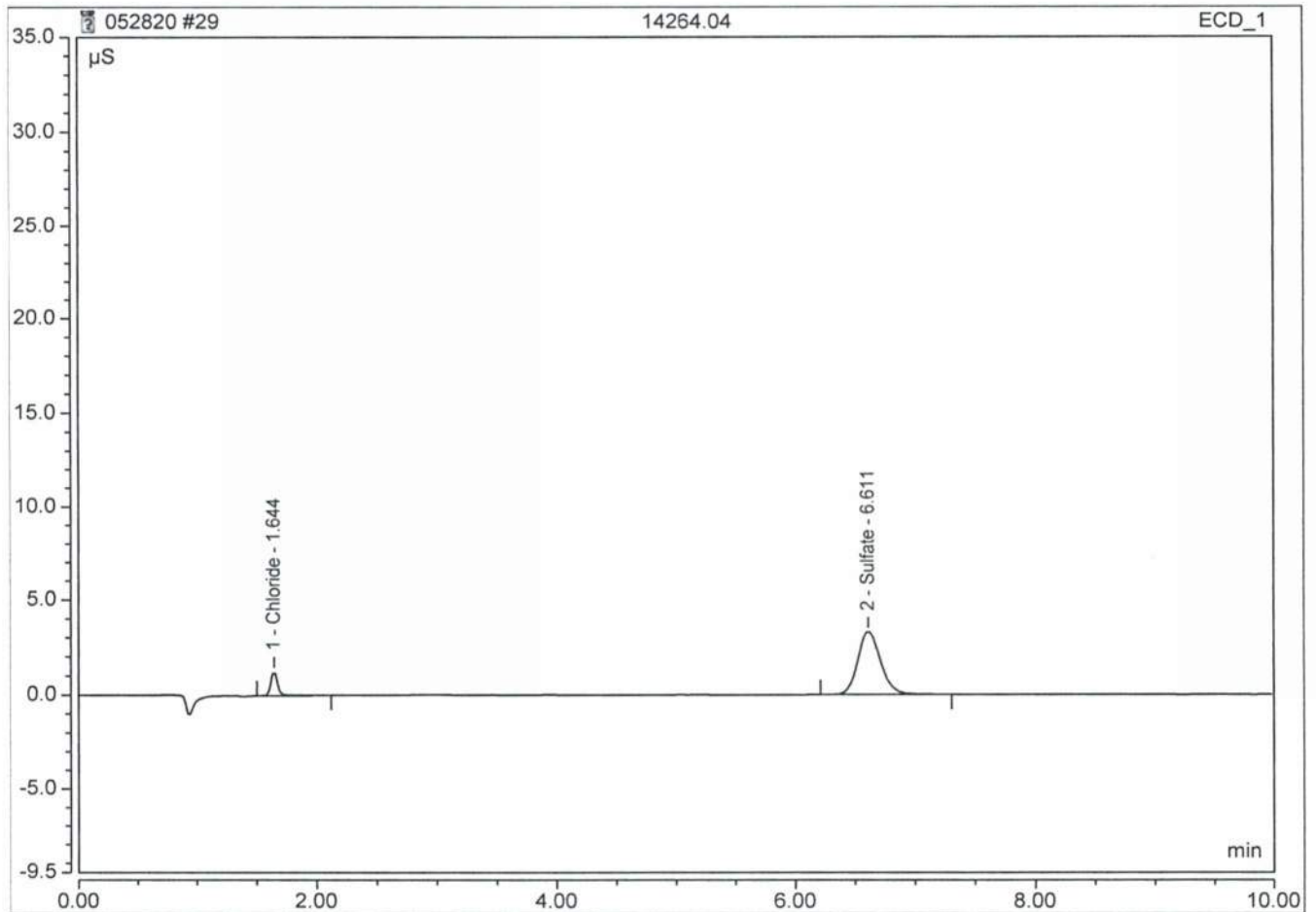
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.296	4.618	68.0512
2	6.59	Sulfate	BMB	1.209	5.488	385.9827
TOTAL:				1.51	10.11	454.03



Peak Integration Report

Sample Name:	14264.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	100.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 13:07	Operator:	Jeff Phifer

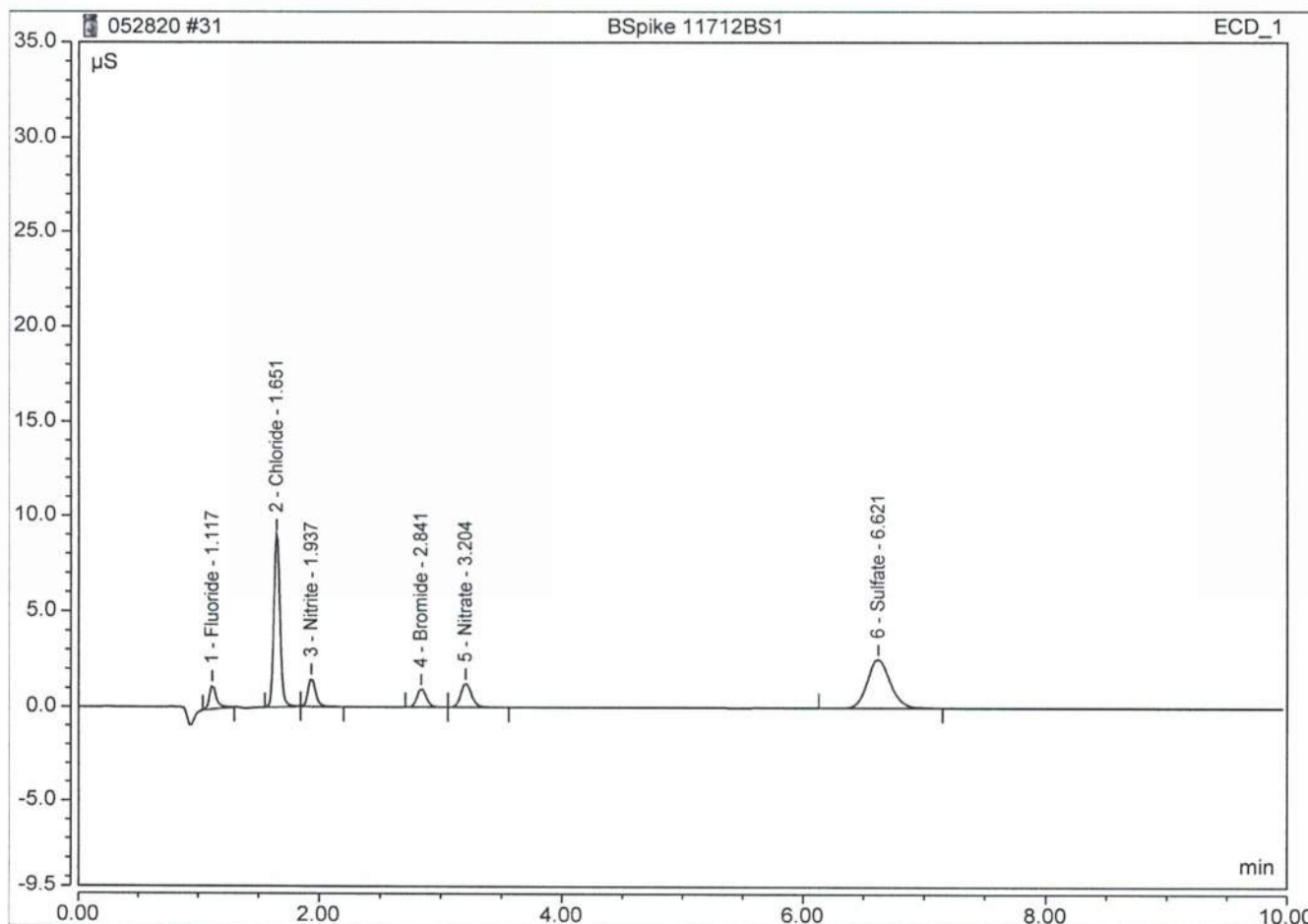
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.64	Chloride	BMB	0.083	1.262	95.8539
2	6.61	Sulfate	BMB	0.726	3.299	929.9005
TOTAL:				0.81	4.56	1025.75



Peak Integration Report

Sample Name:	BSpike 11712BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 13:38	Operator:	Jeff Phifer

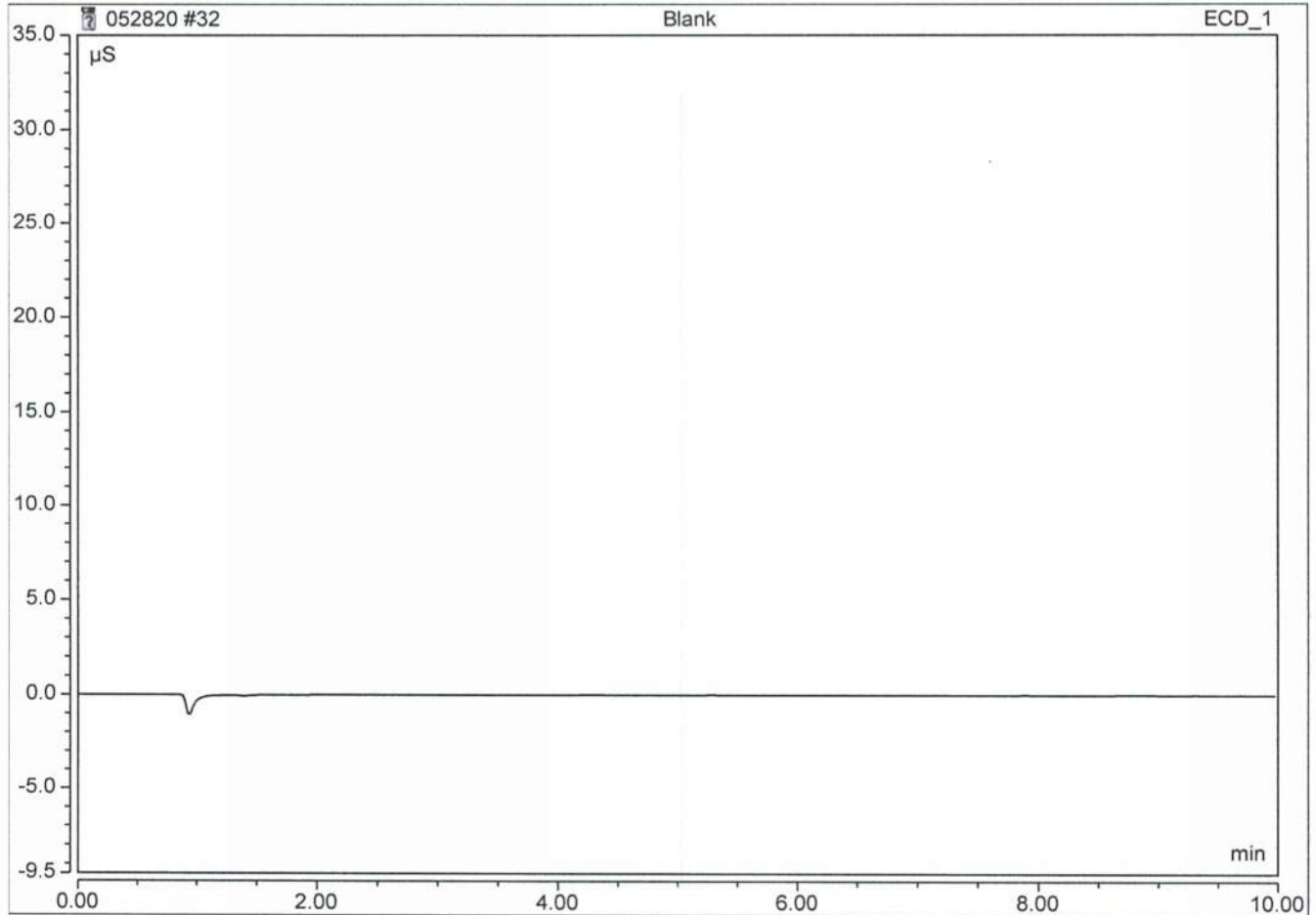
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.083	1.258	0.4988
2	1.65	Chloride	BMB	0.548	9.052	4.8066
3	1.94	Nitrite	BMB	0.107	1.499	0.4872
4	2.84	Bromide	BMB	0.088	0.986	2.0520
5	3.20	Nitrate	BMB	0.130	1.269	0.5012
6	6.62	Sulfate	BMB	0.564	2.563	7.2412
TOTAL:				1.52	16.63	15.59



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	28-May-2020 / 13:50	Operator:	Jeff Phifer







No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Ics-1100 A Dionex IC/Meth 300.0

031620

(New cal.)
all ions (new guard col) JH

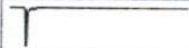





#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:58:12 AM...	1.0000
2		1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:29 A...	1.0000
3		1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:17 A...	1.0000
4		1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:36:06 A...	1.0000
5		1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:55 A...	1.0000
6		1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:43 A...	1.0000

[Click here to add a new injection](#)

CALID# IC5A031620 CAL

031620



#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
Click here to add a new injection						

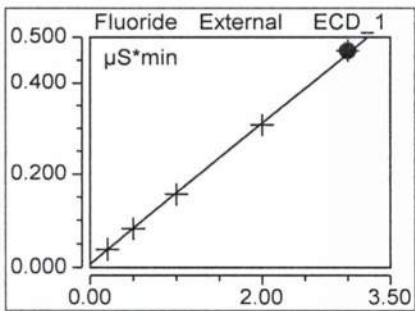
Norm Method	03/08/11 13:39	Jeff Phifer	Method 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mM]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Calibration Batch Report
CAL ID# ICSA031620CAL

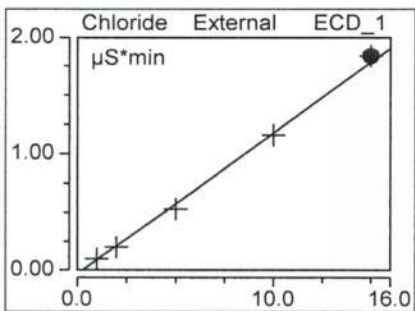
Sequence:	031620	Injection Volu:	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	16-Mar-2020 / 11:01	Column:	AS4A-SC 038777

Calibration Summary								
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.	
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.007	0.152	0.000	0.9998	
Chloride	Area	Lin, WithOffset, 1/A	0.04	-0.033	0.121	0.000	0.9987	
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.003	0.227	0.000	0.9997	
Bromide	Area	Lin, WithOffset, 1/A	0.15	-0.001	0.043	0.000	0.9999	
Nitrate	Area	Lin, WithOffset, 1/A	0.17	-0.001	0.260	0.000	0.9997	
Sulfate	Area	Lin, WithOffset, 1/A	0.46	-0.007	0.079	0.000	0.9996	
AVERAGE:					-0.0064	0.1471	0.0000	0.9996

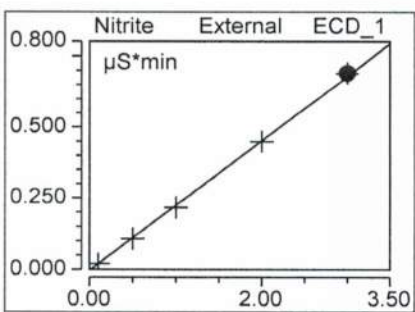
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
1130Cal1	ECD_1 1.118	ECD_1 0.0386	ECD_1 0.506	ECD_1 0.206
1130Cal2	1.118	0.0822	1.190	0.493
1130Cal3	1.118	0.1559	2.362	0.978
1130Cal4	1.118	0.3073	4.834	1.974
1130Cal5	1.118	0.4705	7.546	3.048
Average	1.118			
Rel. Std. Dev.	0.000 %			



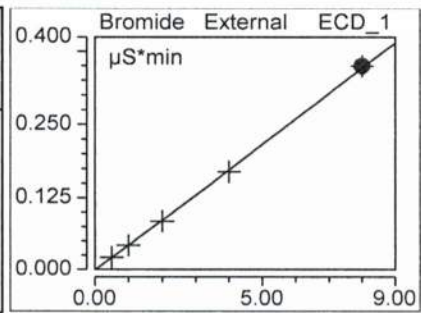
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Chloride	Chloride	Chloride	Chloride	Chloride
1130Cal1	ECD_1 1.651	ECD_1 0.0980	ECD_1 1.539	ECD_1 1.086
1130Cal2	1.651	0.2000	3.158	1.929
1130Cal3	1.661	0.5307	8.559	4.662
1130Cal4	1.664	1.1594	18.897	9.858
1130Cal5	1.664	1.8377	29.851	15.464
Average	1.658			
Rel. Std. Dev.	0.412 %			



Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Nitrite	Nitrite	Nitrite	Nitrite	Nitrite
1130Cal1	ECD_1 1.944	ECD_1 0.0206	ECD_1 0.280	ECD_1 0.105
1130Cal2	1.948	0.1071	1.441	0.486
1130Cal3	1.954	0.2163	2.949	0.967
1130Cal4	1.954	0.4487	6.229	1.989
1130Cal5	1.948	0.6905	9.755	3.054
Average	1.950			
Rel. Std. Dev.	0.229 %			

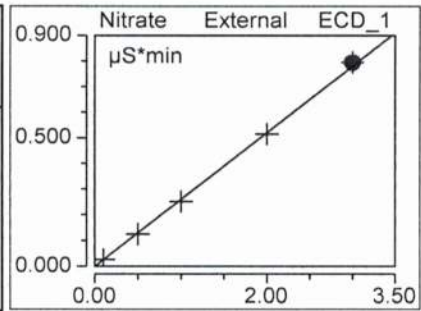


Injection Name	Ret. Time min	Area μS*min	Height μS	Amount
Bromide	Bromide	Bromide	Bromide	Bromide
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	2.871	0.0210	0.228	0.511
1130Cal2	2.868	0.0422	0.461	0.999
1130Cal3	2.884	0.0843	0.917	1.969
1130Cal4	2.874	0.1696	1.866	3.936
1130Cal5	2.848	0.3497	3.898	8.085
Average	2.869			
Rel. Std. Dev.	0.469 %			

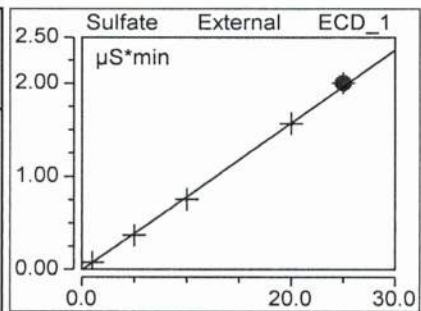


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Injection Name	Ret. Time min	Area μS*min	Height μS	Amount
Nitrate	Nitrate	Nitrate	Nitrate	Nitrate
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	3.244	0.0266	0.254	0.105
1130Cal2	3.234	0.1249	1.182	0.483
1130Cal3	3.248	0.2515	2.359	0.970
1130Cal4	3.228	0.5145	4.808	1.982
1130Cal5	3.194	0.7947	7.457	3.060
Average	3.230			
Rel. Std. Dev.	0.659 %			



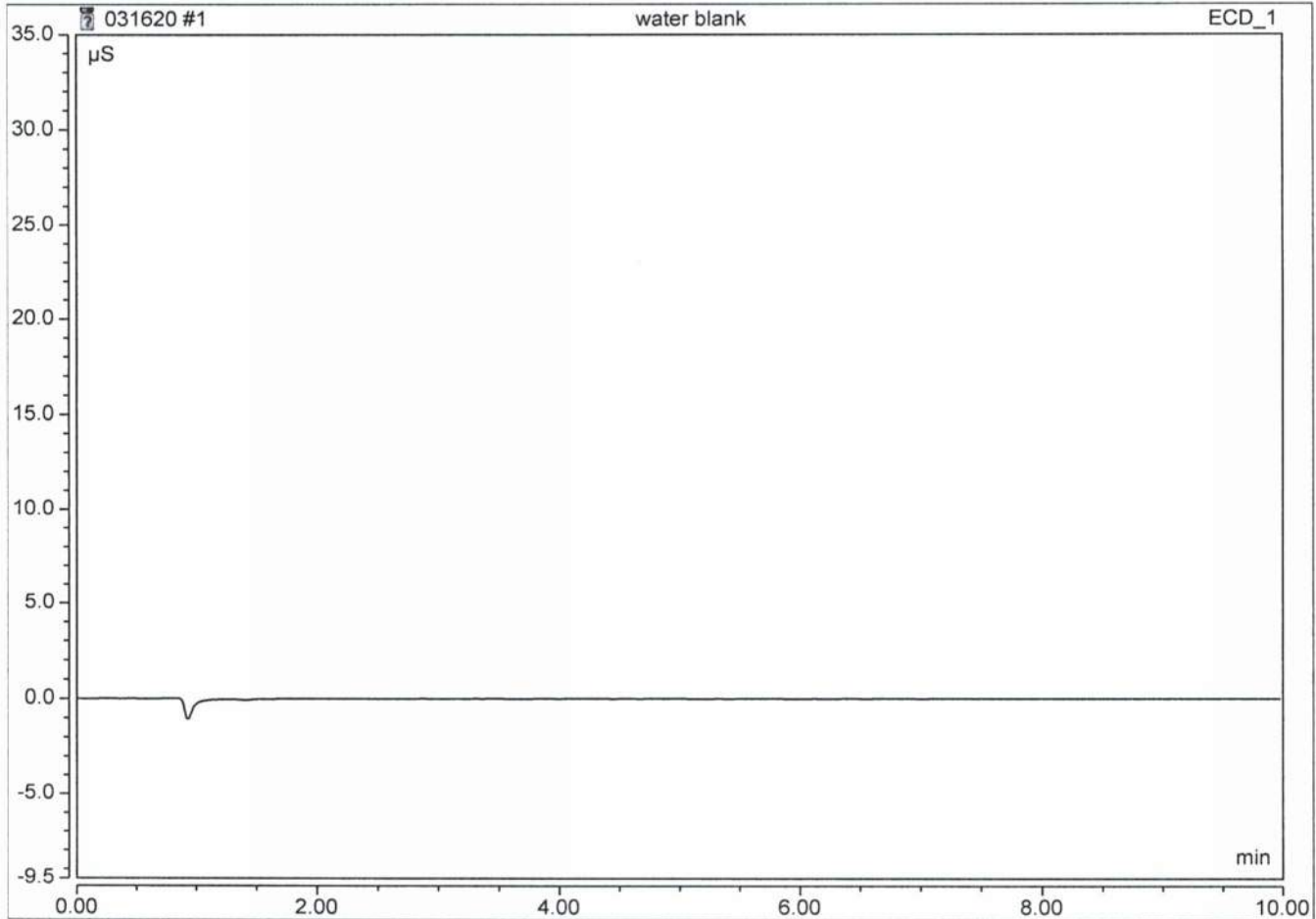
Injection Name	Ret. Time min	Area μS*min	Height μS	Amount
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	6.768	0.0763	0.333	1.054
1130Cal2	6.754	0.3712	1.645	4.800
1130Cal3	6.744	0.7553	3.326	9.676
1130Cal4	6.721	1.5656	6.872	19.966
1130Cal5	6.718	2.0017	8.764	25.504
Average	6.741			
Rel. Std. Dev.	0.319 %			



Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 09:58	Operator:	Jeff Phifer

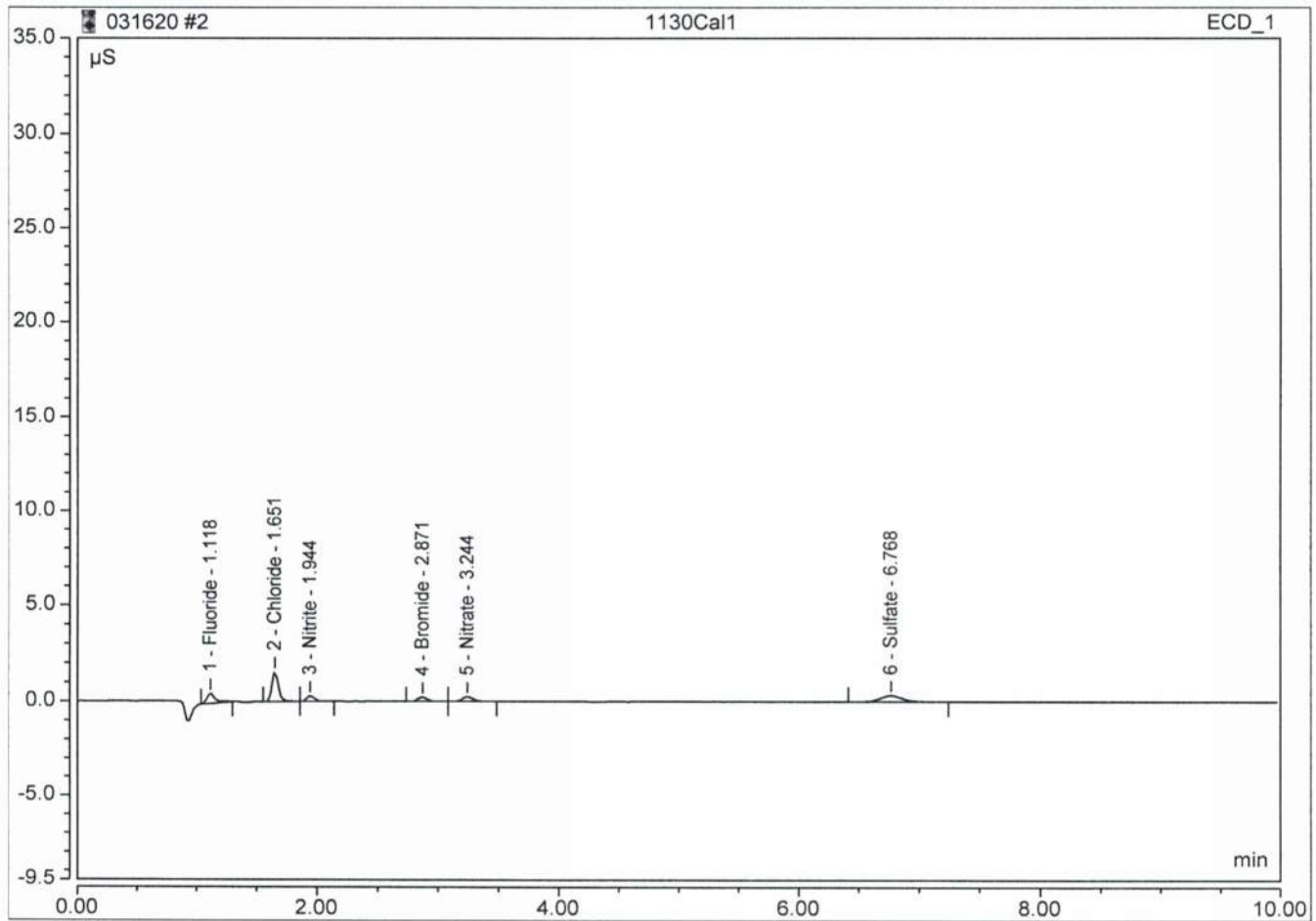
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	1130Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:10	Operator:	Jeff Phifer

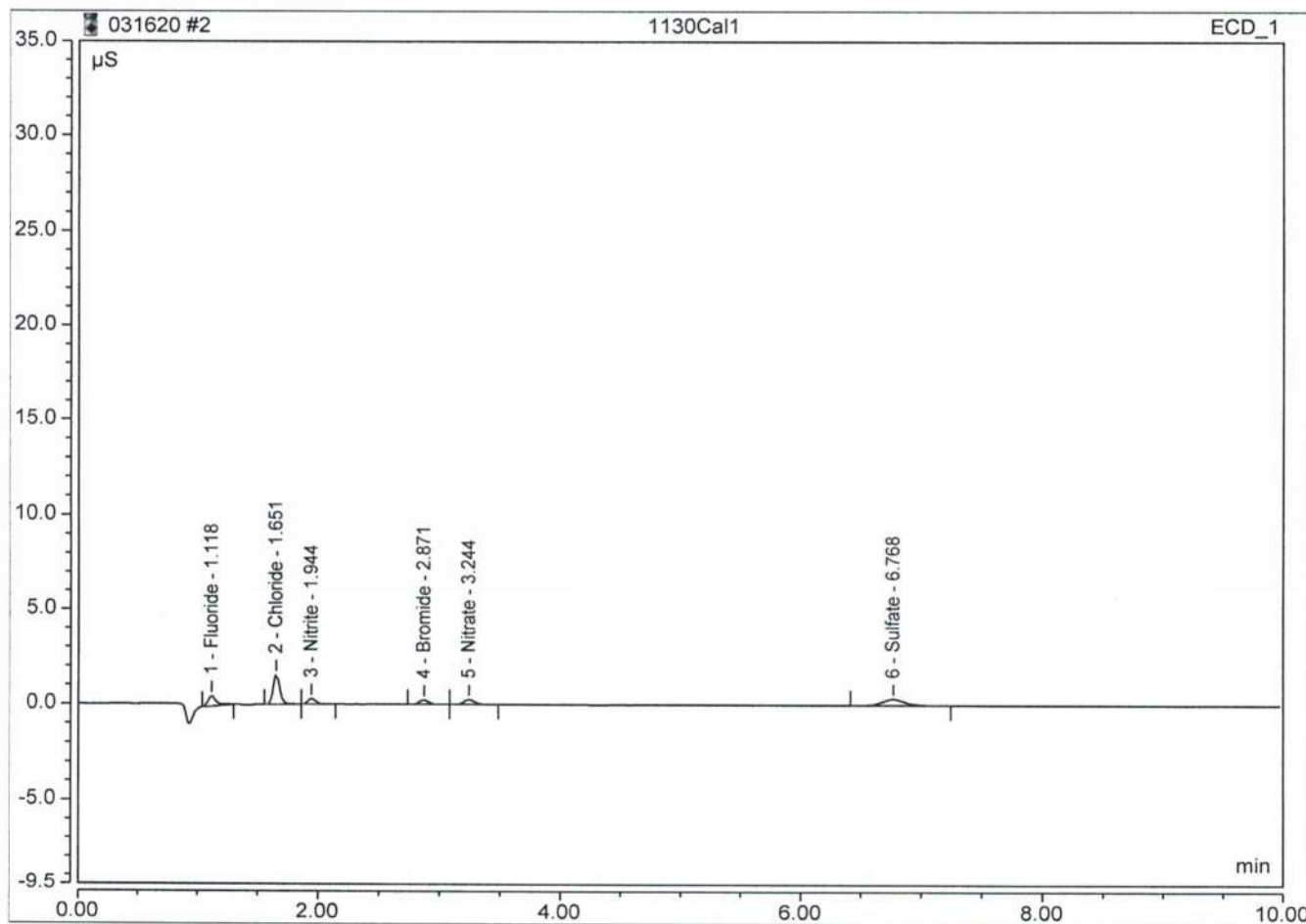
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.039	0.506	0.2 0.2064
2	1.65	Chloride	BMB	0.098	1.539	1 1.0862
3	1.94	Nitrite	BMB	0.021	0.280	0.1 0.1050
4	2.87	Bromide	BMB	0.021	0.228	0.5 0.5111
5	3.24	Nitrate	BMB	0.027	0.254	0.1 0.1053
6	6.77	Sulfate	BMB	0.076	0.333	1 1.0540
TOTAL:				0.28	3.14	3.07



Peak Integration Report

Sample Name:	1130Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:10	Operator:	Jeff Phifer

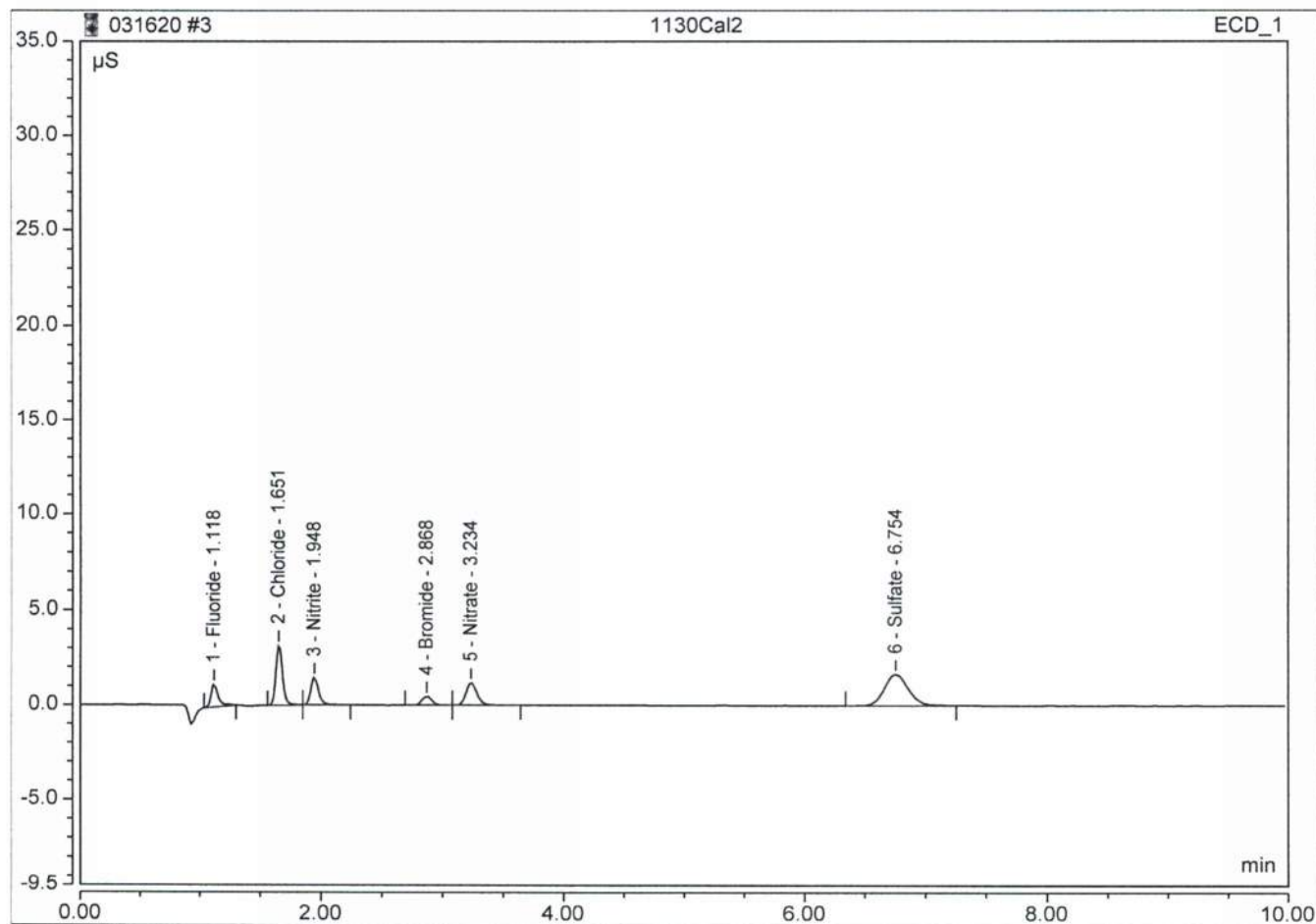
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.039	0.506	n.a.
2	1.65	Chloride	BMB	0.098	1.539	n.a.
3	1.94	Nitrite	BMB	0.021	0.280	n.a.
4	2.87	Bromide	BMB	0.021	0.228	n.a.
5	3.24	Nitrate	BMB	0.027	0.254	n.a.
6	6.77	Sulfate	BMB	0.076	0.333	n.a.
TOTAL:				0.28	3.14	0.00



Peak Integration Report

Sample Name:	1130Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:23	Operator:	Jeff Phifer

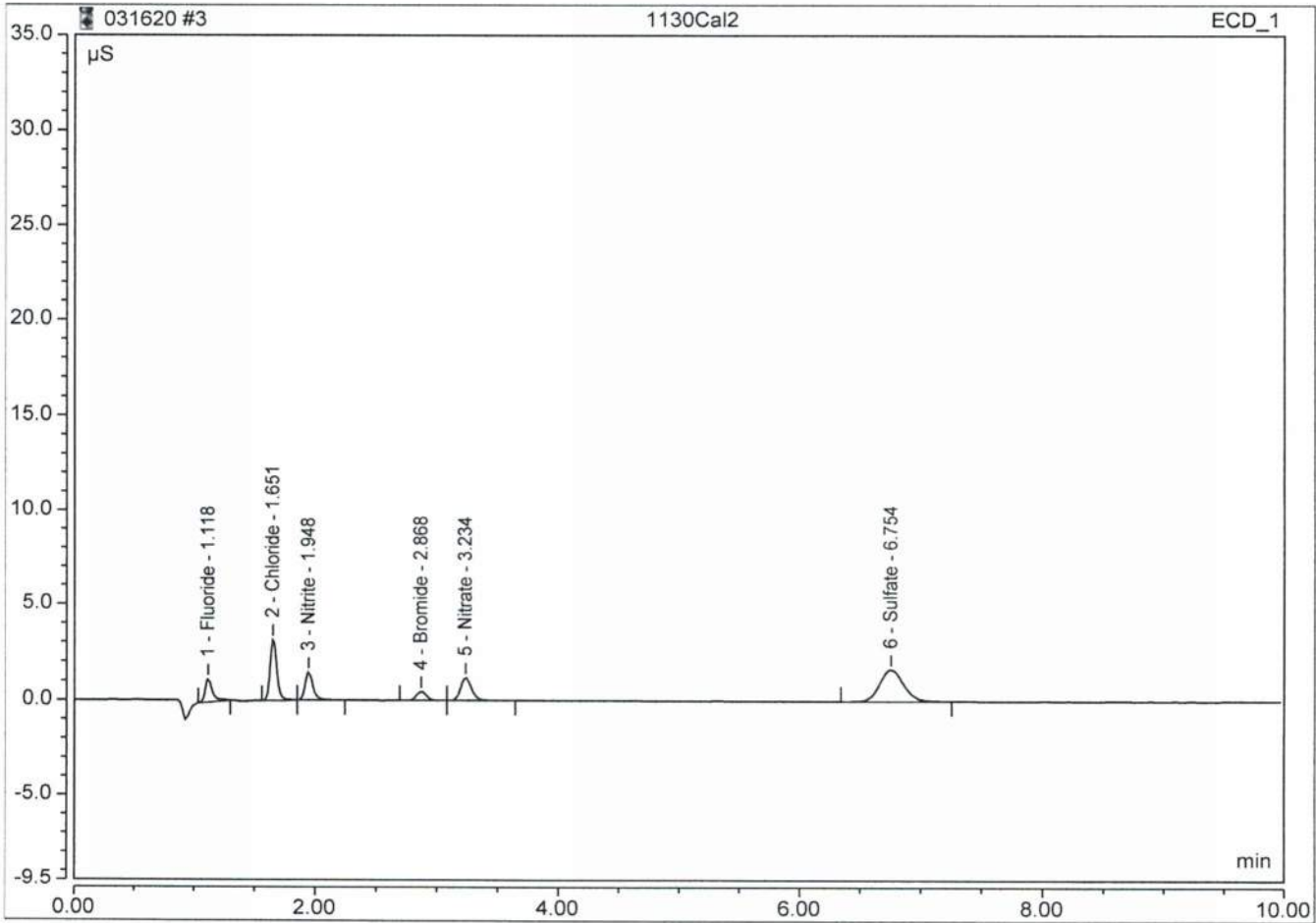
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.082	1.190	0.5 0.4934
2	1.65	Chloride	BMB	0.200	3.158	2 1.9291
3	1.95	Nitrite	BMB	0.107	1.441	0.5 0.4857
4	2.87	Bromide	BMB	0.042	0.461	1 0.9986
5	3.23	Nitrate	BMB	0.125	1.182	0.5 0.4831
6	6.75	Sulfate	BMB	0.371	1.645	5 4.7996
TOTAL:				0.93	9.08	9.19



Peak Integration Report

Sample Name:	1130Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:23	Operator:	Jeff Phifer

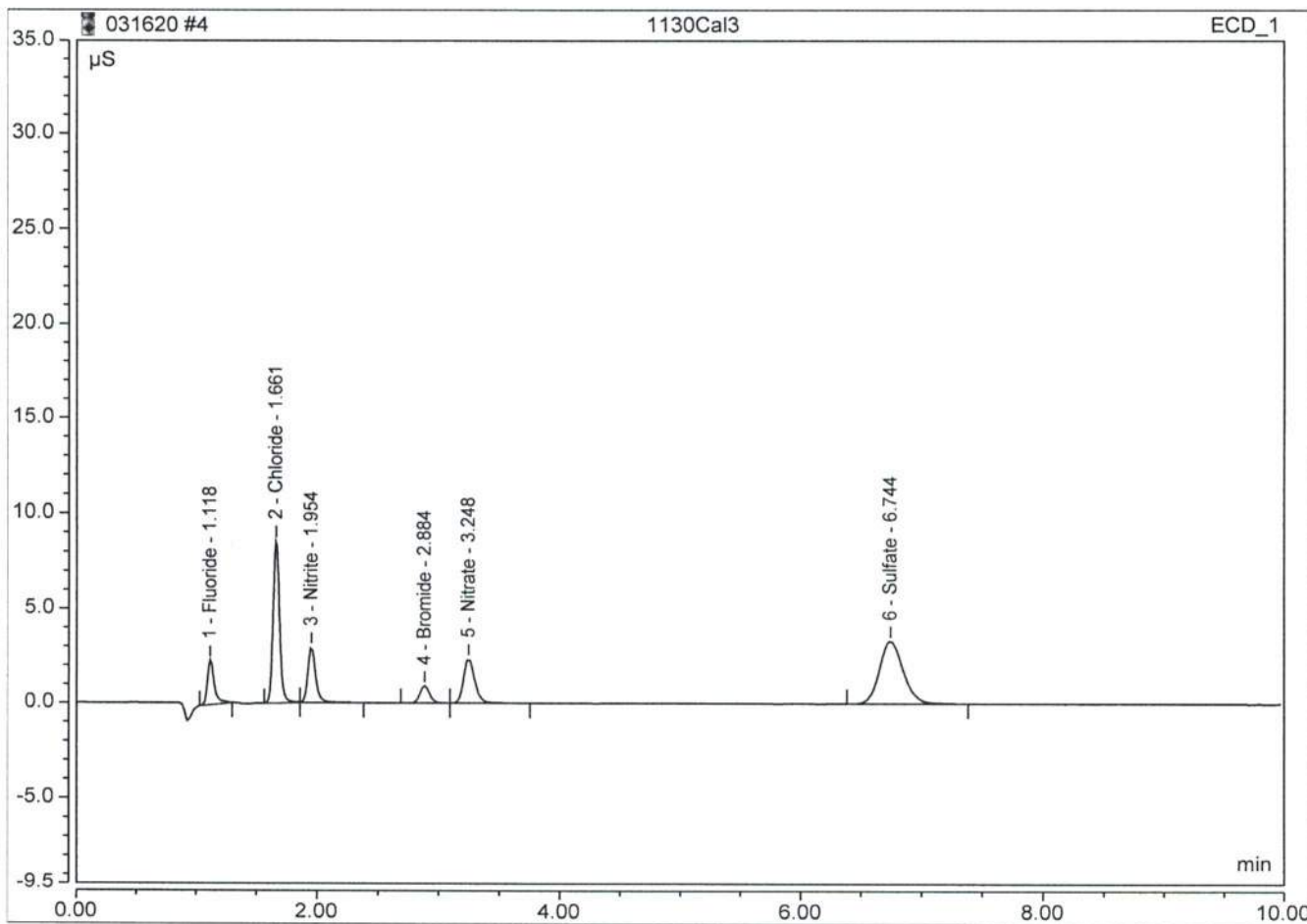
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.082	1.190	0.5000
2	1.65	Chloride	BMB	0.200	3.158	2.0000
3	1.95	Nitrite	BMB	0.107	1.441	0.5000
4	2.87	Bromide	BMB	0.042	0.461	1.0000
5	3.23	Nitrate	BMB	0.125	1.182	0.5000
6	6.75	Sulfate	BMB	0.371	1.645	5.0000
TOTAL:				0.93	9.08	9.50



Peak Integration Report

Sample Name:	1130Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:36	Operator:	Jeff Phifer

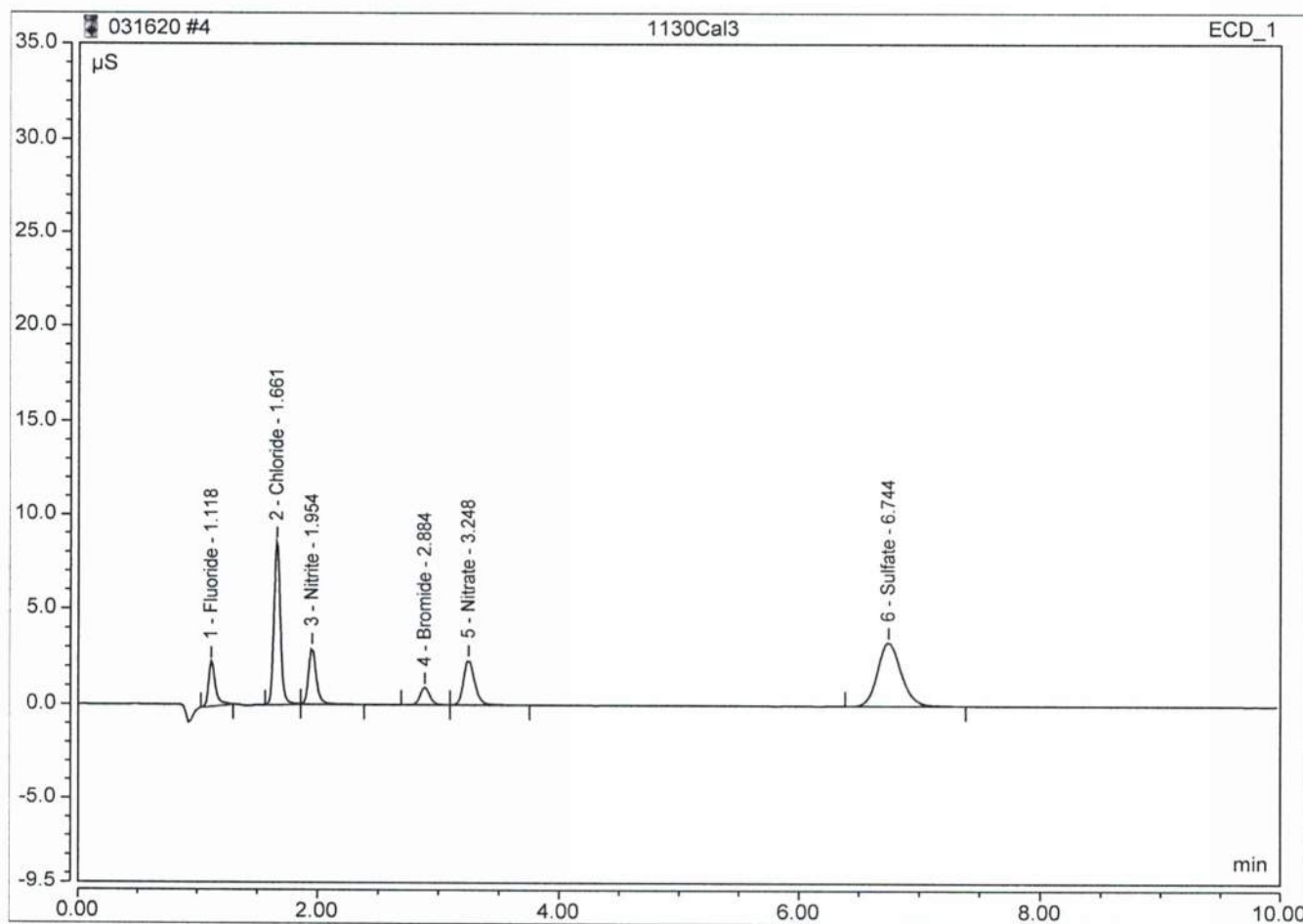
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.156	2.362	1 0.9783
2	1.66	Chloride	BMB	0.531	8.559	5 4.6623
3	1.95	Nitrite	BMB	0.216	2.949	1 0.9666
4	2.88	Bromide	BMB	0.084	0.917	2 1.9694
5	3.25	Nitrate	BMB	0.252	2.359	1 0.9702
6	6.74	Sulfate	BMB	0.755	3.326	10 9.6764
TOTAL:				1.99	20.47	19.22



Peak Integration Report

Sample Name:	1130Ca13	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:36	Operator:	Jeff Phifer

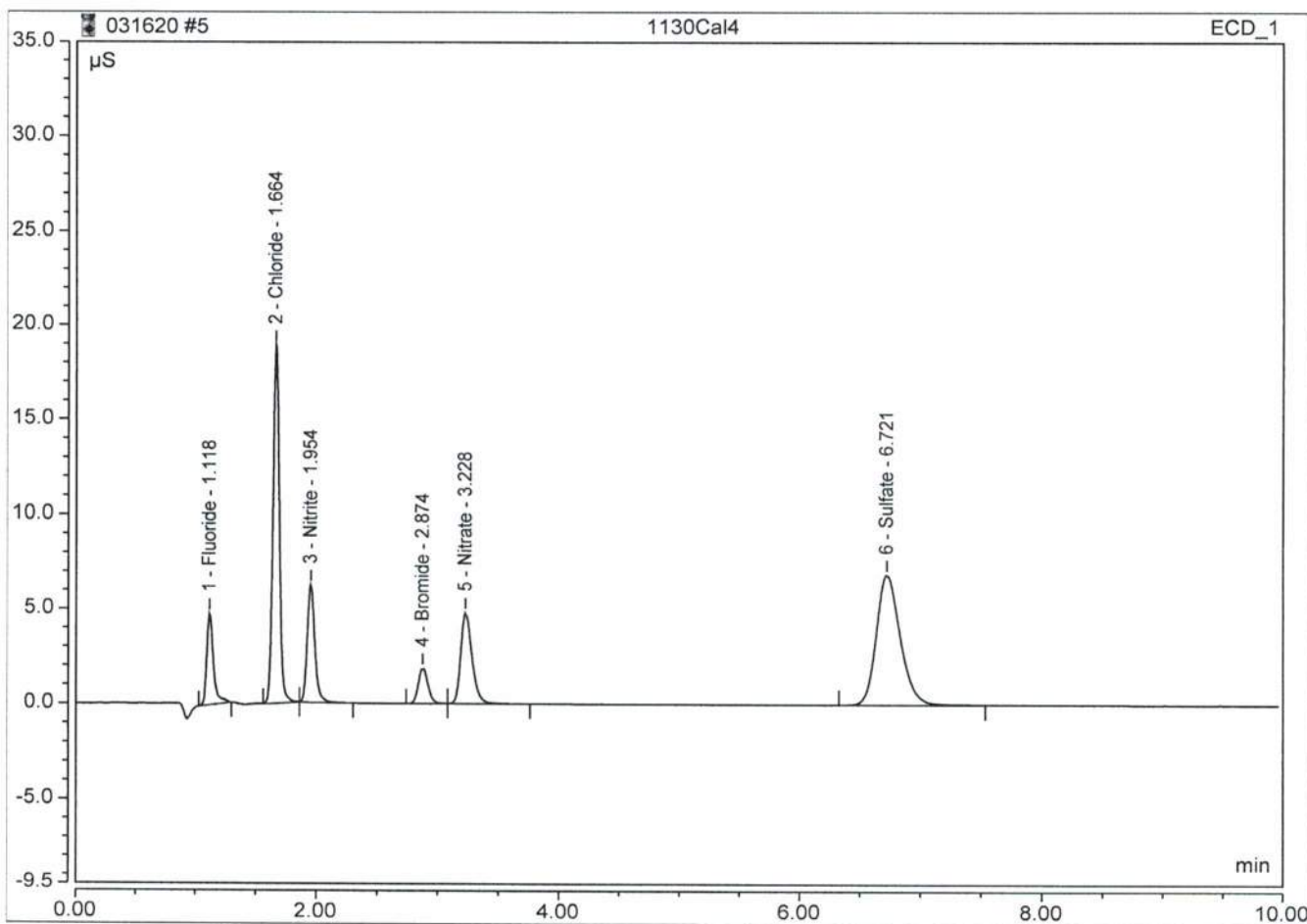
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.156	2.362	1.0013
2	1.66	Chloride	BMB	0.531	8.559	5.0249
3	1.95	Nitrite	BMB	0.216	2.949	1.0014
4	2.88	Bromide	BMB	0.084	0.917	1.9993
5	3.25	Nitrate	BMB	0.252	2.359	1.0042
6	6.74	Sulfate	BMB	0.755	3.326	10.0555
TOTAL:				1.99	20.47	20.09



Peak Integration Report

Sample Name:	1130Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:48	Operator:	Jeff Phifer

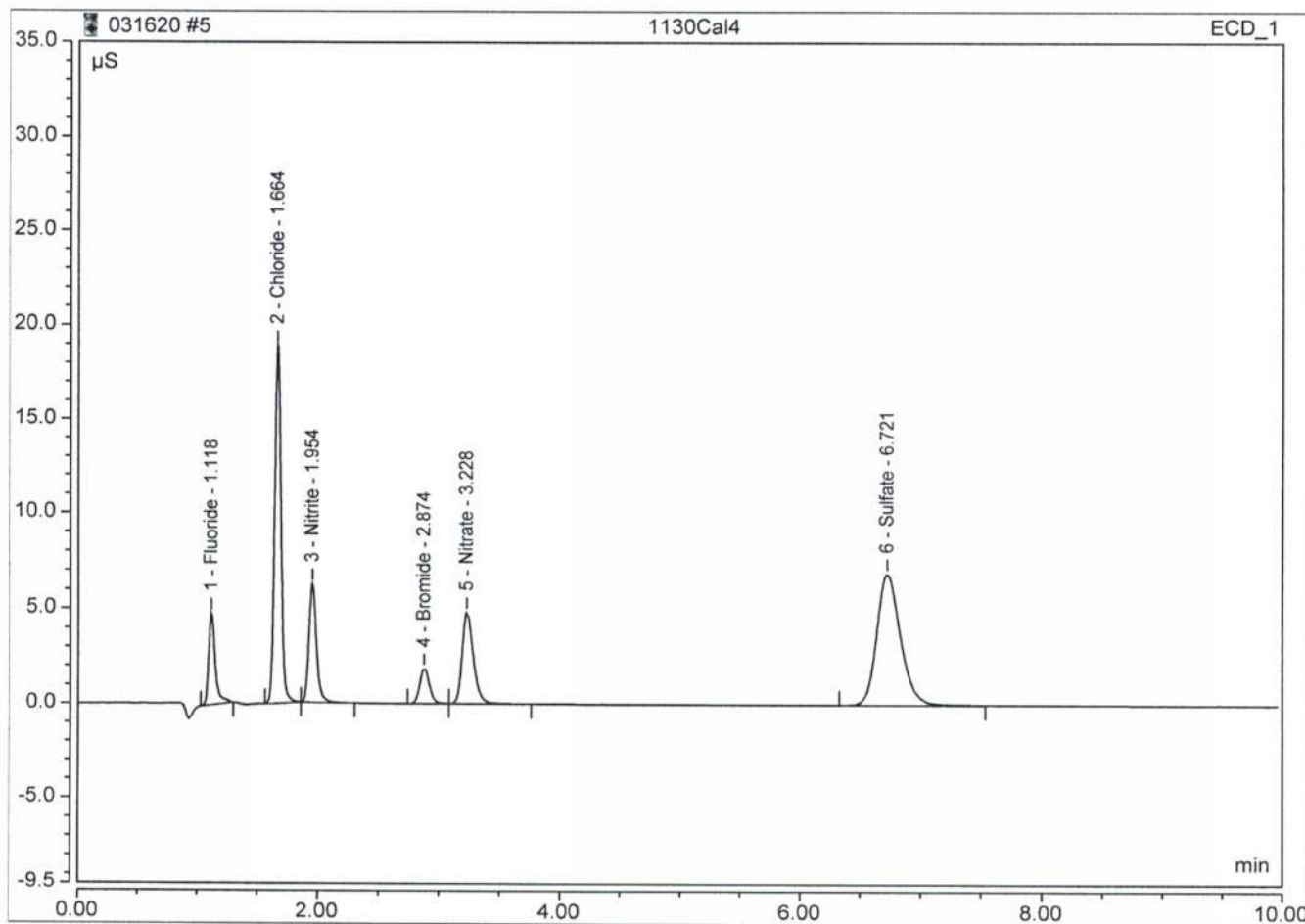
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.307	4.834	2 1.9744
2	1.66	Chloride	BMB	1.159	18.897	10 9.8582
3	1.95	Nitrite	BMB	0.449	6.229	2 1.9892
4	2.87	Bromide	BMB	0.170	1.866	4 3.9361
5	3.23	Nitrate	BMB	0.515	4.808	2 1.9818
6	6.72	Sulfate	BMB	1.566	6.872	20 19.9659
TOTAL:				4.17	43.50	39.71



Peak Integration Report

Sample Name:	1130Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:48	Operator:	Jeff Phifer

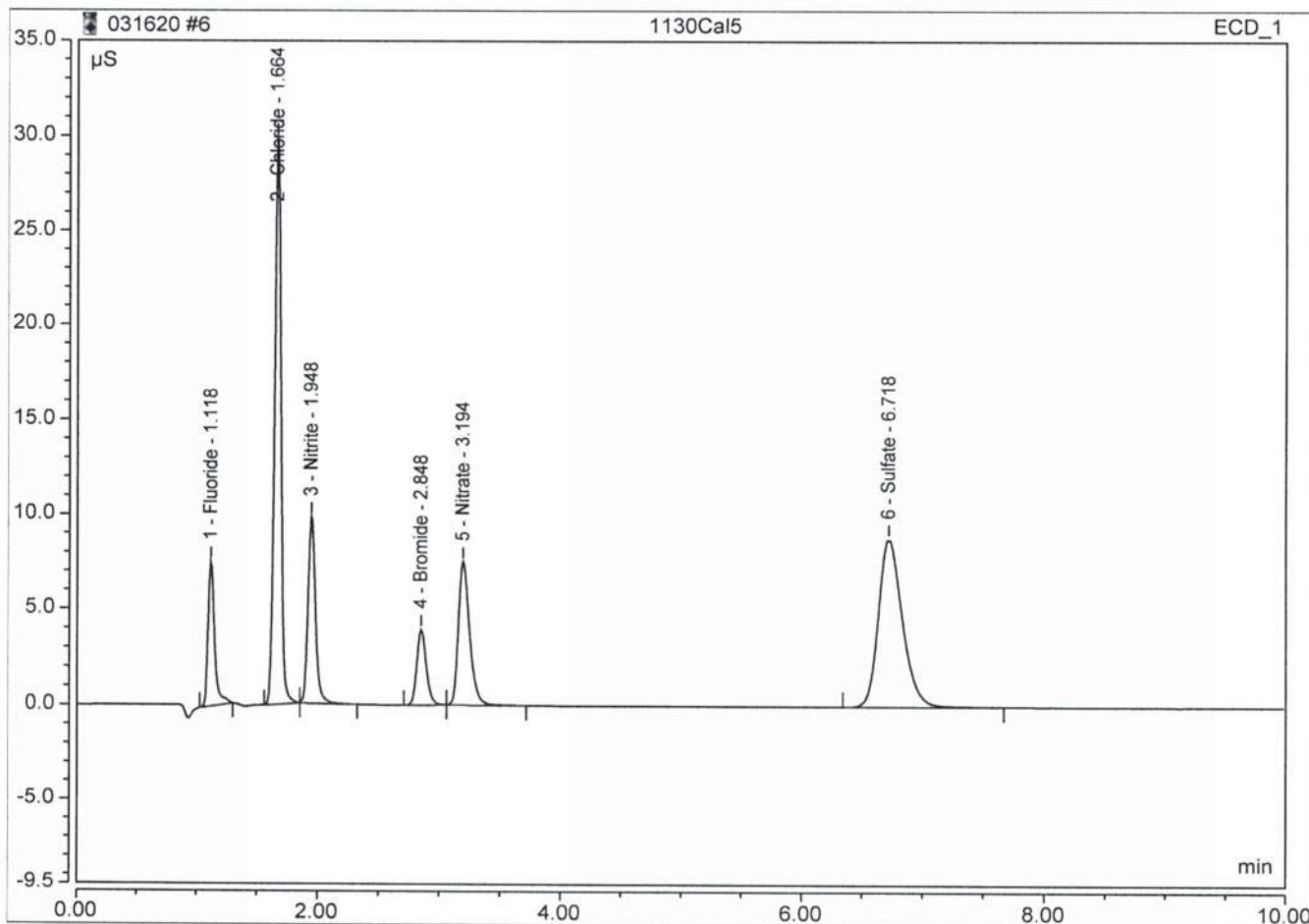
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.307	4.834	2.0102
2	1.66	Chloride	BMB	1.159	18.897	10.2226
3	1.95	Nitrite	BMB	0.449	6.229	2.0251
4	2.87	Bromide	BMB	0.170	1.866	4.0058
5	3.23	Nitrate	BMB	0.515	4.808	2.0216
6	6.72	Sulfate	BMB	1.566	6.872	20.2999
TOTAL:				4.17	43.50	40.59



Peak Integration Report

Sample Name:	1130Cal5	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 11:01	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.470	7.546	3 3.0476
2	1.66	Chloride	BMB	1.838	29.851	15 15.4642
3	1.95	Nitrite	BMB	0.690	9.755	3 3.0536
4	2.85	Bromide	BMB	0.350	3.898	8 8.0849
5	3.19	Nitrate	BMB	0.795	7.457	3 3.0595
6	6.72	Sulfate	BMB	2.002	8.764	25 25.5041
TOTAL:				6.14	67.27	58.21



ICS-1100 B Dionex IC/Meth 300.0

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:57:49 AM - C
	1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:09 AM -
	1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:01 AM -
	1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:35:53 AM -
	1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:45 AM -
	1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:35 AM -
	Blank	Unknown		1	Norm Method	Anion	Finished	5/28/2020 8:23:46 AM - C
	BSpoke 11712BS1	Check Standard		2	Norm Method	Anion	Finished	5/28/2020 8:36:06 AM - C
	LCS 11712LCS1	Check Standard		3	Norm Method	Anion	Finished	5/28/2020 8:48:58 AM - C
	14168.01 30/2.91g	Unknown		4	Norm Method	Anion	Finished	5/28/2020 9:01:50 AM - C
	14168.02 30/4.02g	Unknown		5	Norm Method	Anion	Finished	5/28/2020 9:14:41 AM - C
	14168.01 50/0.3560g	Unknown		6	Norm Method	Anion	Finished	5/28/2020 9:27:34 AM - C
	14168.02 50/0.5910g	Unknown		7	Norm Method	Anion	Finished	5/28/2020 9:40:25 AM - C
	14264.01	Unknown		8	Norm Method	Anion	Finished	5/28/2020 9:53:17 AM - C
	14264.02	Unknown		9	Norm Method	Anion	Finished	5/28/2020 10:06:09 AM -
	14264.03	Unknown		10	Norm Method	Anion	Finished	5/28/2020 10:19:01 AM -
	14264.04	Unknown		11	Norm Method	Anion	Finished	5/28/2020 10:31:53 AM -
	14264.05	Unknown		12	Norm Method	Anion	Finished	5/28/2020 10:44:44 AM -
	14264.06	Unknown		13	Norm Method	Anion	Finished	5/28/2020 10:57:36 AM -
	14264.07	Unknown		14	Norm Method	Anion	Finished	5/28/2020 11:10:28 AM -
	14264.01 dup	Unknown		15	Norm Method	Anion	Finished	5/28/2020 11:23:19 AM -
	14264.01 MS 12989MS	Unknown		16	Norm Method	Anion	Finished	5/28/2020 11:36:11 AM -
	14264.01 MSD 12989M	Unknown		17	Norm Method	Anion	Finished	5/28/2020 11:49:02 AM -
	BSpoke 11712BS1	Check Standard		18	Norm Method	Anion	Finished	5/28/2020 12:01:54 PM -

CAL INT# ICS B 03 16 20 CAL

FL 20 05 28 - W1 - B
 SET 20 05 28 - W1 - B

Sequence: 052820
Last Update Operator: pcuser

	Blank	Unknown	19	Norm Method	Anion	Finished	5/28/2020 12:14:45 PM
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Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
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1.0000	5.0000	1.0000		Jeff Phifer	
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1.0000	2.5000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

Sequence: 052820
Last Update Operator: pcuser

1.0000	1.0000	1.0000	Jeff Phifer	
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Norm Method	16/06/15 12:18	Jeff Phifer	METHOD 300.0	
Stage	Time	Command	Value	Comment
Instrument Setup	min	<i>JP 5.28.20</i>		
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mM]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run			Duration = 10.000 [min]	
	0.000			
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

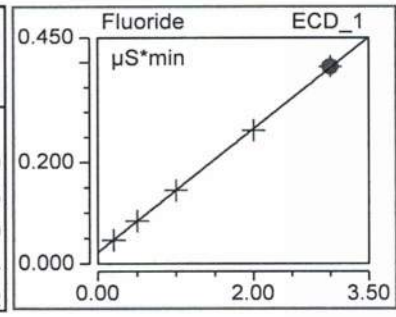
Calibration Batch Report
CAL ID# ICSB031620CAL

Sequence:	052820	Injection Vol:	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	16-Mar-2020 / 11:01	Column:	AS4A-SC 040144

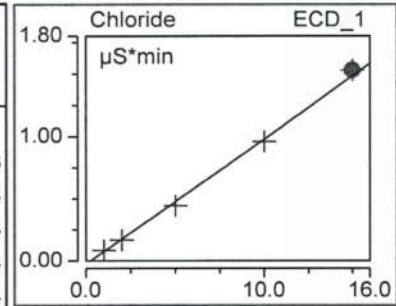
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.023	0.122	0.000	0.9999
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.025	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.193	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	-0.001	0.036	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.004	0.064	0.000	0.9997
AVERAGE:				-0.0017	0.1217	0.0000	0.9996

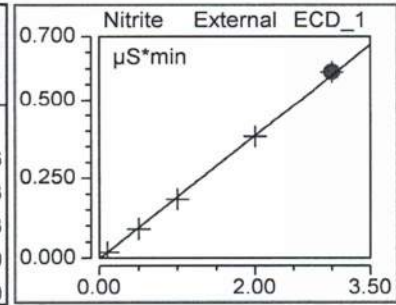
Injection Name	Ret.Time min ECD 1	Area µS*min ECD 1	Height µS ECD 1	Amount ECD 1
1130Cal1	Fluoride 1.087	Fluoride 0.0469	Fluoride 0.474	Fluoride 0.199
1130Cal2	1.088	0.0842	1.010	0.505
1130Cal3	1.088	0.1447	1.902	0.999
1130Cal4	1.088	0.2638	3.720	1.974
1130Cal5	1.088	0.3918	5.690	3.022
Average	1.087			
Rel. Std. Dev.	0.007 %			



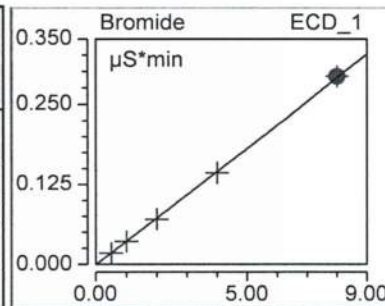
Injection Name	Ret.Time min ECD 1	Area µS*min ECD 1	Height µS ECD 1	Amount ECD 1
1130Cal1	Chloride 1.647	Chloride 0.0837	Chloride 1.369	Chloride 1.083
1130Cal2	1.648	0.1692	2.803	1.934
1130Cal3	1.654	0.4442	7.527	4.674
1130Cal4	1.658	0.9621	16.388	9.834
1130Cal5	1.661	1.5282	25.842	15.474
Average	1.653			
Rel. Std. Dev.	0.363 %			



Injection Name	Ret.Time min ECD 1	Area µS*min ECD 1	Height µS ECD 1	Amount ECD 1
1130Cal1	Nitrite 1.964	Nitrite 0.0180	Nitrite 0.249	Nitrite 0.106
1130Cal2	1.964	0.0909	1.255	0.483
1130Cal3	1.968	0.1837	2.564	0.963
1130Cal4	1.971	0.3820	5.338	1.989
1130Cal5	1.968	0.5890	8.308	3.060
Average	1.967			
Rel. Std. Dev.	0.144 %			

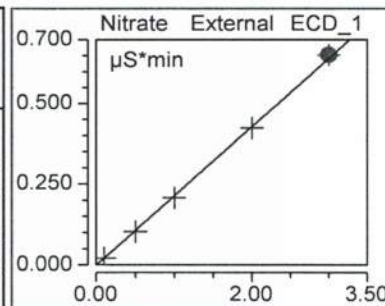


Injection Name	Ret.Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1130Cal1	2.957	0.0176	0.183	0.507
1130Cal2	2.954	0.0358	0.371	1.006
1130Cal3	2.958	0.0707	0.738	1.967
1130Cal4	2.961	0.1430	1.493	3.955
1130Cal5	2.938	0.2925	3.112	8.064
Average	2.953			
Rel. Std. Dev.	0.313 %			

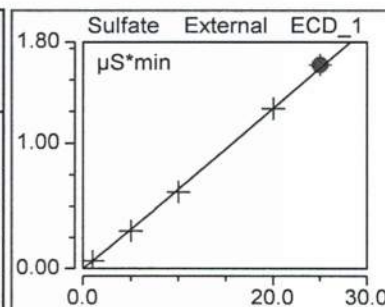


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Injection Name	Ret.Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1130Cal1	3.351	0.0215	0.195	0.105
1130Cal2	3.341	0.1029	0.922	0.486
1130Cal3	3.341	0.2071	1.848	0.972
1130Cal4	3.334	0.4230	3.741	1.982
1130Cal5	3.301	0.6525	5.776	3.055
Average	3.333			
Rel. Std. Dev.	0.575 %			



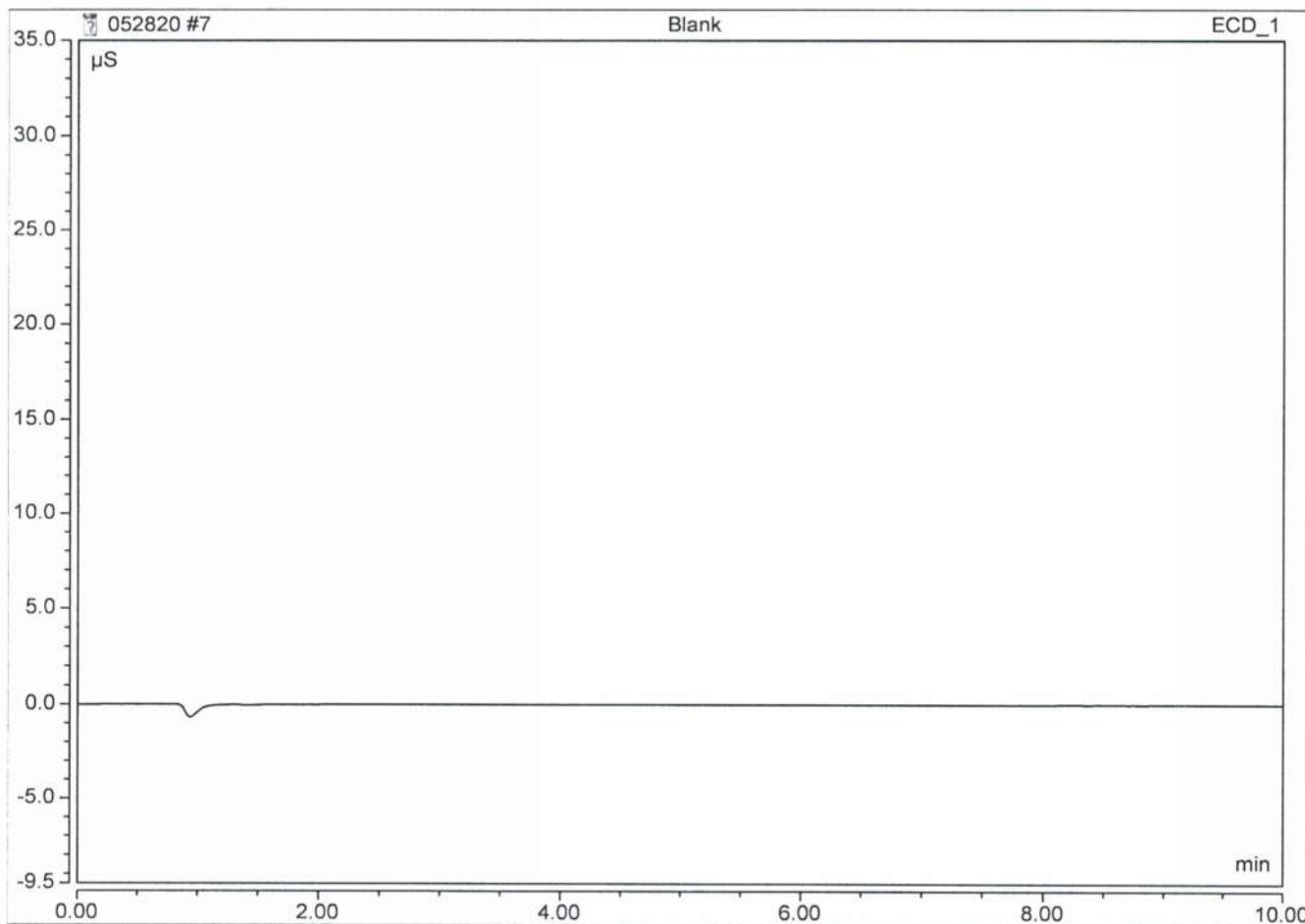
Injection Name	Ret.Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1130Cal1	7.057	0.0628	0.254	1.044
1130Cal2	7.048	0.3053	1.246	4.843
1130Cal3	7.028	0.6158	2.526	9.709
1130Cal4	7.018	1.2715	5.210	19.984
1130Cal5	7.011	1.6185	6.632	25.419
Average	7.032			
Rel. Std. Dev.	0.281 %			



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 08:23	Operator:	Jeff Phifer

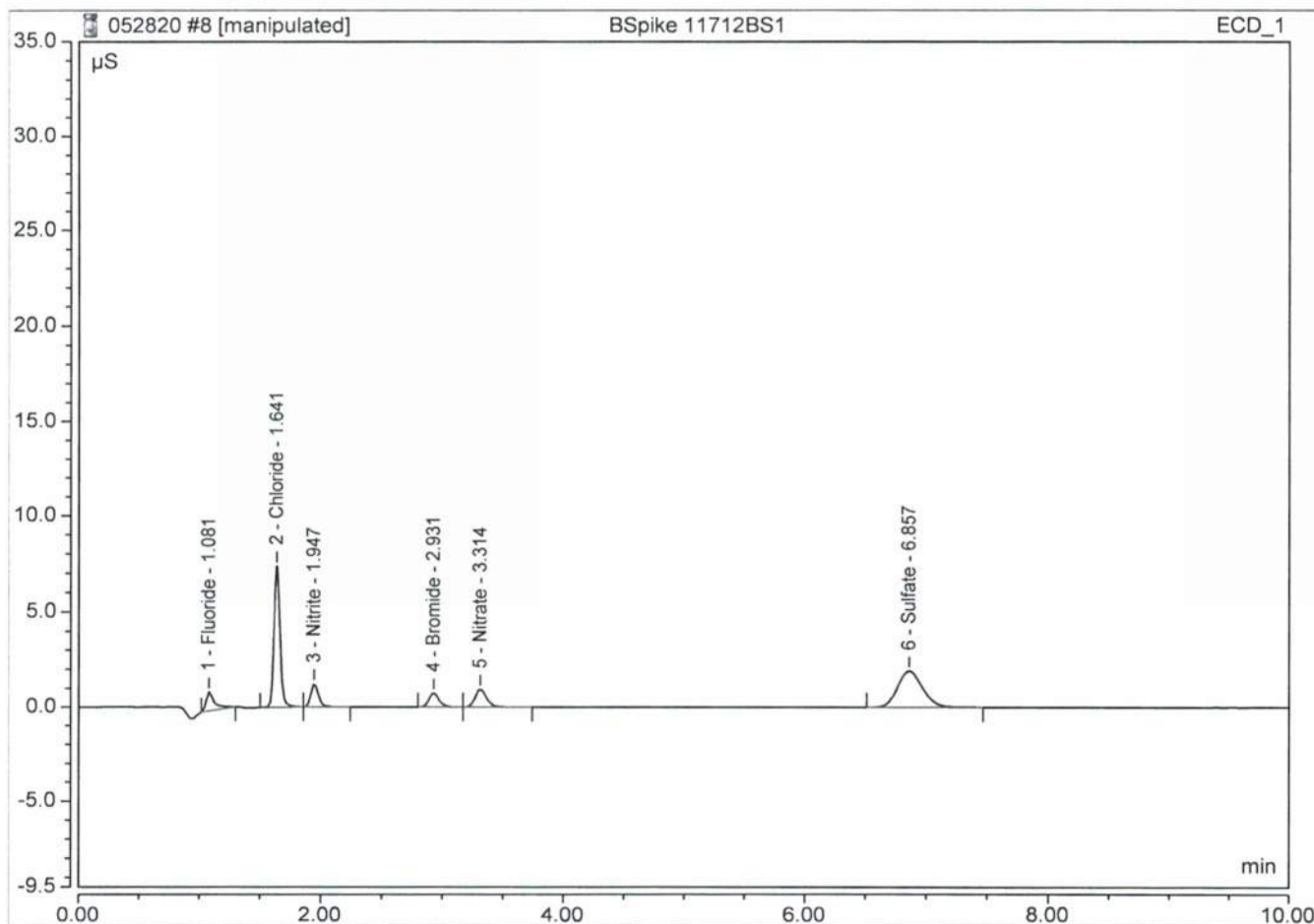
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	BSpike 11712BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 08:36	Operator:	Jeff Phifer

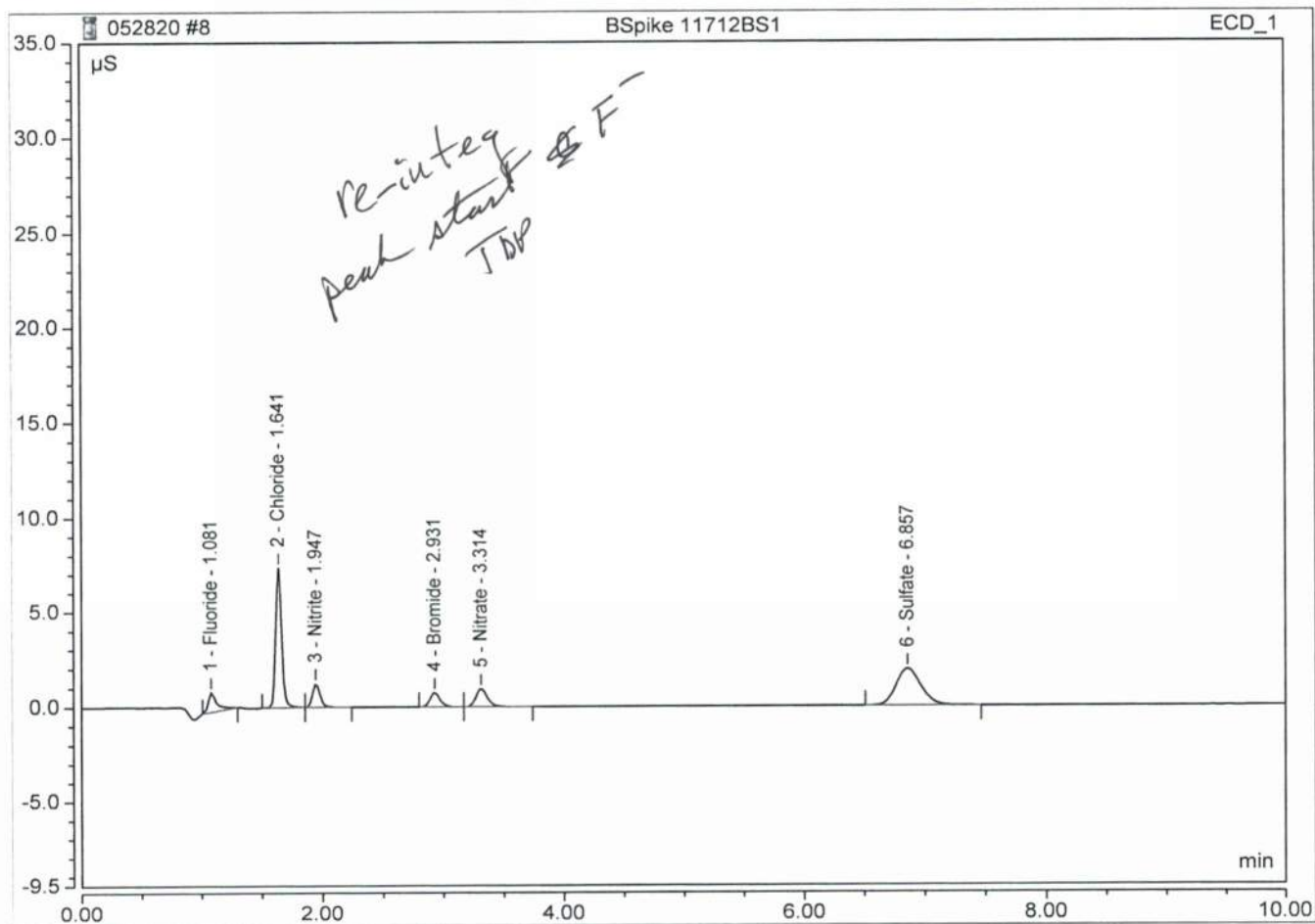
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB*	0.082	1.006	0.5 0.4835 964
2	1.64	Chloride	BMB	0.438	7.371	4.6084
3	1.95	Nitrite	BMB	0.089	1.236	0.4719
4	2.93	Bromide	BMB	0.071	0.748	1.9768
5	3.31	Nitrate	BMB	0.104	0.942	0.4896
6	6.86	Sulfate	BMB	0.453	1.925	7.5 7.1644 963
TOTAL:				1.24	13.23	15.19



Peak Integration Report

Sample Name:	BSpike 11712BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 08:36	Operator:	Jeff Phifer

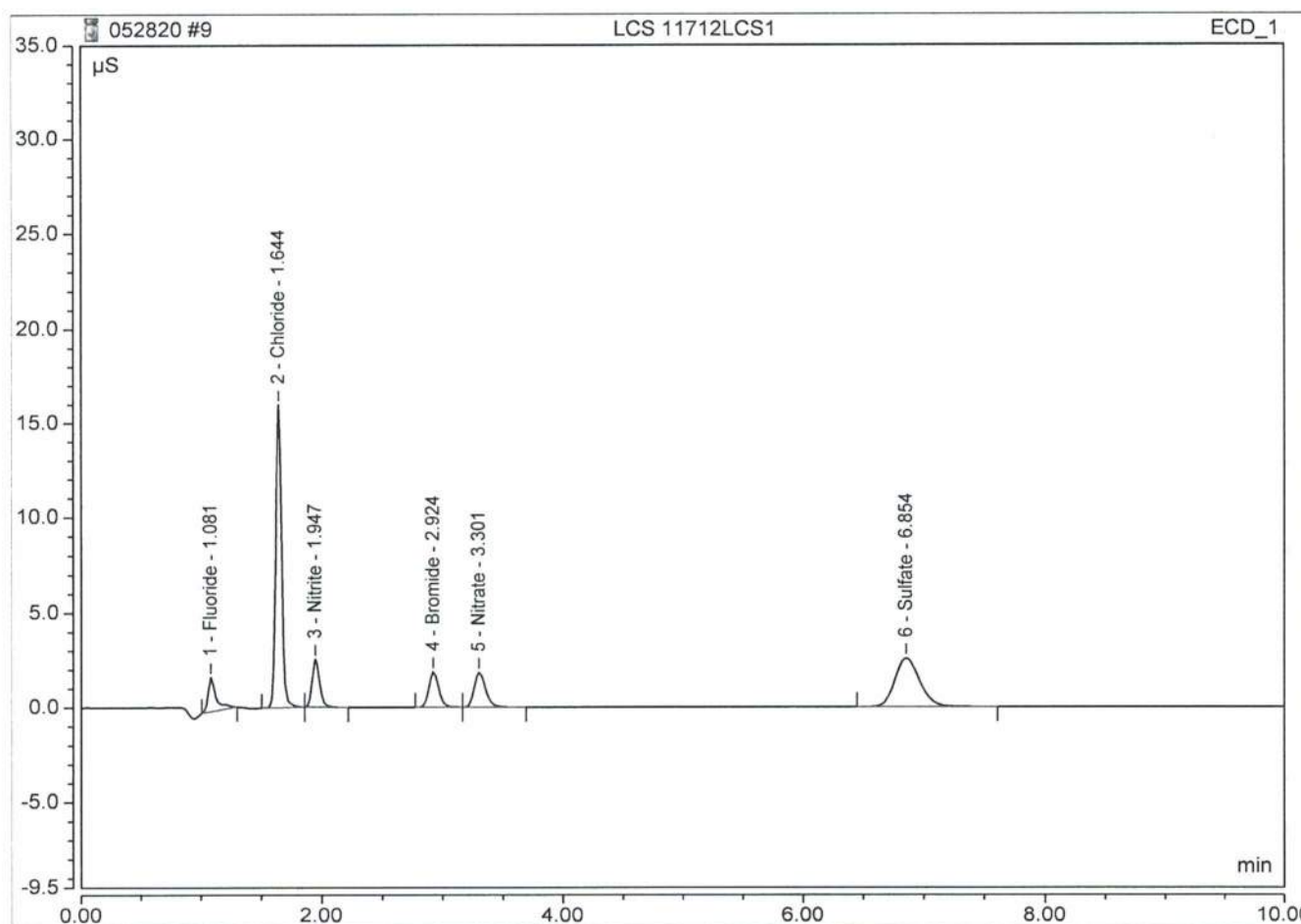
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.087	1.034	0.5269
2	1.64	Chloride	BMB	0.438	7.371	4.6084
3	1.95	Nitrite	BMB	0.089	1.236	0.4719
4	2.93	Bromide	BMB	0.071	0.748	1.9768
5	3.31	Nitrate	BMB	0.104	0.942	0.4896
6	6.86	Sulfate	BMB	0.453	1.925	7.1644
TOTAL:				1.24	13.26	15.24



Peak Integration Report

Sample Name:	LCS 11712LCS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 08:48	Operator:	Jeff Phifer

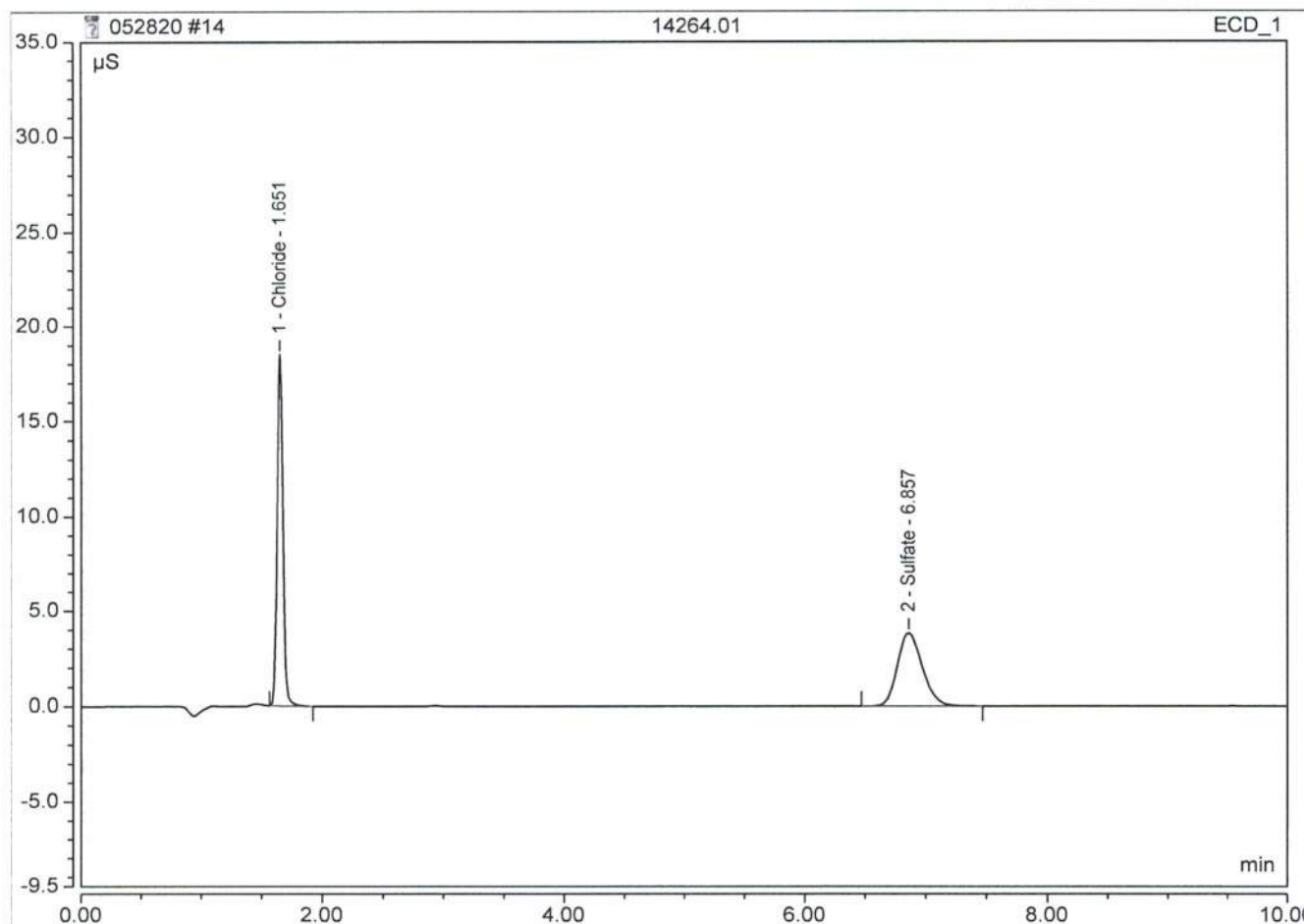
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.144	1.828	0.9912
2	1.64	Chloride	BMB	0.937	16.000	9.5891
3	1.95	Nitrite	BMB	0.181	2.541	0.9502
4	2.92	Bromide	BMB	0.178	1.879	4.9054
5	3.30	Nitrate	BMB	0.202	1.839	0.9484
6	6.85	Sulfate	BMB	0.609	2.581	9.5946
TOTAL:				2.25	26.67	26.98



Peak Integration Report

Sample Name:	14264.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 09:53	Operator:	Jeff Phifer

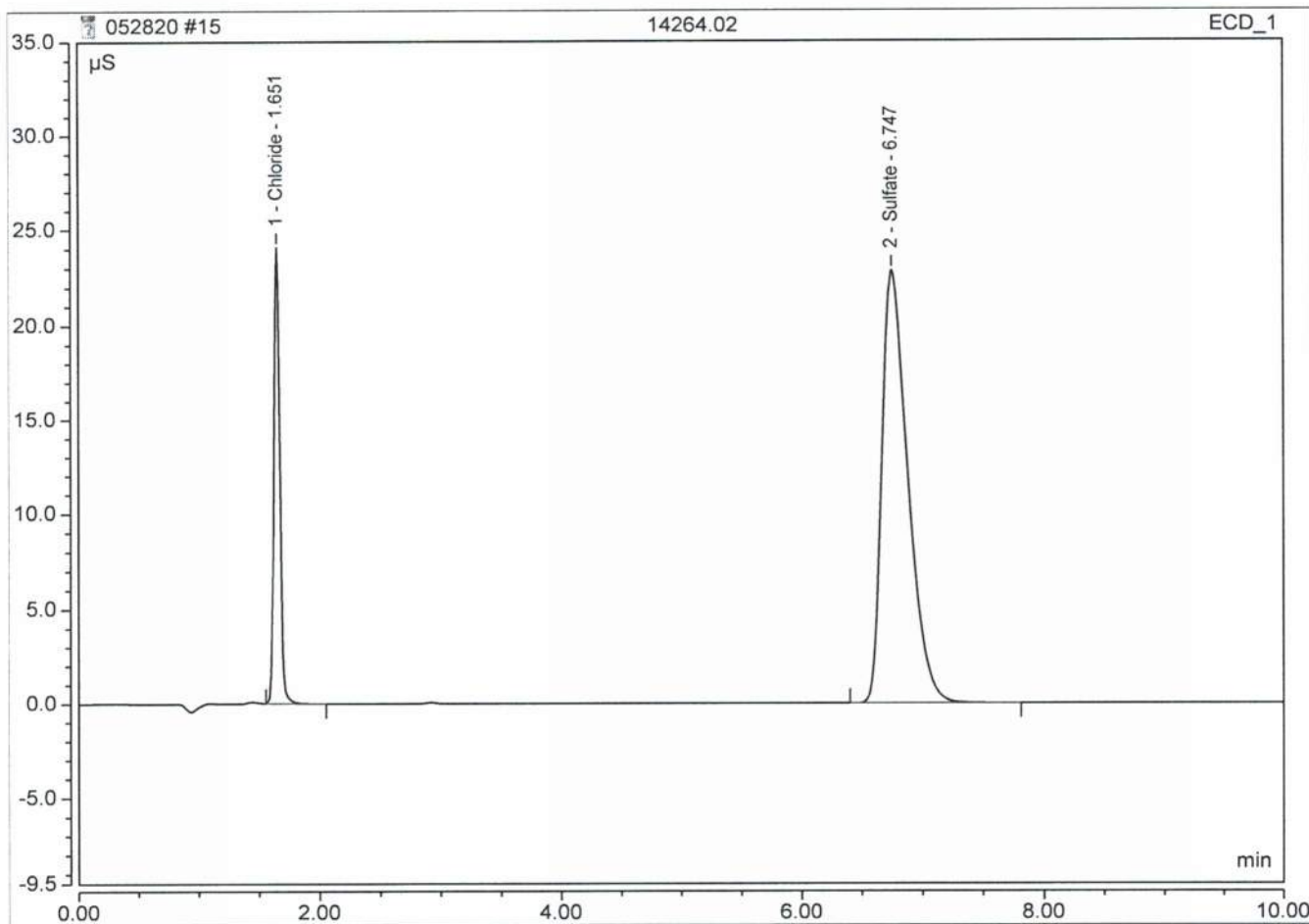
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.65	Chloride	BMB	1.057	18.479	53.8806
2	6.86	Sulfate	BMB	0.901	3.824	70.8729
TOTAL:				1.96	22.30	124.75



Peak Integration Report

Sample Name:	14264.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 10:06	Operator:	Jeff Phifer

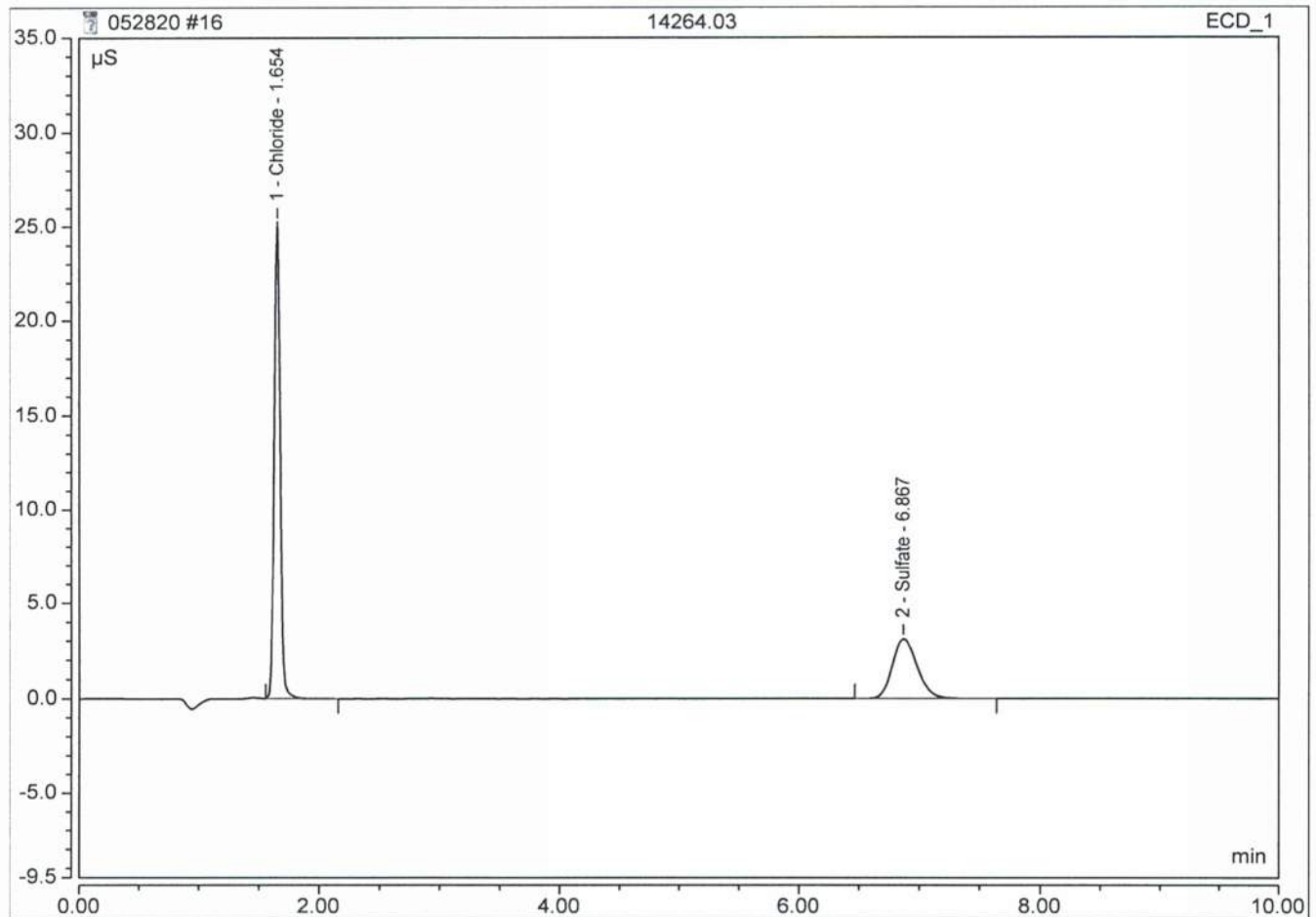
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.65	Chloride	BMB	1.392	24.070	70.6105
2	6.75	Sulfate	BMB	5.658	22.845	443.5908
TOTAL:				7.05	46.91	514.20



Peak Integration Report

Sample Name:	14264.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 10:19	Operator:	Jeff Phifer

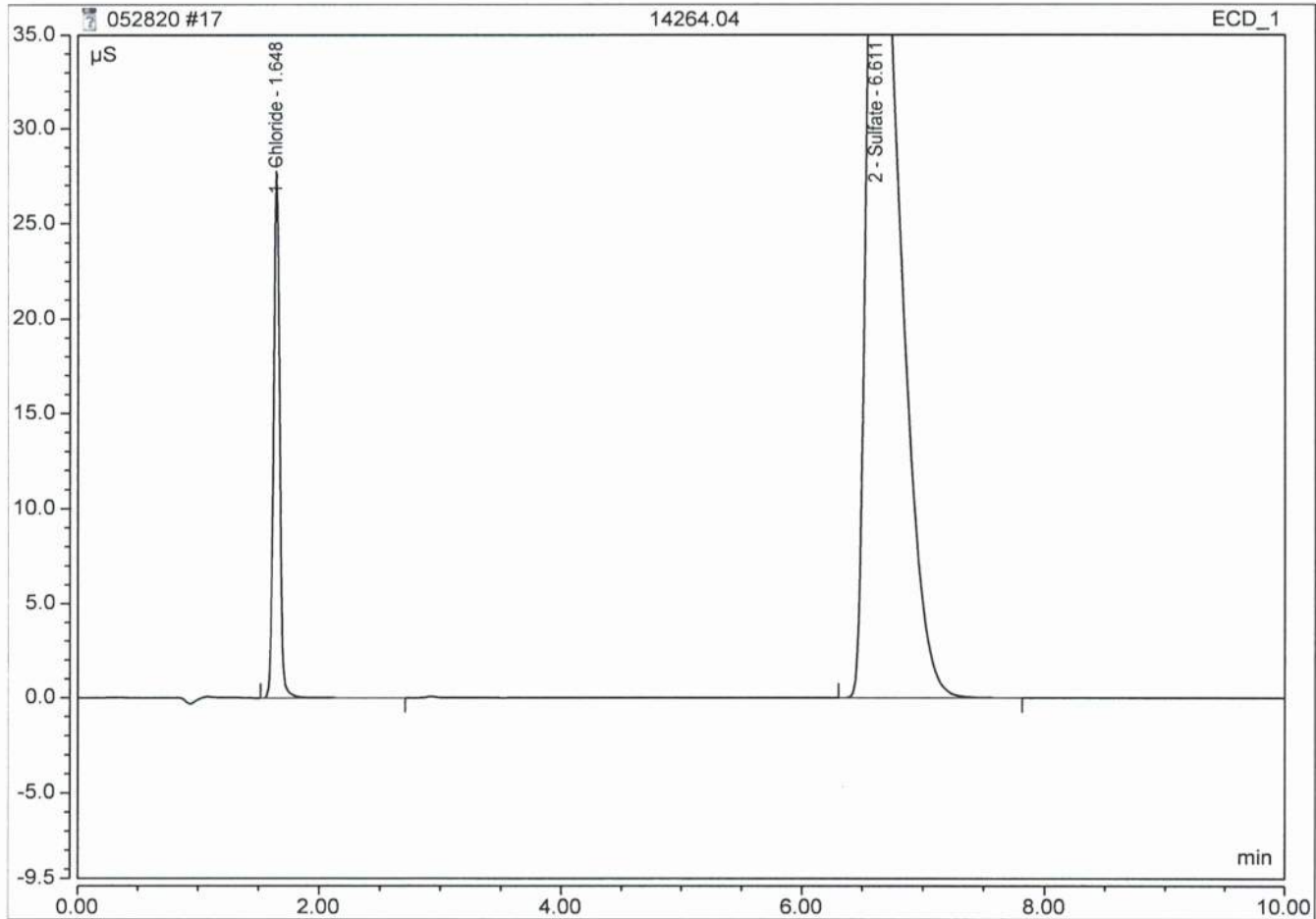
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.65	Chloride	BMB	1.466	25.266	74.2601
2	6.87	Sulfate	BMB	0.737	3.120	58.0208
TOTAL:				2.20	28.39	132.28



Peak Integration Report

Sample Name:	14264.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 10:31	Operator:	Jeff Phifer

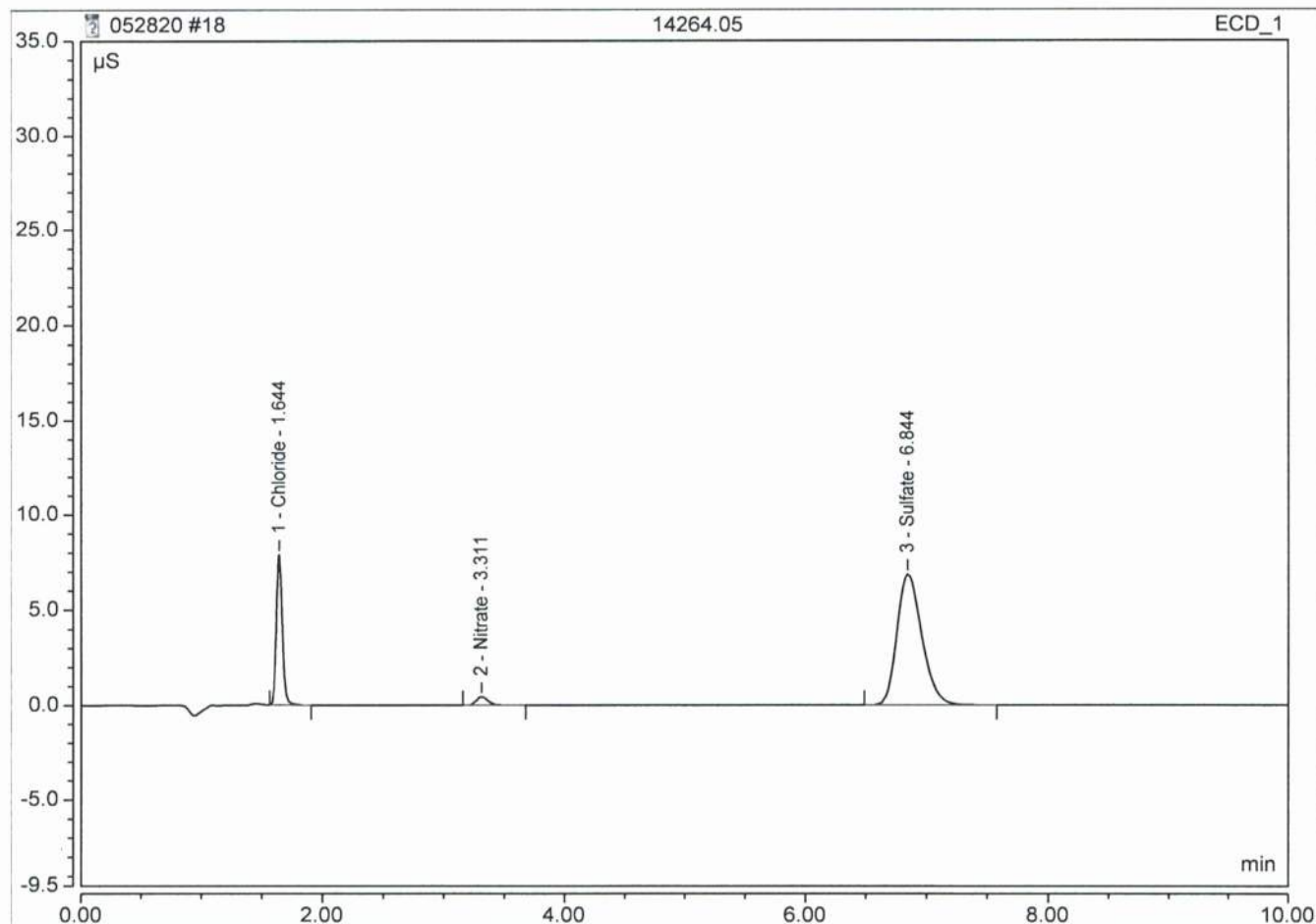
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.65	Chloride	BMB	1.650	27.747	83.4491
2	6.61	Sulfate	BMB	15.428	53.244	1209.0264
TOTAL:				17.08	80.99	1292.48



Peak Integration Report

Sample Name:	14264.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 10:44	Operator:	Jeff Phifer

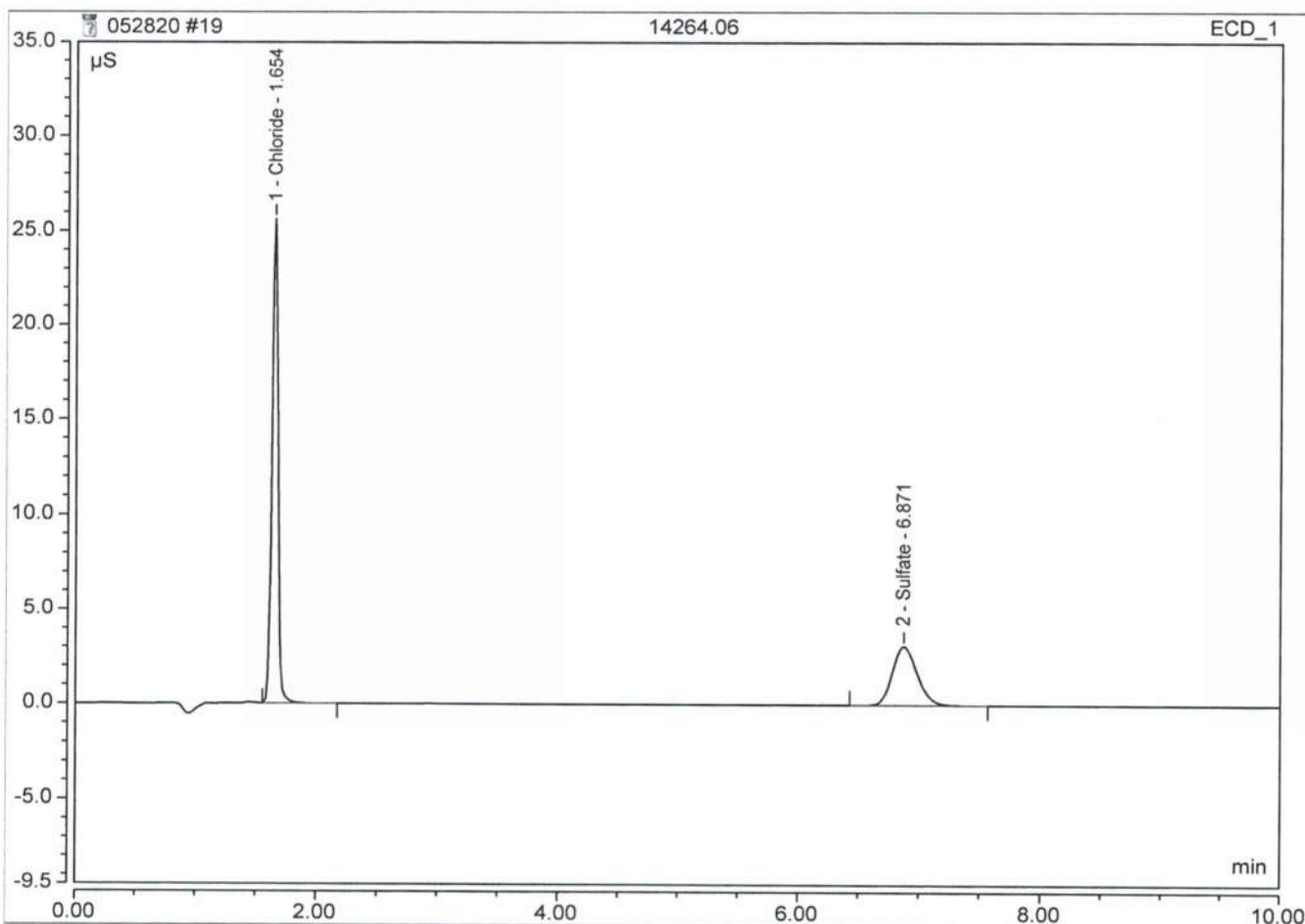
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.64	Chloride	BMB	0.455	7.888	23.9144
2	3.31	Nitrate	BMB	0.050	0.450	1.1791
3	6.84	Sulfate	BMB	1.624	6.883	127.5380
TOTAL:				2.13	15.22	152.63



Peak Integration Report

Sample Name:	14264.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 10:57	Operator:	Jeff Phifer

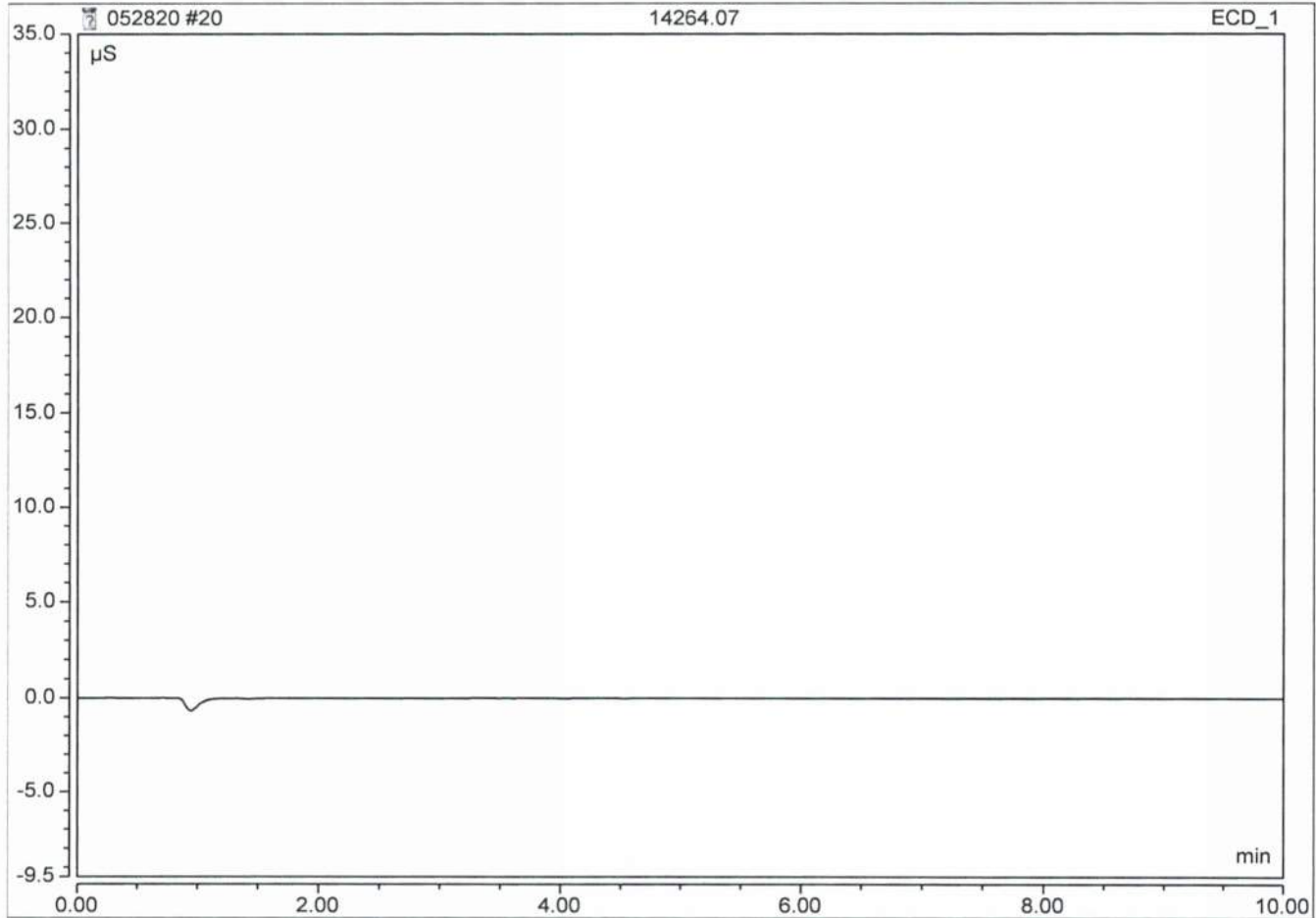
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.65	Chloride	BMB	1.490	25.625	75.4733
2	6.87	Sulfate	BMB	0.738	3.124	58.0867
TOTAL:				2.23	28.75	133.56



Peak Integration Report

Sample Name:	14264.07	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	2.5000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 11:10	Operator:	Jeff Phifer

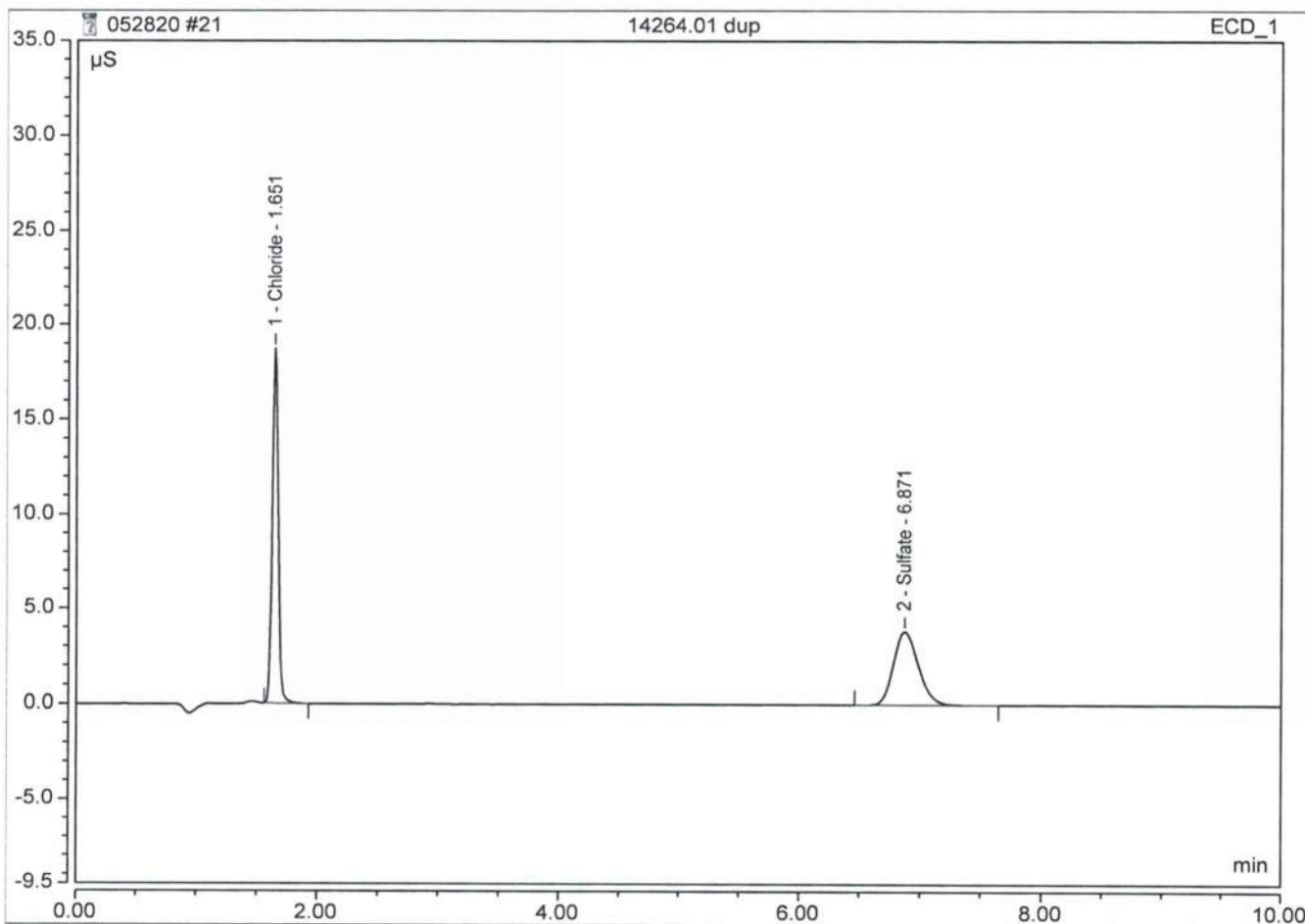
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	14264.01 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 11:23	Operator:	Jeff Phifer

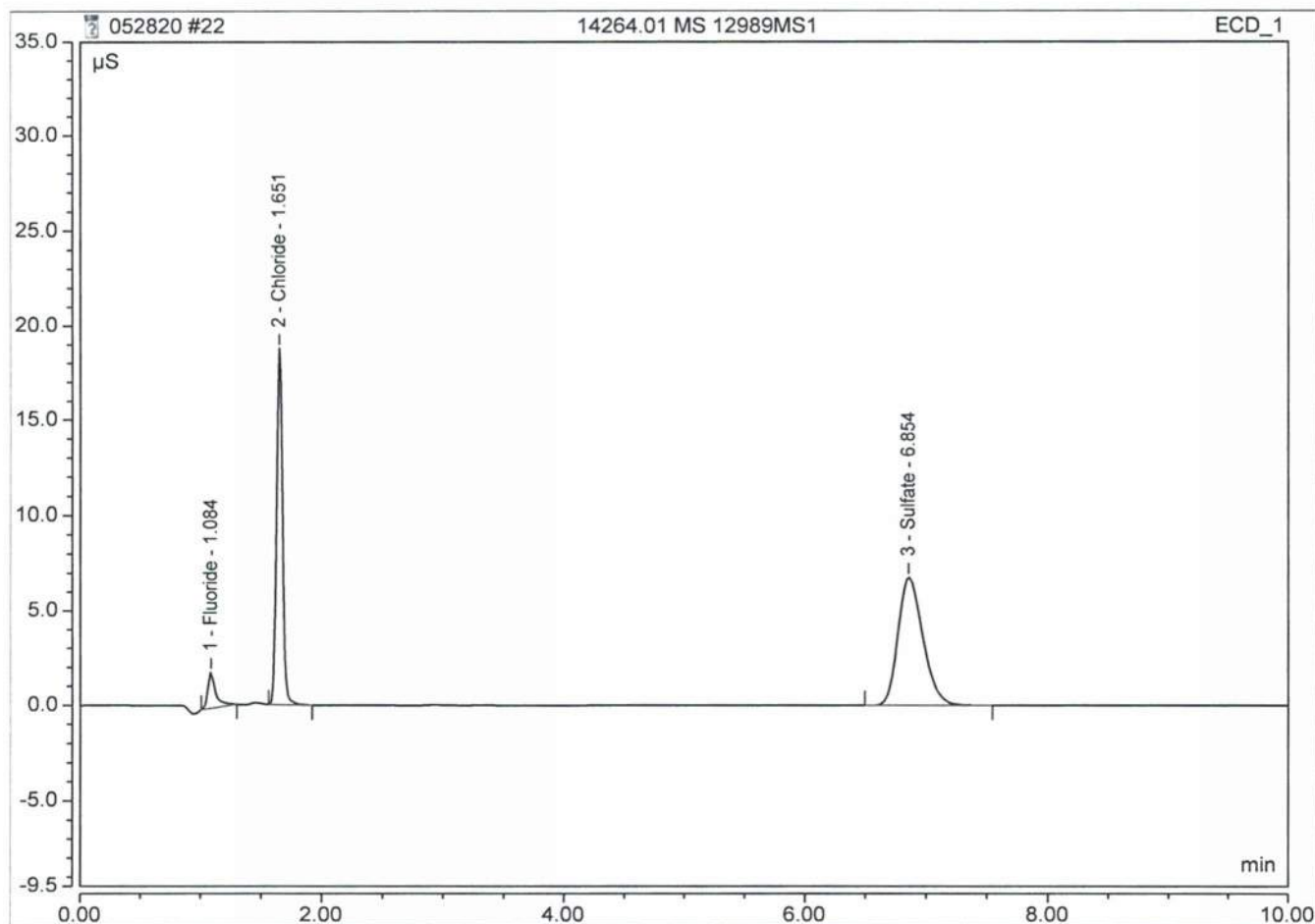
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.65	Chloride	BMB	1.072	18.720	54.6453
2	6.87	Sulfate	BMB	0.908	3.844	71.4532
TOTAL:				1.98	22.56	126.10



Peak Integration Report

Sample Name:	14264.01 MS 12989MS1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 11:36	Operator:	Jeff Phifer

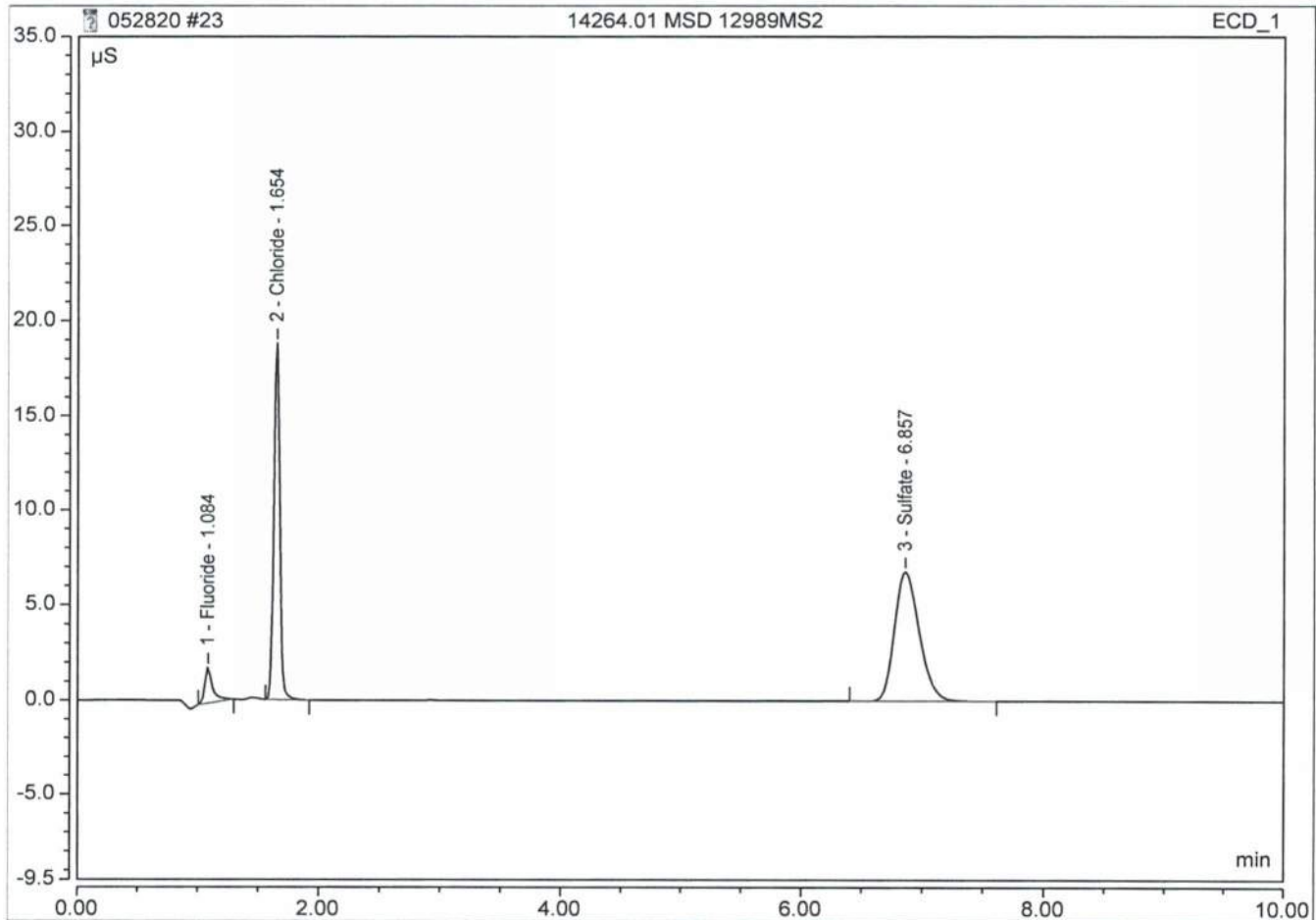
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.144	1.895	0.9920 ~ 10 = 99.5
2	1.65	Chloride	BMB	1.076	18.771	10.9688
3	6.85	Sulfate	BMB	1.598	6.769	10 25.1017 - 14.2 = 109.5
TOTAL:				2.82	27.43	37.06



Peak Integration Report

Sample Name:	14264.01 MSD 12989MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 11:49	Operator:	Jeff Phifer

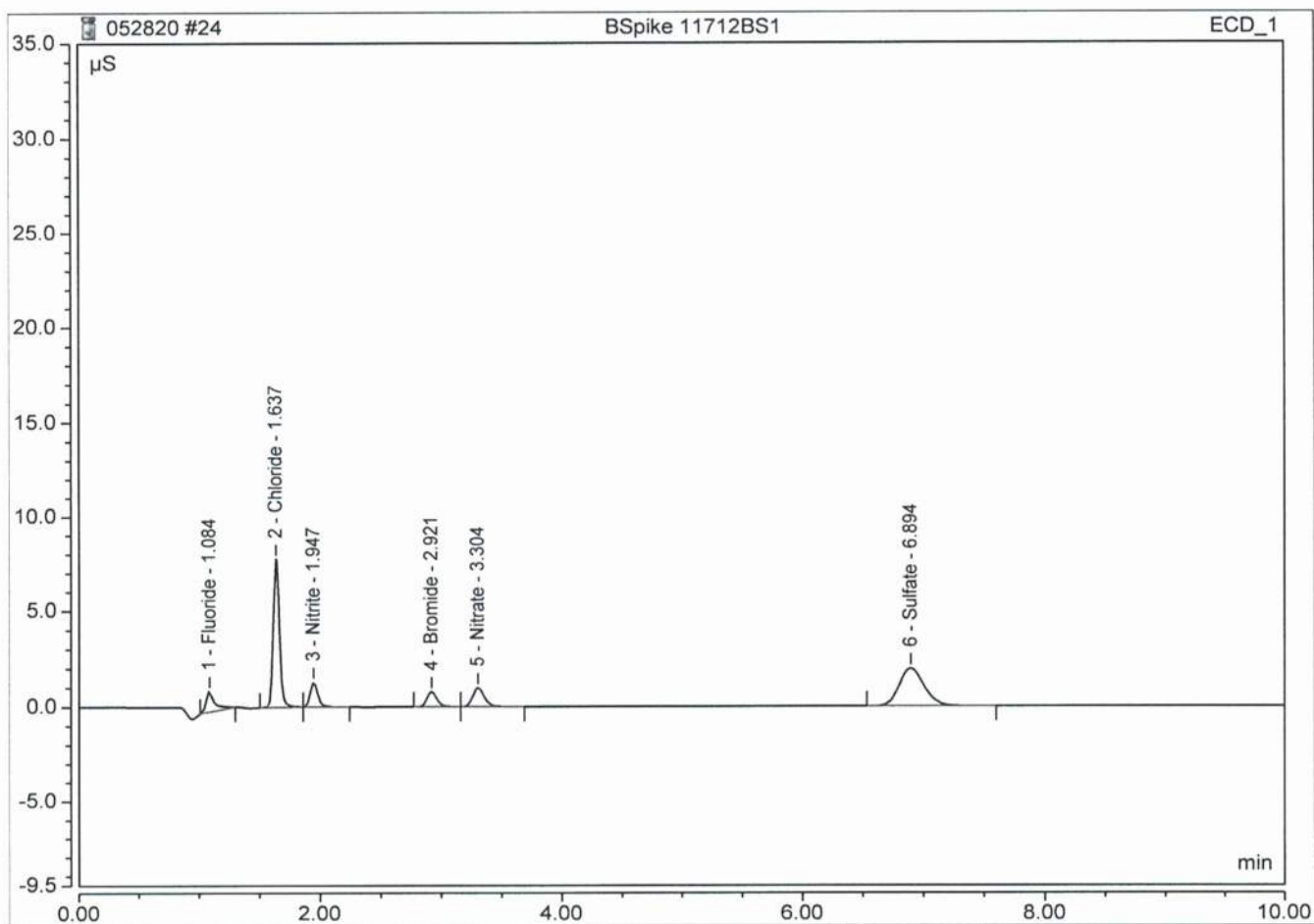
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.143	1.885	1 0.9891 - m = 996
2	1.65	Chloride	BMB	1.078	18.792	10.9902
3	6.86	Sulfate	BMB	1.601	6.773	10 25.1406 - 14.2 = 1096
TOTAL:				2.82	27.45	37.12



Peak Integration Report

Sample Name:	BSpike 11712BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 12:01	Operator:	Jeff Phifer

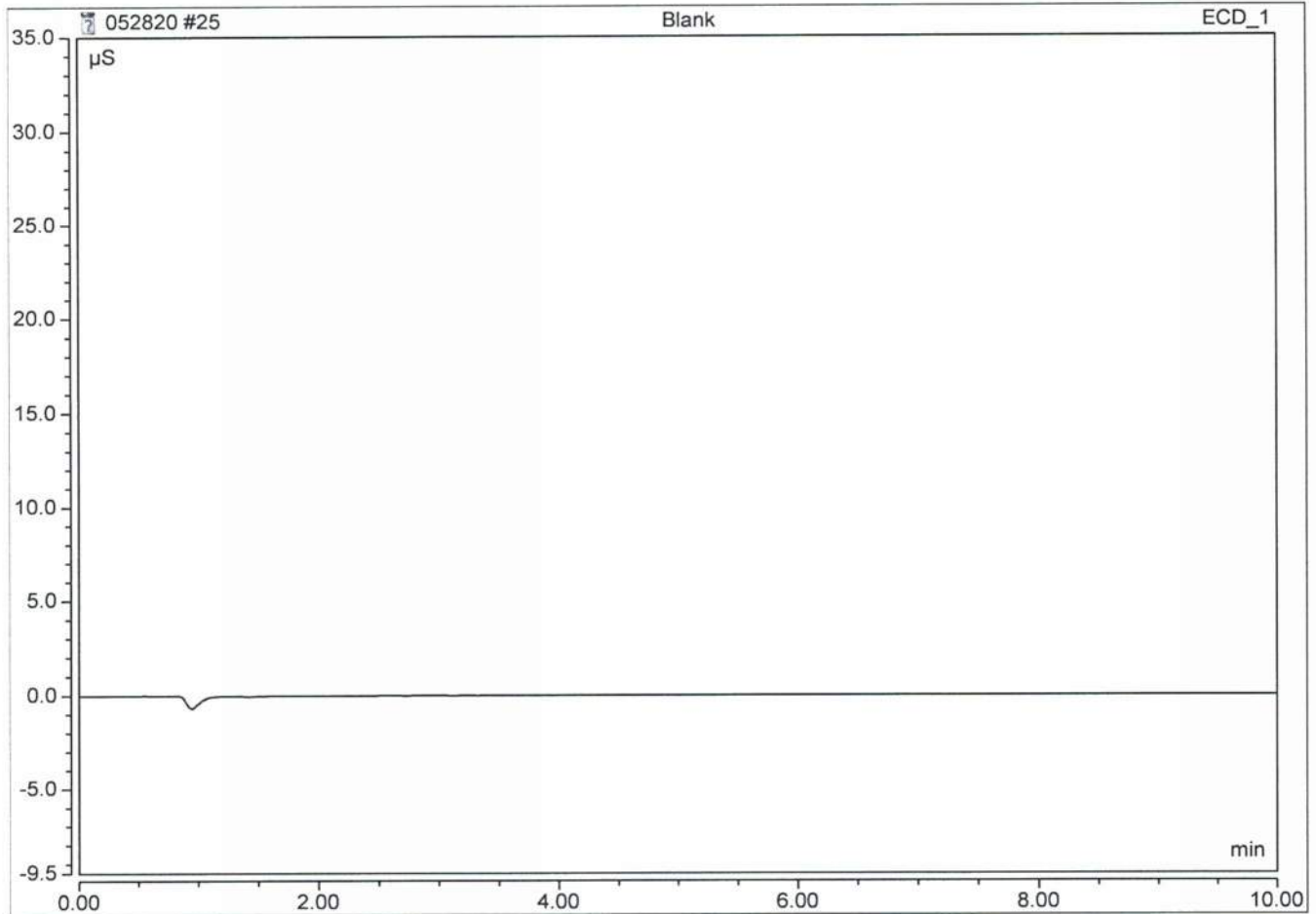
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.090	1.065	0.5542
2	1.64	Chloride	BMB	0.459	7.767	4.8228
3	1.95	Nitrite	BMB	0.093	1.292	0.4922
4	2.92	Bromide	BMB	0.074	0.785	2.0635
5	3.30	Nitrate	BMB	0.109	0.990	0.5116
6	6.89	Sulfate	BMB	0.468	1.976	7.3922
TOTAL:				1.29	13.87	15.84



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	28-May-2020 / 12:14	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



(new Calib)

Ics-1100B
IcsB Dionex IC / Meth 300.0

all ions

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:57:49 AM -C
	1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:09 AM .
	1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:01 AM .
	1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:35:53 AM .
	1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:45 AM .
	1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:35 AM .

CALIB ICSB 031620 CAL



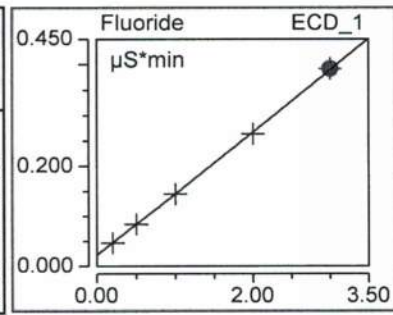
Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

Calibration Batch Report
CAL ID# ICSB031620CAL

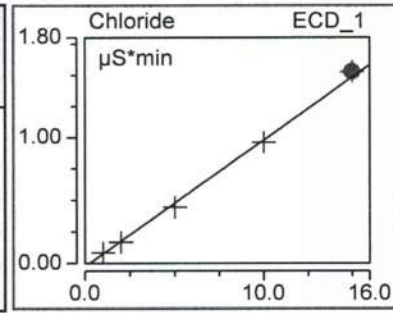
Sequence:	031620	Injection Vol.	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	16-Mar-2020 / 11:01	Column:	AS4A-SC 040144

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.023	0.122	0.000	0.9999
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.025	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.193	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	-0.001	0.036	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.004	0.064	0.000	0.9997
AVERAGE:				-0.0017	0.1217	0.0000	0.9996

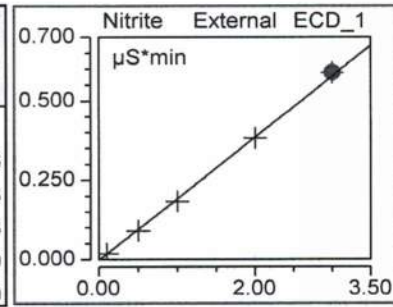
Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	1.087	0.0469	0.474	0.199
1130Cal2	1.088	0.0842	1.010	0.505
1130Cal3	1.088	0.1447	1.902	0.999
1130Cal4	1.088	0.2638	3.720	1.974
1130Cal5	1.088	0.3918	5.690	3.022
Average	1.087			
Rel. Std. Dev.	0.007 %			



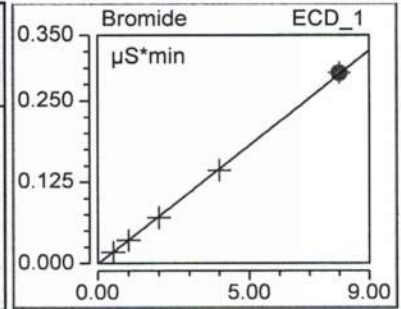
Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	1.647	0.0837	1.369	1.083
1130Cal2	1.648	0.1692	2.803	1.934
1130Cal3	1.654	0.4442	7.527	4.674
1130Cal4	1.658	0.9621	16.388	9.834
1130Cal5	1.661	1.5282	25.842	15.474
Average	1.653			
Rel. Std. Dev.	0.363 %			



Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	1.964	0.0180	0.249	0.106
1130Cal2	1.964	0.0909	1.255	0.483
1130Cal3	1.968	0.1837	2.564	0.963
1130Cal4	1.971	0.3820	5.338	1.989
1130Cal5	1.968	0.5890	8.308	3.060
Average	1.967			
Rel. Std. Dev.	0.144 %			

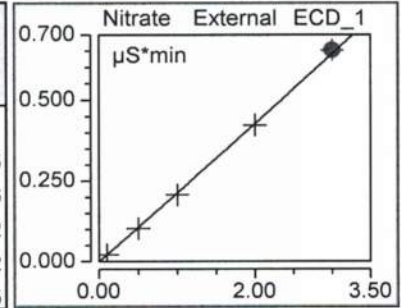


Injection Name	Ret. Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	2.957	0.0176	0.183	0.507
1130Cal2	2.954	0.0358	0.371	1.006
1130Cal3	2.958	0.0707	0.738	1.967
1130Cal4	2.961	0.1430	1.493	3.955
1130Cal5	2.938	0.2925	3.112	8.064
Average	2.953			
Rel. Std. Dev.	0.313 %			

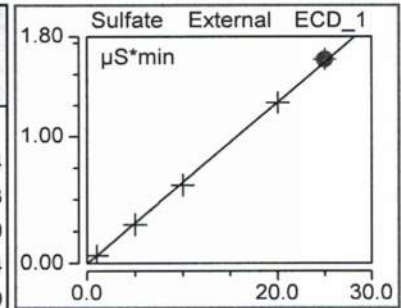


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Injection Name	Ret. Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	3.351	0.0215	0.195	0.105
1130Cal2	3.341	0.1029	0.922	0.486
1130Cal3	3.341	0.2071	1.848	0.972
1130Cal4	3.334	0.4230	3.741	1.982
1130Cal5	3.301	0.6525	5.776	3.055
Average	3.333			
Rel. Std. Dev.	0.575 %			



Injection Name	Ret. Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	7.057	0.0628	0.254	1.044
1130Cal2	7.048	0.3053	1.246	4.843
1130Cal3	7.028	0.6158	2.526	9.709
1130Cal4	7.018	1.2715	5.210	19.984
1130Cal5	7.011	1.6185	6.632	25.419
Average	7.032			
Rel. Std. Dev.	0.281 %			

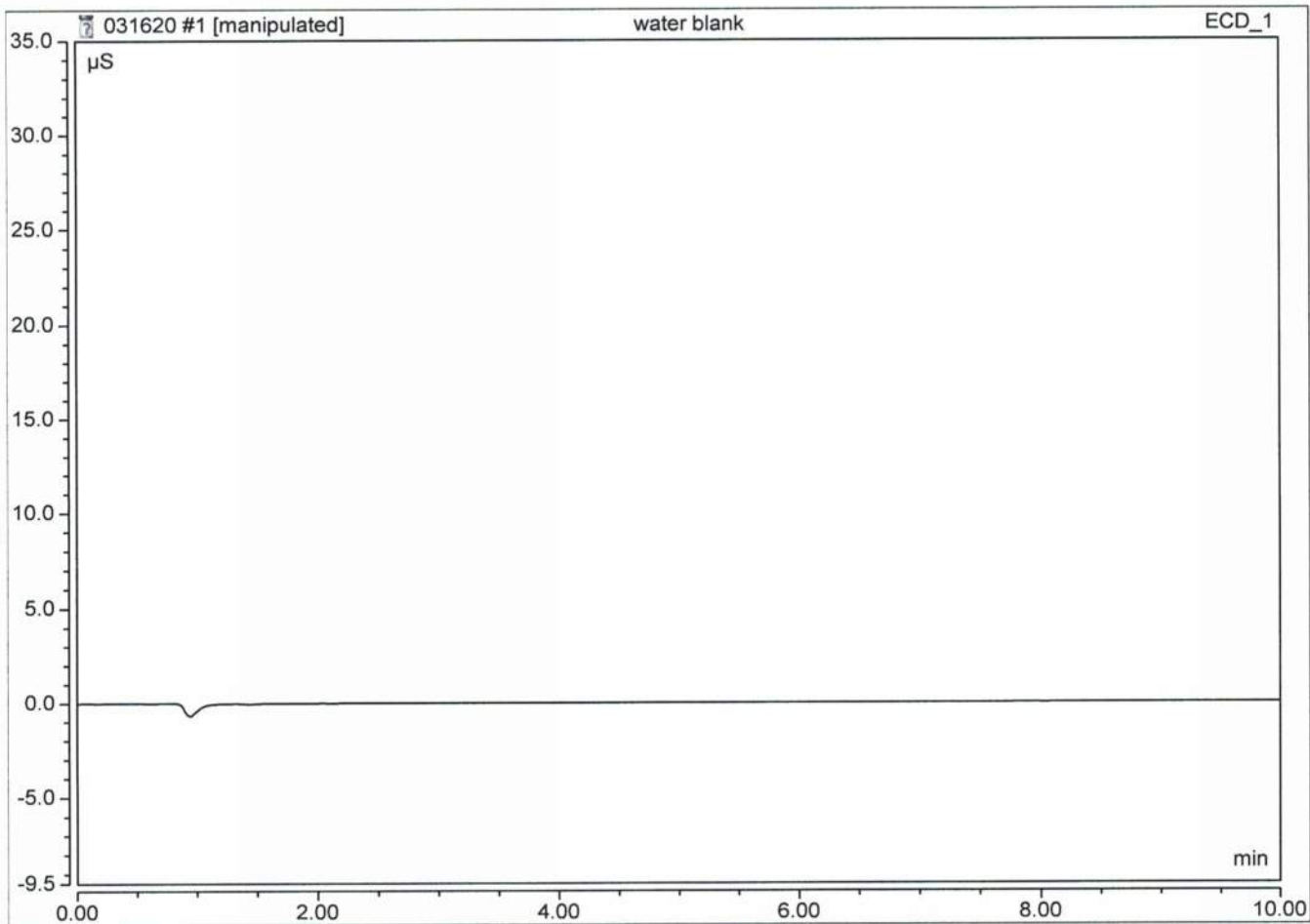


Norm Method	16/06/15 12:18	Jeff Phifer	METHOD 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mM]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 09:57	Operator:	Jeff Phifer

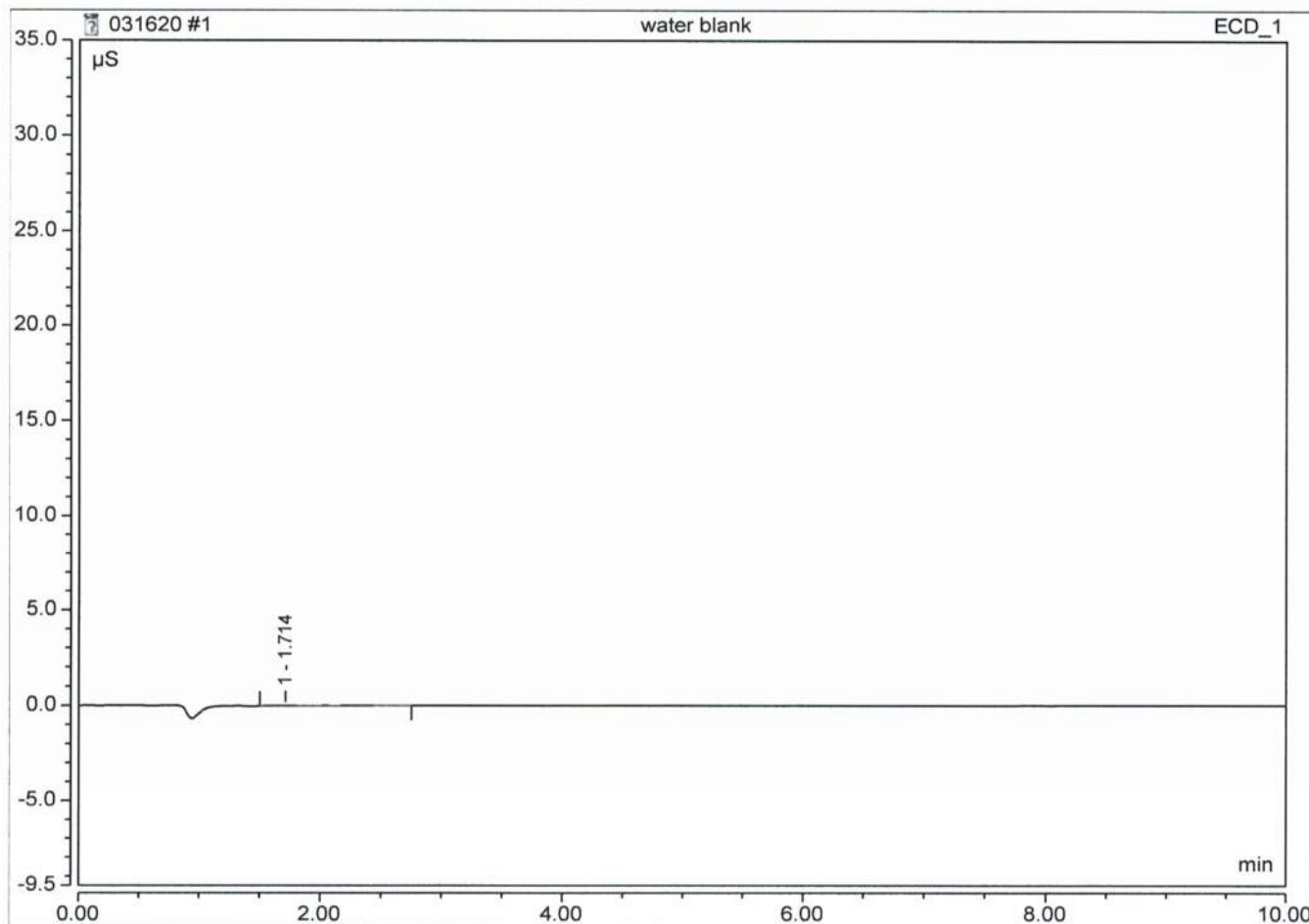
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 09:57	Operator:	Jeff Phifer

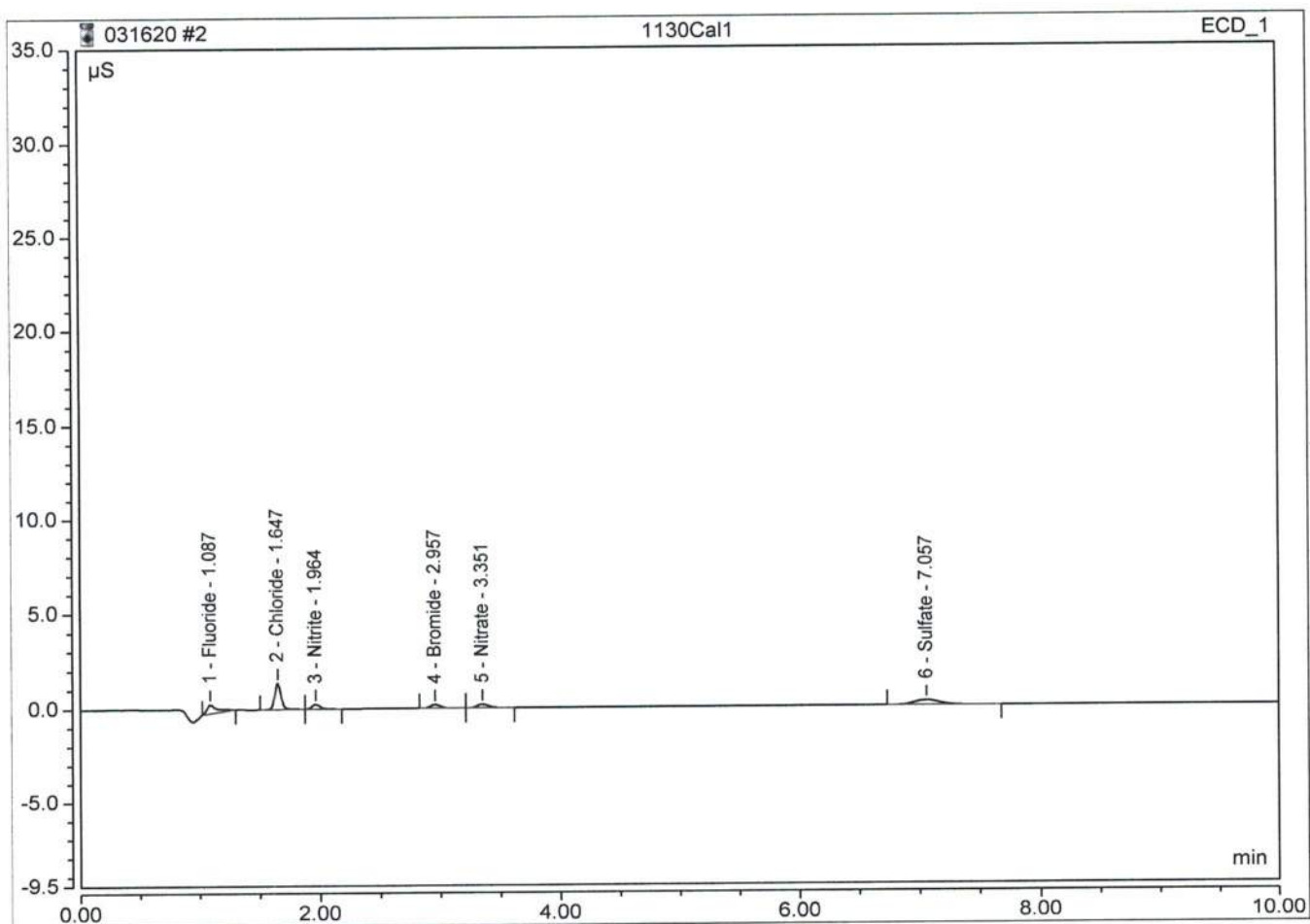
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	1130Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:10	Operator:	Jeff Phifer

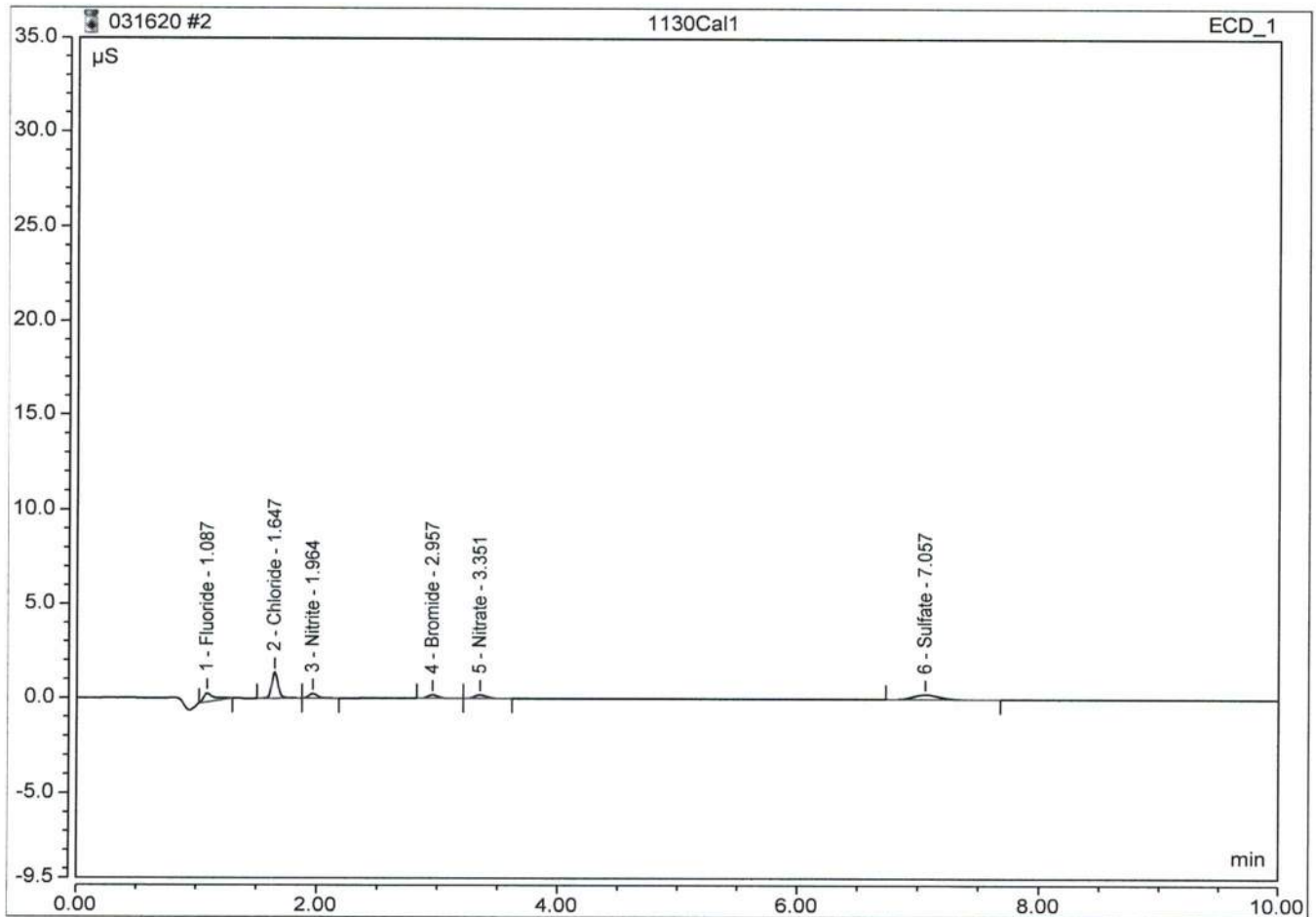
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.047	0.474	0.2 0.1992
2	1.65	Chloride	BMB	0.084	1.369	1 1.0830
3	1.96	Nitrite	BMB	0.018	0.249	0.1 0.1057
4	2.96	Bromide	BMB	0.018	0.183	0.5 0.5067
5	3.35	Nitrate	BMB	0.022	0.195	0.1 0.1047
6	7.06	Sulfate	BMB	0.063	0.254	1 1.0444
TOTAL:				0.25	2.72	3.04



Peak Integration Report

Sample Name:	1130Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:10	Operator:	Jeff Phifer

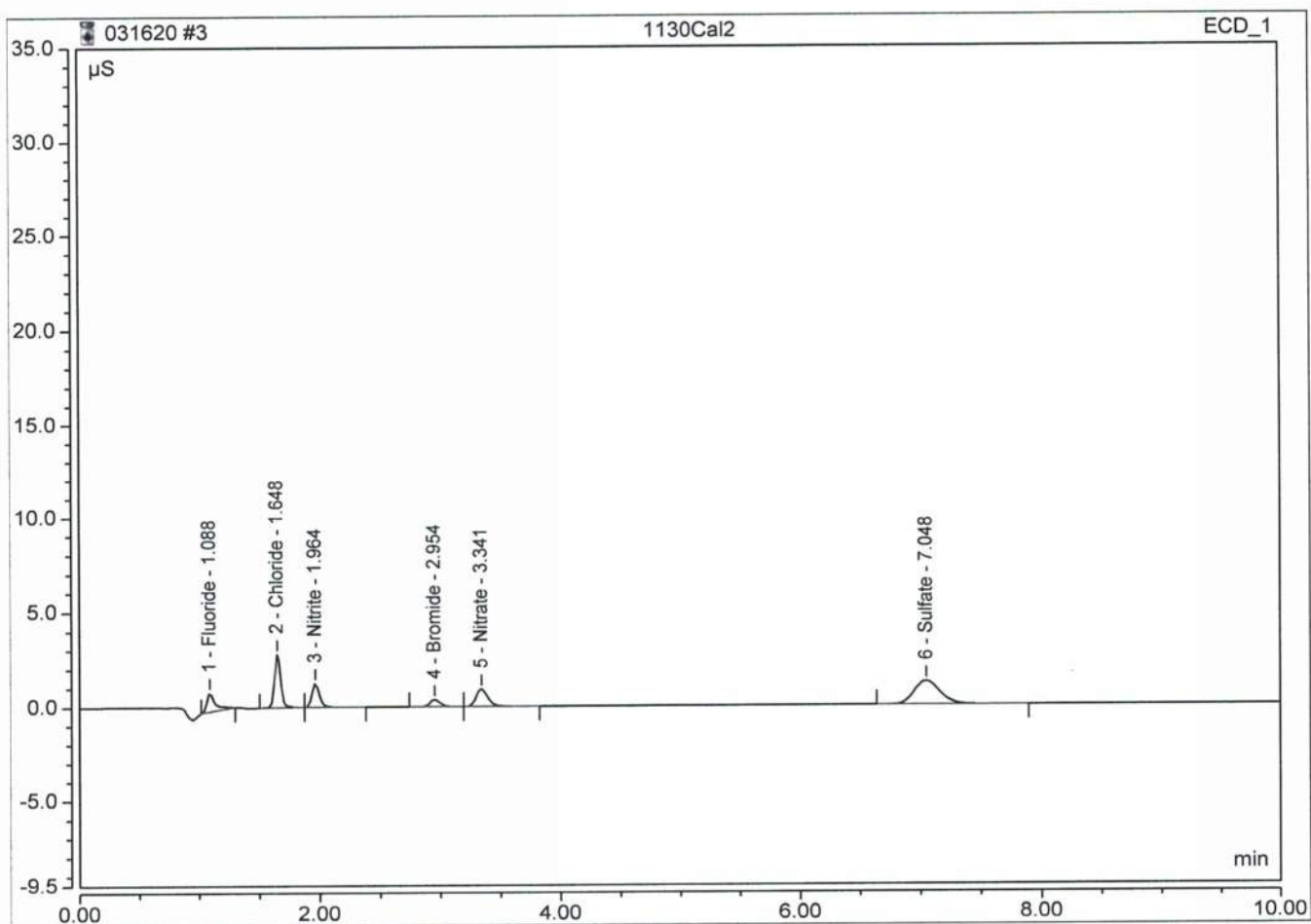
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.047	0.474	n.a.
2	1.65	Chloride	BMB	0.084	1.369	n.a.
3	1.96	Nitrite	BMB	0.018	0.249	n.a.
4	2.96	Bromide	BMB	0.018	0.183	n.a.
5	3.35	Nitrate	BMB	0.022	0.195	n.a.
6	7.06	Sulfate	BMB	0.063	0.254	n.a.
TOTAL:				0.25	2.72	0.00



Peak Integration Report

Sample Name:	1130Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:23	Operator:	Jeff Phifer

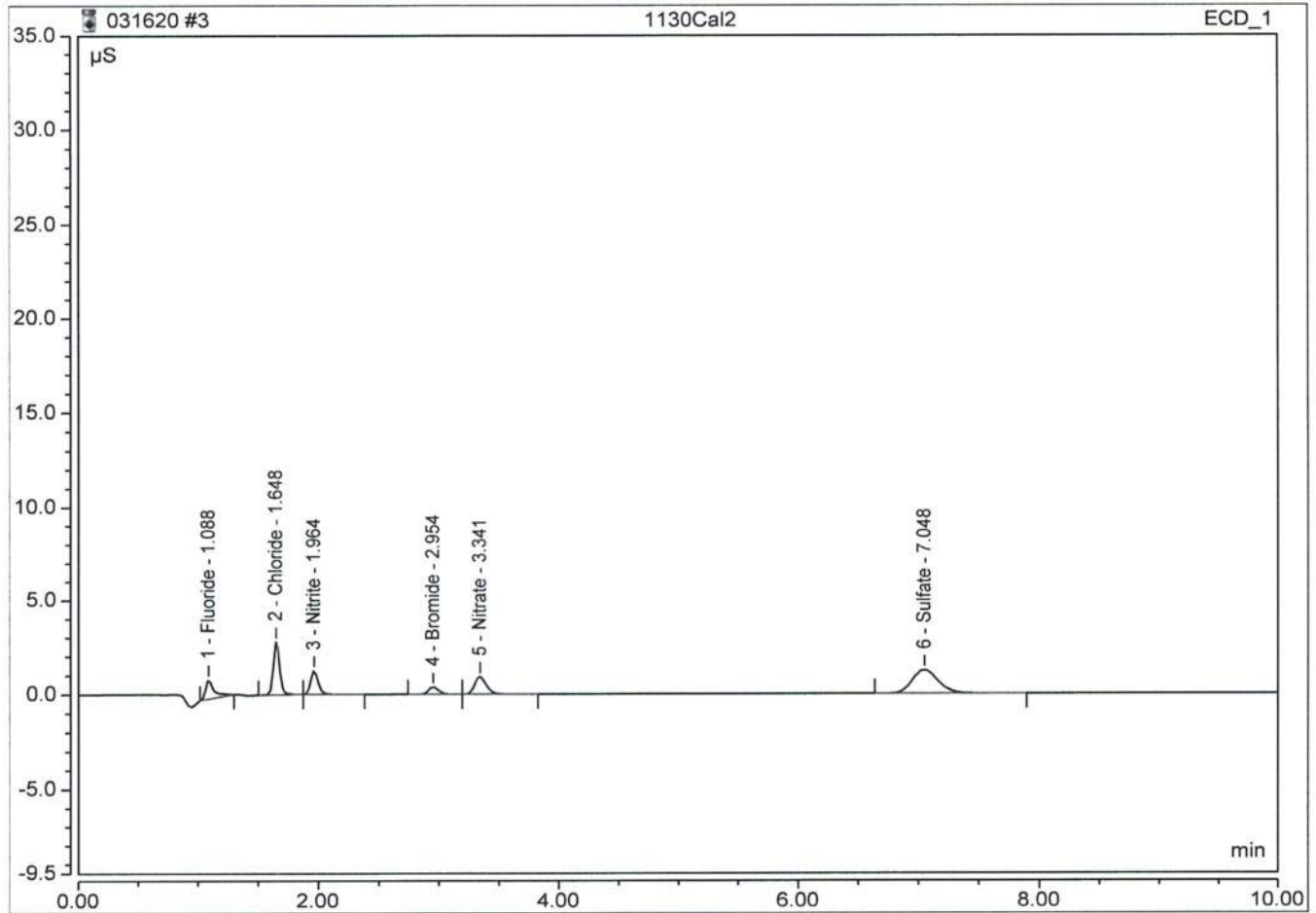
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.084	1.010	0.5 0.5050
2	1.65	Chloride	BMB	0.169	2.803	2 1.9341
3	1.96	Nitrite	BMB	0.091	1.255	0.5 0.4828
4	2.95	Bromide	BMB	0.036	0.371	1 1.0060
5	3.34	Nitrate	BMB	0.103	0.922	0.5 0.4855
6	7.05	Sulfate	BMB	0.305	1.246	5 4.8434
TOTAL:				0.79	7.61	9.26



Peak Integration Report

Sample Name:	1130Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:23	Operator:	Jeff Phifer

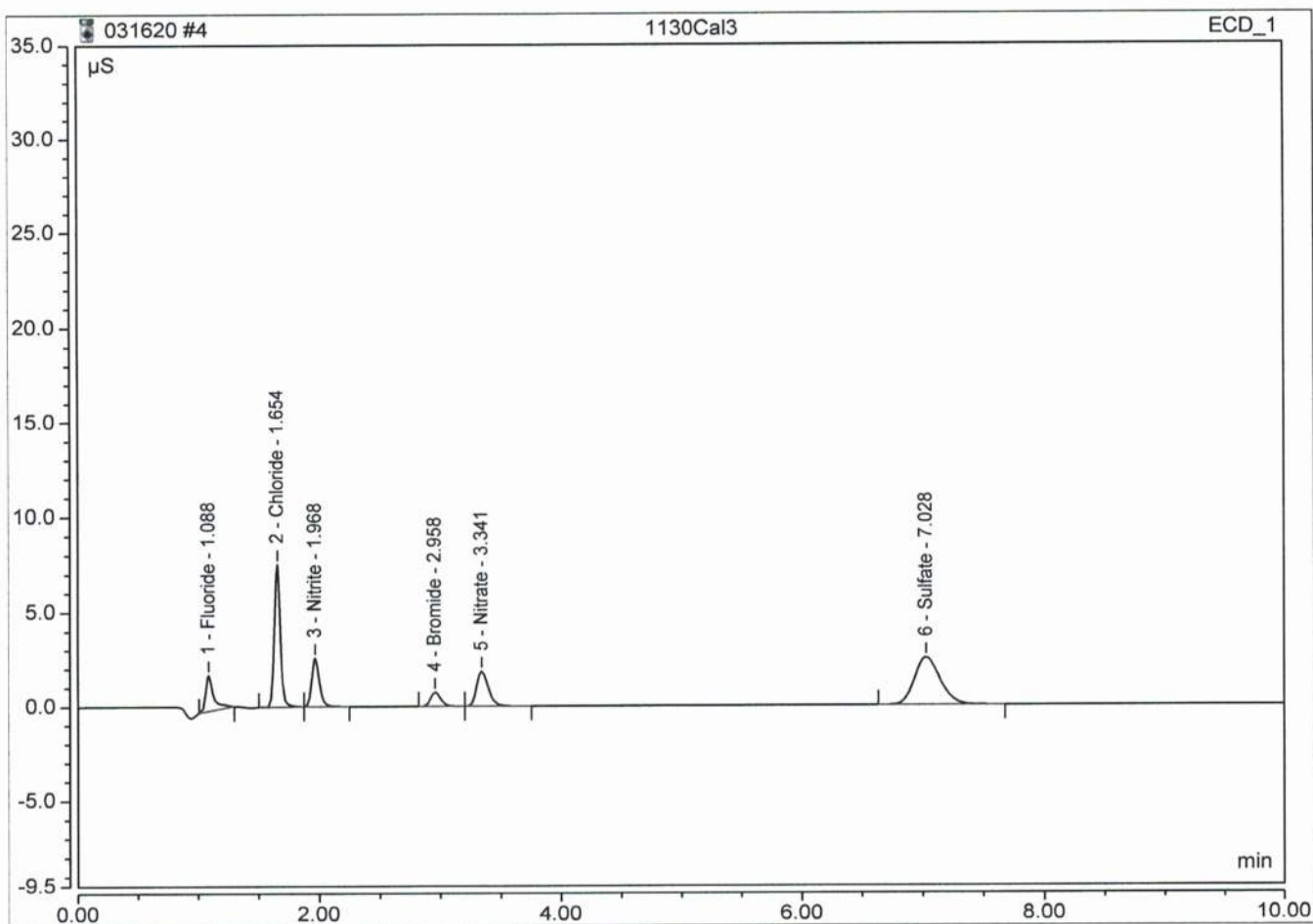
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.084	1.010	0.5000
2	1.65	Chloride	BMB	0.169	2.803	2.0000
3	1.96	Nitrite	BMB	0.091	1.255	0.5000
4	2.95	Bromide	BMB	0.036	0.371	1.0000
5	3.34	Nitrate	BMB	0.103	0.922	0.5000
6	7.05	Sulfate	BMB	0.305	1.246	5.0000
TOTAL:				0.79	7.61	9.50



Peak Integration Report

Sample Name:	1130Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:35	Operator:	Jeff Phifer

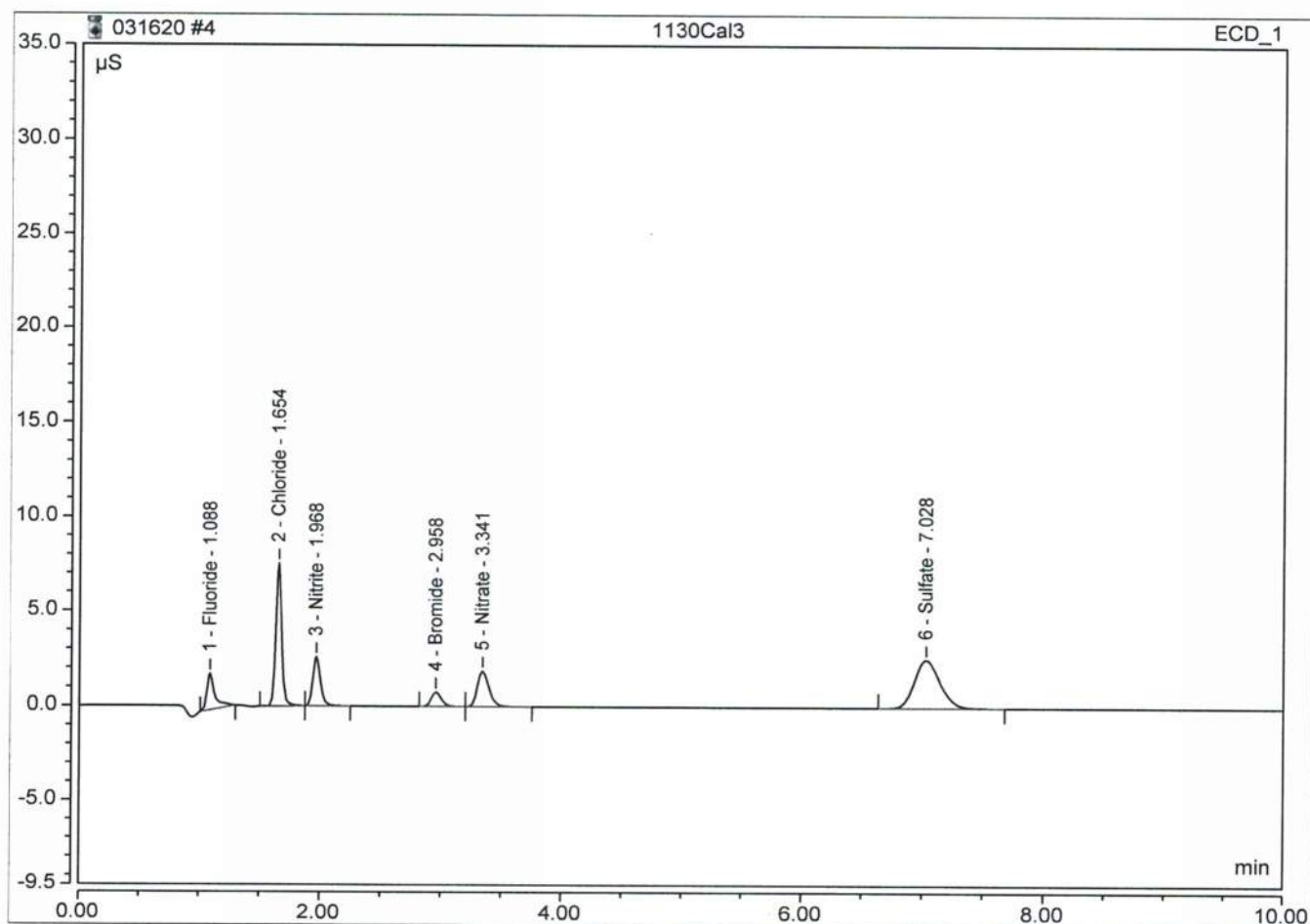
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.145	1.902	0.9994
2	1.65	Chloride	BMB	0.444	7.527	4.6743
3	1.97	Nitrite	BMB	0.184	2.564	0.9629
4	2.96	Bromide	BMB	0.071	0.738	1.9674
5	3.34	Nitrate	BMB	0.207	1.848	0.9723
6	7.03	Sulfate	BMB	0.616	2.526	9.7093
TOTAL:				1.67	17.10	19.29



Peak Integration Report

Sample Name:	1130Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:35	Operator:	Jeff Phifer

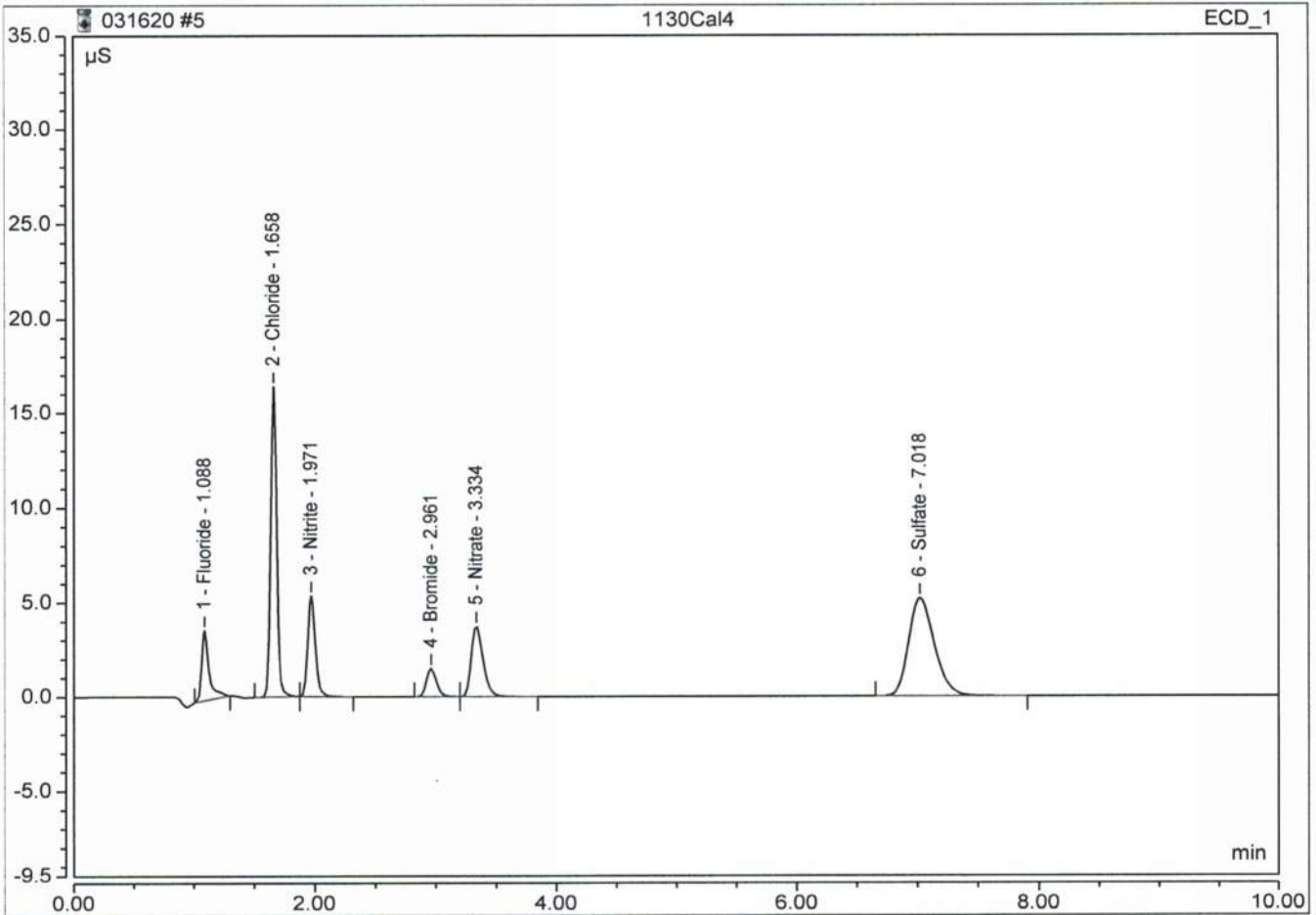
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.145	1.902	0.9971
2	1.65	Chloride	BMB	0.444	7.527	5.0227
3	1.97	Nitrite	BMB	0.184	2.564	1.0025
4	2.96	Bromide	BMB	0.071	0.738	1.9941
5	3.34	Nitrate	BMB	0.207	1.848	1.0030
6	7.03	Sulfate	BMB	0.616	2.526	10.0331
TOTAL:				1.67	17.10	20.05



Peak Integration Report

Sample Name:	1130Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:48	Operator:	Jeff Phifer

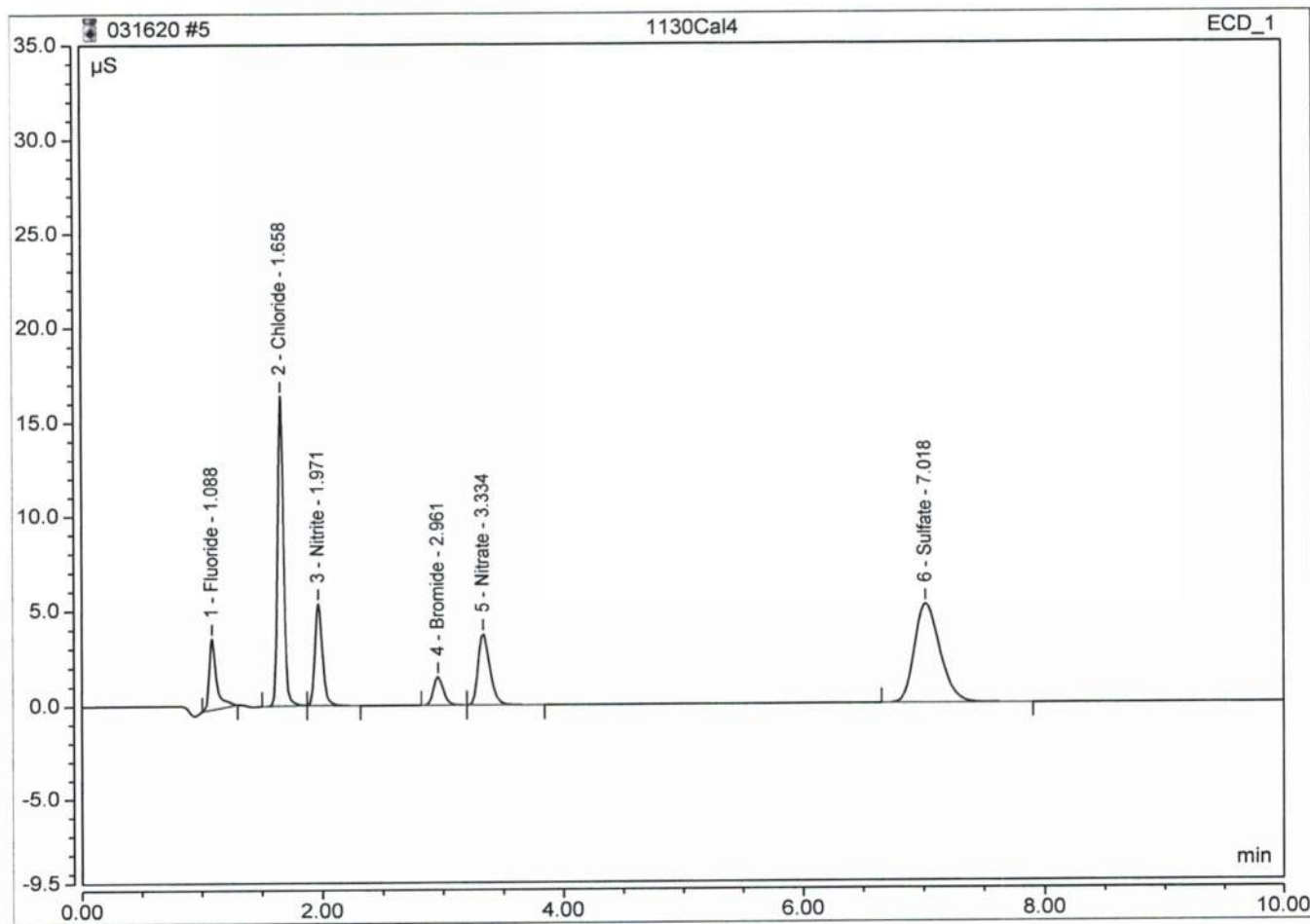
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.264	3.720	2 1.9744
2	1.66	Chloride	BMB	0.962	16.388	10 9.8345
3	1.97	Nitrite	BMB	0.382	5.338	2 1.9887
4	2.96	Bromide	BMB	0.143	1.493	4 3.9554
5	3.33	Nitrate	BMB	0.423	3.741	2 1.9822
6	7.02	Sulfate	BMB	1.272	5.210	20 19.9837
TOTAL:				3.45	35.89	39.72



Peak Integration Report

Sample Name:	1130Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:48	Operator:	Jeff Phifer

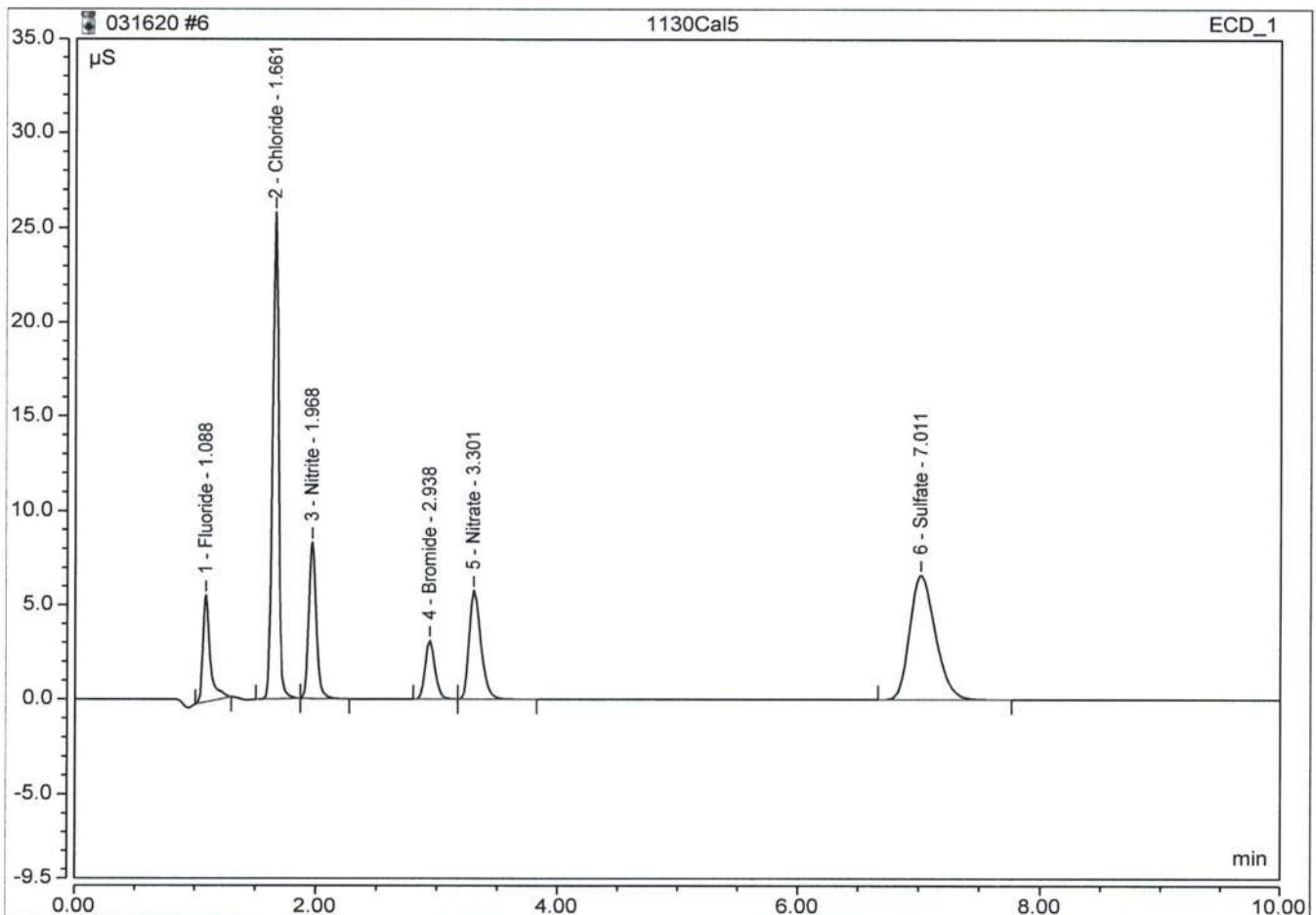
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.264	3.720	1.9908
2	1.66	Chloride	BMB	0.962	16.388	10.2059
3	1.97	Nitrite	BMB	0.382	5.338	2.0289
4	2.96	Bromide	BMB	0.143	1.493	4.0085
5	3.33	Nitrate	BMB	0.423	3.741	2.0191
6	7.02	Sulfate	BMB	1.272	5.210	20.2608
TOTAL:				3.45	35.89	40.51



Peak Integration Report

Sample Name:	1130Cal5	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 11:01	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.392	5.690	3 3.0220
2	1.66	Chloride	BMB	1.528	25.842	15 15.4741
3	1.97	Nitrite	BMB	0.589	8.308	3 3.0599
4	2.94	Bromide	BMB	0.292	3.112	8 8.0645
5	3.30	Nitrate	BMB	0.653	5.776	3 3.0552
6	7.01	Sulfate	BMB	1.618	6.632	25 25.4192
TOTAL:				5.07	55.36	58.09



E/B

Total Suspended Solids

TSS: VLIMS Code: 4630; EPA Method: 2540D

Date Started: 27 MAY 20
 Time Started: 18 15
 Analyst: AS
 Batch ID: TSS 200527B
 Temperature: 102°C
 Time in Oven: 22:45

Date Finished: 28 MAY 20
 Time Finished: 1700
 Reviewed by: BB
 Review Date: 6/12/2020
 Balance ID: II
 Oven ID/Thermometer ID: OVS/AC10848

Merit #	Tin #	MLs sample	g. Filter	g. dry solids + filter 103°C	g. reweigh 15 min. 103°C	TSS mg/L	DF	TVSS Y/N	TVSS Tin #
Blank	PGFAX	1000	0.1154	0.1152		0.20 ND	1.00	N	
LCS Lot									
8208-09B	AY	100	0.1201	0.1286		85	10.0		
14119.01	BP AZ	100 450	0.1153	0.1192		39	10.0		
Dup									
14119.01	BE BD	100 450	0.1146	0.1185		39	10.0		
14252.01	B1	750	0.1199	0.1253		7.20 7	1.33		
14257.01	B2	750	0.1151	0.1186		4.67 5	1.33		
14263.01	B3	500	0.1205	0.1306		20.20 20	2.00		
14264.01	B4	360	0.1204	0.1366		45	2.78		
.02	B5	1000	0.1198	0.1212		1.40 ND	1.00		
.03	B6	1000	0.1197	0.1209		1.20 ND	1.00		
.04	B7	900	0.1158	0.1351		21.44 21	1.11		
.05	B8	1000	0.1199	0.1256		5.70 6	1.00		
.06	B9	1000	0.1202	0.1215		1.30 ND	1.00		

LCS value = 84.7 mg/L
 % Rec = 100.4%
 % RPD = 0.0%

Acceptance Criteria (mg/L): 69.4 - 94.1 mg/L
 Acceptance Criteria (%): 81.9 - 111%
 Acceptance Criteria: ± 5% of average

Total Suspended Solids

TSS: VLIMS Code: 4630; EPA Method: 2540D

Date Started: 29 MAY 20
 Time Started: 1227
 Analyst: AB
 Batch ID: TSS 200529
 Temperature: 103°C
 Time in Oven: 4:45

Date Finished: 29 MAY 20
 Time Finished: 1712
 Reviewed by: BB
 Review Date: 6/12/2020
 Balance ID: I1
 Oven ID/Thermometer ID: 025/AC10878

Merit #	Tin #	MLs sample	g. Filter	g. dry solids + filter 103°C	g. reweigh 15 min. 103°C	TSS mg/L	DF	TVSS Y/N	TVSS Tin #
Blank	fg FBG	1000	0.1197	0.1195		0.20 ND	1.00	N	
LCS Lot									
8208-09B	BH	100	0.1155	0.1239		84	10.0		
14330.01	BI	300	0.1210	0.1250		13.33 13	3.33		
Dup									
.01	BJ	300	0.1193	0.1235		14	3.33		
14264.07	BK	1000	0.1200	0.1199		0.10 ND	1.00		J-Flag
14268.01	AP BL	250 500	0.1195	0.1262		26.80 27	4.00		
14276.01	AP fgFBM	1000	0.1157	0.1178		2.10 ND	1.00		
14289.01	BN	360	0.1198	0.1220		6.11	2.78		
14304.02	AL BPA	160 500	0.1199	0.1210		6.87 7	6.25		-J-Flag
14310.02	BQ	700	0.1205	0.1524		45.57	1.43		
14331.01	BR	250	0.1142	0.1159		6.80 7	4.00		
14343.02	BPA BS	250	0.1212	0.1237		10	4.00		
14344.01	BT	900	0.1200	0.1233		3.67 4	1.11		

LCS value = 84.7
 % Rec = 99.2%
 % RPD = 4.9%

Acceptance Criteria (mg/L): 69.4 - 94.13/2
 Acceptance Criteria (%): 81.9 - 111%
 Acceptance Criteria: ± 5% of average

Total Dissolved Solids

TDS: VLIMS Code: 4615; EPA Method: 2540C

Date Started: 01 Jun 20 Date Finished: 05 Jun 20
 Time Started: 1710 Time Finished: 1245
 Analyst: Heb Reviewed by: BB
 Batch ID: TDS200601A Review Date: 6/12/2020
 Temperature: 180°C Balance ID: I 1
 Time in Oven: 91:35 Oven ID/Thermometer ID: 02/AC10365

Merit #	Tin #	sample (mls)	Tin (grams)	dry solids + tin 180°C (grams)	reweigh 15 min. 180°C (grams)	Cond.	TDS (mg/L)
Blank	A0570350	50	3.7514	3.7514			0/ND
LCS Lot							
8208-09B	849	25	3.8485	3.8626			564
14264.01	848	50	3.7217	3.7614			794
Dup							
.01	847	50	3.8001	3.8395			788
.02	846	50	3.6960	3.7552			1180* 1184
.03	845	50	3.7547	3.7830			566
.04	844	50	3.7471	3.8357			1770* 1772
.05	843	50	3.779	3.7639	3.7938		598
.06	842	50	3.6934	3.7215			562
.07	841	50	3.8428	3.8427			2/ND
14279.01	840	50	3.7592	3.7792			400
.02	839	50	3.7920	3.8290			740
.03	838	50	3.8487	3.8749			524

LCS value = 567 y/l
 % Rec = 99.5%
 % RPD = 0.8%

Acceptance Criteria (mg/L): 510-624 y/l
 Acceptance Criteria (%): 89.9-110%
 Acceptance Criteria: ± 5% of average



2680 East Lansing Dr., East Lansing, MI 48823
 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # _____ OF _____

124126

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Jennifer Caporale
 COMPANY BWL
 ADDRESS _____
 CITY _____ STATE _____ ZIP CODE _____
 PHONE NO. _____ FAX NO. _____ P.O. NO. _____
 E-MAIL ADDRESS environmental-laboratory@lbwl.com
 QUOTE NO. _____

CONTACT NAME Kelly Gleason SAME
 COMPANY _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP CODE _____
 PHONE NO. _____ E-MAIL ADDRESS kelly.gleason@lbwl.com

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME Ericlson GWP 5/26/20 GMP SAMPLER(S) - PLEASE PRINT/SIGN NAME Marc Wahner
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER _____
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

Containers & Preservatives
 NONE HCl HNO₃ H₂SO₄ NaOH MeOH OTHER
As, Cr, B, Pb, Se, Mo, Cd, Sb, Ba, Tl, Pl, Be, Co, Li, Hg (total)
TSS
TDS, Cl⁻, SO₄²⁻
Radium 226
Radium 228
 Certifications
 OHIO VAP Drinking Water
 DoD NPDES
 Project Locations
 Detroit New York
 Other _____
 Special Instructions _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Analysis Parameters
	DATE	TIME											
14264.01	5/26/20	1256	L005063-01 MW-1	WW	5	2	3						X X X X X
.02		1627	02 MW-2										
.03		1046	03 MW-4										
.04		1705	04 MW-5										
.05		1451	05 MW-6										
.06		1046	06 MW-4 Duplicate										
.07		0805	07 Field Blank										

RELINQUISHED BY: [Signature] DATE 5-27-20 TIME 1118
 RECEIVED BY: [Signature] DATE 5/27/20 TIME 1118
 RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____

RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____
 SEAL NO. SEAL INTACT INITIALS NOTES: TEMP. ON ARRIVAL _____
 YES NO
 SEAL NO. SEAL INTACT INITIALS
 YES NO 2.2



2680 East Lansing Dr., East Lansing, MI 48823
 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

REPORT TO **CHAIN OF CUSTODY RECORD** **INVOICE TO**

CONTACT NAME John Laverty			CONTACT NAME Julie Teague <input checked="" type="checkbox"/> SAME		
COMPANY Merit Laboratories			COMPANY Merit Laboratories		
ADDRESS 2680 East Lansing Drive			ADDRESS 2680 East Lansing Drive		
CITY East Lansing	STATE MI	ZIP CODE 48823	CITY East Lansing	STATE MI	ZIP CODE 48823
PHONE NO. 517-332-0167	FAX NO. 517-332-4034	P.O. NO.	PHONE NO. 517-332-0167	E-MAIL ADDRESS juliet@meritlabs.com	
E-MAIL ADDRESS johnlaverty@meritlabs.com		QUOTE NO.	ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)		

PROJECT NO./NAME S14264		SAMPLER(S) - PLEASE PRINT/SIGN NAME										Radium 226* Radium 228**		Certifications <input type="checkbox"/> OHIO VAP <input type="checkbox"/> Drinking Water <input type="checkbox"/> DoD <input type="checkbox"/> NPDES Project Locations <input type="checkbox"/> Detroit <input type="checkbox"/> New York <input type="checkbox"/> Other _____ Special Instructions	
TURNAROUND TIME REQUIRED <input type="checkbox"/> 1 DAY <input type="checkbox"/> 2 DAYS <input type="checkbox"/> 3 DAYS <input checked="" type="checkbox"/> STANDARD <input type="checkbox"/> OTHER _____														* E903.1 Mod. ** E904.0/SW 9320 Mod.	
DELIVERABLES REQUIRED <input type="checkbox"/> STD <input type="checkbox"/> LEVEL II <input type="checkbox"/> LEVEL III <input checked="" type="checkbox"/> LEVEL IV <input type="checkbox"/> EDD <input type="checkbox"/> OTHER _____															
MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE		# Containers & Preservatives										Radium 226* Radium 228**		Please use calculation product & provide Radium 226/228 combined results on the report ** Subcontracted to GEL Laboratories, Inc. 2040 Savage Road Charleston, SC 29407	

RELINQUISHED BY: <i>Sam Smith</i> <input type="checkbox"/> Sampler				RELINQUISHED BY: _____				DATE _____		TIME _____	
RECEIVED BY: <i>UPS</i>				RECEIVED BY: _____				DATE 5/27/20		TIME 1640	
RELINQUISHED BY: _____				RELINQUISHED BY: _____				DATE _____		TIME _____	
RECEIVED BY: _____				RECEIVED BY: _____				DATE _____		TIME _____	
SEAL NO. _____		SEAL INTACT YES <input type="checkbox"/> NO <input type="checkbox"/>		INITIALS _____		NOTES: _____		TEMP. ON ARRIVAL _____			
SEAL NO. _____		SEAL INTACT YES <input type="checkbox"/> NO <input type="checkbox"/>		INITIALS _____							

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Merit Laboratories Login Checklist

Lab Set ID:S14264

Client:BWL01 (Board of Water & Light)

Project: Erickson GMP

Submitted:05/27/2020 11:18 Login User: SRS

Attention: Jennifer Caporale

Address: Board of Water & Light

P.O. Box 13007

Lansing, MI 48901

Phone: 517-702-6372

FAX:517-702-6373

Email: Environmental_Laboratory@LBWL.com

Selection	Description	Note
-----------	-------------	------

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 2.2 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

Chain of Custody

- | | | |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC |
| 09. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: GEL |

Preservation

- | | | |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation |
| 11. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? |

Bottle Conditions

- | | | |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S14264 Submitted: 05/27/2020 11:18

Attention: Jennifer Caporale
Address: Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Client: BWL01 (Board of Water & Light)

Project: Erickson GMP

Initial Preservation Check: 05/27/2020 12:18 SRS

Phone: 517-702-6372 FAX: 517-702-6373

Preservation Recheck (E200.8): N/A

Email: Environmental_Laboratory@LBWL.com

Lab ID	125 ml Plastic HNO ₃	250 ml Plastic HNO ₃	1 L Plastic HNO ₃	250 ml Plastic H ₂ SO ₄	125 ml Amber H ₂ SO ₄	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber PbCO ₃ NaOH	pH					Notes	
									<2	>12	other	ml add	new pH		
S14264.01	X								X						
S14264.01			X						X						
S14264.01			X						X						
S14264.02	X								X						
S14264.02			X						X						
S14264.02			X						X						
S14264.03	X								X						
S14264.03			X						X						
S14264.03			X						X						
S14264.04	X								X						
S14264.04			X						X						
S14264.04			X						X						
S14264.05	X								X						
S14264.05			X						X						
S14264.05			X						X						
S14264.06	X								X						
S14264.06			X						X						
S14264.06			X						X						
S14264.07	X								X						
S14264.07			X						X						
S14264.07			X						X						

Sample Set Receipt

Report to
 Attention: Jennifer Caporale
 Address: Board of Water & Light
 P.O. Box 13007
 Lansing, MI 48901

Invoice to
 Attention: Kelly Gleason
 Address: Board of Water & Light
 PO Box 13007
 Lansing, MI 48901

Phone: 517-702-6372 FAX: 517-702-6373
 Email: Environmental_Laboratory@LBWL.com

Phone: 517-702-6372 FAX: 517-702-6373
 Email: kelly.gleason@lbwl.com

Contacts:

Set ID: S14264 Location: BWL01 (Board of Water & Light) PO #: Login by: SRS
 Project: Erickson GMP Backlog Note:
 Submitted: 05/27/2020 11:18 Due Date: 06/10/2020 Rush: No Collected by: Marc Wahrer QC Level: 3 Custom Limits Present: No
 Approved by: Site: Work Order#: Bill to Acct: Bill to Dept:

Sample ID	Sample Tag	Matrix	Date/Time Collected	COC Ref
S14264.01	L005063-01 MW-1	Wastewater	05/26/2020 12:56	124126
S14264.02	L005063-02 MW-2	Wastewater	05/26/2020 16:27	124126
S14264.03	L005063-03 MW-4	Wastewater	05/26/2020 10:46	124126
S14264.04	L005063-05 MW-5	Wastewater	05/26/2020 17:05	124126
S14264.05	L005063-06 MW-6	Wastewater	05/26/2020 14:51	124126
S14264.06	L005063-06 MW-4 Duplicate	Wastewater	05/26/2020 10:46	124126
S14264.07	L005063-07 Field Blank	Water	05/26/2020 08:05	124126

Samples: S14264.01-07

Analysis Code	Analysis Title	Method	Units	Holding Date
2140WMS	Calcium	E200.8	mg/L	11/22/2020
2145WMS	Chromium	E200.8	mg/L	11/22/2020
2130WMS	Boron	E200.8	mg/L	11/22/2020
2115WMS	Arsenic	E200.8	mg/L	11/22/2020
2205WMS	Selenium	E200.8	mg/L	11/22/2020
2190WMS	Molybdenum	E200.8	mg/L	11/22/2020
2135WMS	Cadmium	E200.8	mg/L	11/22/2020
2110WMS	Antimony	E200.8	mg/L	11/22/2020
2120WMS	Barium	E200.8	mg/L	11/22/2020
2225WMS	Thallium	E200.8	mg/L	11/22/2020
2165WMS	Lead	E200.8	mg/L	11/22/2020
2125WMS	Beryllium	E200.8	mg/L	11/22/2020
2150WMS	Cobalt	E200.8	mg/L	11/22/2020
2170WMS	Lithium	E200.8	mg/L	11/22/2020
2185W	Mercury	E245.1	mg/L	06/23/2020
4630	Total Suspended Solids	SM2540D	mg/L	06/02/2020
4615	Total Dissolved Solids	SM2540C	mg/L	06/02/2020
4425W	Chloride	E300.0	mg/L	06/23/2020
4530W	Sulfate	E300.0	mg/L	06/23/2020
4455W	Fluoride (Undistilled)	E300.0	mg/L	06/23/2020
MISCSUB	Misc. Special Project			02/19/2023
1605W	Metal Digestion	SW3015A		11/22/2020
1605HGW	Mercury Digestion	E245.1		06/23/2020
SUBCONT	Subcontracting			02/19/2023



June 25, 2020

John Laverty
Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan 48823

Re: Routine Analysis
Work Order: 512274
SDG: S14264

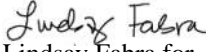
Dear John Laverty:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 29, 2020. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. This package is revised to include additional run logs and instrument data.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4707.

Sincerely,


Lindsay Fabra for
Katelyn Gray
Project Manager

Purchase Order: GELP19-0247
Enclosures



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Case Narrative

Client NCR

**Receipt Narrative
for
Merit Laboratories, Inc.
SDG: S14264
Work Order: 512274**

June 24, 2020

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on May 29, 2020 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

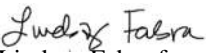
Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
512274001	S14264.01
512274002	S14264.02
512274003	S14264.03
512274004	S14264.04
512274005	S14264.05
512274006	S14264.06
512274007	S14264.07 (Field Blank)

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Radiochemistry.


Lindsay Fabra for
Katelyn Gray
Project Manager

Chain of Custody and Supporting Documentation

512 274



2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

REPORT TO

CONTACT NAME John Laverty

COMPANY Merit Laboratories

ADDRESS 2680 East Lansing Drive

CITY East Lansing

PHONE NO. 517-332-0167

E-MAIL ADDRESS johnlaverty@meritlabs.com

STATE MI ZIP CODE 48823

P.O. NO.

QUOTE NO.

CHAIN OF CUSTODY RECORD

CONTACT NAME Julie Teague

COMPANY Merit Laboratories

ADDRESS 2680 East Lansing Drive

CITY East Lansing

PHONE NO. 517-332-0167

E-MAIL ADDRESS juliet@meritlabs.com

STATE MI ZIP CODE 48823

INVOICE TO

CONTACT NAME

COMPANY

ADDRESS

CITY

PHONE NO.

E-MAIL ADDRESS

PROJECT NO./NAME S14264

SAMPLER(S) - PLEASE PRINT/SIGN NAME

TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER

DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
SL=SLUDGE DW=DRINKING WATER O=OIL WP=WPIPE A=AIR W=WASTE

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR	DATE	TIME	IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives							
							NONE	H ₂ O	HNO ₃	H ₂ SO ₄	NaOH	MOSH	OTHER	
	5/26/20	1256		S14264.01	WW	2		2						
	5/26/20	1627		S14264.02	WW	2		2						
	5/26/20	1046		S14264.03	WW	2		2						
	5/26/20	1705		S14264.04	WW	2		2						
	5/26/20	1451		S14264.05	WW	2		2						
	5/26/20	1046		S14264.06	WW	2		2						
	5/26/20	0805		S14264.07 (Field Blank)	L	2		2						

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications	Special Instructions
<input type="checkbox"/> OHIO VAP <input type="checkbox"/> Drinking Water	* E903.1 Mod.
<input type="checkbox"/> DoD <input type="checkbox"/> NPDES	** E904.0/SW 9320 Mod.
Project Locations	Please use calculation product & provide Radium 226/228 combined results on the report
<input type="checkbox"/> Detroit <input type="checkbox"/> New York	** Subcontracted to GEL Laboratories, Inc.
<input type="checkbox"/> Other	2040 Savage Road
	Charleston, SC 29407

RELINQUISHED BY: SIGNATURE/Organization *John Laverty* DATE 5/27/20 TIME 1040

RECEIVED BY: SIGNATURE/Organization *UPS* DATE 5/27/20 TIME 1040

RELINQUISHED BY: SIGNATURE/Organization *Julie Teague* DATE 5/27/20 TIME 11:20

RECEIVED BY: SIGNATURE/Organization *Julie Teague* DATE 5/27/20 TIME 11:20

RELINQUISHED BY: SIGNATURE/Organization *Julie Teague* DATE 5/27/20 TIME 11:20

RECEIVED BY: SIGNATURE/Organization *Julie Teague* DATE 5/27/20 TIME 11:20

SEAL NO. 512274

SEAL NO. 512274

SEAL INTACT YES NO

SEAL INTACT YES NO

INITIALS

INITIALS

TEMP. ON ARRIVAL 20.0

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

SAMPLE RECEIPT & REVIEW FORM

Client: MEI		SDG/AR/COC/Work Order: 512274			
Received By: ZKW		Date Received: 5/29/20			
Carrier and Tracking Number		Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other			
		12 466 477 03 6197 6711			
Suspected Hazard Information		Yes	No		
		*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.			
A) Shipped as a DOT Hazardous?		Hazard Class Shipped: _____ UN#: _____ If UN2910, Is the Radioactive Shipment Survey Compliant? Yes ___ No ___			
B) Did the client designate the samples are to be received as radioactive?		✓ COC notation or radioactive stickers on containers equal client designation.			
C) Did the RSO classify the samples as radioactive?		Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM/mR/Hr Classified as: Rad 1 Rad 2 Rad 3			
D) Did the client designate samples are hazardous?		✓ COC notation or hazard labels on containers equal client designation.			
E) Did the RSO identify possible hazards?		✓ If D or E is yes, select Hazards below. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:			
Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*			✓	Preservation Method: Wet Ice Ice Packs Dry ice (None) Other: *all temperatures are recorded in Celsius TEMP: 21c
4	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: IR3-18 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	✓			Sample ID's and Containers Affected:
7	Do any samples require Volatile Analysis?	✓			If Preservation added, Lot#:
					If Yes, are Encores or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, take to VOA Freezer)
					Do liquid VOA vials contain acid preservation? Yes ___ No ___ NA ___ (If unknown, select-No)
8	Samples received within holding time?	✓			Are liquid VOA vials free of headspace? Yes ___ No ___ NA ___
					Sample ID's and containers affected:
9	Sample ID's on COC match ID's on bottles?	✓			ID's and tests affected:
10	Date & time on COC match date & time on bottles?	✓			ID's and containers affected:
11	Number of containers received match number indicated on COC?	✓			Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
12	Are sample containers identifiable as GEL provided?			✓	Circle Applicable: No container count on COC Other (describe)
13	COC form is properly signed in relinquished/received sections?	✓			Circle Applicable: Not relinquished Other (describe)
Comments (Use Continuation Form if needed):					

PM (or PMA) review: Initials **NRC** Date **6/1/20** Page **1** of **1**

Laboratory Certifications

List of current GEL Certifications as of 24 June 2020

State	Certification
Alabama	42200
Alaska	17-018
Alaska Drinking Water	SC00012
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-165
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-20-17
Utah NELAP	SC000122020-32
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

Radiological Analysis

Case Narrative

**Radiochemistry
Technical Case Narrative
Merit Laboratories, Inc.
SDG #: S14264
Work Order #: 512274**

Product: Radium-226+Radium-228 Calculation

Analytical Method: Calculation

Analytical Procedure: GL-RAD-D-003 REV# 44

Analytical Batch: 2006577

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
512274001	S14264.01
512274002	S14264.02
512274003	S14264.03
512274004	S14264.04
512274005	S14264.05
512274006	S14264.06
512274007	S14264.07 (Field Blank)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: GFPC Ra228, Liquid

Analytical Method: EPA 904.0/SW846 9320 Modified

Analytical Procedure: GL-RAD-A-009 REV# 17

Analytical Batch: 2006408

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
512274001	S14264.01
512274002	S14264.02
512274003	S14264.03
512274004	S14264.04
512274005	S14264.05
512274006	S14264.06
512274007	S14264.07 (Field Blank)
1204570219	Method Blank (MB)
1204570220	512274001(S14264.01) Sample Duplicate (DUP)
1204570221	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Duplication Criteria between QC Sample and Duplicate Sample

The Sample and the Duplicate, (See Below), did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with the value listed below.

Sample	Analyte	Value
1204570220 (S14264.01DUP)	Radium-228	RPD 119* (0.0%-100.0%) RER 1.8 (0-3)

Product: Lucas Cell, Ra226, Liquid

Analytical Method: EPA 903.1 Modified

Analytical Procedure: GL-RAD-A-008 REV# 15

Analytical Batch: 2006332

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
512274001	S14264.01
512274002	S14264.02
512274003	S14264.03
512274004	S14264.04
512274005	S14264.05
512274006	S14264.06
512274007	S14264.07 (Field Blank)
1204570026	Method Blank (MB)
1204570027	512274001(S14264.01) Sample Duplicate (DUP)
1204570028	512274001(S14264.01) Matrix Spike (MS)
1204570029	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report for

MERI001 Merit Laboratories, Inc.

Client SDG: S14264 GEL Work Order: 512274

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:



Name: Kate Gellatly

Date: 22 JUN 2020

Title: Analyst I

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 25, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S14264.01 Project: MERI00120
Sample ID: 512274001 Client ID: MERI001
Matrix: Waste Water
Collect Date: 26-MAY-20 12:56
Receive Date: 29-MAY-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.457	+/-0.843	1.48	3.00	pCi/L			JXK3	06/16/20	1121	2006408	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.796	+/-0.936			pCi/L		1	AEA	06/22/20	0422	2006577	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.340	+/-0.408	0.686	1.00	pCi/L			MXH8	06/19/20	0926	2006332	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			83.7	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 25, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S14264.02	Project: MERI00120
Sample ID: 512274002	Client ID: MERI001
Matrix: Waste Water	
Collect Date: 26-MAY-20 16:27	
Receive Date: 29-MAY-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.0833	+/-0.633	1.22	3.00	pCi/L			JXK3	06/16/20	1121	2006408	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.138	+/-0.678			pCi/L		1	AEA	06/22/20	0422	2006577	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.0551	+/-0.241	0.528	1.00	pCi/L			MXH8	06/19/20	0926	2006332	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			81.4	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 25, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S14264.03	Project: MERI00120
Sample ID: 512274003	Client ID: MERI001
Matrix: Waste Water	
Collect Date: 26-MAY-20 10:46	
Receive Date: 29-MAY-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.0930	+/-0.742	1.45	3.00	pCi/L			JXK3	06/16/20	1121	2006408	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.599	+/-0.827			pCi/L		1	AEA	06/22/20	0422	2006577	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.599	+/-0.366	0.382	1.00	pCi/L			MXH8	06/19/20	0959	2006332	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			81.5	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 25, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive
East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S14264.04 Project: MERI00120
Sample ID: 512274004 Client ID: MERI001
Matrix: Waste Water
Collect Date: 26-MAY-20 17:05
Receive Date: 29-MAY-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.280	+/-0.786	1.43	3.00	pCi/L			JXK3	06/16/20	1121	2006408	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.36	+/-0.934			pCi/L		1	AEA	06/22/20	0422	2006577	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		1.08	+/-0.504	0.615	1.00	pCi/L			MXH8	06/19/20	0959	2006332	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			80.9	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 25, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S14264.05	Project: MERI00120
Sample ID: 512274005	Client ID: MERI001
Matrix: Waste Water	
Collect Date: 26-MAY-20 14:51	
Receive Date: 29-MAY-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.481	+/-0.804	1.63	3.00	pCi/L			JXK3	06/16/20	1121	2006408	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.000	+/-0.841			pCi/L		1	AEA	06/22/20	0422	2006577	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	-0.0419	+/-0.246	0.561	1.00	pCi/L			MXH8	06/19/20	0959	2006332	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			87.4	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 25, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S14264.06	Project: MERI00120
Sample ID: 512274006	Client ID: MERI001
Matrix: Waste Water	
Collect Date: 26-MAY-20 10:46	
Receive Date: 29-MAY-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.357	+/-0.831	1.48	3.00	pCi/L			JXK3	06/16/20	1121	2006408	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.622	+/-0.875			pCi/L		1	AEA	06/22/20	0422	2006577	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.265	+/-0.273	0.423	1.00	pCi/L			MXH8	06/19/20	0959	2006332	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			90.1	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 25, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive
East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S14264.07 (Field Blank) Project: MERI00120
Sample ID: 512274007 Client ID: MERI001
Matrix: Waste Water
Collect Date: 26-MAY-20 08:05
Receive Date: 29-MAY-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.578	+/-0.870	1.77	3.00	pCi/L			JXK3	06/16/20	1121	2006408	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.159	+/-0.891			pCi/L		1	AEA	06/22/20	0422	2006577	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.159	+/-0.190	0.303	1.00	pCi/L			MXH8	06/19/20	0959	2006332	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			80.5	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: June 22, 2020

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Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan

Contact: John Laverty

Workorder: 512274

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	2006408										
QC1204570220	512274001	DUP									
Radium-228	U	0.457		1.79	pCi/L	119*		(0% - 100%)	JXK3	06/16/20	11:21
	Uncertainty	+/-0.843		+/-1.09							
QC1204570221	LCS										
Radium-228	56.2			55.0	pCi/L		97.8	(75%-125%)		06/16/20	11:21
	Uncertainty			+/-3.53							
QC1204570219	MB										
Radium-228			U	0.0398	pCi/L					06/16/20	11:21
	Uncertainty			+/-0.846							
Rad Ra-226											
Batch	2006332										
QC1204570027	512274001	DUP									
Radium-226	U	0.340	U	0.315	pCi/L	N/A			N/AMXH8	06/19/20	09:58
	Uncertainty	+/-0.408		+/-0.437							
QC1204570029	LCS										
Radium-226	27.1			29.0	pCi/L		107	(75%-125%)		06/19/20	10:38
	Uncertainty			+/-2.12							
QC1204570026	MB										
Radium-226			U	0.215	pCi/L					06/19/20	09:58
	Uncertainty			+/-0.223							
QC1204570028	512274001	MS									
Radium-226	27.1	U		29.6	pCi/L		109	(75%-125%)		06/19/20	10:38
	Uncertainty	+/-0.408		+/-2.08							

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded

GEL LABORATORIES LLC

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QC Summary

Workorder: 512274

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J											
J											
K											
L											
M											
M											
N/A											
NI											
ND											
NJ											
Q											
R											
U											
UI											
UJ											
UL											
X											
Y											
^											
h											

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Gas Flow Raw Data

Batch 2006408 Check-list

This check-list was completed on 16-JUN-20 by Nat Long

This batch was reviewed by Kenshalla Oston on 16-JUN-20 and Nat Long on 16-JUN-20.

Batch ID:
2006408

Product:
GFC28RAL

Description: Gas Flow Radium 228
GL-RAD-A-009

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?		No	
11	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
12	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-228 in Liquid

Batch ID: 2006408

Analyst: Jennie Kill-Bowden (JXK3)

Method: EPA 904.0/SW846 9320 Modified

Lab SOP: GL-RAD-A-009 REV# 17

Instrument: GFC-51204863

Due Dates for Lab: 22-JUN-2020

Package: 24-JUN-2020

SDG: 26-JUN-2020

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1204570221	Radium-228 SPIKE	1919-A	.2	mL

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	Ac-228 Ingrow (date)	Ac-228 Separation (date)
1	512274001	09-JUN-2020	3	300	06/10/20 13:15	06/16/20 09:49
2	512274002	09-JUN-2020	3	300	06/10/20 13:15	06/16/20 09:49
3	512274003	09-JUN-2020	3	300	06/10/20 13:15	06/16/20 09:49
4	512274004	09-JUN-2020	3	300	06/10/20 13:15	06/16/20 09:49
5	512274005	09-JUN-2020	3	300	06/10/20 13:15	06/16/20 09:49
6	512274006	09-JUN-2020	3	300	06/10/20 13:15	06/16/20 09:49
7	512274007	09-JUN-2020	3	300	06/10/20 13:15	06/16/20 09:49
8	1204570219 MB	09-JUN-2020	3	300	06/10/20 13:15	06/16/20 09:49
9	1204570220 DUP (512274001)	09-JUN-2020	3	300	06/10/20 13:15	06/16/20 09:49
10	1204570221 LCS	09-JUN-2020	3	300	06/10/20 13:15	06/16/20 09:49

Reagent/Solvent Lot ID	Description	Amount	Comments:
WORK 0487-G	Barium-133 TRACER	.1 mL	
REGNT 2947553	RGF-Neodymium 500mg/L	.2 mL	Pipet Id: RAD-GFC-1795419
REGNT 3064966	RGF-50% Potassium Carbonate	2 mL	Data Entry Date2: 09-JUN-2020 00:00
REGNT 3068506.2	RGF-Hydrofluoric Acid	4 mL	
REGNT 3069850	Barium Carrier Ra228 REG	1 mL	
REGNT 3071153	RGF-Neodymium Subtrate	5 mL	
REGNT 3075541.9	Acetic Acid Glacial ACS Poly Coated Bottle	10 mL	
REGNT 3077077	7M Nitric Acid	25 mL	
REGNT 3080464	Lot #DGA0013	2 g	
REGNT 3083439.4	HNO3	5 mL	
REGNT 3084226	RGF-2M Hydrochloric Acid	20 mL	
REGNT 3085936	RGF-1.5M Ammonium Sulfate	10 mL	
REGNT 3085946	1M Citric Acid	5 mL	

Radium-228 Liquid

Filename : RA228.XLS
 File type : Excel
 Version # : 1.4.2

Tracer S/N : 0487-G
 Tracer Exp Date : 2/27/2021
 Tracer Volume Added: 0.10

Batch : 2006408
 Analyst : JEN02186
 Prep Date : 6/9/2020
 Ra-228 Method Uncertainty : 0.1268

Procedure Code : GFC28RAL
 Parmname : Radium-228
 Required MDA : 3 pCi/L
 Ra-228 Abundance : 1.00
 Halflife of Ra-228 : 5.75 years
 Halflife of Ac-228 : 6.15 hours

Geometry: 25mm Filter

Sample Characteristics					Tracer Calculations		Tracer Samp.		Tracer	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Tracer Ref. Activity (CPM)	Tracer Ref. Count Uncertainty (%)	Tracer Samp. Activity (CPM)	Tracer Samp. Count Uncertainty (%)	Tracer Aliquot (mL)	Tracer Aliquot StDev. (mL)
1	512274001.1	0.3000	1.8459E-05	5/26/2020 12:56	292.0	3.38%	244.3	3.69%	0.1	0.000200
2	512274002.1	0.3000	1.8459E-05	5/26/2020 16:27	292.0	3.38%	237.6	3.75%	0.1	0.000200
3	512274003.1	0.3000	1.8459E-05	5/26/2020 10:46	292.0	3.38%	238.0	3.74%	0.1	0.000200
4	512274004.1	0.3000	1.8459E-05	5/26/2020 17:05	292.0	3.38%	236.3	3.76%	0.1	0.000200
5	512274005.1	0.3000	1.8459E-05	5/26/2020 14:51	292.0	3.38%	255.3	3.61%	0.1	0.000200
6	512274006.1	0.3000	1.8459E-05	5/26/2020 10:46	292.0	3.38%	263.1	3.56%	0.1	0.000200
7	512274007.1	0.3000	1.8459E-05	5/26/2020 8:05	292.0	3.38%	235.1	3.76%	0.1	0.000200
8	1204570219.1	0.3000	1.8459E-05	6/9/2020 0:00	292.0	3.38%	240.5	3.72%	0.1	0.000200
9	1204570220.1	0.3000	1.8459E-05	5/26/2020 12:56	292.0	3.38%	243.6	3.70%	0.1	0.000200
10	1204570221.1	0.3000	1.8459E-05	6/9/2020 0:00	292.0	3.38%	255.8	3.61%	0.1	0.000200

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-009
 Instrument SOP: GL-RAD-I-016

Count raw Data														Calculated	Sample
Pos.	Detector ID	Counting Time (min.)	Gross Counts		Beta cpm	Count Start Date/Time	Ac-228 Ingrowth Date/Time	Ac-228 Decay Date/Time	Ra-228 Decay	Ac-228 Decay	Ac-228 Ingrowth	Ac-228 Count Correction	Recovery %	Recovery Error %	
			Alpha	Beta											
1	7A	60	5	47	0.783	6/16/2020 11:21	6/10/2020 13:15	6/16/2020 9:49	0.993	0.840	1.000	1.057	83.7%	2.52%	
2	7B	60	5	25	0.417	6/16/2020 11:21	6/10/2020 13:15	6/16/2020 9:49	0.993	0.840	1.000	1.057	81.4%	2.54%	
3	7C	60	10	34	0.567	6/16/2020 11:21	6/10/2020 13:15	6/16/2020 9:49	0.993	0.840	1.000	1.057	81.5%	2.54%	
4	7D	60	15	38	0.633	6/16/2020 11:21	6/10/2020 13:15	6/16/2020 9:49	0.993	0.840	1.000	1.057	80.9%	2.54%	
5	8A	60	5	45	0.750	6/16/2020 11:21	6/10/2020 13:15	6/16/2020 9:49	0.993	0.840	1.000	1.057	87.4%	2.49%	
6	8B	60	12	53	0.883	6/16/2020 11:21	6/10/2020 13:15	6/16/2020 9:49	0.993	0.840	1.000	1.057	90.1%	2.47%	
7	8C	60	12	46	0.767	6/16/2020 11:21	6/10/2020 13:15	6/16/2020 9:49	0.993	0.840	1.000	1.057	80.5%	2.54%	
8	8D	60	4	43	0.717	6/16/2020 11:21	6/10/2020 13:15	6/16/2020 9:49	0.998	0.841	1.000	1.057	82.4%	2.53%	
9	9A	60	8	78	1.300	6/16/2020 11:21	6/10/2020 13:15	6/16/2020 9:49	0.993	0.841	1.000	1.057	83.4%	2.52%	
10	9B	60	10	1011	16.850	6/16/2020 11:21	6/10/2020 13:15	6/16/2020 9:49	0.998	0.840	1.000	1.057	87.6%	2.49%	

Calibration Data								
Pos.	Counted on	Calibration Date	Calibration Due Date	Detector Efficiency (cpm/dpm)	Detector Efficiency Error (cpm/dpm)	Bkg cpm	Weekly Bkg Count Start Date/Time	Bkg Count Time (min.)
1	PIC	6/1/2020	5/31/2021	0.6340	0.00594	0.656	6/12/2020 17:39	500
2	PIC	6/1/2020	5/31/2021	0.6359	0.00627	0.394	6/12/2020 17:39	500
3	PIC	6/1/2020	5/31/2021	0.6361	0.00790	0.592	6/12/2020 17:40	500
4	PIC	6/1/2020	5/31/2021	0.6337	0.01113	0.558	6/12/2020 17:40	500
5	PIC	6/1/2020	5/31/2021	0.6340	0.01579	0.890	6/12/2020 17:40	500
6	PIC	6/1/2020	5/31/2021	0.6352	0.02148	0.776	6/12/2020 17:40	500
7	PIC	6/1/2020	5/31/2021	0.6437	0.01955	0.924	6/12/2020 17:40	500
8	PIC	6/1/2020	5/31/2021	0.6158	0.00609	0.706	6/12/2020 17:45	500
9	PIC	6/1/2020	5/31/2021	0.6275	0.00758	0.806	6/12/2020 17:40	500
10	PIC	6/1/2020	5/31/2021	0.6367	0.00754	0.652	6/12/2020 17:40	500

Notes:

- 1 - Results are decay corrected to Sample Date/Time
- 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
- 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : N/A
Spike Exp Date : N/A
Spike Activity (dpm/ml): N/A
Spike Volume Added: N/A

LCS S/N : 1919-A
LCS Exp Date : 4/7/2021
LCS Activity (dpm/ml): 187.13
LCS Volume Added: 0.20

Results Pos.	Decision	Critical	Required	Sample Act.		Sample Act.	Net Count	Net Count	2 SIGMA	2 SIGMA	Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery
	Level pCi/L	Level pCi/L	MDA pCi/L	MDA pCi/L	Conc. pCi/L	Error %	Rate CPM	Rate Error CPM	Counting Uncertainty pCi/L	Total Prop. Uncertainty pCi/L						
1	0.9246	0.6528	3	1.4849	0.4566	94.17%	0.1273	0.1199	0.8425	0.8504		SAMPLE				
2	0.7345	0.5185	3	1.2208	0.0833	387.95%	0.0227	0.0879	0.6335	0.6338		SAMPLE				
3	0.8989	0.6346	3	1.4527	-0.0930	406.96%	-0.0253	0.1031	0.7415	0.7417		SAMPLE				
4	0.8823	0.6229	3	1.4314	0.2795	143.44%	0.0753	0.1080	0.7857	0.7889		SAMPLE				
5	1.0309	0.7278	3	1.6272	-0.4806	85.41%	-0.1400	0.1195	0.8040	0.8041		SAMPLE				
6	0.9324	0.6583	3	1.4828	0.3569	118.90%	0.1073	0.1276	0.8313	0.8364		SAMPLE				
7	1.1237	0.7934	3	1.7703	-0.5778	76.93%	-0.1573	0.1209	0.8705	0.8706		SAMPLE				
8	0.9986	0.7050	3	1.5967	0.0398	1083.47%	0.0107	0.1156	0.8457	0.8458		MB				
9	1.0382	0.7330	3	1.6475	1.7945	31.00%	0.4940	0.1526	1.0863	1.1779	512274001.1	DUP	118.9%	1.8049		
10	0.8726	0.6161	3	1.4018	54.9863	4.19%	16.1980	0.5312	3.5341	14.3907		LCS			56.1956	97.8%

SampleID	Instr	Time (min.)	Alpha Counts	Beta Counts	Count Start Time	Count End Time	Machine	Batch ID
512274001	7A	60	5	47	6/16/2020 11:21	6/16/2020 12:21	PIC	2006408
512274002	7B	60	5	25	6/16/2020 11:21	6/16/2020 12:21	PIC	2006408
512274003	7C	60	10	34	6/16/2020 11:21	6/16/2020 12:21	PIC	2006408
512274004	7D	60	15	38	6/16/2020 11:21	6/16/2020 12:21	PIC	2006408
512274005	8A	60	5	45	6/16/2020 11:21	6/16/2020 12:21	PIC	2006408
512274006	8B	60	12	53	6/16/2020 11:21	6/16/2020 12:21	PIC	2006408
512274007	8C	60	12	46	6/16/2020 11:21	6/16/2020 12:21	PIC	2006408
1204570219	8D	60	4	43	6/16/2020 11:21	6/16/2020 12:21	PIC	2006408
1204570220	9A	60	8	78	6/16/2020 11:21	6/16/2020 12:21	PIC	2006408
1204570221	9B	60	10	1011	6/16/2020 11:21	6/16/2020 12:21	PIC	2006408

ASSAY 16-Jun-20 10:18:02

Protocol id 8 Ba-133
Time limit
Count limit
Isotope Ba-133
Protocol date 6/16/2020
Run id. 1354

Samp_ID	POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR	% RECOVERY	COUNT TIME
REF		1 93	1	180	876	291.95	3.38		10:18:02
512274001	2	93	2	180	733	244.28	3.69	83.67	10:21:16
512274002	3	93	3	180	713	237.62	3.75	81.39	10:24:30
512274003	4	93	4	180	714	237.95	3.74	81.50	10:27:44
512274004	5	93	5	180	709	236.27	3.76	80.93	10:30:58
512274005	1	18	1	180	766	255.29	3.61	87.44	10:34:34
512274006	2	18	2	180	789.5	263.1	3.56	90.12	10:37:48
512274007	3	18	3	180	705.5	235.1	3.76	80.53	10:41:02
1204570219	4	18	4	180	721.5	240.46	3.72	82.36	10:44:15
1204570220	5	18	5	180	731	243.62	3.7	83.45	10:47:30
1204570221	1	15	1	180	767.5	255.79	3.61	87.61	10:51:06

END OF ASSAY

Continuing Calibration Data

Gas Flow Proportional Counter Checks for 16-Jun-2020

Detectors LB4100 A1 through J4 and PIC 1A through 14D and G5400W 1W through 1Z

Short Name	Status	Parmname	Run Time	Count Time	CPM or dec	Low Limit	High Limit	Stdev
LB4100A1	Above	Beta bkg	16-Jun 06:27	60	8.867	0.628	1.888	+36.22
LB4100C1	Above	Beta bkg	16-Jun 06:02	60	2.250	0.534	3.326	+0.69
LB4100C4	Above	Alpha XTalk	16-Jun 05:29	5	0.675	0.171	0.572	+4.55
LB4100C4	Above	Beta bkg	16-Jun 03:59	60	1860	0.452	2.039	+7,024.34
LB4100C4	Above	Beta eff	16-Jun 05:20	5	20683	18000	20220	+4.25
LB4100E1	Above	Alpha bkg	16-Jun 03:56	60	0.517	-5.45E-2	0.290	+6.96
LB4100E2	Above	Beta bkg	16-Jun 03:56	60	2.317	0.950	2.756	+1.54
LB4100E3	Above	Alpha bkg	16-Jun 03:56	60	2.150	-4.47E-2	0.174	+57.13
LB4100E3	Above	Beta bkg	16-Jun 03:56	60	3.000	-1.31E+0	6.766	+0.20
LB4100E3	Above	Beta XTalk	16-Jun 05:07	5	4.66E-4	8.54E-5	4.65E-4	+3.02
LB4100E4	need 2nd	Beta bkg	16-Jun 03:56	60	1.900	0.326	2.646	+1.07
LB4100F1	Above	Beta bkg	16-Jun 03:56	60	2.150	0.531	1.960	+3.80
LB4100F3	need 2nd	Alpha bkg	16-Jun 03:56	60	0.233	-7.68E-2	0.332	+1.55
LB4100G3	Above	Beta bkg	16-Jun 03:56	60	5.567	0.810	1.674	+30.03
LB4100H1	Below	Alpha eff	16-Jun 05:07	5	3697	7658	10570	-11.16
LB4100H1	Above	Alpha XTalk	16-Jun 05:07	5	0.947	0.233	0.355	+32.08
LB4100H1	Above	Beta bkg	16-Jun 03:56	60	2.067	0.507	1.512	+6.31
LB4100H1	Below	Beta eff	16-Jun 05:14	5	28264	34000	45760	-5.93
LB4100H2	Below	Alpha eff	16-Jun 05:07	5	5284	6514	8609	-6.52
LB4100H2	Above	Alpha XTalk	16-Jun 05:07	5	0.528	0.276	0.380	+11.50
LB4100H2	Above	Beta bkg	16-Jun 03:56	60	138	0.215	2.346	+385.90
LB4100H2	Below	Beta eff	16-Jun 05:13	5	14866	15130	17230	-3.75
LB4100H3	Above	Alpha XTalk	16-Jun 05:07	5	0.326	0.263	0.323	+3.29
LB4100H3	Above	Beta bkg	16-Jun 03:56	60	4.250	0.545	2.286	+9.77
LB4100H4	Below	Alpha XTalk	16-Jun 05:07	5	0.286	0.295	0.389	-3.57
LB4100H4	Above	Beta bkg	16-Jun 03:56	60	3.867	0.362	1.711	+12.59
LB4100H4	Below	Beta eff	16-Jun 05:14	5	29636	30260	34150	-3.96
LB4100I2	Above	Beta bkg	16-Jun 03:56	60	5.317	0.425	2.438	+11.58
LB4100I3	Above	Beta bkg	16-Jun 03:56	60	2.300	-3.39E-1	3.842	+0.79

LB4100I4	Above	Beta bkg	16-Jun 03:56	60	2.200	-1.74E-2	2.470	+2.35
PIC3C	Below	Alpha bkg	16-Jun 05:11	60	0.050	0.063	0.394	-3.23
PIC3C	Below	Alpha eff	16-Jun 06:26	5	9085	9133	9635	-3.57
PIC4B	Above	Alpha bkg	16-Jun 05:11	60	0.317	-5.36E-2	0.301	+3.26
PIC12A	Above	Beta bkg	16-Jun 05:56	60	2.433	0.074	1.397	+7.70
PIC14D	Above	Alpha bkg	16-Jun 05:57	60	0.317	-8.26E-2	0.242	+4.38

INSTRUMENTS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

The following detectors may not have properly transferred to the LIMS system

LB4100B1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC3A	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC6D	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC13C	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk

Reviewed by R. Seil - pluman

Date 6-17-20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: GFPC

Batch ID: 2006408

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
1204570219	MB	JXK3	PIC8D	JUN-16-20 11:21:25	DONE	25mm Filter	01-JUN-20 00:00
1204570220	DUP	JXK3	PIC9A	JUN-16-20 11:21:28	DONE	25mm Filter	01-JUN-20 00:00
1204570221	LCS	JXK3	PIC9B	JUN-16-20 11:21:32	DONE	25mm Filter	01-JUN-20 00:00
512274001	SAMPLE	JXK3	PIC7A	JUN-16-20 11:21:36	DONE	25mm Filter	01-JUN-20 00:00
512274002	SAMPLE	JXK3	PIC7B	JUN-16-20 11:21:36	DONE	25mm Filter	01-JUN-20 00:00
512274003	SAMPLE	JXK3	PIC7C	JUN-16-20 11:21:39	DONE	25mm Filter	01-JUN-20 00:00
512274004	SAMPLE	JXK3	PIC7D	JUN-16-20 11:21:43	DONE	25mm Filter	01-JUN-20 00:00
512274005	SAMPLE	JXK3	PIC8A	JUN-16-20 11:21:45	DONE	25mm Filter	01-JUN-20 00:00
512274006	SAMPLE	JXK3	PIC8B	JUN-16-20 11:21:49	DONE	25mm Filter	01-JUN-20 00:00
512274007	SAMPLE	JXK3	PIC8C	JUN-16-20 11:21:53	DONE	25mm Filter	01-JUN-20 00:00

Lucas Cell Raw Data

Batch 2006332 Check-list

This check-list was completed on 19-JUN-20 by Elizabeth Krouse

This batch was reviewed by Elizabeth Krouse on 19-JUN-20 and Lyndsey Pace on 21-JUN-20.

Batch ID:
2006332

Product:
LUC26RAL

Description: Lucas Cell Radium 226
GL-RAD-A-008

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the matrix spike (MS/MSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-226 in Liquid

Batch ID: 2006332
Analyst: Michael Hance (MXH8)
Method: EPA 903.1 Modified
Lab SOP: GL-RAD-A-008 REV# 15
Instrument: GFC-18150253

Due Dates for Lab: 23-JUN-2020			Package: 24-JUN-2020	SDG: 26-JUN-2020		
Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units	
LCS	1204570029	Radium-226 SPIKE	1715-E	.1	mL	
MS	1204570028	Radium-226 SPIKE	1715-E	.1	mL	

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	End Degass (date)	CELL #	End Transfer (date)	Start Count Time (date)	Background Counts	Total Counts
1	512274001	16-JUN-2020	1	500	06/16/20 11:30	706	06/19/20 06:15	06/19/20 09:26	8	16
2	512274002	16-JUN-2020	1	500	06/16/20 11:30	808	06/19/20 06:15	06/19/20 09:26	2	3
3	512274003	16-JUN-2020	1	500	06/16/20 11:30	107	06/19/20 07:00	06/19/20 09:59	1	13
4	512274004	16-JUN-2020	1	500	06/16/20 11:30	208	06/19/20 07:00	06/19/20 09:59	7	34
5	512274005	16-JUN-2020	1	500	06/16/20 11:30	306	06/19/20 07:00	06/19/20 09:59	5	4
6	512274006	16-JUN-2020	1	500	06/16/20 11:30	403	06/19/20 07:00	06/19/20 09:59	2	8
7	512274007	16-JUN-2020	1	500	06/16/20 11:30	502	06/19/20 07:00	06/19/20 09:59	1	5
8	1204570026 MB	16-JUN-2020	1	500	06/16/20 11:30	708	06/19/20 07:00	06/19/20 09:58	1	6
9	1204570027 DUP (512274001)	16-JUN-2020	1	500	06/16/20 11:30	805	06/19/20 07:00	06/19/20 09:58	6	12
10	1204570028 MS (512274001)	16-JUN-2020	1	500	06/16/20 11:30	105	06/19/20 07:38	06/19/20 10:38	2	779
11	1204570029 LCS	16-JUN-2020	1	500	06/16/20 11:30	202	06/19/20 07:38	06/19/20 10:38	1	722

Reagent/Solvent Lot ID	Description	Amount	Comments:
			Spike Pipet ID: RAD-RA226-2766953 Bkg Count Time: 30 Minutes Sample Count Time: 30 Minutes Data Entry Date2: 16-JUN-2020 00:00

RA2006332

Radium-226 Liquid

Filename : RA226.XLS
 File type : Excel
 Version # : 1.3.2

Batch : 2006332
 Analyst : MIC02086
 Prep Date : 6/16/2020

Ra-226 Method Uncertainty : 0.073648

Procedure Code : LUC26RAL
 Parmname : Radium-226
 Required MDA : 1 pCi/L
 Halflife of Ra-226 : 1600 years
 Ra-226 Abundance : 1.00
 Halflife of Rn-222 : 3.8235 days

Batch counted on : LUCAS CELL DETECTOR
 BKG Count time : 30 min

Sample Characteristics					Count Raw Data						Background	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Cell Number	Counting Time (min.)	Gross Counts	Gross CPM	Background Counts	Background CPM	Count Time (min.)	Cell Efficiency (cpm/dpm)
1	512274001.1	0.5000	2.0256E-05	5/26/2020 12:56	706	30	16	0.533	8	0.267	30	1.8320
2	512274002.1	0.5000	2.0256E-05	5/26/2020 16:27	808	30	3	0.100	2	0.067	30	1.4130
3	512274003.1	0.5000	2.0256E-05	5/26/2020 10:46	107	30	13	0.433	1	0.033	30	1.5441
4	512274004.1	0.5000	2.0256E-05	5/26/2020 17:05	208	30	34	1.133	7	0.233	30	1.9180
5	512274005.1	0.5000	2.0256E-05	5/26/2020 14:51	306	30	4	0.133	5	0.167	30	1.8401
6	512274006.1	0.5000	2.0256E-05	5/26/2020 10:46	403	30	8	0.267	2	0.067	30	1.7460
7	512274007.1	0.5000	2.0256E-05	5/26/2020 8:05	502	30	5	0.167	1	0.033	30	1.9430
8	1204570026.1	0.5000	2.0256E-05	6/16/2020 0:00	708	30	6	0.200	1	0.033	30	1.7920
9	1204570027.1	0.5000	2.0256E-05	5/26/2020 12:56	805	30	12	0.400	6	0.200	30	1.4670
10	1204570028.1	0.5000	2.0256E-05	5/26/2020 12:56	105	30	779	25.967	2	0.067	30	2.0111
11	1204570029.1	0.5000	2.0256E-05	6/16/2020 0:00	202	30	722	24.067	1	0.033	30	1.8990

RA2006332

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-008
 Instrument SOP: GL-RAD-I-007

Cell Efficiency Error (%)	Cell Calibration Date	Cell Calibration Due Date	De-Gas Date/Time	Rn-222 Ingrow End Date/Time	Count Start Date/Time	Rn-222 Corrections			Ra-226 Decay
						De-Gas to Ingrowth	Ingrowth to Count	During Count	
0.500%	11/1/2019	10/31/2020	6/16/2020 11:30	6/19/2020 6:15	6/19/2020 9:26	0.396	0.976	1.002	1.000
2.200%	3/31/2020	3/31/2021	6/16/2020 11:30	6/19/2020 6:15	6/19/2020 9:26	0.396	0.976	1.002	1.000
2.523%	5/1/2020	4/30/2021	6/16/2020 11:30	6/19/2020 7:00	6/19/2020 9:59	0.399	0.978	1.002	1.000
7.700%	8/1/2019	7/31/2020	6/16/2020 11:30	6/19/2020 7:00	6/19/2020 9:59	0.399	0.978	1.002	1.000
6.024%	1/20/2020	12/31/2020	6/16/2020 11:30	6/19/2020 7:00	6/19/2020 9:59	0.399	0.978	1.002	1.000
5.200%	3/1/2020	1/31/2021	6/16/2020 11:30	6/19/2020 7:00	6/19/2020 9:59	0.399	0.978	1.002	1.000
4.700%	6/2/2020	5/31/2021	6/16/2020 11:30	6/19/2020 7:00	6/19/2020 9:59	0.399	0.978	1.002	1.000
8.700%	11/1/2019	10/31/2020	6/16/2020 11:30	6/19/2020 7:00	6/19/2020 9:58	0.399	0.978	1.002	1.000
6.300%	3/31/2020	3/31/2021	6/16/2020 11:30	6/19/2020 7:00	6/19/2020 9:58	0.399	0.978	1.002	1.000
8.623%	5/1/2020	4/30/2021	6/16/2020 11:30	6/19/2020 7:38	6/19/2020 10:38	0.402	0.978	1.002	1.000
3.600%	8/1/2019	7/31/2020	6/16/2020 11:30	6/19/2020 7:38	6/19/2020 10:38	0.402	0.978	1.002	1.000

- Notes:
 1 - Results are decay corrected to Sample Date/Time
 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : 1715-E
Spike Exp Date : 6/18/2020
Spike Activity (dpm/ml): 300.29
Spike Volume Added: 0.10

LCS S/N : 1715-E
LCS Exp Date : 6/18/2020
LCS Activity (dpm/ml): 300.29
LCS Volume Added: 0.10

* RPD changed to 0% due to sample & dup activity below MDA

Results Pos.	Decision	Critical	Required	Sample Act. Conc. pCi/L	Sample Act. Error %	Net Count Rate CPM	Net Count Rate Error CPM	2 SIGMA	2 SIGMA	Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery	
	Level pCi/L	Level pCi/L	MDA pCi/L					MDA pCi/L	Counting Uncertainty pCi/L							Total Prop. Uncertainty pCi/L
1	0.3959	0.2795	1	0.6865	0.3398	61.24%	0.2667	0.1633	0.4079	0.4109						
2	0.2567	0.1812	1	0.5276	0.0551	223.62%	0.0333	0.0745	0.2414	0.2415						
3	0.1644	0.1161	1	0.3818	0.5988	31.28%	0.4000	0.1247	0.3659	0.3772						
4	0.3502	0.2472	1	0.6150	1.0846	24.93%	0.9000	0.2134	0.5041	0.5527						
5	0.3085	0.2178	1	0.5612	-0.0419	300.06%	-0.0333	0.1000	0.2462	0.2463						
6	0.2056	0.1452	1	0.4227	0.2648	52.96%	0.2000	0.1054	0.2735	0.2775						
7	0.1307	0.0922	1	0.3034	0.1586	61.42%	0.1333	0.0816	0.1904	0.1923						
8	0.1416	0.1000	1	0.3290	0.2149	53.63%	0.1667	0.0882	0.2229	0.2280						
9	0.4238	0.2992	1	0.7560	0.3151	70.99%	0.2000	0.1414	0.4367	0.4407	512274001.1	DUP	*	0.0%		
10	0.1773	0.1252	1	0.3644	29.5579	9.34%	25.9000	0.9315	2.0837	6.8921	512274001.1	MS			27.0541	109.3%
11	0.1327	0.0937	1	0.3083	29.0461	5.18%	24.0333	0.8963	2.1231	5.1272		LCS			27.0535	107.4%

Continuing Calibration Data



Ludlum Alpha Scintillation Counter Checks for 19-JUN-2020

Short Name	Parmname	Run Time	Count Time	Counts	CPM	Stdev	Status	Comments
LUCAS1	EFF	06:37	1	1.26E+05	126437	-0.16		
LUCAS2	EFF	06:59	1	1.37E+05	136924	2.66		
LUCAS3	EFF	07:03	1	1.39E+05	138975	2.27		
LUCAS4	EFF	06:54	1	1.31E+05	130742	1.36		
LUCAS5	EFF	06:52	1	1.34E+05	134042	2.25		
LUCAS6	EFF	06:47	1	1.35E+05	135269	-0.18		
LUCAS7	EFF	06:45	1	1.38E+05	137748	1.65		
LUCAS8	EFF	06:43	1	1.40E+05	140499	2.42		

Reviewed by: 
Elizabeth Krouse

Date: 19-JUN-20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: LUCAS CELL DETECTOR

Batch ID: 2006332

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
512274001	SAMPLE	MXH8	LUCAS7	JUN-19-20 09:26:00	DONE	Lucas Cell	01-NOV-19 00:00
512274002	SAMPLE	MXH8	LUCAS8	JUN-19-20 09:26:00	DONE	Lucas Cell	31-MAR-20 00:00
1204570026	MB	MXH8	LUCAS7	JUN-19-20 09:58:00	DONE	Lucas Cell	01-NOV-19 00:00
1204570027	DUP	MXH8	LUCAS8	JUN-19-20 09:58:00	DONE	Lucas Cell	31-MAR-20 00:00
512274003	SAMPLE	MXH8	LUCAS1	JUN-19-20 09:59:00	DONE	Lucas Cell	01-MAY-20 00:00
512274004	SAMPLE	MXH8	LUCAS2	JUN-19-20 09:59:00	DONE	Lucas Cell	01-AUG-19 00:00
512274005	SAMPLE	MXH8	LUCAS3	JUN-19-20 09:59:00	DONE	Lucas Cell	20-JAN-20 00:00
512274006	SAMPLE	MXH8	LUCAS4	JUN-19-20 09:59:00	DONE	Lucas Cell	01-MAR-20 00:00
512274007	SAMPLE	MXH8	LUCAS5	JUN-19-20 09:59:00	DONE	Lucas Cell	02-JUN-20 00:00
1204570028	MS	MXH8	LUCAS1	JUN-19-20 10:38:00	DONE	Lucas Cell	01-MAY-20 00:00
1204570029	LCS	MXH8	LUCAS2	JUN-19-20 10:38:00	DONE	Lucas Cell	01-AUG-19 00:00



Environmental Laboratory
 1232 Haco Drive
 Lansing
 Michigan, 48910

CHAIN OF CUSTODY


Page 1 of 1

Phone: (517)702-6372

Lab Work Order Number L005063

Client Name BWL - Erickson Station		Project Name Erickson GMP		Requested Analyses							Requested Turn Around				
Client Contact Cheryl Louden		Project Number [none]		Metals, Hg (Total) per quote	TSS	TDS, Cl-, SO4-, F-	Radium 226	Radium 228	Field Data						Rush requests subject to additional charge. Rush requests subject to lab approval.
Address 3725 S. Canal		Project Description													
City Lansing		PO Number													
State/Zip MI, 48917		Shipped By													
Phone (517) 702-6396	Fax (517) 702-6373	Tracking Number													
Sampler Marc Wahrer															

Sample Name or Field ID	Sampled Date	Sampled Time	Sample Type Grab/Composite	Matrix Code	Container Count	Preservation Code										Sample	Comments	
						b	a											
MW-1	05/26/2020	12:56	G	GW	5	1	1	1	1	1	1	X						
MW-2	05/26/2020	16:27	G	GW	5	1	1	1	1	1	1	X						
MW-4	05/26/2020	10:46	G	GW	5	1	1	1	1	1	1	X						
MW-5	05/26/2020	17:05	G	GW	5	1	1	1	1	1	1	X						
MW-6	05/26/2020	14:51	G	GW	5	1	1	1	1	1	1	X						
MW-4 Duplicate	05/26/2020	10:46	G	GW	5	1	1	1	1	1	1							
Field Blank	05/26/2020	08:05	G	GW	5	1	1	1	1	1	1							

Relinquished By  <small>05/27/2020 07:13:54 am SigPlus1</small>	Date/Time 5/27/2020 6:25	Received By Kelly Gleason	Date/Time 5/27/2020 6:25	Comments
Relinquished By	Date/Time	Received By	Date/Time	
Relinquished By	Date/Time	Received By	Date/Time	
Cooler Numbers and Temperatures Default Cooler				Comments
Matrix Codes: GW=Ground Water				

Preserv. Codes: a=None,b=0.5% HNO3



Lansing Board of Water and Light
Environmental Services Laboratory
1232 Haco Dr.
Lansing, Michigan 48901

13 August 2020

BWL - Erickson Station
Attn: Cheryl Louden
3725 S. Canal
Lansing, MI 48917

Project: Erickson GMP

Dear Cheryl Louden,

Enclosed is a copy of the laboratory report for the following work order(s) received by Lansing Board of Water and Light Environmental Services Laboratory:

Work Order
L006016

Received
6/24/2020 7:40:00AM

Account Number
30926 10021

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

Sincerely,

A handwritten signature in blue ink that reads "Jennifer Caporale".

Jennifer Caporale, Supervisor



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Loudon

Report Date: 08/13/2020

Sample Name: MW-1

Lab #: L006016-01 Ground Water

Collected: 23-Jun-20 12:22

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory		Analysis Date/Time	By	Method	Notes
	Result	Limit	Units		Limit					
Conductivity	1200	1.0	uS/cm	1		23-Jun-20 12:22	maw	SM 2510B		
Dissolved oxygen	ND	0.100	mg/L	1		23-Jun-20 12:22	maw	FIELD		
Gallons Purged	3.00		Gallons	1		23-Jun-20 12:22	maw	FIELD		
Oxidation Reduction Potential	-87.20	-999.0	mV	1		23-Jun-20 12:22	maw	FIELD		
pH	6.8	7.0	pH Units	1		23-Jun-20 12:22	maw	SM 4500H+B		
Static Head Measurement	15.2		Feet	1		23-Jun-20 12:22	maw	FIELD		
Temperature	14		°C	1		23-Jun-20 12:22	maw	SM 2550B		
Turbidity	17	0.10	NTU	1		23-Jun-20 12:22	maw	SM 2130B		

Sample Name: MW-2

Lab #: L006016-02 Ground Water

Collected: 23-Jun-20 16:01

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory		Analysis Date/Time	By	Method	Notes
	Result	Limit	Units		Limit					
Conductivity	1700	1.0	uS/cm	1		23-Jun-20 16:01	maw	SM 2510B		
Dissolved oxygen	ND	0.100	mg/L	1		23-Jun-20 16:01	maw	FIELD		
Gallons Purged	3.50		Gallons	1		23-Jun-20 16:01	maw	FIELD		
Oxidation Reduction Potential	-40.20	-999.0	mV	1		23-Jun-20 16:01	maw	FIELD		
pH	6.7	7.0	pH Units	1		23-Jun-20 16:01	maw	SM 4500H+B		
Static Head Measurement	19.3		Feet	1		23-Jun-20 16:01	maw	FIELD		
Temperature	13		°C	1		23-Jun-20 16:01	maw	SM 2550B		
Turbidity	9.0	0.10	NTU	1		23-Jun-20 16:01	maw	SM 2130B		



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 08/13/2020

Sample Name: MW-4

Lab #: L006016-03 Ground Water

Collected: 23-Jun-20 10:15

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	910	1.0	uS/cm	1		23-Jun-20 10:15	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		23-Jun-20 10:15	maw	FIELD	
Gallons Purged	3.00		Gallons	1		23-Jun-20 10:15	maw	FIELD	
Oxidation Reduction Potential	-174.8	-999.0	mV	1		23-Jun-20 10:15	maw	FIELD	
pH	7.1	7.0	pH Units	1		23-Jun-20 10:15	maw	SM 4500H+B	
Static Head Measurement	16.6		Feet	1		23-Jun-20 10:15	maw	FIELD	
Temperature	14		°C	1		23-Jun-20 10:15	maw	SM 2550B	
Turbidity	3.0	0.10	NTU	1		23-Jun-20 10:15	maw	SM 2130B	

Sample Name: MW-5

Lab #: L006016-04 Ground Water

Collected: 23-Jun-20 16:46

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	2000	1.0	uS/cm	1		23-Jun-20 16:46	maw	SM 2510B	
Dissolved oxygen	2.61	0.100	mg/L	1		23-Jun-20 16:46	maw	FIELD	
Gallons Purged	5.00		Gallons	1		23-Jun-20 16:46	maw	FIELD	
Oxidation Reduction Potential	-34.80	-999.0	mV	1		23-Jun-20 16:46	maw	FIELD	
pH	7.3	7.0	pH Units	1		23-Jun-20 16:46	maw	SM 4500H+B	
Static Head Measurement	17.3		Feet	1		23-Jun-20 16:46	maw	FIELD	
Temperature	15		°C	1		23-Jun-20 16:46	maw	SM 2550B	
Turbidity	18	0.10	NTU	1		23-Jun-20 16:46	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 08/13/2020

Sample Name: MW-6

Lab #: L006016-05 Ground Water

Collected: 23-Jun-20 14:16

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory	Analysis	By	Method	Notes
	Result	Limit	Units		Limit	Date/Time			
Conductivity	1000	1.0	uS/cm	1		23-Jun-20 14:16	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		23-Jun-20 14:16	maw	FIELD	
Gallons Purged	3.00		Gallons	1		23-Jun-20 14:16	maw	FIELD	
Oxidation Reduction Potential	-45.40	-999.0	mV	1		23-Jun-20 14:16	maw	FIELD	
pH	6.7	7.0	pH Units	1		23-Jun-20 14:16	maw	SM 4500H+B	
Static Head Measurement	18.9		Feet	1		23-Jun-20 14:16	maw	FIELD	
Temperature	12		°C	1		23-Jun-20 14:16	maw	SM 2550B	
Turbidity	34	0.10	NTU	1		23-Jun-20 14:16	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 08/13/2020

Approved By:

Jennifer Caporale

Notes and Definitions

AL Action Level (Action Level = Regulatory Limit)
MCL Maximum Contaminant Level
PEL Permissible Exposure Limit (Permissible Exposure Limit = Regulatory Limit)
RPD Relative Percent Difference
OT Odor Threshold
ND Non Detect

All drinking water regulatory limits are MCL's with the exception of Lead and Copper unless otherwise noted.



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BOARD OF WATER & LIGHT

ERICKSON GMP

SDG Batch:

15123

Pages 1 - 279



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BOARD OF WATER & LIGHT

PROJECT: ERICKSON GMP

SDG Batch:
15123.01

Prepared by:
Merit Laboratories, Inc.

July 29, 2020

Inorganics Inventory Sheet - SDG: S15123

Laboratory Name: Merit Laboratories, Inc.
City / State: East Lansing, MI
Sample Delivery Group: S15123.01 - .07

Deliverable	References		Pages		Checklist	
	Form	CLP	From	To	Lab	Audit
1. Inventory Sheet (not numbered)	This	DC-2			<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. SDG Case Narrative			1	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Analytical Summary Report			3	34	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. ICP/MS Metals Data			35	175		
Sequence / Injection Log		F.0			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Sheet		F. I			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initial Calibration and Calibration Verification		F. IIA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRDL Standards		F. IIB			<input type="checkbox"/>	<input type="checkbox"/>
Blanks		F. III			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Interference Check Sample		F. IVB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		F. VA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Digest Spike Sample Recovery		F. VB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duplicates		F. VI			<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		F. VII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Serial Dilutions		F. VIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		F. XIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP/MS Tune		F. XIV			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Internal Standard Relative Intensity Summary		F. XV			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument Detection Limits (IDL) & MDLs		F. IX			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Linear Ranges		F. XI			<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP/MS Raw Data					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation / Digestion Log		F. XII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Mercury Data			176	194		
Sequence / Injection Log		F.0			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Sheet		F. I			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initial Calibration and Calibration Verification		F. IIA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRDL Standards		F. IIB			<input type="checkbox"/>	<input type="checkbox"/>
Blanks		F. III			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		F. VA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Digest Spike Sample Recovery		F. VB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duplicates		F. VI			<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		F. VII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		F. XIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Mercury Cold Vapor Raw Data					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation / Digestion Log					<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Ion Chromatography Data			195	272		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Calibration Curve - data and evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Total Suspended Solids Data			273	273		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>

Inorganics Inventory Sheet - SDG: S15123

Deliverable	References		Pages		Checklist	
	Form	CLP	From	To	Lab	Audit
8. Total Dissolved Solids Data			274	274		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Shipping / Receiving Documents			275	279		
Chain-of-Custody					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample log-in sheet					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample Receipt					<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Subcontracted Analysis Report						
GEL Laboratories – Radiological Analysis (Total Pages 50)					<input checked="" type="checkbox"/>	<input type="checkbox"/>



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CASE NARRATIVE
CLIENT: BOARD OF WATER & LIGHT
PROJECT: ERICKSON GMP
Merit IDs: S15123.01-S15123.07

- Field Sampling:** Marc Wahrer performed the fieldwork.
- Analytical Bottles:** All bottles were sent with the appropriate preservation in it. Please see the bottle list attached.
- Sample Receiving:** All samples were received by the laboratory (06/24/2020). Dates and signatures can be found on the Chain of Custody Records. The sample receipts specify the actual tags and bottles received and logged into the laboratory “vlims” system.

ANALYSES

Metals: All metal analyses were performed according to Method 200.8. The metal digestion was performed according to Method 3015A. The QC requirements were followed for this specific project and method-specified criteria were met. *Outliers:* None

Notes: Dilution test not applicable if measured concentration is less than 100 times MDL.

Mercury: All mercury QC requirements were met according to the specifications in Method 245.1. *Outliers:* None

Fluoride: All fluoride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Chloride: All chloride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Sulfate: All Sulfate QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Total Suspended Solids: All total suspended solids QC requirements were met according to the specifications in Method 2540 D. *Outliers:* None

Total Dissolved Solids: All total suspended solids QC requirements were met according to the specifications in Method 2540 C. *Outliers:* None



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Radium 226 & 228: All radiological analysis were subcontracted out to GEL Laboratories. GEL Laboratories analytical report is included.

Data Reporting: The analytical reports are reflective of what is on a given Chain-of-Custody record (COC). Merit's IDs were assigned to the samples as they were delivered and accepted by our log-in staff.

"I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness, for other than the condition detailed above. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature."

A handwritten signature in cursive script that reads "Barbara Ball".

Barb Ball
QA Officer

07/29/2020
Date



Analytical Laboratory Report

Report ID: S15123.01(01)
Generated on 07/10/2020

Report to
Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S15123.01-S15123.07
Project: Erickson GMP
Collected Date(s): 06/23/2020
Submitted Date/Time: 06/24/2020 11:20
Sampled by: Marc Wahrer
P.O. #:

Table of Contents

- Cover Page (Page 1)
- General Report Notes (Page 2)
- Report Narrative (Page 2)
- Laboratory Certifications (Page 3)
- Qualifier Descriptions (Page 3)
- Glossary of Abbreviations (Page 3)
- Method Summary (Page 4)
- Sample Summary (Page 5)

Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

Report Narrative

All Metal Results Are Reported As Total



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
E300.0	EPA Method 300.0 Revision 2.1
SM2540C	Standard Method 2540 C 2011
SM2540D	Standard Method 2540 D 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S15123.01	MW-1 L006016-01	Groundwater	06/23/20 12:22
S15123.02	MW-2 L006016-02	Groundwater	06/23/20 16:01
S15123.03	MW-4 L006016-03	Groundwater	06/23/20 10:15
S15123.04	MW-5 L006016-04	Groundwater	06/23/20 16:46
S15123.05	MW-6 L006016-05	Groundwater	06/23/20 14:16
S15123.06	MW-4 Duplicate L006016-06	Groundwater	06/23/20 10:15
S15123.07	Field Blank L006016-07	Water	06/23/20 07:30



Analytical Laboratory Report

Lab Sample ID: S15123.01

Sample Tag: MW-1 L006016-01

Collected Date/Time: 06/23/2020 12:22

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.0	IR
2	1L Plastic	None	Yes	4.0	IR
1	125ml Plastic	HNO3	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/02/20 10:30	JRH	
Metal Digestion	Completed	SW3015A	06/30/20 13:20	JRH	

Inorganics

Method: E300.0, Run Date: 06/25/20 12:08, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	70	5	0.06	mg/L	5	16887-00-6	
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	
Sulfate	59	5	0.52	mg/L	5	14808-79-8	

Method: SM2540C, Run Date: 06/24/20 17:00, Analyst: NAW

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	774	20	2	mg/L	2		

Method: SM2540D, Run Date: 06/29/20 19:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	43	3	1	mg/L	2.50		

Metals

Method: E200.8, Run Date: 06/30/20 16:05, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	165	5.0	0.22	mg/L	25	7440-70-2	

Method: E200.8, Run Date: 06/30/20 14:05, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.007	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.168	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	0.39	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.032	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	



Analytical Laboratory Report

Lab Sample ID: S15123.01 (continued)

Sample Tag: MW-1 L006016-01

Method: E245.1, Run Date: 07/06/20 12:50, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 07/08/20 08:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S15123.02

Sample Tag: MW-2 L006016-02

Collected Date/Time: 06/23/2020 16:01

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.0	IR
2	1L Plastic	None	Yes	4.0	IR
1	125ml Plastic	HNO3	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/02/20 10:30	JRH	
Metal Digestion	Completed	SW3015A	06/30/20 13:20	JRH	

Inorganics

Method: E300.0, Run Date: 06/25/20 12:21, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 06/25/20 12:08, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	75	25	0.40	mg/L	25	16887-00-6	
Sulfate	484	25	1.5	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 06/24/20 17:00, Analyst: NAW

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,300	20	2	mg/L	2		

Method: SM2540D, Run Date: 06/29/20 19:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 06/30/20 16:09, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	268	5.0	0.87	mg/L	100	7440-70-2	

Method: E200.8, Run Date: 06/30/20 14:07, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.045	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	4.05	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.055	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.010	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S15123.02 (continued)

Sample Tag: MW-2 L006016-02

Method: E200.8, Run Date: 06/30/20 14:07, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 07/06/20 12:52, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 07/08/20 08:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S15123.03

Sample Tag: MW-4 L006016-03

Collected Date/Time: 06/23/2020 10:15

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.0	IR
2	1L Plastic	None	Yes	4.0	IR
1	125ml Plastic	HNO3	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/02/20 10:30	JRH	
Metal Digestion	Completed	SW3015A	06/30/20 13:20	JRH	

Inorganics

Method: E300.0, Run Date: 06/25/20 15:33, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	72	10	0.13	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 06/25/20 12:33, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	
Sulfate	57	5	0.52	mg/L	5	14808-79-8	

Method: SM2540C, Run Date: 06/24/20 17:00, Analyst: NAW

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	558	20	2	mg/L	2		

Method: SM2540D, Run Date: 06/29/20 19:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 06/30/20 16:10, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	108	5.0	0.87	mg/L	100	7440-70-2	

Method: E200.8, Run Date: 06/30/20 14:09, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.007	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.165	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	0.06	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.008	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S15123.03 (continued)

Sample Tag: MW-4 L006016-03

Method: E200.8, Run Date: 06/30/20 14:09, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 07/06/20 12:54, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 07/08/20 08:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S15123.04

Sample Tag: MW-5 L006016-04

Collected Date/Time: 06/23/2020 16:46

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.0	IR
2	1L Plastic	None	Yes	4.0	IR
1	125ml Plastic	HNO3	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/02/20 10:30	JRH	
Metal Digestion	Completed	SW3015A	06/30/20 13:20	JRH	

Inorganics

Method: E300.0, Run Date: 06/25/20 12:21, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	75	25	0.40	mg/L	25	16887-00-6	

Method: E300.0, Run Date: 06/25/20 12:46, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 06/25/20 15:08, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	931	50	3.0	mg/L	50	14808-79-8	

Method: SM2540C, Run Date: 06/24/20 17:00, Analyst: NAW

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,720	20	2	mg/L	2		

Method: SM2540D, Run Date: 06/29/20 19:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	23	3	1	mg/L	1.33		

Metals

Method: E200.8, Run Date: 06/30/20 16:12, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	289	5.0	0.87	mg/L	100	7440-70-2	

Method: E200.8, Run Date: 06/30/20 14:11, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.049	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	4.59	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	



Analytical Laboratory Report

Lab Sample ID: S15123.04 (continued)

Sample Tag: MW-5 L006016-04

Method: E200.8, Run Date: 06/30/20 14:11, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.061	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.050	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 07/06/20 12:56, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 07/08/20 08:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S15123.05

Sample Tag: MW-6 L006016-05

Collected Date/Time: 06/23/2020 14:16

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.0	IR
2	1L Plastic	None	Yes	4.0	IR
1	125ml Plastic	HNO3	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/02/20 10:30	JRH	
Metal Digestion	Completed	SW3015A	06/30/20 13:20	JRH	

Inorganics

Method: E300.0, Run Date: 06/25/20 12:59, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 06/25/20 12:34, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	29	10	0.16	mg/L	10	16887-00-6	
Sulfate	154	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 06/24/20 17:00, Analyst: NAW

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	706	20	2	mg/L	2		

Method: SM2540D, Run Date: 06/29/20 19:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 06/30/20 16:13, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	154	5.0	0.87	mg/L	100	7440-70-2	

Method: E200.8, Run Date: 06/30/20 14:13, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.042	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	0.65	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.037	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.026	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S15123.05 (continued)

Sample Tag: MW-6 L006016-05

Method: E200.8, Run Date: 06/30/20 14:13, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 07/06/20 12:59, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 07/08/20 08:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S15123.06

Sample Tag: MW-4 Duplicate L006016-06

Collected Date/Time: 06/23/2020 10:15

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.0	IR
2	1L Plastic	None	Yes	4.0	IR
1	125ml Plastic	HNO3	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/02/20 10:30	JRH	
Metal Digestion	Completed	SW3015A	06/30/20 13:20	JRH	

Inorganics

Method: E300.0, Run Date: 06/25/20 15:46, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	73	10	0.13	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 06/25/20 13:12, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	
Sulfate	57	5	0.52	mg/L	5	14808-79-8	

Method: SM2540C, Run Date: 06/24/20 17:00, Analyst: NAW

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	582	20	2	mg/L	2		

Method: SM2540D, Run Date: 06/29/20 19:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 06/30/20 16:14, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	108	5.0	0.87	mg/L	100	7440-70-2	

Method: E200.8, Run Date: 06/30/20 14:17, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.007	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.170	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	0.05	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.008	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.006	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S15123.06 (continued)

Sample Tag: MW-4 Duplicate L006016-06

Method: E200.8, Run Date: 06/30/20 14:17, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 07/06/20 13:01, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 07/08/20 08:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S15123.07

Sample Tag: Field Blank L006016-07

Collected Date/Time: 06/23/2020 07:30

Matrix: Water

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.0	IR
2	1L Plastic	None	Yes	4.0	IR
1	125ml Plastic	HNO3	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/02/20 10:30	JRH	
Metal Digestion	Completed	SW3015A	06/30/20 13:20	JRH	

Inorganics

Method: E300.0, Run Date: 06/25/20 13:25, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	2.5	0.03	mg/L	2.5	16887-00-6	
Fluoride (Undistilled)	Not detected	0.5	0.04	mg/L	2.5	16984-48-8	
Sulfate	Not detected	2.5	0.15	mg/L	2.5	14808-79-8	

Method: SM2540C, Run Date: 06/24/20 17:00, Analyst: NAW

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	Not detected	20	2	mg/L	2		

Method: SM2540D, Run Date: 06/29/20 19:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 06/30/20 16:03, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	Not detected	0.5	0.017	mg/L	2	7440-70-2	

Method: E200.8, Run Date: 06/30/20 14:01, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0010	mg/L	2	7440-36-0	
Arsenic	Not detected	0.002	0.00010	mg/L	2	7440-38-2	
Barium	Not detected	0.005	0.000065	mg/L	2	7440-39-3	
Beryllium	Not detected	0.001	0.000086	mg/L	2	7440-41-7	
Boron	Not detected	0.04	0.00070	mg/L	2	7440-42-8	
Cadmium	Not detected	0.0005	0.000076	mg/L	2	7440-43-9	
Chromium	Not detected	0.005	0.000039	mg/L	2	7440-47-3	
Cobalt	Not detected	0.005	0.000043	mg/L	2	7440-48-4	
Lead	Not detected	0.003	0.000076	mg/L	2	7439-92-1	
Lithium*	Not detected	0.005	0.00065	mg/L	2	7439-93-2	
Molybdenum	Not detected	0.005	0.000087	mg/L	2	7439-98-7	
Selenium	Not detected	0.005	0.00084	mg/L	2	7782-49-2	
Thallium	Not detected	0.002	0.000034	mg/L	2	7440-28-0	



Analytical Laboratory Report

Lab Sample ID: S15123.07 (continued)

Sample Tag: Field Blank L006016-07

Method: E245.1, Run Date: 07/06/20 13:03, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 07/08/20 08:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Quality Control Cover Page

Report ID: S15123.01(01)
Report Date: 07/10/2020
Project: Erickson GMP
Lab Sample ID(s): S15123.01-S15123.07

Report to:

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Sample ID	Sample Tag	Collected	Matrix	Analysis Departments
S15123.01	MW-1 L006016-01	06/23/2020 12:22	Groundwater	Inorganics, Metals
S15123.02	MW-2 L006016-02	06/23/2020 16:01	Groundwater	Inorganics, Metals
S15123.03	MW-4 L006016-03	06/23/2020 10:15	Groundwater	Inorganics, Metals
S15123.04	MW-5 L006016-04	06/23/2020 16:46	Groundwater	Inorganics, Metals
S15123.05	MW-6 L006016-05	06/23/2020 14:16	Groundwater	Inorganics, Metals
S15123.06	MW-4 Duplicate L006016-06	06/23/2020 10:15	Groundwater	Inorganics, Metals
S15123.07	Field Blank L006016-07	06/23/2020 07:30	Water	Inorganics, Metals

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager



Quality Control Report

Report ID: QC-S15123-01
Generated on 07/29/2020

Report to
Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
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Report Summary

Lab Sample ID(s): S15123.01-S15123.07
Project: Erickson GMP
Submitted Date/Time: 06/24/2020 11:20
Sampled by: Marc Wahrer
P.O. #:

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-8)
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Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S15123.01

Sample Tag: MW-1 L006016-01

Collected Date/Time: 06/23/2020 12:22

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	06/25/20 12:08	CL200625-W1-A	CL200625-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	06/25/20 12:08	FL200625-W1-A	FL200625-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	06/25/20 12:08	SFT200625-W1-A	SFT200625-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624	TDS200624	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B	TSS200629B	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Barium	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Beryllium	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Boron	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cadmium	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Calcium	E200.8	06/30/20 16:05	MT5-20-0630B	MTD-063020-5	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cobalt	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lead	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lithium	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/06/20 12:50	HG2-HG3-20-0706AHGD-070120-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Selenium	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Thallium	E200.8	06/30/20 14:05	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S15123.02

Sample Tag: MW-2 L006016-02

Collected Date/Time: 06/23/2020 16:01

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	06/25/20 12:08	CL200625-W1-B	CL200625-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	06/25/20 12:21	FL200625-W1-A	FL200625-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	06/25/20 12:08	SFT200625-W1-B	SFT200625-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624	TDS200624	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B	TSS200629B	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Barium	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Beryllium	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Boron	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cadmium	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Calcium	E200.8	06/30/20 16:09	MT5-20-0630B	MTD-063020-5	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cobalt	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lead	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lithium	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/06/20 12:52	HG2-HG3-20-0706AHGD-070120-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Selenium	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Thallium	E200.8	06/30/20 14:07	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S15123.03

Sample Tag: MW-4 L006016-03

Collected Date/Time: 06/23/2020 10:15

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	06/25/20 15:33	CL200625-W1-A	CL200625-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	06/25/20 12:33	FL200625-W1-A	FL200625-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	06/25/20 12:33	SFT200625-W1-A	SFT200625-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624	TDS200624	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B	TSS200629B	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Barium	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Beryllium	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Boron	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cadmium	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Calcium	E200.8	06/30/20 16:10	MT5-20-0630B	MTD-063020-5	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cobalt	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lead	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lithium	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/06/20 12:54	HG2-HG3-20-0706AHGD-070120-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Selenium	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Thallium	E200.8	06/30/20 14:09	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S15123.04

Sample Tag: MW-5 L006016-04

Collected Date/Time: 06/23/2020 16:46

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	06/25/20 12:21	CL200625-W1-B	CL200625-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	06/25/20 12:46	FL200625-W1-A	FL200625-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	06/25/20 15:08	SFT200625-W1-B	SFT200625-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624	TDS200624	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B	TSS200629B	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Barium	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Beryllium	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Boron	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cadmium	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Calcium	E200.8	06/30/20 16:12	MT5-20-0630B	MTD-063020-5	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cobalt	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lead	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lithium	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/06/20 12:56	HG2-HG3-20-0706AHGD-070120-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Selenium	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Thallium	E200.8	06/30/20 14:11	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S15123.05

Sample Tag: MW-6 L006016-05

Collected Date/Time: 06/23/2020 14:16

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	06/25/20 12:34	CL200625-W1-B	CL200625-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	06/25/20 12:59	FL200625-W1-A	FL200625-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	06/25/20 12:34	SFT200625-W1-B	SFT200625-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624	TDS200624	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B	TSS200629B	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Barium	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Beryllium	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Boron	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cadmium	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Calcium	E200.8	06/30/20 16:13	MT5-20-0630B	MTD-063020-5	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cobalt	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lead	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lithium	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/06/20 12:59	HG2-HG3-20-0706AHGD-070120-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Selenium	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Thallium	E200.8	06/30/20 14:13	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S15123.06

Sample Tag: MW-4 Duplicate L006016-06

Collected Date/Time: 06/23/2020 10:15

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	06/25/20 15:46	CL200625-W1-A	CL200625-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	06/25/20 13:12	FL200625-W1-A	FL200625-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	06/25/20 13:12	SFT200625-W1-A	SFT200625-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624	TDS200624	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B	TSS200629B	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Barium	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Beryllium	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Boron	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cadmium	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Calcium	E200.8	06/30/20 16:14	MT5-20-0630B	MTD-063020-5	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cobalt	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lead	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lithium	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/06/20 13:01	HG2-HG3-20-0706AHGD-070120-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Selenium	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Thallium	E200.8	06/30/20 14:17	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S15123.07

Sample Tag: Field Blank L006016-07

Collected Date/Time: 06/23/2020 07:30

Matrix: Water

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	06/25/20 13:25	CL200625-W1-A	CL200625-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	06/25/20 13:25	FL200625-W1-A	FL200625-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	06/25/20 13:25	SFT200625-W1-A	SFT200625-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624	TDS200624	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B	TSS200629B	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Barium	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Beryllium	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Boron	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cadmium	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Calcium	E200.8	06/30/20 16:03	MT5-20-0630B	MTD-063020-5	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Cobalt	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lead	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Lithium	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/06/20 13:03	HG2-HG3-20-0706AHGD-070120-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Selenium	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD
Thallium	E200.8	06/30/20 14:01	MT5-20-0630A	MTD-063020-5	No	BLK/LCS/MS/MSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: CL200625-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15123.01	Chloride	E300.0	06/25/20 12:08	CL200625-W1-A
S15123.03	Chloride	E300.0	06/25/20 15:33	CL200625-W1-A
S15123.06	Chloride	E300.0	06/25/20 15:46	CL200625-W1-A
S15123.07	Chloride	E300.0	06/25/20 13:25	CL200625-W1-A

Inorganics, Prep Batch ID: CL200625-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15123.02	Chloride	E300.0	06/25/20 12:08	CL200625-W1-B
S15123.04	Chloride	E300.0	06/25/20 12:21	CL200625-W1-B
S15123.05	Chloride	E300.0	06/25/20 12:34	CL200625-W1-B

Inorganics, Prep Batch ID: FL200625-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15123.01	Fluoride (Undistilled)	E300.0	06/25/20 12:08	FL200625-W1-A
S15123.02	Fluoride (Undistilled)	E300.0	06/25/20 12:21	FL200625-W1-A
S15123.03	Fluoride (Undistilled)	E300.0	06/25/20 12:33	FL200625-W1-A
S15123.04	Fluoride (Undistilled)	E300.0	06/25/20 12:46	FL200625-W1-A
S15123.05	Fluoride (Undistilled)	E300.0	06/25/20 12:59	FL200625-W1-A
S15123.06	Fluoride (Undistilled)	E300.0	06/25/20 13:12	FL200625-W1-A
S15123.07	Fluoride (Undistilled)	E300.0	06/25/20 13:25	FL200625-W1-A

Inorganics, Prep Batch ID: SFT200625-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15123.01	Sulfate	E300.0	06/25/20 12:08	SFT200625-W1-A
S15123.03	Sulfate	E300.0	06/25/20 12:33	SFT200625-W1-A
S15123.06	Sulfate	E300.0	06/25/20 13:12	SFT200625-W1-A
S15123.07	Sulfate	E300.0	06/25/20 13:25	SFT200625-W1-A

Inorganics, Prep Batch ID: SFT200625-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15123.02	Sulfate	E300.0	06/25/20 12:08	SFT200625-W1-B
S15123.04	Sulfate	E300.0	06/25/20 15:08	SFT200625-W1-B
S15123.05	Sulfate	E300.0	06/25/20 12:34	SFT200625-W1-B

Inorganics, Prep Batch ID: TDS200624

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15123.01	Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624
S15123.02	Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624
S15123.03	Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624
S15123.04	Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624
S15123.05	Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624
S15123.06	Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624
S15123.07	Total Dissolved Solids	SM2540C	06/24/20 17:00	TDS200624

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TSS200629B

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15123.01	Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B
S15123.02	Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B
S15123.03	Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B
S15123.04	Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B
S15123.05	Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B
S15123.06	Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B
S15123.07	Total Suspended Solids	SM2540D	06/29/20 19:25	TSS200629B

Metals, Prep Batch ID: HGD-070120-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15123.01	Mercury	E245.1	07/06/20 12:50	HG2-HG3-20-0706A
S15123.02	Mercury	E245.1	07/06/20 12:52	HG2-HG3-20-0706A
S15123.03	Mercury	E245.1	07/06/20 12:54	HG2-HG3-20-0706A
S15123.04	Mercury	E245.1	07/06/20 12:56	HG2-HG3-20-0706A
S15123.05	Mercury	E245.1	07/06/20 12:59	HG2-HG3-20-0706A
S15123.06	Mercury	E245.1	07/06/20 13:01	HG2-HG3-20-0706A
S15123.07	Mercury	E245.1	07/06/20 13:03	HG2-HG3-20-0706A

Metals, Prep Batch ID: MTD-063020-5

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15123.01	Antimony	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.01	Arsenic	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.01	Barium	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.01	Beryllium	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.01	Boron	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.01	Cadmium	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.01	Calcium	E200.8	06/30/20 16:05	MT5-20-0630B
S15123.01	Chromium	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.01	Cobalt	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.01	Lead	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.01	Lithium	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.01	Molybdenum	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.01	Selenium	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.01	Thallium	E200.8	06/30/20 14:05	MT5-20-0630A
S15123.02	Antimony	E200.8	06/30/20 14:07	MT5-20-0630A
S15123.02	Arsenic	E200.8	06/30/20 14:07	MT5-20-0630A
S15123.02	Barium	E200.8	06/30/20 14:07	MT5-20-0630A
S15123.02	Beryllium	E200.8	06/30/20 14:07	MT5-20-0630A
S15123.02	Boron	E200.8	06/30/20 14:07	MT5-20-0630A
S15123.02	Cadmium	E200.8	06/30/20 14:07	MT5-20-0630A
S15123.02	Calcium	E200.8	06/30/20 16:09	MT5-20-0630B
S15123.02	Chromium	E200.8	06/30/20 14:07	MT5-20-0630A
S15123.02	Cobalt	E200.8	06/30/20 14:07	MT5-20-0630A
S15123.02	Lead	E200.8	06/30/20 14:07	MT5-20-0630A
S15123.02	Lithium	E200.8	06/30/20 14:07	MT5-20-0630A
S15123.02	Molybdenum	E200.8	06/30/20 14:07	MT5-20-0630A
S15123.02	Selenium	E200.8	06/30/20 14:07	MT5-20-0630A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-063020-5 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15123.02	Thallium	E200.8	06/30/20 14:07	MT5-20-0630A
S15123.03	Antimony	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.03	Arsenic	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.03	Barium	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.03	Beryllium	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.03	Boron	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.03	Cadmium	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.03	Calcium	E200.8	06/30/20 16:10	MT5-20-0630B
S15123.03	Chromium	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.03	Cobalt	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.03	Lead	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.03	Lithium	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.03	Molybdenum	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.03	Selenium	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.03	Thallium	E200.8	06/30/20 14:09	MT5-20-0630A
S15123.04	Antimony	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.04	Arsenic	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.04	Barium	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.04	Beryllium	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.04	Boron	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.04	Cadmium	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.04	Calcium	E200.8	06/30/20 16:12	MT5-20-0630B
S15123.04	Chromium	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.04	Cobalt	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.04	Lead	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.04	Lithium	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.04	Molybdenum	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.04	Selenium	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.04	Thallium	E200.8	06/30/20 14:11	MT5-20-0630A
S15123.05	Antimony	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.05	Arsenic	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.05	Barium	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.05	Beryllium	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.05	Boron	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.05	Cadmium	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.05	Calcium	E200.8	06/30/20 16:13	MT5-20-0630B
S15123.05	Chromium	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.05	Cobalt	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.05	Lead	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.05	Lithium	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.05	Molybdenum	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.05	Selenium	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.05	Thallium	E200.8	06/30/20 14:13	MT5-20-0630A
S15123.06	Antimony	E200.8	06/30/20 14:17	MT5-20-0630A
S15123.06	Arsenic	E200.8	06/30/20 14:17	MT5-20-0630A
S15123.06	Barium	E200.8	06/30/20 14:17	MT5-20-0630A
S15123.06	Beryllium	E200.8	06/30/20 14:17	MT5-20-0630A
S15123.06	Boron	E200.8	06/30/20 14:17	MT5-20-0630A
S15123.06	Cadmium	E200.8	06/30/20 14:17	MT5-20-0630A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-063020-5 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15123.06	Calcium	E200.8	06/30/20 16:14	MT5-20-0630B
S15123.06	Chromium	E200.8	06/30/20 14:17	MT5-20-0630A
S15123.06	Cobalt	E200.8	06/30/20 14:17	MT5-20-0630A
S15123.06	Lead	E200.8	06/30/20 14:17	MT5-20-0630A
S15123.06	Lithium	E200.8	06/30/20 14:17	MT5-20-0630A
S15123.06	Molybdenum	E200.8	06/30/20 14:17	MT5-20-0630A
S15123.06	Selenium	E200.8	06/30/20 14:17	MT5-20-0630A
S15123.06	Thallium	E200.8	06/30/20 14:17	MT5-20-0630A
S15123.07	Antimony	E200.8	06/30/20 14:01	MT5-20-0630A
S15123.07	Arsenic	E200.8	06/30/20 14:01	MT5-20-0630A
S15123.07	Barium	E200.8	06/30/20 14:01	MT5-20-0630A
S15123.07	Beryllium	E200.8	06/30/20 14:01	MT5-20-0630A
S15123.07	Boron	E200.8	06/30/20 14:01	MT5-20-0630A
S15123.07	Cadmium	E200.8	06/30/20 14:01	MT5-20-0630A
S15123.07	Calcium	E200.8	06/30/20 16:03	MT5-20-0630B
S15123.07	Chromium	E200.8	06/30/20 14:01	MT5-20-0630A
S15123.07	Cobalt	E200.8	06/30/20 14:01	MT5-20-0630A
S15123.07	Lead	E200.8	06/30/20 14:01	MT5-20-0630A
S15123.07	Lithium	E200.8	06/30/20 14:01	MT5-20-0630A
S15123.07	Molybdenum	E200.8	06/30/20 14:01	MT5-20-0630A
S15123.07	Selenium	E200.8	06/30/20 14:01	MT5-20-0630A
S15123.07	Thallium	E200.8	06/30/20 14:01	MT5-20-0630A

Form 0: Sequence Log

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	10:30:07 Tue 30-Jun-20	Blank	Liquid	
002	10:32:06 Tue 30-Jun-20	Std-0.0001	Liquid	
003	10:34:05 Tue 30-Jun-20	Std-0.0005	Liquid	
004	10:36:03 Tue 30-Jun-20	Std-0.001	Liquid	
005	10:38:02 Tue 30-Jun-20	Std-0.005	Liquid	
006	10:40:01 Tue 30-Jun-20	Std-0.02	Liquid	
007	10:42:00 Tue 30-Jun-20	Std-0.05	Liquid	
008	10:43:59 Tue 30-Jun-20	Std-0.2	Liquid	
009	10:45:57 Tue 30-Jun-20	rinse	Liquid	
010	10:51:53 Tue 30-Jun-20	ICV-0.1	Liquid	ICV
011	10:53:52 Tue 30-Jun-20	CCV-0.1	Liquid	CCV
012	10:55:50 Tue 30-Jun-20	rinse	Liquid	
013	11:01:57 Tue 30-Jun-20	ICB	Liquid	ICB
014	11:03:56 Tue 30-Jun-20	CCB	Liquid	CCB
015	11:05:54 Tue 30-Jun-20	LOD 0.00005	Liquid	
016	11:07:53 Tue 30-Jun-20	LOD 0.00005	Liquid	
017	11:10:04 Tue 30-Jun-20	BS-0.0001	Liquid	BS
018	11:14:29 Tue 30-Jun-20	BS-0.00025	Liquid	BS
019	11:16:28 Tue 30-Jun-20	BS-0.0005	Liquid	BS
020	11:29:03 Tue 30-Jun-20	BS-0.001	Liquid	BS
021	11:32:32 Tue 30-Jun-20	BS-0.001	Liquid	
022	11:37:33 Tue 30-Jun-20	BS-0.0025	Liquid	BS
023	11:42:04 Tue 30-Jun-20	BS-0.0025	Liquid	
024	11:44:02 Tue 30-Jun-20	Solu-AB	Liquid	AB
025	11:46:01 Tue 30-Jun-20	Solu-AA	Liquid	AA
026	11:48:00 Tue 30-Jun-20	Rinse	Liquid	
027	11:53:35 Tue 30-Jun-20	063020_1 LCS-0.05	Liquid	LCS
028	11:55:37 Tue 30-Jun-20	Rinse	Liquid	
029	11:57:35 Tue 30-Jun-20	063020_1 LRB	Liquid	LRB
030	12:00:26 Tue 30-Jun-20	14870.01 dil	Liquid	DIL
031	12:02:24 Tue 30-Jun-20	14870.01s tot	Liquid	S
032	12:04:23 Tue 30-Jun-20	Rinse	Liquid	
033	12:06:22 Tue 30-Jun-20	14870.01s diss	Liquid	S
034	12:08:20 Tue 30-Jun-20	Rinse	Liquid	
035	12:10:19 Tue 30-Jun-20	14870.02s tot	Liquid	S
036	12:12:18 Tue 30-Jun-20	Rinse	Liquid	
037	12:14:16 Tue 30-Jun-20	14870.02s diss	Liquid	S
038	12:16:15 Tue 30-Jun-20	Rinse	Liquid	
039	12:18:13 Tue 30-Jun-20	14870.03s tot	Liquid	S
040	12:20:12 Tue 30-Jun-20	Rinse	Liquid	
041	12:22:10 Tue 30-Jun-20	14870.03s diss	Liquid	S
042	12:24:09 Tue 30-Jun-20	Rinse	Liquid	
043	12:26:07 Tue 30-Jun-20	14870.04s tot	Liquid	S
044	12:28:05 Tue 30-Jun-20	Rinse	Liquid	
045	12:30:04 Tue 30-Jun-20	14870.04s diss	Liquid	S
046	12:32:03 Tue 30-Jun-20	Rinse	Liquid	
047	12:34:01 Tue 30-Jun-20	14870.05s tot	Liquid	S
048	12:36:00 Tue 30-Jun-20	Rinse	Liquid	
049	12:37:59 Tue 30-Jun-20	14870.05s diss	Liquid	S
050	12:41:54 Tue 30-Jun-20	14870.01 MS-0.05 diss	Liquid	MS
051	12:43:52 Tue 30-Jun-20	14870.01 MSD diss	Liquid	MSD
052	12:45:51 Tue 30-Jun-20	CCV2-0.1	Liquid	CCV
053	12:47:49 Tue 30-Jun-20	Rinse	Liquid	
054	12:52:08 Tue 30-Jun-20	CCB2	Liquid	CCB
055	12:54:06 Tue 30-Jun-20	14938.01s tot	Liquid	S
056	12:57:05 Tue 30-Jun-20	14938.01s diss	Liquid	S

Form 0: Sequence Log

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	12:58:03 Tue 30-Jun-20	14938.02s tot	Liquid	S
058	13:00:01 Tue 30-Jun-20	14938.02s diss	Liquid	S
059	13:01:59 Tue 30-Jun-20	14938.03s tot	Liquid	S
060	13:03:58 Tue 30-Jun-20	14938.03s diss	Liquid	S
061	13:05:56 Tue 30-Jun-20	14938.04s tot	Liquid	S
062	13:07:54 Tue 30-Jun-20	14938.04s diss	Liquid	S
063	13:15:38 Tue 30-Jun-20	14938.05s tot	Liquid	S
064	13:19:56 Tue 30-Jun-20	14938.05s diss	Liquid	S
065	13:22:58 Tue 30-Jun-20	14938.05 MS-0.05diss	Liquid	MS
066	13:24:57 Tue 30-Jun-20	14938.05 MSD diss	Liquid	MSD
067	13:26:56 Tue 30-Jun-20	CCV3-0.1	Liquid	CCV
068	13:28:54 Tue 30-Jun-20	Rinse	Liquid	
069	13:33:47 Tue 30-Jun-20	CCB3	Liquid	CCB
070	13:53:31 Tue 30-Jun-20	063020_5 LCS-0.05	Liquid	LCS
071	13:55:30 Tue 30-Jun-20	Rinse	Liquid	
072	13:57:32 Tue 30-Jun-20	063020_5 LRB	Liquid	LRB
073	13:59:38 Tue 30-Jun-20	15123.07s	Liquid	
074	14:01:55 Tue 30-Jun-20	15123.07s	Liquid	S
075	14:03:52 Tue 30-Jun-20	15123.01 dil	Liquid	DIL
076	14:05:50 Tue 30-Jun-20	15123.01s	Liquid	S
077	14:07:48 Tue 30-Jun-20	15123.02s	Liquid	S
078	14:09:45 Tue 30-Jun-20	15123.03s	Liquid	S
079	14:11:42 Tue 30-Jun-20	15123.04s	Liquid	S
080	14:13:41 Tue 30-Jun-20	15123.05s	Liquid	S
081	14:15:38 Tue 30-Jun-20	15232.02s	Liquid	S
082	14:17:37 Tue 30-Jun-20	15123.06s	Liquid	S
083	14:19:34 Tue 30-Jun-20	15123.06 MS-0.05	Liquid	MS
084	14:21:32 Tue 30-Jun-20	15123.06 MSD	Liquid	MSD
085	14:23:32 Tue 30-Jun-20	CCV4-0.1	Liquid	CCV
086	14:25:30 Tue 30-Jun-20	Rinse	Liquid	
087	14:29:41 Tue 30-Jun-20	CCB4	Liquid	CCB

Form 0: Sequence Log

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	14:59:57 Tue 30-Jun-20	Blank	Liquid	
002	15:01:08 Tue 30-Jun-20	Std-0.20	Liquid	
003	15:02:18 Tue 30-Jun-20	Std-0.50	Liquid	
004	15:03:29 Tue 30-Jun-20	Std-1.0	Liquid	
005	15:04:39 Tue 30-Jun-20	Std-2.0	Liquid	
006	15:05:50 Tue 30-Jun-20	Std-5.0	Liquid	
007	15:07:00 Tue 30-Jun-20	ICV-2.0	Liquid	ICV
008	15:08:11 Tue 30-Jun-20	CCV-2.0	Liquid	CCV
009	15:09:22 Tue 30-Jun-20	ICB	Liquid	ICB
010	15:10:33 Tue 30-Jun-20	CCB	Liquid	CCB
011	15:11:43 Tue 30-Jun-20	BS-0.05	Liquid	BS
012	15:22:40 Tue 30-Jun-20	063020_1 LCS-1.0	Liquid	LCS
013	15:23:49 Tue 30-Jun-20	063020_1 LRB	Liquid	LRB
014	15:25:38 Tue 30-Jun-20	14870.01 dil	Liquid	DIL
015	15:26:48 Tue 30-Jun-20	14870.01s tot	Liquid	S
016	15:27:59 Tue 30-Jun-20	14870.01s diss	Liquid	S
017	15:29:09 Tue 30-Jun-20	14870.02s tot	Liquid	S
018	15:30:19 Tue 30-Jun-20	14870.02s diss	Liquid	S
019	15:31:29 Tue 30-Jun-20	14870.03s tot	Liquid	S
020	15:32:39 Tue 30-Jun-20	14870.03s diss	Liquid	S
021	15:33:48 Tue 30-Jun-20	14870.04s tot	Liquid	S
022	15:34:59 Tue 30-Jun-20	14870.04s diss	Liquid	S
023	15:36:09 Tue 30-Jun-20	14870.05s tot	Liquid	S
024	15:37:19 Tue 30-Jun-20	14870.05s diss	Liquid	S
025	15:39:54 Tue 30-Jun-20	14870.01 MS-2.0 diss	Liquid	MS
026	15:41:03 Tue 30-Jun-20	14870.01 MSD diss	Liquid	MSD
027	15:42:22 Tue 30-Jun-20	CCV2-2.0	Liquid	CCV
028	15:43:33 Tue 30-Jun-20	CCB2	Liquid	CCB
029	15:44:42 Tue 30-Jun-20	14938.01s tot	Liquid	S
030	15:45:53 Tue 30-Jun-20	14938.01s diss	Liquid	S
031	15:47:03 Tue 30-Jun-20	14938.02s tot	Liquid	S
032	15:48:12 Tue 30-Jun-20	14938.02s diss	Liquid	S
033	15:49:22 Tue 30-Jun-20	14938.03s tot	Liquid	S
034	15:50:33 Tue 30-Jun-20	14938.03s diss	Liquid	S
035	15:51:43 Tue 30-Jun-20	14938.04s tot	Liquid	S
036	15:52:53 Tue 30-Jun-20	14938.04s diss	Liquid	S
037	15:54:03 Tue 30-Jun-20	14938.05s tot	Liquid	S
038	15:55:12 Tue 30-Jun-20	14938.05s diss	Liquid	S
039	15:56:33 Tue 30-Jun-20	14938.05 MS-2.0 diss	Liquid	MS
040	15:57:43 Tue 30-Jun-20	14938.05 MSD	Liquid	MSD
041	15:58:53 Tue 30-Jun-20	CCV3-2.0	Liquid	CCV
042	16:00:04 Tue 30-Jun-20	CCB3	Liquid	CCB
043	16:01:29 Tue 30-Jun-20	063020_5 LCS-1.0	Liquid	LCS
044	16:02:39 Tue 30-Jun-20	063020_5 LRB	Liquid	LRB
045	16:03:48 Tue 30-Jun-20	15123.07s	Liquid	S
046	16:05:41 Tue 30-Jun-20	15123.01 dil	Liquid	DIL
047	16:06:50 Tue 30-Jun-20	15123.01s	Liquid	S
048	16:07:59 Tue 30-Jun-20	15123.02s	Liquid	S
049	16:09:44 Tue 30-Jun-20	15123.02s -d	Liquid	S
050	16:10:53 Tue 30-Jun-20	15123.03s	Liquid	S
051	16:12:02 Tue 30-Jun-20	15123.04s	Liquid	S
052	16:13:12 Tue 30-Jun-20	15123.05s	Liquid	S
053	16:14:22 Tue 30-Jun-20	15123.06s	Liquid	S
054	16:15:31 Tue 30-Jun-20	15123.06 MS-2.0	Liquid	MS
055	16:16:41 Tue 30-Jun-20	15123.06 MSD	Liquid	MSD
056	16:17:50 Tue 30-Jun-20	CCV4-2.0	Liquid	CCV

Form 0: Sequence Log

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	16:26:39 Tue 30-Jun-20	CCB4	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.01

Sample Tag: MW-1 L006016-01

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	06/30/2020	
7440-42-8	Boron	0.39	0.04	0.0018	mg/L	5	06/30/2020	
7440-38-2	Arsenic	0.007	0.002	0.00026	mg/L	5	06/30/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	06/30/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.00022	mg/L	5	06/30/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	06/30/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	06/30/2020	
7440-39-3	Barium	0.168	0.005	0.00016	mg/L	5	06/30/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	06/30/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	06/30/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	06/30/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	06/30/2020	
7439-93-2	Lithium	0.032	0.005	0.0016	mg/L	5	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.01

Sample Tag: MW-1 L006016-01

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	165	5.0	0.22	mg/L	25	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.02

Sample Tag: MW-2 L006016-02

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	06/30/2020	
7440-42-8	Boron	4.05	0.04	0.0018	mg/L	5	06/30/2020	
7440-38-2	Arsenic	Not detected	0.002	0.00026	mg/L	5	06/30/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	06/30/2020	
7439-98-7	Molybdenum	0.010	0.005	0.00022	mg/L	5	06/30/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	06/30/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	06/30/2020	
7440-39-3	Barium	0.045	0.005	0.00016	mg/L	5	06/30/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	06/30/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	06/30/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	06/30/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	06/30/2020	
7439-93-2	Lithium	0.055	0.005	0.0016	mg/L	5	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.02

Sample Tag: MW-2 L006016-02

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	268	5.0	0.87	mg/L	100	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.03

Sample Tag: MW-4 L006016-03

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	06/30/2020	
7440-42-8	Boron	0.06	0.04	0.0018	mg/L	5	06/30/2020	
7440-38-2	Arsenic	0.007	0.002	0.00026	mg/L	5	06/30/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	06/30/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.00022	mg/L	5	06/30/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	06/30/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	06/30/2020	
7440-39-3	Barium	0.165	0.005	0.00016	mg/L	5	06/30/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	06/30/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	06/30/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	06/30/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	06/30/2020	
7439-93-2	Lithium	0.008	0.005	0.0016	mg/L	5	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.03

Sample Tag: MW-4 L006016-03

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	108	5.0	0.87	mg/L	100	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.04

Sample Tag: MW-5 L006016-04

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	06/30/2020	
7440-42-8	Boron	4.59	0.04	0.0018	mg/L	5	06/30/2020	
7440-38-2	Arsenic	Not detected	0.002	0.00026	mg/L	5	06/30/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	06/30/2020	
7439-98-7	Molybdenum	0.050	0.005	0.00022	mg/L	5	06/30/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	06/30/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	06/30/2020	
7440-39-3	Barium	0.049	0.005	0.00016	mg/L	5	06/30/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	06/30/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	06/30/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	06/30/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	06/30/2020	
7439-93-2	Lithium	0.061	0.005	0.0016	mg/L	5	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.04

Sample Tag: MW-5 L006016-04

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	289	5.0	0.87	mg/L	100	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.05

Sample Tag: MW-6 L006016-05

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	06/30/2020	
7440-42-8	Boron	0.65	0.04	0.0018	mg/L	5	06/30/2020	
7440-38-2	Arsenic	Not detected	0.002	0.00026	mg/L	5	06/30/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	06/30/2020	
7439-98-7	Molybdenum	0.026	0.005	0.00022	mg/L	5	06/30/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	06/30/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	06/30/2020	
7440-39-3	Barium	0.042	0.005	0.00016	mg/L	5	06/30/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	06/30/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	06/30/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	06/30/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	06/30/2020	
7439-93-2	Lithium	0.037	0.005	0.0016	mg/L	5	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.05

Sample Tag: MW-6 L006016-05

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	154	5.0	0.87	mg/L	100	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.06

Sample Tag: MW-4 Duplicate L006016-06

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	06/30/2020	
7440-42-8	Boron	0.05	0.04	0.0018	mg/L	5	06/30/2020	
7440-38-2	Arsenic	0.007	0.002	0.00026	mg/L	5	06/30/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	06/30/2020	
7439-98-7	Molybdenum	0.006	0.005	0.00022	mg/L	5	06/30/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	06/30/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	06/30/2020	
7440-39-3	Barium	0.170	0.005	0.00016	mg/L	5	06/30/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	06/30/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	06/30/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	06/30/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	06/30/2020	
7439-93-2	Lithium	0.008	0.005	0.0016	mg/L	5	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.06

Sample Tag: MW-4 Duplicate L006016-06

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	108	5.0	0.87	mg/L	100	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.07

Sample Tag: Field Blank L006016-07

Date Collected: 06/23/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000039	mg/L	2	06/30/2020	
7440-42-8	Boron	Not detected	0.04	0.00070	mg/L	2	06/30/2020	
7440-38-2	Arsenic	Not detected	0.002	0.00010	mg/L	2	06/30/2020	
7782-49-2	Selenium	Not detected	0.005	0.00084	mg/L	2	06/30/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000087	mg/L	2	06/30/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000076	mg/L	2	06/30/2020	
7440-36-0	Antimony	Not detected	0.005	0.0010	mg/L	2	06/30/2020	
7440-39-3	Barium	Not detected	0.005	0.000065	mg/L	2	06/30/2020	
7440-28-0	Thallium	Not detected	0.002	0.000034	mg/L	2	06/30/2020	
7439-92-1	Lead	Not detected	0.003	0.000076	mg/L	2	06/30/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000086	mg/L	2	06/30/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000043	mg/L	2	06/30/2020	
7439-93-2	Lithium	Not detected	0.005	0.00065	mg/L	2	06/30/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Lab Sample ID: S15123.07

Sample Tag: Field Blank L006016-07

Date Collected: 06/23/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	Not detected	0.5	0.017	mg/L	2	06/30/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Note/Qualifier Key

b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
010 ICV-0.1	ICV	1	Li	0.100	0.1	100	90/110	mg/L	Liquid
			Be	0.100	0.1	100	90/110		
			B	0.101	0.1	101	90/110		
			Al	0.103	0.1	103	90/110		
			Se	0.101	0.1	101	90/110		
			Cr	0.100	0.1	100	90/110		
			Fe	0.0997	0.1	100	90/110		
			Co	0.102	0.1	102	90/110		
			Ni	0.0983	0.1	98	90/110		
			Cu	0.100	0.1	100	90/110		
			Zn	0.101	0.1	101	90/110		
			As	0.101	0.1	101	90/110		
			Sr	0.100	0.1	100	90/110		
			Mo	0.103	0.1	103	90/110		
			Ag	0.0976	0.1	98	90/110		
			Cd	0.0979	0.1	98	90/110		
			Sb	0.104	0.1	104	90/110		
			Ba	0.101	0.1	101	90/110		
			Tl	0.100	0.1	100	90/110		
			Pb	0.101	0.1	101	90/110		
011 CCV-0.1	CCV	1	Li	0.0936	0.1	94	90/110	mg/L	Liquid
			Be	0.0930	0.1	93	90/110		
			B	0.0938	0.1	94	90/110		
			Al	0.0923	0.1	92	90/110		
			Se	0.102	0.1	102	90/110		
			Cr	0.101	0.1	101	90/110		
			Fe	0.0994	0.1	99	90/110		
			Co	0.101	0.1	101	90/110		
			Ni	0.0987	0.1	99	90/110		
			Cu	0.102	0.1	102	90/110		
			Zn	0.101	0.1	101	90/110		
			As	0.101	0.1	101	90/110		
			Sr	0.101	0.1	101	90/110		
			Mo	0.102	0.1	102	90/110		
			Ag	0.100	0.1	100	90/110		
			Cd	0.100	0.1	100	90/110		
			Sb	0.101	0.1	101	90/110		
			Ba	0.103	0.1	103	90/110		
			Tl	0.0961	0.1	96	90/110		
			Pb	0.0961	0.1	96	90/110		
052 CCV2-0.1	CCV	1	Li	0.102	0.1	102	90/110	mg/L	Liquid
			Be	0.0995	0.1	100	90/110		
			B	0.100	0.1	100	90/110		
			Al	0.0972	0.1	97	90/110		
			Se	0.0974	0.1	97	90/110		
			Cr	0.103	0.1	103	90/110		
			Fe	0.103	0.1	103	90/110		
			Co	0.101	0.1	101	90/110		
			Ni	0.101	0.1	101	90/110		
			Cu	0.102	0.1	102	90/110		
			Zn	0.106	0.1	106	90/110		
			As	0.104	0.1	104	90/110		
			Sr	0.104	0.1	104	90/110		
			Mo	0.0999	0.1	100	90/110		
			Ag	0.101	0.1	101	90/110		
			Cd	0.102	0.1	102	90/110		
Sb	0.104	0.1	104	90/110					

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
052 CCV2-0.1	CCV	1	Ba	0.103	0.1	103	90/110	mg/L	Liquid
			Tl	0.0942	0.1	94	90/110		
			Pb	0.0970	0.1	97	90/110		
067 CCV3-0.1	CCV	1	Li	0.100	0.1	100	90/110	mg/L	Liquid
			Be	0.0962	0.1	96	90/110		
			B	0.0970	0.1	97	90/110		
			Al	0.0934	0.1	93	90/110		
			Se	0.0990	0.1	99	90/110		
			Cr	0.103	0.1	103	90/110		
			Fe	0.102	0.1	102	90/110		
			Co	0.100	0.1	100	90/110		
			Ni	0.0998	0.1	100	90/110		
			Cu	0.100	0.1	100	90/110		
			Zn	0.102	0.1	102	90/110		
			As	0.100	0.1	100	90/110		
			Sr	0.101	0.1	101	90/110		
			Mo	0.0975	0.1	98	90/110		
			Ag	0.100	0.1	100	90/110		
			Cd	0.0998	0.1	100	90/110		
			Sb	0.103	0.1	103	90/110		
			Ba	0.102	0.1	102	90/110		
Tl	0.0968	0.1	97	90/110					
Pb	0.0985	0.1	99	90/110					
085 CCV4-0.1	CCV	1	Li	0.100	0.1	100	90/110	mg/L	Liquid
			Be	0.0979	0.1	98	90/110		
			B	0.0962	0.1	96	90/110		
			Al	0.0938	0.1	94	90/110		
			Se	0.0996	0.1	100	90/110		
			Cr	0.104	0.1	104	90/110		
			Fe	0.101	0.1	101	90/110		
			Co	0.102	0.1	102	90/110		
			Ni	0.0988	0.1	99	90/110		
			Cu	0.100	0.1	100	90/110		
			Zn	0.104	0.1	104	90/110		
			As	0.100	0.1	100	90/110		
			Sr	0.102	0.1	102	90/110		
			Mo	0.0975	0.1	98	90/110		
			Ag	0.101	0.1	101	90/110		
Cd	0.102	0.1	102	90/110					
Sb	0.104	0.1	104	90/110					
Ba	0.105	0.1	105	90/110					
Tl	0.0924	0.1	92	90/110					
Pb	0.0934	0.1	93	90/110					

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
007 ICV-2.0	ICV	1	Mg	2.02	2.0	101	90/110	mg/L	Liquid
			Ca	1.96	2.0	98	90/110		
008 CCV-2.0	CCV	1	Mg	2.03	2.0	102	90/110	mg/L	Liquid
			Ca	1.98	2.0	99	90/110		
027 CCV2-2.0	CCV	1	Mg	2.04	2.0	102	90/110	mg/L	Liquid
			Ca	2.08	2.0	104	90/110		
041 CCV3-2.0	CCV	1	Mg	2.04	2.0	102	90/110	mg/L	Liquid
			Ca	2.02	2.0	101	90/110		
056 CCV4-2.0	CCV	1	Mg	2.00	2.0	100	90/110	mg/L	Liquid
			Ca	2.00	2.0	100	90/110		

Form 3: Blanks

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
013 ICB	ICB	1	Li	<0.001	0.000083	mg/L	Liquid
			Be	<0.0002	0.000052		
			B	<0.008	0.000331		
			Al	<0.002	0.000083		
			Se	<0.001	0.000753		
			Cr	<0.001	-0.000008		
			Fe	<0.004	-0.000845		
			Co	<0.001	0.000009		
			Ni	<0.001	-0.000018		
			Cu	<0.001	0.000010		
			Zn	<0.001	-0.000090		
			As	<0.0004	0.000116		
			Sr	<0.001	-0.000000		
			Mo	<0.001	0.000515		
			Ag	<0.0001	0.000006		
			Cd	<0.0001	0.000013		
			Sb	<0.001	0.000667		
			Ba	<0.001	0.000010		
			Tl	<0.0004	0.000023		
			Pb	<0.0006	0.000013		
014 CCB	CCB	1	Li	<0.001	-0.000017	mg/L	Liquid
			Be	<0.0002	0.000002		
			B	<0.008	0.000260		
			Al	<0.002	-0.000007		
			Se	<0.001	0.000367		
			Cr	<0.001	-0.000008		
			Fe	<0.004	-0.001053		
			Co	<0.001	0.000004		
			Ni	<0.001	-0.000018		
			Cu	<0.001	0.000007		
			Zn	<0.001	-0.000136		
			As	<0.0004	0.000170		
			Sr	<0.001	-0.000001		
			Mo	<0.001	0.000380		
			Ag	<0.0001	0.000002		
			Cd	<0.0001	-0.000000		
			Sb	<0.001	0.000498		
			Ba	<0.001	0.000003		
			Tl	<0.0004	0.000015		
			Pb	<0.0006	0.000008		
029 063020_1 LRB	LRB	1	Li	<0.001	0.000033	mg/L	Liquid
			Be	<0.0002	0.000019		
			B	<0.008	0.000116		
			Al	<0.002	0.001203		
			Se	<0.001	0.000169		
			Cr	<0.001	0.000011		
			Fe	<0.004	0.000723		
			Co	<0.001	0.000011		
			Ni	<0.001	-0.000009		
			Cu	<0.001	0.000029		
			Zn	<0.001	-0.000040		
			As	<0.0004	0.000097		
			Sr	<0.001	0.000011		
			Mo	<0.001	0.000823		
			Ag	<0.0001	0.000017		
			Cd	<0.0001	0.000014		
			Sb	<0.001	0.000301		

Form 3: Blanks

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
029 063020_1 LRB	LRB	1	Ba	<0.001	0.000001	mg/L	Liquid
			Tl	<0.0004	0.000018		
			Pb	<0.0006	0.000030		
054 CCB2	CCB	1	Li	<0.001	-0.000007	mg/L	Liquid
			Be	<0.0002	0.000004		
			B	<0.008	0.000423		
			Al	<0.002	-0.000002		
			Se	<0.001	0.000544		
			Cr	<0.001	0.000018		
			Fe	<0.004	-0.000688		
			Co	<0.001	0.000022		
			Ni	<0.001	-0.000004		
			Cu	<0.001	0.000024		
			Zn	<0.001	-0.000099		
			As	<0.0004	0.000107		
			Sr	<0.001	0.000128		
			Mo	<0.001	0.000611		
			Ag	<0.0001	0.000036		
			Cd	<0.0001	0.000024		
			Sb	<0.001	0.000716		
			Ba	<0.001	0.000039		
			Tl	<0.0004	0.000027		
Pb	<0.0006	0.000026					
069 CCB3	CCB	1	Li	<0.001	-0.000039	mg/L	Liquid
			Be	<0.0002	0.000001		
			B	<0.008	0.000333		
			Al	<0.002	-0.000029		
			Se	<0.001	-0.000011		
			Cr	<0.001	-0.000014		
			Fe	<0.004	-0.001005		
			Co	<0.001	0.000009		
			Ni	<0.001	-0.000018		
			Cu	<0.001	0.000007		
			Zn	<0.001	-0.000096		
			As	<0.0004	0.000100		
			Sr	<0.001	0.000009		
			Mo	<0.001	0.000572		
			Ag	<0.0001	0.000009		
			Cd	<0.0001	0.000014		
			Sb	<0.001	0.000644		
			Ba	<0.001	0.000007		
			Tl	<0.0004	0.000007		
Pb	<0.0006	0.000005					
072 063020_5 LRB	LRB	1	Li	<0.001	-0.000047	mg/L	Liquid
			Be	<0.0002	0.000003		
			B	<0.008	0.000083		
			Al	<0.002	0.000118		
			Se	<0.001	0.000787		
			Cr	<0.001	-0.000002		
			Fe	<0.004	-0.001340		
			Co	<0.001	0.000005		
			Ni	<0.001	-0.000027		
			Cu	<0.001	0.000010		
			Zn	<0.001	-0.000009		
			As	<0.0004	0.000116		
			Sr	<0.001	0.000030		
			Mo	<0.001	0.000552		

Form 3: Blanks

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
072 063020_5 LRB	LRB	1	Ag	<0.0001	0.000009	mg/L	Liquid
			Cd	<0.0001	0.000004		
			Sb	<0.001	0.000334		
			Ba	<0.001	0.000012		
			Tl	<0.0004	0.000000		
			Pb	<0.0006	0.000010		
087 CCB4	CCB	1	Li	<0.001	-0.000005	mg/L	Liquid
			Be	<0.0002	0.000001		
			B	<0.008	0.000667		
			Al	<0.002	-0.000031		
			Se	<0.001	0.000076		
			Cr	<0.001	-0.000004		
			Fe	<0.004	-0.001129		
			Co	<0.001	0.000013		
			Ni	<0.001	-0.000012		
			Cu	<0.001	0.000008		
			Zn	<0.001	-0.000122		
			As	<0.0004	0.000090		
			Sr	<0.001	0.000006		
			Mo	<0.001	0.000659		
			Ag	<0.0001	0.000011		
			Cd	<0.0001	0.000010		
			Sb	<0.001	0.000615		
			Ba	<0.001	0.000015		
Tl	<0.0004	0.000005					
Pb	<0.0006	0.000008					

Form 3: Blanks

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
009 ICB	ICB	1	Mg	<0.05	0.000194	mg/L	Liquid
			Ca	<0.05	-0.008620		
010 CCB	CCB	1	Mg	<0.05	0.000185	mg/L	Liquid
			Ca	<0.05	-0.003430		
013 063020_1 LRB	LRB	1	Mg	<0.05	0.000941	mg/L	Liquid
028 CCB2	CCB	1	Mg	<0.05	0.000807	mg/L	Liquid
			Ca	<0.05	-0.007986		
042 CCB3	CCB	1	Mg	<0.05	0.001072	mg/L	Liquid
			Ca	<0.05	-0.007554		
044 063020_5 LRB	LRB	1	Mg	<0.05	0.000809	mg/L	Liquid
			Ca	<0.05	-0.007561		
057 CCB4	CCB	1	Mg	<0.05	0.000433	mg/L	Liquid
			Ca	<0.05	-0.006573		

Form 4B: ICP Interference Check Sample

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix					
024 Solu-AB	AB	1	Al	9.86	10	99	65/135	mg/L	Liquid					
			Cr	0.0229	0.02	115	65/135							
			Fe	11.2	10	112	65/135							
			Co	0.0228	0.02	114	65/135							
			Ni	0.0222	0.02	111	65/135							
			Cu	0.0224	0.02	112	65/135							
			Zn	0.0234	0.02	117	65/135							
			As	0.0228	0.02	114	65/135							
			Mo	0.228	0.20	114	65/135							
			Ag	0.0222	0.02	111	65/135							
			Cd	0.0228	0.02	114	65/135							
			025 Solu-AA	AA	1	Li	<0.010			0.0	N/A	N/A	mg/L	Liquid
						Be	<0.001			0.0	N/A	N/A		
B	<0.04	0.0				N/A	N/A							
Se	<0.005	0.0				N/A	N/A							
Cr	<0.005	0.0				N/A	N/A							
Co	<0.005	0.0				N/A	N/A							
Ni	<0.005	0.0				N/A	N/A							
Cu	<0.005	0.0				N/A	N/A							
Zn	<0.005	0.0				N/A	N/A							
As	<0.002	0.0				N/A	N/A							
Sr	<0.005	0.0				N/A	N/A							
Ag	<0.0005	0.0				N/A	N/A							
Cd	<0.0005	0.0				N/A	N/A							
Sb	<0.005	0.0				N/A	N/A							
Ba	<0.005	0.0				N/A	N/A							
Tl	<0.002	0.0				N/A	N/A							
Pb	<0.003	0.0				N/A	N/A							

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
017 BS-0.0001		1	Li	0.00009	ND	0.0001	90	70/130	mg/L	Liquid
			Be	0.00010	ND	0.0001	100	70/130		
			Cr	0.00011	ND	0.0001	110	70/130		
			Co	0.00011	ND	0.0001	110	70/130		
			Ni	0.00010	ND	0.0001	100	70/130		
			Cu	0.00010	ND	0.0001	100	70/130		
			Zn	0.00013	ND	0.0001	130	70/130		
			Sr	0.00010	ND	0.0001	100	70/130		
			Ag	0.00010	ND	0.0001	100	70/130		
			Cd	0.00011	ND	0.0001	110	70/130		
			Ba	0.00012	ND	0.0001	120	70/130		
			Tl	0.00011	ND	0.0001	110	70/130		
			Pb	0.00010	ND	0.0001	100	70/130		
018 BS-0.00025		1	Li	0.00026	ND	0.00025	104	70/130	mg/L	Liquid
			Be	0.00031	ND	0.00025	124	70/130		
			B	0.00031	ND	0.00025	124	70/130		
			Al	0.00030	ND	0.00025	120	70/130		
			Cr	0.00026	ND	0.00025	104	70/130		
			Co	0.00030	ND	0.00025	120	70/130		
			Ni	0.00028	ND	0.00025	112	70/130		
			Cu	0.00031	ND	0.00025	124	70/130		
			Sr	0.00030	ND	0.00025	120	70/130		
			Ag	0.00028	ND	0.00025	112	70/130		
			Cd	0.00032	ND	0.00025	128	70/130		
			Ba	0.00027	ND	0.00025	108	70/130		
			Tl	0.00028	ND	0.00025	112	70/130		
Pb	0.00026	ND	0.00025	104	70/130					
019 BS-0.0005		1	Li	0.00058	ND	0.0005	116	70/130	mg/L	Liquid
			Be	0.00056	ND	0.0005	112	70/130		
			B	0.00062	ND	0.0005	124	70/130		
			Al	0.00058	ND	0.0005	116	70/130		
			Se	0.00042	ND	0.0005	84	70/130		
			Cr	0.00053	ND	0.0005	106	70/130		
			Co	0.00056	ND	0.0005	112	70/130		
			Ni	0.00057	ND	0.0005	114	70/130		
			Cu	0.00059	ND	0.0005	118	70/130		
			Zn	0.00062	ND	0.0005	124	70/130		
			As	0.00056	ND	0.0005	112	70/130		
			Sr	0.00055	ND	0.0005	110	70/130		
			Mo	0.00058	ND	0.0005	116	70/130		
Ag	0.00053	ND	0.0005	106	70/130					
Cd	0.00053	ND	0.0005	106	70/130					
Ba	0.00052	ND	0.0005	104	70/130					
Tl	0.00056	ND	0.0005	112	70/130					
Pb	0.00053	ND	0.0005	106	70/130					
020 BS-0.001		1	Li	0.00108	ND	0.001	108	70/130	mg/L	Liquid
			Be	0.00109	ND	0.001	109	70/130		
			B	0.00120	ND	0.001	120	70/130		
			Al	0.00111	ND	0.001	111	70/130		
			Se	0.00119	ND	0.001	119	70/130		
			Cr	0.00113	ND	0.001	113	70/130		
			Co	0.00113	ND	0.001	113	70/130		
			Ni	0.00103	ND	0.001	103	70/130		
			Cu	0.00117	ND	0.001	117	70/130		
			Zn	0.00130	ND	0.001	130	70/130		
			As	0.00116	ND	0.001	116	70/130		
			Sr	0.00114	ND	0.001	114	70/130		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
020 BS-0.001		1	Mo	0.00096	ND	0.001	96	70/130	mg/L	Liquid
			Ag	0.00111	ND	0.001	111	70/130		
			Cd	0.00119	ND	0.001	119	70/130		
			Sb	0.0013	ND	0.001	130	70/130		
			Ba	0.00108	ND	0.001	108	70/130		
			Tl	0.00109	ND	0.001	109	70/130		
			Pb	0.00108	ND	0.001	108	70/130		
022 BS-0.0025		1	Fe	0.00207	ND	0.0025	83	70/130	mg/L	Liquid
050 14870.01	033 14870.01s diss	5	Li	0.258	<0.005	0.25	103	75/125	mg/L	Liquid
			Be	0.248	<0.001	0.25	99	75/125		
			B	0.291	0.04	0.25	100	75/125		
			Al	0.244	0.018	0.25	90	75/125		
			Se	0.250	<0.005	0.25	100	75/125		
			Cr	0.258	<0.005	0.25	103	75/125		
			Fe	0.360	0.11	0.25	100	75/125		
			Co	0.254	<0.005	0.25	102	75/125		
			Ni	0.246	<0.005	0.25	98	75/125		
			Cu	0.250	<0.005	0.25	100	75/125		
			Zn	0.258	<0.005	0.25	103	75/125		
			As	0.254	0.002	0.25	101	75/125		
			Sr	0.453	0.209	0.25	98	75/125		
			Mo	0.238	<0.005	0.25	95	75/125		
			Ag	0.246	<0.0005	0.25	98	75/125		
			Cd	0.252	<0.0005	0.25	101	75/125		
			Sb	0.226	<0.005	0.25	90	75/125		
Ba	0.338	0.072	0.25	106	75/125					
Tl	0.228	<0.002	0.25	91	75/125					
Pb	0.232	<0.003	0.25	93	75/125					
065 14938.05	064 14938.05s diss	5	Li	0.250	0.008	0.25	97	75/125	mg/L	Liquid
			Be	0.230	<0.001	0.25	92	75/125		
			B	0.345	0.12	0.25	90	75/125		
			Al	0.226	<0.010	0.25	90	75/125		
			Se	0.255	<0.005	0.25	102	75/125		
			Cr	0.256	<0.005	0.25	102	75/125		
			Fe	0.282	0.03	0.25	101	75/125		
			Co	0.254	<0.005	0.25	102	75/125		
			Ni	0.248	<0.005	0.25	99	75/125		
			Cu	0.250	<0.005	0.25	100	75/125		
			Zn	0.254	<0.005	0.25	102	75/125		
			As	0.254	<0.002	0.25	102	75/125		
			Sr	0.525	0.264	0.25	104	75/125		
			Mo	0.242	<0.005	0.25	97	75/125		
			Ag	0.248	<0.0005	0.25	99	75/125		
			Cd	0.252	<0.0005	0.25	101	75/125		
			Sb	0.231	<0.005	0.25	92	75/125		
Ba	0.372	0.107	0.25	106	75/125					
Tl	0.230	<0.002	0.25	92	75/125					
Pb	0.228	<0.003	0.25	91	75/125					
083 15123.06	082 15123.06s	5	Li	0.251	0.008	0.25	97	75/125	mg/L	Liquid
			Be	0.233	<0.001	0.25	93	75/125		
			B	0.283	0.05	0.25	93	75/125		
			Al	0.223	<0.010	0.25	89	75/125		
			Se	0.251	<0.005	0.25	100	75/125		
			Cr	0.260	<0.005	0.25	104	75/125		
			Fe	1.53	1.30	0.25	92	75/125		
			Co	0.251	<0.005	0.25	100	75/125		
			Ni	0.246	<0.005	0.25	98	75/125		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
083 15123.06	082 15123.06s	5	Cu	0.239	<0.005	0.25	96	75/125	mg/L	Liquid
			Zn	0.251	<0.005	0.25	100	75/125		
			As	0.261	0.007	0.25	102	75/125		
			Sr	0.401	0.141	0.25	104	75/125		
			Mo	0.236	0.006	0.25	92	75/125		
			Ag	0.245	<0.0005	0.25	98	75/125		
			Cd	0.250	<0.0005	0.25	100	75/125		
			Sb	0.228	<0.005	0.25	91	75/125		
			Ba	0.437	0.170	0.25	107	75/125		
			Tl	0.228	<0.002	0.25	91	75/125		
			Pb	0.225	<0.003	0.25	90	75/125		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
011 BS-0.05		1	Mg	0.051	ND	0.05	102	70/130	mg/L	Liquid
			Ca	0.048	ND	0.05	96	70/130		
025 14870.01 MS-2.0	016 14870.01s diss	1	Mg	6.62	4.55	2.0	104	75/125	mg/L	Liquid
			Ca	18.9	16.9	2.0	100	75/125		
039 14938.05 MS-2.0	038 14938.05s diss	1	Mg	8.15	6.44	2.0	86	75/125	mg/L	Liquid
054 15123.06 MS-2.0	053 15123.06s	5	Ca	118	108	10.0	100	75/125	mg/L	Liquid

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Duplicate Name	Sample Name	Dilute	Element	Dup Conc	Samp Conc	%RPD	LCL/UCL	Units	Matrix
051 14870.01 MSD	050 14870.01 MS-0.05	5	Li	0.243	0.258	6	0/20	mg/L	Liquid
			Be	0.233	0.248	6	0/20		
			B	0.282	0.291	3	0/20		
			Al	0.242	0.244	1	0/20		
			Se	0.252	0.250	1	0/20		
			Cr	0.250	0.258	3	0/20		
			Fe	0.357	0.360	1	0/20		
			Co	0.249	0.254	2	0/20		
			Ni	0.245	0.246	0	0/20		
			Cu	0.243	0.250	3	0/20		
			Zn	0.246	0.258	5	0/20		
			As	0.249	0.254	2	0/20		
			Sr	0.450	0.453	1	0/20		
			Mo	0.247	0.238	4	0/20		
			Ag	0.244	0.246	1	0/20		
			Cd	0.249	0.252	1	0/20		
			Sb	0.229	0.226	1	0/20		
			Ba	0.324	0.338	4	0/20		
			Tl	0.234	0.228	3	0/20		
			Pb	0.232	0.232	0	0/20		
066 14938.05 MSD	065 14938.05	5	Li	0.248	0.250	1	0/20	mg/L	Liquid
			Be	0.235	0.230	2	0/20		
			B	0.356	0.345	3	0/20		
			Al	0.236	0.226	4	0/20		
			Se	0.259	0.255	2	0/20		
			Cr	0.264	0.256	3	0/20		
			Fe	0.270	0.282	4	0/20		
			Co	0.255	0.254	0	0/20		
			Ni	0.245	0.248	1	0/20		
			Cu	0.252	0.250	1	0/20		
			Zn	0.260	0.254	2	0/20		
			As	0.256	0.254	1	0/20		
			Sr	0.521	0.525	1	0/20		
			Mo	0.252	0.242	4	0/20		
			Ag	0.242	0.248	2	0/20		
			Cd	0.247	0.252	2	0/20		
			Sb	0.236	0.231	2	0/20		
			Ba	0.368	0.372	1	0/20		
			Tl	0.228	0.230	1	0/20		
			Pb	0.228	0.228	0	0/20		
084 15123.06 MSD	083 15123.06 MS-0.05	5	Li	0.252	0.251	0	0/20	mg/L	Liquid
			Be	0.237	0.233	2	0/20		
			B	0.283	0.283	0	0/20		
			Al	0.232	0.223	4	0/20		
			Se	0.252	0.251	0	0/20		
			Cr	0.254	0.260	2	0/20		
			Fe	1.55	1.53	1	0/20		
			Co	0.250	0.251	0	0/20		
			Ni	0.246	0.246	0	0/20		
			Cu	0.245	0.239	2	0/20		
			Zn	0.251	0.251	0	0/20		
			As	0.259	0.261	1	0/20		
			Sr	0.402	0.401	0	0/20		
			Mo	0.250	0.236	6	0/20		
			Ag	0.243	0.245	1	0/20		
			Cd	0.249	0.250	0	0/20		
			Sb	0.230	0.228	1	0/20		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
084 15123.06 MSD	083 15123.06 MS-0.05	5	Ba	0.425	0.437	3	0/20	mg/L	Liquid
			Tl	0.224	0.228	2	0/20		
			Pb	0.227	0.225	1	0/20		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
026 14870.01 MSD	025 14870.01 MS-2.0	1	Mg	6.54	6.62	1	0/20	mg/L	Liquid
			Ca	18.6	18.9	2	0/20		
040 14938.05 MSD	039 14938.05 MS-2.0	1	Mg	8.36	8.15	3	0/20	mg/L	Liquid
055 15123.06 MSD	054 15123.06 MS-2.0	5	Ca	108	118	9	0/20	mg/L	Liquid

Form 7: Laboratory Control Sample

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
027 063020_1 LCS-0.05	1	Li	0.0479	0.05	96	85/115	mg/L	Liquid
		Be	0.0487	0.05	97	85/115		
		B	0.0473	0.05	95	85/115		
		Al	0.0471	0.05	94	85/115		
		Se	0.0482	0.05	96	85/115		
		Cr	0.0492	0.05	98	85/115		
		Fe	0.0484	0.05	97	85/115		
		Co	0.0480	0.05	96	85/115		
		Ni	0.0482	0.05	96	85/115		
		Cu	0.0488	0.05	98	85/115		
		Zn	0.0506	0.05	101	85/115		
		As	0.0487	0.05	97	85/115		
		Sr	0.0479	0.05	96	85/115		
		Mo	0.0460	0.05	92	85/115		
		Ag	0.0491	0.05	98	85/115		
		Cd	0.0495	0.05	99	85/115		
		Sb	0.0437	0.05	87	85/115		
		Ba	0.0499	0.05	100	85/115		
		Tl	0.0468	0.05	94	85/115		
		Pb	0.0474	0.05	95	85/115		
070 063020_5 LCS-0.05	1	Li	0.0459	0.05	92	85/115	mg/L	Liquid
		Be	0.0444	0.05	89	85/115		
		B	0.0457	0.05	91	85/115		
		Al	0.0449	0.05	90	85/115		
		Se	0.0460	0.05	92	85/115		
		Cr	0.0497	0.05	99	85/115		
		Fe	0.0494	0.05	99	85/115		
		Co	0.0498	0.05	100	85/115		
		Ni	0.0501	0.05	100	85/115		
		Cu	0.0496	0.05	99	85/115		
		Zn	0.0503	0.05	101	85/115		
		As	0.0495	0.05	99	85/115		
		Sr	0.0502	0.05	100	85/115		
		Mo	0.0445	0.05	89	85/115		
		Ag	0.0491	0.05	98	85/115		
		Cd	0.0486	0.05	97	85/115		
		Sb	0.0453	0.05	91	85/115		
		Ba	0.0492	0.05	98	85/115		
		Tl	0.0477	0.05	95	85/115		
		Pb	0.0471	0.05	94	85/115		

Form 7: Laboratory Control Sample

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
012 063020_1 LCS-1.0	1	Mg	1.00	1.0	100	85/115	mg/L	Liquid
		Ca	1.03	1.0	103	85/115		
043 063020_5 LCS-1.0	1	Mg	0.993	1.0	99	85/115	mg/L	Liquid
		Ca	1.03	1.0	103	85/115		

Form 8: Serial Dilutions

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%D</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
030 14870.01 dil	031 14870.01s tot	5	Li	<0.005	<0.005	NC	0/10	mg/L	Liquid
			Be	<0.001	<0.001	NC	0/10		
			B	0.04	0.04	0	0/10		
			Al	0.064	0.054	19*	0/10		
			Se	0.009	<0.005	NC	0/10		
			Cr	<0.005	<0.005	NC	0/10		
			Fe	0.39	0.45	13*	0/10		
			Co	<0.005	<0.005	NC	0/10		
			Ni	<0.005	<0.005	NC	0/10		
			Cu	<0.005	<0.005	NC	0/10		
			Zn	0.005	<0.005	NC	0/10		
			As	0.003	0.002	50*	0/10		
			Sr	0.190	0.207	8	0/10		
			Mo	0.011	<0.005	NC	0/10		
			Ag	<0.0005	<0.0005	NC	0/10		
			Cd	<0.0005	<0.0005	NC	0/10		
			Sb	<0.005	<0.005	NC	0/10		
			Ba	0.063	0.073	14*	0/10		
			Tl	<0.002	<0.002	NC	0/10		
			Pb	<0.003	<0.003	NC	0/10		
075 15123.01 dil	076 15123.01s	5	Li	0.029	0.032	9	0/10	mg/L	Liquid
			Be	<0.001	<0.001	NC	0/10		
			B	0.40	0.39	3	0/10		
			Al	0.249	0.244	2	0/10		
			Se	<0.005	<0.005	NC	0/10		
			Cr	<0.005	<0.005	NC	0/10		
			Fe	9.21	9.63	4	0/10		
			Co	<0.005	<0.005	NC	0/10		
			Ni	<0.005	<0.005	NC	0/10		
			Cu	<0.005	<0.005	NC	0/10		
			Zn	0.012	<0.005	NC	0/10		
			As	0.006	0.007	14*	0/10		
			Sr	0.232	0.246	6	0/10		
			Mo	0.010	<0.005	NC	0/10		
			Ag	<0.0005	<0.0005	NC	0/10		
			Cd	<0.0005	<0.0005	NC	0/10		
			Sb	0.007	<0.005	NC	0/10		
			Ba	0.161	0.168	4	0/10		
			Tl	<0.002	<0.002	NC	0/10		
			Pb	<0.003	<0.003	NC	0/10		

Form 8: Serial Dilutions

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%D</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
014 14870.01 dil	015 14870.01s tot	1	Mg	4.61	4.81	4	0/10	mg/L	Liquid
			Ca	16.9	16.9	0	0/10		
046 15123.01 dil	047 15123.01s	5	Mg	42.0	42.8	2	0/10	mg/L	Liquid
			Ca	165	165	0	0/10		

Form 13: Analysis Run Log

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Blank	10:30:07 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
002 Std-0.0001	10:32:06 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
003 Std-0.0005	10:34:05 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
004 Std-0.001	10:36:03 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
005 Std-0.005	10:38:02 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
006 Std-0.02	10:40:01 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
007 Std-0.05	10:42:00 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
008 Std-0.2	10:43:59 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
009 rinse	10:45:57 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
010 ICV-0.1	10:51:53 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
011 CCV-0.1	10:53:52 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
012 rinse	10:55:50 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
013 ICB	11:01:57 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
014 CCB	11:03:56 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
015 LOD 0.00005	11:05:54 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
016 LOD 0.00005	11:07:53 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
017 BS-0.0001	11:10:04 Tue	Liquid	Ag,Ba,Be,Cd,Co,Cr,Cu,Li,Ni,Pb,Sr,Tl,Zn
018 BS-0.00025	11:14:29 Tue	Liquid	Ag,Al,B,Ba,Be,Cd,Co,Cr,Cu,Li,Ni,Pb,Sr,Tl
019 BS-0.0005	11:16:28 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Li,Mo,Ni,Pb,Se,Sr,Tl,Zn
020 BS-0.001	11:29:03 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
021 BS-0.001	11:32:32 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
022 BS-0.0025	11:37:33 Tue	Liquid	Fe
023 BS-0.0025	11:42:04 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
024 Solu-AB	11:44:02 Tue	Liquid	Ag,Al,As,Cd,Co,Cr,Cu,Fe,Mo,Ni,Zn
025 Solu-AA	11:46:01 Tue	Liquid	Ag,As,B,Ba,Be,Cd,Co,Cr,Cu,Li,Ni,Pb,Sb,Se,Sr,Tl,Zn
026 Rinse	11:48:00 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
027 063020_1 LCS-0.05	11:53:35 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
028 Rinse	11:55:37 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
029 063020_1 LRB	11:57:35 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
030 14870.01 dil	12:00:26 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn

Form 13: Analysis Run Log

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
031 14870.01s tot	12:02:24 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
032 Rinse	12:04:23 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
033 14870.01s diss	12:06:22 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
034 Rinse	12:08:20 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
035 14870.02s tot	12:10:19 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
036 Rinse	12:12:18 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
037 14870.02s diss	12:14:16 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
038 Rinse	12:16:15 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
039 14870.03s tot	12:18:13 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
040 Rinse	12:20:12 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
041 14870.03s diss	12:22:10 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
042 Rinse	12:24:09 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
043 14870.04s tot	12:26:07 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
044 Rinse	12:28:05 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
045 14870.04s diss	12:30:04 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
046 Rinse	12:32:03 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
047 14870.05s tot	12:34:01 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
048 Rinse	12:36:00 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
049 14870.05s diss	12:37:59 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
050 14870.01 MS-0.05 diss	12:41:54 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
051 14870.01 MSD diss	12:43:52 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
052 CCV2-0.1	12:45:51 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
053 Rinse	12:47:49 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
054 CCB2	12:52:08 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
055 14938.01s tot	12:54:06 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
056 14938.01s diss	12:56:05 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
057 14938.02s tot	12:58:03 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
058 14938.02s diss	13:00:01 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn

Form 13: Analysis Run Log

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
059 14938.03s tot	13:01:59 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
060 14938.03s diss	13:03:58 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
061 14938.04s tot	13:05:56 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
062 14938.04s diss	13:07:54 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
063 14938.05s tot	13:15:38 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
064 14938.05s diss	13:19:56 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
065 14938.05 MS-0.05diss	13:22:58 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
066 14938.05 MSD diss	13:24:57 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
067 CCV3-0.1	13:26:56 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
068 Rinse	13:28:54 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
069 CCB3	13:33:47 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
070 063020_5 LCS-0.05	13:53:31 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
071 Rinse	13:55:30 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
072 063020_5 LRB	13:57:32 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
073 15123.07s	13:59:38 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
074 15123.07s	14:01:55 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
075 15123.01 dil	14:03:52 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
076 15123.01s	14:05:50 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
077 15123.02s	14:07:48 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
078 15123.03s	14:09:45 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
079 15123.04s	14:11:42 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
080 15123.05s	14:13:41 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
081 15232.02s	14:15:38 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
082 15123.06s	14:17:37 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
083 15123.06 MS-0.05	14:19:34 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
084 15123.06 MSD	14:21:32 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
085 CCV4-0.1	14:23:32 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn
086 Rinse	14:25:30 Tue	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mo,Ni,Pb,Sb,Se,Sr,Tl,Zn

Form 13: Analysis Run Log

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
087 CCB4	14:29:41 Tue	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mo, Ni, Pb, Sb, Se, Sr, Tl, Zn

Form 13: Analysis Run Log

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Blank	14:59:57 Tue	Liquid	Ca, Mg
002 Std-0.20	15:01:08 Tue	Liquid	Ca, Mg
003 Std-0.50	15:02:18 Tue	Liquid	Ca, Mg
004 Std-1.0	15:03:29 Tue	Liquid	Ca, Mg
005 Std-2.0	15:04:39 Tue	Liquid	Ca, Mg
006 Std-5.0	15:05:50 Tue	Liquid	Ca, Mg
007 ICV-2.0	15:07:00 Tue	Liquid	Ca, Mg
008 CCV-2.0	15:08:11 Tue	Liquid	Ca, Mg
009 ICB	15:09:22 Tue	Liquid	Ca, Mg
010 CCB	15:10:33 Tue	Liquid	Ca, Mg
011 BS-0.05	15:11:43 Tue	Liquid	Ca, Mg
012 063020_1 LCS-1.0	15:22:40 Tue	Liquid	Ca, Mg
013 063020_1 LRB	15:23:49 Tue	Liquid	Mg
014 14870.01 dil	15:25:38 Tue	Liquid	Ca, Mg
015 14870.01s tot	15:26:48 Tue	Liquid	Ca, Mg
016 14870.01s diss	15:27:59 Tue	Liquid	Ca, Mg
017 14870.02s tot	15:29:09 Tue	Liquid	Ca, Mg
018 14870.02s diss	15:30:19 Tue	Liquid	Ca, Mg
019 14870.03s tot	15:31:29 Tue	Liquid	Ca, Mg
020 14870.03s diss	15:32:39 Tue	Liquid	Ca, Mg
021 14870.04s tot	15:33:48 Tue	Liquid	Ca, Mg
022 14870.04s diss	15:34:59 Tue	Liquid	Ca, Mg
023 14870.05s tot	15:36:09 Tue	Liquid	Ca, Mg
024 14870.05s diss	15:37:19 Tue	Liquid	Ca, Mg
025 14870.01 MS-2.0 diss	15:39:54 Tue	Liquid	Ca, Mg
026 14870.01 MSD diss	15:41:03 Tue	Liquid	Ca, Mg
027 CCV2-2.0	15:42:22 Tue	Liquid	Ca, Mg
028 CCB2	15:43:33 Tue	Liquid	Ca, Mg
029 14938.01s tot	15:44:42 Tue	Liquid	Ca, Mg
030 14938.01s diss	15:45:53 Tue	Liquid	Ca, Mg
031 14938.02s tot	15:47:03 Tue	Liquid	Ca, Mg
032 14938.02s diss	15:48:12 Tue	Liquid	Ca, Mg
033 14938.03s tot	15:49:22 Tue	Liquid	Ca, Mg
034 14938.03s diss	15:50:33 Tue	Liquid	Ca, Mg
035 14938.04s tot	15:51:43 Tue	Liquid	Ca, Mg
036 14938.04s diss	15:52:53 Tue	Liquid	Ca, Mg
037 14938.05s tot	15:54:03 Tue	Liquid	Ca, Mg
038 14938.05s diss	15:55:12 Tue	Liquid	Ca, Mg
039 14938.05 MS-2.0 diss	15:56:33 Tue	Liquid	Mg
040 14938.05 MSD	15:57:43 Tue	Liquid	Mg
041 CCV3-2.0	15:58:53 Tue	Liquid	Ca, Mg
042 CCB3	16:00:04 Tue	Liquid	Ca, Mg
043 063020_5 LCS-1.0	16:01:29 Tue	Liquid	Ca, Mg
044 063020_5 LRB	16:02:39 Tue	Liquid	Ca, Mg
045 15123.07s	16:03:48 Tue	Liquid	Ca, Mg
046 15123.01 dil	16:05:41 Tue	Liquid	Ca, Mg
047 15123.01s	16:06:50 Tue	Liquid	Ca, Mg
048 15123.02s	16:07:59 Tue	Liquid	Ca, Mg
049 15123.02s -d	16:09:44 Tue	Liquid	Ca, Mg
050 15123.03s	16:10:53 Tue	Liquid	Ca, Mg
051 15123.04s	16:12:02 Tue	Liquid	Ca, Mg
052 15123.05s	16:13:12 Tue	Liquid	Ca, Mg
053 15123.06s	16:14:22 Tue	Liquid	Ca, Mg
054 15123.06 MS-2.0	16:15:31 Tue	Liquid	Ca
055 15123.06 MSD	16:16:41 Tue	Liquid	Ca
056 CCV4-2.0	16:19:20 Tue	Liquid	Ca, Mg

Form 13: Analysis Run Log

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
057 CCB4	16:26:39 Tue	Liquid	Ca,Mg

Performance Check Report

Sample ID: STD Performance Check

Sample Date/Time: Tuesday, June 30, 2020 10:13:18

Sample Description:

Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\STD Performance Check.mth

Dataset File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\DataSet\Optimize2020\STD Performance Check.940

MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun

Conditions File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac

Dual Detector Mode: Pulse

Acq. Dead Time (ns): 35

Current Dead Time (ns): 35

Torch Z position (mm): 0.00

Summary

Analyte	Mass	Meas. Intens.	Mean	Net Intens.	Mean	Net Intens.	SD	Net Intens.	RSD	Mode	
Be	9.0		11202.1		11202.057		92.697		0.8	Standard	
In	114.9		93051.1		93051.089		943.642		1.0	Standard	
U	238.1		70669.5		70669.503		407.201		0.6	Standard	
[	CeO	155.9		1948.5		0.022		0.000		1.5	Standard
|>	Ce	139.9		88849.7		88849.713		333.460		0.4	Standard
[	Ce++	70.0		2140.1		0.024		0.000		1.9	Standard
	Bkgd	220.0		0.3		0.333		0.204		61.2	Standard

Current Conditions File Data

Current Value	Description
0.93	Nebulizer Gas Flow STD/KED [NEB]
1.20	Auxiliary Gas Flow
18.00	Plasma Gas Flow
-12.00	Deflector Voltage
1600.00	ICP RF Power
-1675.00	Analog Stage Voltage
1300.00	Pulse Stage Voltage
-4.00	Quadrupole Rod Offset STD [QRO]
-15.00	Cell Rod Offset STD [CRO]
14.00	Discriminator Threshold
-9.00	Cell Entrance/Exit Voltage STD
0.00	RPa
0.45	RPq
0.93	DRC Mode NEB
-9.00	DRC Mode QRO
-2.00	DRC Mode CRO
-7.00	DRC Mode Cell Entrance/Exit Voltage
0.60	Cell Gas A
200.00	Axial Field Voltage
-13.00	KED Mode CRO
-12.00	KED Mode QRO
-8.00	KED Mode Cell Entrance Voltage
-32.00	KED Mode Cell Exit Voltage
4.00	KED Cell Gas A
0.00	KED RPa
0.25	KED RPq
475.00	KED Mode Axial Field Voltage

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\wizard\SmartTune\daily optimization.swz

Start Time: 6/30/2020 10:08:04 AM

End Time: 6/30/2020 10:15:23 AM

Torch Alignment - [Passed]

Vertical	Horizontal	Intensity
0.58 mm	0.03 mm	96784.75

Nebulizer Gas Flow STD/KED [NEB] - [Passed] Optimum value(s): 0.93

Obtained Intensity (In 115): 96102.16

Obtained Formula (CeO 156 / Ce 140): 0.0232 (=2146.16 / 92560.89)

QID STD/DRC - Optimum value(s): Correlation Coefficient = 0.999; Intercept = -12.99

KED Mode QID - Optimum value(s): Correlation Coefficient = 0.998; Intercept = -13.29

Mass Calibration and Resolution - [Passed] Optimum value(s): N/A

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.704)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.705)

Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.706)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.701)

STD Performance Check - [Passed] Optimum value(s): N/A

Obtained Intensity (Be 9): 11202.06

Obtained Intensity (In 115): 93051.09

Obtained Intensity (U 238): 70669.50

Obtained Intensity (Bkgd 220): 0.33

Obtained Formula (CeO 156 / Ce 140): 0.022 (=1948.53 / 88849.71)

Obtained Formula (Ce++ 70 / Ce 140): 0.024 (=2140.09 / 88849.71)

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\daily optimization.swz

Optimization Status

Start Time: 6/30/2020 10:08:04 AM

Torch Alignment

Optimization Settings:

Method: Torch Alignment.mth.
Intensity Criterion: In 115 Maximum

Optimization Results:

	Vertical	Horizontal	Intensity
[Passed]	0.58 mm	0.03 mm	96784.75

Nebulizer Gas Flow STD/KED [NEB]

Optimization Settings:

Method: Optimize.mth.
Initial Try - Start/End/Step: 0.9/0.96/0.01.
Intensity Criterion: In 115 Maximum
Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (In 115): 96102.16
Obtained Formula (CeO 156 / Ce 140): 0.0232 (=2146.16 / 92560.89)

[Passed] optimum value(s): 0.93

QID STD/DRC

Optimization Settings:

Method: QID Calibration.mth.
Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.999; Intercept = -12.99

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-13	47880.1
Mg	24	41	-13	106117
In	115	41	-11	96001.5
Ce	140	41	-10.5	89012.5
Pb	208	41	-8.5	40441.2
U	238	41	-7.5	72415.1

KED Mode QID

Optimization Settings:

Method: QID Calibration.mth.
Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.998; Intercept = -13.29

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-13.5	36093.5
Mg	24	41	-13.5	117538
In	115	41	-11	92341.5
Ce	140	41	-10	62150.9
Pb	208	41	-9	26620.8
U	238	41	-8	69569

Mass Calibration and Resolution

Optimization Settings:

Method: Tuning.mth.

MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun

Iterations: 6

Target accuracy (+/- amu): 0.05 for Mass Cal. and 0.03 for Resolution

Peak height (%) for Res. Opt.: 10

Optimization Results:

Initial Try

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.704)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.705)

Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.706)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.701)

[Passed] Optimum value(s): N/A

STD Performance Check

Optimization Settings:

Method: STD Performance Check.mth.

Intensity Criterion: Be 9 > 2000

Intensity Criterion: In 115 > 30000

Intensity Criterion: U 238 > 30000

Intensity Criterion: Bkgd 220 <= 5

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Formula Criterion: Ce++ 70 / Ce 140 <= 0.03

Optimization Results:

Initial Try

Obtained Intensity (Be 9): 11202.06

Obtained Intensity (In 115): 93051.09

Obtained Intensity (U 238): 70669.50

Obtained Intensity (Bkgd 220): 0.33

Obtained Formula (CeO 156 / Ce 140): 0.022 (=1948.53 / 88849.71)

Obtained Formula (Ce++ 70 / Ce 140): 0.024 (=2140.09 / 88849.71)

[Passed] Optimum value(s): N/A

End Time: 6/30/2020 10:15:23 AM

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Li	64036	70-125	44825-80045	80-120	51229-76843	0
Rh-1	700391	70-125	490274-875489	80-120	560313-840469	0
Rh	229279	70-125	160495-286599	80-120	183423-275135	0
Re	231739	70-125	162217-289674	80-120	185391-278087	0

Seq ID	QC Type	Li	Rh-1	Rh	Re
001		100	100	100	100
002		101	105	122	120
003		96	98	102	97
004		99	100	102	98
005		97	98	101	98
006		97	96	102	97
007		99	95	101	97
008		96	94	98	95
009		96	97	99	97
010	ICV	94	96	100	96
011	CCV	99	93	97	97
012		93	94	99	98
013	ICB	95	94	98	95
014	CCB	95	95	99	97
015		93	94	97	98
016		94	93	97	97
017	BS	92	93	96	96
018	BS	96	96	94	95
019	BS	94	93	97	95
020	BS	94	93	96	94
021	BS	94	92	97	94
022	BS	92	93	95	95
023	BS	95	94	97	96
024	AB	91	85	88	95
025	AA	90	86	89	96
026		97	95	96	101
027	LCS	96	92	96	97
028		95	94	96	93
029	LRB	91	90	94	95
030	DIL	93	91	94	99
031	S	95	89	91	95
032		94	91	94	97
033	S	93	90	91	95
034		96	92	96	96
035	S	92	85	86	96
036		93	91	96	97
037	S	90	84	86	97
038		96	92	94	96
039	S	95	86	88	96
040	Page 83 of 279	92	94	95	

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Li	64036	70-125	44825-80045	80-120	51229-76843	0
Rh-1	700391	70-125	490274-875489	80-120	560313-840469	0
Rh	229279	70-125	160495-286599	80-120	183423-275135	0
Re	231739	70-125	162217-289674	80-120	185391-278087	0

Seq ID	QC Type	Li	Rh-1	Rh	Re
041	S	95	85	87	96
042		99	91	95	95
043	S	94	85	85	95
044		101	92	97	97
045	S	91	84	86	97
046		100	93	93	97
047	S	94	86	88	94
048		103	93	98	100
049	S	93	84	87	96
050	MS	100	88	91	96
051	MSD	101	89	92	95
052	CCV	99	92	94	96
053		101	91	97	97
054	CCB	105	95	97	96
055	S	98	87	91	97
056	S	98	88	90	98
057	S	103	92	94	100
058	S	110	96	96	104
059	S	105	90	92	101
060	S	102	88	94	103
061	S	108	95	97	102
062	S	111	95	95	101
063	S	104	90	92	98
064	S	104	90	91	99
065	MS	107	88	91	99
066	MSD	101	89	91	100
067	CCV	106	94	95	96
068		104	94	97	96
069	CCB	107	95	96	98
070	LCS	114	98	97	96
071		106	94	97	97
072	LRB	105	92	95	95
073	S	105	95	96	97
074	S	104	94	97	98
075	DIL	104	91	96	96
076	S	100	88	89	95
077	S	96	84	87	98
078	S	102	90	91	97
079	S	100	84	86	99
080	S	102	88	88	98

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0630A

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Li	64036	70-125	44825-80045	80-120	51229-76843	0
Rh-1	700391	70-125	490274-875489	80-120	560313-840469	0
Rh	229279	70-125	160495-286599	80-120	183423-275135	0
Re	231739	70-125	162217-289674	80-120	185391-278087	0

Seq ID	QC Type	Li	Rh-1	Rh	Re
081	S	101	86	89	98
082	S	104	88	88	98
083	MS	106	89	90	99
084	MSD	102	88	91	98
085	CCV	106	91	94	100
086		110	93	95	98
087	CCB	110	94	95	97

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	10410	70-125	7287-13013	80-120	8328-12492	0

Seq ID	QC Type	Rh
001		100
002		100
003		101
004		98
005		102
006		101
007	ICV	101
008	CCV	101
009	ICB	103
010	CCB	101
011	BS	102
012	LCS	102
013	LRB	102
014	DIL	102
015	S	99
016	S	102
017	S	103
018	S	102
019	S	102
020	S	103
021	S	102
022	S	105
023	S	104
024	S	105
025	MS	102
026	MSD	103
027	CCV	103
028	CCB	104
029	S	103
030	S	103
031	S	104
032	S	103
033	S	102
034	S	102
035	S	105
036	S	104
037	S	104
038	S	103
039	MS	104
040	MS	104

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0630B

Instrument ID: PE NEXION 2

Analysis Date: 06/30/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	10410	70-125	7287-13013	80-120	8328-12492	0

Seq ID	QC Type	Rh
041	CCV	104
042	CCB	105
043	LCS	104
044	LRB	107
045	S	105
046	DIL	105
047	S	102
048	S	105
049	S	105
050	S	103
051	S	103
052	S	103
053	S	104
054	MS	104
055	MSD	105
056	CCV	104
057	CCB	104

Form 9

Analysis Date varies
 Analytical Method 6020A/6020/200.8
 Digestion Date varies
 Spiked Value varies (ug/L)
 Estimated Limit varies (ug/L)

Element/Mass	Date	Spike (ug/l)	MDL (ug/l)	Prep Batch
Al-27	4/9/2012	0.50	0.189	MTD-040212-1
Sb-121	3/20/2012	1.00	0.105	MTD-032012-3
As-75	3/20/2012	0.05	0.032	MTD-032012-2
Ba-137	3/20/2012	0.50	0.202	MTD-032012-2
Be-9	4/10/2012	0.10	0.079	MTD-041012-1
B-10	3/20/2012	1.00	0.589	MTD-032012-3
B-11	3/20/2012	1.00	0.277	MTD-032012-3
Cd-111	3/20/2012	0.05	0.038	MTD-032012-2
Cd-114	3/20/2012	0.10	0.030	MTD-032012-2
Cr-52	3/20/2012	0.10	0.023	MTD-032012-2
Cr-53	3/20/2012	0.10	0.054	MTD-032012-2
Co-59	3/20/2012	0.10	0.035	MTD-032012-2
Cu-65	3/20/2012	0.50	0.068	MTD-032012-2
Fe-56	4/9/2012	2.00	0.470	MTD-040912-1
Fe-57	4/9/2012	2.00	0.824	MTD-040912-1
Pb-208	3/20/2012	0.10	0.052	MTD-032012-2
Li-7	3/20/2012	1.00	0.166	MTD-032012-3
Mn-55	3/20/2012	0.10	0.187	MTD-032012-2
Mo-95	4/9/2012	0.50	0.442	MTD-040212-1
Ni-60	4/13/2012	0.10	0.035	MTD-041012-1
Se-78	3/20/2012	0.10	0.058	MTD-032012-2
Se-82	3/20/2012	0.50	0.475	MTD-032012-2
Ag-107	3/20/2012	0.10	0.025	MTD-032012-2
Sr-88	3/20/2012	0.10	0.016	MTD-032012-2
Tl-205	4/9/2012	0.50	0.089	MTD-040212-1
Sn-118	3/20/2012	0.10	0.079	MTD-032012-2
Ti-47	3/20/2012	0.50	0.124	MTD-032012-2
V-51	3/20/2012	0.05	0.018	MTD-032012-2
Zn-66	4/9/2012	2.00	0.366	MTD-040912-1

Element/Mass	Date	Spike (mg/l)	MDL (mg/l)	Prep Batch
Ca-43	4/16/2012	0.01	0.0101	MTD-041012-4
Ca-44	4/16/2012	0.01	0.0041	MTD-041012-4
Mg-24	4/16/2012	0.01	0.0006	MTD-041012-4
K-39	4/16/2012	0.01	0.0030	MTD-041012-4
Na-23	4/16/2012	0.10	0.0101	MTD-041012-4

Linear Range June 2012

		Prep Batch	Run Batch
Aluminum	5.0ppm	MTD-061912-5	MT3-12-0619C
Antimony	5.0ppm	MTD-061912-5	MT3-12-0619C
Arsenic	1.0ppm	MTD-061912-5	MT3-12-0619C
Barium	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-10	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-11	5.0ppm	MTD-061912-5	MT3-12-0619C
Beryllium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-111	5.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-114	5.0ppm	MTD-061912-5	MT3-12-0619C
Chromium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cobalt	2.0ppm	MTD-061912-5	MT3-12-0619C
Copper	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-56	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-57	2.0ppm	MTD-061912-5	MT3-12-0619C
Lead	5.0ppm	MTD-061912-5	MT3-12-0619C
Lithium	2.0ppm	MTD-061912-5	MT3-12-0619C
Manganese	1.0ppm	MTD-061912-5	MT3-12-0619C
Molybdenum	1.0ppm	MTD-061912-5	MT3-12-0619C
Nickel	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-78	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-82	5.0ppm	MTD-061912-5	MT3-12-0619C
Silver	1.0ppm	MTD-061912-5	MT3-12-0619C
Strontium-86	5.0ppm	MTD-061912-5	MT3-12-0619C
Thallium	5.0ppm	MTD-061912-5	MT3-12-0619C
Tin	1.0ppm	MTD-061912-5	MT3-12-0619C
Titanium	1.0ppm	MTD-061912-5	MT3-12-0619C
Vanadium	1.0ppm	MTD-061912-5	MT3-12-0619C
Zinc	2.0ppm	MTD-061912-5	MT3-12-0619C

Sodium-23	50ppm	MTD-061912-5	MT3-12-0619B
Magnesium-24	50ppm	MTD-061912-5	MT3-12-0619B
Potassium-39	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-43	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-44	50ppm	MTD-061912-5	MT3-12-0619B

Maximum spiking levels are instated to ensure the safety and longevity of the instrument. Any sample results above this level result in extended wash runs and sample dilution.

Metals Quantitation Summary Report

Sequence #: 001
Method: 18-R+AI
Acq Time: 10:30:07 Tue 30-Jun-20
Sample Name: Blank
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3248.703	0	mg/L	3
Be	9	0.000	0	mg/L	3
B	11	263.336	0	mg/L	3
Al	27	760.020	0	mg/L	3
Se	82	-83.917	0	mg/L	3
Cr	52	216.668	0	mg/L	3
Fe	57	150.001	0	mg/L	3
Co	59	8.333	0	mg/L	3
Ni	60	88.334	0	mg/L	3
Cu	65	71.667	0	mg/L	3
Zn	66	161.668	0	mg/L	3
As	75	6.667	0	mg/L	3
Sr	88	20.000	0	mg/L	3
Mo	95	65.000	0	mg/L	3
Ag	107	21.667	0	mg/L	3
Cd	111	5.000	0	mg/L	3
Sb	123	129.371	0	mg/L	3
Ba	137	13.333	0	mg/L	3
Tl	205	260.002	0	mg/L	3
Pb	208	533.337	0	mg/L	3

Metals Quantitation Summary Report

Sequence #: 002
Method: 18-R+AI
Acq Time: 10:32:06 Tue 30-Jun-20
Sample Name: Std-0.0001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3850.519	0.000141	mg/L	3
Be	9	153.334	0.000140	mg/L	3
B	11	596.679	0.000325	mg/L	3
Al	27	1618.425	0.000225	mg/L	3
Se	82	40.155	0.000567	mg/L	3
Cr	52	536.677	0.000069	mg/L	3
Fe	57	75.000	-0.001183	mg/L	3
Co	59	970.033	0.000111	mg/L	3
Ni	60	368.338	0.000103	mg/L	3
Cu	65	498.342	0.000131	mg/L	3
Zn	66	270.003	0.000110	mg/L	3
As	75	51.667	0.000128	mg/L	3
Sr	88	348.338	0.000100	mg/L	3
Mo	95	238.335	0.000061	mg/L	3
Ag	107	1115.044	0.000106	mg/L	3
Cd	111	163.334	0.000127	mg/L	3
Sb	123	326.041	0.000085	mg/L	3
Ba	137	171.668	0.000115	mg/L	3
Tl	205	2690.254	0.000098	mg/L	3
Pb	208	3735.193	0.000097	mg/L	3

Metals Quantitation Summary Report

Sequence #: 003
Method: 18-R+AI
Acq Time: 10:34:05 Tue 30-Jun-20
Sample Name: Std-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5284.311	0.000566	mg/L	3
Be	9	668.349	0.000643	mg/L	3
B	11	811.690	0.000578	mg/L	3
Al	27	2960.307	0.000620	mg/L	3
Se	82	53.189	0.000646	mg/L	3
Cr	52	1953.467	0.000527	mg/L	3
Fe	57	110.000	-0.000552	mg/L	3
Co	59	4045.573	0.000562	mg/L	3
Ni	60	1236.720	0.000548	mg/L	3
Cu	65	1666.764	0.000611	mg/L	3
Zn	66	475.008	0.000574	mg/L	3
As	75	175.001	0.000597	mg/L	3
Sr	88	1488.411	0.000547	mg/L	3
Mo	95	1063.373	0.000460	mg/L	3
Ag	107	4517.381	0.000529	mg/L	3
Cd	111	516.676	0.000495	mg/L	3
Sb	123	1149.627	0.000617	mg/L	3
Ba	137	593.346	0.000517	mg/L	3
Tl	205	10512.200	0.000524	mg/L	3
Pb	208	13837.635	0.000519	mg/L	3

Metals Quantitation Summary Report

Sequence #: 004
Method: 18-R+AI
Acq Time: 10:36:03 Tue 30-Jun-20
Sample Name: Std-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	7310.204	0.001025	mg/L	3
Be	9	1201.717	0.001115	mg/L	3
B	11	1331.729	0.001067	mg/L	3
Al	27	4880.834	0.001106	mg/L	3
Se	82	231.652	0.001481	mg/L	3
Cr	52	3740.490	0.001064	mg/L	3
Fe	57	151.667	-0.000017	mg/L	3
Co	59	7630.371	0.001056	mg/L	3
Ni	60	2506.887	0.001150	mg/L	3
Cu	65	3223.698	0.001202	mg/L	3
Zn	66	781.688	0.001134	mg/L	3
As	75	330.004	0.001142	mg/L	3
Sr	88	2845.283	0.001048	mg/L	3
Mo	95	2060.149	0.000915	mg/L	3
Ag	107	9314.704	0.001088	mg/L	3
Cd	111	1136.712	0.001089	mg/L	3
Sb	123	2211.209	0.001254	mg/L	3
Ba	137	1258.389	0.001104	mg/L	3
Tl	205	21980.230	0.001098	mg/L	3
Pb	208	28432.965	0.001076	mg/L	3

Metals Quantitation Summary Report

Sequence #: 005
Method: 18-R+AI
Acq Time: 10:38:02 Tue 30-Jun-20
Sample Name: Std-0.005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	24704.691	0.005547	mg/L	3
Be	9	5514.398	0.005245	mg/L	3
B	11	5779.503	0.005646	mg/L	3
Al	27	21781.602	0.005780	mg/L	3
Se	82	996.964	0.005162	mg/L	3
Cr	52	18809.053	0.005650	mg/L	3
Fe	57	483.342	0.004339	mg/L	3
Co	59	40477.267	0.005641	mg/L	3
Ni	60	11522.983	0.005473	mg/L	3
Cu	65	15526.774	0.005926	mg/L	3
Zn	66	3157.017	0.005531	mg/L	3
As	75	1541.750	0.005451	mg/L	3
Sr	88	14514.036	0.005408	mg/L	3
Mo	95	10795.746	0.004953	mg/L	3
Ag	107	46754.722	0.005501	mg/L	3
Cd	111	5337.664	0.005162	mg/L	3
Sb	123	10850.367	0.006501	mg/L	3
Ba	137	6379.758	0.005679	mg/L	3
Tl	205	107320.069	0.005403	mg/L	3
Pb	208	139635.068	0.005356	mg/L	3

Metals Quantitation Summary Report

Sequence #: 006
Method: 18-R+AI
Acq Time: 10:40:01 Tue 30-Jun-20
Sample Name: Std-0.02
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	79470.522	0.019559	mg/L	3
Be	9	20891.935	0.019801	mg/L	3
B	11	20189.260	0.020308	mg/L	3
Al	27	73324.486	0.019856	mg/L	3
Se	82	4128.761	0.020422	mg/L	3
Cr	52	62938.339	0.019062	mg/L	3
Fe	57	1556.752	0.018399	mg/L	3
Co	59	140989.256	0.019637	mg/L	3
Ni	60	40335.211	0.019251	mg/L	3
Cu	65	50281.734	0.019257	mg/L	3
Zn	66	11042.601	0.020108	mg/L	3
As	75	5457.710	0.019369	mg/L	3
Sr	88	52046.358	0.019416	mg/L	3
Mo	95	38286.266	0.017641	mg/L	3
Ag	107	165487.091	0.019456	mg/L	3
Cd	111	20740.051	0.020069	mg/L	3
Sb	123	32089.124	0.019376	mg/L	3
Ba	137	21746.545	0.019367	mg/L	3
Tl	205	369790.462	0.018910	mg/L	3
Pb	208	490218.819	0.019127	mg/L	3

Metals Quantitation Summary Report

Sequence #: 007
Method: 18-R+AI
Acq Time: 10:42:00 Tue 30-Jun-20
Sample Name: Std-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	193654.272	0.048175	mg/L	3
Be	9	53095.176	0.049649	mg/L	3
B	11	50666.364	0.050681	mg/L	3
Al	27	190091.513	0.051124	mg/L	3
Se	82	10521.128	0.051974	mg/L	3
Cr	52	163141.329	0.049618	mg/L	3
Fe	57	3888.863	0.049034	mg/L	3
Co	59	362066.994	0.050559	mg/L	3
Ni	60	101927.677	0.048827	mg/L	3
Cu	65	130457.992	0.050094	mg/L	3
Zn	66	26933.720	0.049586	mg/L	3
As	75	14033.557	0.049911	mg/L	3
Sr	88	134976.453	0.050441	mg/L	3
Mo	95	102404.060	0.047322	mg/L	3
Ag	107	431237.266	0.050837	mg/L	3
Cd	111	50261.603	0.048735	mg/L	3
Sb	123	83311.396	0.050535	mg/L	3
Ba	137	56009.610	0.050017	mg/L	3
Tl	205	964168.380	0.049081	mg/L	3
Pb	208	1257810.998	0.048845	mg/L	3

Metals Quantitation Summary Report

Sequence #: 008
Method: 18-R+AI
Acq Time: 10:43:59 Tue 30-Jun-20
Sample Name: Std-0.2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	771745.581	0.200487	mg/L	3
Be	9	207454.081	0.200101	mg/L	3
B	11	193012.893	0.199783	mg/L	3
Al	27	717965.250	0.199713	mg/L	3
Se	82	39844.588	0.199457	mg/L	3
Cr	52	638700.530	0.200173	mg/L	3
Fe	57	14982.865	0.200423	mg/L	3
Co	59	1390555.545	0.199880	mg/L	3
Ni	60	406081.753	0.200356	mg/L	3
Cu	65	505820.142	0.200026	mg/L	3
Zn	66	105113.765	0.200079	mg/L	3
As	75	54627.585	0.200074	mg/L	3
Sr	88	519654.178	0.199938	mg/L	3
Mo	95	422102.424	0.200907	mg/L	3
Ag	107	1646976.072	0.199832	mg/L	3
Cd	111	200676.704	0.200305	mg/L	3
Sb	123	319756.521	0.199890	mg/L	3
Ba	137	217539.363	0.200042	mg/L	3
Tl	205	3860489.339	0.200328	mg/L	3
Pb	208	5059980.049	0.200367	mg/L	3

Metals Quantitation Summary Report

Sequence #: 009
Method: 18-R+AI
Acq Time: 10:45:57 Tue 30-Jun-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 06/24/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3365.397	0.000068	mg/L	3
Be	9	51.667	0.000050	mg/L	3
B	11	965.033	0.000739	mg/L	3
Al	27	1466.742	0.000207	mg/L	3
Se	82	565.080	0.003132	mg/L	3
Cr	52	286.670	0.000023	mg/L	3
Fe	57	165.001	0.000223	mg/L	3
Co	59	268.336	0.000037	mg/L	3
Ni	60	286.670	0.000098	mg/L	3
Cu	65	223.335	0.000060	mg/L	3
Zn	66	260.002	0.000191	mg/L	3
As	75	231.669	0.000823	mg/L	3
Sr	88	81.667	0.000024	mg/L	3
Mo	95	7540.325	0.003545	mg/L	3
Ag	107	476.675	0.000055	mg/L	3
Cd	111	35.000	0.000030	mg/L	3
Sb	123	3478.127	0.002089	mg/L	3
Ba	137	41.667	0.000026	mg/L	3
Tl	205	1675.099	0.000072	mg/L	3
Pb	208	3076.797	0.000099	mg/L	3

Metals Quantitation Summary Report

Sequence #: 010
Method: 18-R+AI
Acq Time: 10:51:53 Tue 30-Jun-20
Sample Name: ICV-0.1
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 06/24/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	381629.362	0.100602	mg/L	3
Be	9	102175.903	0.100423	mg/L	3
B	11	95922.824	0.101121	mg/L	3
Al	27	364577.637	0.103268	mg/L	3
Se	82	20803.336	0.101602	mg/L	3
Cr	52	326295.466	0.100663	mg/L	3
Fe	57	7647.047	0.099712	mg/L	3
Co	59	724064.524	0.102505	mg/L	3
Ni	60	202450.115	0.098374	mg/L	3
Cu	65	259117.822	0.100903	mg/L	3
Zn	66	54078.898	0.101265	mg/L	3
As	75	28186.113	0.101639	mg/L	3
Sr	88	264331.434	0.100161	mg/L	3
Mo	95	221366.461	0.103734	mg/L	3
Ag	107	817369.425	0.097694	mg/L	3
Cd	111	99648.149	0.097988	mg/L	3
Sb	123	170560.681	0.104962	mg/L	3
Ba	137	111584.183	0.101014	mg/L	3
Tl	205	1951757.814	0.100559	mg/L	3
Pb	208	2590853.098	0.101861	mg/L	3

Metals Quantitation Summary Report

Sequence #: 011
Method: 18-R+AI
Acq Time: 10:53:52 Tue 30-Jun-20
Sample Name: CCV-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 06/24/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	375896.388	0.093665	mg/L	3
Be	9	100131.543	0.093023	mg/L	3
B	11	94184.469	0.093830	mg/L	3
Al	27	345119.079	0.092354	mg/L	3
Se	82	20163.612	0.102258	mg/L	3
Cr	52	316897.113	0.101076	mg/L	3
Fe	57	7383.576	0.099473	mg/L	3
Co	59	694050.694	0.101517	mg/L	3
Ni	60	196639.388	0.098717	mg/L	3
Cu	65	255503.259	0.102827	mg/L	3
Zn	66	52476.222	0.101545	mg/L	3
As	75	27250.968	0.101573	mg/L	3
Sr	88	259477.206	0.101622	mg/L	3
Mo	95	211524.542	0.102464	mg/L	3
Ag	107	816430.358	0.100841	mg/L	3
Cd	111	98800.487	0.100397	mg/L	3
Sb	123	160231.084	0.101925	mg/L	3
Ba	137	110482.369	0.103381	mg/L	3
Tl	205	1891022.602	0.096103	mg/L	3
Pb	208	2478499.405	0.096130	mg/L	3

Metals Quantitation Summary Report

Sequence #: 012
Method: 18-R+AI
Acq Time: 10:55:50 Tue 30-Jun-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3177.020	0.000044	mg/L	3
Be	9	23.333	0.000024	mg/L	3
B	11	963.366	0.000767	mg/L	3
Al	27	1763.442	0.000304	mg/L	3
Se	82	296.696	0.001861	mg/L	3
Cr	52	261.669	0.000015	mg/L	3
Fe	57	168.334	0.000267	mg/L	3
Co	59	196.668	0.000027	mg/L	3
Ni	60	216.668	0.000064	mg/L	3
Cu	65	231.669	0.000063	mg/L	3
Zn	66	471.675	0.000590	mg/L	3
As	75	190.001	0.000665	mg/L	3
Sr	88	93.334	0.000028	mg/L	3
Mo	95	6218.020	0.002913	mg/L	3
Ag	107	381.672	0.000044	mg/L	3
Cd	111	11.667	0.000007	mg/L	3
Sb	123	3108.042	0.001854	mg/L	3
Ba	137	46.667	0.000031	mg/L	3
Tl	205	1543.417	0.000065	mg/L	3
Pb	208	2775.110	0.000086	mg/L	3

Metals Quantitation Summary Report

Sequence #: 013
Method: 18-R+AI
Acq Time: 11:01:57 Tue 30-Jun-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3388.737	0.000083	mg/L	3
Be	9	53.333	0.000052	mg/L	3
B	11	565.011	0.000331	mg/L	3
Al	27	1015.036	0.000083	mg/L	3
Se	82	72.045	0.000753	mg/L	3
Cr	52	188.335	-0.000008	mg/L	3
Fe	57	85.000	-0.000845	mg/L	3
Co	59	68.334	0.000009	mg/L	3
Ni	60	51.667	-0.000018	mg/L	3
Cu	65	95.000	0.000010	mg/L	3
Zn	66	111.667	-0.000090	mg/L	3
As	75	38.333	0.000116	mg/L	3
Sr	88	18.333	-0.000000	mg/L	3
Mo	95	1146.713	0.000515	mg/L	3
Ag	107	66.667	0.000006	mg/L	3
Cd	111	18.333	0.000013	mg/L	3
Sb	123	1192.964	0.000667	mg/L	3
Ba	137	23.333	0.000010	mg/L	3
Tl	205	681.683	0.000023	mg/L	3
Pb	208	835.009	0.000013	mg/L	3

Metals Quantitation Summary Report

Sequence #: 014
Method: 18-R+AI
Acq Time: 11:03:56 Tue 30-Jun-20
Sample Name: CCB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3020.320	-0.000017	mg/L	3
Be	9	1.667	0.000002	mg/L	3
B	11	498.342	0.000260	mg/L	3
Al	27	695.017	-0.000007	mg/L	3
Se	82	-4.639	0.000367	mg/L	3
Cr	52	188.335	-0.000008	mg/L	3
Fe	57	70.000	-0.001053	mg/L	3
Co	59	35.000	0.000004	mg/L	3
Ni	60	50.000	-0.000018	mg/L	3
Cu	65	90.000	0.000007	mg/L	3
Zn	66	88.334	-0.000136	mg/L	3
As	75	53.333	0.000170	mg/L	3
Sr	88	16.667	-0.000001	mg/L	3
Mo	95	866.693	0.000380	mg/L	3
Ag	107	38.333	0.000002	mg/L	3
Cd	111	5.000	-0.000000	mg/L	3
Sb	123	927.944	0.000498	mg/L	3
Ba	137	16.667	0.000003	mg/L	3
Tl	205	545.010	0.000015	mg/L	3
Pb	208	713.340	0.000008	mg/L	3

Metals Quantitation Summary Report

Sequence #: 015
Method: 18-R+AI
Acq Time: 11:05:54 Tue 30-Jun-20
Sample Name: LOD 0.00005
Sample Type: Sample
Matrix: Liquid
Comments: soil
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3215.362	0.000058	mg/L	3
Be	9	35.000	0.000034	mg/L	3
B	11	440.007	0.000209	mg/L	3
Al	27	925.030	0.000064	mg/L	3
Se	82	82.177	0.000808	mg/L	3
Cr	52	288.336	0.000024	mg/L	3
Fe	57	65.000	-0.001106	mg/L	3
Co	59	341.671	0.000048	mg/L	3
Ni	60	128.334	0.000021	mg/L	3
Cu	65	198.335	0.000051	mg/L	3
Zn	66	230.002	0.000140	mg/L	3
As	75	45.000	0.000143	mg/L	3
Sr	88	135.001	0.000045	mg/L	3
Mo	95	671.683	0.000293	mg/L	3
Ag	107	373.338	0.000043	mg/L	3
Cd	111	56.667	0.000052	mg/L	3
Sb	123	768.144	0.000405	mg/L	3
Ba	137	55.000	0.000039	mg/L	3
Tl	205	1126.711	0.000044	mg/L	3
Pb	208	1535.032	0.000039	mg/L	3

Metals Quantitation Summary Report

Sequence #: 016
Method: 18-R+AI
Acq Time: 11:07:53 Tue 30-Jun-20
Sample Name: LOD 0.00005
Sample Type: Sample
Matrix: Liquid
Comments: water
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3103.671	0.000014	mg/L	3
Be	9	33.333	0.000033	mg/L	3
B	11	438.340	0.000201	mg/L	3
Al	27	856.692	0.000041	mg/L	3
Se	82	52.331	0.000656	mg/L	3
Cr	52	378.338	0.000053	mg/L	3
Fe	57	38.333	-0.001469	mg/L	3
Co	59	338.337	0.000048	mg/L	3
Ni	60	130.001	0.000022	mg/L	3
Cu	65	186.668	0.000047	mg/L	3
Zn	66	228.335	0.000138	mg/L	3
As	75	63.333	0.000210	mg/L	3
Sr	88	120.001	0.000039	mg/L	3
Mo	95	601.679	0.000259	mg/L	3
Ag	107	365.005	0.000042	mg/L	3
Cd	111	70.000	0.000066	mg/L	3
Sb	123	597.087	0.000298	mg/L	3
Ba	137	68.333	0.000051	mg/L	3
Tl	205	1245.055	0.000051	mg/L	3
Pb	208	1541.701	0.000040	mg/L	3

Metals Quantitation Summary Report

Sequence #: 017
Method: 18-R+AI
Acq Time: 11:10:04 Tue 30-Jun-20
Sample Name: BS-0.0001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3312.051	0.000091	mg/L	3
Be	9	103.334	0.000104	mg/L	3
Cr	52	553.344	0.000111	mg/L	3
Co	59	783.355	0.000114	mg/L	3
Ni	60	288.336	0.000103	mg/L	3
Cu	65	303.337	0.000095	mg/L	3
Zn	66	223.335	0.000133	mg/L	3
Sr	88	263.336	0.000096	mg/L	3
Ag	107	845.025	0.000102	mg/L	3
Cd	111	110.000	0.000107	mg/L	3
Ba	137	143.334	0.000123	mg/L	3
Tl	205	2331.858	0.000108	mg/L	3
Pb	208	3065.128	0.000101	mg/L	3

Metals Quantitation Summary Report

Sequence #: 018
Method: 18-R+AI
Acq Time: 11:14:29 Tue 30-Jun-20
Sample Name: BS-0.00025
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	4093.920	0.000258	mg/L	3
Be	9	316.670	0.000305	mg/L	3
B	11	548.344	0.000307	mg/L	3
Al	27	1815.115	0.000303	mg/L	3
Cr	52	991.701	0.000259	mg/L	3
Co	59	2023.477	0.000303	mg/L	3
Ni	60	615.013	0.000275	mg/L	3
Cu	65	811.690	0.000309	mg/L	3
Sr	88	751.687	0.000295	mg/L	3
Ag	107	2195.169	0.000277	mg/L	3
Cd	111	306.670	0.000316	mg/L	3
Ba	137	291.670	0.000269	mg/L	3
Tl	205	5582.757	0.000277	mg/L	3
Pb	208	7154.053	0.000263	mg/L	3

Metals Quantitation Summary Report

Sequence #: 019
Method: 18-R+Al
Acq Time: 11:16:28 Tue 30-Jun-20
Sample Name: BS-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5224.289	0.000583	mg/L	3
Be	9	568.345	0.000561	mg/L	3
B	11	833.358	0.000624	mg/L	3
Al	27	2731.928	0.000576	mg/L	3
Se	82	4.918	0.000420	mg/L	3
Cr	52	1886.791	0.000532	mg/L	3
Co	59	3838.849	0.000558	mg/L	3
Ni	60	1216.719	0.000565	mg/L	3
Cu	65	1545.084	0.000591	mg/L	3
Zn	66	480.008	0.000624	mg/L	3
As	75	158.334	0.000562	mg/L	3
Sr	88	1418.404	0.000545	mg/L	3
Mo	95	1255.055	0.000575	mg/L	3
Ag	107	4355.665	0.000533	mg/L	3
Cd	111	526.676	0.000527	mg/L	3
Ba	137	570.011	0.000519	mg/L	3
Tl	205	10944.195	0.000557	mg/L	3
Pb	208	13740.954	0.000526	mg/L	3

Metals Quantitation Summary Report

Sequence #: 020
Method: 18-R+AI
Acq Time: 11:29:03 Tue 30-Jun-20
Sample Name: BS-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	7128.445	0.001088	mg/L	3
Be	9	1116.710	0.001099	mg/L	3
B	11	1388.401	0.001209	mg/L	3
Al	27	4642.422	0.001117	mg/L	3
Se	82	159.980	0.001199	mg/L	3
Cr	52	3728.821	0.001131	mg/L	3
Co	59	7707.080	0.001133	mg/L	3
Ni	60	2136.827	0.001037	mg/L	3
Cu	65	2975.310	0.001178	mg/L	3
Zn	68	600.013	0.001302	mg/L	3
As	75	315.003	0.001160	mg/L	3
Sr	88	2911.964	0.001141	mg/L	3
Mo	95	2036.812	0.000963	mg/L	3
Ag	107	8982.826	0.001114	mg/L	3
Cd	111	1176.715	0.001199	mg/L	3
Sb	123	2214.543	0.001340	mg/L	3
Ba	137	1165.048	0.001085	mg/L	3
Tl	205	21125.609	0.001096	mg/L	3
Pb	208	27637.472	0.001087	mg/L	3

Metals Quantitation Summary Report

Sequence #: 021
Method: 18-R+AI
Acq Time: 11:32:32 Tue 30-Jun-20
Sample Name: BS-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	7183.476	0.001091	mg/L	3
Be	9	1121.711	0.001096	mg/L	3
B	11	1256.722	0.001061	mg/L	3
Al	27	4817.479	0.001157	mg/L	3
Se	82	176.974	0.001288	mg/L	3
Cr	52	3685.475	0.001107	mg/L	3
Co	59	7777.116	0.001135	mg/L	3
Ni	60	2256.845	0.001089	mg/L	3
Cu	65	3063.662	0.001204	mg/L	3
Zn	66	805.023	0.001256	mg/L	3
As	75	315.004	0.001149	mg/L	3
Sr	88	2865.288	0.001113	mg/L	3
Mo	95	2213.505	0.001041	mg/L	3
Ag	107	8879.426	0.001093	mg/L	3
Cd	111	1148.380	0.001160	mg/L	3
Sb	123	2236.003	0.001342	mg/L	3
Ba	137	1238.387	0.001145	mg/L	3
Tl	205	20381.205	0.001057	mg/L	3
Pb	208	27200.328	0.001069	mg/L	3

Metals Quantitation Summary Report

Sequence #: 022
Method: 18-R+AI
Acq Time: 11:37:33 Tue 30-Jun-20
Sample Name: BS-0.0025
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Fe	57	290.003	0.002075	mg/L	3

Metals Quantitation Summary Report

Sequence #: 023
Method: 18-R+AI
Acq Time: 11:42:04 Tue 30-Jun-20
Sample Name: BS-0.0025
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	13372.924	0.002689	mg/L	3
Be	9	2643.578	0.002557	mg/L	3
B	11	2751.932	0.002599	mg/L	3
Al	27	10660.645	0.002776	mg/L	3
Se	82	528.449	0.003035	mg/L	3
Cr	52	8867.753	0.002762	mg/L	3
Fe	57	266.669	0.001672	mg/L	3
Co	59	18693.897	0.002735	mg/L	3
Ni	60	5399.354	0.002670	mg/L	3
Cu	65	7328.547	0.002922	mg/L	3
Zn	66	1716.770	0.003028	mg/L	3
As	75	651.682	0.002408	mg/L	3
Sr	88	6863.315	0.002680	mg/L	3
Mo	95	5094.242	0.002438	mg/L	3
Ag	107	21524.558	0.002656	mg/L	3
Cd	111	2575.232	0.002613	mg/L	3
Sb	123	5273.258	0.003277	mg/L	3
Ba	137	2860.286	0.002666	mg/L	3
Tl	205	50681.410	0.002603	mg/L	3
Pb	208	67389.741	0.002634	mg/L	3

Metals Quantitation Summary Report

Sequence #: 024
Method: 18-R+AI
Acq Time: 11:44:02 Tue 30-Jun-20
Sample Name: Solu-AB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Al	27	33701415.477	9.865482	mg/L	3
Cr	52	65843.080	0.022929	mg/L	3
Fe	57	745210.167	11.209159	mg/L	3
Co	59	142909.613	0.022881	mg/L	3
Ni	60	40552.479	0.022251	mg/L	3
Cu	65	51054.452	0.022466	mg/L	3
Zn	66	11181.042	0.023445	mg/L	3
As	75	5596.096	0.022808	mg/L	3
Mo	95	431837.831	0.228961	mg/L	3
Ag	107	164570.882	0.022245	mg/L	3
Cd	111	20576.483	0.022876	mg/L	3

Metals Quantitation Summary Report

Sequence #: 025
Method: 18-R+AI
Acq Time: 11:46:01 Tue 30-Jun-20
Sample Name: Solu-AA
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3183.689	0.000077	mg/L	3
Be	9	5.000	0.000005	mg/L	3
B	11	591.679	0.000395	mg/L	3
Se	82	-33.000	0.000214	mg/L	3
Cr	52	291.670	0.000034	mg/L	3
Co	59	211.668	0.000032	mg/L	3
Ni	60	176.668	0.000053	mg/L	3
Cu	65	1541.750	0.000643	mg/L	3
Zn	66	1021.703	0.001839	mg/L	3
As	75	46.667	0.000164	mg/L	3
Sr	88	273.336	0.000108	mg/L	3
Ag	107	93.334	0.000010	mg/L	3
Cd	111	145.001	0.000154	mg/L	3
Sb	123	210.002	0.000065	mg/L	3
Ba	137	550.011	0.000544	mg/L	3
Tl	205	225.002	-0.000001	mg/L	3
Pb	208	2545.091	0.000080	mg/L	3

Metals Quantitation Summary Report

Sequence #: 026
Method: 18-R+AI
Acq Time: 11:48:00 Tue 30-Jun-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3190.357	0.000013	mg/L	3
Be	9	1.667	0.000002	mg/L	3
B	11	406.672	0.000156	mg/L	3
Al	27	9016.194	0.002288	mg/L	3
Se	82	-81.610	-0.000005	mg/L	3
Cr	52	268.336	0.000020	mg/L	3
Fe	57	1140.047	0.013889	mg/L	3
Co	59	101.667	0.000014	mg/L	3
Ni	60	201.668	0.000059	mg/L	3
Cu	65	178.334	0.000045	mg/L	3
Zn	66	473.341	0.000626	mg/L	3
As	75	20.000	0.000052	mg/L	3
Sr	88	48.333	0.000011	mg/L	3
Mo	95	9181.288	0.004467	mg/L	3
Ag	107	170.001	0.000019	mg/L	3
Cd	111	15.000	0.000011	mg/L	3
Sb	123	129.791	0.000004	mg/L	3
Ba	137	21.667	0.000008	mg/L	3
Tl	205	338.337	0.000004	mg/L	3
Pb	208	1018.347	0.000018	mg/L	3

Metals Quantitation Summary Report

Sequence #: 027
Method: 18-R+AI
Acq Time: 11:53:35 Tue 30-Jun-20
Sample Name: 063020_1 LCS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	187504.373	0.047900	mg/L	3
Be	9	50788.473	0.048779	mg/L	3
B	11	46126.091	0.047367	mg/L	3
Al	27	170726.388	0.047162	mg/L	3
Se	82	9430.126	0.048253	mg/L	3
Cr	52	154277.531	0.049241	mg/L	3
Fe	57	3658.804	0.048483	mg/L	3
Co	59	327549.331	0.048019	mg/L	3
Ni	60	95897.465	0.048225	mg/L	3
Cu	65	121185.262	0.048848	mg/L	3
Zn	66	26200.672	0.050649	mg/L	3
As	75	13057.635	0.048736	mg/L	3
Sr	88	122339.962	0.047997	mg/L	3
Mo	95	94837.116	0.046024	mg/L	3
Ag	107	397096.001	0.049153	mg/L	3
Cd	111	48726.308	0.049598	mg/L	3
Sb	123	68705.274	0.043739	mg/L	3
Ba	137	53270.850	0.049933	mg/L	3
Tl	205	921902.154	0.046822	mg/L	3
Pb	208	1224150.467	0.047439	mg/L	3

Metals Quantitation Summary Report

Sequence #: 028
Method: 18-R+AI
Acq Time: 11:55:37 Tue 30-Jun-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3073.664	0.000001	mg/L	3
Be	9	33.333	0.000032	mg/L	3
B	11	583.345	0.000351	mg/L	3
Al	27	10369.099	0.002720	mg/L	3
Se	82	158.639	0.001186	mg/L	3
Cr	52	260.002	0.000017	mg/L	3
Fe	57	331.671	0.002592	mg/L	3
Co	59	150.001	0.000021	mg/L	3
Ni	60	208.335	0.000062	mg/L	3
Cu	65	240.002	0.000069	mg/L	3
Zn	66	451.674	0.000582	mg/L	3
As	75	48.333	0.000159	mg/L	3
Sr	88	76.667	0.000023	mg/L	3
Mo	95	3415.409	0.001635	mg/L	3
Ag	107	271.669	0.000031	mg/L	3
Cd	111	25.000	0.000021	mg/L	3
Sb	123	899.819	0.000497	mg/L	3
Ba	137	48.333	0.000033	mg/L	3
Tl	205	783.355	0.000029	mg/L	3
Pb	208	2531.756	0.000082	mg/L	3

Metals Quantitation Summary Report

Sequence #: 029
Method: 18-R+Al
Acq Time: 11:57:35 Tue 30-Jun-20
Sample Name: 063020_1 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3071.997	0.000033	mg/L	3
Be	9	18.333	0.000019	mg/L	3
B	11	345.004	0.000116	mg/L	3
Al	27	4789.154	0.001203	mg/L	3
Se	82	-43.131	0.000169	mg/L	3
Cr	52	236.669	0.000011	mg/L	3
Fe	57	191.668	0.000723	mg/L	3
Co	59	78.334	0.000011	mg/L	3
Ni	60	65.000	-0.000009	mg/L	3
Cu	65	136.667	0.000029	mg/L	3
Zn	66	131.667	-0.000040	mg/L	3
As	75	31.667	0.000097	mg/L	3
Sr	88	46.667	0.000011	mg/L	3
Mo	95	1710.102	0.000823	mg/L	3
Ag	107	155.001	0.000017	mg/L	3
Cd	111	18.333	0.000014	mg/L	3
Sb	123	581.259	0.000301	mg/L	3
Ba	137	13.333	0.000001	mg/L	3
Tl	205	590.012	0.000018	mg/L	3
Pb	208	1266.690	0.000030	mg/L	3

Metals Quantitation Summary Report

Sequence #: 052
Method: 18-R+AI
Acq Time: 12:45:51 Tue 30-Jun-20
Sample Name: CCV2-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 06/24/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	406939.436	0.102349	mg/L	3
Be	9	106272.282	0.099559	mg/L	3
B	11	100210.574	0.100822	mg/L	3
Al	27	360213.721	0.097201	mg/L	3
Se	82	19093.604	0.097456	mg/L	3
Cr	52	315674.001	0.103995	mg/L	3
Fe	57	7431.933	0.103575	mg/L	3
Co	59	672382.201	0.101634	mg/L	3
Ni	60	195176.725	0.101259	mg/L	3
Cu	65	246721.774	0.102604	mg/L	3
Zn	66	53153.752	0.106273	mg/L	3
As	75	27007.172	0.104026	mg/L	3
Sr	88	258455.779	0.104558	mg/L	3
Mo	95	199735.453	0.099969	mg/L	3
Ag	107	794519.978	0.101386	mg/L	3
Cd	111	97664.375	0.102542	mg/L	3
Sb	123	159597.656	0.104894	mg/L	3
Ba	137	107182.265	0.103643	mg/L	3
Tl	205	1833198.221	0.094283	mg/L	3
Pb	208	2471704.391	0.097012	mg/L	3

Metals Quantitation Summary Report

Sequence #: 053
Method: 18-R+AI
Acq Time: 12:47:49 Tue 30-Jun-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3218.697	-0.000012	mg/L	3
Be	9	20.000	0.000018	mg/L	3
B	11	1043.372	0.000767	mg/L	3
Al	27	1831.784	0.000283	mg/L	3
Se	82	373.512	0.002319	mg/L	3
Cr	52	236.669	0.000009	mg/L	3
Fe	57	133.334	-0.000162	mg/L	3
Co	59	105.000	0.000014	mg/L	3
Ni	60	226.669	0.000071	mg/L	3
Cu	65	198.335	0.000052	mg/L	3
Zn	66	483.342	0.000633	mg/L	3
As	75	153.334	0.000547	mg/L	3
Sr	88	60.000	0.000016	mg/L	3
Mo	95	5816.185	0.002782	mg/L	3
Ag	107	253.336	0.000029	mg/L	3
Cd	111	18.333	0.000014	mg/L	3
Sb	123	2520.013	0.001522	mg/L	3
Ba	137	31.667	0.000018	mg/L	3
Tl	205	873.360	0.000032	mg/L	3
Pb	208	2155.064	0.000064	mg/L	3

Metals Quantitation Summary Report

Sequence #: 054
Method: 18-R+AI
Acq Time: 12:52:08 Tue 30-Jun-20
Sample Name: CCB2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3378.734	-0.000007	mg/L	3
Be	9	5.000	0.000004	mg/L	3
B	11	723.352	0.000423	mg/L	3
Al	27	788.355	-0.000002	mg/L	3
Se	82	30.193	0.000544	mg/L	3
Cr	52	265.003	0.000018	mg/L	3
Fe	57	95.000	-0.000688	mg/L	3
Co	59	160.001	0.000022	mg/L	3
Ni	60	78.334	-0.000004	mg/L	3
Cu	65	128.334	0.000024	mg/L	3
Zn	66	105.000	-0.000099	mg/L	3
As	75	35.000	0.000107	mg/L	3
Sr	88	348.338	0.000128	mg/L	3
Mo	95	1323.395	0.000611	mg/L	3
Ag	107	310.004	0.000036	mg/L	3
Cd	111	28.333	0.000024	mg/L	3
Sb	123	1249.216	0.000716	mg/L	3
Ba	137	55.000	0.000039	mg/L	3
Tl	205	781.689	0.000027	mg/L	3
Pb	208	1173.354	0.000026	mg/L	3

Metals Quantitation Summary Report

Sequence #: 067
Method: 18-R+AI
Acq Time: 13:26:56 Tue 30-Jun-20
Sample Name: CCV3-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 06/24/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	429510.501	0.100724	mg/L	3
Be	9	110151.519	0.096246	mg/L	3
B	11	103690.682	0.097048	mg/L	3
Al	27	371317.377	0.093433	mg/L	3
Se	82	19768.056	0.099049	mg/L	3
Cr	52	316895.133	0.103259	mg/L	3
Fe	57	7451.953	0.102606	mg/L	3
Co	59	670745.408	0.100280	mg/L	3
Ni	60	194588.106	0.099823	mg/L	3
Cu	65	245513.425	0.100972	mg/L	3
Zn	66	51996.141	0.102789	mg/L	3
As	75	26489.537	0.100887	mg/L	3
Sr	88	253653.853	0.101487	mg/L	3
Mo	95	197140.180	0.097548	mg/L	3
Ag	107	792580.674	0.100031	mg/L	3
Cd	111	96194.488	0.099869	mg/L	3
Sb	123	158839.549	0.103226	mg/L	3
Ba	137	107674.436	0.102993	mg/L	3
Tl	205	1884783.427	0.096838	mg/L	3
Pb	208	2512951.860	0.098540	mg/L	3

Metals Quantitation Summary Report

Sequence #: 068
Method: 18-R+AI
Acq Time: 13:28:54 Tue 30-Jun-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3618.793	0.000055	mg/L	3
Be	9	28.333	0.000025	mg/L	3
B	11	951.698	0.000642	mg/L	3
Al	27	1951.800	0.000296	mg/L	3
Se	82	240.025	0.001582	mg/L	3
Cr	52	355.004	0.000046	mg/L	3
Fe	57	131.667	-0.000182	mg/L	3
Co	59	353.338	0.000050	mg/L	3
Ni	60	233.335	0.000074	mg/L	3
Cu	65	300.003	0.000093	mg/L	3
Zn	66	441.674	0.000553	mg/L	3
As	75	143.334	0.000510	mg/L	3
Sr	88	180.001	0.000063	mg/L	3
Mo	95	5921.227	0.002834	mg/L	3
Ag	107	563.345	0.000067	mg/L	3
Cd	111	48.333	0.000044	mg/L	3
Sb	123	2744.425	0.001666	mg/L	3
Ba	137	65.000	0.000049	mg/L	3
Tl	205	1593.423	0.000069	mg/L	3
Pb	208	2993.456	0.000098	mg/L	3

Metals Quantitation Summary Report

Sequence #: 069
Method: 18-R+AI
Acq Time: 13:33:47 Tue 30-Jun-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3295.382	-0.000039	mg/L	3
Be	9	1.667	0.000001	mg/L	3
B	11	638.348	0.000333	mg/L	3
Al	27	695.017	-0.000029	mg/L	3
Se	82	-82.146	-0.000011	mg/L	3
Cr	52	166.668	-0.000014	mg/L	3
Fe	57	71.667	-0.001005	mg/L	3
Co	59	68.334	0.000009	mg/L	3
Ni	60	50.000	-0.000018	mg/L	3
Cu	65	86.667	0.000007	mg/L	3
Zn	66	106.667	-0.000096	mg/L	3
As	75	33.333	0.000100	mg/L	3
Sr	88	41.667	0.000009	mg/L	3
Mo	95	1240.054	0.000572	mg/L	3
Ag	107	96.667	0.000009	mg/L	3
Cd	111	18.333	0.000014	mg/L	3
Sb	123	1133.169	0.000644	mg/L	3
Ba	137	20.000	0.000007	mg/L	3
Tl	205	383.339	0.000007	mg/L	3
Pb	208	638.339	0.000005	mg/L	3

Metals Quantitation Summary Report

Sequence #: 070
Method: 18-R+AI
Acq Time: 13:53:31 Tue 30-Jun-20
Sample Name: 063020_5 LCS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	212937.347	0.045920	mg/L	3
Be	9	54679.532	0.044403	mg/L	3
B	11	52681.995	0.045720	mg/L	3
Al	27	192638.955	0.044936	mg/L	3
Se	82	9536.631	0.046016	mg/L	3
Cr	52	156395.066	0.049774	mg/L	3
Fe	57	3748.826	0.049487	mg/L	3
Co	59	340965.324	0.049837	mg/L	3
Ni	60	99943.520	0.050119	mg/L	3
Cu	65	123572.325	0.049660	mg/L	3
Zn	66	26147.243	0.050381	mg/L	3
As	75	13317.877	0.049546	mg/L	3
Sr	88	128566.091	0.050296	mg/L	3
Mo	95	92194.875	0.044588	mg/L	3
Ag	107	398736.480	0.049187	mg/L	3
Cd	111	47935.293	0.048645	mg/L	3
Sb	123	71488.220	0.045380	mg/L	3
Ba	137	52698.801	0.049263	mg/L	3
Tl	205	924813.360	0.047766	mg/L	3
Pb	208	1197324.825	0.047189	mg/L	3

Metals Quantitation Summary Report

Sequence #: 071
Method: 18-R+AI
Acq Time: 13:55:30 Tue 30-Jun-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3480.424	0.000013	mg/L	3
Be	9	18.333	0.000016	mg/L	3
B	11	653.348	0.000351	mg/L	3
Al	27	2063.483	0.000318	mg/L	3
Se	82	194.839	0.001363	mg/L	3
Cr	52	210.002	-0.000000	mg/L	3
Fe	57	121.667	-0.000331	mg/L	3
Co	59	55.000	0.000007	mg/L	3
Ni	60	215.002	0.000064	mg/L	3
Cu	65	173.334	0.000041	mg/L	3
Zn	66	446.674	0.000558	mg/L	3
As	75	68.334	0.000229	mg/L	3
Sr	88	60.000	0.000016	mg/L	3
Mo	95	2945.304	0.001387	mg/L	3
Ag	107	208.335	0.000023	mg/L	3
Cd	111	16.667	0.000012	mg/L	3
Sb	123	1091.289	0.000610	mg/L	3
Ba	137	41.667	0.000027	mg/L	3
Tl	205	505.009	0.000013	mg/L	3
Pb	208	1528.366	0.000040	mg/L	3

Metals Quantitation Summary Report

Sequence #: 072
Method: 18-R+AI
Acq Time: 13:57:32 Tue 30-Jun-20
Sample Name: 063020_5 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3207.027	-0.000047	mg/L	3
Be	9	3.333	0.000003	mg/L	3
B	11	365.005	0.000083	mg/L	3
Al	27	1263.389	0.000118	mg/L	3
Se	82	77.124	0.000787	mg/L	3
Cr	52	198.335	-0.000002	mg/L	3
Fe	57	46.667	-0.001340	mg/L	3
Co	59	40.000	0.000005	mg/L	3
Ni	60	31.667	-0.000027	mg/L	3
Cu	65	91.667	0.000010	mg/L	3
Zn	66	148.334	-0.000009	mg/L	3
As	75	36.667	0.000116	mg/L	3
Sr	88	93.334	0.000030	mg/L	3
Mo	95	1176.715	0.000552	mg/L	3
Ag	107	95.000	0.000009	mg/L	3
Cd	111	8.333	0.000004	mg/L	3
Sb	123	636.261	0.000334	mg/L	3
Ba	137	25.000	0.000012	mg/L	3
Tl	205	250.002	0.000000	mg/L	3
Pb	208	766.675	0.000010	mg/L	3

Metals Quantitation Summary Report

Sequence #: 073
Method: 18-R+AI
Acq Time: 13:59:38 Tue 30-Jun-20
Sample Name: 15123.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3203.693	-0.000263	mg/L	3
Be	9	1.667	0.000008	mg/L	3
B	11	626.680	0.001641	mg/L	3
Al	27	2763.601	0.002476	mg/L	3
Se	82	-38.470	0.000981	mg/L	3
Cr	52	290.003	0.000131	mg/L	3
Fe	57	51.667	-0.006391	mg/L	3
Co	59	70.000	0.000046	mg/L	3
Ni	60	48.333	-0.000092	mg/L	3
Cu	65	343.337	0.000556	mg/L	3
Zn	66	138.334	-0.000166	mg/L	3
As	75	20.000	0.000255	mg/L	3
Sr	88	60.000	0.000080	mg/L	3
Mo	95	666.682	0.001473	mg/L	3
Ag	107	95.000	0.000046	mg/L	3
Cd	111	15.000	0.000052	mg/L	3
Sb	123	628.545	0.001613	mg/L	3
Ba	137	76.667	0.000299	mg/L	3
Tl	205	365.005	0.000029	mg/L	3
Pb	208	526.671	0.000002	mg/L	3

Metals Quantitation Summary Report

Sequence #: 074
Method: 18-R+AI
Acq Time: 14:01:55 Tue 30-Jun-20
Sample Name: 15123.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 2

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3392.069	0.000001	mg/L	3
Be	9	0.000	0.000000	mg/L	3
B	11	568.345	0.000558	mg/L	3
Al	27	2610.239	0.000927	mg/L	3
Se	82	-86.871	-0.000097	mg/L	3
Cr	52	236.669	0.000017	mg/L	3
Fe	57	63.333	-0.002255	mg/L	3
Co	59	20.000	0.000003	mg/L	3
Ni	60	38.333	-0.000047	mg/L	3
Cu	65	305.003	0.000189	mg/L	3
Zn	66	136.667	-0.000078	mg/L	3
As	75	10.000	0.000026	mg/L	3
Sr	88	23.333	0.000003	mg/L	3
Mo	95	486.675	0.000408	mg/L	3
Ag	107	50.000	0.000007	mg/L	3
Cd	111	8.333	0.000007	mg/L	3
Sb	123	447.711	0.000408	mg/L	3
Ba	137	78.334	0.000122	mg/L	3
Tl	205	185.001	-0.000007	mg/L	3
Pb	208	415.003	-0.000008	mg/L	3

Metals Quantitation Summary Report

Sequence #: 075
Method: 18-R+AI
Acq Time: 14:03:52 Tue 30-Jun-20
Sample Name: 15123.01 dil
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5829.525	0.029170	mg/L	3
Be	9	3.333	0.000149	mg/L	3
B	11	8657.626	0.398518	mg/L	3
Al	27	20332.856	0.249162	mg/L	3
Se	82	-66.936	0.002400	mg/L	3
Cr	52	270.003	0.000985	mg/L	3
Fe	57	13513.061	9.214556	mg/L	3
Co	59	240.002	0.001704	mg/L	3
Ni	60	160.001	0.001884	mg/L	3
Cu	65	113.334	0.000899	mg/L	3
Zn	66	275.003	0.011653	mg/L	3
As	75	40.000	0.006251	mg/L	3
Sr	88	11846.579	0.232200	mg/L	3
Mo	95	468.341	0.009883	mg/L	3
Ag	107	46.667	0.000161	mg/L	3
Cd	111	13.333	0.000435	mg/L	3
Sb	123	336.251	0.006756	mg/L	3
Ba	137	3450.417	0.161260	mg/L	3
Tl	205	195.001	-0.000143	mg/L	3
Pb	208	396.669	-0.000231	mg/L	3

Metals Quantitation Summary Report

Sequence #: 076
Method: 18-R+AI
Acq Time: 14:05:50 Tue 30-Jun-20
Sample Name: 15123.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	29168.118	0.032361	mg/L	3
Be	9	6.667	0.000031	mg/L	3
B	11	78505.267	0.388313	mg/L	3
Al	27	184377.946	0.244727	mg/L	3
Se	82	48.423	0.003257	mg/L	3
Cr	52	950.032	0.001305	mg/L	3
Fe	57	129720.209	9.633518	mg/L	3
Co	59	2516.889	0.001986	mg/L	3
Ni	60	918.363	0.002280	mg/L	3
Cu	65	378.338	0.000684	mg/L	3
Zn	66	386.672	0.002540	mg/L	3
As	75	350.004	0.006938	mg/L	3
Sr	88	116592.295	0.246868	mg/L	3
Mo	95	1231.720	0.003076	mg/L	3
Ag	107	48.333	0.000019	mg/L	3
Cd	111	6.667	0.000012	mg/L	3
Sb	123	376.042	0.000897	mg/L	3
Ba	137	33382.303	0.168859	mg/L	3
Tl	205	143.334	-0.000027	mg/L	3
Pb	208	1418.362	0.000182	mg/L	3

Metals Quantitation Summary Report

Sequence #: 077
Method: 18-R+AI
Acq Time: 14:07:48 Tue 30-Jun-20
Sample Name: 15123.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	45189.697	0.054905	mg/L	3
Be	9	3.333	0.000016	mg/L	3
B	11	782549.182	4.056422	mg/L	3
Al	27	5727.817	0.006966	mg/L	3
Se	82	71.993	0.004003	mg/L	3
Cr	52	193.335	0.000011	mg/L	3
Fe	57	6424.782	0.482393	mg/L	3
Co	59	4862.495	0.003962	mg/L	3
Ni	60	7715.418	0.021417	mg/L	3
Cu	65	278.336	0.000487	mg/L	3
Zn	66	253.336	0.001233	mg/L	3
As	75	38.333	0.000675	mg/L	3
Sr	88	171167.965	0.374127	mg/L	3
Mo	95	3763.830	0.010023	mg/L	3
Ag	107	33.333	0.000010	mg/L	3
Cd	111	10.000	0.000033	mg/L	3
Sb	123	314.584	0.000722	mg/L	3
Ba	137	8694.312	0.045369	mg/L	3
Tl	205	138.334	-0.000029	mg/L	3
Pb	208	895.012	0.000073	mg/L	3

Metals Quantitation Summary Report

Sequence #: 078
Method: 18-R+AI
Acq Time: 14:09:45 Tue 30-Jun-20
Sample Name: 15123.03s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	10240.337	0.008459	mg/L	3
Be	9	0.000	0.000000	mg/L	3
B	11	11898.288	0.056503	mg/L	3
Al	27	4994.206	0.005504	mg/L	3
Se	82	43.684	0.003103	mg/L	3
Cr	52	183.335	-0.000022	mg/L	3
Fe	57	17295.465	1.258988	mg/L	3
Co	59	413.339	0.000316	mg/L	3
Ni	60	433.340	0.000947	mg/L	3
Cu	65	116.667	0.000111	mg/L	3
Zn	66	165.001	0.000192	mg/L	3
As	75	353.338	0.006918	mg/L	3
Sr	88	65801.240	0.137541	mg/L	3
Mo	95	1668.431	0.004161	mg/L	3
Ag	107	33.333	0.000009	mg/L	3
Cd	111	3.333	-0.000007	mg/L	3
Sb	123	264.793	0.000504	mg/L	3
Ba	137	33133.381	0.165465	mg/L	3
Tl	205	73.334	-0.000046	mg/L	3
Pb	208	193.334	-0.000063	mg/L	3

Metals Quantitation Summary Report

Sequence #: 079
Method: 18-R+AI
Acq Time: 14:11:42 Tue 30-Jun-20
Sample Name: 15123.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	51852.298	0.060877	mg/L	3
Be	9	5.000	0.000023	mg/L	3
B	11	922773.912	4.594373	mg/L	3
Al	27	143805.437	0.191270	mg/L	3
Se	82	83.778	0.004287	mg/L	3
Cr	52	910.029	0.001304	mg/L	3
Fe	57	6223.023	0.472525	mg/L	3
Co	59	990.035	0.000812	mg/L	3
Ni	60	4610.746	0.012845	mg/L	3
Cu	65	975.033	0.002073	mg/L	3
Zn	66	495.009	0.003905	mg/L	3
As	75	45.000	0.000828	mg/L	3
Sr	88	369380.890	0.816372	mg/L	3
Mo	95	18270.012	0.049790	mg/L	3
Ag	107	28.333	0.000007	mg/L	3
Cd	111	36.667	0.000186	mg/L	3
Sb	123	335.004	0.000806	mg/L	3
Ba	137	9217.974	0.048624	mg/L	3
Tl	205	286.670	0.000007	mg/L	3
Pb	208	2046.724	0.000290	mg/L	3

Metals Quantitation Summary Report

Sequence #: 080
Method: 18-R+AI
Acq Time: 14:13:41 Tue 30-Jun-20
Sample Name: 15123.05s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	33432.416	0.036797	mg/L	3
Be	9	0.000	0.000000	mg/L	3
B	11	133928.390	0.648136	mg/L	3
Al	27	27725.214	0.035154	mg/L	3
Se	82	15.284	0.002360	mg/L	3
Cr	52	220.002	0.000051	mg/L	3
Fe	57	1038.371	0.068598	mg/L	3
Co	59	613.347	0.000488	mg/L	3
Ni	60	2488.550	0.006661	mg/L	3
Cu	65	476.675	0.000915	mg/L	3
Zn	66	283.336	0.001506	mg/L	3
As	75	18.333	0.000256	mg/L	3
Sr	88	458569.950	0.988154	mg/L	3
Mo	95	9853.397	0.026109	mg/L	3
Ag	107	31.667	0.000009	mg/L	3
Cd	111	53.333	0.000273	mg/L	3
Sb	123	232.706	0.000417	mg/L	3
Ba	137	8229.038	0.042296	mg/L	3
Tl	205	106.667	-0.000037	mg/L	3
Pb	208	471.670	-0.000009	mg/L	3

Metals Quantitation Summary Report

Sequence #: 081
Method: 18-R+AI
Acq Time: 14:15:38 Tue 30-Jun-20
Sample Name: 15232.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	16716.443	0.016523	mg/L	3
Be	9	3.333	0.000015	mg/L	3
B	11	130371.904	0.637481	mg/L	3
Al	27	18071.430	0.022736	mg/L	3
Se	82	-35.058	0.000988	mg/L	3
Cr	52	271.669	0.000137	mg/L	3
Fe	57	1020.036	0.066413	mg/L	3
Co	59	933.364	0.000737	mg/L	3
Ni	60	1068.374	0.002706	mg/L	3
Cu	65	4959.194	0.010733	mg/L	3
Zn	66	4372.336	0.044696	mg/L	3
As	75	136.667	0.002656	mg/L	3
Sr	88	2064821.470	4.403560	mg/L	3
Mo	95	11656.421	0.030600	mg/L	3
Ag	107	48.333	0.000019	mg/L	3
Cd	111	36.667	0.000178	mg/L	3
Sb	123	452.501	0.001172	mg/L	3
Ba	137	9136.257	0.046522	mg/L	3
Tl	205	180.001	-0.000019	mg/L	3
Pb	208	46471.685	0.008882	mg/L	3

Metals Quantitation Summary Report

Sequence #: 082
Method: 18-R+AI
Acq Time: 14:17:37 Tue 30-Jun-20
Sample Name: 15123.06s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	10328.738	0.008342	mg/L	3
Be	9	0.000	0.000000	mg/L	3
B	11	10789.074	0.050249	mg/L	3
Al	27	4994.208	0.005404	mg/L	3
Se	82	13.604	0.002328	mg/L	3
Cr	52	201.668	0.000018	mg/L	3
Fe	57	17550.780	1.309651	mg/L	3
Co	59	470.008	0.000371	mg/L	3
Ni	60	430.006	0.000968	mg/L	3
Cu	65	88.334	0.000056	mg/L	3
Zn	66	281.670	0.001469	mg/L	3
As	75	360.005	0.007231	mg/L	3
Sr	88	66075.795	0.141535	mg/L	3
Mo	95	2213.505	0.005715	mg/L	3
Ag	107	35.000	0.000011	mg/L	3
Cd	111	8.333	0.000022	mg/L	3
Sb	123	162.495	0.000169	mg/L	3
Ba	137	33335.535	0.170608	mg/L	3
Tl	205	56.667	-0.000050	mg/L	3
Pb	208	420.003	-0.000019	mg/L	3

Metals Quantitation Summary Report

Sequence #: 083
Method: 18-R+AI
Acq Time: 14:19:34 Tue 30-Jun-20
Sample Name: 15123.06 MS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	216241.076	0.251243	mg/L	3
Be	9	53561.892	0.233666	mg/L	3
B	11	60713.775	0.283301	mg/L	3
Al	27	178633.954	0.223756	mg/L	3
Se	82	9433.868	0.251247	mg/L	3
Cr	52	152583.904	0.260385	mg/L	3
Fe	57	20947.013	1.531975	mg/L	3
Co	59	321226.735	0.251649	mg/L	3
Ni	60	91814.121	0.246736	mg/L	3
Cu	65	111212.957	0.239608	mg/L	3
Zn	66	24340.729	0.251401	mg/L	3
As	75	13080.987	0.261028	mg/L	3
Sr	88	191294.046	0.401078	mg/L	3
Mo	95	91304.230	0.236729	mg/L	3
Ag	107	371149.830	0.245490	mg/L	3
Cd	111	46032.384	0.250437	mg/L	3
Sb	123	67172.149	0.228566	mg/L	3
Ba	137	87212.153	0.437052	mg/L	3
Tl	205	916269.735	0.228596	mg/L	3
Pb	208	1186964.369	0.225954	mg/L	3

Metals Quantitation Summary Report

Sequence #: 084
Method: 18-R+AI
Acq Time: 14:21:32 Tue 30-Jun-20
Sample Name: 15123.06 MSD
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	210733.312	0.252316	mg/L	3
Be	9	52723.809	0.237172	mg/L	3
B	11	58998.346	0.283927	mg/L	3
Al	27	180225.442	0.232994	mg/L	3
Se	82	9457.315	0.252313	mg/L	3
Cr	52	150626.892	0.254881	mg/L	3
Fe	57	21426.060	1.554095	mg/L	3
Co	59	322288.332	0.250438	mg/L	3
Ni	60	92597.498	0.246846	mg/L	3
Cu	65	114972.578	0.245641	mg/L	3
Zn	66	24591.154	0.251954	mg/L	3
As	75	13092.667	0.259065	mg/L	3
Sr	88	193481.433	0.402381	mg/L	3
Mo	95	97508.443	0.250735	mg/L	3
Ag	107	371304.762	0.243601	mg/L	3
Cd	111	46172.863	0.249186	mg/L	3
Sb	123	68139.843	0.230023	mg/L	3
Ba	137	85629.210	0.425600	mg/L	3
Tl	205	892128.118	0.224889	mg/L	3
Pb	208	1181201.928	0.227194	mg/L	3

Metals Quantitation Summary Report

Sequence #: 085
Method: 18-R+AI
Acq Time: 14:23:32 Tue 30-Jun-20
Sample Name: CCV4-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 06/24/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	431944.692	0.100408	mg/L	3
Be	9	112995.198	0.097900	mg/L	3
B	11	103606.151	0.096237	mg/L	3
Al	27	375827.110	0.093812	mg/L	3
Se	82	19377.650	0.099660	mg/L	3
Cr	52	318377.318	0.104305	mg/L	3
Fe	57	7361.897	0.101990	mg/L	3
Co	59	679807.592	0.102198	mg/L	3
Ni	60	191545.744	0.098809	mg/L	3
Cu	65	243041.946	0.100494	mg/L	3
Zn	66	52536.452	0.104436	mg/L	3
As	75	26177.304	0.100252	mg/L	3
Sr	88	254339.673	0.102286	mg/L	3
Mo	95	196002.095	0.097521	mg/L	3
Ag	107	800119.257	0.101529	mg/L	3
Cd	111	98668.207	0.102985	mg/L	3
Sb	123	160029.924	0.104534	mg/L	3
Ba	137	109545.146	0.105326	mg/L	3
Tl	205	1863651.922	0.092462	mg/L	3
Pb	208	2468468.148	0.093457	mg/L	3

Metals Quantitation Summary Report

Sequence #: 086
Method: 18-R+AI
Acq Time: 14:25:30 Tue 30-Jun-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3513.766	-0.000009	mg/L	3
Be	9	10.000	0.000008	mg/L	3
B	11	1543.417	0.001136	mg/L	3
Al	27	1955.134	0.000273	mg/L	3
Se	82	348.524	0.002142	mg/L	3
Cr	52	223.335	0.000006	mg/L	3
Fe	57	135.001	-0.000101	mg/L	3
Co	59	83.334	0.000011	mg/L	3
Ni	60	198.335	0.000059	mg/L	3
Cu	65	186.668	0.000049	mg/L	3
Zn	66	435.007	0.000557	mg/L	3
As	75	138.334	0.000501	mg/L	3
Sr	88	48.333	0.000012	mg/L	3
Mo	95	6047.952	0.002955	mg/L	3
Ag	107	251.669	0.000029	mg/L	3
Cd	111	18.333	0.000014	mg/L	3
Sb	123	2440.826	0.001503	mg/L	3
Ba	137	40.000	0.000026	mg/L	3
Tl	205	830.024	0.000029	mg/L	3
Pb	208	2098.398	0.000060	mg/L	3

Metals Quantitation Summary Report

Sequence #: 087
Method: 18-R+Al
Acq Time: 14:29:41 Tue 30-Jun-20
Sample Name: CCB4
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630A.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	3540.439	-0.000005	mg/L	3
Be	9	1.667	0.000001	mg/L	3
B	11	1026.704	0.000667	mg/L	3
Al	27	706.684	-0.000031	mg/L	3
Se	82	-63.785	0.000076	mg/L	3
Cr	52	193.335	-0.000004	mg/L	3
Fe	57	61.667	-0.001129	mg/L	3
Co	59	93.334	0.000013	mg/L	3
Ni	60	60.000	-0.000012	mg/L	3
Cu	65	88.334	0.000008	mg/L	3
Zn	66	91.667	-0.000122	mg/L	3
As	75	30.000	0.000090	mg/L	3
Sr	88	35.000	0.000006	mg/L	3
Mo	95	1395.068	0.000659	mg/L	3
Ag	107	108.334	0.000011	mg/L	3
Cd	111	15.000	0.000010	mg/L	3
Sb	123	1069.621	0.000615	mg/L	3
Ba	137	28.333	0.000015	mg/L	3
Tl	205	343.338	0.000005	mg/L	3
Pb	208	728.341	0.000008	mg/L	3

Metals Quantitation Summary Report

Sequence #: 001
Method: 02-Ca-Mg.mth
Acq Time: 14:59:57 Tue 30-Jun-20
Sample Name: Blank
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	4523.333	0	mg/L		3
Ca	44	4801.667	0	mg/L		3

Metals Quantitation Summary Report

Sequence #: 002
Method: 02-Ca-Mg.mth
Acq Time: 15:01:08 Tue 30-Jun-20
Sample Name: Std-0.20
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	138406.667	0.203153	mg/L		3
Ca	44	8591.667	0.184028	mg/L		3

Metals Quantitation Summary Report

Sequence #: 003
Method: 02-Ca-Mg.mth
Acq Time: 15:02:18 Tue 30-Jun-20
Sample Name: Std-0.50
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	332111.667	0.493198	mg/L		3
Ca	44	15056.667	0.493110	mg/L		3

Metals Quantitation Summary Report

Sequence #: 004
Method: 02-Ca-Mg.mth
Acq Time: 15:03:29 Tue 30-Jun-20
Sample Name: Std-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	683931.667	1.049326	mg/L		3
Ca	44	25668.333	1.036289	mg/L		3

Metals Quantitation Summary Report

Sequence #: 005
Method: 02-Ca-Mg.mth
Acq Time: 15:04:39 Tue 30-Jun-20
Sample Name: Std-2.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	1341976.667	1.988302	mg/L		3
Ca	44	46735.000	1.994026	mg/L		3

Metals Quantitation Summary Report

Sequence #: 006
Method: 02-Ca-Mg.mth
Acq Time: 15:05:50 Tue 30-Jun-20
Sample Name: Std-5.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	3316421.667	4.995368	mg/L		3
Ca	44	108173.333	4.996460	mg/L		3

Metals Quantitation Summary Report

Sequence #: 007
Method: 02-Ca-Mg.mth
Acq Time: 15:07:00 Tue 30-Jun-20
Sample Name: ICV-2.0
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 06/10/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	1349003.333	2.020572	mg/L		3
Ca	44	45698.333	1.968480	mg/L		3

Metals Quantitation Summary Report

Sequence #: 008
Method: 02-Ca-Mg.mth
Acq Time: 15:08:11 Tue 30-Jun-20
Sample Name: CCV-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 06/10/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	1353898.333	2.036553	mg/L		3
Ca	44	45896.667	1.987183	mg/L		3

Metals Quantitation Summary Report

Sequence #: 009
Method: 02-Ca-Mg.mth
Acq Time: 15:09:22 Tue 30-Jun-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	4780.000	0.000194	mg/L		3
Ca	44	4753.333	-0.008620	mg/L		3

Metals Quantitation Summary Report

Sequence #: 010
Method: 02-Ca-Mg.mth
Acq Time: 15:10:33 Tue 30-Jun-20
Sample Name: CCB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	4693.333	0.000185	mg/L		3
Ca	44	4780.000	-0.003430	mg/L		3

Metals Quantitation Summary Report

Sequence #: 011
Method: 02-Ca-Mg.mth
Acq Time: 15:11:43 Tue 30-Jun-20
Sample Name: BS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	38448.333	0.050604	mg/L		3
Ca	44	5891.667	0.048492	mg/L		3

Metals Quantitation Summary Report

Sequence #: 012
Method: 02-Ca-Mg.mth
Acq Time: 15:22:40 Tue 30-Jun-20
Sample Name: 063020_1 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	673861.667	1.001070	mg/L		3
Ca	44	26450.000	1.035557	mg/L		3

Metals Quantitation Summary Report

Sequence #: 013
Method: 02-Ca-Mg.mth
Acq Time: 15:23:49 Tue 30-Jun-20
Sample Name: 063020_1 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass	Concentration	Units	RSD %	Rep
Mg	24	5220.000	0.000941	mg/L	3

Metals Quantitation Summary Report

Sequence #: 027
Method: 02-Ca-Mg.mth
Acq Time: 15:42:22 Tue 30-Jun-20
Sample Name: CCV2-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 06/24/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	1395158.333	2.041629	mg/L		3
Ca	44	49320.000	2.088500	mg/L		3

Metals Quantitation Summary Report

Sequence #: 028
Method: 02-Ca-Mg.mth
Acq Time: 15:43:33 Tue 30-Jun-20
Sample Name: CCB2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	5236.667	0.000807	mg/L		3
Ca	44	4805.000	-0.007986	mg/L		3

Metals Quantitation Summary Report

Sequence #: 041
Method: 02-Ca-Mg.mth
Acq Time: 15:58:53 Tue 30-Jun-20
Sample Name: CCV3-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 06/24/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	1398713.333	2.045712	mg/L		3
Ca	44	48001.667	2.024130	mg/L		3

Metals Quantitation Summary Report

Sequence #: 042
Method: 02-Ca-Mg.mth
Acq Time: 16:00:04 Tue 30-Jun-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-1
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	5510.000	0.001072	mg/L		3
Ca	44	4896.667	-0.007554	mg/L		3

Metals Quantitation Summary Report

Sequence #: 043
Method: 02-Ca-Mg.mth
Acq Time: 16:01:29 Tue 30-Jun-20
Sample Name: 063020_5 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	684151.667	0.993687	mg/L		3
Ca	44	27141.667	1.038812	mg/L		3

Metals Quantitation Summary Report

Sequence #: 044
Method: 02-Ca-Mg.mth
Acq Time: 16:02:39 Tue 30-Jun-20
Sample Name: 063020_5 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	5413.333	0.000809	mg/L		3
Ca	44	4975.000	-0.007561	mg/L		3

Metals Quantitation Summary Report

Sequence #: 045
Method: 02-Ca-Mg.mth
Acq Time: 16:03:48 Tue 30-Jun-20
Sample Name: 15123.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 2

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	5098.333	0.001019	mg/L		3
Ca	44	4768.333	-0.025109	mg/L		3

Metals Quantitation Summary Report

Sequence #: 046
Method: 02-Ca-Mg.mth
Acq Time: 16:05:41 Tue 30-Jun-20
Sample Name: 15123.01 dil
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	1162390.000	42.080765	mg/L		3
Ca	44	147266.667	165.775504	mg/L		3

Metals Quantitation Summary Report

Sequence #: 047
Method: 02-Ca-Mg.mth
Acq Time: 16:06:50 Tue 30-Jun-20
Sample Name: 15123.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	5760398.333	42.871010	mg/L		3
Ca	44	698516.667	165.633521	mg/L		3

Metals Quantitation Summary Report

Sequence #: 048
Method: 02-Ca-Mg.mth
Acq Time: 16:07:59 Tue 30-Jun-20
Sample Name: 15123.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	8975116.667	64.964055	mg/L		3
Ca	44	1125083.333	259.971944	mg/L		3

Metals Quantitation Summary Report

Sequence #: 049
Method: 02-Ca-Mg.mth
Acq Time: 16:09:44 Tue 30-Jun-20
Sample Name: 15123.02s -d
Sample Type: Sample
Matrix: Liquid
Comments: 20/1=100
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	467471.667	67.142652	mg/L		3
Ca	44	62801.667	268.746352	mg/L		3

Metals Quantitation Summary Report

Sequence #: 050
Method: 02-Ca-Mg.mth
Acq Time: 16:10:53 Tue 30-Jun-20
Sample Name: 15123.03s
Sample Type: Sample
Matrix: Liquid
Comments: 20/1=100
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	271510.000	39.250763	mg/L		3
Ca	44	28083.333	108.984876	mg/L		3

Metals Quantitation Summary Report

Sequence #: 051
Method: 02-Ca-Mg.mth
Acq Time: 16:12:02 Tue 30-Jun-20
Sample Name: 15123.04s
Sample Type: Sample
Matrix: Liquid
Comments: 20/1=100
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	509570.000	74.168612	mg/L		3
Ca	44	66315.000	289.001465	mg/L		3

Metals Quantitation Summary Report

Sequence #: 052
Method: 02-Ca-Mg.mth
Acq Time: 16:13:12 Tue 30-Jun-20
Sample Name: 15123.05s
Sample Type: Sample
Matrix: Liquid
Comments: 20/1=100
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	213905.000	30.927054	mg/L		3
Ca	44	37491.667	154.240125	mg/L		3

Metals Quantitation Summary Report

Sequence #: 053
Method: 02-Ca-Mg.mth
Acq Time: 16:14:22 Tue 30-Jun-20
Sample Name: 15123.06s
Sample Type: Sample
Matrix: Liquid
Comments: 20/1=100
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	276866.667	39.904034	mg/L		3
Ca	44	28108.333	108.742489	mg/L		3

Metals Quantitation Summary Report

Sequence #: 054
Method: 02-Ca-Mg.mth
Acq Time: 16:15:31 Tue 30-Jun-20
Sample Name: 15123.06 MS-2.0
Sample Type: Sample
Matrix: Liquid
Comments: 20/1=100
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Ca	44	30255.000	118.402231	mg/L		3

Metals Quantitation Summary Report

Sequence #: 055
Method: 02-Ca-Mg.mth
Acq Time: 16:16:41 Tue 30-Jun-20
Sample Name: 15123.06 MSD
Sample Type: Sample
Matrix: Liquid
Comments: 20/1=100
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Ca	44	28286.667	108.485005	mg/L		3

Metals Quantitation Summary Report

Sequence #: 056
Method: 02-Ca-Mg.mth
Acq Time: 16:19:20 Tue 30-Jun-20
Sample Name: CCV4-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 06/24/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	1385571.667	2.008962	mg/L		3
Ca	44	47935.000	2.002483	mg/L		3

Metals Quantitation Summary Report

Sequence #: 057
Method: 02-Ca-Mg.mth
Acq Time: 16:26:39 Tue 30-Jun-20
Sample Name: CCB4
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0630B.cal
Cal Type: External Calibration
Last Calib: MTD-063020-5
Bkg File:
Int Correct:
Blank File: Blank.012

Element	Mass		Concentration	Units	RSD %	Rep
Mg	24	4995.000	0.000433	mg/L		3
Ca	44	4848.333	-0.006573	mg/L		3

Metals Digestion 3015A \ 3050B

063020 CCM

DATE 6/30/20

PREP BATCH MTD-062420-5

TIME START 1320

TIME FINISH 1350

ANALYST Qll

Pipet Calibration:

Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria	Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria
2	1			Bias: Mean \pm 2% of nominal value Precision: RSD \leq 1% of nominal value	3	1			Bias: Mean \pm 2% of nominal value Precision: RSD \leq 1% of nominal value
	2					2			
	3					3			

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	FINAL VOLUME (ml)	REMARKS	% TOTAL SOLIDS	DILUTION FACTOR
LCS 062420-5	----	50	50		—	1
LRB 062420-5	----	50	50		—	1
15123.01		10				5
02						
03						
04						
05						
06						
06 MS						
06 MSD						
07		25		field blank		2
15232.02		10				5

NOTES: 1) Spike values (unless otherwise stated):
 LCS - 0.05 ppm - 50 mls 0.50 mls of 5ppm Spiking Solution
 Samples: Water - 0.05 ppm - 50 mls 0.50 mls of 5ppm Spiking Solution
 Soil - 0.10 ppm - 50 mls 1.0 mls of 5ppm Spiking Solution
 Spiking Solution - Date Prepared: 6/24/20

2) Spike values for minerals (Ca-Mg-K-Na)
 LCS - 1.0 ppm - 50 mls 0.50 mls HM Stock Solution
 Samples (Water or Soil) - 2.0 ppm - 50 mls 1.0 mls HM Stock Solution
 High Purity Stock Solution (HM) - Lot # 1927522-500

3) HNO₃ Lot # 248841

4) Centrifuge Tube Lot # 191129-060

5) Balance ID: MA

Reviewed by CCM On 6-30-20

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

Filename	Run Time	Sample ID	Matrix	QC Type
001	7/6/2020 12:16:52 PM	Calibration Blank	Liquid	
002	7/6/2020 12:18:44 PM	Standard #1	Liquid	
003	7/6/2020 12:20:36 PM	Standard #2	Liquid	
004	7/6/2020 12:22:27 PM	Standard #3	Liquid	
005	7/6/2020 12:24:19 PM	Standard #4	Liquid	
006	7/6/2020 12:26:10 PM	Standard #5	Liquid	
007	7/6/2020 12:28:02 PM	Standard #6	Liquid	
008	7/6/2020 12:30:57 PM	Standard #7	Liquid	
009	7/6/2020 12:34:41 PM	Standard #8	Liquid	
010	7/6/2020 12:37:53 PM	ICV-5.0 ppb	Liquid	ICV
011	7/6/2020 12:39:44 PM	ICB	Liquid	ICB
012	7/6/2020 12:41:36 PM	CCV1-2.0 ppb	Liquid	CCV
013	7/6/2020 12:43:27 PM	CCB1	Liquid	CCB
014	7/6/2020 12:45:19 PM	BS-0.10	Liquid	BS
015	7/6/2020 12:47:10 PM	070220_4 LCS-2.0	Liquid	LCS
016	7/6/2020 12:49:01 PM	070220_4 LRB	Liquid	LRB
017	7/6/2020 12:50:47 PM	15123.01s	Liquid	S
018	7/6/2020 12:52:34 PM	15123.02s	Liquid	S
019	7/6/2020 12:54:21 PM	15123.03s	Liquid	S
020	7/6/2020 12:56:09 PM	15123.04s	Liquid	S
021	7/6/2020 12:57:57 PM	15123.04 -d	Liquid	
022	7/6/2020 12:59:46 PM	15123.05s	Liquid	S
023	7/6/2020 1:01:36 PM	15123.06s	Liquid	S
024	7/6/2020 1:03:22 PM	15123.07s	Liquid	S
025	7/6/2020 1:05:09 PM	15202.01s tclp	Liquid	S
026	7/6/2020 1:06:57 PM	15224.02s	Liquid	S
027	7/6/2020 1:08:45 PM	15224.02 MS-2.0	Liquid	MS
028	7/6/2020 1:10:34 PM	15224.02 MSD	Liquid	MSD
029	7/6/2020 1:12:26 PM	CCV2-2.0 ppb	Liquid	CCV
030	7/6/2020 1:14:17 PM	CCB2	Liquid	CCB
031	7/6/2020 1:33:22 PM	070620_1 LCS-2.0	Liquid	LCS
032	7/6/2020 1:35:13 PM	070620_1 LRB	Liquid	LRB
033	7/6/2020 1:37:02 PM	15277.01s tclp	Liquid	S
034	7/6/2020 1:38:49 PM	15277.02s tclp	Liquid	S
035	7/6/2020 1:40:36 PM	15289.02s tclp	Liquid	S
036	7/6/2020 1:42:24 PM	15299.01s tclp	Liquid	S
037	7/6/2020 1:44:11 PM	15299.01 MS-2.0	Liquid	MS
038	7/6/2020 1:46:00 PM	15299.01 MSD	Liquid	MSD
039	7/6/2020 1:47:49 PM	15317.01s	Liquid	S
040	7/6/2020 1:49:38 PM	15317.02s	Liquid	S
041	7/6/2020 1:51:26 PM	15321.02s	Liquid	S
042	7/6/2020 1:53:13 PM	15321.04s	Liquid	S
043	7/6/2020 1:55:01 PM	15321.06s	Liquid	S
044	7/6/2020 1:56:49 PM	15321.07s	Liquid	S
045	7/6/2020 1:58:40 PM	CCV3-2.0 ppb	Liquid	CCV
046	7/6/2020 2:00:32 PM	CCB3	Liquid	CCB
047	7/6/2020 2:02:20 PM	15324.01s	Liquid	S
048	7/6/2020 2:04:21 PM	15327.01s	Liquid	S
049	7/6/2020 2:06:10 PM	15334.01s	Liquid	S
050	7/6/2020 2:07:59 PM	15346.01s	Liquid	S
051	7/6/2020 2:09:47 PM	15368.02s	Liquid	S
052	7/6/2020 2:11:35 PM	15390.06s diss	Liquid	S
053	7/6/2020 2:13:23 PM	15390.07s diss	Liquid	S
054	7/6/2020 2:15:11 PM	15390.08s diss	Liquid	S
055	7/6/2020 2:17:00 PM	15390.08 MS-2.0	Liquid	MS
056	7/6/2020 2:18:49 PM	15390.08 MSD	Liquid	MSD

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	7/6/2020 2:20:41 PM	CCV4-2.0 ppb	Liquid	CCV
058	7/6/2020 2:22:32 PM	CCB4	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

Lab Sample ID: S15123.01

Sample Tag: MW-1 L006016-01

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/06/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

Lab Sample ID: S15123.02

Sample Tag: MW-2 L006016-02

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/06/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

Lab Sample ID: S15123.03

Sample Tag: MW-4 L006016-03

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/06/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

Lab Sample ID: S15123.04

Sample Tag: MW-5 L006016-04

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/06/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

Lab Sample ID: S15123.05

Sample Tag: MW-6 L006016-05

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/06/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

Lab Sample ID: S15123.06

Sample Tag: MW-4 Duplicate L006016-06

Date Collected: 06/23/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/06/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

Lab Sample ID: S15123.07

Sample Tag: Field Blank L006016-07

Date Collected: 06/23/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/06/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

Note/Qualifier Key

b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
010 ICV-5.0 ppb	ICV	1.0	Hg	4.885	5.0	98	90/110	ug/L	Liquid
012 CCV1-2.0 ppb	CCV	1.0	Hg	2.028	2.0	101	90/110	ug/L	Liquid
029 CCV2-2.0 ppb	CCV	1.0	Hg	1.988	2.0	99	90/110	ug/L	Liquid
045 CCV3-2.0 ppb	CCV	1.0	Hg	1.978	2.0	99	90/110	ug/L	Liquid
057 CCV4-2.0 ppb	CCV	1.0	Hg	1.982	2.0	99	90/110	ug/L	Liquid

Form 3: Blanks

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
011 ICB	ICB	1.0	Hg	<0.05	-0.0016	ug/L	Liquid
013 CCB1	CCB	1.0	Hg	<0.05	0.0032	ug/L	Liquid
016 070220_4 LRB	LRB	1.0	Hg	<0.05	0.0321	ug/L	Liquid
030 CCB2	CCB	1.0	Hg	<0.05	0.0040	ug/L	Liquid
032 070620_1 LRB	LRB	1.0	Hg	<0.05	0.0134	ug/L	Liquid
046 CCB3	CCB	1.0	Hg	<0.05	0.0024	ug/L	Liquid
058 CCB4	CCB	1.0	Hg	<0.05	0.0057	ug/L	Liquid

Form 5A: Matrix Spike Sample Recovery

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
014 BS-0.10		1.0	Hg	0.113	ND	0.10	113	70/130	ug/L	Liquid
027 15224.02 MS-2.0	026 15224.02s	1.0	Hg	2.192	0.56	2.0	82	80/120	ug/L	Liquid
037 15299.01 MS-2.0	036 15299.01s tclp	2.0	Hg	4.454	<0.2	4.0	111	80/120	ug/L	Liquid
055 15390.08 MS-2.0	054 15390.08s diss	1.0	Hg	1.796	<0.2	2.0	90	80/120	ug/L	Liquid

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
028 15224.02 MSD	027 15224.02 MS-2.0	1.0	Hg	2.075	2.192	5	0/20	ug/L	Liquid
038 15299.01 MSD	037 15299.01 MS-2.0	2.0	Hg	4.316	4.454	3	0/20	ug/L	Liquid
056 15390.08 MSD	055 15390.08 MS-2.0	1.0	Hg	1.799	1.796	0	0/20	ug/L	Liquid

Form 7: Laboratory Control Sample

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
015 070220_4 LCS-2.0	1.0	Hg	1.965	2.0	98	85/115	ug/L	Liquid
031 070620_1 LCS-2.0	1.0	Hg	1.798	2.0	90	85/115	ug/L	Liquid

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Calibration Blank	7/6/2020 12:16:52 PM	Liquid	Hg
002 Standard #1	7/6/2020 12:18:44 PM	Liquid	Hg
003 Standard #2	7/6/2020 12:20:36 PM	Liquid	Hg
004 Standard #3	7/6/2020 12:22:27 PM	Liquid	Hg
005 Standard #4	7/6/2020 12:24:19 PM	Liquid	Hg
006 Standard #5	7/6/2020 12:26:10 PM	Liquid	Hg
007 Standard #6	7/6/2020 12:28:02 PM	Liquid	Hg
008 Standard #7	7/6/2020 12:30:57 PM	Liquid	Hg
009 Standard #8	7/6/2020 12:34:41 PM	Liquid	Hg
010 ICV-5.0 ppb	7/6/2020 12:37:53 PM	Liquid	Hg
011 ICB	7/6/2020 12:39:44 PM	Liquid	Hg
012 CCV1-2.0 ppb	7/6/2020 12:41:36 PM	Liquid	Hg
013 CCB1	7/6/2020 12:43:27 PM	Liquid	Hg
014 BS-0.10	7/6/2020 12:45:19 PM	Liquid	Hg
015 070220_4 LCS-2.0	7/6/2020 12:47:10 PM	Liquid	Hg
016 070220_4 LRB	7/6/2020 12:49:01 PM	Liquid	Hg
017 15123.01s	7/6/2020 12:50:47 PM	Liquid	Hg
018 15123.02s	7/6/2020 12:52:34 PM	Liquid	Hg
019 15123.03s	7/6/2020 12:54:21 PM	Liquid	Hg
020 15123.04s	7/6/2020 12:56:09 PM	Liquid	Hg
021 15123.04 -d	7/6/2020 12:57:57 PM	Liquid	Hg
022 15123.05s	7/6/2020 12:59:46 PM	Liquid	Hg
023 15123.06s	7/6/2020 1:01:36 PM	Liquid	Hg
024 15123.07s	7/6/2020 1:03:22 PM	Liquid	Hg
025 15202.01s tclp	7/6/2020 1:05:09 PM	Liquid	Hg
026 15224.02s	7/6/2020 1:06:57 PM	Liquid	Hg
027 15224.02 MS-2.0	7/6/2020 1:08:45 PM	Liquid	Hg
028 15224.02 MSD	7/6/2020 1:10:34 PM	Liquid	Hg
029 CCV2-2.0 ppb	7/6/2020 1:12:26 PM	Liquid	Hg
030 CCB2	7/6/2020 1:14:17 PM	Liquid	Hg
031 070620_1 LCS-2.0	7/6/2020 1:33:22 PM	Liquid	Hg
032 070620_1 LRB	7/6/2020 1:35:13 PM	Liquid	Hg
033 15277.01s tclp	7/6/2020 1:37:02 PM	Liquid	Hg
034 15277.02s tclp	7/6/2020 1:38:49 PM	Liquid	Hg
035 15289.02s tclp	7/6/2020 1:40:36 PM	Liquid	Hg
036 15299.01s tclp	7/6/2020 1:42:24 PM	Liquid	Hg
037 15299.01 MS-2.0	7/6/2020 1:44:11 PM	Liquid	Hg
038 15299.01 MSD	7/6/2020 1:46:00 PM	Liquid	Hg
039 15317.01s	7/6/2020 1:47:49 PM	Liquid	Hg
040 15317.02s	7/6/2020 1:49:38 PM	Liquid	Hg
041 15321.02s	7/6/2020 1:51:26 PM	Liquid	Hg
042 15321.04s	7/6/2020 1:53:13 PM	Liquid	Hg
043 15321.06s	7/6/2020 1:55:01 PM	Liquid	Hg
044 15321.07s	7/6/2020 1:56:49 PM	Liquid	Hg
045 CCV3-2.0 ppb	7/6/2020 1:58:40 PM	Liquid	Hg
046 CCB3	7/6/2020 2:00:32 PM	Liquid	Hg
047 15324.01s	7/6/2020 2:02:20 PM	Liquid	Hg
048 15327.01s	7/6/2020 2:04:21 PM	Liquid	Hg
049 15334.01s	7/6/2020 2:06:10 PM	Liquid	Hg
050 15346.01s	7/6/2020 2:07:59 PM	Liquid	Hg
051 15368.02s	7/6/2020 2:09:47 PM	Liquid	Hg
052 15390.06s diss	7/6/2020 2:11:35 PM	Liquid	Hg
053 15390.07s diss	7/6/2020 2:13:23 PM	Liquid	Hg
054 15390.08s diss	7/6/2020 2:15:11 PM	Liquid	Hg
055 15390.08 MS-2.0	7/6/2020 2:17:00 PM	Liquid	Hg
056 15390.08 MS-2.0	7/6/2020 2:18:49 PM	Liquid	Hg

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0706A

Instrument ID: HG QuickTrace

Analysis Date: 07/06/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
057 CCV4-2.0 ppb	7/6/2020 2:20:41 PM	Liquid	Hg
058 CCB4	7/6/2020 2:22:32 PM	Liquid	Hg

Mercury Summary Report

Element	Seq #	Acquisition Time	Sample Name	Peak	Concentration	Units	Matrix	Dilution	Sample Wt.	Sample Vol.
Hg	001	7/6/2020 12:16:52 PM	Calibration Blank	16.1800	0.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	002	7/6/2020 12:18:44 PM	Standard #1	1049.0000	0.1000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	003	7/6/2020 12:20:36 PM	Standard #2	2061.0000	0.2000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	004	7/6/2020 12:22:27 PM	Standard #3	5114.0000	0.5000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	005	7/6/2020 12:24:19 PM	Standard #4	10180.0000	1.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	006	7/6/2020 12:26:10 PM	Standard #5	20100.0000	2.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	007	7/6/2020 12:28:02 PM	Standard #6	60210.0000	6.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	008	7/6/2020 12:30:57 PM	Standard #7	81520.0000	8.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	009	7/6/2020 12:34:41 PM	Standard #8	101900.0000	10.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	010	7/6/2020 12:37:53 PM	ICV-5.0 ppb	49610.0000	4.8850	ug/L	Liquid	1.0	1.0000	1.0000
Hg	011	7/6/2020 12:39:44 PM	ICB	-72.2300	-0.0016	ug/L	Liquid	1.0	1.0000	1.0000
Hg	012	7/6/2020 12:41:36 PM	CCV1-2.0 ppb	20560.0000	2.0280	ug/L	Liquid	1.0	1.0000	1.0000
Hg	013	7/6/2020 12:43:27 PM	CCB1	-22.9700	0.0032	ug/L	Liquid	1.0	1.0000	1.0000
Hg	014	7/6/2020 12:45:19 PM	BS-0.10	1088.0000	0.1125	ug/L	Liquid	1.0	1.0000	1.0000
Hg	015	7/6/2020 12:47:10 PM	070220_4 LCS-2.0	19920.0000	1.9650	ug/L	Liquid	1.0	1.0000	1.0000
Hg	016	7/6/2020 12:49:01 PM	070220_4 LRB	270.9000	0.0321	ug/L	Liquid	1.0	1.0000	1.0000
Hg	017	7/6/2020 12:50:47 PM	15123.01s	258.3000	0.0309	ug/L	Liquid	1.0	1.0000	1.0000
Hg	018	7/6/2020 12:52:34 PM	15123.02s	338.3000	0.0388	ug/L	Liquid	1.0	1.0000	1.0000
Hg	019	7/6/2020 12:54:21 PM	15123.03s	467.4000	0.0515	ug/L	Liquid	1.0	1.0000	1.0000
Hg	020	7/6/2020 12:56:09 PM	15123.04s	381.5000	0.0430	ug/L	Liquid	1.0	1.0000	1.0000
Hg	021	7/6/2020 12:57:57 PM	15123.04 -d	288.6000	0.0339	ug/L	Liquid	1.0	1.0000	1.0000
Hg	022	7/6/2020 12:59:46 PM	15123.05s	304.3000	0.0354	ug/L	Liquid	1.0	1.0000	1.0000
Hg	023	7/6/2020 1:01:36 PM	15123.06s	208.7000	0.0260	ug/L	Liquid	1.0	1.0000	1.0000
Hg	024	7/6/2020 1:03:22 PM	15123.07s	196.9000	0.0248	ug/L	Liquid	1.0	1.0000	1.0000
Hg	029	7/6/2020 1:12:26 PM	CCV2-2.0 ppb	20150.0000	1.9880	ug/L	Liquid	1.0	1.0000	1.0000
Hg	030	7/6/2020 1:14:17 PM	CCB2	-14.8300	0.0040	ug/L	Liquid	1.0	1.0000	1.0000
Hg	031	7/6/2020 1:33:22 PM	070620_1 LCS-2.0	18230.0000	1.7980	ug/L	Liquid	1.0	1.0000	1.0000
Hg	032	7/6/2020 1:35:13 PM	070620_1 LRB	80.7100	0.0134	ug/L	Liquid	1.0	1.0000	1.0000
Hg	045	7/6/2020 1:58:40 PM	CCV3-2.0 ppb	20050.0000	1.9780	ug/L	Liquid	1.0	1.0000	1.0000
Hg	046	7/6/2020 2:00:32 PM	CCB3	-31.2300	0.0024	ug/L	Liquid	1.0	1.0000	1.0000
Hg	057	7/6/2020 2:20:41 PM	CCV4-2.0 ppb	20090.0000	1.9820	ug/L	Liquid	1.0	1.0000	1.0000
Hg	058	7/6/2020 2:22:32 PM	CCB4	2.1910	0.0057	ug/L	Liquid	1.0	1.0000	1.0000

Mercury Digestion
Method # 245.1, 7471B, 7470A (OHIO VAP)

TIME START: 10:30
 TIME FINISH: 12:30
 PREP BATCH: HGD-070120-1
 BALANCE ID: M2

Beginning End
 block #1 95°C block #1 95°C ID # P42479
 block #2 _____°C block #2 _____°C ID # _____
 block #3 _____°C block #3 _____°C ID # _____

DATE 7/1/20
 ANALYST CCM
 REVIEWED BY CCM
 REVIEW DATE 7-1-20

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	%TOT. SOLIDS	DRY SAMPLE WT.	DILUTION FACTOR	FINAL VOLUME	REMARKS
LCS 070120-1	-----	25	-----	-----	1	25g	
LRB 070120-1	-----	25	-----	-----		25g	
15110.01		25					
02		25					
03		5.0			5		tcp
04		12.5			2		tcp
15123.01		25			1		
02							
03							
04							
05							
06							
07							field blank
15130.01							
15135.01		6.561			44		tcp
02		5.0			5		tcp
15137.01		25			2		drinking water
15156.01		12.5			2		tcp
02							
03							
04							
05							
15110.01 MS		25			1		
01 MSD							
15123.05MS							
05 MSD							

NOTES: 1) Spike values (unless otherwise stated):
 2.0 ppb for LCS: 0.50 ml of HPS solution, 2.0 ppb for liquid samples: 0.50 ml of HPS solution & 0.002 ppm for solid samples: 0.50 ml of HPS solution
 Centrifuge Tube Lot # 191127-028 (Date Prepared: 6/24/20 Exp 7/8/20)
 HNO₃ Lot # 0000248341
 H₂SO₄ Lot # 2019061317

Pipet Calibration:

Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Notes
1	0.500	0.503	
2		0.502	
3		0.501	

ICS-1102 A Dionex IC/Meth 3000

062520
























#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:58:12 AM...	1.0000
2		1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:29 A...	1.0000
3		1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:17 A...	1.0000
4		1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:36:06 A...	1.0000
5		1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:55 A...	1.0000
6		1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:43 A...	1.0000
7		Blank	Unknown		1	Norm Method	Anion	Finished	6/25/2020 11:30:28 A...	1.0000
8		BSpike 11721BS1	Check Standard		2	Norm Method	Anion	Finished	6/25/2020 11:42:44 A...	1.0000
9		LCS 11721LCS1	Check Standard		3	Norm Method	Anion	Finished	6/25/2020 11:55:32 A...	1.0000
10		15123.01	Unknown		4	Norm Method	Anion	Finished	6/25/2020 12:08:21 P...	1.0000
11		15123.02	Unknown		5	Norm Method	Anion	Finished	6/25/2020 12:21:10 P...	1.0000
12		15123.03	Unknown		6	Norm Method	Anion	Finished	6/25/2020 12:33:58 P...	1.0000
13		15123.04	Unknown		7	Norm Method	Anion	Finished	6/25/2020 12:46:47 P...	1.0000
14		15123.05	Unknown		8	Norm Method	Anion	Finished	6/25/2020 12:59:36 P...	1.0000
15		15123.06	Unknown		9	Norm Method	Anion	Finished	6/25/2020 1:12:25 PM...	1.0000
16		15123.07	Unknown		10	Norm Method	Anion	Finished	6/25/2020 1:25:13 PM...	1.0000
17		15167.01	Unknown		11	Norm Method	Anion	Finished	6/25/2020 1:38:02 PM...	1.0000
18		15167.02	Unknown		12	Norm Method	Anion	Finished	6/25/2020 1:50:51 PM...	1.0000
19		15167.03	Unknown		13	Norm Method	Anion	Finished	6/25/2020 2:03:43 PM...	1.0000
20		15123.01 dup	Unknown		14	Norm Method	Anion	Finished	6/25/2020 2:16:32 PM...	1.0000
21		15123.01 MS 13013...	Unknown		15	Norm Method	Anion	Finished	6/25/2020 2:29:21 PM...	1.0000
22		15123.01 MSD 1301...	Unknown		16	Norm Method	Anion	Finished	6/25/2020 2:42:10 PM...	1.0000
23		15123.05 MS 13014...	Unknown		17	Norm Method	Anion	Finished	6/25/2020 2:54:58 PM...	1.0000
24		15123.05 MSD 1301...	Unknown		18	Norm Method	Anion	Finished	6/25/2020 3:07:46 PM...	1.0000

CA INT ICSA031620CAL

CL200625-WL-A
SET200625-WL-A FL200625-WL-A

062520



#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
7		1.0000	1.0000		Jeff Phifer	
8		1.0000	1.0000		Jeff Phifer	
9		1.0000	1.0000		Jeff Phifer	
10		5.0000	1.0000		Jeff Phifer	
11		5.0000	1.0000		Jeff Phifer	
12		5.0000	1.0000		Jeff Phifer	
13		5.0000	1.0000		Jeff Phifer	
14		5.0000	1.0000		Jeff Phifer	
15		5.0000	1.0000		Jeff Phifer	
16		2.5000	1.0000		Jeff Phifer	
17		200.0000	1.0000		Jeff Phifer	
18		100.0000	1.0000		Jeff Phifer	
19		100.0000	1.0000		Jeff Phifer	
20		5.0000	1.0000		Jeff Phifer	
21		1.0000	1.0000		Jeff Phifer	
22		1.0000	1.0000		Jeff Phifer	
23		1.0000	1.0000		Jeff Phifer	
24		1.0000	1.0000		Jeff Phifer	

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
25		BSpoke 11721BS1	Check Standard		19	Norm Method	Anion	Finished	6/25/2020 3:20:34 PM...	1.0000
26		15123.03	Unknown		20	Norm Method	Anion	Finished	6/25/2020 3:33:22 PM...	1.0000
27		15123.06	Unknown		21	Norm Method	Anion	Finished	6/25/2020 3:46:11 PM...	1.0000
28		15167.04	Unknown		22	Norm Method	Anion	Finished	6/25/2020 3:59:00 PM...	1.0000
29		15167.05	Unknown		23	Norm Method	Anion	Finished	6/25/2020 4:11:50 PM...	1.0000
30		15167.06	Unknown		24	Norm Method	Anion	Finished	6/25/2020 4:24:38 PM...	1.0000
31	Loading...	15168.01	Unknown		25	Norm Method	Anion	Finished	6/25/2020 4:37:28 PM...	1.0000
32	Loading...	15168.02	Unknown		26	Norm Method	Anion	Finished	6/25/2020 4:50:16 PM...	1.0000
33	Loading...	BSpoke 11721BS1	Check Standard		27	Norm Method	Anion	Finished	6/25/2020 5:03:05 PM...	1.0000
34	Loading...	Blank	Unknown		28	Norm Method	Anion	Finished	6/25/2020 5:15:54 PM...	1.0000

[Click here to add a new injection](#)

062520

#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Group
25		1.0000	1.0000		Jeff Phifer	
26		10.0000	1.0000		Jeff Phifer	
27		10.0000	1.0000		Jeff Phifer	
28		50.0000	1.0000		Jeff Phifer	
29		50.0000	1.0000		Jeff Phifer	
30		50.0000	1.0000		Jeff Phifer	
31	Loading...	25.0000	1.0000		Jeff Phifer	
32	Loading...	200.0000	1.0000		Jeff Phifer	
33	Loading...	1.0000	1.0000		Jeff Phifer	
34	Loading...	1.0000	1.0000		Jeff Phifer	
Click here to add a new injection						

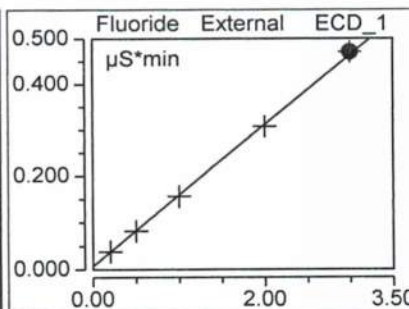
Norm Method	03/08/11 13:39	Jeff Phifer	Method 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000	Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run			Duration = 10.000 [min]	
	0.000			
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Calibration Batch Report
CAL ID# IC3A031620CAL

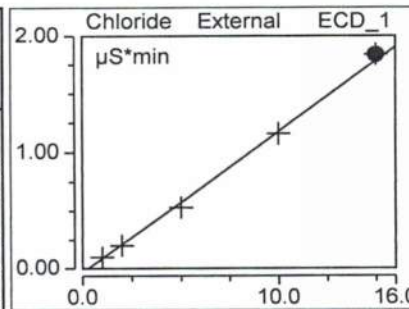
Sequence:	062520	Injection Volu:	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	16-Mar-2020 / 11:01	Column:	AS4A-SC 038777

Calibration Summary								
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.	
Fluoride	Area	Lin, WithOffset, 1/A	0.01	0.007	0.152	0.000	0.9998	
Chloride	Area	Lin, WithOffset, 1/A	0.02	-0.033	0.121	0.000	0.9987	
Nitrite	Area	Lin, WithOffset, 1/A	0.03	-0.003	0.227	0.000	0.9997	
Bromide	Area	Lin, WithOffset, 1/A	0.07	-0.001	0.043	0.000	0.9999	
Nitrate	Area	Lin, WithOffset, 1/A	0.08	-0.001	0.260	0.000	0.9997	
Sulfate	Area	Lin, WithOffset, 1/A	0.33	-0.007	0.079	0.000	0.9996	
AVERAGE:					-0.0064	0.1471	0.0000	0.9996

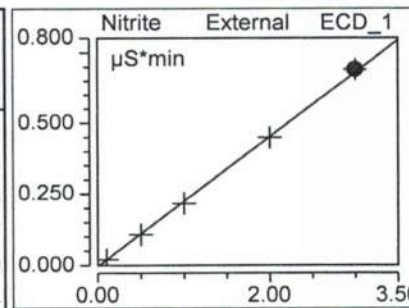
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
1130Cal1	ECD_1 1.118	ECD_1 0.0386	ECD_1 0.506	ECD_1 0.206
1130Cal2	1.118	0.0822	1.190	0.493
1130Cal3	1.118	0.1559	2.362	0.978
1130Cal4	1.118	0.3073	4.834	1.974
1130Cal5	1.118	0.4705	7.546	3.048
Average	1.118			
Rel. Std. Dev.	0.000 %			



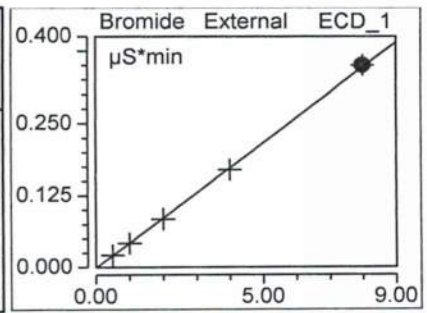
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Chloride	Chloride	Chloride	Chloride	Chloride
1130Cal1	ECD_1 1.651	ECD_1 0.0980	ECD_1 1.539	ECD_1 1.086
1130Cal2	1.651	0.2000	3.158	1.929
1130Cal3	1.661	0.5307	8.559	4.662
1130Cal4	1.664	1.1594	18.897	9.858
1130Cal5	1.664	1.8377	29.851	15.464
Average	1.658			
Rel. Std. Dev.	0.412 %			



Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Nitrite	Nitrite	Nitrite	Nitrite	Nitrite
1130Cal1	ECD_1 1.944	ECD_1 0.0206	ECD_1 0.280	ECD_1 0.105
1130Cal2	1.948	0.1071	1.441	0.486
1130Cal3	1.954	0.2163	2.949	0.967
1130Cal4	1.954	0.4487	6.229	1.989
1130Cal5	1.948	0.6905	9.755	3.054
Average	1.950			
Rel. Std. Dev.	0.229 %			

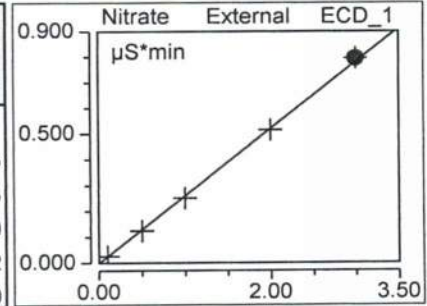


Injection Name	Ret. Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Bromide	Bromide	Bromide	Bromide	Bromide
1130Cal1	ECD_1 2.871	ECD_1 0.0210	ECD_1 0.228	ECD_1 0.511
1130Cal2	2.868	0.0422	0.461	0.999
1130Cal3	2.884	0.0843	0.917	1.969
1130Cal4	2.874	0.1696	1.866	3.936
1130Cal5	2.848	0.3497	3.898	8.085
Average	2.869			
Rel. Std. Dev.	0.469 %			

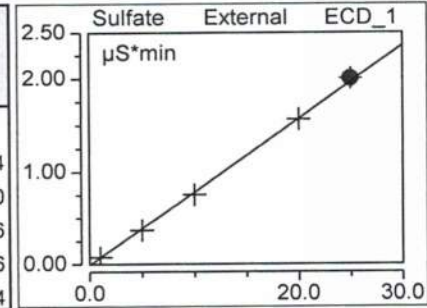


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Injection Name	Ret. Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Nitrate	Nitrate	Nitrate	Nitrate	Nitrate
1130Cal1	ECD_1 3.244	ECD_1 0.0266	ECD_1 0.254	ECD_1 0.105
1130Cal2	3.234	0.1249	1.182	0.483
1130Cal3	3.248	0.2515	2.359	0.970
1130Cal4	3.228	0.5145	4.808	1.982
1130Cal5	3.194	0.7947	7.457	3.060
Average	3.230			
Rel. Std. Dev.	0.659 %			



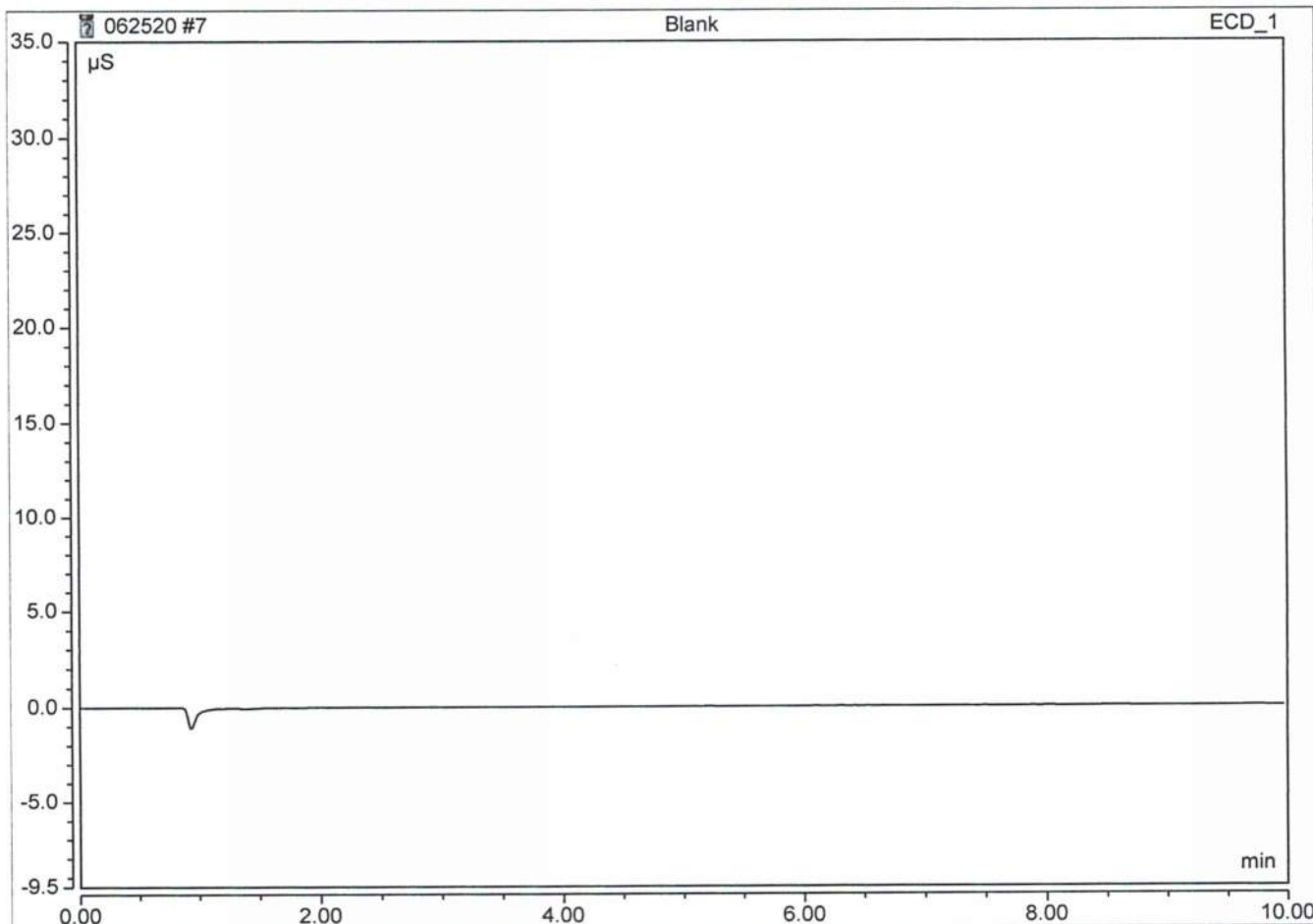
Injection Name	Ret. Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
1130Cal1	ECD_1 6.768	ECD_1 0.0763	ECD_1 0.333	ECD_1 1.054
1130Cal2	6.754	0.3712	1.645	4.800
1130Cal3	6.744	0.7553	3.326	9.676
1130Cal4	6.721	1.5656	6.872	19.966
1130Cal5	6.718	2.0017	8.764	25.504
Average	6.741			
Rel. Std. Dev.	0.319 %			



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 11:30	Operator:	Jeff Phifer

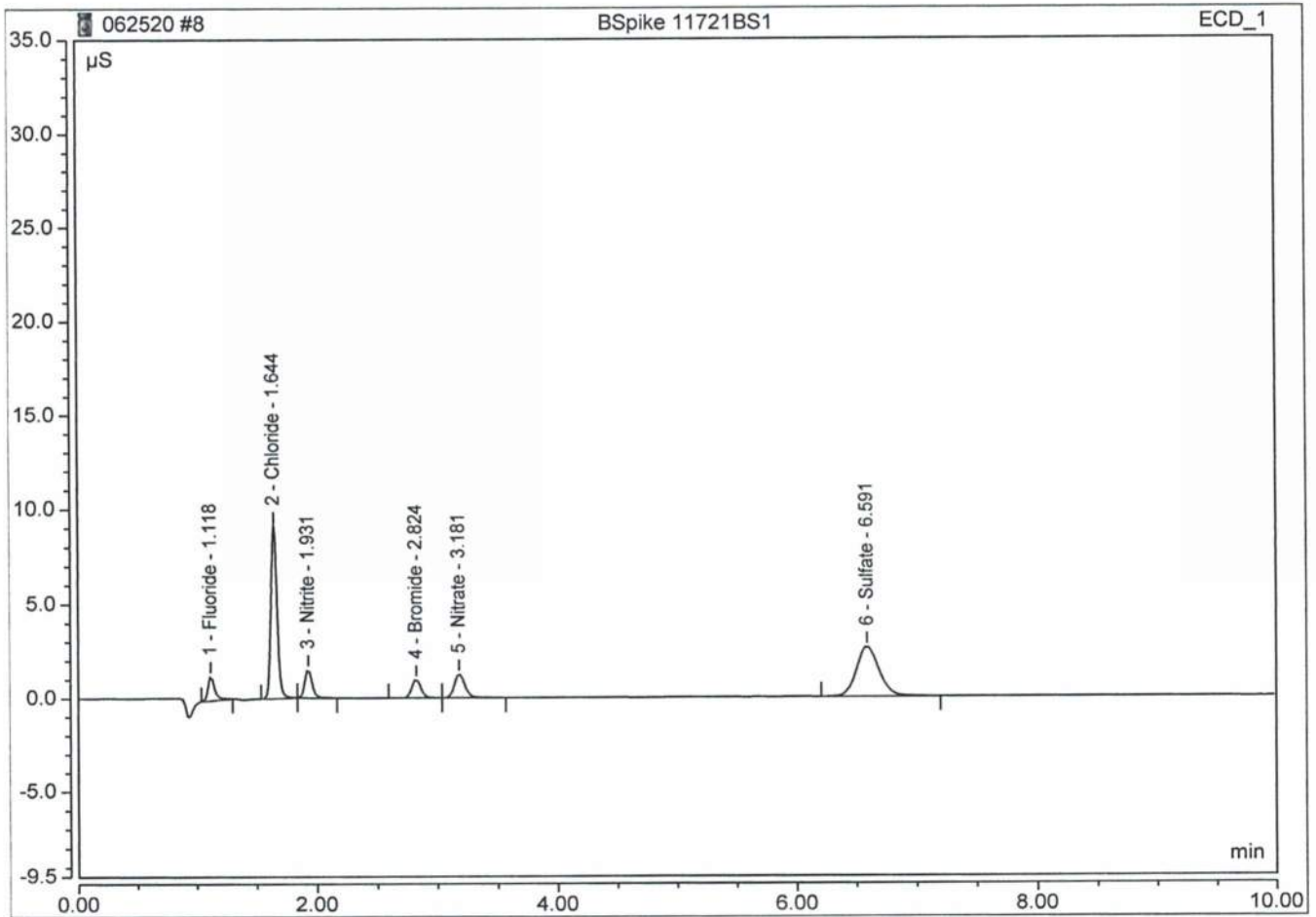
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	BSpike 11721BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 11:42	Operator:	Jeff Phifer

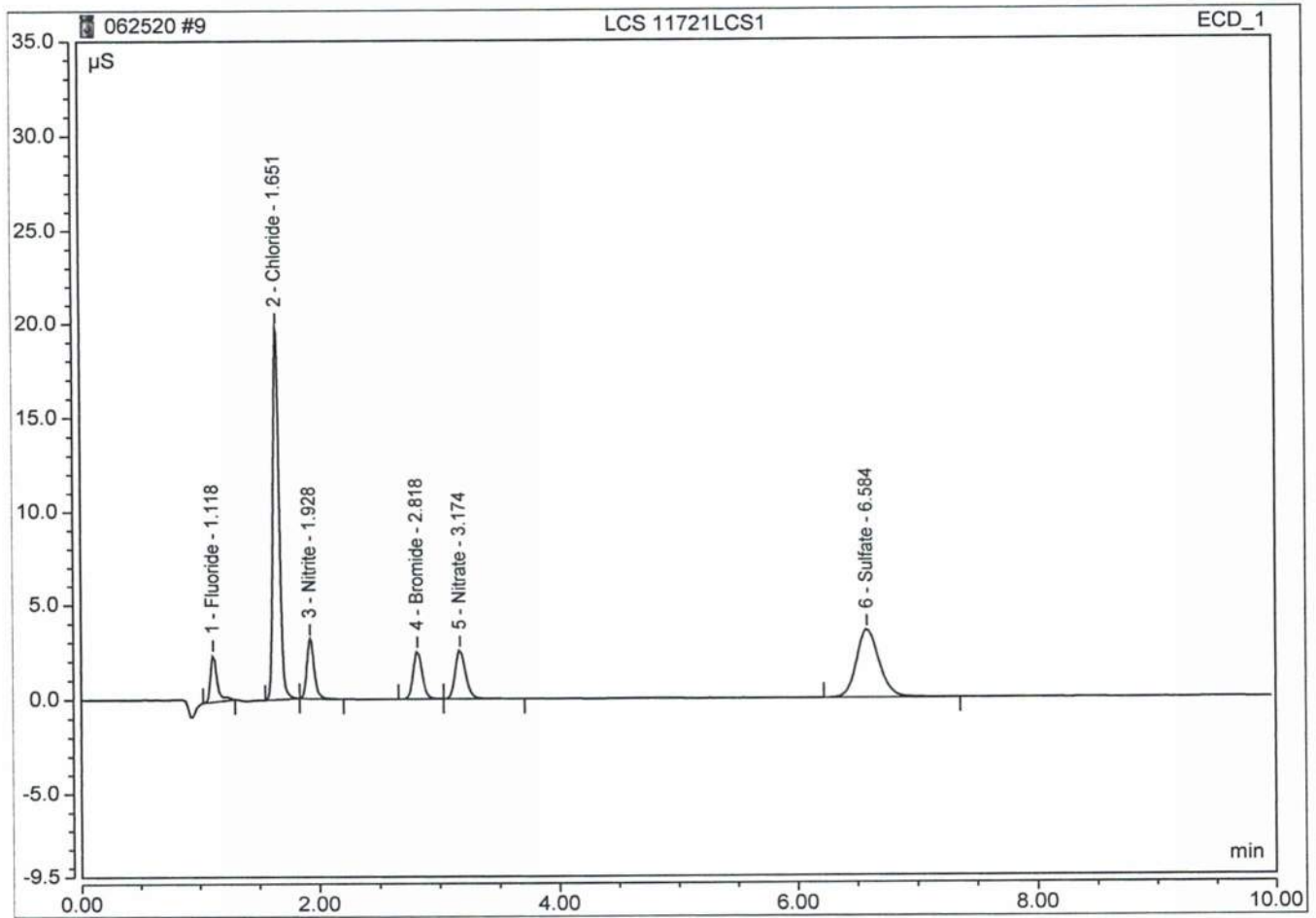
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.085	1.295	0.5114
2	1.64	Chloride	BMB	0.547	9.086	4.7958
3	1.93	Nitrite	BMB	0.107	1.517	0.4862
4	2.82	Bromide	BMB	0.087	0.980	2.0332
5	3.18	Nitrate	BMB	0.127	1.262	0.4926
6	6.59	Sulfate	BMB	0.578	2.650	7.4275
TOTAL:				1.53	16.79	15.75



Peak Integration Report

Sample Name:	LCS 11721LCS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 11:55	Operator:	Jeff Phifer

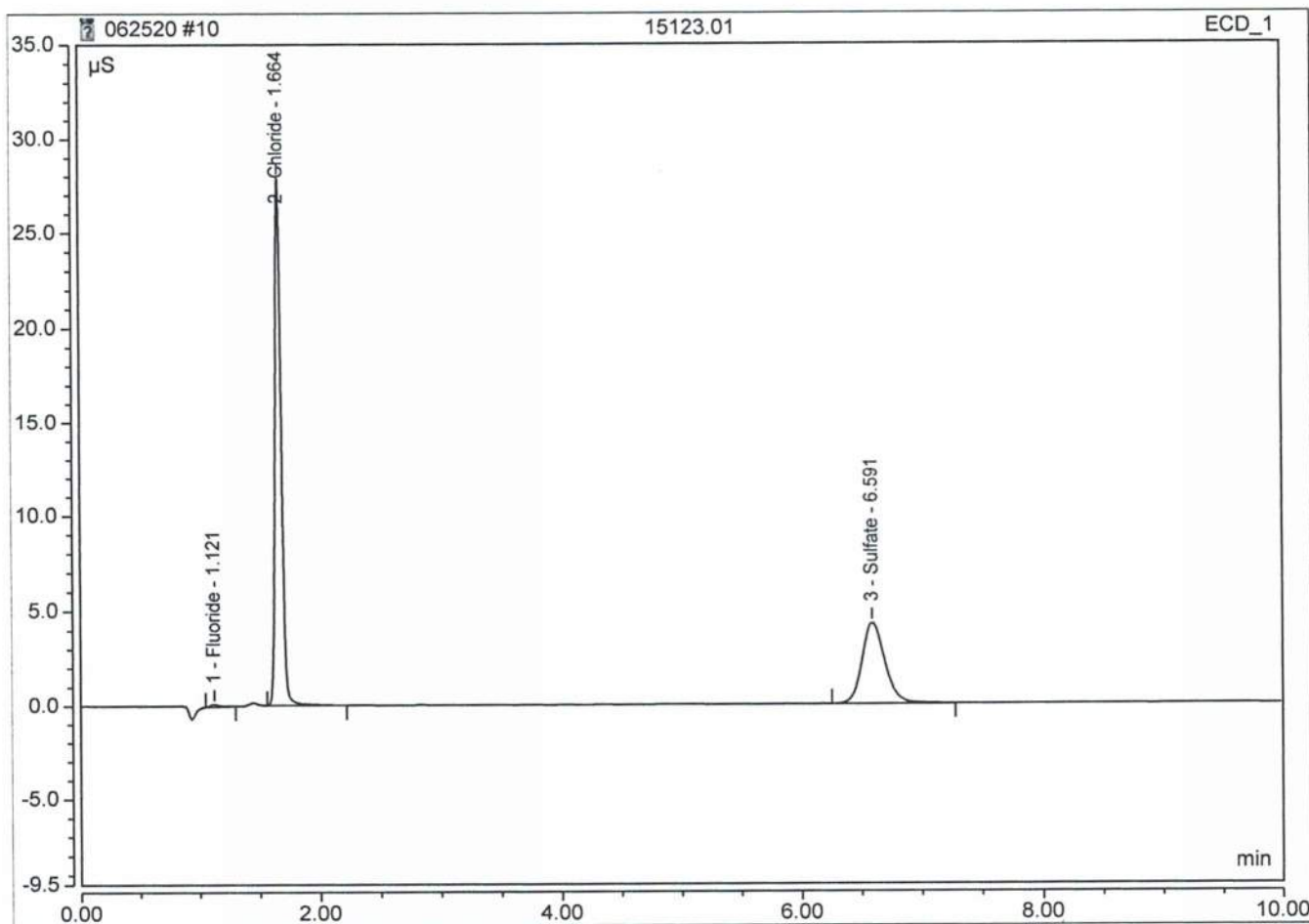
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.161	2.465	1.0101 <i>1015</i>
2	1.65	Chloride	BMB	1.179	19.766	10.0173 <i>1000</i>
3	1.93	Nitrite	BMB	0.218	3.130	0.9722
4	2.82	Bromide	BMB	0.219	2.499	5.0633
5	3.17	Nitrate	BMB	0.255	2.528	0.9842
6	6.58	Sulfate	BMB	0.776	3.552	9.9355 <i>995</i>
TOTAL:				2.81	33.94	27.98



Peak Integration Report

Sample Name:	15123.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 12:08	Operator:	Jeff Phifer

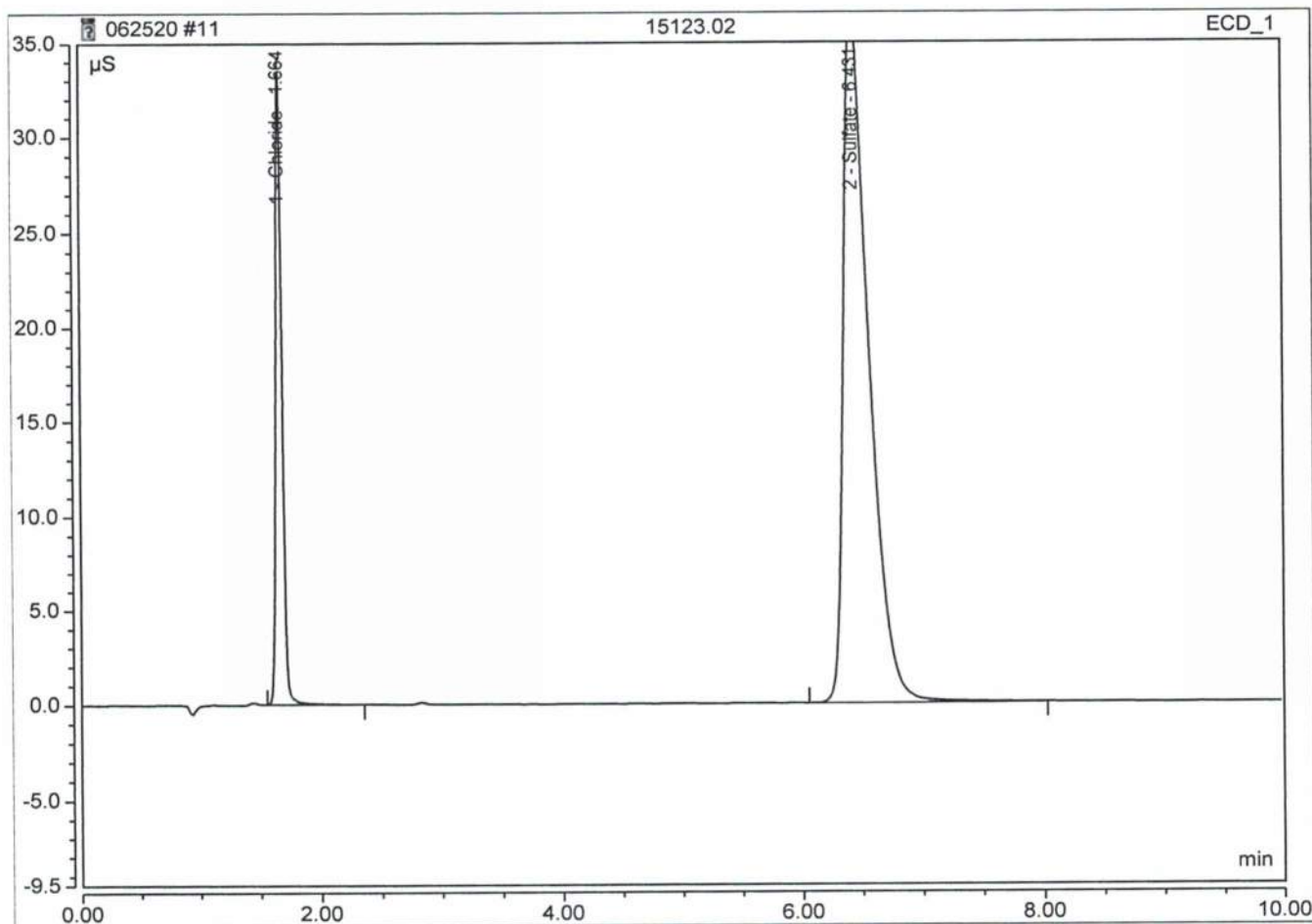
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.011	0.133	0.1296
2	1.66	Chloride	BMB	1.665	27.896	70.1907
3	6.59	Sulfate	BMB	0.930	4.276	59.4798
TOTAL:				2.61	32.30	129.80



Peak Integration Report

Sample Name:	15123.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 12:21	Operator:	Jeff Phifer

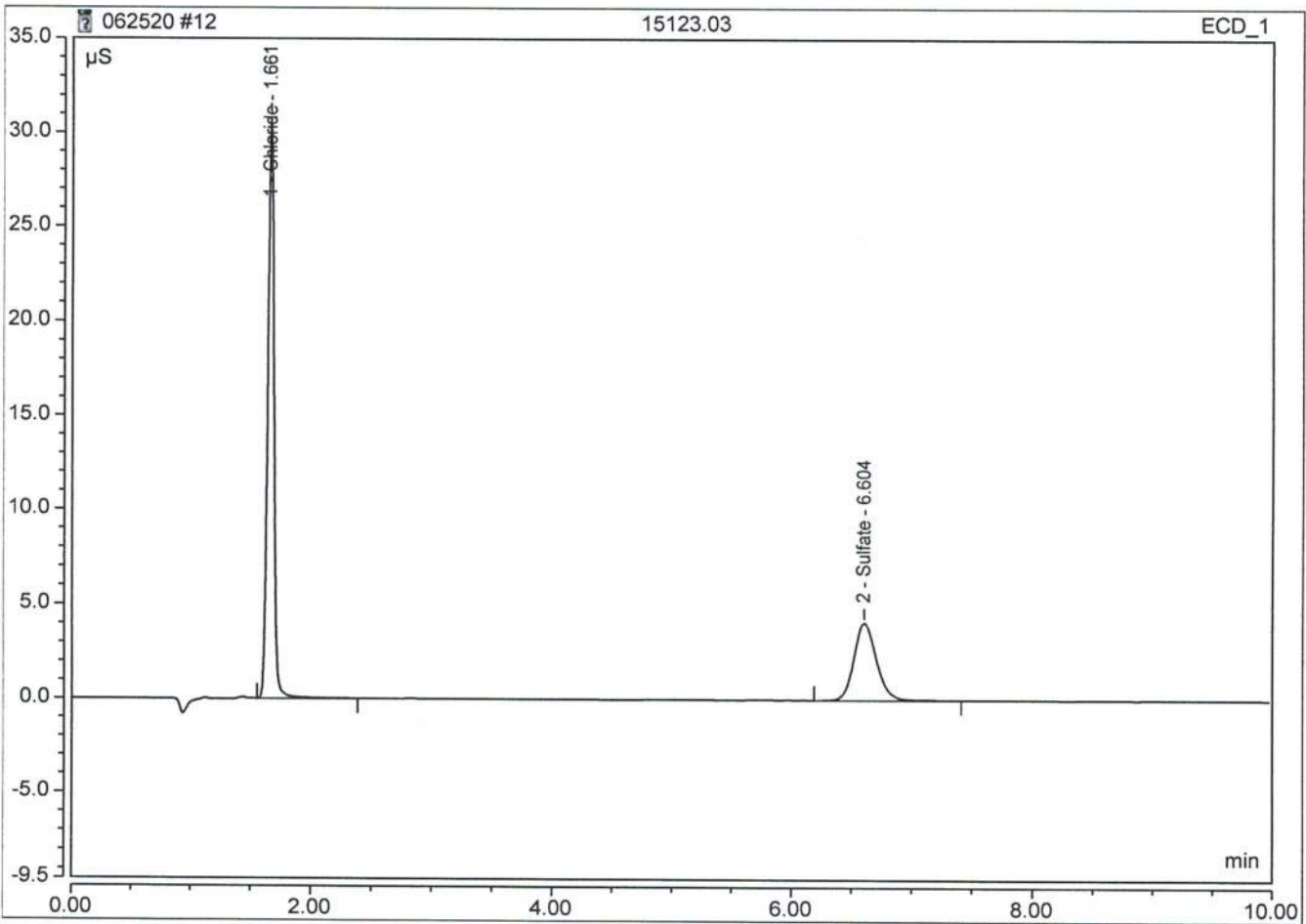
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	2.027	33.511	85.1233
2	6.43	Sulfate	BMB	8.916	36.924	566.5179
TOTAL:				10.94	70.43	651.64



Peak Integration Report

Sample Name:	15123.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 12:33	Operator:	Jeff Phifer

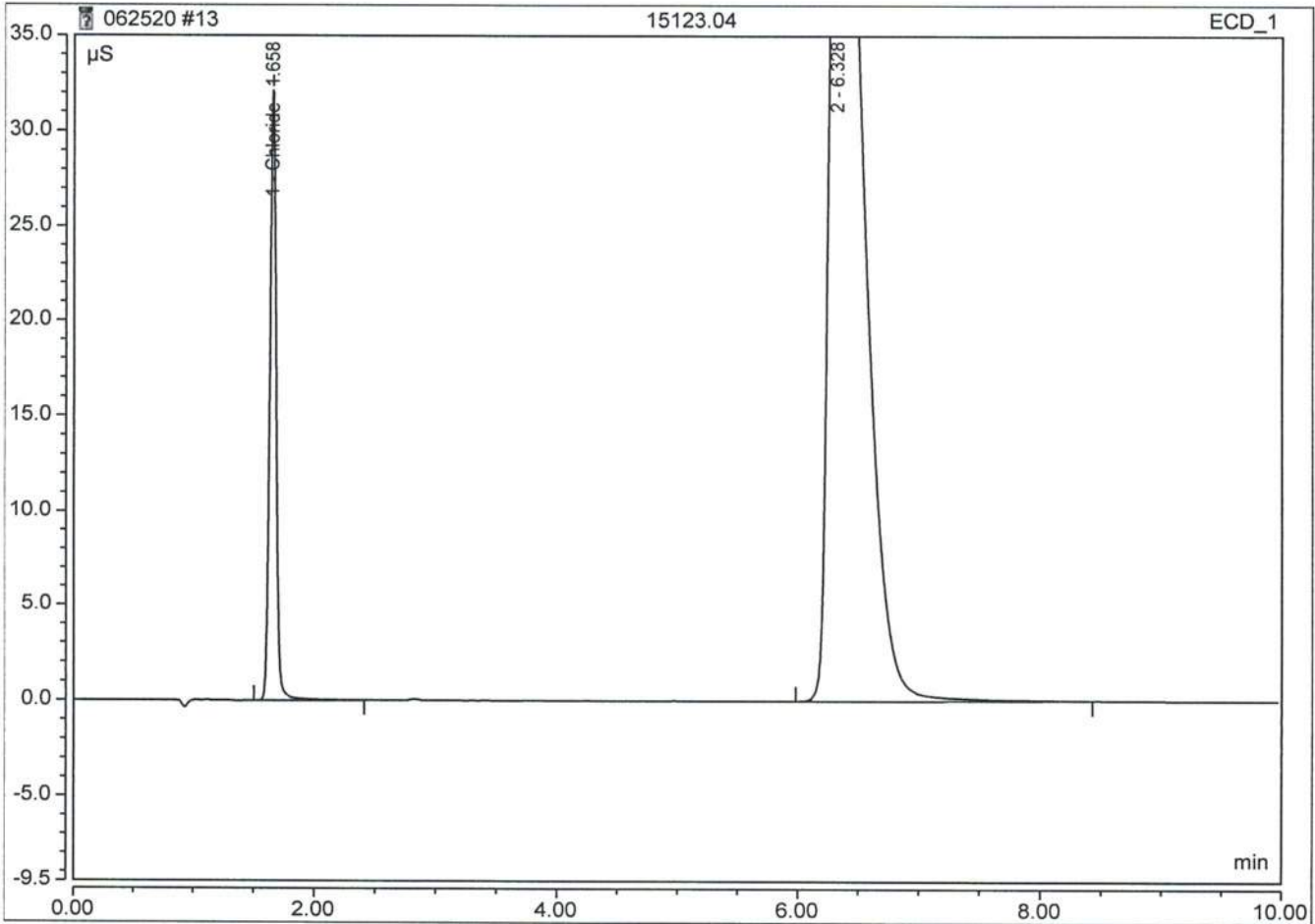
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	1.864	30.806	78.4191
2	6.60	Sulfate	BMB	0.891	4.092	56.9681
TOTAL:				2.75	34.90	135.39



Peak Integration Report

Sample Name:	15123.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 12:46	Operator:	Jeff Phifer

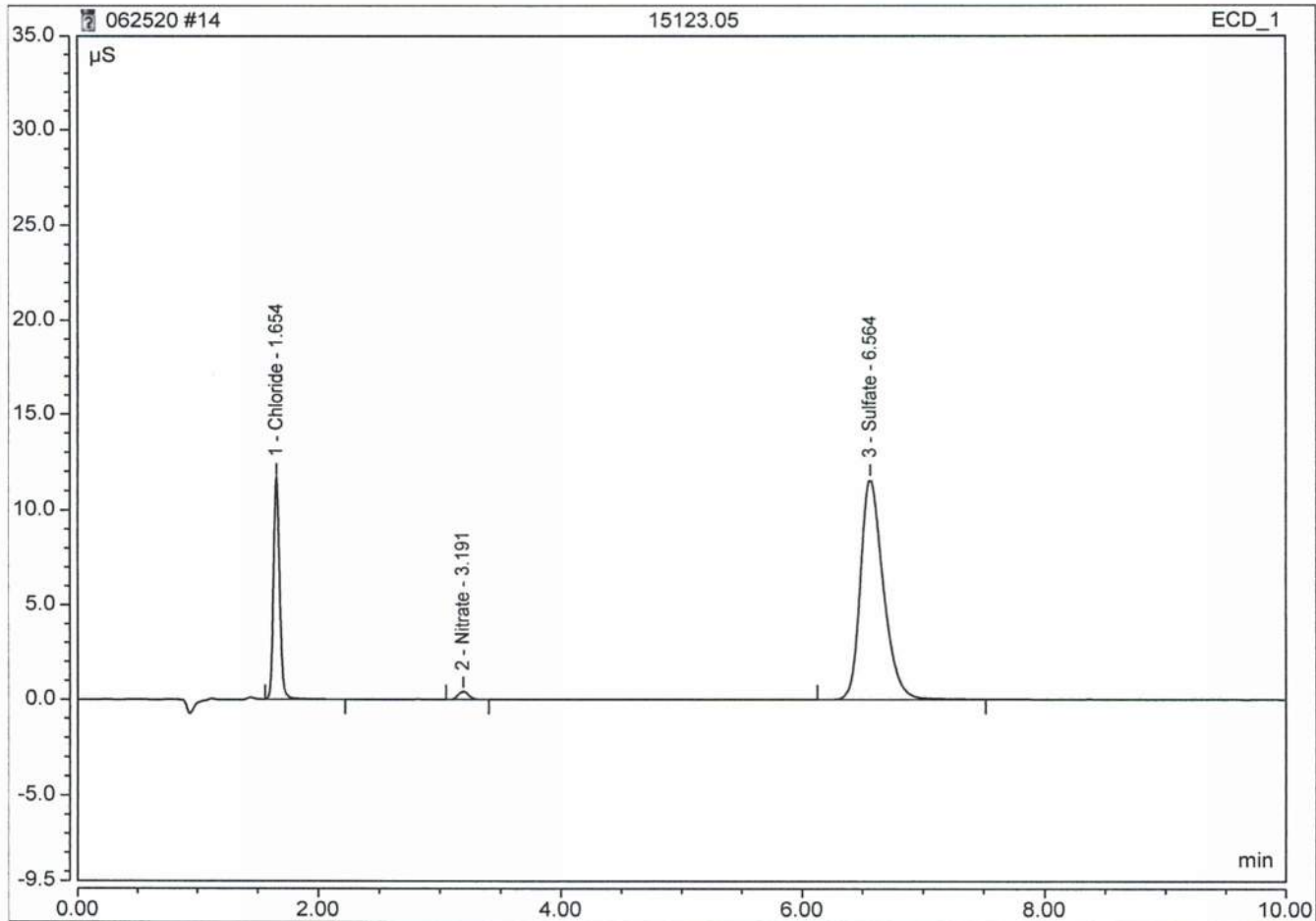
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	1.976	32.157	83.0226
TOTAL:				1.98	32.16	83.02



Peak Integration Report

Sample Name:	15123.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 12:59	Operator:	Jeff Phifer

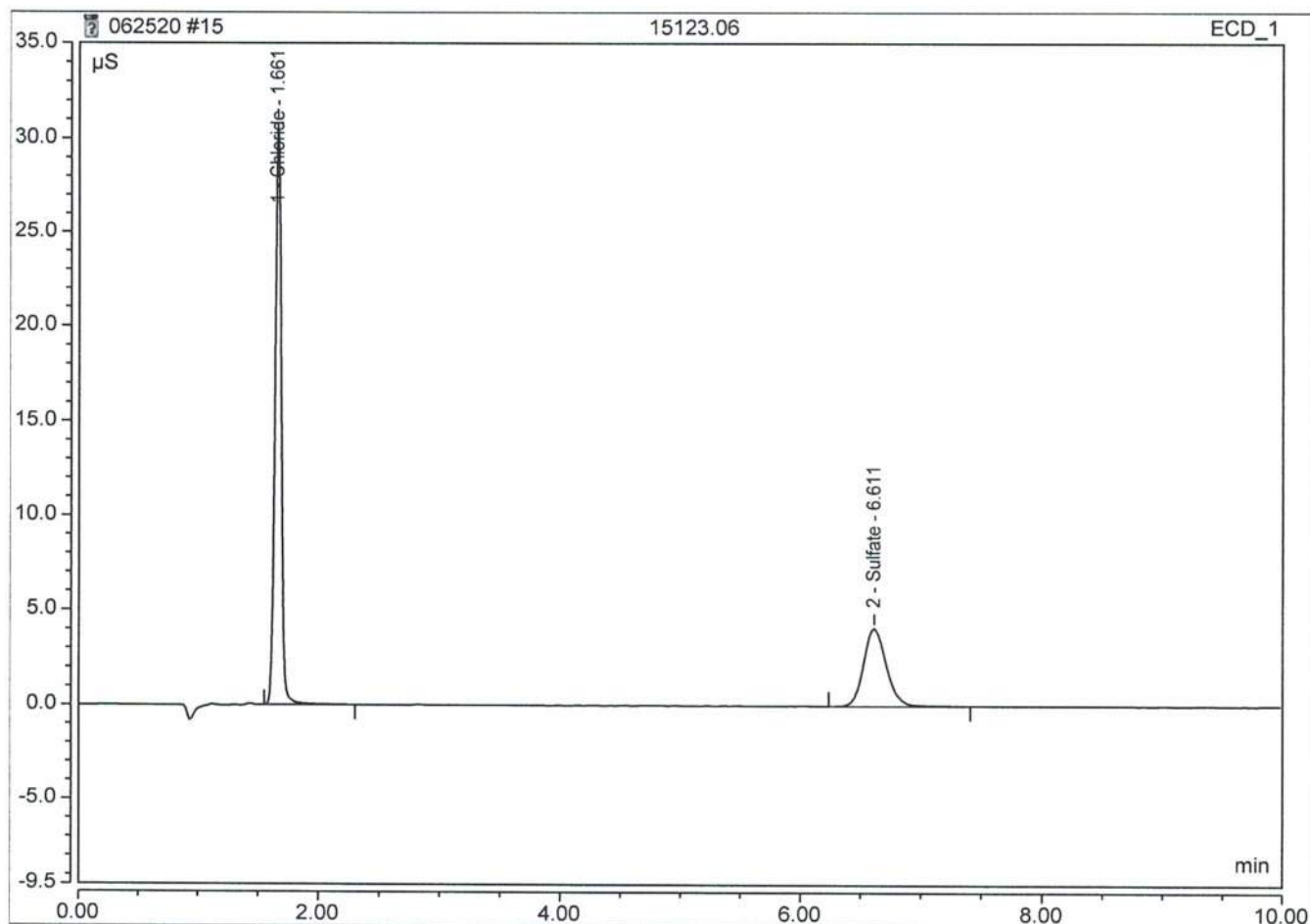
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.696	11.646	30.1343
2	3.19	Nitrate	BMB	0.042	0.428	0.8216
3	6.56	Sulfate	BMB	2.544	11.608	161.9522
TOTAL:				3.28	23.68	192.91



Peak Integration Report

Sample Name:	15123.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 13:12	Operator:	Jeff Phifer

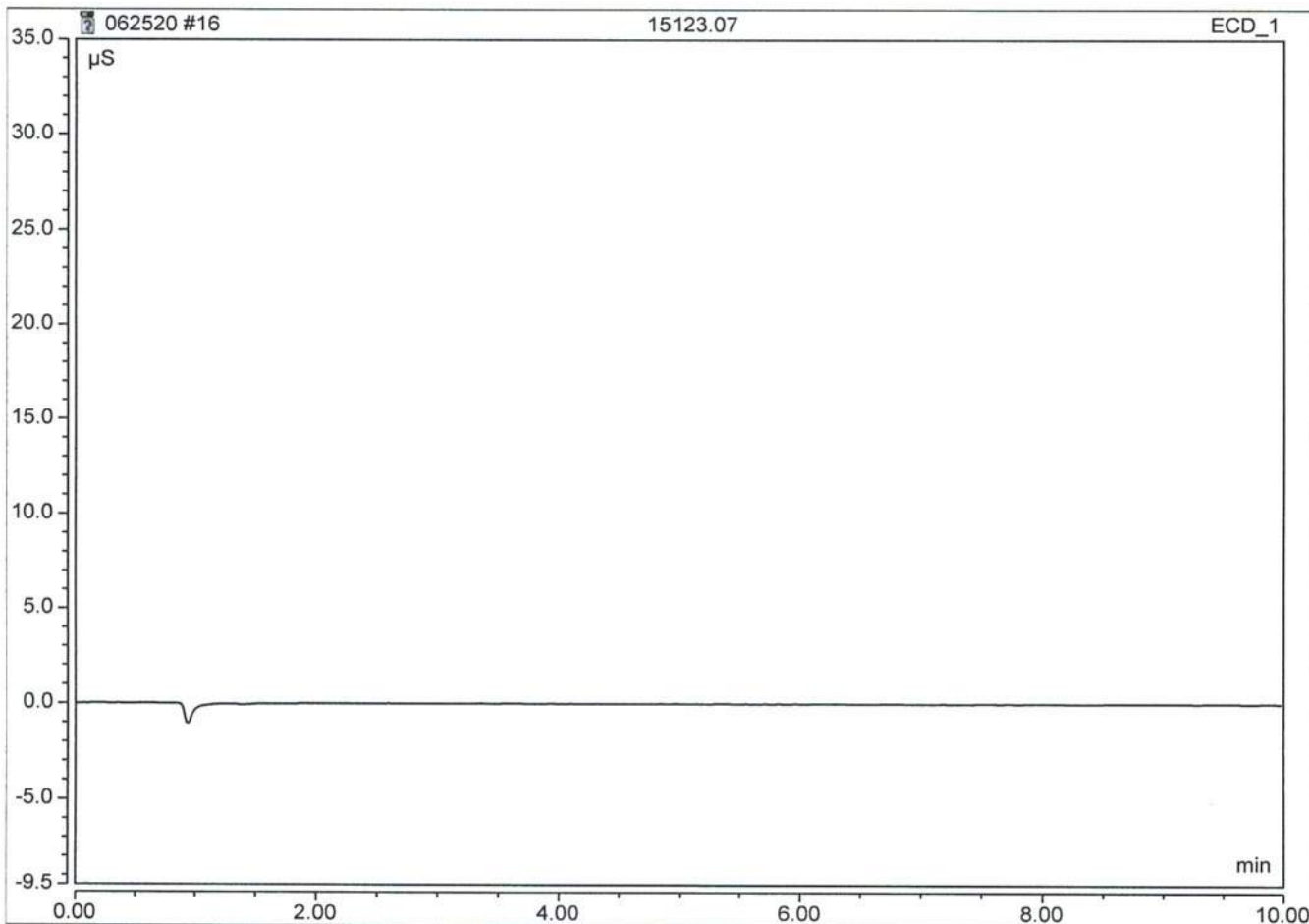
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	1.861	30.769	78.2979
2	6.61	Sulfate	BMB	0.896	4.097	57.2899
TOTAL:				2.76	34.87	135.59



Peak Integration Report

Sample Name:	15123.07	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	2.5000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 13:25	Operator:	Jeff Phifer

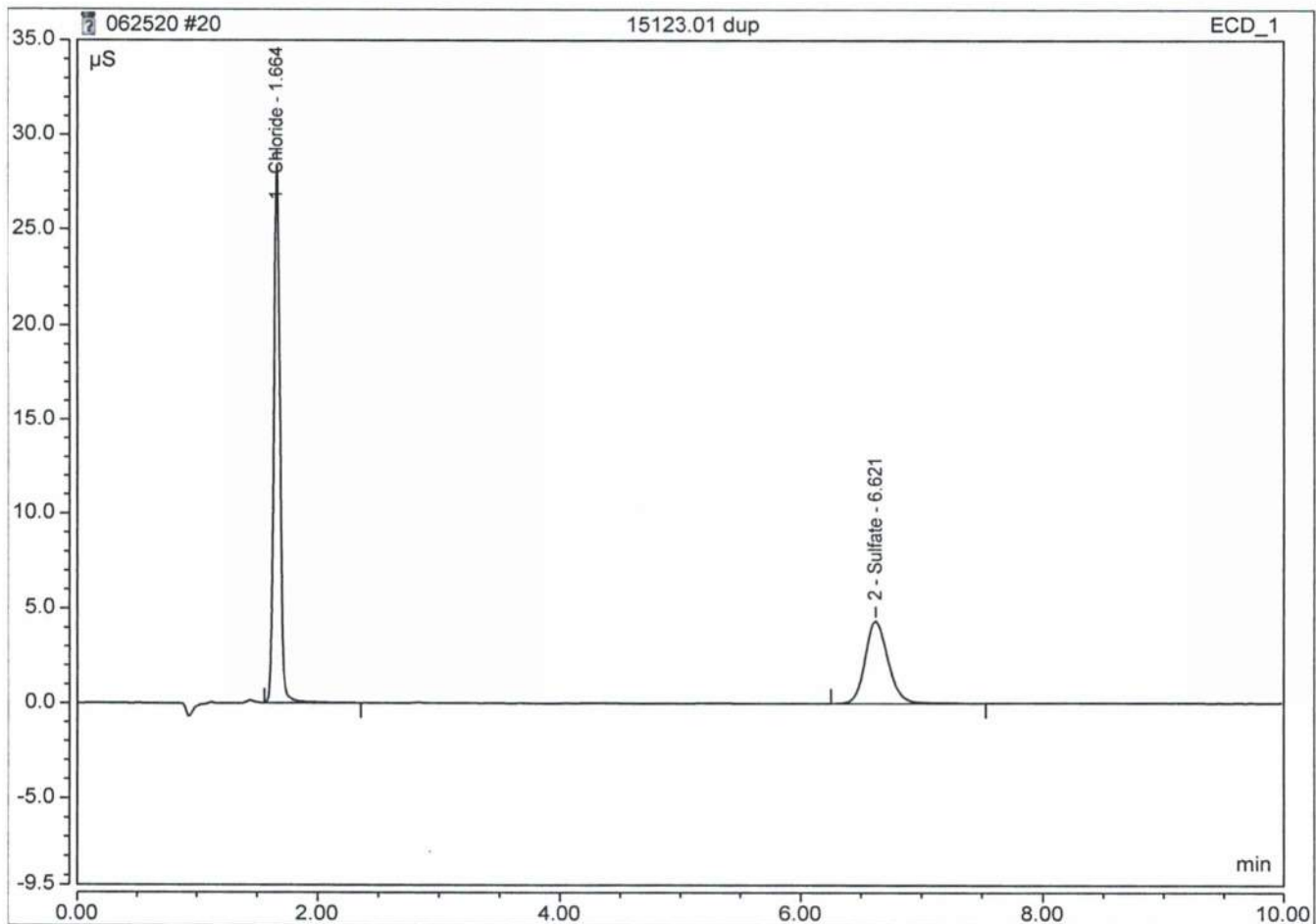
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	15123.01 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 14:16	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	1.704	28.444	71.7952
2	6.62	Sulfate	BMB	0.953	4.353	60.9325
TOTAL:				2.66	32.80	132.73

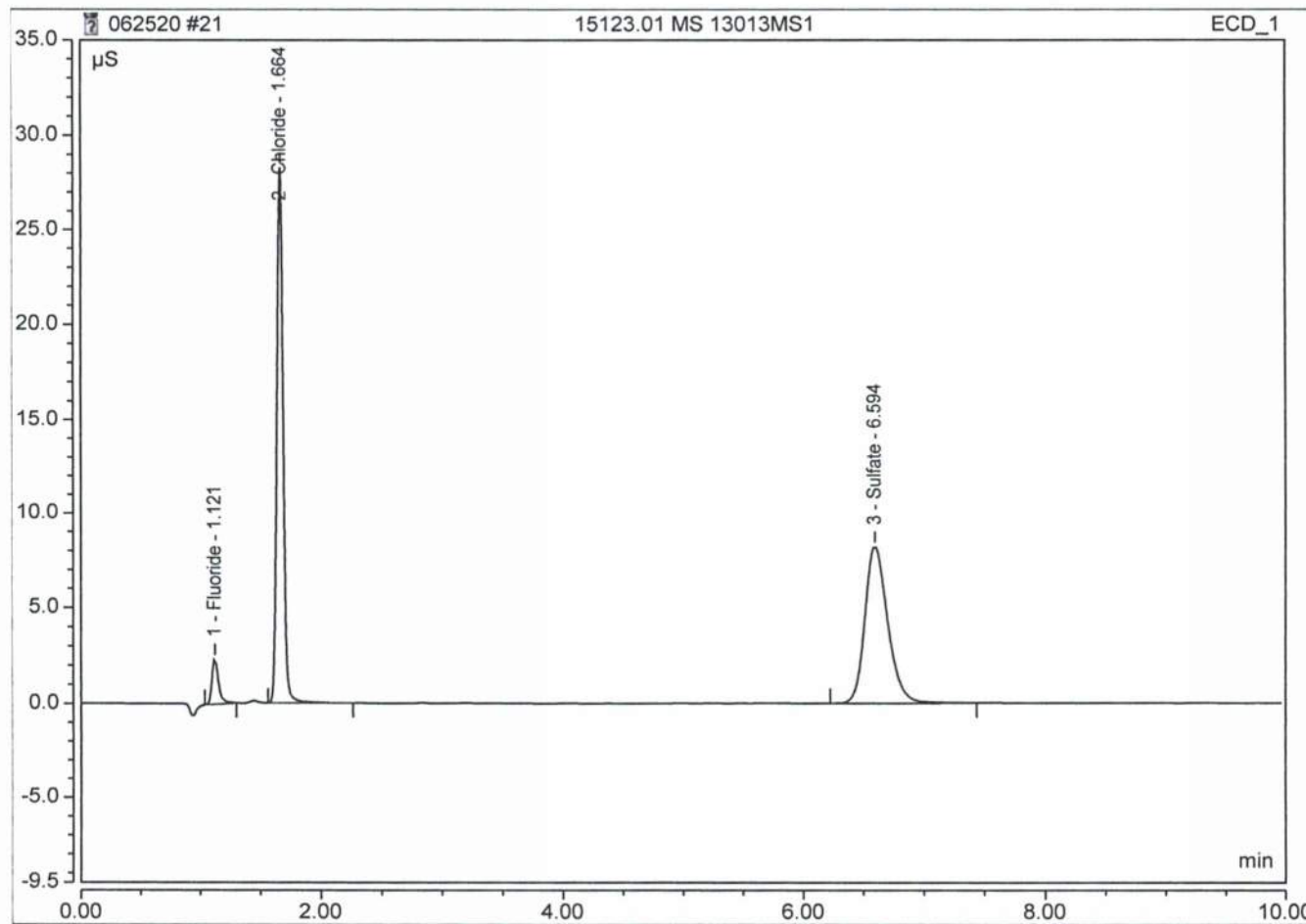


Peak Integration Report

Sample Name:	15123.01 MS 13013MS1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 14:29	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.149	2.377	0.9362
2	1.66	Chloride	BMB	1.692	28.292	14.2633
3	6.59	Sulfate	BMB	1.793	8.219	22.8487
TOTAL:				3.63	38.89	38.05

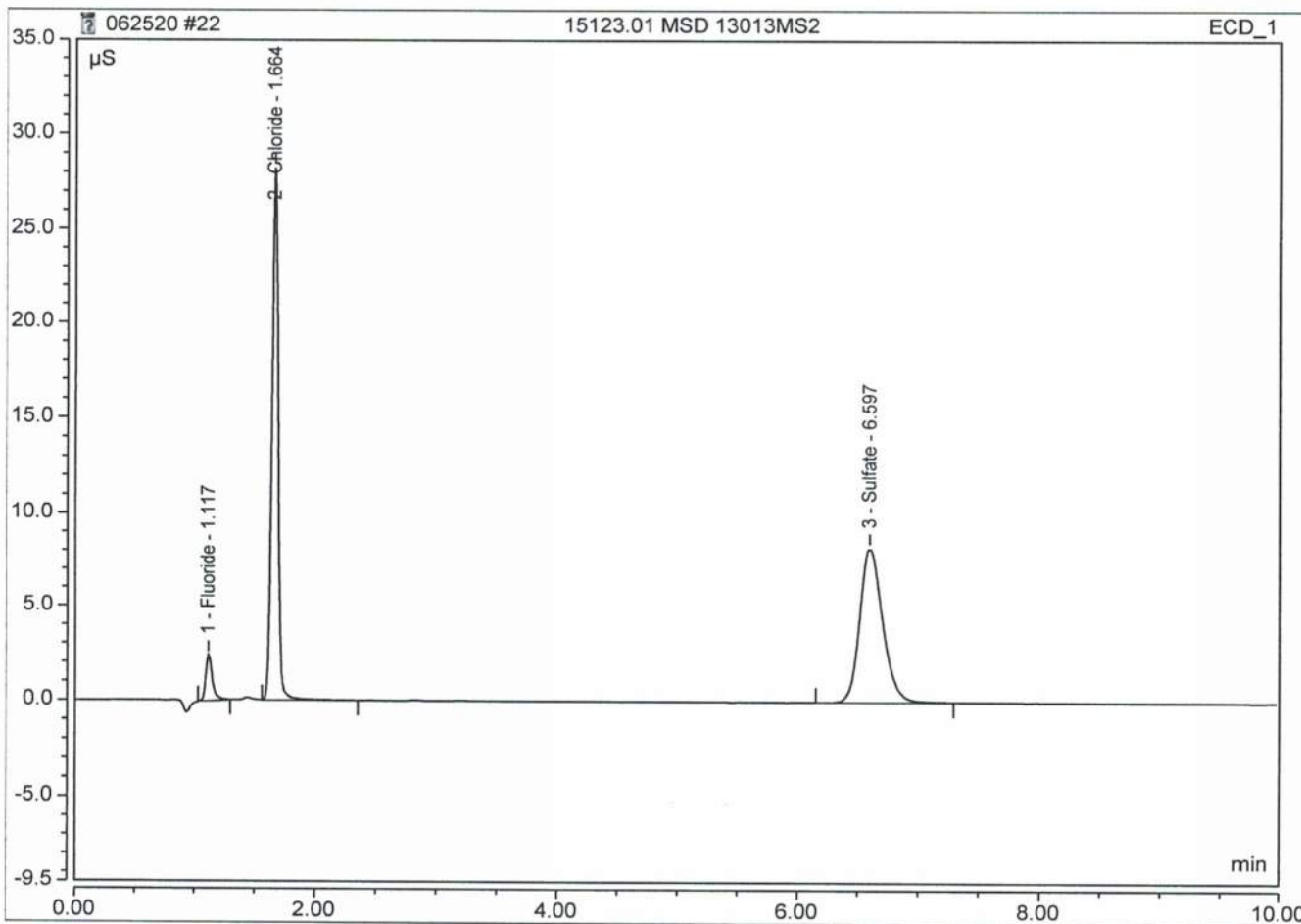
912
 1105



Peak Integration Report

Sample Name:	15123.01 MSD 13013MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 14:42	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.151	2.380	0.9437 - 0.03 = 915
2	1.66	Chloride	BMB	1.693	28.223	14.2700
3	6.60	Sulfate	BMB	1.788	8.218	22.7879 - 11.0 = 110?
TOTAL:				3.63	38.82	38.00

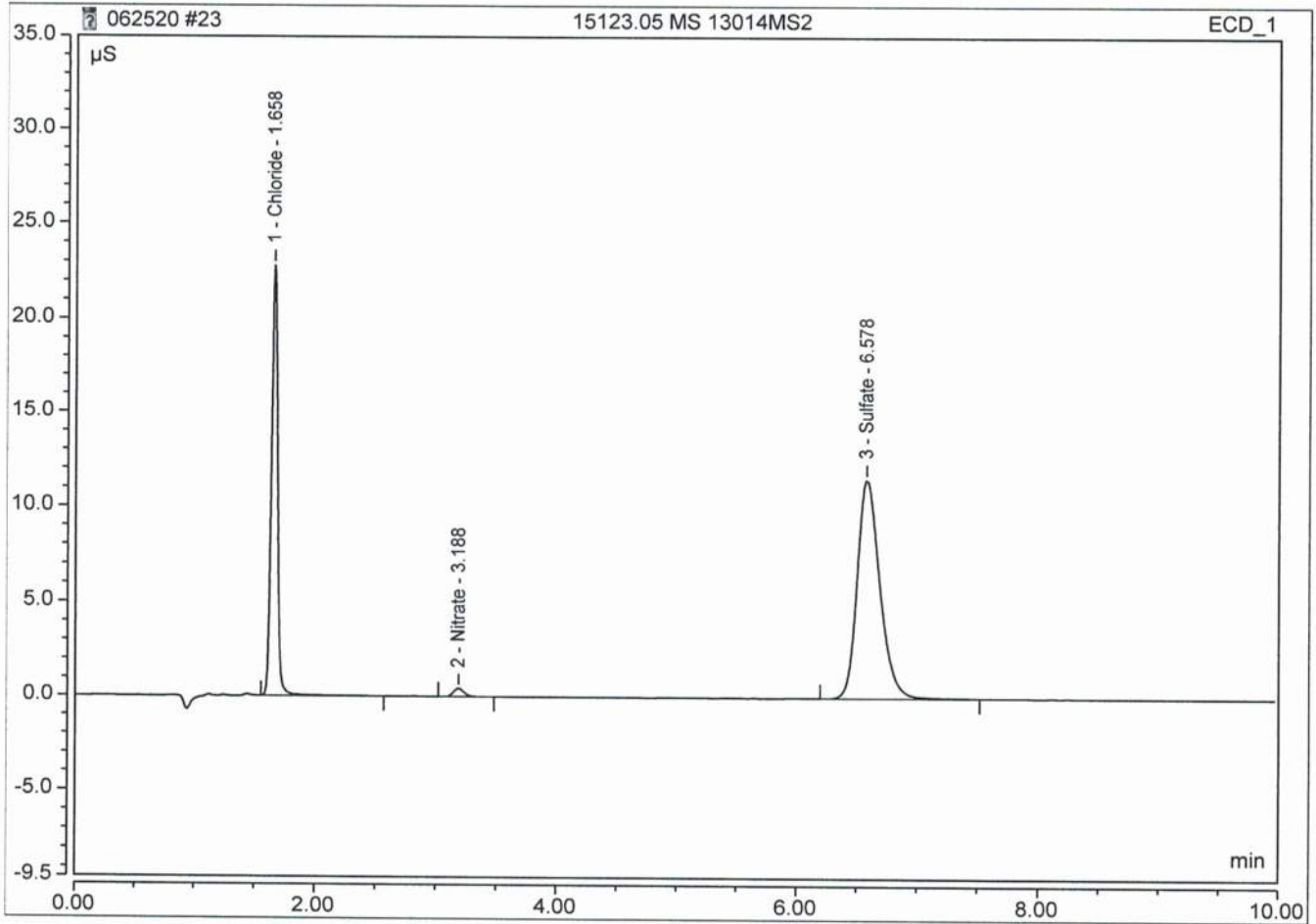


Peak Integration Report

Sample Name:	15123.05 MS 13014MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 14:54	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	1.372	22.798	5 11.6184 -6.0 =
2	3.19	Nitrate	BMB	0.044	0.442	0.1733
3	6.58	Sulfate	BMB	2.528	11.523	32.1924
TOTAL:				3.95	34.76	43.98

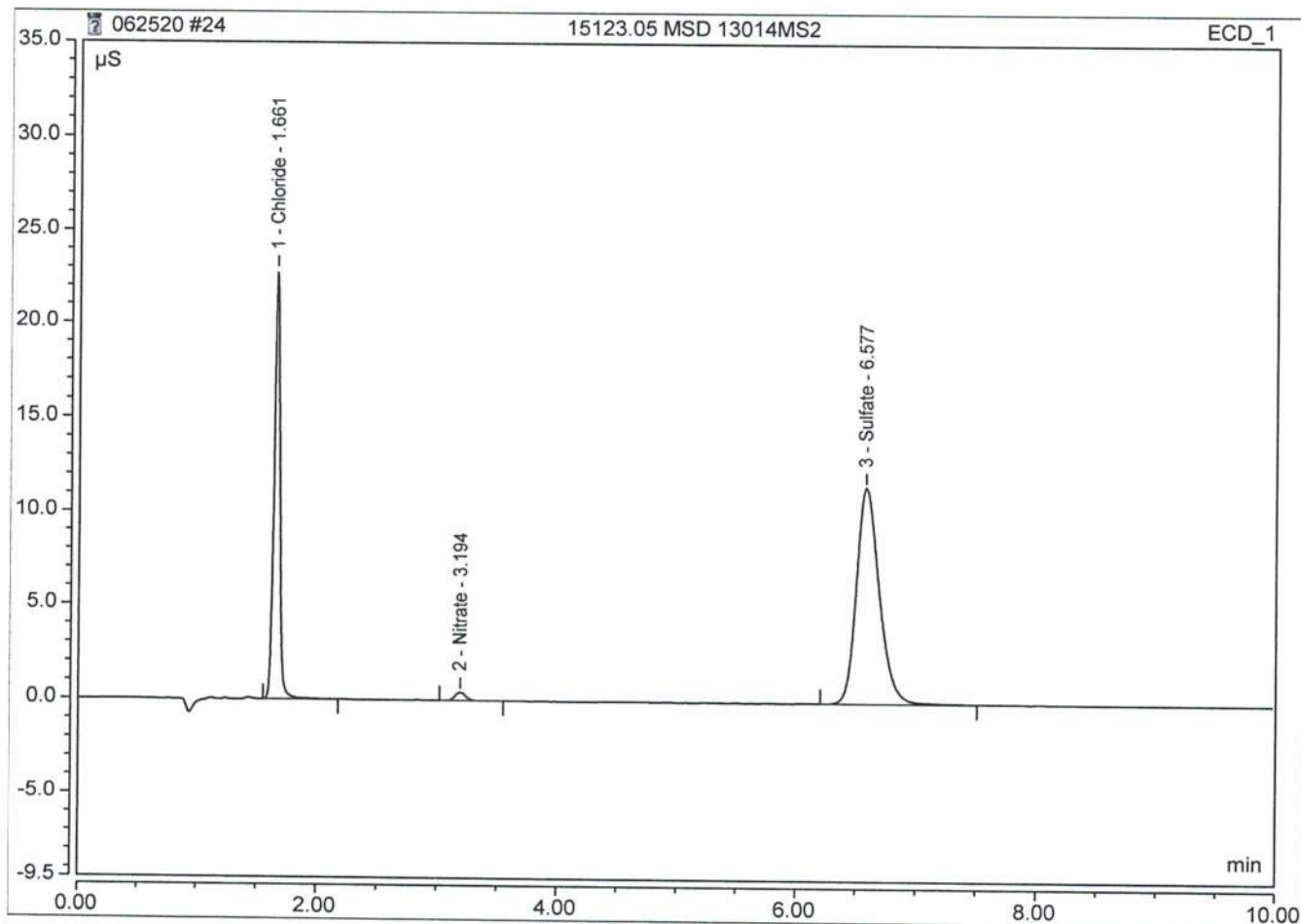
1128



Peak Integration Report

Sample Name:	15123.05 MSD 13014MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 15:07	Operator:	Jeff Phifer

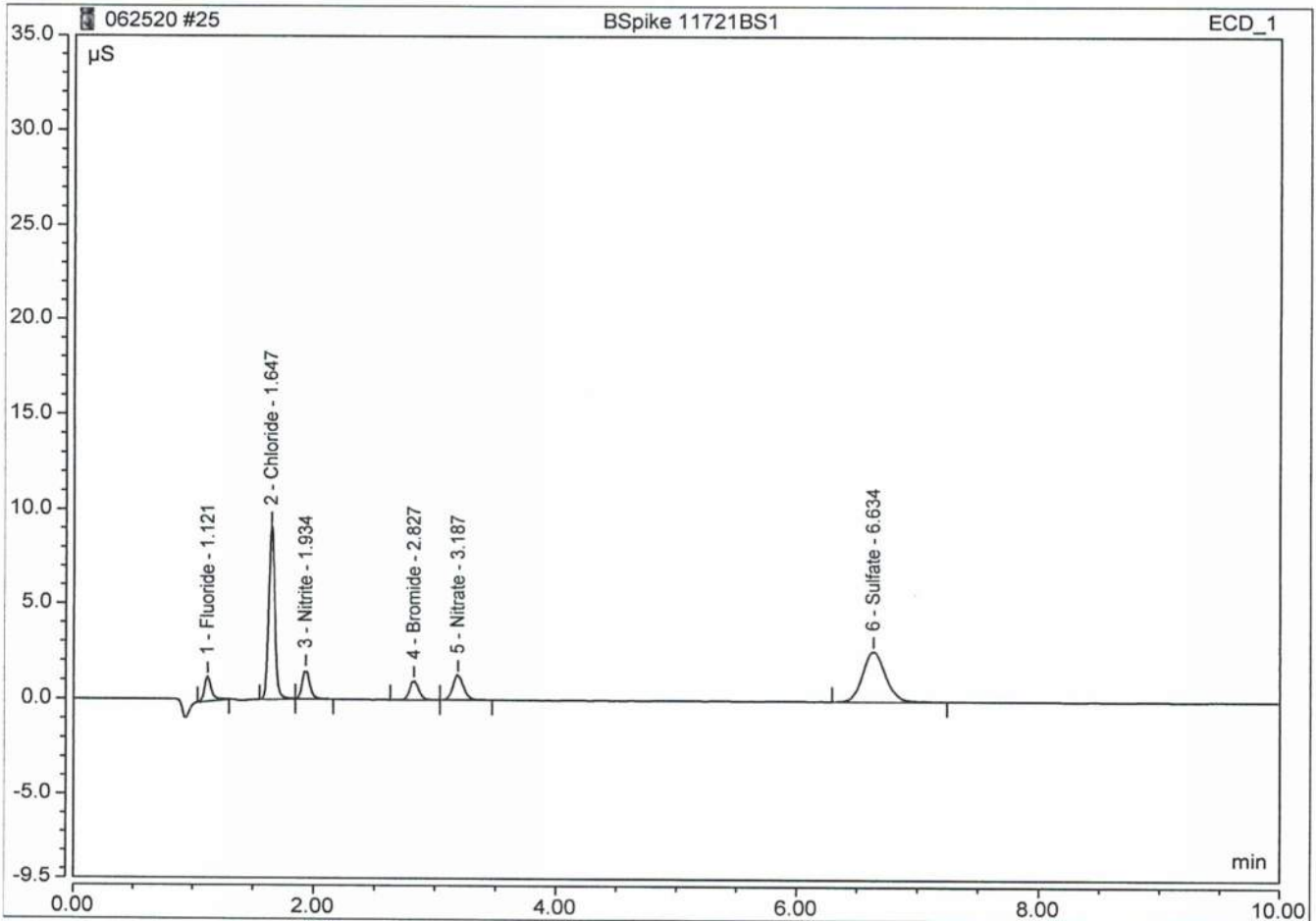
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	1.369	22.835	5 11.5942 - 6.0 ~ 112.8
2	3.19	Nitrate	BMB	0.044	0.438	0.1717
3	6.58	Sulfate	BMB	2.528	11.507	32.1931
TOTAL:				3.94	34.78	43.96



Peak Integration Report

Sample Name:	BSpike 11721BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 15:20	Operator:	Jeff Phiifer

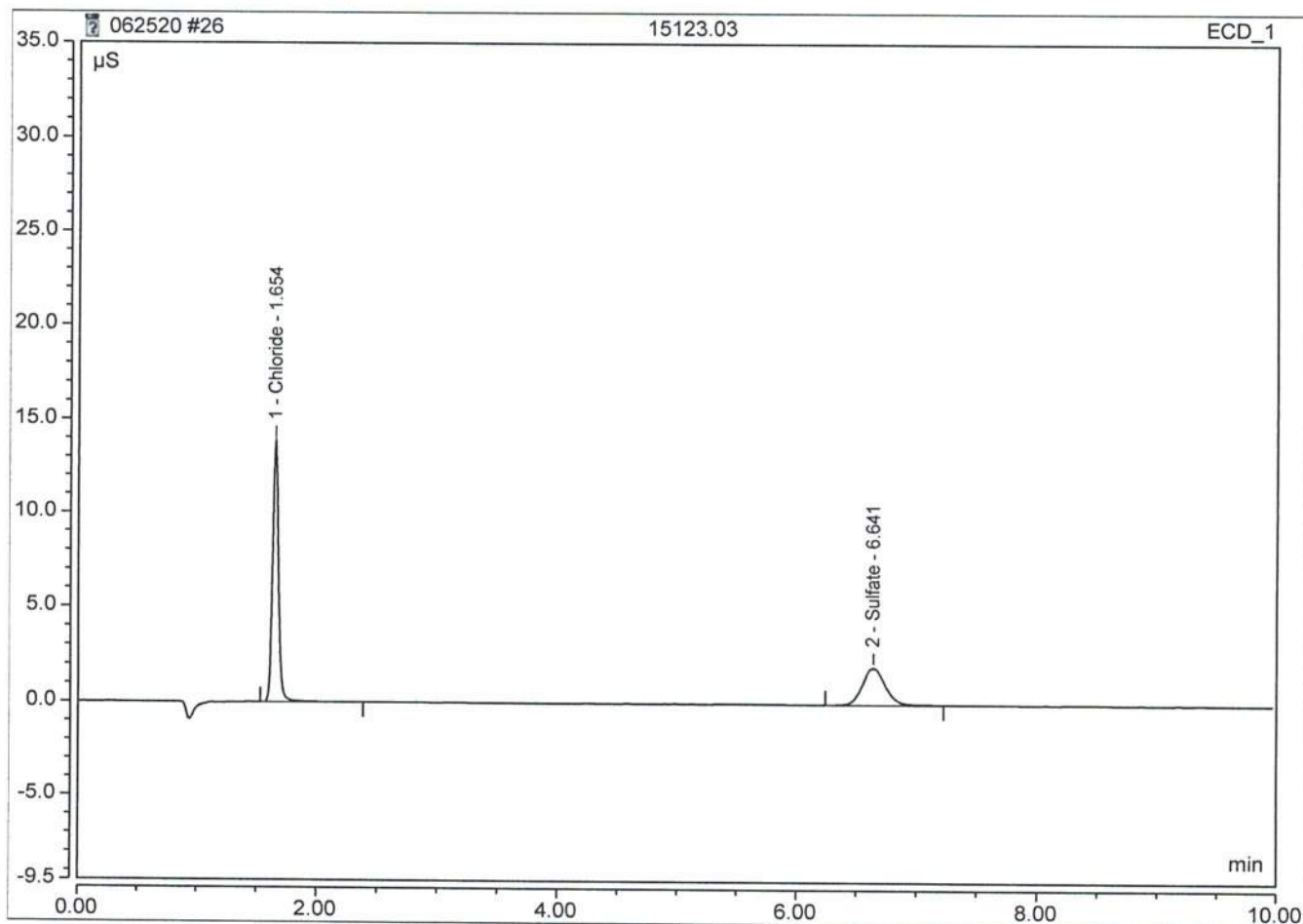
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.083	1.264	0.5000
2	1.65	Chloride	BMB	0.551	9.105	4.8311
3	1.93	Nitrite	BMB	0.107	1.512	0.4859
4	2.83	Bromide	BMB	0.087	0.981	2.0310
5	3.19	Nitrate	BMB	0.129	1.280	0.4995
6	6.63	Sulfate	BMB	0.572	2.603	7.3476
TOTAL:				1.53	16.75	15.70



Peak Integration Report

Sample Name:	15123.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 15:33	Operator:	Jeff Phifer

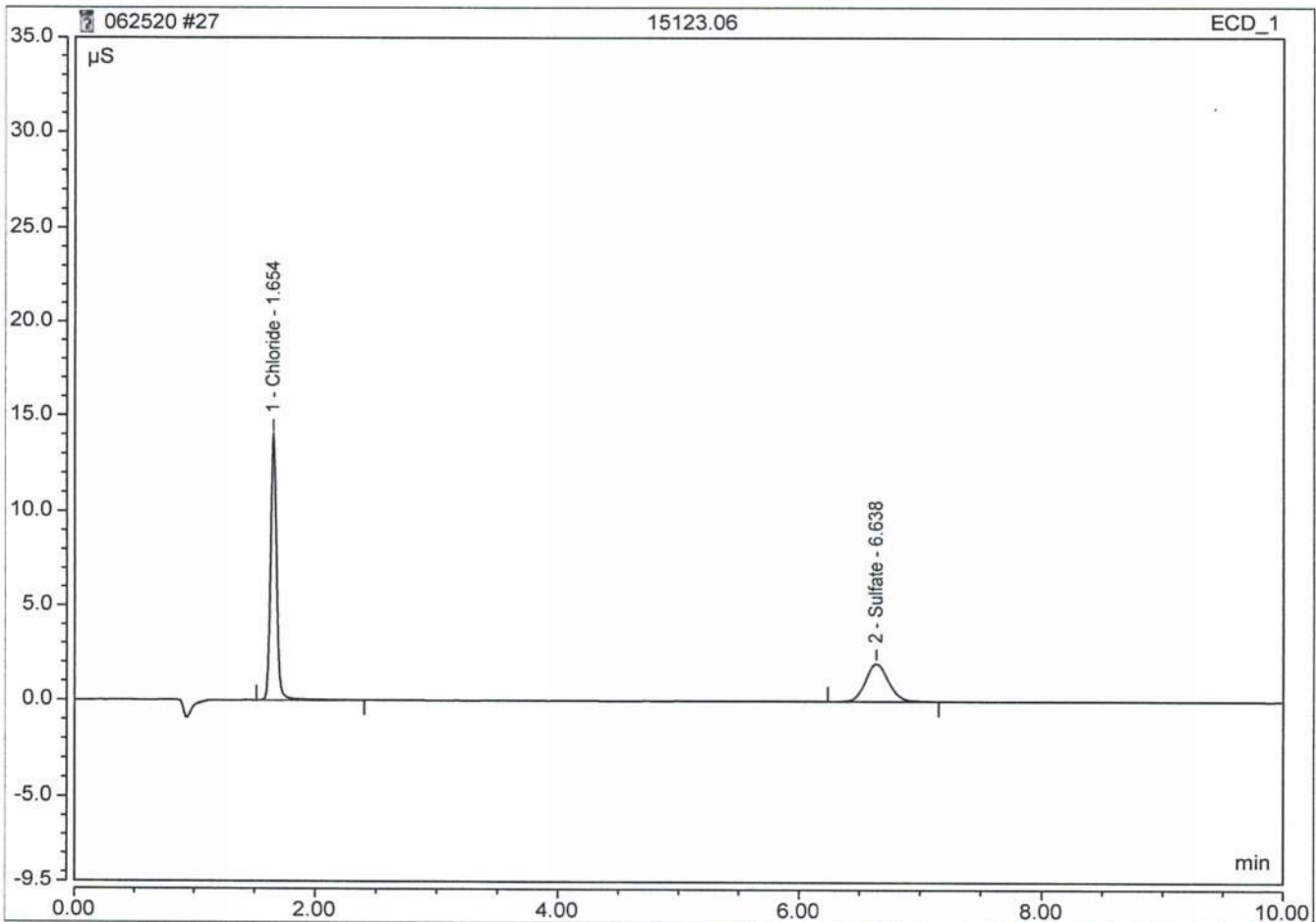
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.842	13.877	72.3187
2	6.64	Sulfate	BMB	0.433	1.970	55.8323
TOTAL:				1.27	15.85	128.15



Peak Integration Report

Sample Name:	15123.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 15:46	Operator:	Jeff Phifer

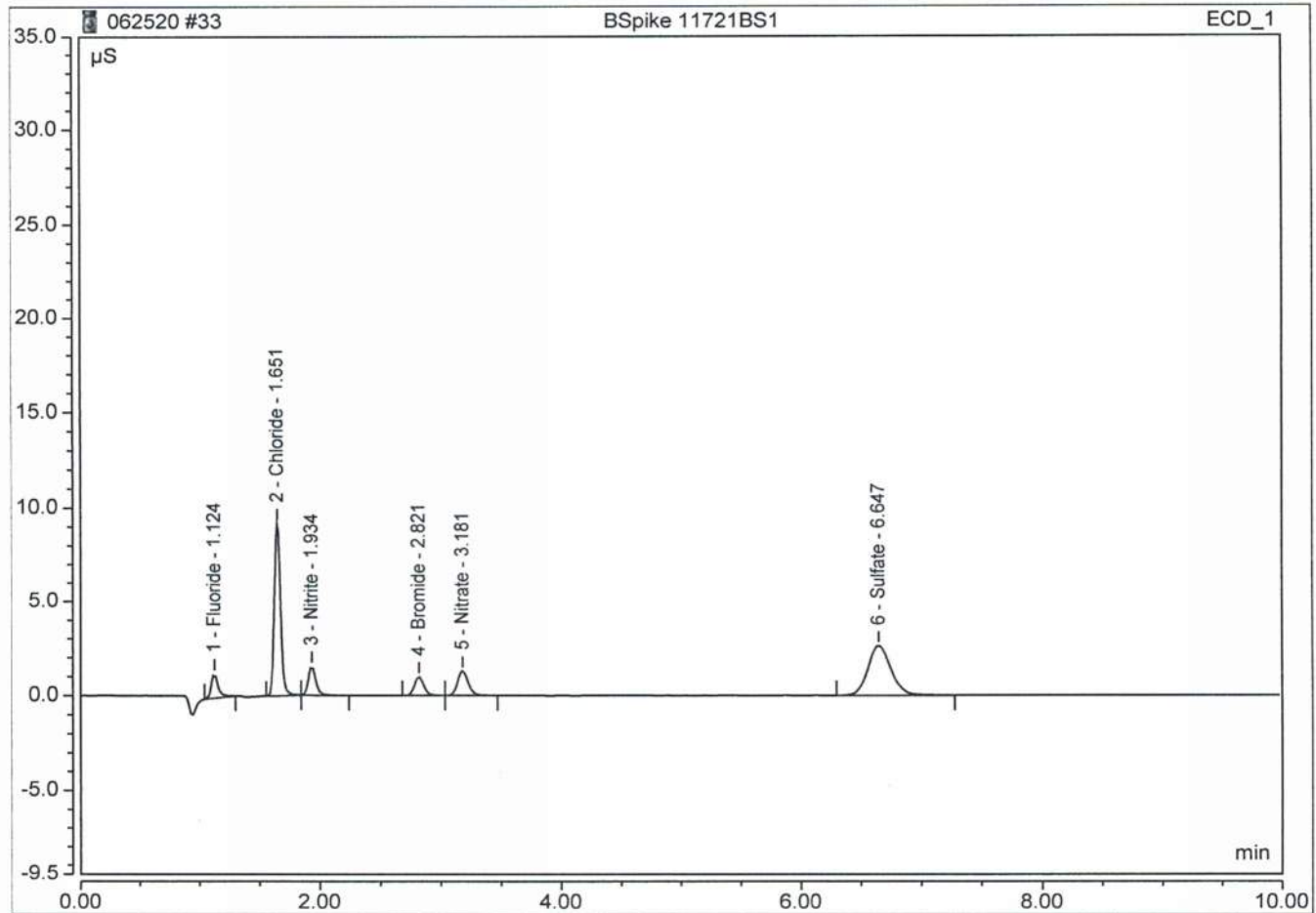
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.854	14.027	73.3715
2	6.64	Sulfate	BMB	0.437	1.980	56.2947
TOTAL:				1.29	16.01	129.67



Peak Integration Report

Sample Name:	BSpike 11721BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 17:03	Operator:	Jeff Phifer

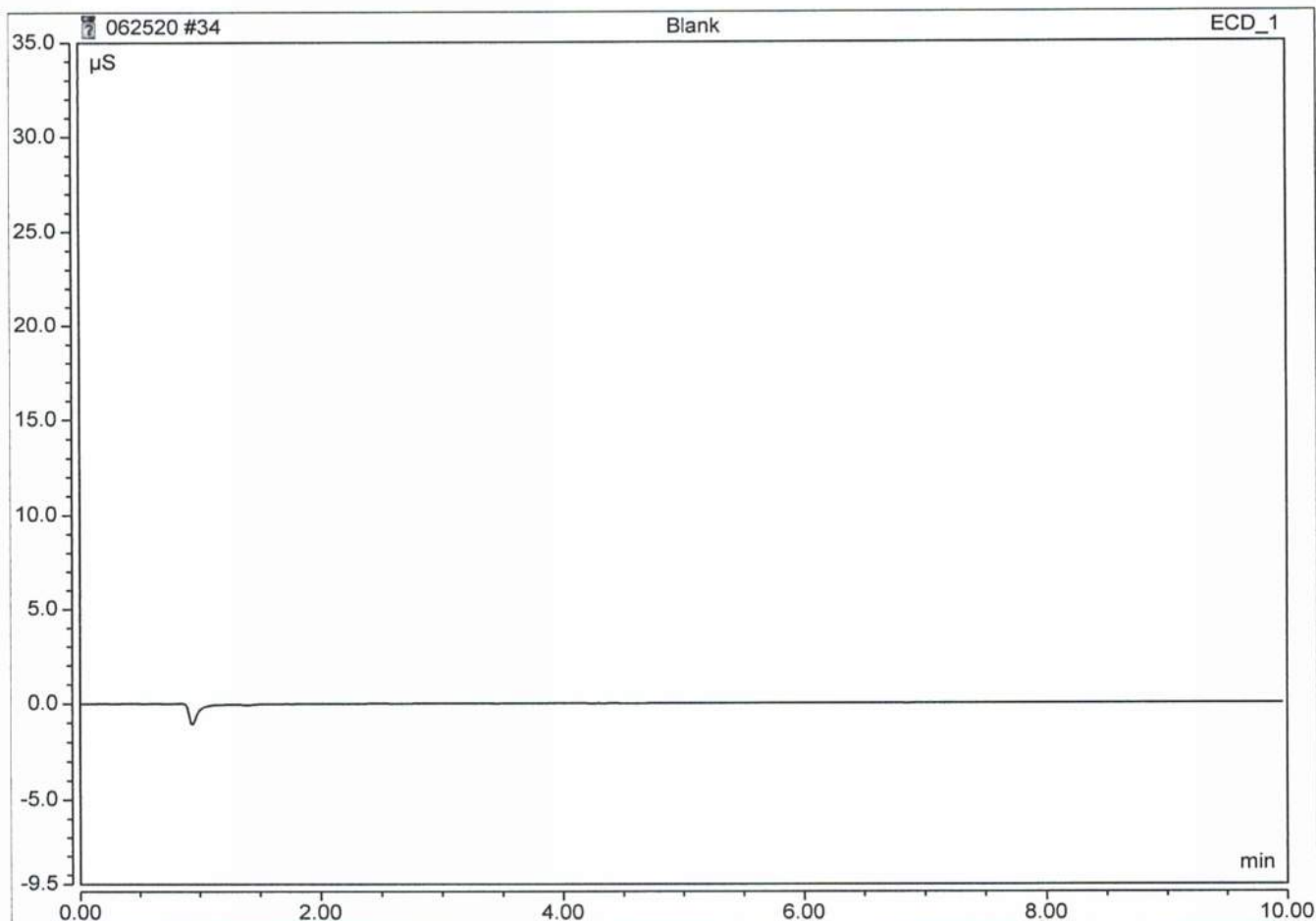
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.083	1.266	0.4991
2	1.65	Chloride	BMB	0.553	9.186	4.8480
3	1.93	Nitrite	BMB	0.108	1.521	0.4884
4	2.82	Bromide	BMB	0.087	0.990	2.0395
5	3.18	Nitrate	BMB	0.129	1.292	0.5001
6	6.65	Sulfate	BMB	0.573	2.614	7.3638
TOTAL:				1.53	16.87	15.74



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	25-Jun-2020 / 17:15	Operator:	Jeff Phifer







No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Ics-1100 A Dionex IC/Meth 300.0

031620

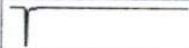





(New cal.)
all ions (new guard col) JH

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:58:12 AM...	1.0000
2		1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:29 A...	1.0000
3		1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:17 A...	1.0000
4		1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:36:06 A...	1.0000
5		1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:55 A...	1.0000
6		1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:43 A...	1.0000

[Click here to add a new injection](#)

CALID# IC5A031620 CAL



#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
Click here to add a new injection						

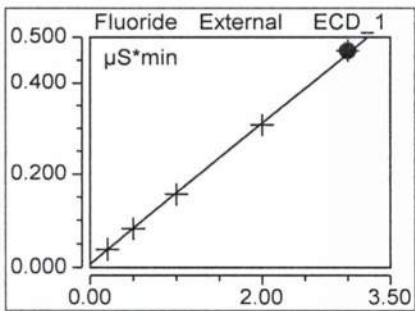
Norm Method	03/08/11 13:39	Jeff Phifer	Method 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mM]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Calibration Batch Report
CAL ID# ICSA031620CAL

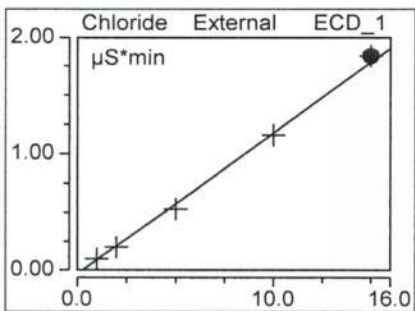
Sequence:	031620	Injection Volu:	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	16-Mar-2020 / 11:01	Column:	AS4A-SC 038777

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.007	0.152	0.000	0.9998
Chloride	Area	Lin, WithOffset, 1/A	0.04	-0.033	0.121	0.000	0.9987
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.003	0.227	0.000	0.9997
Bromide	Area	Lin, WithOffset, 1/A	0.15	-0.001	0.043	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.17	-0.001	0.260	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.46	-0.007	0.079	0.000	0.9996
AVERAGE:				-0.0064	0.1471	0.0000	0.9996

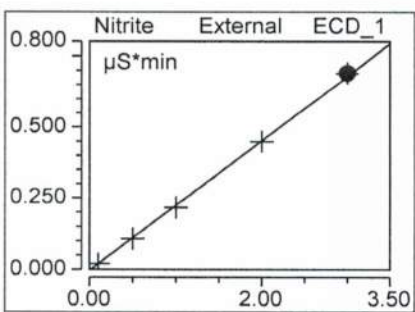
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
1130Cal1	1.118	0.0386	0.506	0.206
1130Cal2	1.118	0.0822	1.190	0.493
1130Cal3	1.118	0.1559	2.362	0.978
1130Cal4	1.118	0.3073	4.834	1.974
1130Cal5	1.118	0.4705	7.546	3.048
Average	1.118			
Rel. Std. Dev.	0.000 %			



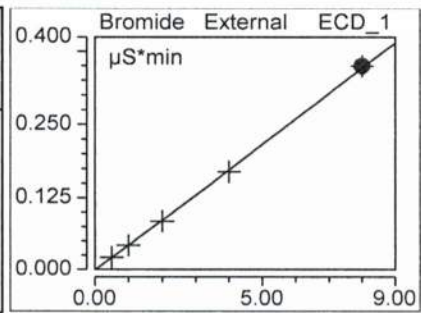
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Chloride	Chloride	Chloride	Chloride	Chloride
1130Cal1	1.651	0.0980	1.539	1.086
1130Cal2	1.651	0.2000	3.158	1.929
1130Cal3	1.661	0.5307	8.559	4.662
1130Cal4	1.664	1.1594	18.897	9.858
1130Cal5	1.664	1.8377	29.851	15.464
Average	1.658			
Rel. Std. Dev.	0.412 %			



Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Nitrite	Nitrite	Nitrite	Nitrite	Nitrite
1130Cal1	1.944	0.0206	0.280	0.105
1130Cal2	1.948	0.1071	1.441	0.486
1130Cal3	1.954	0.2163	2.949	0.967
1130Cal4	1.954	0.4487	6.229	1.989
1130Cal5	1.948	0.6905	9.755	3.054
Average	1.950			
Rel. Std. Dev.	0.229 %			

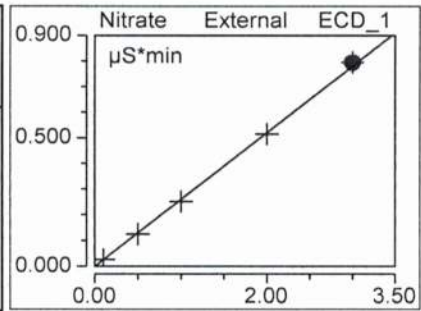


Injection Name	Ret. Time min	Area μS*min	Height μS	Amount
Bromide	Bromide	Bromide	Bromide	Bromide
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	2.871	0.0210	0.228	0.511
1130Cal2	2.868	0.0422	0.461	0.999
1130Cal3	2.884	0.0843	0.917	1.969
1130Cal4	2.874	0.1696	1.866	3.936
1130Cal5	2.848	0.3497	3.898	8.085
Average	2.869			
Rel. Std. Dev.	0.469 %			

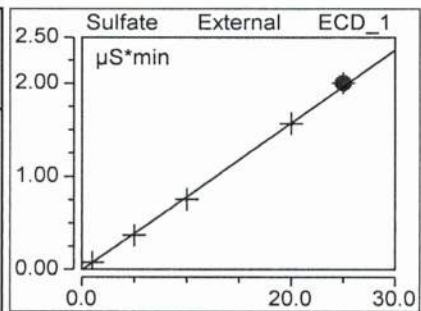


Handwritten signature

Injection Name	Ret. Time min	Area μS*min	Height μS	Amount
Nitrate	Nitrate	Nitrate	Nitrate	Nitrate
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	3.244	0.0266	0.254	0.105
1130Cal2	3.234	0.1249	1.182	0.483
1130Cal3	3.248	0.2515	2.359	0.970
1130Cal4	3.228	0.5145	4.808	1.982
1130Cal5	3.194	0.7947	7.457	3.060
Average	3.230			
Rel. Std. Dev.	0.659 %			



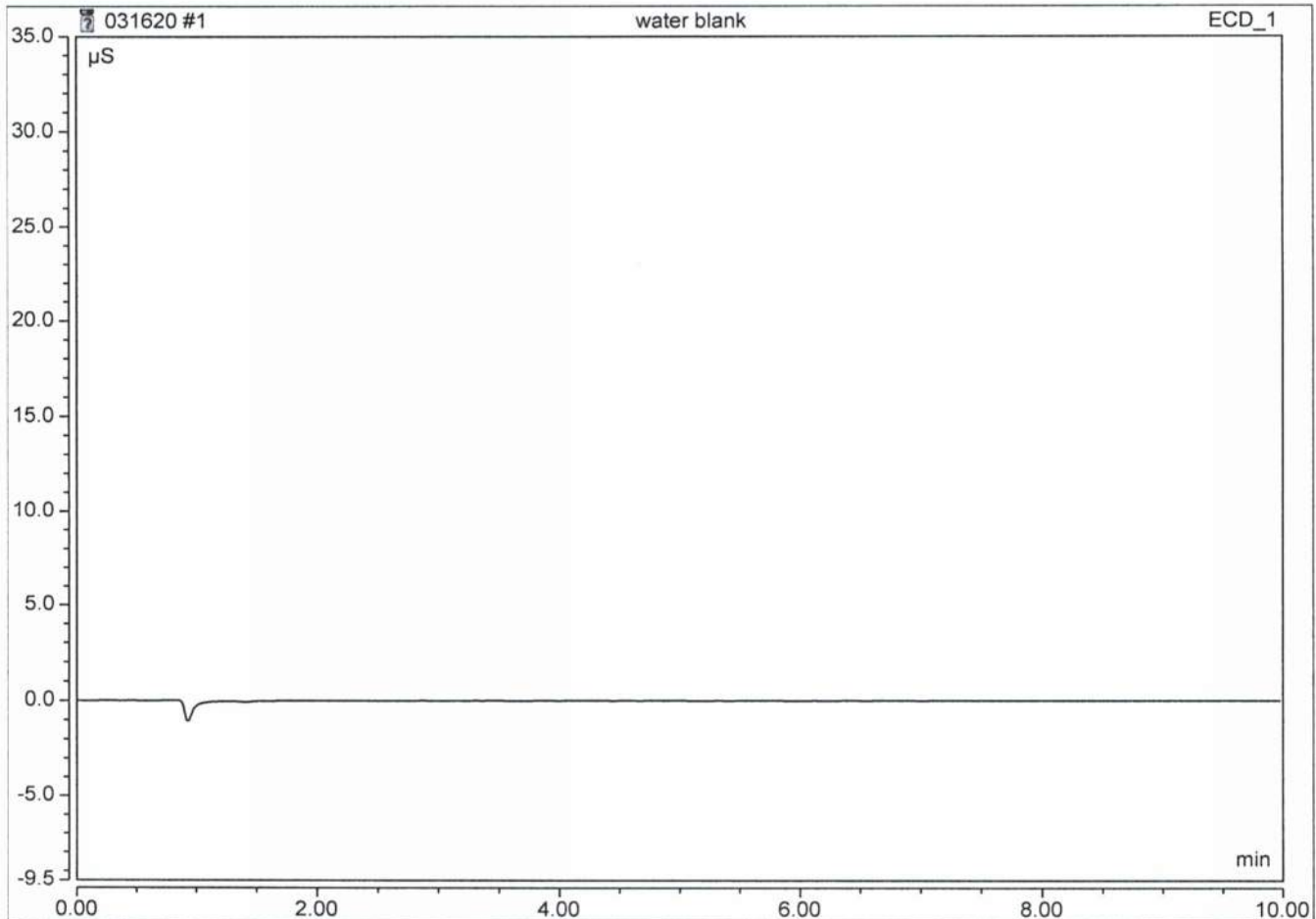
Injection Name	Ret. Time min	Area μS*min	Height μS	Amount
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	6.768	0.0763	0.333	1.054
1130Cal2	6.754	0.3712	1.645	4.800
1130Cal3	6.744	0.7553	3.326	9.676
1130Cal4	6.721	1.5656	6.872	19.966
1130Cal5	6.718	2.0017	8.764	25.504
Average	6.741			
Rel. Std. Dev.	0.319 %			



Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 09:58	Operator:	Jeff Phifer

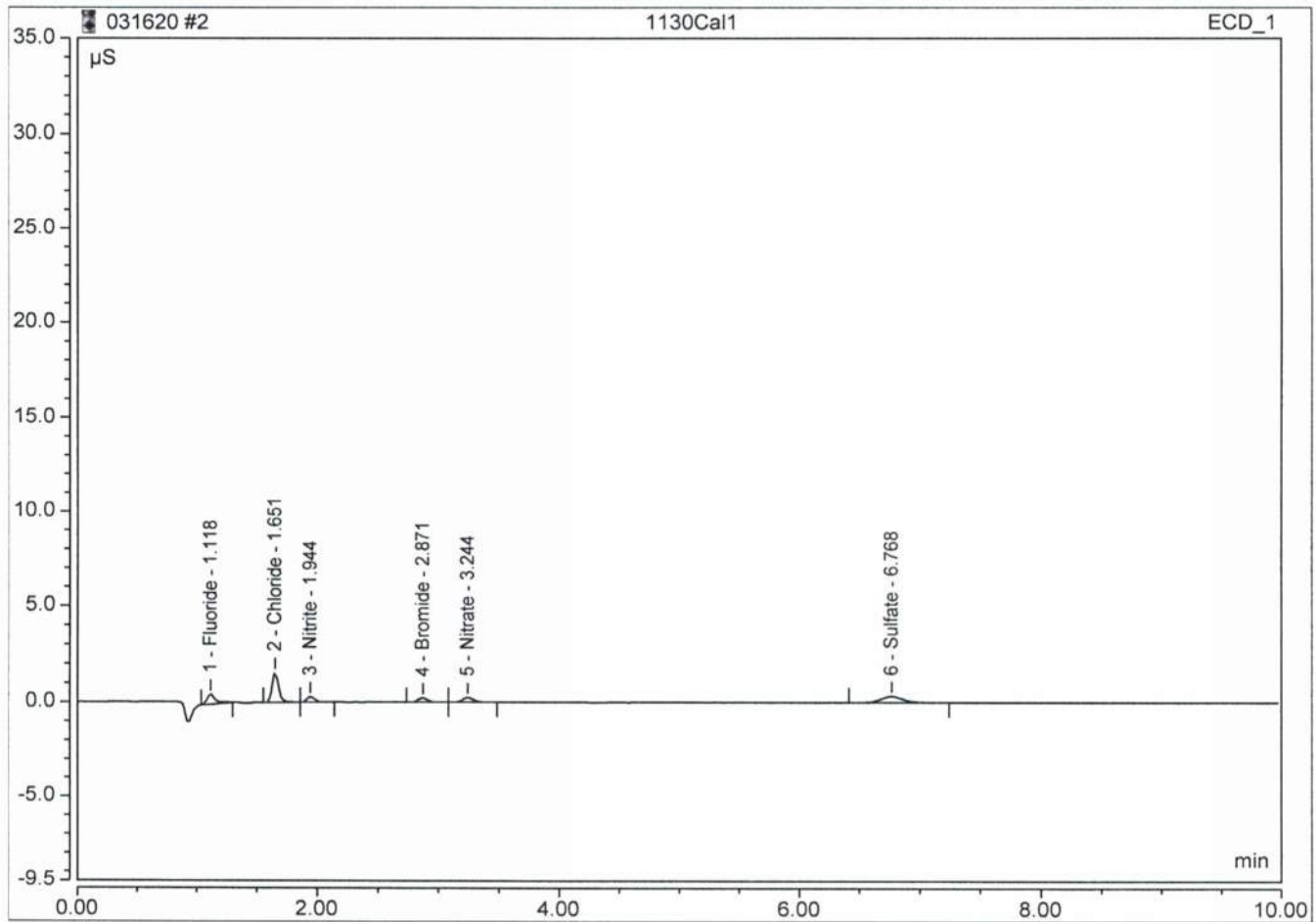
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	1130Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:10	Operator:	Jeff Phifer

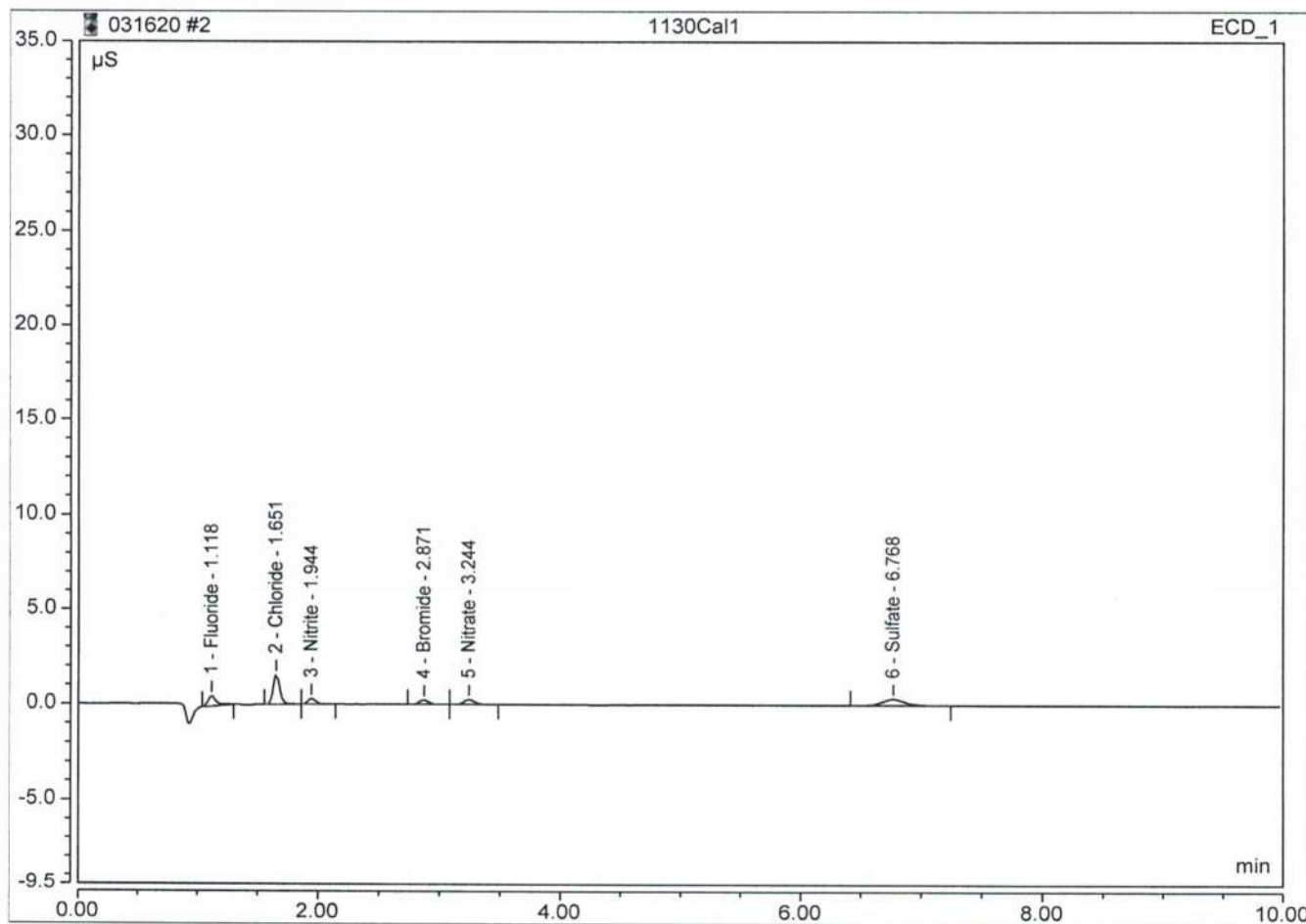
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.039	0.506	0.2 0.2064
2	1.65	Chloride	BMB	0.098	1.539	1 1.0862
3	1.94	Nitrite	BMB	0.021	0.280	0.1 0.1050
4	2.87	Bromide	BMB	0.021	0.228	0.5 0.5111
5	3.24	Nitrate	BMB	0.027	0.254	0.1 0.1053
6	6.77	Sulfate	BMB	0.076	0.333	1 1.0540
TOTAL:				0.28	3.14	3.07



Peak Integration Report

Sample Name:	1130Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:10	Operator:	Jeff Phifer

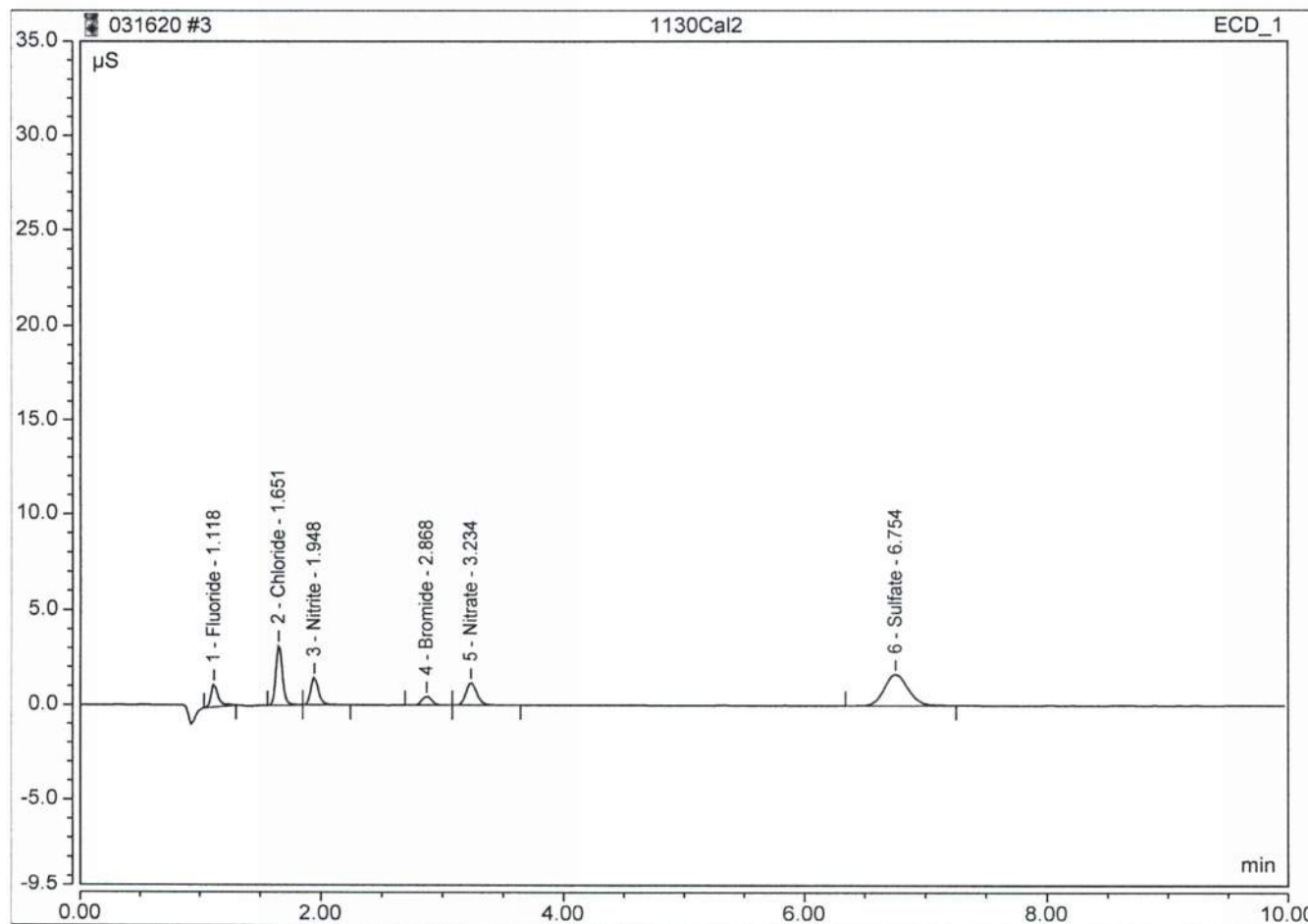
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.039	0.506	n.a.
2	1.65	Chloride	BMB	0.098	1.539	n.a.
3	1.94	Nitrite	BMB	0.021	0.280	n.a.
4	2.87	Bromide	BMB	0.021	0.228	n.a.
5	3.24	Nitrate	BMB	0.027	0.254	n.a.
6	6.77	Sulfate	BMB	0.076	0.333	n.a.
TOTAL:				0.28	3.14	0.00



Peak Integration Report

Sample Name:	1130Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:23	Operator:	Jeff Phifer

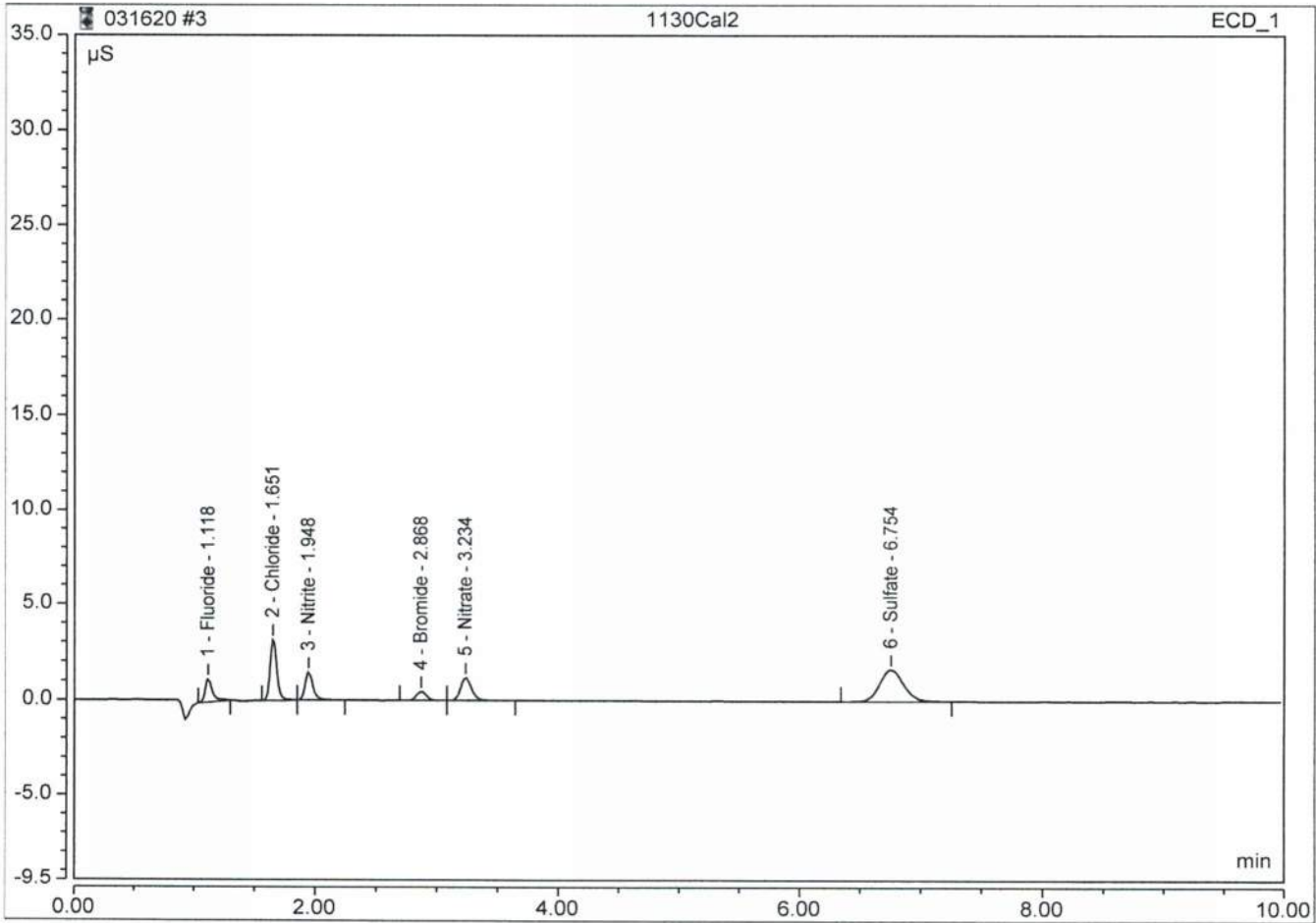
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.082	1.190	0.5 0.4934
2	1.65	Chloride	BMB	0.200	3.158	2 1.9291
3	1.95	Nitrite	BMB	0.107	1.441	0.5 0.4857
4	2.87	Bromide	BMB	0.042	0.461	1 0.9986
5	3.23	Nitrate	BMB	0.125	1.182	0.5 0.4831
6	6.75	Sulfate	BMB	0.371	1.645	5 4.7996
TOTAL:				0.93	9.08	9.19



Peak Integration Report

Sample Name:	1130Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:23	Operator:	Jeff Phifer

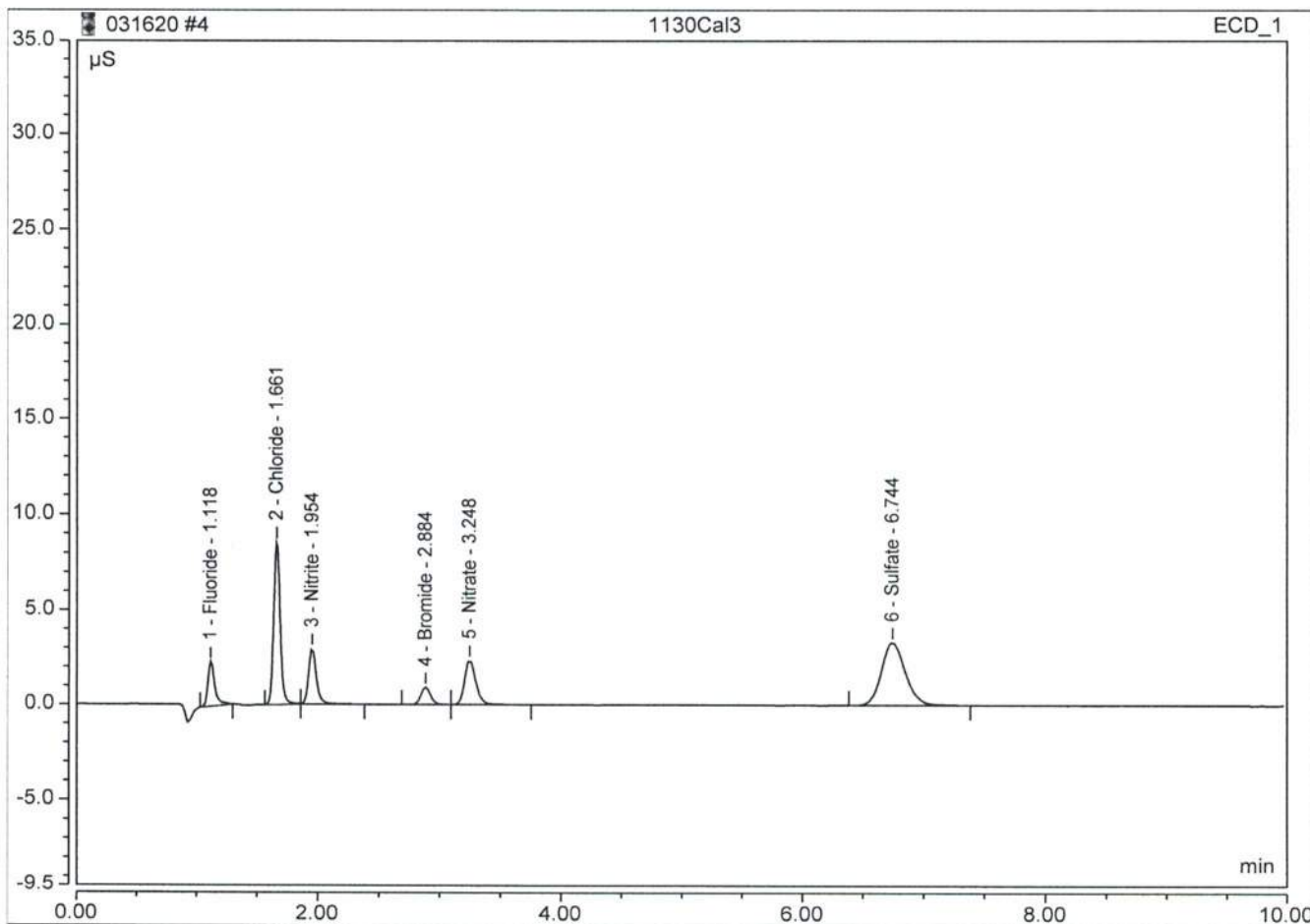
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.082	1.190	0.5000
2	1.65	Chloride	BMB	0.200	3.158	2.0000
3	1.95	Nitrite	BMB	0.107	1.441	0.5000
4	2.87	Bromide	BMB	0.042	0.461	1.0000
5	3.23	Nitrate	BMB	0.125	1.182	0.5000
6	6.75	Sulfate	BMB	0.371	1.645	5.0000
TOTAL:				0.93	9.08	9.50



Peak Integration Report

Sample Name:	1130Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:36	Operator:	Jeff Phifer

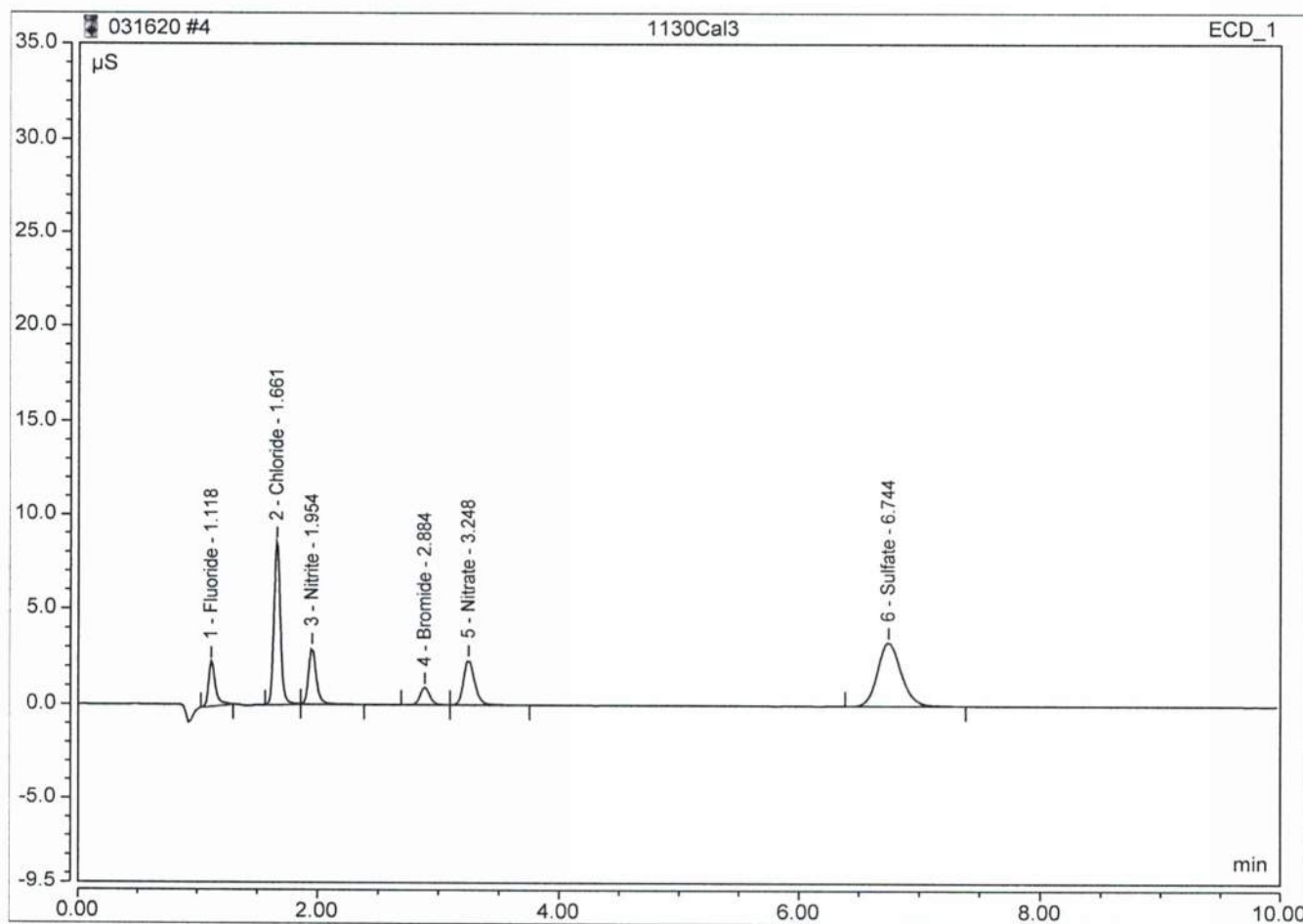
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.156	2.362	1 0.9783
2	1.66	Chloride	BMB	0.531	8.559	5 4.6623
3	1.95	Nitrite	BMB	0.216	2.949	1 0.9666
4	2.88	Bromide	BMB	0.084	0.917	2 1.9694
5	3.25	Nitrate	BMB	0.252	2.359	1 0.9702
6	6.74	Sulfate	BMB	0.755	3.326	10 9.6764
TOTAL:				1.99	20.47	19.22



Peak Integration Report

Sample Name:	1130Ca13	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:36	Operator:	Jeff Phifer

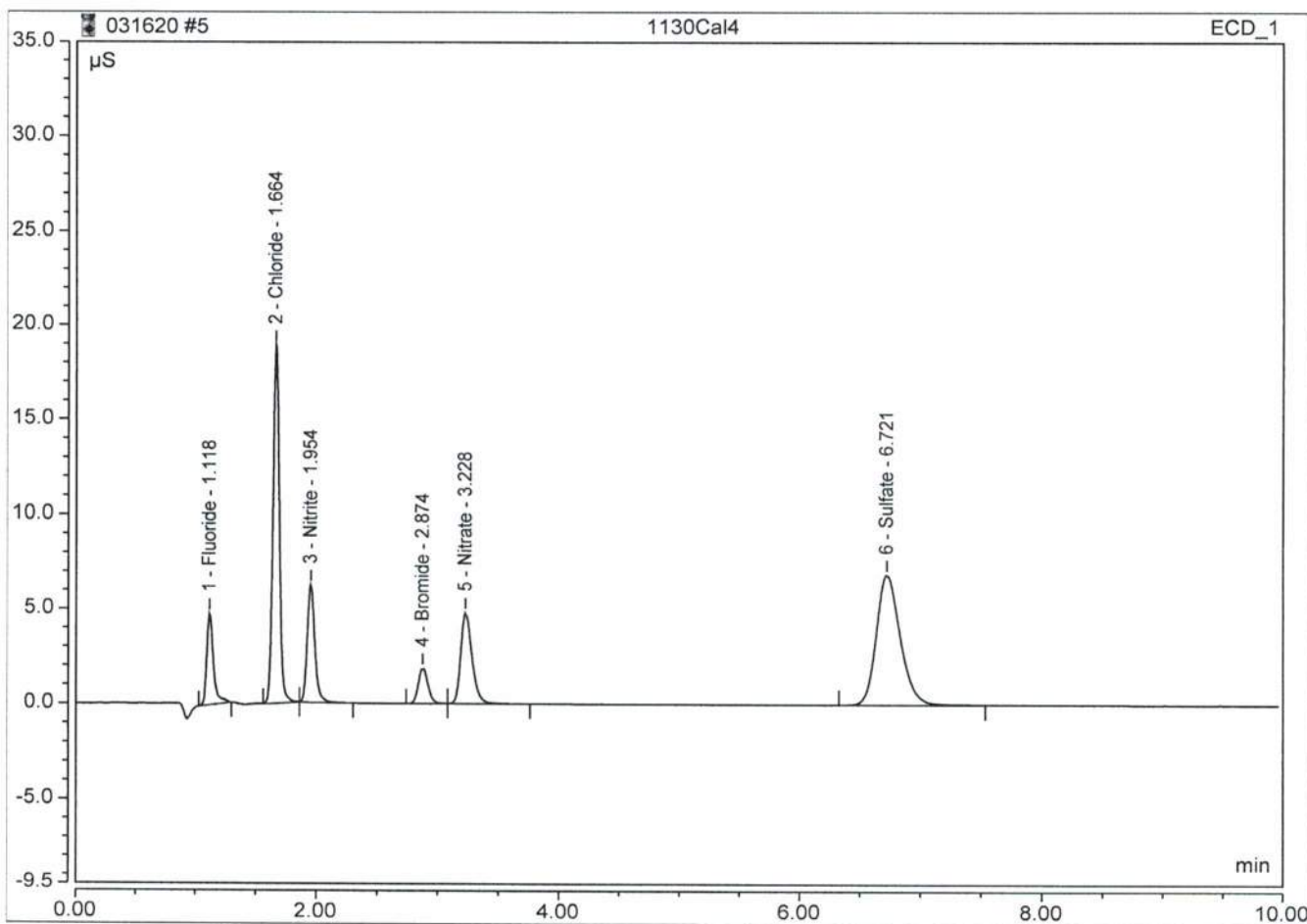
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.156	2.362	1.0013
2	1.66	Chloride	BMB	0.531	8.559	5.0249
3	1.95	Nitrite	BMB	0.216	2.949	1.0014
4	2.88	Bromide	BMB	0.084	0.917	1.9993
5	3.25	Nitrate	BMB	0.252	2.359	1.0042
6	6.74	Sulfate	BMB	0.755	3.326	10.0555
TOTAL:				1.99	20.47	20.09



Peak Integration Report

Sample Name:	1130Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:48	Operator:	Jeff Phifer

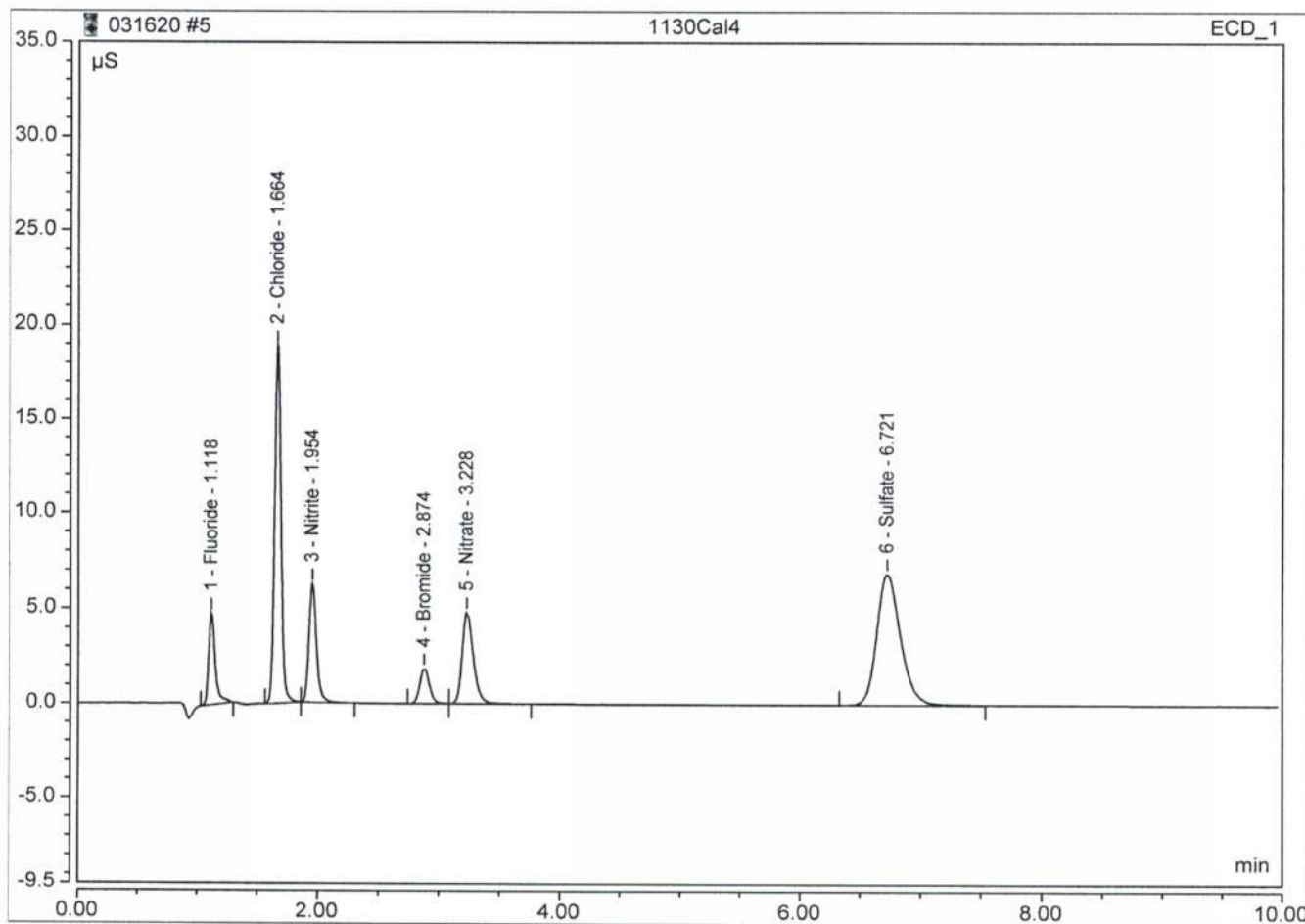
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.307	4.834	2 1.9744
2	1.66	Chloride	BMB	1.159	18.897	10 9.8582
3	1.95	Nitrite	BMB	0.449	6.229	2 1.9892
4	2.87	Bromide	BMB	0.170	1.866	4 3.9361
5	3.23	Nitrate	BMB	0.515	4.808	2 1.9818
6	6.72	Sulfate	BMB	1.566	6.872	20 19.9659
TOTAL:				4.17	43.50	39.71



Peak Integration Report

Sample Name:	1130Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 10:48	Operator:	Jeff Phifer

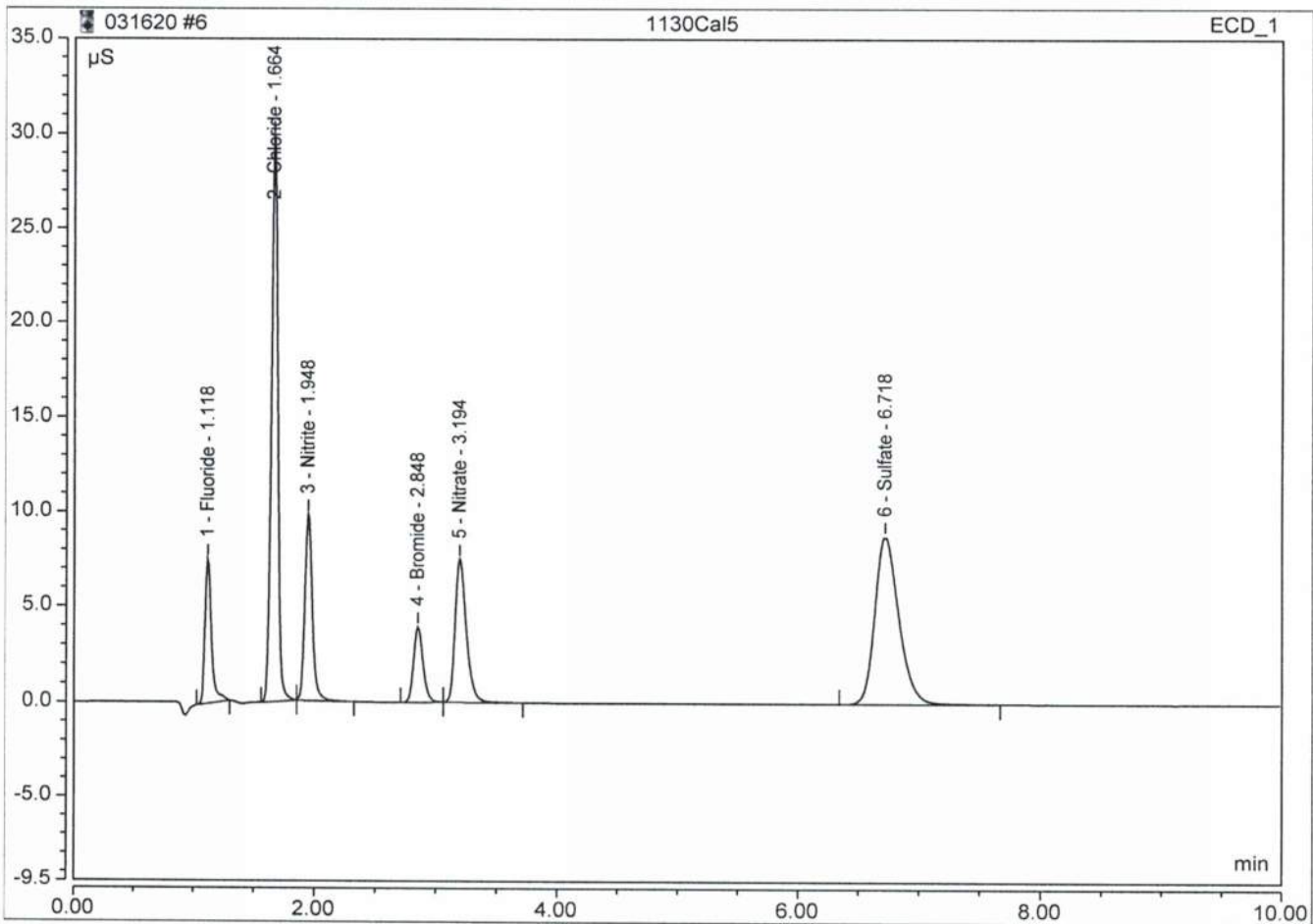
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.307	4.834	2.0102
2	1.66	Chloride	BMB	1.159	18.897	10.2226
3	1.95	Nitrite	BMB	0.449	6.229	2.0251
4	2.87	Bromide	BMB	0.170	1.866	4.0058
5	3.23	Nitrate	BMB	0.515	4.808	2.0216
6	6.72	Sulfate	BMB	1.566	6.872	20.2999
TOTAL:				4.17	43.50	40.59



Peak Integration Report

Sample Name:	1130Cal5	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	16-Mar-2020 / 11:01	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.470	7.546	3 3.0476
2	1.66	Chloride	BMB	1.838	29.851	15 15.4642
3	1.95	Nitrite	BMB	0.690	9.755	3 3.0536
4	2.85	Bromide	BMB	0.350	3.898	8 8.0849
5	3.19	Nitrate	BMB	0.795	7.457	3 3.0595
6	6.72	Sulfate	BMB	2.002	8.764	25 25.5041
TOTAL:				6.14	67.27	58.21



Ics-1100 B Didneric / Meth 300.0

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:57:49 AM -C
	1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:09 AM -
	1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:01 AM -
	1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:35:53 AM -
	1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:45 AM -
	1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:35 AM -
	Blank	Unknown		1	Norm Method	Anion	Finished	6/25/2020 11:30:46 AM -
	BSpike 11721BS1	Check Standard		2	Norm Method	Anion	Finished	6/25/2020 11:43:05 AM -
	LCS 11721LCS1	Check Standard		3	Norm Method	Anion	Finished	6/25/2020 11:55:56 AM -
	15123.02	Unknown		4	Norm Method	Anion	Finished	6/25/2020 12:08:49 PM -
	15123.04	Unknown		5	Norm Method	Anion	Finished	6/25/2020 12:21:40 PM -
	15123.05	Unknown		6	Norm Method	Anion	Finished	6/25/2020 12:34:32 PM -
	15153.01	Unknown		7	Norm Method	Anion	Finished	6/25/2020 12:47:23 PM -
	15166.01	Unknown		8	Norm Method	Anion	Finished	6/25/2020 1:00:15 PM -C
	15166.02	Unknown		9	Norm Method	Anion	Finished	6/25/2020 1:13:07 PM -C
	15166.03	Unknown		10	Norm Method	Anion	Finished	6/25/2020 1:26:00 PM -C
	15166.04	Unknown		11	Norm Method	Anion	Finished	6/25/2020 1:38:52 PM -C
	15166.05	Unknown		12	Norm Method	Anion	Finished	6/25/2020 1:51:43 PM -C
	15166.06	Unknown		13	Norm Method	Anion	Finished	6/25/2020 2:04:35 PM -C
	15123.02 dup	Unknown		14	Norm Method	Anion	Finished	6/25/2020 2:17:27 PM -C
	15123.02 MS 13015MS	Unknown		15	Norm Method	Anion	Finished	6/25/2020 2:30:19 PM -C
	15123.02 MSD 13015M	Unknown		16	Norm Method	Anion	Finished	6/25/2020 2:43:10 PM -C
	BSpike 11721BS1	Check Standard		17	Norm Method	Anion	Finished	6/25/2020 2:56:02 PM -C
	15123.04	Unknown		18	Norm Method	Anion	Finished	6/25/2020 3:08:54 PM -C

CAL ID# ICS B 0316 20 CAL

CL 200625-WL-B
 SFT 200625-WL-B
 NINA 200625-WL-B
 NIKI 200625-WL-B

	15176.01	Unknown		19	Norm Method	Anion	Finished	6/25/2020 3:21:46 PM -C
	15176.02	Unknown		20	Norm Method	Anion	Finished	6/25/2020 3:34:38 PM -C
	15176.03	Unknown		21	Norm Method	Anion	Finished	6/25/2020 3:47:29 PM -C
	15176.04	Unknown		22	Norm Method	Anion	Finished	6/25/2020 4:00:20 PM -C
	15154.01	Unknown		23	Norm Method	Anion	Finished	6/25/2020 4:13:12 PM -C
	15166.07	Unknown		24	Norm Method	Anion	Finished	6/25/2020 4:26:04 PM -C
	15166.08	Unknown		25	Norm Method	Anion	Finished	6/25/2020 4:38:56 PM -C
	BSpoke 11721BS1	Check Standard		26	Norm Method	Anion	Finished	6/25/2020 4:51:49 PM -C
	Blank	Unknown		27	Norm Method	Anion	Finished	6/25/2020 5:04:41 PM -C

Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	25.0000	1.0000		Jeff Phifer	
1.0000	25.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	25.0000	1.0000		Jeff Phifer	
1.0000	200.0000	1.0000		Jeff Phifer	
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1.0000	25.0000	1.0000		Jeff Phifer	
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1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	50.0000	1.0000		Jeff Phifer	



1.0000	5.0000	1.0000	Jeff Phifer
1.0000	5.0000	1.0000	Jeff Phifer
1.0000	5.0000	1.0000	Jeff Phifer
1.0000	5.0000	1.0000	Jeff Phifer
1.0000	10.0000	1.0000	Jeff Phifer
1.0000	200.0000	1.0000	Jeff Phifer
1.0000	100.0000	1.0000	Jeff Phifer
1.0000	1.0000	1.0000	Jeff Phifer
1.0000	1.0000	1.0000	Jeff Phifer

Norm Method	16/06/15 12:18	Jeff Phifer	METHOD 300.0	
Stage	Time	Command	Value	Comment
Instrument Setup	min			
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject				
	0.000			
		Wait		Sampler.CycleTimeState, Hold,
		Sampler.Inject		
Start Run				
	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run			Duration = 10.000 [min]	
	0.000			
	0.500			
		Sampler.BeginOverlap		
Stop Run				
	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

JP 6.25.20

Calibration Batch Report

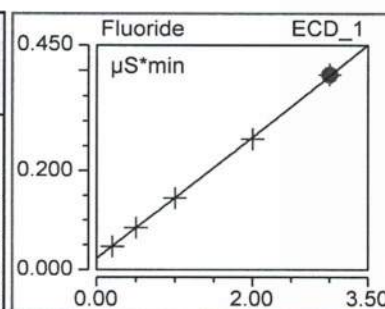
CAL ID# ICSB031620CAL

Sequence:	062520	Injection Vol: 2,500.00
Instrument Method:	Norm Method	Operator: Jeff Phifer
Inj. Date / Time:	16-Mar-2020 / 11:01	Column: AS4A-SC 040144

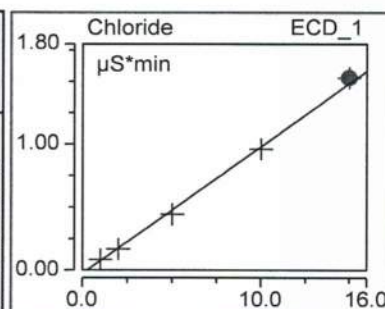
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.023	0.122	0.000	0.9999
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.025	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.193	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	-0.001	0.036	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.004	0.064	0.000	0.9997
AVERAGE:				-0.0017	0.1217	0.0000	0.9996

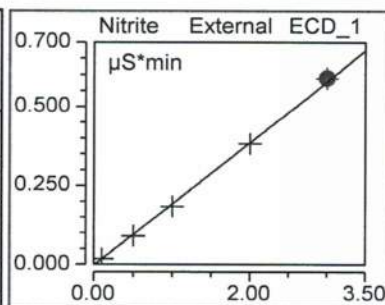
Injection Name	Ret.Time min ECD 1	Area µS*min ECD 1	Height µS ECD 1	Amount ECD 1
1130Cal1	Fluoride 1.087	Fluoride 0.0469	Fluoride 0.474	Fluoride 0.199
1130Cal2	1.088	0.0842	1.010	0.505
1130Cal3	1.088	0.1447	1.902	0.999
1130Cal4	1.088	0.2638	3.720	1.974
1130Cal5	1.088	0.3918	5.690	3.022
Average	1.087			
Rel. Std. Dev.	0.007 %			



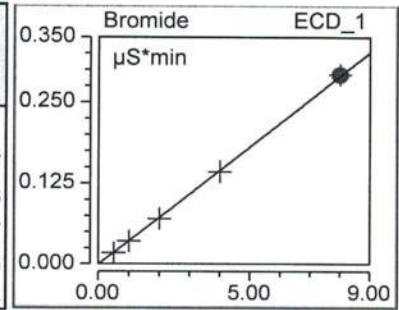
Injection Name	Ret.Time min ECD 1	Area µS*min ECD 1	Height µS ECD 1	Amount ECD 1
1130Cal1	Chloride 1.647	Chloride 0.0837	Chloride 1.369	Chloride 1.083
1130Cal2	1.648	0.1692	2.803	1.934
1130Cal3	1.654	0.4442	7.527	4.674
1130Cal4	1.658	0.9621	16.388	9.834
1130Cal5	1.661	1.5282	25.842	15.474
Average	1.653			
Rel. Std. Dev.	0.363 %			



Injection Name	Ret.Time min ECD 1	Area µS*min ECD 1	Height µS ECD 1	Amount ECD 1
1130Cal1	Nitrite 1.964	Nitrite 0.0180	Nitrite 0.249	Nitrite 0.106
1130Cal2	1.964	0.0909	1.255	0.483
1130Cal3	1.968	0.1837	2.564	0.963
1130Cal4	1.971	0.3820	5.338	1.989
1130Cal5	1.968	0.5890	8.308	3.060
Average	1.967			
Rel. Std. Dev.	0.144 %			

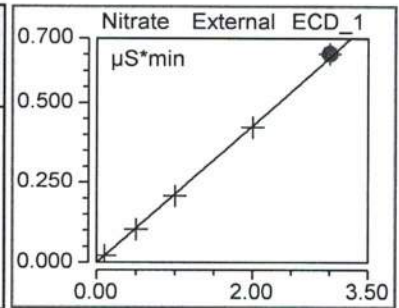


Injection Name	Ret. Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	Bromide 2.957	Bromide 0.0176	Bromide 0.183	Bromide 0.507
1130Cal2	2.954	0.0358	0.371	1.006
1130Cal3	2.958	0.0707	0.738	1.967
1130Cal4	2.961	0.1430	1.493	3.955
1130Cal5	2.938	0.2925	3.112	8.064
Average	2.953			
Rel. Std. Dev.	0.313 %			

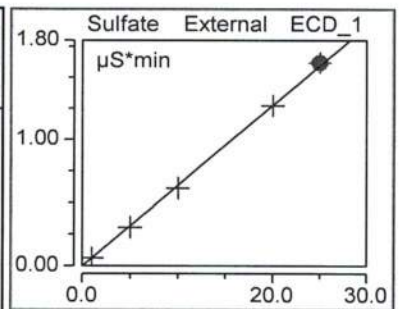


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Injection Name	Ret. Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	Nitrate 3.351	Nitrate 0.0215	Nitrate 0.195	Nitrate 0.105
1130Cal2	3.341	0.1029	0.922	0.486
1130Cal3	3.341	0.2071	1.848	0.972
1130Cal4	3.334	0.4230	3.741	1.982
1130Cal5	3.301	0.6525	5.776	3.055
Average	3.333			
Rel. Std. Dev.	0.575 %			



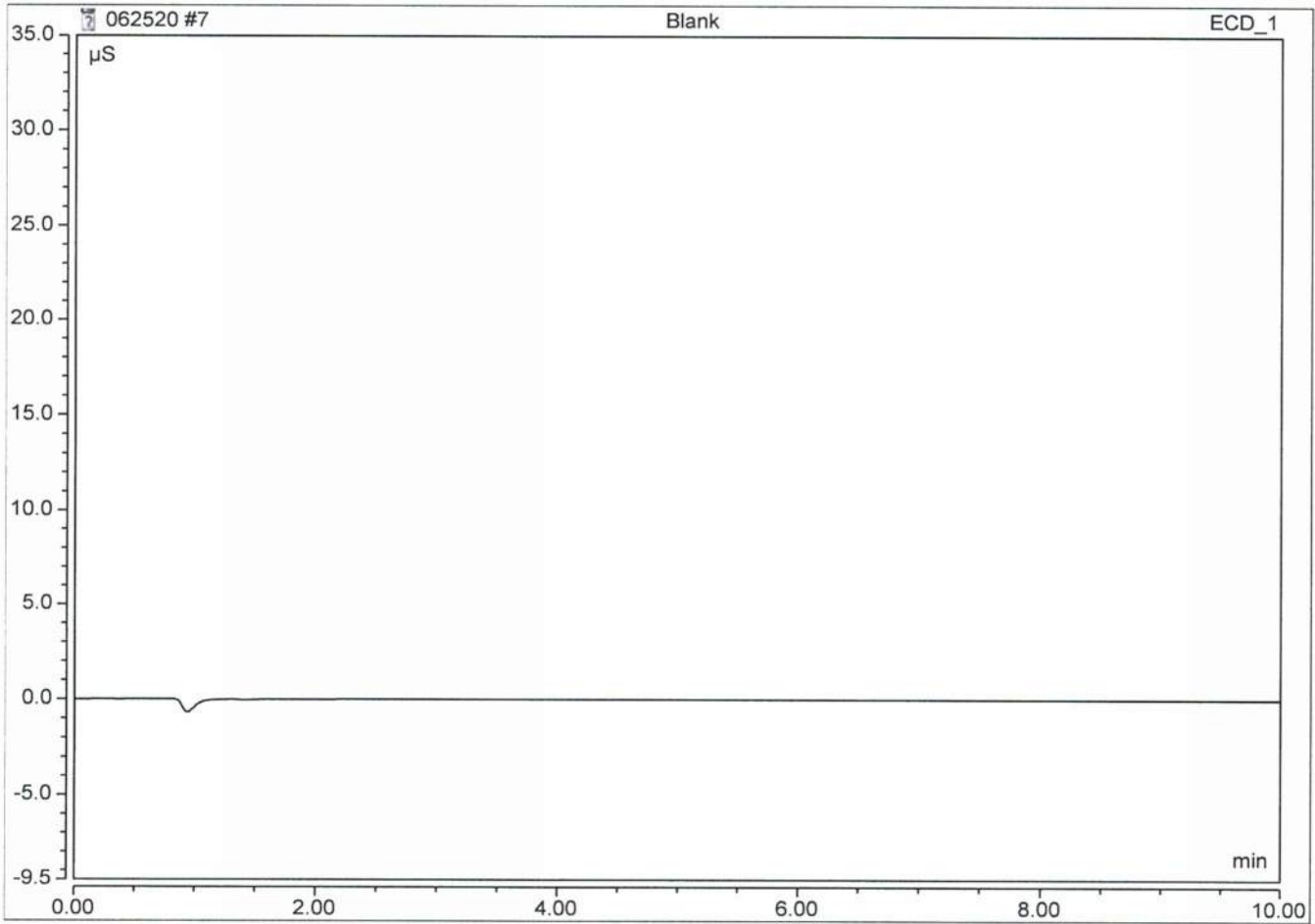
Injection Name	Ret. Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	Sulfate 7.057	Sulfate 0.0628	Sulfate 0.254	Sulfate 1.044
1130Cal2	7.048	0.3053	1.246	4.843
1130Cal3	7.028	0.6158	2.526	9.709
1130Cal4	7.018	1.2715	5.210	19.984
1130Cal5	7.011	1.6185	6.632	25.419
Average	7.032			
Rel. Std. Dev.	0.281 %			



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 11:30	Operator:	Jeff Phifer

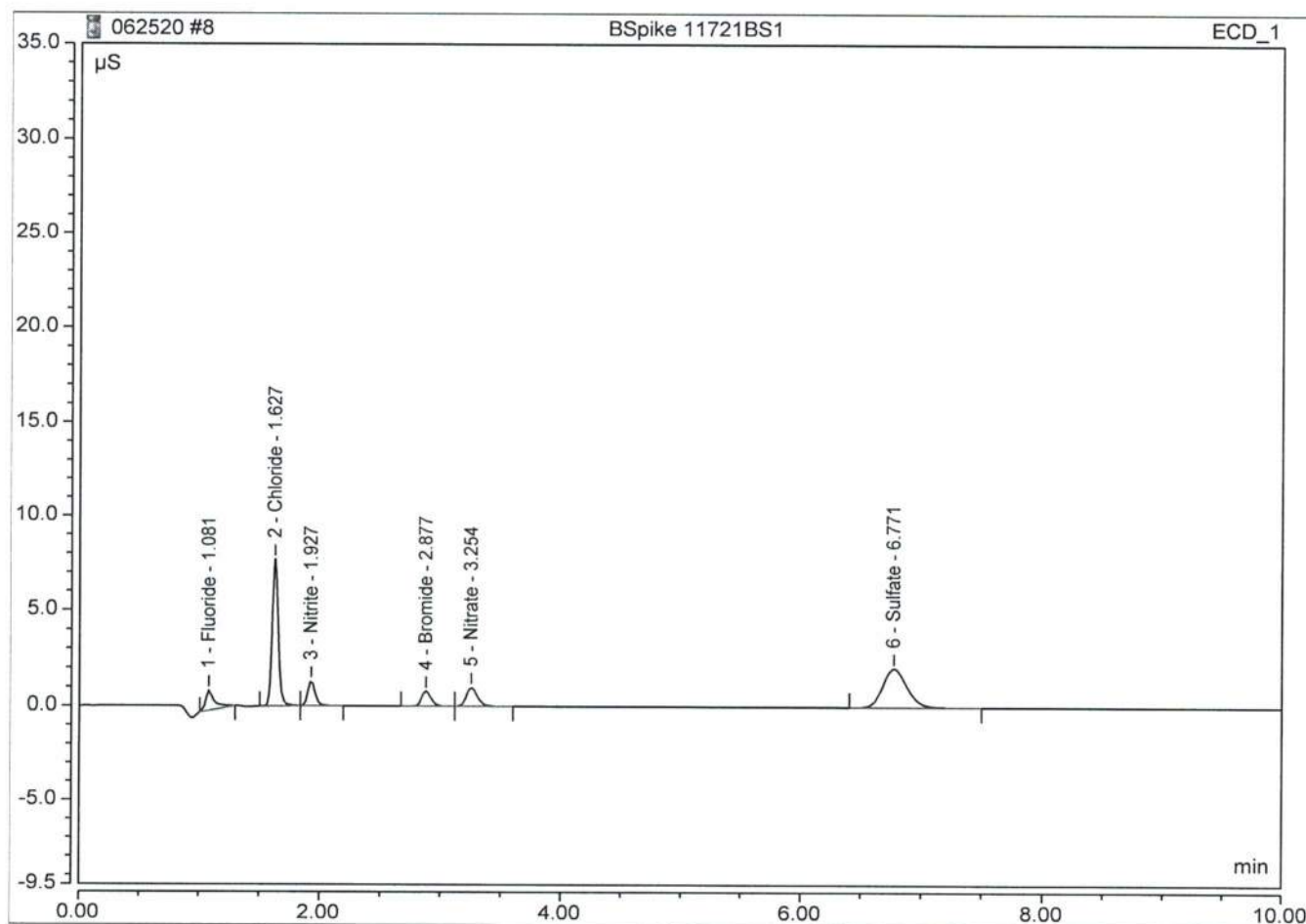
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	BSpoke 11721BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 11:43	Operator:	Jeff Phifer

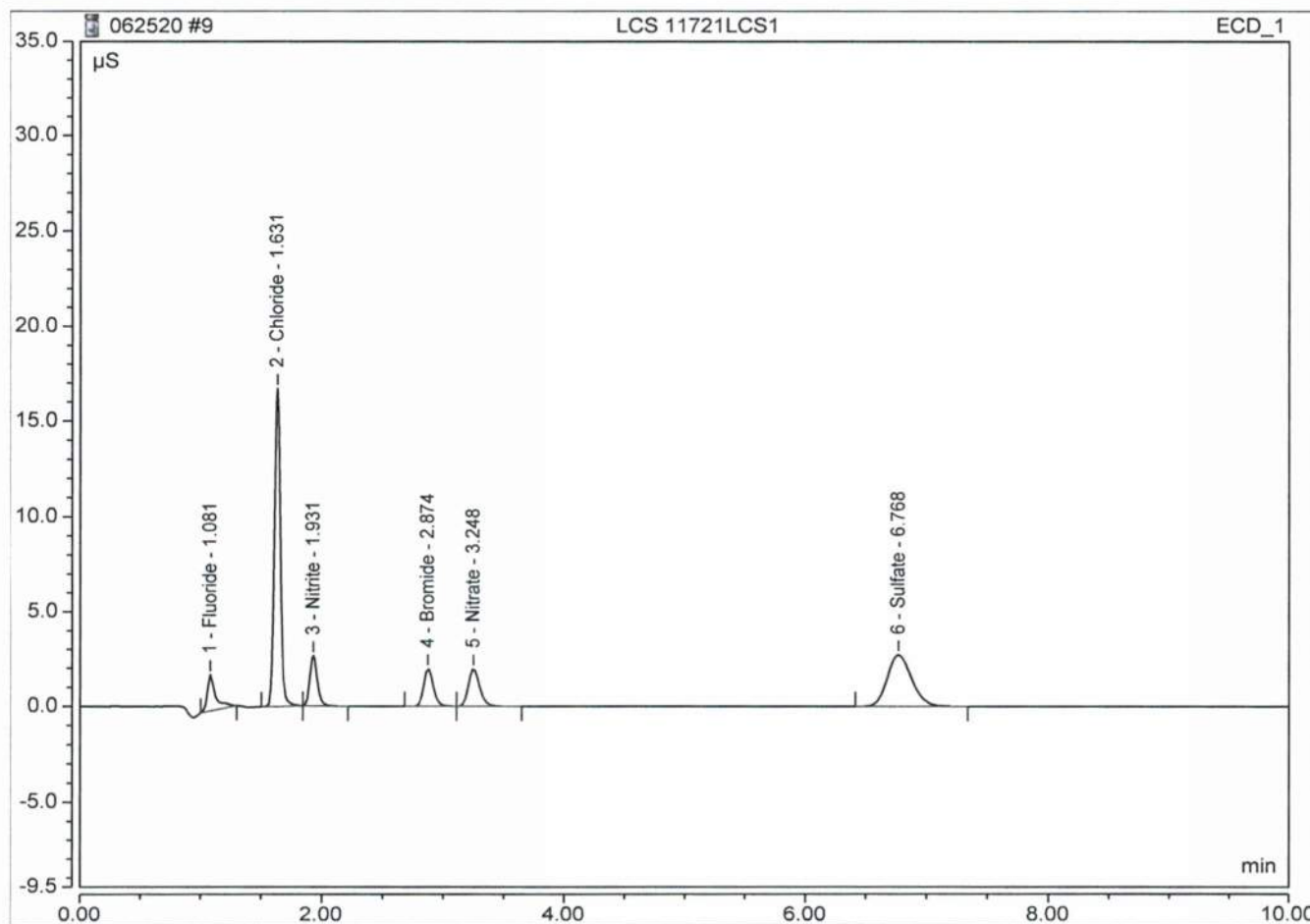
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.090	1.058	0.5550
2	1.63	Chloride	BMB	0.453	7.689	5 4.7648 965
3	1.93	Nitrite	BMB	0.092	1.287	0.5 0.4862 980
4	2.88	Bromide	BMB	0.072	0.772	1.9997
5	3.25	Nitrate	BMB	0.105	0.975	0.5 0.4941 980
6	6.77	Sulfate	BMB	0.468	2.021	7.5 7.3904 995
TOTAL:				1.28	13.80	15.69



Peak Integration Report

Sample Name:	LCS 11721LCS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 11:55	Operator:	Jeff Phifer

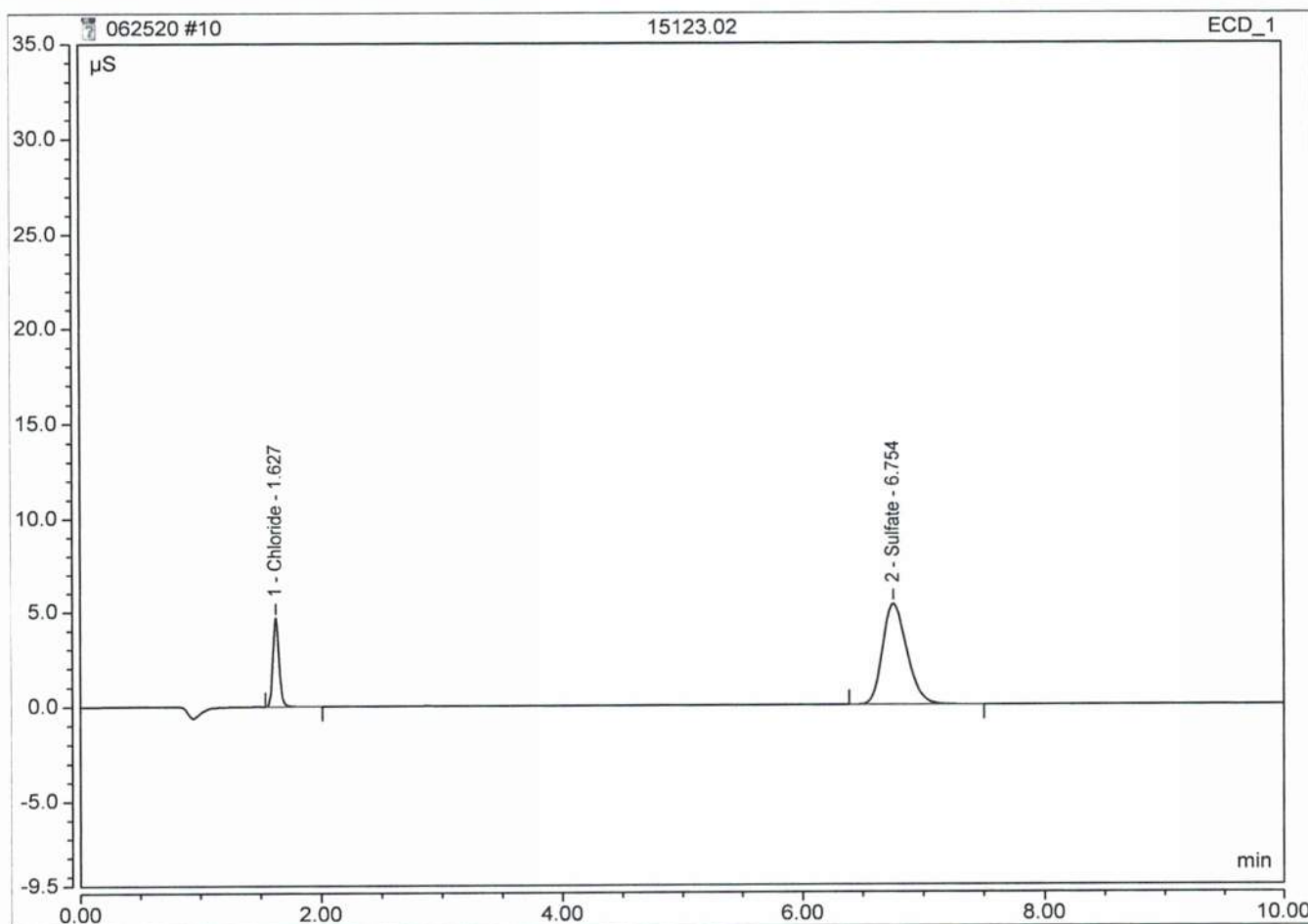
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.150	1.892	1.0470
2	1.63	Chloride	BMB	0.973	16.704	10 9.9433 996
3	1.93	Nitrite	BMB	0.187	2.641	1 0.9782 980
4	2.87	Bromide	BMB	0.182	1.966	5.0295
5	3.25	Nitrate	BMB	0.211	1.952	1 0.9887 996
6	6.77	Sulfate	BMB	0.625	2.705	10 9.8565 986
TOTAL:				2.33	27.86	27.84



Peak Integration Report

Sample Name:	15123.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 12:08	Operator:	Jeff Phifer

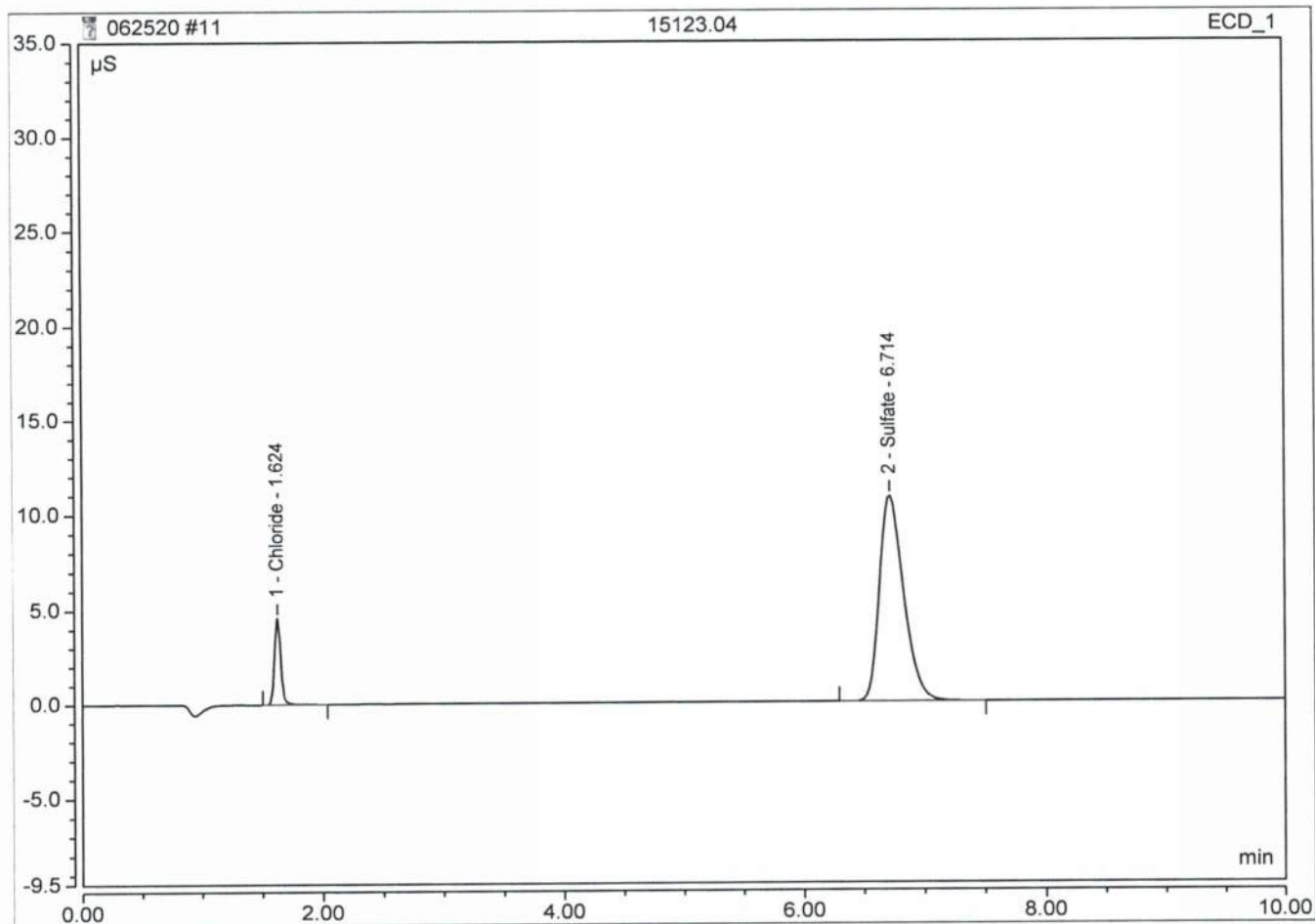
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.277	4.684	75.2296
2	6.75	Sulfate	BMB	1.231	5.332	483.7399
TOTAL:				1.51	10.02	558.97



Peak Integration Report

Sample Name:	15123.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 12:21	Operator:	Jeff Phifer

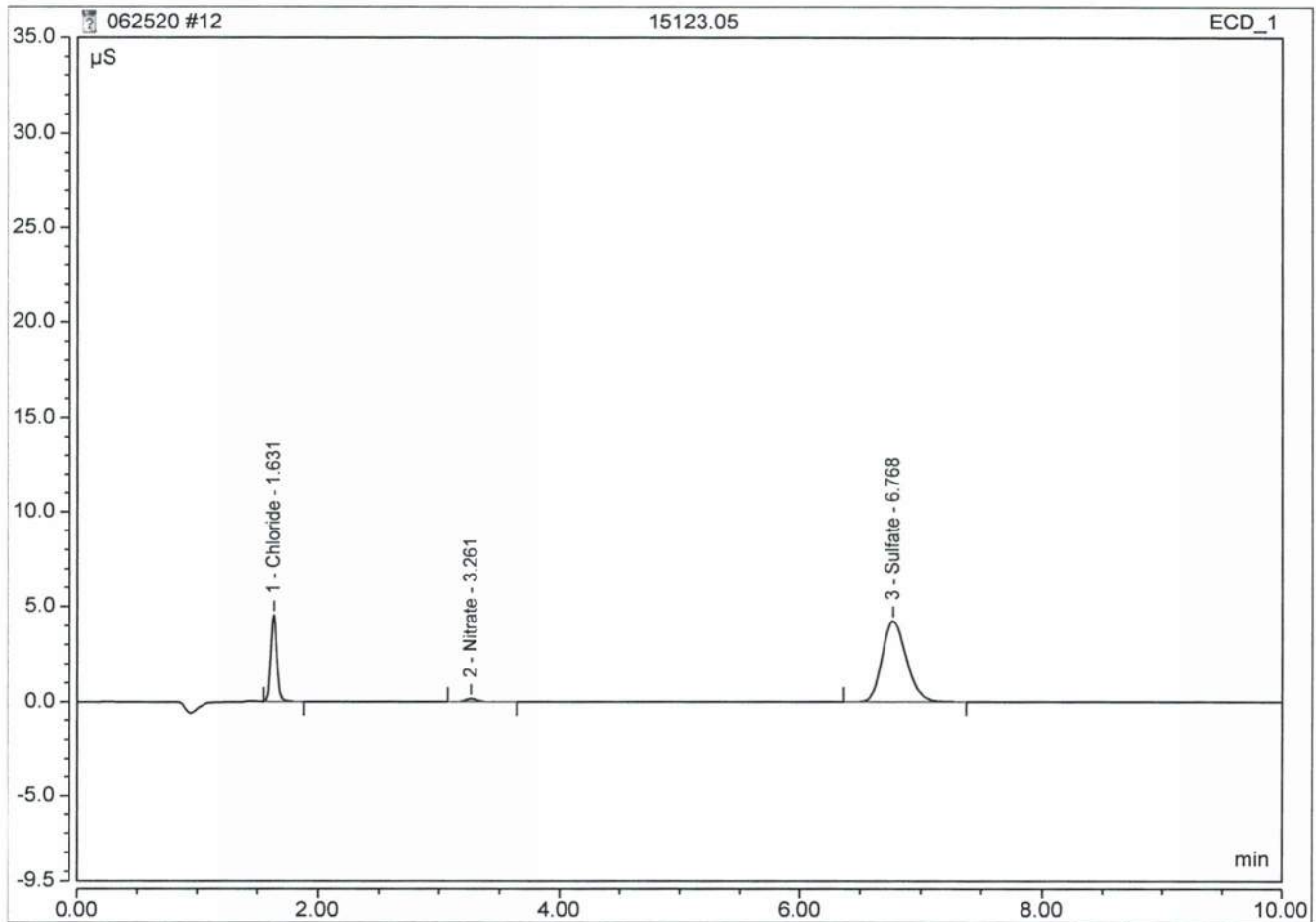
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.62	Chloride	BMB	0.275	4.601	74.8159
2	6.71	Sulfate	BMB	2.520	10.838	988.6572
TOTAL:				2.80	15.44	1063.47



Peak Integration Report

Sample Name:	15123.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 12:34	Operator:	Jeff Phifer

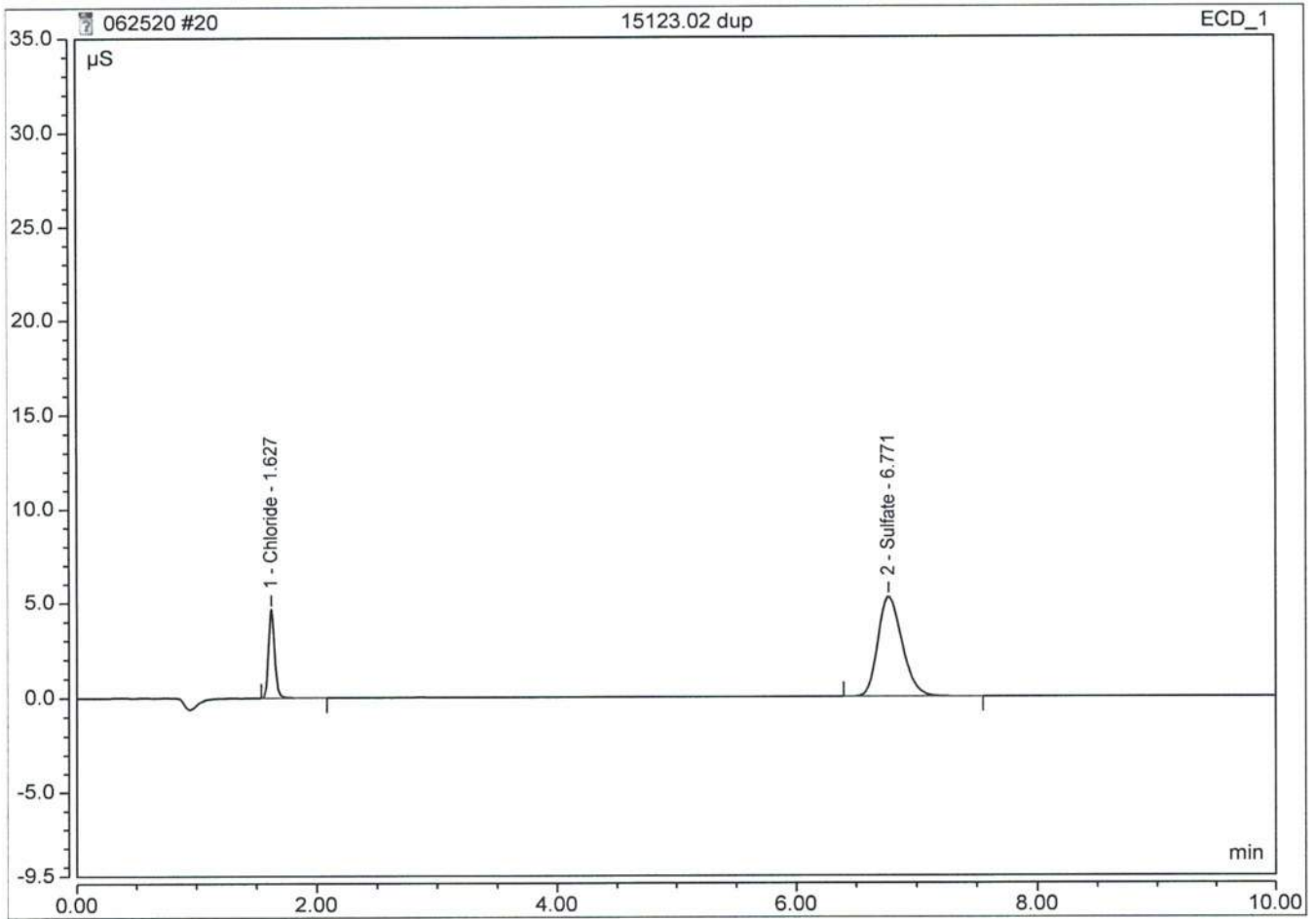
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.266	4.547	29.0021
2	3.26	Nitrate	BMB	0.018	0.168	0.9010
3	6.77	Sulfate	BMB	0.982	4.253	154.4531
TOTAL:				1.27	8.97	184.36



Peak Integration Report

Sample Name:	15123.02 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 14:17	Operator:	Jeff Phifer

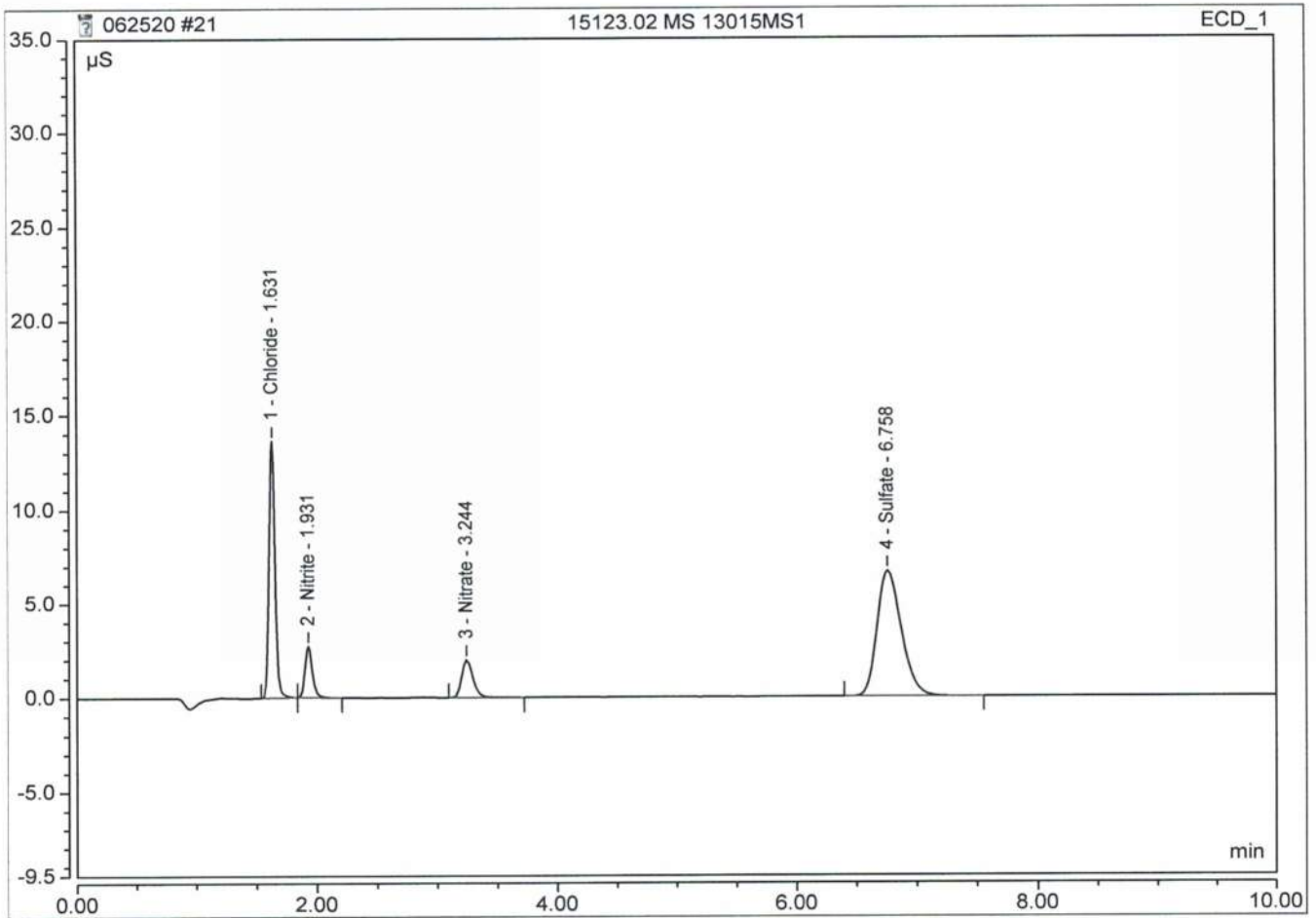
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.276	4.653	74.8769
2	6.77	Sulfate	BMB	1.217	5.269	478.1096
TOTAL:				1.49	9.92	552.99



Peak Integration Report

Sample Name:	15123.02 MS 13015MS1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 14:30	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.791	13.645	5 8.1299 - 3.0 = 1020
2	1.93	Nitrite	BMB	0.193	2.728	1 1.0091 - 0 = 1015
3	3.24	Nitrate	BMB	0.217	2.011	1 1.0197 - 0 = 1025
4	6.76	Sulfate	BMB	1.554	6.712	5 24.4030 - 19.4 = 1005
TOTAL:				2.75	25.10	34.56

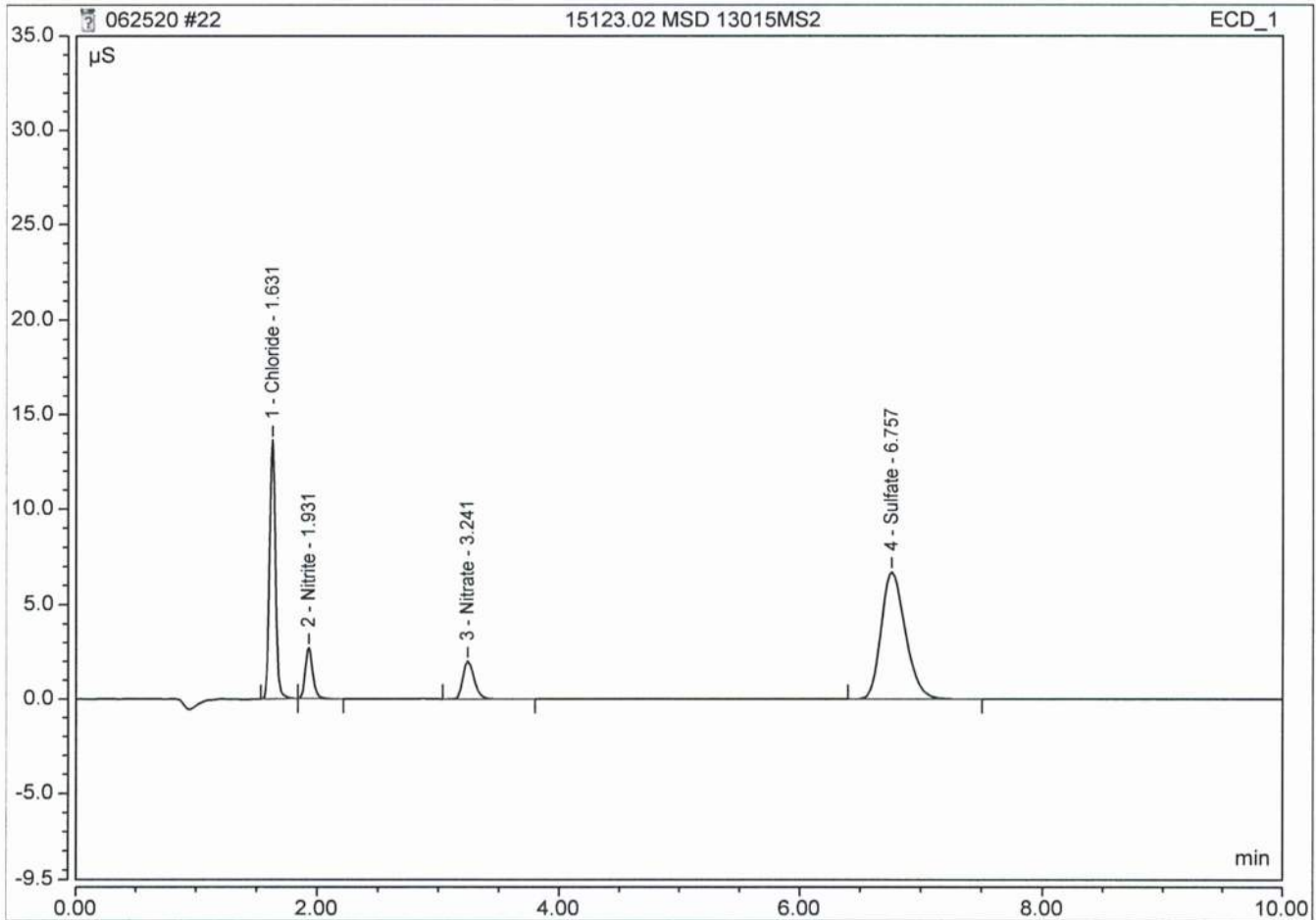


Peak Integration Report

Sample Name:	15123.02 MSD 13015MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 14:43	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.793	13.647	5 8.1445 - 3.0 =
2	1.93	Nitrite	BMB	0.192	2.716	1 1.0066 - no =
3	3.24	Nitrate	BMB	0.217	2.014	1 1.0211 - no =
4	6.76	Sulfate	BMB	1.555	6.723	5 24.4300 - 19.4 =
TOTAL:				2.76	25.10	34.60

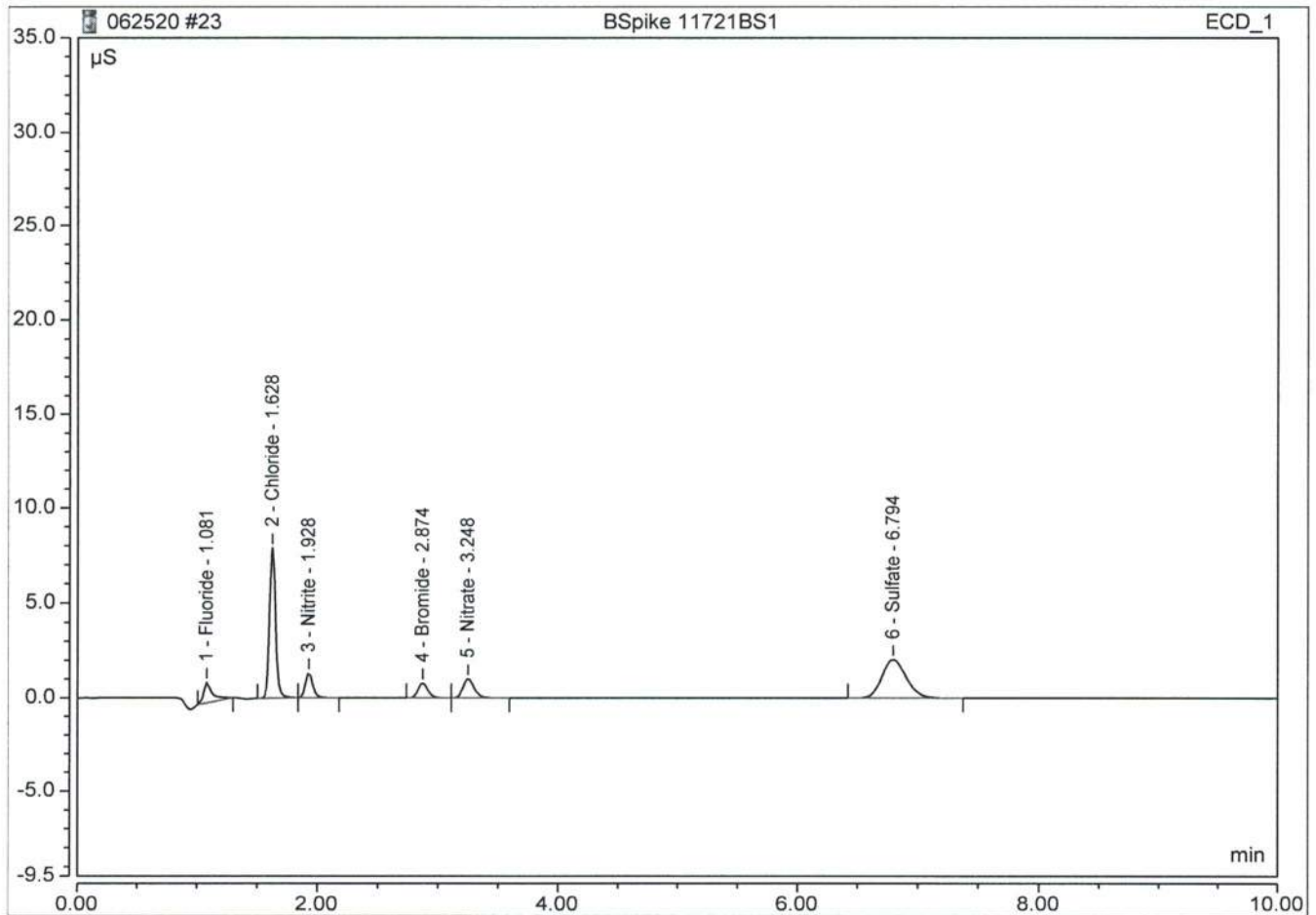
1026
 1018
 1028
 1005



Peak Integration Report

Sample Name:	BSpike 11721BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 14:56	Operator:	Jeff Phifer

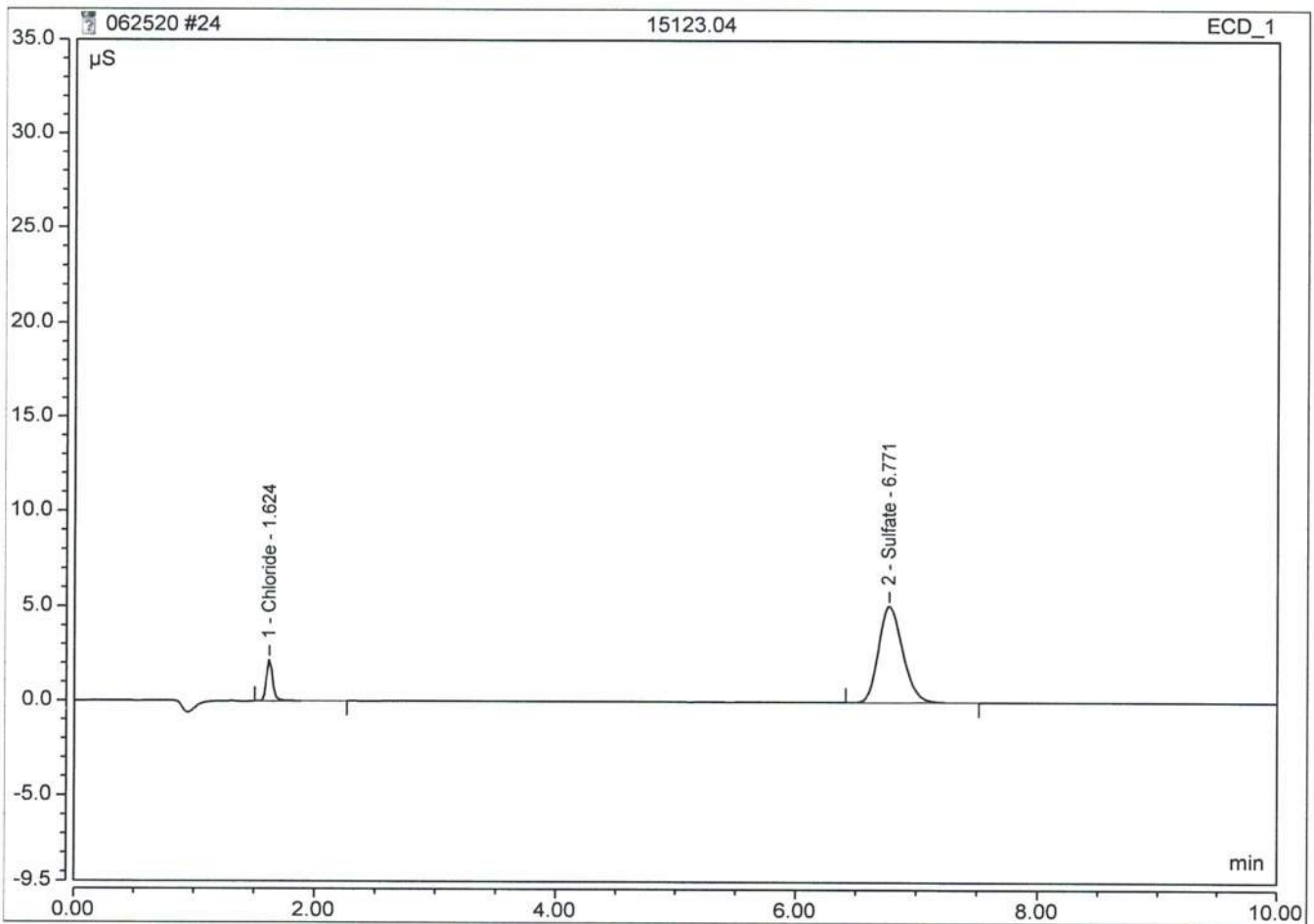
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.093	1.085	0.5788
2	1.63	Chloride	BMB	0.465	7.897	5 4.8833 98%
3	1.93	Nitrite	BMB	0.094	1.318	0.5 0.4968 100%
4	2.87	Bromide	BMB	0.074	0.791	2.0477
5	3.25	Nitrate	BMB	0.109	1.013	0.5 0.5125 102%
6	6.79	Sulfate	BMB	0.475	2.047	7.5 7.5105 100%
TOTAL:				1.31	14.15	16.03



Peak Integration Report

Sample Name:	15123.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	50.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 15:08	Operator:	Jeff Phifer

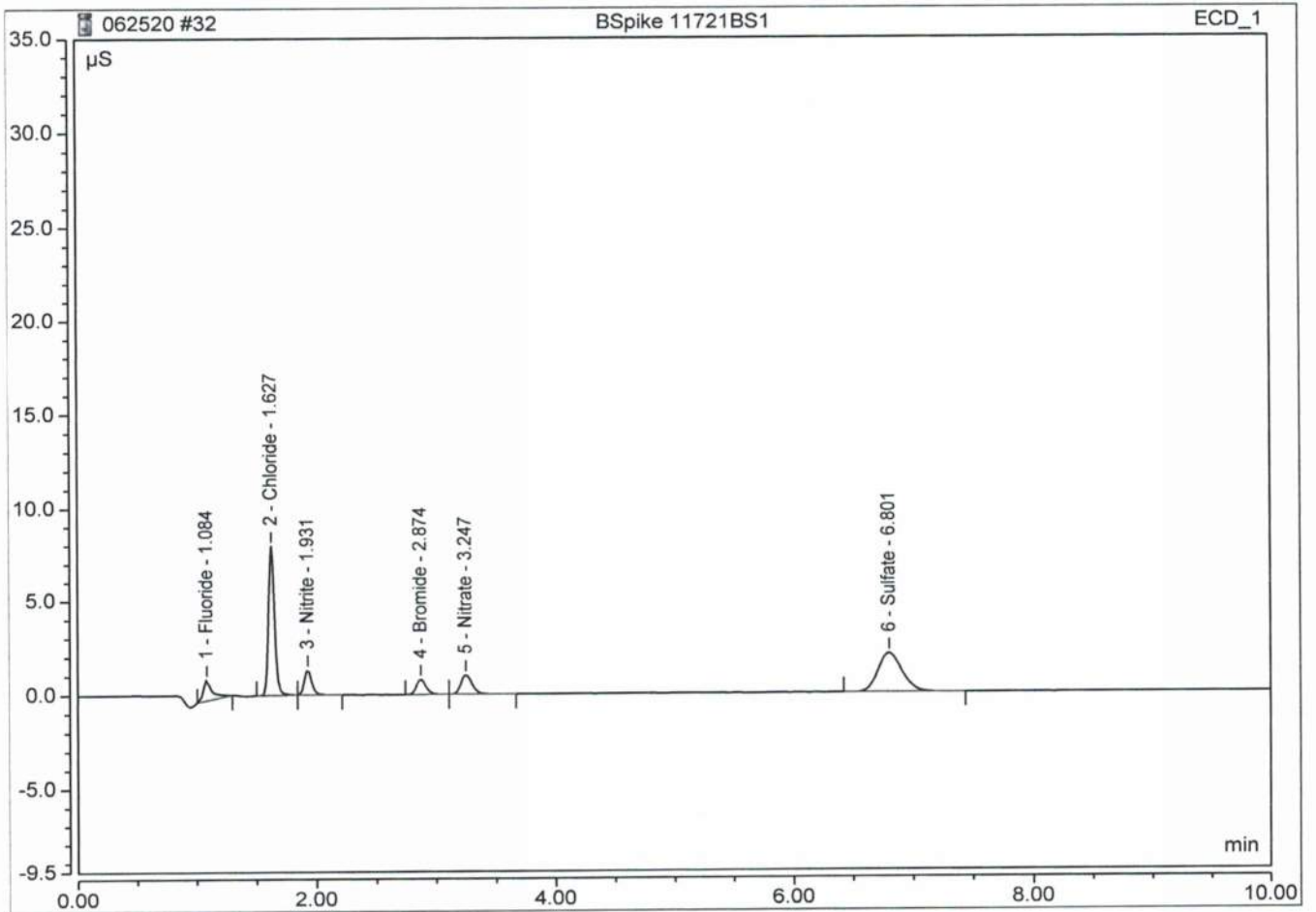
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.62	Chloride	BMB	0.136	2.204	80.1311
2	6.77	Sulfate	BMB	1.185	5.127	931.2883
TOTAL:				1.32	7.33	1011.42



Peak Integration Report

Sample Name:	BSpoke 11721BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 16:51	Operator:	Jeff Phifer

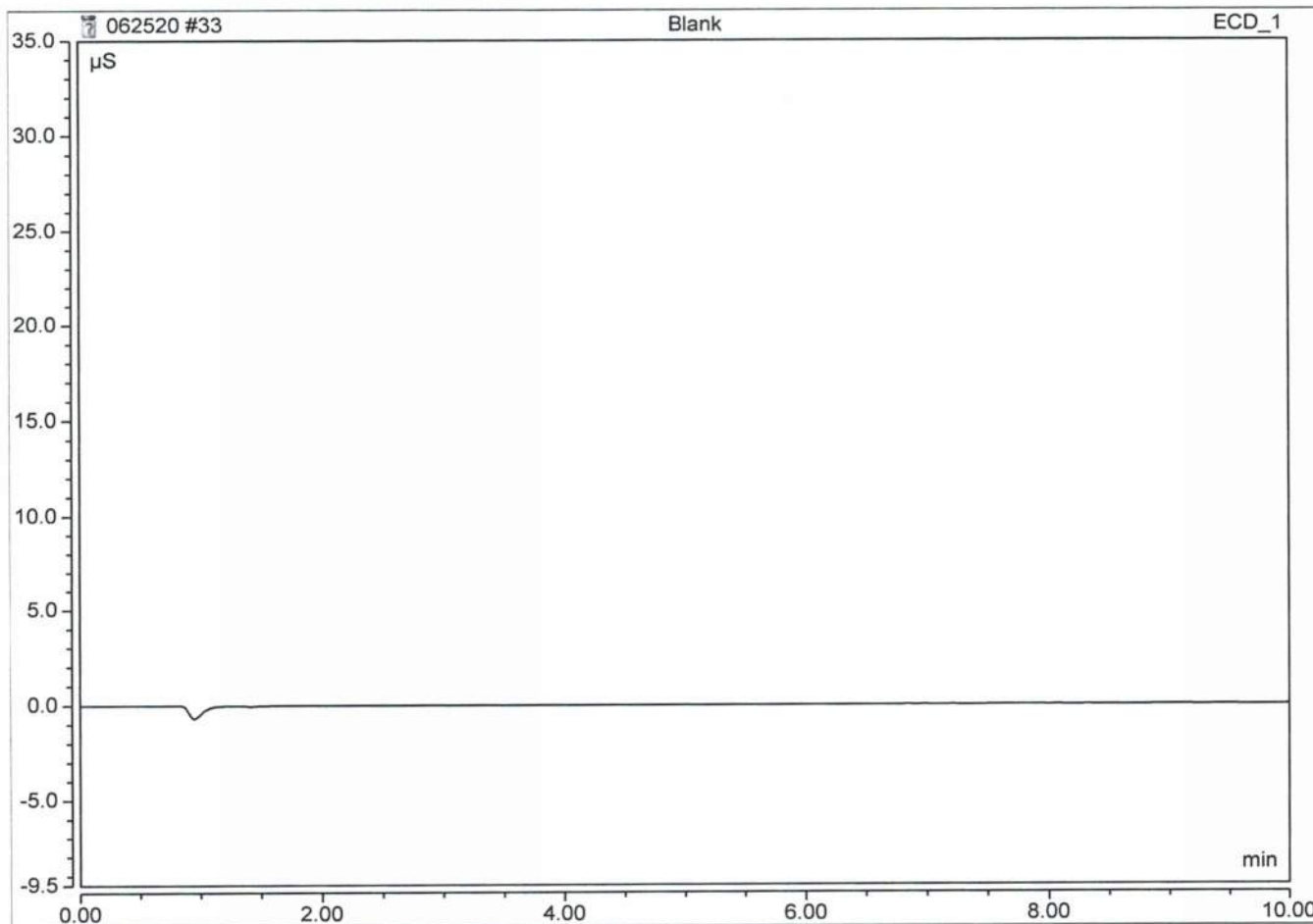
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.095	1.087	0.5908
2	1.63	Chloride	BMB	0.469	7.977	5 4.9231 986
3	1.93	Nitrite	BMB	0.094	1.325	0.5 0.5006 100%
4	2.87	Bromide	BMB	0.074	0.797	2.0627
5	3.25	Nitrate	BMB	0.110	1.022	0.5 0.5168 104%
6	6.80	Sulfate	BMB	0.478	2.060	7.5 7.5555 101%
TOTAL:				1.32	14.27	16.15



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	25-Jun-2020 / 17:04	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
TOTAL:				0.00	0.00	0.00



(new Calib)
all ions

Ics-1100B
IcsB Dionex IC / Meth 300.0

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:57:49 AM -C
	1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:09 AM .
	1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:01 AM .
	1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:35:53 AM .
	1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:45 AM .
	1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:35 AM .

CALIB ICSB 031620 CAL



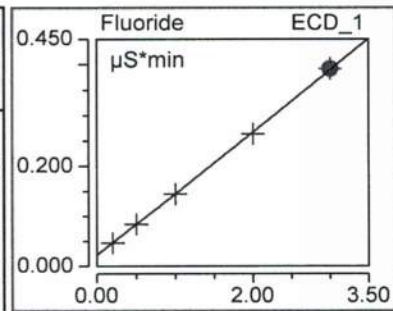
Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

Calibration Batch Report
CAL ID# ICSB031620CAL

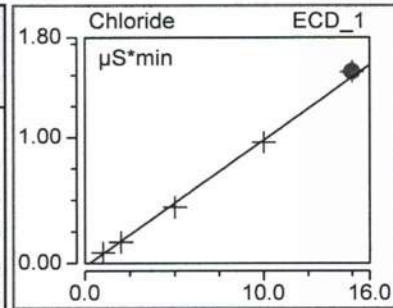
Sequence:	031620	Injection Vol.	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	16-Mar-2020 / 11:01	Column:	AS4A-SC 040144

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.023	0.122	0.000	0.9999
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.025	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.193	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	-0.001	0.036	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.004	0.064	0.000	0.9997
AVERAGE:				-0.0017	0.1217	0.0000	0.9996

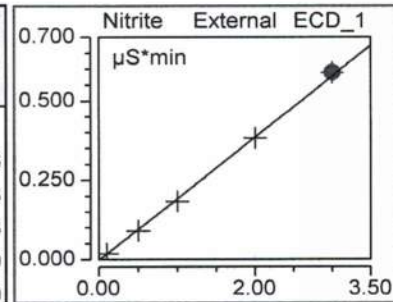
Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	1.087	0.0469	0.474	0.199
1130Cal2	1.088	0.0842	1.010	0.505
1130Cal3	1.088	0.1447	1.902	0.999
1130Cal4	1.088	0.2638	3.720	1.974
1130Cal5	1.088	0.3918	5.690	3.022
Average	1.087			
Rel. Std. Dev.	0.007 %			



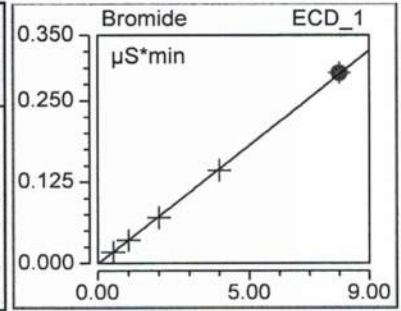
Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	1.647	0.0837	1.369	1.083
1130Cal2	1.648	0.1692	2.803	1.934
1130Cal3	1.654	0.4442	7.527	4.674
1130Cal4	1.658	0.9621	16.388	9.834
1130Cal5	1.661	1.5282	25.842	15.474
Average	1.653			
Rel. Std. Dev.	0.363 %			



Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	1.964	0.0180	0.249	0.106
1130Cal2	1.964	0.0909	1.255	0.483
1130Cal3	1.968	0.1837	2.564	0.963
1130Cal4	1.971	0.3820	5.338	1.989
1130Cal5	1.968	0.5890	8.308	3.060
Average	1.967			
Rel. Std. Dev.	0.144 %			

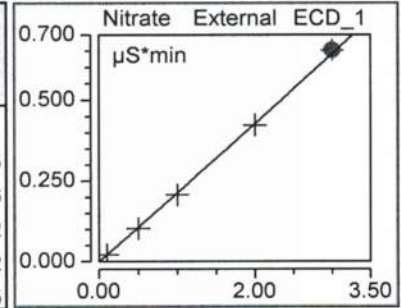


Injection Name	Ret. Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	2.957	0.0176	0.183	0.507
1130Cal2	2.954	0.0358	0.371	1.006
1130Cal3	2.958	0.0707	0.738	1.967
1130Cal4	2.961	0.1430	1.493	3.955
1130Cal5	2.938	0.2925	3.112	8.064
Average	2.953			
Rel. Std. Dev.	0.313 %			

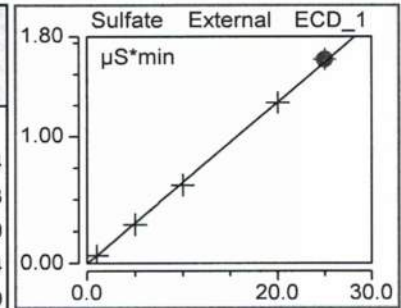


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Injection Name	Ret. Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	3.351	0.0215	0.195	0.105
1130Cal2	3.341	0.1029	0.922	0.486
1130Cal3	3.341	0.2071	1.848	0.972
1130Cal4	3.334	0.4230	3.741	1.982
1130Cal5	3.301	0.6525	5.776	3.055
Average	3.333			
Rel. Std. Dev.	0.575 %			



Injection Name	Ret. Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1130Cal1	7.057	0.0628	0.254	1.044
1130Cal2	7.048	0.3053	1.246	4.843
1130Cal3	7.028	0.6158	2.526	9.709
1130Cal4	7.018	1.2715	5.210	19.984
1130Cal5	7.011	1.6185	6.632	25.419
Average	7.032			
Rel. Std. Dev.	0.281 %			

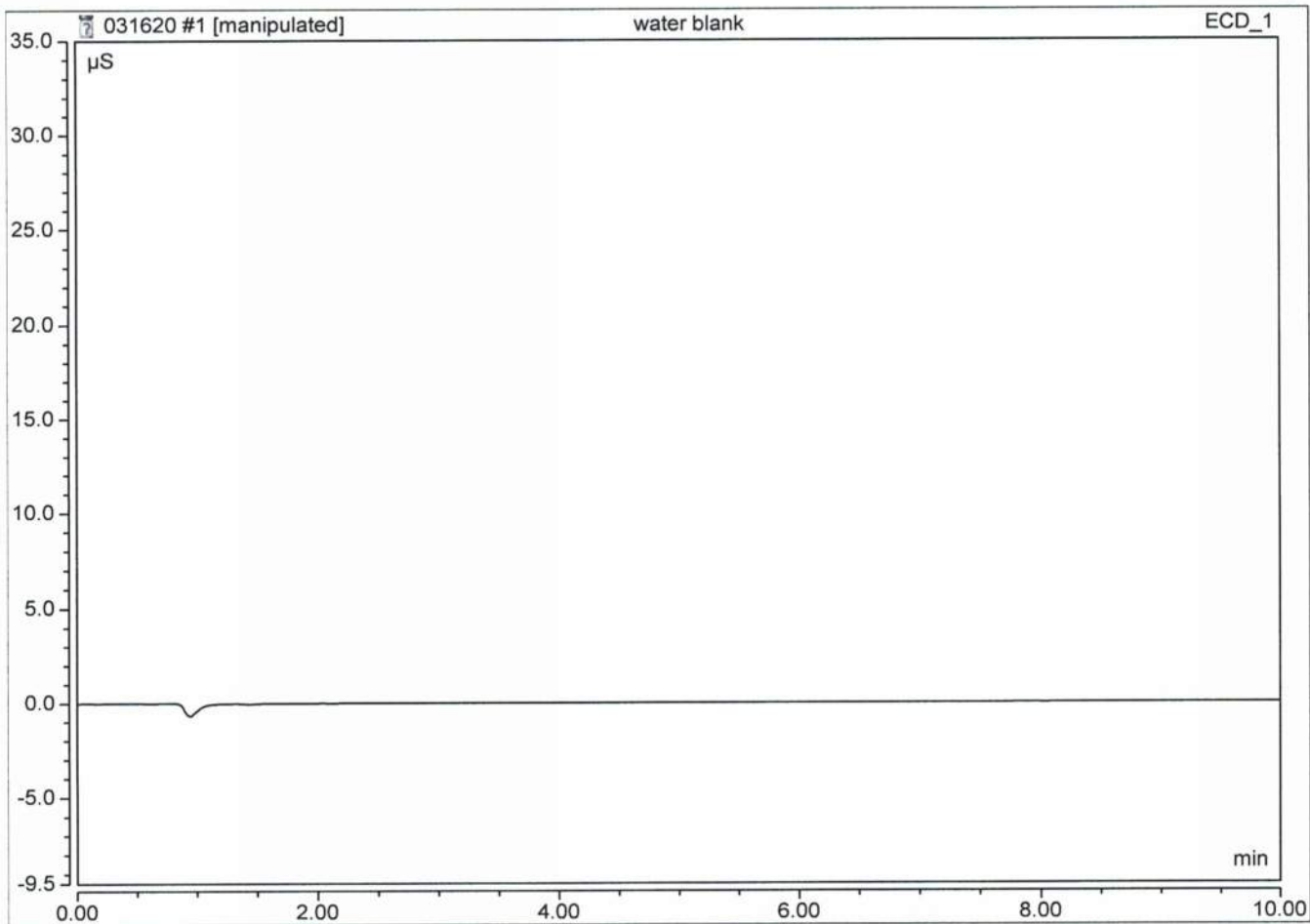


Norm Method	16/06/15 12:18	Jeff Phifer	METHOD 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mM]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 09:57	Operator:	Jeff Phifer

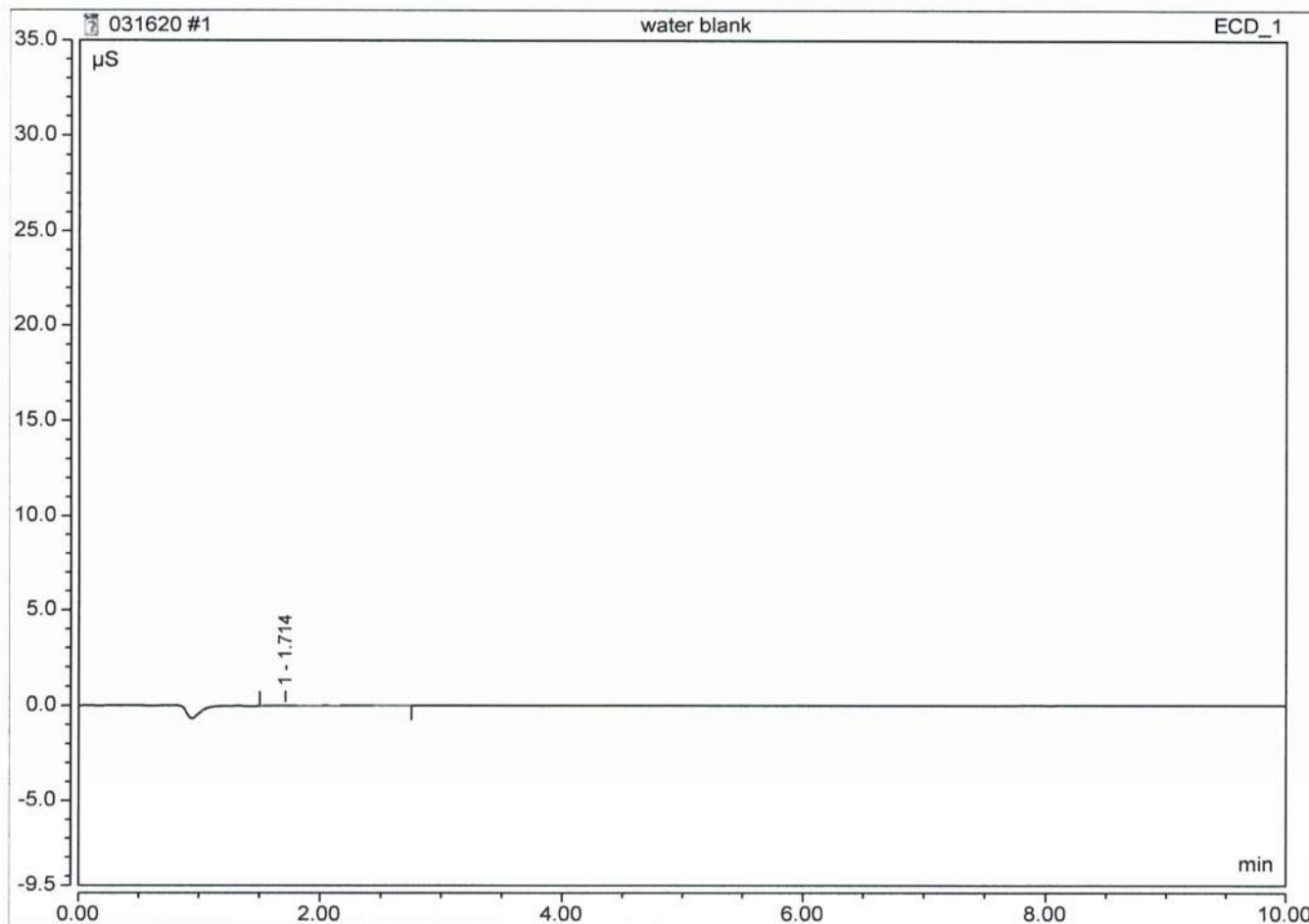
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 09:57	Operator:	Jeff Phifer

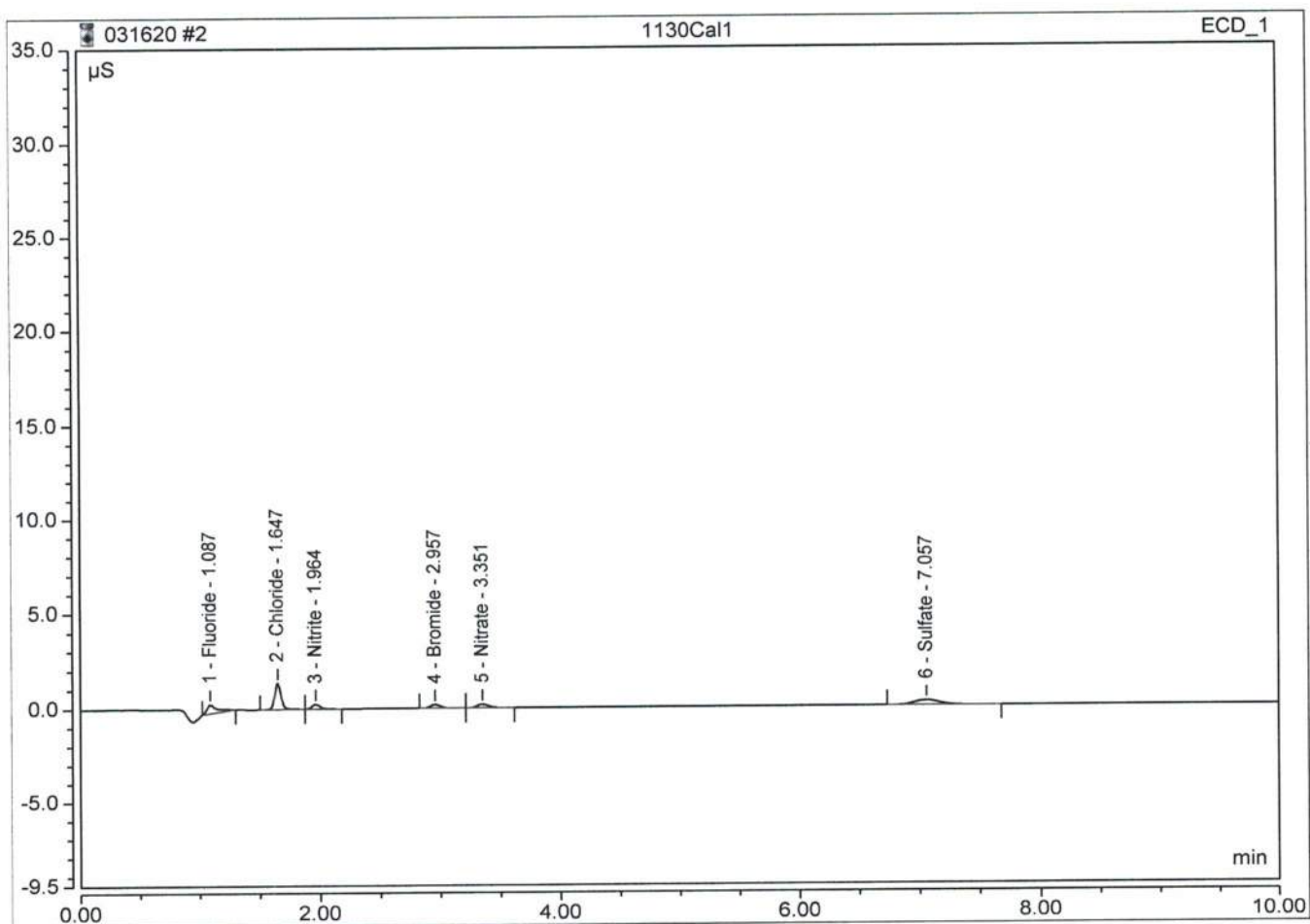
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	1130Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:10	Operator:	Jeff Phifer

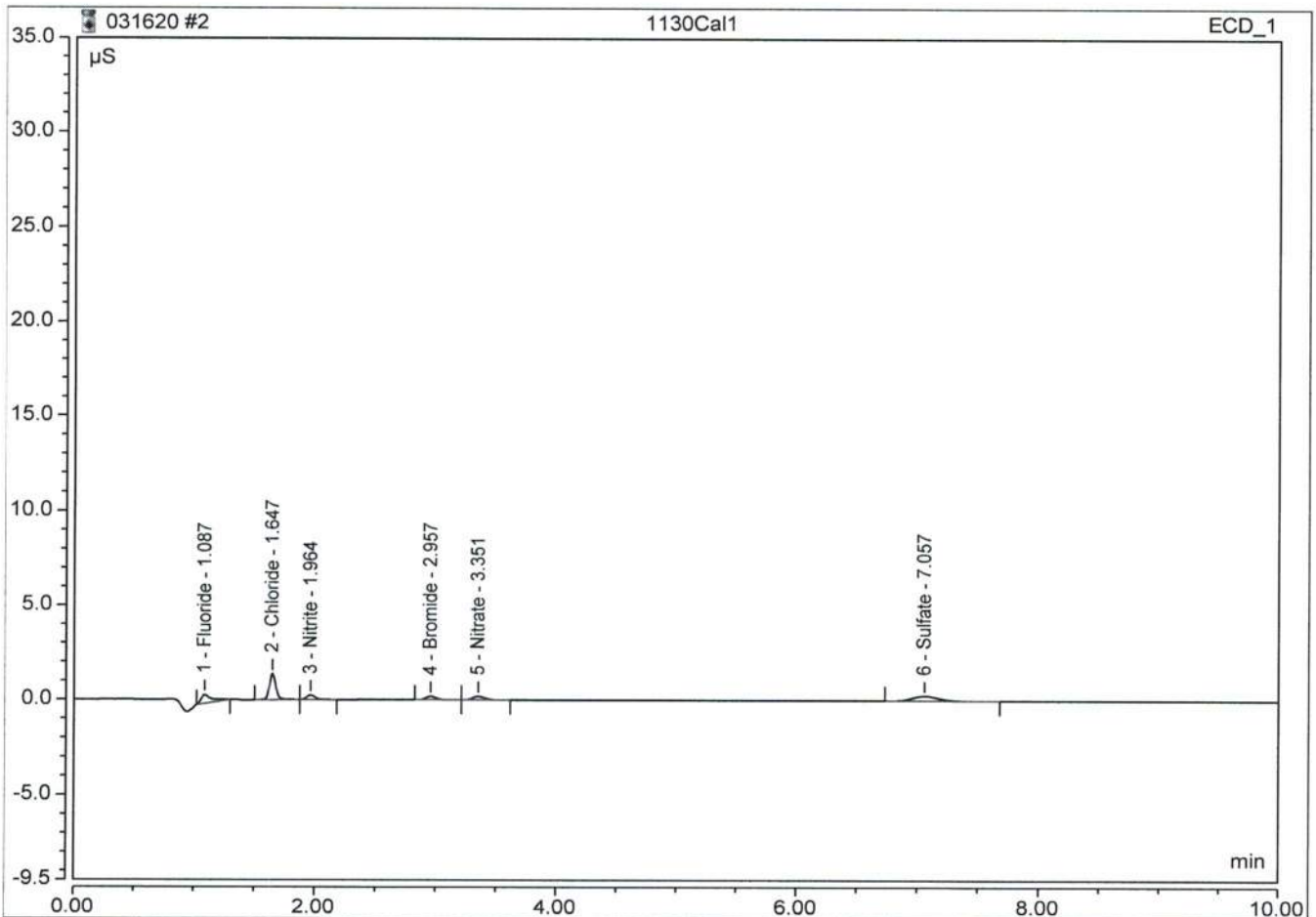
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.047	0.474	0.2 0.1992
2	1.65	Chloride	BMB	0.084	1.369	1 1.0830
3	1.96	Nitrite	BMB	0.018	0.249	0.1 0.1057
4	2.96	Bromide	BMB	0.018	0.183	0.5 0.5067
5	3.35	Nitrate	BMB	0.022	0.195	0.1 0.1047
6	7.06	Sulfate	BMB	0.063	0.254	1 1.0444
TOTAL:				0.25	2.72	3.04



Peak Integration Report

Sample Name:	1130Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:10	Operator:	Jeff Phifer

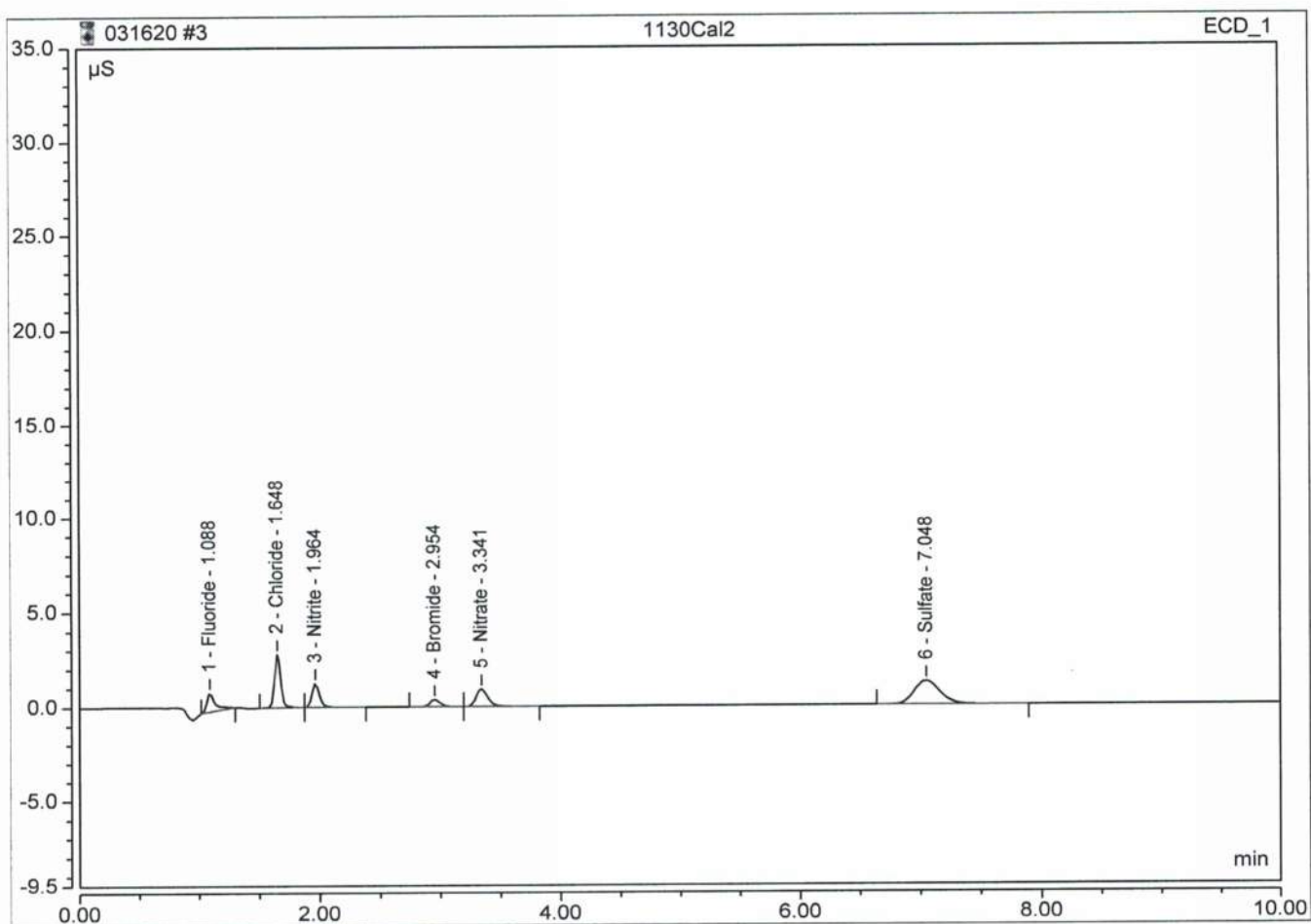
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.047	0.474	n.a.
2	1.65	Chloride	BMB	0.084	1.369	n.a.
3	1.96	Nitrite	BMB	0.018	0.249	n.a.
4	2.96	Bromide	BMB	0.018	0.183	n.a.
5	3.35	Nitrate	BMB	0.022	0.195	n.a.
6	7.06	Sulfate	BMB	0.063	0.254	n.a.
TOTAL:				0.25	2.72	0.00



Peak Integration Report

Sample Name:	1130Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:23	Operator:	Jeff Phifer

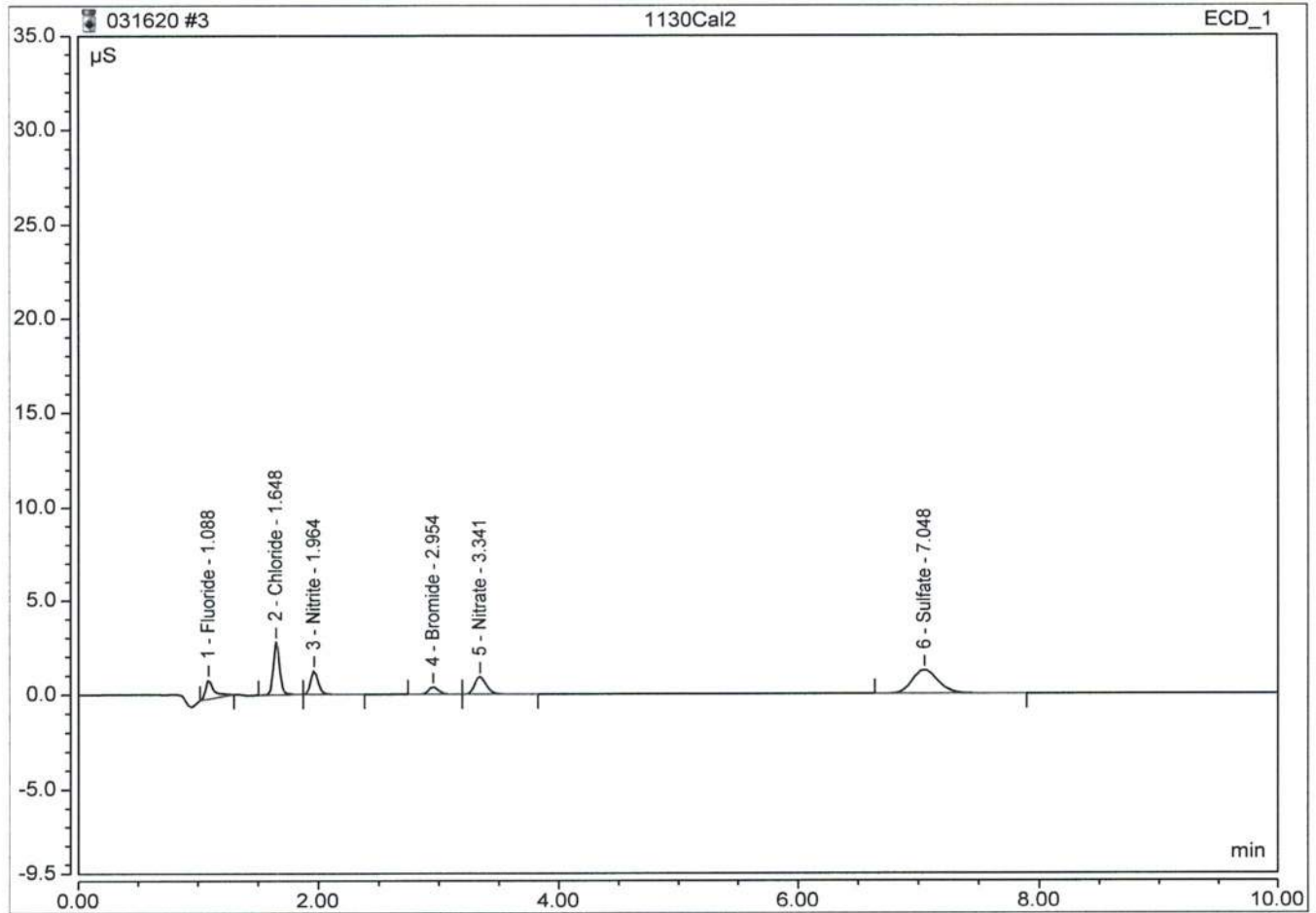
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.084	1.010	0.5 0.5050
2	1.65	Chloride	BMB	0.169	2.803	2 1.9341
3	1.96	Nitrite	BMB	0.091	1.255	0.5 0.4828
4	2.95	Bromide	BMB	0.036	0.371	1 1.0060
5	3.34	Nitrate	BMB	0.103	0.922	0.5 0.4855
6	7.05	Sulfate	BMB	0.305	1.246	5 4.8434
TOTAL:				0.79	7.61	9.26



Peak Integration Report

Sample Name:	1130Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:23	Operator:	Jeff Phifer

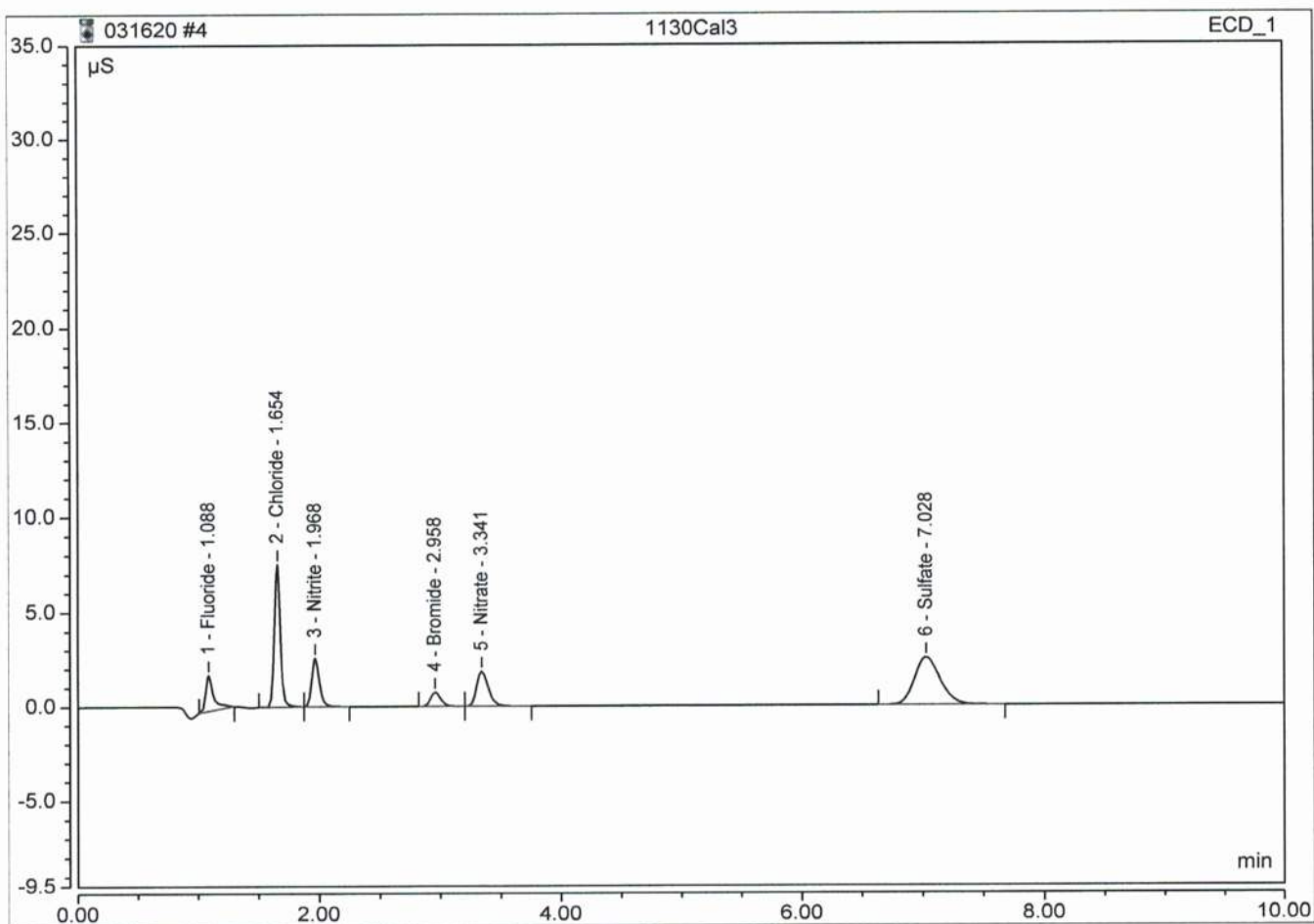
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.084	1.010	0.5000
2	1.65	Chloride	BMB	0.169	2.803	2.0000
3	1.96	Nitrite	BMB	0.091	1.255	0.5000
4	2.95	Bromide	BMB	0.036	0.371	1.0000
5	3.34	Nitrate	BMB	0.103	0.922	0.5000
6	7.05	Sulfate	BMB	0.305	1.246	5.0000
TOTAL:				0.79	7.61	9.50



Peak Integration Report

Sample Name:	1130Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:35	Operator:	Jeff Phifer

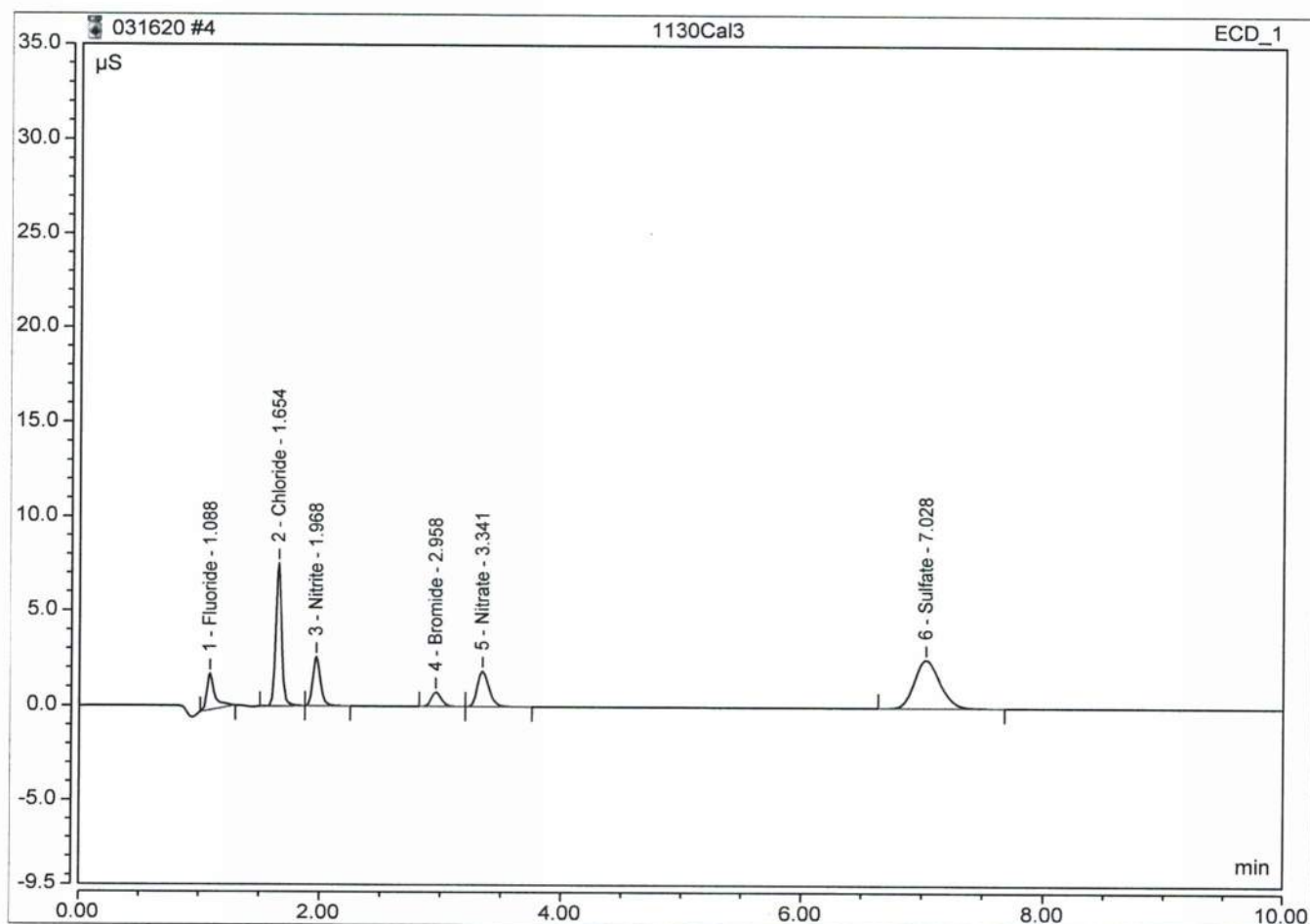
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.145	1.902	0.9994
2	1.65	Chloride	BMB	0.444	7.527	4.6743
3	1.97	Nitrite	BMB	0.184	2.564	0.9629
4	2.96	Bromide	BMB	0.071	0.738	1.9674
5	3.34	Nitrate	BMB	0.207	1.848	0.9723
6	7.03	Sulfate	BMB	0.616	2.526	9.7093
TOTAL:				1.67	17.10	19.29



Peak Integration Report

Sample Name:	1130Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:35	Operator:	Jeff Phifer

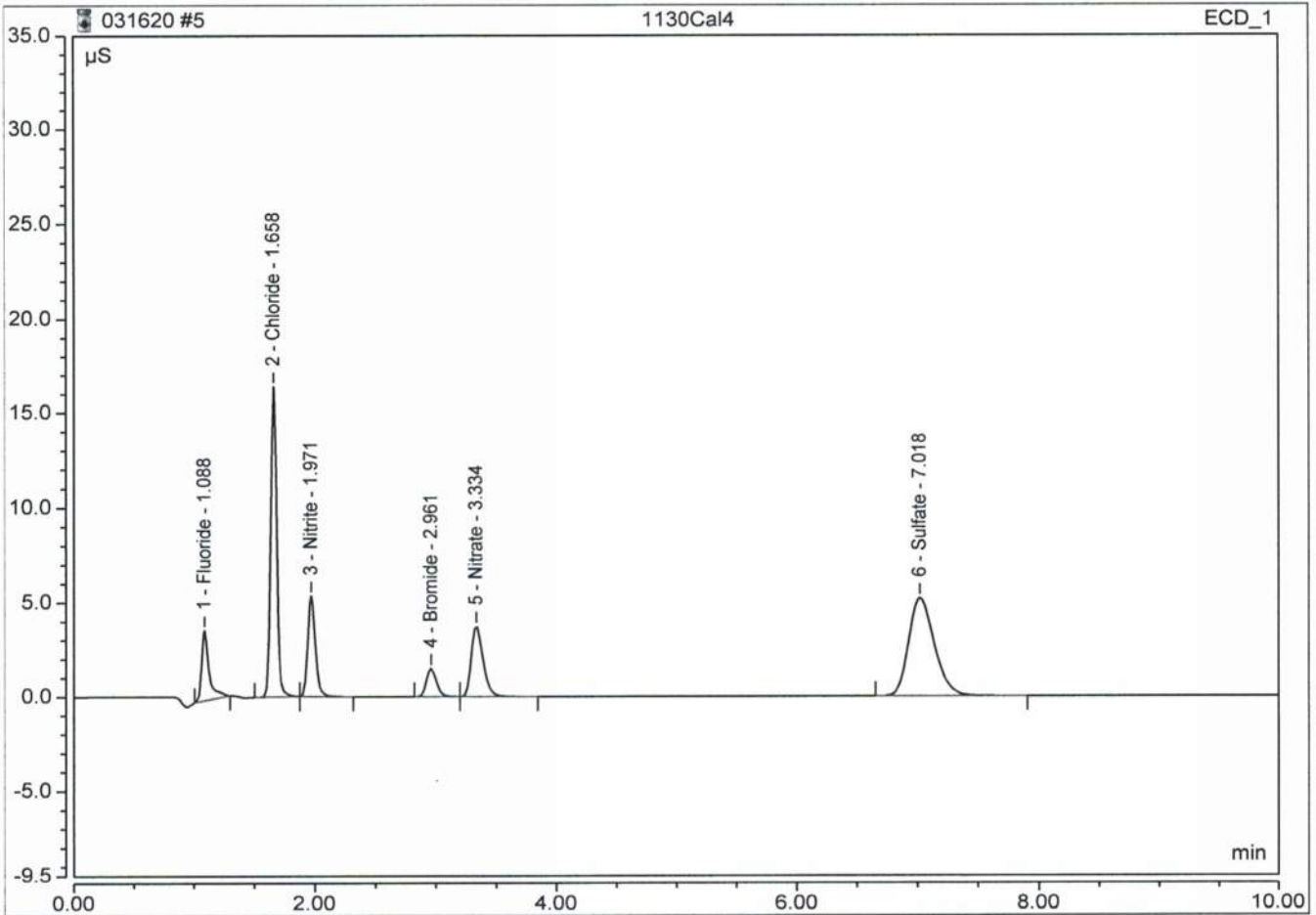
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.145	1.902	0.9971
2	1.65	Chloride	BMB	0.444	7.527	5.0227
3	1.97	Nitrite	BMB	0.184	2.564	1.0025
4	2.96	Bromide	BMB	0.071	0.738	1.9941
5	3.34	Nitrate	BMB	0.207	1.848	1.0030
6	7.03	Sulfate	BMB	0.616	2.526	10.0331
TOTAL:				1.67	17.10	20.05



Peak Integration Report

Sample Name:	1130Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:48	Operator:	Jeff Phifer

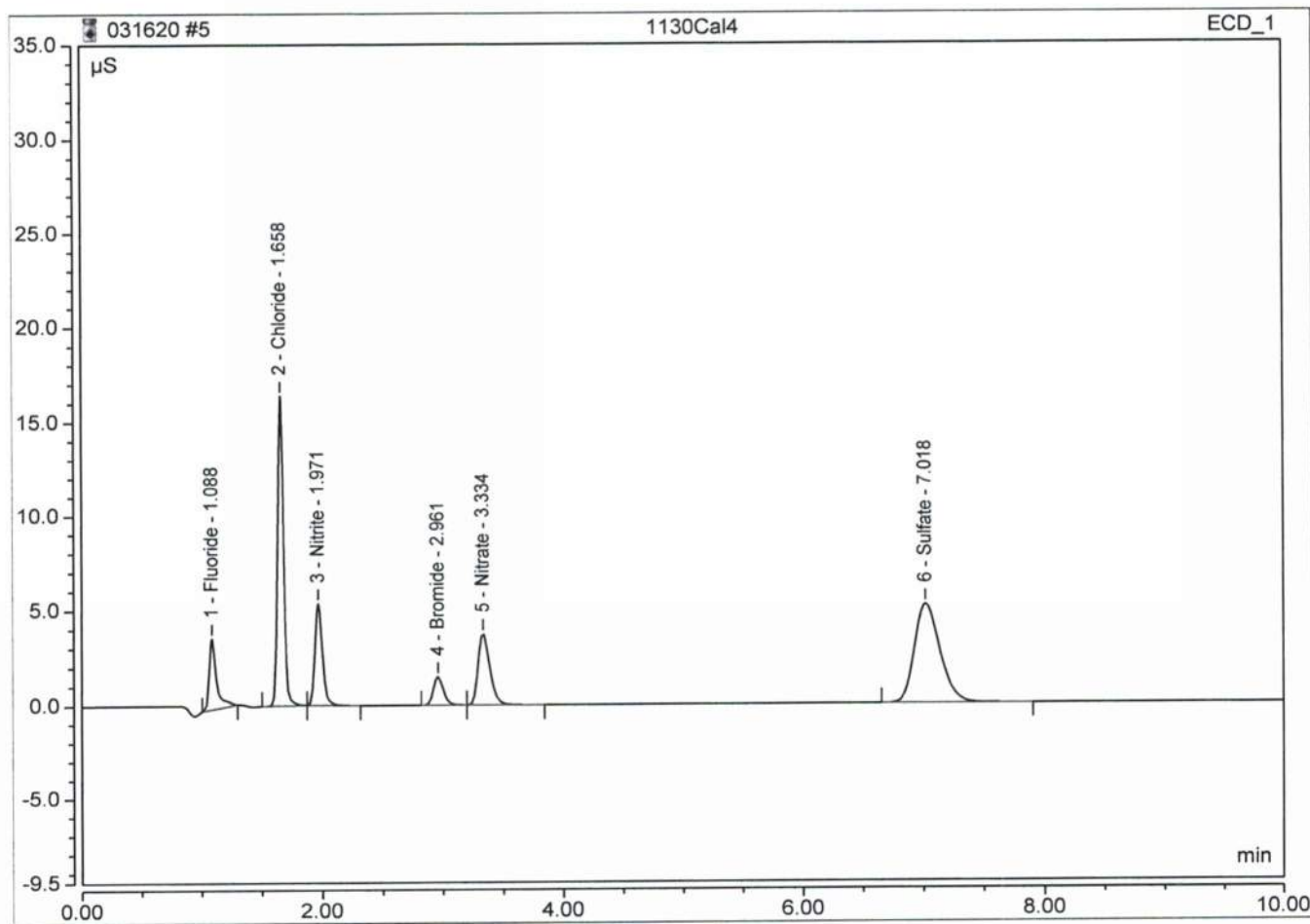
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.264	3.720	2 1.9744
2	1.66	Chloride	BMB	0.962	16.388	10 9.8345
3	1.97	Nitrite	BMB	0.382	5.338	2 1.9887
4	2.96	Bromide	BMB	0.143	1.493	4 3.9554
5	3.33	Nitrate	BMB	0.423	3.741	2 1.9822
6	7.02	Sulfate	BMB	1.272	5.210	20 19.9837
TOTAL:				3.45	35.89	39.72



Peak Integration Report

Sample Name:	1130Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 10:48	Operator:	Jeff Phifer

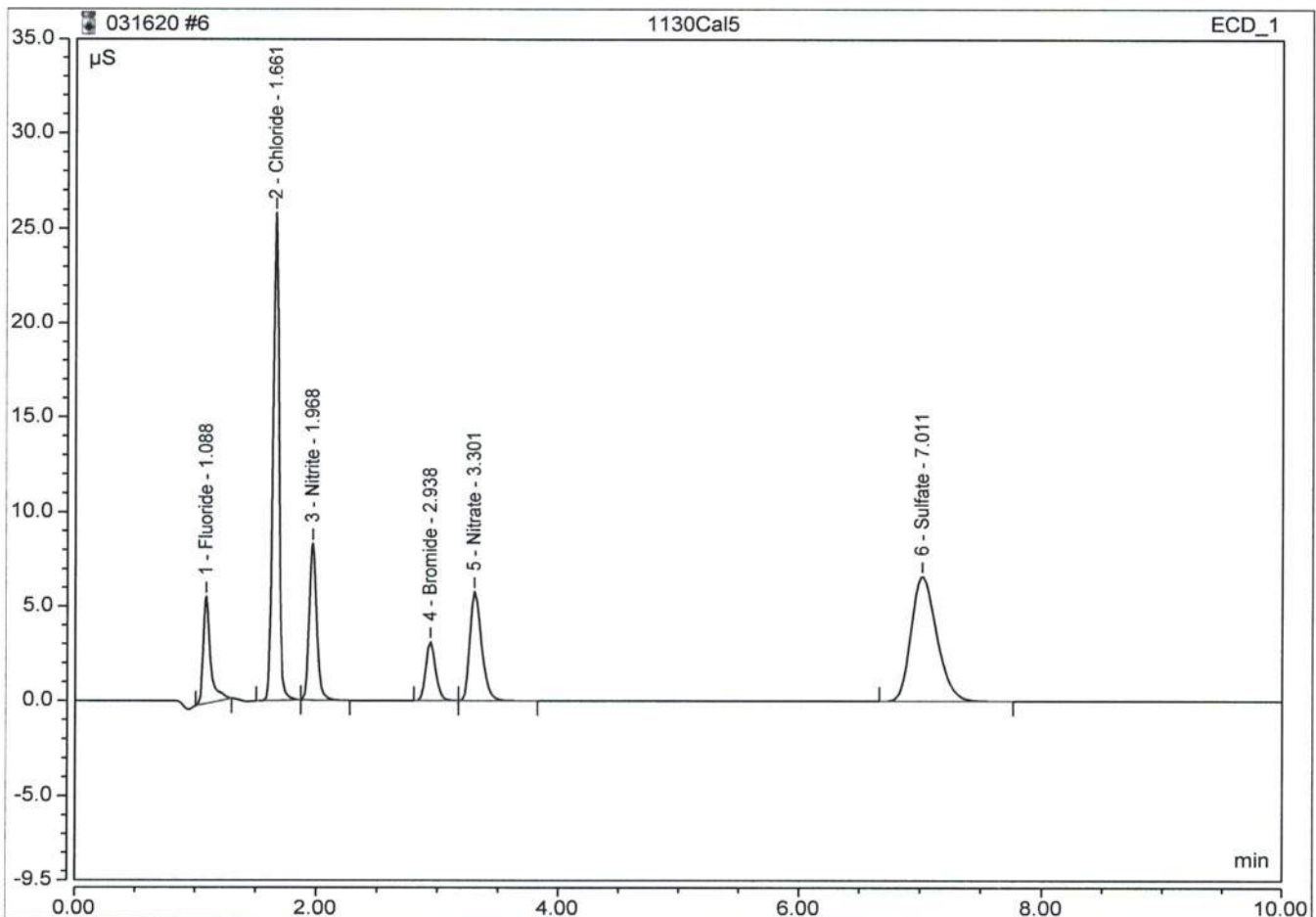
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.264	3.720	1.9908
2	1.66	Chloride	BMB	0.962	16.388	10.2059
3	1.97	Nitrite	BMB	0.382	5.338	2.0289
4	2.96	Bromide	BMB	0.143	1.493	4.0085
5	3.33	Nitrate	BMB	0.423	3.741	2.0191
6	7.02	Sulfate	BMB	1.272	5.210	20.2608
TOTAL:				3.45	35.89	40.51



Peak Integration Report

Sample Name:	1130Cal5	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	16-Mar-2020 / 11:01	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.392	5.690	3 3.0220
2	1.66	Chloride	BMB	1.528	25.842	15 15.4741
3	1.97	Nitrite	BMB	0.589	8.308	3 3.0599
4	2.94	Bromide	BMB	0.292	3.112	8 8.0645
5	3.30	Nitrate	BMB	0.653	5.776	3 3.0552
6	7.01	Sulfate	BMB	1.618	6.632	25 25.4192
TOTAL:				5.07	55.36	58.09



Total Suspended Solids

TSS: VLIMS Code: 4630; EPA Method: 2540D

Date Started: 29 JUN 20
 Time Started: 1925
 Analyst: HB
 Batch ID: TSS200629B
 Temperature: 103°C
 Time in Oven: 19:25

Date Finished: 30 JUN 20
 Time Finished: 1250
 Reviewed by: BB
 Review Date: 7/6/2020
 Balance ID: I1
 Oven ID/Thermometer ID: OVS/AC10848

Merit #	Tin #	MLs sample	g. Filter	g. dry solids + filter 103°C	g. reweigh 15 min. 103°C	TSS mg/L	DF	TVSS Y/N	TVSS Tin #
Blank	18636	1000	0.1156	0.1153		-0.30 ND	1.00	N	
LCS Lot									
8208-09B	3H	100	0.1146	0.1232		86	10.0		
15123.01	3I	400	0.1154	0.1325		42.75 43	2.50		
Dup									
.01	I8FVP	400	0.1156	0.1328		43	2.50		
.02	VQ	1000	0.1195	0.1208		1.30 ND	1.00		
.03	VR	1000	0.1143	0.1160		1.70 ND	1.00		
.04	VS	750	0.114 0.1195	0.1367		22.93 23	1.33		
.05	VT	1000	0.1198	0.1216		1.80 ND	1.00		
.06	VU	1000	0.1198	0.1222		2.40 ND	1.00		
.07	VV	1000	0.1200	0.1199		-0.10 ND	1.00		
15153.01	VW	200	0.1216	0.1256		20	5.00		
15154.01	VX	1000	0.1201	0.1216		1.50 ND	1.00		
15155.01	VY	350	0.1208	0.1245		10.57 10	2.86		

LCS value = 84.4 mg/L
 % Rec = 101.5%
 % RPD = 0.6%

Acceptance Criteria (mg/L): 69.4 - 99.1
 Acceptance Criteria (%): 81.9 - 111%
 Acceptance Criteria: ± 5% of average

Total Dissolved Solids

TDS: VLIMS Code: 4615; EPA Method: 2540C

Date Started: June 24, 2020
 Time Started: 1700
 Analyst: TW / JSD
 Batch ID: TDS200624
 Temperature: 180 °C
 Time in Oven: 43:50

Date Finished: 26 JUN 20
 Time Finished: 1250
 Reviewed by: BB
 Review Date: 7/6/2020
 Balance ID: II
 Oven ID/Thermometer ID: 02/AC103GS

Merit #	Tin #	sample (mls)	Tin (grams)	dry solids + tin 180°C (grams)	reweigh 15 min. 180°C (grams)	Cond.	TDS (mg/L)
Blank	<u>1056996550</u>		<u>3.7529</u>	<u>3.7536</u>			<u>4/ND</u>
LCS Lot							
<u>8208-09B</u>	<u>966</u>	<u>25</u>	<u>3.8195</u>	<u>3.8343</u>			<u>592</u>
<u>15007.04</u>	<u>967</u>	<u>25</u>	<u>3.7491</u>	<u>3.8728</u>			<u>4948</u> <u>4950</u>
Dup							
<u>.04</u>	<u>968</u>	<u>25</u>	<u>3.7544</u>	<u>3.8770</u>			<u>4904</u>
<u>.05</u>	<u>969</u>	<u>25</u>	<u>3.7999</u>	<u>3.9667</u>			<u>6672</u> <u>6670</u>
<u>.06</u>	<u>970</u>	<u>25</u>	<u>3.5991</u>	<u>3.7882</u>			<u>7564</u> <u>7566</u>
<u>15123.01</u>	<u>971</u>	<u>50</u>	<u>3.6562</u>	<u>3.6949</u>			<u>774</u>
<u>.02</u>	<u>972</u>	<u>50</u>	<u>3.6183</u>	<u>3.6836</u>			<u>1306</u> <u>1300</u>
<u>.03</u>	<u>973</u>	<u>50</u>	<u>3.5206</u>	<u>3.5485</u>			<u>558</u>
<u>.04</u>	<u>974</u>	<u>50</u>	<u>3.6049</u>	<u>3.6909</u>			<u>1720</u> <u>1720</u>
<u>.05</u>	<u>975</u>	<u>50</u>	<u>3.6500</u>	<u>3.6853</u>			<u>706</u>
<u>.06</u>	<u>976</u>	<u>50</u>	<u>3.6003</u>	<u>3.6294</u>			<u>582</u>
<u>.07</u>	<u>977</u>	<u>50</u>	<u>3.6084</u>	<u>3.6088</u>			<u>8/ND</u>

LCS value = 567 mg/L
 % Rec = 104.4%
 % RPD = 0.9%

Acceptance Criteria (mg/L): 510-624 mg/L
 Acceptance Criteria (%): 89.9-110%
 Acceptance Criteria: ± 5% of average



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C.O.C. PAGE # 1 OF 1

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Jennifer Caporale
COMPANY Lansing Board of Water and Light
ADDRESS PO Box 13007 48901-3007
CITY Lansing STATE MI ZIP CODE 48901
PHONE NO. 517-702-6372 FAX NO. _____ P.O. NO. _____
E-MAIL ADDRESS Environmental_Laboratory@lbwl.com QUOTE NO. _____

CONTACT NAME Kelly Gleason SAME
COMPANY _____
ADDRESS _____
CITY _____ STATE _____ ZIP CODE _____
PHONE NO. _____ E-MAIL ADDRESS Kelly.Gleason@lbwl.com

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME Erickson GMP SAMPLER(S) - PLEASE PRINT/SIGN NAME Marc Wahrer
TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER _____
DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

MATRIX GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives							Total Metals	TSS	TDS, Cl-, SO4-, F	Radium 226	Radium 228	Certifications	
	DATE	TIME				NONE	HCl	HNO3	H2SO4	NaOH	MeOH	OTHER							<input type="checkbox"/> OHIO VAP <input type="checkbox"/> Drinking Water <input type="checkbox"/> DoD <input checked="" type="checkbox"/> NPDES
15123.01	06/23/20	1222	MW-1 L006016-01	GW	5	2		3						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Project Locations <input type="checkbox"/> Detroit <input type="checkbox"/> New York Special Instructions Metals to analyse: Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Pb, Li, Hg, Mo, Se, Tl
.02		1601	MW-2 -02	GW	5	2		3						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Please send a preliminary report
.03		1015	MW-4 -03	GW	5	2		3						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
.04		1646	MW-5 -04	GW	5	2		3						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
.05		1416	MW-6 -05	GW	5	2		3						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
.06		1015	MW-4 Duplicate -06	GW	5	2		3						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
.07		0730	Field Blank -07	DI	5	2		3						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

RELINQUISHED BY: [Signature] ^{Sampler} DATE 6-29-20 TIME 1120
SIGNATURE/ORGANIZATION _____
RECEIVED BY: M. Central DATE 6/24/2020 TIME 1120
SIGNATURE/ORGANIZATION _____
RELINQUISHED BY: _____ DATE _____ TIME _____
SIGNATURE/ORGANIZATION _____
RECEIVED BY: _____ DATE _____ TIME _____
SIGNATURE/ORGANIZATION _____

RELINQUISHED BY: _____ DATE _____ TIME _____
SIGNATURE/ORGANIZATION _____
RECEIVED BY: _____ DATE _____ TIME _____
SIGNATURE/ORGANIZATION _____
SEAL NO. _____ SEAL INTACT YES NO INITIALS _____
NOTES: TEMP. ON ARRIVAL 4.0
SEAL NO. _____ SEAL INTACT YES NO INITIALS _____



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C.O.C. PAGE # 1 OF 1

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME **John Laverty**
 COMPANY **Merit Laboratories**
 ADDRESS **2680 East Lansing Drive**
 CITY **East Lansing** STATE **MI** ZIP CODE **48823**
 PHONE NO. **517-332-0167** FAX NO. **517-332-4034** P.O. NO.
 E-MAIL ADDRESS **johnlaverty@meritlabs.com** QUOTE NO.

CONTACT NAME **Julie Teague** SAME
 COMPANY **Merit Laboratories**
 ADDRESS **2680 East Lansing Drive**
 CITY **East Lansing** STATE **MI** ZIP CODE **48823**
 PHONE NO. **517-332-0167** E-MAIL ADDRESS **juliet@meritlabs.com**

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME **S15123** SAMPLER(S) - PLEASE PRINT/SIGN NAME
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER
 MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE A=AIR W=WASTE

# Containers & Preservatives	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Radium 226*	Radium 228**
			2					✓	✓
			2					✓	✓
			2					✓	✓
			2					✓	✓
			2					✓	✓
			2					✓	✓
			2					✓	✓

Certifications
 OHIO VAP Drinking Water
 DoD NPDES
Project Locations
 Detroit New York
 Other
Special Instructions

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Radium 226*	Radium 228**
	DATE	TIME												
	6/23/2020	1222	S15123.01	GW	2			2					✓	✓
	6/23/2020	1601	S15123.02	GW	2			2					✓	✓
	6/23/2020	1015	S15123.03	GW	2			2					✓	✓
	6/23/2020	1646	S15123.04	GW	2			2					✓	✓
	6/23/2020	1416	S15123.05	GW	2			2					✓	✓
	6/23/2020	1015	S15123.06	GW	2			2					✓	✓
	6/23/2020	0730	S15123.07 (Field Blank)	L	2			2					✓	✓

* E903.1 Mod.
 ** E904.0/SW 9320 Mod.
 Please use calculation product & provide Radium 226/228 combined results on the report
 ** Subcontracted to
 GEL Laboratories, Inc.
 2040 Savage Road
 Charleston, SC 29407

RELINQUISHED BY: *M. Chitko* Sampler DATE TIME
 SIGNATURE/ORGANIZATION
 RECEIVED BY: DATE TIME
 SIGNATURE/ORGANIZATION
 RELINQUISHED BY: DATE TIME
 SIGNATURE/ORGANIZATION
 RECEIVED BY: DATE TIME
 SIGNATURE/ORGANIZATION

RELINQUISHED BY: DATE TIME
 SIGNATURE/ORGANIZATION
 RECEIVED BY: DATE TIME
 SIGNATURE/ORGANIZATION
 SEAL NO. SEAL INTACT INITIALS
 YES NO
 SEAL NO. SEAL INTACT INITIALS
 YES NO
 NOTES: TEMP. ON ARRIVAL

Merit Laboratories Login Checklist

Lab Set ID:S15123

Client:BWL01 (Board of Water & Light)

Project: Erickson GMP

Submitted:06/24/2020 11:20 Login User: MMC

Attention: Jennifer Caporale

Address: Board of Water & Light

P.O. Box 13007

Lansing, MI 48901

Phone: 517-702-6372

FAX:

Email: Environmental_Laboratory@LBWL.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.0
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to: GEL
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S15123 Submitted: 06/24/2020 11:20

Attention: Jennifer Caporale
Address: Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Client: BWL01 (Board of Water & Light)

Project: Erickson GMP

Initial Preservation Check: 06/24/2020 11:48 MMC

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Preservation Recheck (E200.8): N/A

Lab ID	125 ml Plastic HNO ₃	250 ml Plastic HNO ₃	1 L Plastic HNO ₃	250 ml Plastic H ₂ SO ₄	125 ml Amber H ₂ SO ₄	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber PbCO ₃ NaOH	pH					Notes	
									<2	>12	other	ml add	new pH		
S15123.01	X								X						
S15123.01			X						X						
S15123.01			X						X						
S15123.02	X								X						
S15123.02			X						X						
S15123.02			X						X						
S15123.03	X								X						
S15123.03			X						X						
S15123.03			X						X						
S15123.04	X								X						
S15123.04			X						X						
S15123.04			X						X						
S15123.05	X								X						
S15123.05			X						X						
S15123.05			X						X						
S15123.06	X								X						
S15123.06			X						X						
S15123.06			X						X						
S15123.07	X								X						
S15123.07			X						X						
S15123.07			X						X						

Sample Set Receipt

Report to
 Attention: Jennifer Caporale
 Address: Board of Water & Light
 P.O. Box 13007
 Lansing, MI 48901

Invoice to
 Attention: Kelly Gleason
 Address: Board of Water & Light
 PO Box 13007
 Lansing, MI 48901

Phone: 517-702-6372 FAX:
 Email: Environmental_Laboratory@LBWL.com

Phone: 517-702-6372 FAX: 517-702-6373
 Email: kelly.gleason@lbwl.com

Contacts:

 Set ID: S15123 Location: BWL01 (Board of Water & Light) PO #: Login by: MMC
 Project: Erickson GMP Backlog Note:
 Submitted: 06/24/2020 11:20 Due Date: 07/09/2020 Rush: No Collected by: Marc Wahrer QC Level: 3 Custom Limits Present: No
 Approved by: Site: Work Order#: Bill to Acct: Bill to Dept:

Sample ID	Sample Tag	Matrix	Date/Time Collected	COC Ref
S15123.01	MW-1 L006016-01	Groundwater	06/23/2020 12:22	
S15123.02	MW-2 L006016-02	Groundwater	06/23/2020 16:01	
S15123.03	MW-4 L006016-03	Groundwater	06/23/2020 10:15	
S15123.04	MW-5 L006016-04	Groundwater	06/23/2020 16:46	
S15123.05	MW-6 L006016-05	Groundwater	06/23/2020 14:16	
S15123.06	MW-4 Duplicate L006016-06	Groundwater	06/23/2020 10:15	
S15123.07	Field Blank L006016-07	Water	06/23/2020 07:30	

Samples: S15123.01-07

Analysis Code	Analysis Title	Method	Units	Holding Date
2140WMS	Calcium	E200.8	mg/L	12/20/2020
2145WMS	Chromium	E200.8	mg/L	12/20/2020
2130WMS	Boron	E200.8	mg/L	12/20/2020
2115WMS	Arsenic	E200.8	mg/L	12/20/2020
2205WMS	Selenium	E200.8	mg/L	12/20/2020
2190WMS	Molybdenum	E200.8	mg/L	12/20/2020
2135WMS	Cadmium	E200.8	mg/L	12/20/2020
2110WMS	Antimony	E200.8	mg/L	12/20/2020
2120WMS	Barium	E200.8	mg/L	12/20/2020
2225WMS	Thallium	E200.8	mg/L	12/20/2020
2165WMS	Lead	E200.8	mg/L	12/20/2020
2125WMS	Beryllium	E200.8	mg/L	12/20/2020
2150WMS	Cobalt	E200.8	mg/L	12/20/2020
2170WMS	Lithium	E200.8	mg/L	12/20/2020
2185W	Mercury	E245.1	mg/L	07/21/2020
4630	Total Suspended Solids	SM2540D	mg/L	06/30/2020
4615	Total Dissolved Solids	SM2540C	mg/L	06/30/2020
4425W	Chloride	E300.0	mg/L	07/21/2020
4530W	Sulfate	E300.0	mg/L	07/21/2020
4455W	Fluoride (Undistilled)	E300.0	mg/L	07/21/2020
MISCSUB	Misc. Special Project			03/19/2023
1605W	Metal Digestion	SW3015A		12/20/2020
1605HGW	Mercury Digestion	E245.1		07/21/2020
SUBCONT	Subcontracting			03/19/2023

July 09, 2020

John Laverty
Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan 48823

Re: Routine Analysis
Work Order: 514635
SDG: S15123

Dear John Laverty:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 26, 2020. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4443.

Sincerely,



Samuel Hogan for
Lindsay Fabra
Project Manager

Purchase Order: GELP20-0018
Enclosures

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Case Narrative

**Receipt Narrative
for
Merit Laboratories, Inc.
SDG: S15123
Work Order: 514635**

July 09, 2020

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on June 26, 2020 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
514635001	S15123.01
514635002	S15123.02
514635003	S15123.03
514635004	S15123.04
514635005	S15123.05
514635006	S15123.06
514635007	S15123.07 (Field Blank)

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Radiochemistry.

A handwritten signature in black ink, appearing to read "Sam Hogan". The signature is written in a cursive style with a large, stylized initial "S".

Samuel Hogan for
Lindsay Fabra
Project Manager

Chain of Custody and Supporting Documentation

GEL

SAMPLE RECEIPT & REVIEW FORM

Client: WERT SDG/AR/COC/Work Order: 514635

Received By: Tye Date Received: 6/29/20 KG

Carrier and Tracking Number
FedEx Express FedEx Ground UPS Field Services Courier Other
1Z 4060 477 03 0344 3131

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A) Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	Hazard Class Shipped _____ UN# _____ IF UN2910, Is the Radioactive Shipment Survey Compliant? Yes ___ No ___
B) Did the client designate the samples are to be received as radioactive?		<input checked="" type="checkbox"/>	COC notation or radioactive stickers on containers equal client designation.
C) Did the RSO classify the samples as radioactive?		<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts) _____ CPM/mRA/r Classified as: Rad 1 Rad 2 Rad 3
D) Did the client designate samples are hazardous?		<input checked="" type="checkbox"/>	COC notation or hazard labels on containers equal client designation.
E) Did the RSO identify possible hazards?		<input checked="" type="checkbox"/>	If D or E is yes, select Hazards below. PCBs Flammable Foreign Soil RCRA Asbestos Beryllium Other

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			Circle Applicable Client contacted and provided COC COC created upon receipt
3 Samples requiring cold preservation within (0 ± 6 deg. C)?	<input checked="" type="checkbox"/>			Preservation Method Wet Ice Ice Packs Dry Ice <u>None</u> Other _____ *All temperatures are recorded in Celsius TEMP: <u>16C</u>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: <u>TR3-19</u> Secondary Temperature Device Serial # (if applicable)
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's and Containers Affected.
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>			If Preservation added, List _____ If Yes, are Encores or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, list to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes ___ No ___ NA ___ (If unknown, select No) Are liquid VOA vials free of headspace? Yes ___ No ___ NA ___ Sample ID's and containers affected
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			ID's and containers affected
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Circle Applicable No dates on containers No times on containers COC missing info Other (describe)
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Circle Applicable No container count on COC Other (describe)
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>			
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			Circle Applicable Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review initials NRG Date 6/29/20 Page 1 of 1

Laboratory Certifications

List of current GEL Certifications as of 09 July 2020

State	Certification
Alabama	42200
Alaska	17-018
Alaska Drinking Water	SC00012
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-165
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-20-17
Utah NELAP	SC000122020-32
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

Radiological Analysis

Case Narrative

Radiochemistry
Technical Case Narrative
Merit Laboratories, Inc.
SDG #: S15123
Work Order #: 514635

Product: Radium-226+Radium-228 Calculation

Analytical Method: Calculation

Analytical Procedure: GL-RAD-D-003 REV# 44

Analytical Batch: 2016197

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
514635001	S15123.01
514635002	S15123.02
514635003	S15123.03
514635004	S15123.04
514635005	S15123.05
514635006	S15123.06
514635007	S15123.07 (Field Blank)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: GFPC Ra228, Liquid

Analytical Method: EPA 904.0/SW846 9320 Modified

Analytical Procedure: GL-RAD-A-009 REV# 17

Analytical Batch: 2016186

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
514635001	S15123.01
514635002	S15123.02
514635003	S15123.03
514635004	S15123.04
514635005	S15123.05
514635006	S15123.06
514635007	S15123.07 (Field Blank)
1204588599	Method Blank (MB)
1204588600	514635004(S15123.04) Sample Duplicate (DUP)
1204588601	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: Lucas Cell, Ra226, Liquid

Analytical Method: EPA 903.1 Modified

Analytical Procedure: GL-RAD-A-008 REV# 15

Analytical Batch: 2016497

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
514635001	S15123.01
514635002	S15123.02
514635003	S15123.03
514635004	S15123.04
514635005	S15123.05
514635006	S15123.06
514635007	S15123.07 (Field Blank)
1204589173	Method Blank (MB)
1204589174	514635001(S15123.01) Sample Duplicate (DUP)
1204589175	514635001(S15123.01) Matrix Spike (MS)
1204589176	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report for

MERI001 Merit Laboratories, Inc.

Client SDG: S15123 GEL Work Order: 514635

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:



Name: Theresa Austin

Date: 09 JUL 2020

Title: Group Leader

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 9, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S15123.01 Project: MERI00120
Sample ID: 514635001 Client ID: MERI001
Matrix: Ground Water
Collect Date: 23-JUN-20 12:22
Receive Date: 26-JUN-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.166	+/-1.49	2.74	3.00	pCi/L			JXC9	07/06/20	1022	2016186	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.518	+/-1.51			pCi/L		1	AEA	07/08/20	1028	2016197	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.518	+/-0.247	0.289	1.00	pCi/L			MXH8	07/08/20	0845	2016497	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			83.1	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 9, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S15123.02	Project: MERI00120
Sample ID: 514635002	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 23-JUN-20 16:01	
Receive Date: 26-JUN-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.139	+/-1.14	2.13	3.00	pCi/L			JXC9	07/06/20	1022	2016186	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.754	+/-1.18			pCi/L		1	AEA	07/08/20	1028	2016197	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.754	+/-0.275	0.245	1.00	pCi/L			MXH8	07/08/20	0845	2016497	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			88.7	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 9, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S15123.03	Project: MERI00120
Sample ID: 514635003	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 23-JUN-20 10:15	
Receive Date: 26-JUN-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.141	+/-0.781	1.53	3.00	pCi/L			JXC9	07/06/20	1023	2016186	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.368	+/-0.822			pCi/L		1	AEA	07/08/20	1028	2016197	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.368	+/-0.255	0.372	1.00	pCi/L			MXH8	07/08/20	0845	2016497	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			86.5	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 9, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S15123.04	Project: MERI00120
Sample ID: 514635004	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 23-JUN-20 16:46	
Receive Date: 26-JUN-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.302	+/-0.655	1.19	3.00	pCi/L			JXC9	07/06/20	1023	2016186	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.524	+/-0.678			pCi/L		1	AEA	07/08/20	1028	2016197	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.223	+/-0.175	0.237	1.00	pCi/L			MXH8	07/08/20	0845	2016497	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			86.6	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 9, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S15123.05 Project: MERI00120
Sample ID: 514635005 Client ID: MERI001
Matrix: Ground Water
Collect Date: 23-JUN-20 14:16
Receive Date: 26-JUN-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.299	+/-0.584	1.23	3.00	pCi/L			JXC9	07/06/20	1023	2016186	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.379	+/-0.626			pCi/L		1	AEA	07/08/20	1028	2016197	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.379	+/-0.227	0.291	1.00	pCi/L			MXH8	07/08/20	0845	2016497	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			96.4	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: July 9, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S15123.06	Project: MERI00120
Sample ID: 514635006	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 23-JUN-20 10:15	
Receive Date: 26-JUN-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.771	+/-0.818	1.36	3.00	pCi/L			JXC9	07/06/20	1023	2016186	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.34	+/-0.859			pCi/L		1	AEA	07/08/20	1028	2016197	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.568	+/-0.264	0.305	1.00	pCi/L			MXH8	07/08/20	0845	2016497	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			107	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: July 9, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive
East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S15123.07 (Field Blank) Project: MERI00120
Sample ID: 514635007 Client ID: MERI001
Matrix: Water
Collect Date: 23-JUN-20 07:30
Receive Date: 26-JUN-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.194	+/-0.888	1.64	3.00	pCi/L			JXC9	07/06/20	1023	2016186	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.338	+/-0.908			pCi/L		1	AEA	07/08/20	1028	2016197	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.144	+/-0.188	0.321	1.00	pCi/L			MXH8	07/08/20	0845	2016497	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			83.1	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: July 9, 2020

Page 1 of 2

Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan

Contact: John Laverty

Workorder: 514635

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	2016186										
QC1204588600	514635004	DUP									
Radium-228	U	0.302	U	0.548	pCi/L	N/A		N/A	JXC9	07/06/20	10:23
	Uncertainty	+/-0.655		+/-0.956							
QC1204588601	LCS										
Radium-228	55.8			48.8	pCi/L		87.5	(75%-125%)		07/06/20	10:23
	Uncertainty			+/-3.30							
QC1204588599	MB										
Radium-228			U	0.577	pCi/L					07/06/20	10:23
	Uncertainty			+/-0.905							
Rad Ra-226											
Batch	2016497										
QC1204589174	514635001	DUP									
Radium-226		0.518		0.372	pCi/L	32.7		(0% - 100%)	MXH8	07/08/20	09:15
	Uncertainty	+/-0.247		+/-0.200							
QC1204589176	LCS										
Radium-226	27.1			30.5	pCi/L		113	(75%-125%)		07/08/20	09:15
	Uncertainty			+/-1.72							
QC1204589173	MB										
Radium-226			U	0.238	pCi/L					07/08/20	08:45
	Uncertainty			+/-0.273							
QC1204589175	514635001	MS									
Radium-226	27.1	0.518		29.8	pCi/L		108	(75%-125%)		07/08/20	09:15
	Uncertainty	+/-0.247		+/-1.65							

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded

GEL LABORATORIES LLC

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QC Summary

Workorder: 514635

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J											
J											
K											
L											
M											
M											
N/A											
N1											
ND											
NJ											
Q											
R											
U											
UI											
UJ											
UL											
X											
Y											
^											
h											

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Gas Flow Raw Data

Batch 2016186 Check-list

This check-list was completed on 07-JUL-20 by Angela Johnson

This batch was reviewed by Angela Johnson on 07-JUL-20 and Kenshalla Oston on 07-JUL-20.

Batch ID:
2016186

Product:
GFC28RAL

Description: Gas Flow Radium 228
GL-RAD-A-009

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
11	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
12	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-228 in Liquid

Batch ID: 2016186

Analyst: Jasmine Conley (JXC9)

Method: EPA 904.0/SW846 9320 Modified

Lab SOP: GL-RAD-A-009 REV# 17

Instrument: GFC-51204863

Due Dates for Lab: 10-JUL-2020

Package: 11-JUL-2020

SDG: 13-JUL-2020

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1204588601	Radium-228 SPIKE	1919-A	.2	mL

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	Ac-228 Ingrow (date)	Ac-228 Separation (date)
1	514635001	01-JUL-2020	3	300	07/02/20 12:24	07/06/20 08:13
2	514635002	01-JUL-2020	3	300	07/02/20 12:24	07/06/20 08:13
3	514635003	01-JUL-2020	3	300	07/02/20 12:24	07/06/20 08:13
4	514635004	01-JUL-2020	3	300	07/02/20 12:24	07/06/20 08:13
5	514635005	01-JUL-2020	3	300	07/02/20 12:24	07/06/20 08:13
6	514635006	01-JUL-2020	3	300	07/02/20 12:24	07/06/20 08:13
7	514635007	01-JUL-2020	3	300	07/02/20 12:24	07/06/20 08:13
8	1204588599 MB	01-JUL-2020	3	300	07/02/20 12:24	07/06/20 08:13
9	1204588600 DUP (514635004)	01-JUL-2020	3	300	07/02/20 12:24	07/06/20 08:13
10	1204588601 LCS	01-JUL-2020	3	300	07/02/20 12:24	07/06/20 08:13

Reagent/Solvent Lot ID	Description	Amount	Comments:
WORK 0487-G	Barium-133 TRACER	.1 mL	
REGNT 2947553	RGF-Neodymium 500mg/L	.2 mL	Pipet Id: RAD-GFC-1795419
REGNT 3015426.9	HNO3, JT Baker	5 mL	Data Entry Date2: 01-JUL-2020 00:00
REGNT 3064966	RGF-50% Potassium Carbonate	2 mL	
REGNT 3069850	Barium Carrier Ra228 REG	1 mL	
REGNT 3071153	RGF-Neodymium Subtrate	5 mL	
REGNT 3075543.10	Acetic Acid Glacial ACS Poly Coated Bottle	10 mL	
REGNT 3083481.5	RGF-Hydrofluoric Acid	4 mL	
REGNT 3085946	1M Citric Acid	5 mL	
REGNT 3086856	Lot #DGA0014	2 g	
REGNT 3088065	7M Nitric Acid	25 mL	
REGNT 3090449	RGF-2M Hydrochloric Acid	20 mL	
REGNT 3091930	RGF-1.5M Ammonium Sulfate	10 mL	

Radium-228 Liquid

Filename : RA228.XLS
 File type : Excel
 Version # : 1.4.2

Tracer S/N : 0487-G
 Tracer Exp Date : 2/27/2021
 Tracer Volume Added: 0.10

Batch : 2016186
 Analyst : JAS02031
 Prep Date : 7/1/2020
 Ra-228 Method Uncertainty : 0.1268

Procedure Code : GFC28RAL
 Parmname : Radium-228
 Required MDA : 3 pCi/L
 Ra-228 Abundance : 1.00
 Halflife of Ra-228 : 5.75 years
 Halflife of Ac-228 : 6.15 hours

Geometry: 25mm Filter

Sample Characteristics					Tracer Calculations		Tracer Samp.		Tracer	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Tracer Ref. Activity (CPM)	Tracer Ref. Count Uncertainty (%)	Tracer Samp. Activity (CPM)	Tracer Samp. Count Uncertainty (%)	Tracer Aliquot (mL)	Tracer Aliquot StDev. (mL)
1	514635001.1	0.3000	1.8459E-05	6/23/2020 12:22	262.1	3.57%	217.9	3.91%	0.1	0.000200
2	514635002.1	0.3000	1.8459E-05	6/23/2020 16:01	262.1	3.57%	232.6	3.79%	0.1	0.000200
3	514635003.1	0.3000	1.8459E-05	6/23/2020 10:15	262.1	3.57%	226.6	3.83%	0.1	0.000200
4	514635004.1	0.3000	1.8459E-05	6/23/2020 16:46	262.1	3.57%	227.0	3.83%	0.1	0.000200
5	514635005.1	0.3000	1.8459E-05	6/23/2020 14:16	262.1	3.57%	252.6	3.63%	0.1	0.000200
6	514635006.1	0.3000	1.8459E-05	6/23/2020 10:15	262.1	3.57%	279.5	3.45%	0.1	0.000200
7	514635007.1	0.3000	1.8459E-05	6/23/2020 7:30	262.1	3.57%	217.8	3.91%	0.1	0.000200
8	1204588599.1	0.3000	1.8459E-05	7/1/2020 0:00	262.1	3.57%	232.8	3.78%	0.1	0.000200
9	1204588600.1	0.3000	1.8459E-05	6/23/2020 16:46	262.1	3.57%	228.8	3.82%	0.1	0.000200
10	1204588601.1	0.3000	1.8459E-05	7/1/2020 0:00	262.1	3.57%	252.8	3.63%	0.1	0.000200

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-009
 Instrument SOP: GL-RAD-I-016

Count raw Data													Calculated	Sample
Pos.	Detector ID	Counting Time (min.)	Gross Counts		Beta cpm	Count Start Date/Time	Ac-228 Ingrowth Date/Time	Ac-228 Decay Date/Time	Ra-228 Decay	Ac-228 Decay	Ac-228 Ingrowth	Ac-228 Count Correction	Recovery %	Recovery Error %
			Alpha	Beta										
1	6A	60	10	108	1.800	7/6/2020 10:22	7/2/2020 12:24	7/6/2020 8:13	0.996	0.783	1.000	1.057	83.1%	2.66%
2	6C	60	1	80	1.333	7/6/2020 10:22	7/2/2020 12:24	7/6/2020 8:13	0.996	0.783	1.000	1.057	88.7%	2.62%
3	7A	60	3	39	0.650	7/6/2020 10:23	7/2/2020 12:24	7/6/2020 8:13	0.996	0.783	1.000	1.057	86.5%	2.63%
4	7B	60	4	28	0.467	7/6/2020 10:23	7/2/2020 12:24	7/6/2020 8:13	0.996	0.783	1.000	1.057	86.6%	2.63%
5	7C	60	8	27	0.450	7/6/2020 10:23	7/2/2020 12:24	7/6/2020 8:13	0.996	0.783	1.000	1.057	96.4%	2.56%
6	8A	60	8	66	1.100	7/6/2020 10:23	7/2/2020 12:24	7/6/2020 8:13	0.996	0.783	1.000	1.057	107%	2.50%
7	8B	60	5	47	0.783	7/6/2020 10:23	7/2/2020 12:24	7/6/2020 8:13	0.996	0.783	1.000	1.057	83.1%	2.66%
8	8D	60	3	53	0.883	7/6/2020 10:23	7/2/2020 12:24	7/6/2020 8:13	0.998	0.783	1.000	1.057	88.8%	2.62%
9	9A	60	12	59	0.983	7/6/2020 10:23	7/2/2020 12:24	7/6/2020 8:13	0.996	0.783	1.000	1.057	87.3%	2.63%
10	9B	60	11	928	15.467	7/6/2020 10:23	7/2/2020 12:24	7/6/2020 8:13	0.998	0.783	1.000	1.057	96.4%	2.56%

Calibration Data								
Pos.	Counted on	Calibration Date	Calibration Due Date	Detector Efficiency (cpm/dpm)	Detector Efficiency Error (cpm/dpm)	Bkg cpm	Weekly Bkg Count Start Date/Time	Bkg Count Time (min.)
1	PIC	6/1/2020	5/31/2021	0.5743	0.02228	1.839	7/3/2020 13:52	1000
2	PIC	6/1/2020	5/31/2021	0.6036	0.01970	1.370	7/3/2020 13:52	1000
3	PIC	6/1/2020	5/31/2021	0.6340	0.00594	0.688	7/3/2020 13:52	1000
4	PIC	6/1/2020	5/31/2021	0.6359	0.00627	0.385	7/3/2020 13:52	1000
5	PIC	6/1/2020	5/31/2021	0.6361	0.00790	0.540	7/3/2020 13:52	1000
6	PIC	6/1/2020	5/31/2021	0.6340	0.01579	0.844	7/3/2020 13:52	1000
7	PIC	6/1/2020	5/31/2021	0.6352	0.02148	0.733	7/3/2020 13:52	1000
8	PIC	6/1/2020	5/31/2021	0.6158	0.00609	0.728	7/3/2020 13:52	1000
9	PIC	6/1/2020	5/31/2021	0.6275	0.00758	0.836	7/3/2020 13:52	1000
10	PIC	6/1/2020	5/31/2021	0.6367	0.00754	0.713	7/3/2020 13:52	1000

Notes:

- 1 - Results are decay corrected to Sample Date/Time
- 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
- 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : N/A
Spike Exp Date : N/A
Spike Activity (dpm/ml): N/A
Spike Volume Added: N/A

* - RPD changed to 0% due to sample & dup activity below MDA

LCS S/N : 1919-A
LCS Exp Date : 4/7/2021
LCS Activity (dpm/ml): 185.78
LCS Volume Added: 0.20

Results Pos.	Decision	Critical	Required	Sample Act.		Net Count	Net Count	2 SIGMA	2 SIGMA	Sample	Sample	RPD	RER	Nominal	Recovery
	Level	Level	MDA	Conc.	Error	Rate	Rate Error	Counting	Total Prop.							QC	Type	pCi/L
	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	%	CPM	CPM	Uncertainty	Uncertainty					
1	1.7901	1.2638	3	2.7408	-0.1662	457.54%	-0.0390	0.1784	1.4907	1.4908					
2	1.3772	0.9723	3	2.1346	-0.1393	418.92%	-0.0367	0.1536	1.1438	1.1439					
3	0.9540	0.6735	3	1.5327	-0.1411	282.48%	-0.0380	0.1073	0.7813	0.7815					
4	0.7104	0.5016	3	1.1880	0.3019	110.66%	0.0817	0.0903	0.6547	0.6592					
5	0.7557	0.5335	3	1.2330	-0.2988	99.66%	-0.0900	0.0897	0.5836	0.5837					
6	0.8569	0.6050	3	1.3606	0.7711	54.18%	0.2560	0.1385	0.8175	0.8409					
7	1.0229	0.7222	3	1.6372	0.1942	233.32%	0.0503	0.1174	0.8879	0.8893					
8	0.9814	0.6929	3	1.5715	0.5769	80.07%	0.1553	0.1243	0.9048	0.9166					
9	1.0527	0.7432	3	1.6723	0.5477	89.12%	0.1473	0.1312	0.9563	0.9664	514635004.1	DUP	* 0.0%		
10	0.8650	0.6107	3	1.3869	48.8044	4.36%	14.7537	0.5084	3.2964	12.8260		LCS		55.7891	87.5%

ASSAY 6-Jul-20 9:13:36

Protocol id 9 Ba-133_1
Time limit
Count limit
Isotope Ba-133_1
Protocol date 7/6/2020
Run id. 1460

Samp_ID	POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR	% RECOVERY	COUNT TIME
REF		1	94	1	180	786.5	262.11	3.57	09:13:36
514635001		2	94	2	180	654	217.94	3.91	83.15 09:16:50
514635002		3	94	3	180	698	232.62	3.79	88.75 09:20:04
514635003		4	94	4	180	680	226.62	3.83	86.46 09:23:18
514635004		5	94	5	180	681	226.95	3.83	86.59 09:26:32
514635005		1	20	1	180	758	252.61	3.63	96.38 09:30:21
514635006		2	20	2	180	838.5	279.47	3.45	106.62 09:33:35
514635007		3	20	3	180	653.5	217.79	3.91	83.09 09:36:48
1204588599		4	20	4	180	698.5	232.78	3.78	88.81 09:40:02
1204588600		5	20	5	180	686.5	228.79	3.82	87.29 09:43:17
1204588601		1	15	1	180	758.5	252.78	3.63	96.44 09:47:04

END OF ASSAY

SampleID	Instr	Time (min.)	Alpha Counts	Beta Counts	Count Start Time	Count End Time	Machine	Batch ID
514635001	6A	60	10	108	7/6/2020 10:22	7/6/2020 11:22	PIC	2016186
514635002	6C	60	1	80	7/6/2020 10:22	7/6/2020 11:22	PIC	2016186
514635003	7A	60	3	39	7/6/2020 10:23	7/6/2020 11:23	PIC	2016186
514635004	7B	60	4	28	7/6/2020 10:23	7/6/2020 11:23	PIC	2016186
514635005	7C	60	8	27	7/6/2020 10:23	7/6/2020 11:23	PIC	2016186
514635006	8A	60	8	66	7/6/2020 10:23	7/6/2020 11:23	PIC	2016186
514635007	8B	60	5	47	7/6/2020 10:23	7/6/2020 11:23	PIC	2016186
1204588599	8D	60	3	53	7/6/2020 10:23	7/6/2020 11:23	PIC	2016186
1204588600	9A	60	12	59	7/6/2020 10:23	7/6/2020 11:23	PIC	2016186
1204588601	9B	60	11	928	7/6/2020 10:23	7/6/2020 11:23	PIC	2016186

Continuing Calibration Data

Gas Flow Proportional Counter Checks for 06-Jul-2020

Detectors LB4100 A1 through J4 and PIC 1A through 14D and G5400W 1W through 1Z

Short Name	Status	Parmname	Run Time	Count Time	CPM or dec	Low Limit	High Limit	Stdev
LB4100C1	Above	Beta bkg	06-Jul 05:13	60	2.183	0.534	3.326	+0.54
LB4100C4	Above	Alpha XTalk	06-Jul 04:57	5	1.869	0.171	0.572	+22.39
LB4100C4	Above	Beta bkg	06-Jul 05:13	60	11564	0.452	2.039	+43,708.33
LB4100C4	Above	Beta eff	06-Jul 05:04	5	29385	18000	20220	+27.77
LB4100E1	Above	Alpha bkg	06-Jul 05:00	60	0.467	-5.45E-2	0.290	+6.09
LB4100E2	Above	Beta bkg	06-Jul 05:00	60	2.800	0.950	2.756	+3.15
LB4100E3	Above	Alpha bkg	06-Jul 05:00	60	2.400	-4.47E-2	0.174	+63.98
LB4100E3	Above	Beta bkg	06-Jul 05:00	60	3.533	-1.31E+0	6.766	+0.60
LB4100E4	Above	Beta bkg	06-Jul 05:00	60	2.600	0.326	2.646	+2.88
LB4100F1	Above	Beta bkg	06-Jul 05:00	60	1.983	0.531	1.960	+3.10
LB4100F3	Above	Alpha bkg	06-Jul 05:00	60	0.333	-7.68E-2	0.332	+3.02
LB4100G1	need 2nd	Beta bkg	06-Jul 05:00	60	1.000	0.375	1.637	-0.03
LB4100G2	Above	Beta bkg	06-Jul 05:00	60	374	0.721	1.648	+2,412.85
LB4100G3	Above	Beta bkg	06-Jul 05:00	60	29.533	0.810	1.674	+196.47
LB4100I2	Above	Beta bkg	06-Jul 08:41	60	34.450	0.425	2.438	+98.40
LB4100I4	Above	Beta bkg	06-Jul 08:41	60	3.867	-1.74E-2	2.470	+6.37
PIC4B	Above	Alpha bkg	06-Jul 05:22	60	0.383	-5.36E-2	0.301	+4.39
PIC6B	need 2nd	Beta bkg	06-Jul 05:36	60	1.667	0.886	2.210	+0.54
PIC10B	Above	Beta bkg	06-Jul 05:37	60	3.117	-6.98E-1	2.876	+3.40
PIC10C	Above	Beta bkg	06-Jul 05:37	60	3.833	0.098	1.332	+15.16
PIC12A	Above	Beta bkg	06-Jul 05:41	60	2.083	0.074	1.397	+6.11
PIC13D	need 2nd	Alpha eff	06-Jul 05:33	5	10568	10250	10650	+1.77
PIC13D	need 2nd	Alpha XTalk	06-Jul 05:33	5	0.286	0.267	0.307	-0.11
PIC13D	Above	Beta bkg	06-Jul 05:48	60	4.133	0.758	2.410	+9.26
PIC13D	need 2nd	Beta eff	06-Jul 05:40	5	24626	24080	25350	-0.42
PIC14D	Above	Alpha bkg	06-Jul 05:48	60	0.417	-8.26E-2	0.242	+6.23

INSTRUMENTS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

The following detectors may not have properly transferred to the LIMS system

G5400W1W	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
G5400W1X	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
G5400W1Y	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
G5400W1Z	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC3A	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC3B	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC3C	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC3D	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC6D	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC13C	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk

Reviewed by 

Date 7/6/20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: GFPC

Batch ID: 2016186

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
514635001	SAMPLE	JXC9	PIC6A	JUL-06-20 10:22:56	DONE	25mm Filter	01-JUN-20 00:00
514635002	SAMPLE	JXC9	PIC6C	JUL-06-20 10:22:56	DONE	25mm Filter	01-JUN-20 00:00
514635003	SAMPLE	JXC9	PIC7A	JUL-06-20 10:23:02	DONE	25mm Filter	01-JUN-20 00:00
514635004	SAMPLE	JXC9	PIC7B	JUL-06-20 10:23:02	DONE	25mm Filter	01-JUN-20 00:00
514635005	SAMPLE	JXC9	PIC7C	JUL-06-20 10:23:03	DONE	25mm Filter	01-JUN-20 00:00
514635006	SAMPLE	JXC9	PIC8A	JUL-06-20 10:23:06	DONE	25mm Filter	01-JUN-20 00:00
514635007	SAMPLE	JXC9	PIC8B	JUL-06-20 10:23:07	DONE	25mm Filter	01-JUN-20 00:00
1204588599	MB	JXC9	PIC8D	JUL-06-20 10:23:07	DONE	25mm Filter	01-JUN-20 00:00
1204588600	DUP	JXC9	PIC9A	JUL-06-20 10:23:11	DONE	25mm Filter	01-JUN-20 00:00
1204588601	LCS	JXC9	PIC9B	JUL-06-20 10:23:12	DONE	25mm Filter	01-JUN-20 00:00

Lucas Cell Raw Data

Batch 2016497 Check-list

This check-list was completed on 08-JUL-20 by Elizabeth Krouse

This batch was reviewed by Elizabeth Krouse on 08-JUL-20 and Lyndsey Pace on 08-JUL-20.

Batch ID:
2016497

Product:
LUC26RAL

Description: Lucas Cell Radium 226
GL-RAD-A-008

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the matrix spike (MS/MSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-226 in Liquid

Batch ID: 2016497
Analyst: Michael Hance (MXH8)
Method: EPA 903.1 Modified
Lab SOP: GL-RAD-A-008 REV# 15
Instrument: GFC-18150253

Due Dates for Lab: 09-JUL-2020			Package: 11-JUL-2020	SDG: 13-JUL-2020		
Type	Sample ID	Description	Serial Number	Spike Amount	Spike Units	
LCS	1204589176	Radium-226 SPIKE	1715-E	.1	mL	
MS	1204589175	Radium-226 SPIKE	1715-E	.1	mL	

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	End Degas (date)	CELL #	End Transfer (date)	Start Count Time (date)	Background Counts	Total Counts
1	514635001	01-JUL-2020	1	500	07/01/20 11:30	108	07/08/20 05:45	07/08/20 08:45	5	29
2	514635002	01-JUL-2020	1	500	07/01/20 11:30	207	07/08/20 05:45	07/08/20 08:45	3	37
3	514635003	01-JUL-2020	1	500	07/01/20 11:30	303	07/08/20 05:45	07/08/20 08:45	8	24
4	514635004	01-JUL-2020	1	500	07/01/20 11:30	407	07/08/20 05:45	07/08/20 08:45	2	11
5	514635005	01-JUL-2020	1	500	07/01/20 11:30	503	07/08/20 05:45	07/08/20 08:45	4	20
6	514635006	01-JUL-2020	1	500	07/01/20 11:30	605	07/08/20 05:45	07/08/20 08:45	5	30
7	514635007	01-JUL-2020	1	500	07/01/20 11:30	705	07/08/20 05:45	07/08/20 08:45	5	11
8	1204589173 MB	01-JUL-2020	1	500	07/01/20 11:30	805	07/08/20 05:45	07/08/20 08:45	7	15
9	1204589174 DUP (514635001)	01-JUL-2020	1	500	07/01/20 11:30	102	07/08/20 06:15	07/08/20 09:15	1	16
10	1204589175 MS (514635001)	01-JUL-2020	1	500	07/01/20 11:30	206	07/08/20 06:15	07/08/20 09:15	6	1266
11	1204589176 LCS	01-JUL-2020	1	500	07/01/20 11:30	301	07/08/20 06:15	07/08/20 09:15	5	1222

Reagent/Solvent Lot ID	Description	Amount	Comments:
			Spike Pipet ID: RAD-RA226-2766953 Bkg Count Time: 30 Minutes Sample Count Time: 30 Minutes Data Entry Date2: 08-JUL-2020 08:45 GFC-18150253 Michael Hance Data Entry Date2: 08-JUL-2020 09:15 GFC-18150253 Michael Hance Data Entry Date2: 01-JUL-2020 00:00 Data Entry Date3: 01-JUL-2020 00:00

Radium-226 Liquid

Filename : RA226.XLS
 File type : Excel
 Version # : 1.3.2

Batch : 2016497
 Analyst : MIC02086
 Prep Date : 7/1/2020
 Ra-226 Method Uncertainty : 0.073648

Procedure Code : LUC26RAL
 Parmname : Radium-226
 Required MDA : 1 pCi/L
 Halfife of Ra-226 : 1600 years
 Ra-226 Abundance : 1.00
 Halfife of Rn-222 : 3.8235 days

Batch counted on : LUCAS CELL DETECTOR
 BKG Count time : 30 min

Sample Characteristics					Count Raw Data						Background	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Cell Number	Counting Time (min.)	Gross Counts	Gross CPM	Background Counts	Background CPM	Count Time (min.)	Cell Efficiency (cpm/dpm)
1	514635001.1	0.5000	2.0256E-05	6/23/2020 12:22	108	30	29	0.967	5	0.167	30	2.0199
2	514635002.1	0.5000	2.0256E-05	6/23/2020 16:01	207	30	37	1.233	3	0.100	30	1.9650
3	514635003.1	0.5000	2.0256E-05	6/23/2020 10:15	303	30	24	0.800	8	0.267	30	1.8940
4	514635004.1	0.5000	2.0256E-05	6/23/2020 16:46	407	30	11	0.367	2	0.067	30	1.7620
5	514635005.1	0.5000	2.0256E-05	6/23/2020 14:16	503	30	20	0.667	4	0.133	30	1.8400
6	514635006.1	0.5000	2.0256E-05	6/23/2020 10:15	605	30	30	1.000	5	0.167	30	1.9170
7	514635007.1	0.5000	2.0256E-05	6/23/2020 7:30	705	30	11	0.367	5	0.167	30	1.8190
8	1204589173.1	0.5000	2.0256E-05	7/1/2020 0:00	805	30	15	0.500	7	0.233	30	1.4670
9	1204589174.1	0.5000	2.0256E-05	6/23/2020 12:22	102	30	16	0.533	1	0.033	30	1.7541
10	1204589175.1	0.5000	2.0256E-05	6/23/2020 12:22	206	30	1266	42.200	6	0.200	30	1.8380
11	1204589176.1	0.5000	2.0256E-05	7/1/2020 0:00	301	30	1222	40.733	5	0.167	30	1.7333

RA2016497.xls

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-008
 Instrument SOP: GL-RAD-I-007

Cell Efficiency Error (%)	Cell Calibration Date	Cell Calibration Due Date	De-Gas Date/Time	Rn-222 Ingrowth End Date/Time	Count Start Date/Time	Rn-222 Corrections			Ra-226 Decay
						De-Gas to Ingrowth	Ingrowth to Count	During Count	
6.875%	5/1/2020	4/30/2021	7/1/2020 11:30	7/8/2020 5:45	7/8/2020 8:45	0.706	0.978	1.002	1.000
4.300%	8/1/2019	7/31/2020	7/1/2020 11:30	7/8/2020 5:45	7/8/2020 8:45	0.706	0.978	1.002	1.000
9.523%	1/20/2020	12/31/2020	7/1/2020 11:30	7/8/2020 5:45	7/8/2020 8:45	0.706	0.978	1.002	1.000
5.000%	3/1/2020	1/31/2021	7/1/2020 11:30	7/8/2020 5:45	7/8/2020 8:45	0.706	0.978	1.002	1.000
7.300%	6/2/2020	5/31/2021	7/1/2020 11:30	7/8/2020 5:45	7/8/2020 8:45	0.706	0.978	1.002	1.000
2.700%	7/2/2020	6/30/2021	7/1/2020 11:30	7/8/2020 5:45	7/8/2020 8:45	0.706	0.978	1.002	1.000
4.200%	11/1/2019	10/31/2020	7/1/2020 11:30	7/8/2020 5:45	7/8/2020 8:45	0.706	0.978	1.002	1.000
6.300%	3/31/2020	3/31/2021	7/1/2020 11:30	7/8/2020 5:45	7/8/2020 8:45	0.706	0.978	1.002	1.000
2.511%	5/1/2020	4/30/2021	7/1/2020 11:30	7/8/2020 6:15	7/8/2020 9:15	0.708	0.978	1.002	1.000
3.700%	8/1/2019	7/31/2020	7/1/2020 11:30	7/8/2020 6:15	7/8/2020 9:15	0.708	0.978	1.002	1.000
4.681%	1/20/2020	12/31/2020	7/1/2020 11:30	7/8/2020 6:15	7/8/2020 9:15	0.708	0.978	1.002	1.000

- Notes:
 1 - Results are decay corrected to Sample Date/Time
 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : 1715-E
Spike Exp Date : 5/21/2021
Spike Activity (dpm/ml): 300.29
Spike Volume Added: 0.10

LCS S/N : 1715-E
LCS Exp Date : 5/21/2021
LCS Activity (dpm/ml): 300.29
LCS Volume Added: 0.10

Results																
Pos.	Decision Level pCi/L	Critical Level pCi/L	Required MDA pCi/L	MDA pCi/L	Sample Act. Conc. pCi/L	Sample Act. Error %	Net Count Rate CPM	Net Count Rate Error CPM	2 SIGMA Counting Uncertainty pCi/L	2 SIGMA Total Prop. Uncertainty pCi/L	Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery
1	0.1589	0.1122	1	0.2891	0.5177	25.25%	0.8000	0.1944	0.2465	0.2669		SAMPLE				
2	0.1265	0.0893	1	0.2452	0.7538	19.09%	1.1333	0.2108	0.2748	0.3024		SAMPLE				
3	0.2144	0.1514	1	0.3717	0.3681	36.62%	0.5333	0.1886	0.2550	0.2694		SAMPLE				
4	0.1152	0.0813	1	0.2369	0.2225	40.37%	0.3000	0.1202	0.1747	0.1790		SAMPLE				
5	0.1560	0.1102	1	0.2914	0.3788	31.48%	0.5333	0.1633	0.2274	0.2400		SAMPLE				
6	0.1675	0.1182	1	0.3046	0.5682	23.82%	0.8333	0.1972	0.2635	0.2776		SAMPLE				
7	0.1765	0.1246	1	0.3210	0.1437	66.80%	0.2000	0.1333	0.1878	0.1893		SAMPLE				
8	0.2589	0.1828	1	0.4547	0.2376	58.97%	0.2667	0.1563	0.2730	0.2767		MB				
9	0.0817	0.0577	1	0.1898	0.3720	27.60%	0.5000	0.1374	0.2004	0.2083	514635001.1	DUP	32.7%			
10	0.1910	0.1349	1	0.3407	29.8202	4.66%	42.0000	1.1888	1.6544	5.0934	514635001.1	MS			27.0532	108.3%
11	0.1849	0.1306	1	0.3364	30.5423	5.50%	40.5667	1.1676	1.7230	5.5009		LCS			27.0530	112.9%

Continuing Calibration Data

[IMAGE]

Ludlum Alpha Scintillation Counter Checks for 08-JUL-2020

Short Name	Parmname	Run Time	Count Time	Counts	CPM	Stdev	Status	Comments
LUCAS1	EFF	07:04	1	1.28E+05	128291	1.64		
LUCAS2	EFF	07:04	1	1.35E+05	135067	1.47		
LUCAS3	EFF	07:04	1	1.37E+05	137202	1.3		
LUCAS4	EFF	07:04	1	1.31E+05	131366	2.08		
LUCAS5	EFF	07:04	1	1.32E+05	132084	0.63		
LUCAS6	EFF	07:04	1	1.32E+05	132321	-2.48		
LUCAS7	EFF	07:04	1	1.37E+05	136544	1.07		
LUCAS8	EFF	07:04	1	1.41E+05	140828	2.48		

Reviewed by:



Lyndsey Pace

Date: 08-JUL-20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: LUCAS CELL DETECTOR

Batch ID: 2016497

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
514635001	SAMPLE	MXH8	LUCAS1	JUL-08-20 08:45:00	DONE	Lucas Cell	01-MAY-20 00:00
514635002	SAMPLE	MXH8	LUCAS2	JUL-08-20 08:45:00	DONE	Lucas Cell	01-AUG-19 00:00
514635003	SAMPLE	MXH8	LUCAS3	JUL-08-20 08:45:00	DONE	Lucas Cell	20-JAN-20 00:00
514635004	SAMPLE	MXH8	LUCAS4	JUL-08-20 08:45:00	DONE	Lucas Cell	01-MAR-20 00:00
514635005	SAMPLE	MXH8	LUCAS5	JUL-08-20 08:45:00	DONE	Lucas Cell	02-JUN-20 00:00
514635006	SAMPLE	MXH8	LUCAS6	JUL-08-20 08:45:00	DONE	Lucas Cell	02-JUL-20 00:00
514635007	SAMPLE	MXH8	LUCAS7	JUL-08-20 08:45:00	DONE	Lucas Cell	01-NOV-19 00:00
1204589173	MB	MXH8	LUCAS8	JUL-08-20 08:45:00	DONE	Lucas Cell	31-MAR-20 00:00
1204589174	DUP	MXH8	LUCAS1	JUL-08-20 09:15:00	DONE	Lucas Cell	01-MAY-20 00:00
1204589175	MS	MXH8	LUCAS2	JUL-08-20 09:15:00	DONE	Lucas Cell	01-AUG-19 00:00
1204589176	LCS	MXH8	LUCAS3	JUL-08-20 09:15:00	DONE	Lucas Cell	20-JAN-20 00:00



Environmental Laboratory
 1232 Haco Drive
 Lansing
 Michigan, 48910

CHAIN OF CUSTODY

Page 1 of 1

Phone: (517)702-6372

Lab Work Order Number L006016

Client Name BWL - Erickson Station		Project Name Erickson GMP		Requested Analyses						Requested Turn Around			
Client Contact Cheryl Loudon		Project Number [none]		Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Pb, Li, Hg, Mo, Se, Tl (same as 1st event)	TSS	TDS, Cl, SO4, F-	Radium 226	Radium 228				Rush requests subject to additional charge.	
Address 3725 S. Canal		Project Description										Rush requests subject to lab approval.	
City Lansing		PD Number											
State/Zip MI, 48917		Shipped By											
Phone (517) 702-6396	Fax (517) 702-6373	Tracking Number											
Sampler Marc Wahrer													

Sample Name or File ID	Sampled Date	Sampled Time	Sample Type Grab/Composite	Matrix Code	Container Count	Preservation Code						Sample	Comments	
						HNO3	NONE	NONE	HNO3	HNO3				
MW-1	06/23/2020	12:22	G	GW	5	1	1	1	1	1				
MW-2	06/23/2020	16:01	G	GW	5	1	1	1	1	1				
MW-4	06/23/2020	10:15	G	GW	5	1	1	1	1	1				
MW-5	06/23/2020	16:46	G	GW	5	1	1	1	1	1				
MW-6	06/23/2020	14:16	G	GW	5	1	1	1	1	1				
MW-4 Duplicate	06/23/2020	10:15	G	GW	5	1	1	1	1	1				
Field Blank	06/23/2020	07:30	G	GW	5	1	1	1	1	1				

Relinquished By 	Date/Time 6/24/2020 7:40	Received By Kelly Gleason	Date/Time 6/24/2020 7:40	
Relinquished By	Date/Time	Received By	Date/Time	Comments
Relinquished By	Date/Time	Received By	Date/Time	
Relinquished By	Date/Time	Received By	Date/Time	
Cooler Numbers and Temperatures Default Cooler				



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ERICKSON GMP

SDG Batch:

15917

Pages 1 - 311



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PROJECT: ERICKSON GMP

SDG Batch:
15917.01

Prepared by:
Merit Laboratories, Inc.

September 3, 2020

Inorganics Inventory Sheet - SDG: S15917

Laboratory Name: Merit Laboratories, Inc.
City / State: East Lansing, MI
Sample Delivery Group: S15917.01 - .07

Deliverable	References		Pages		Checklist	
	Form	CLP	From	To	Lab	Audit
1. Inventory Sheet (not numbered)	This	DC-2			<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. SDG Case Narrative			1	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Analytical Summary Report			3	34	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. ICP/MS Metals Data			35	209		
Sequence / Injection Log		F.0			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Sheet		F. I			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initial Calibration and Calibration Verification		F. IIA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRDL Standards		F. IIB			<input type="checkbox"/>	<input type="checkbox"/>
Blanks		F. III			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Interference Check Sample		F. IVB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		F. VA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Digest Spike Sample Recovery		F. VB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duplicates		F. VI			<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		F. VII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Serial Dilutions		F. VIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		F. XIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP/MS Tune		F. XIV			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Internal Standard Relative Intensity Summary		F. XV			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument Detection Limits (IDL) & MDLs		F. IX			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Linear Ranges		F. XI			<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP/MS Raw Data					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation / Digestion Log		F. XII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Mercury Data			210	228		
Sequence / Injection Log		F.0			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Sheet		F. I			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initial Calibration and Calibration Verification		F. IIA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRDL Standards		F. IIB			<input type="checkbox"/>	<input type="checkbox"/>
Blanks		F. III			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		F. VA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Digest Spike Sample Recovery		F. VB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duplicates		F. VI			<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		F. VII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		F. XIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Mercury Cold Vapor Raw Data					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation / Digestion Log					<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Ion Chromatography Data			229	305		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Calibration Curve - data and evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Total Suspended Solids Data			306	306		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>

Inorganics Inventory Sheet - SDG: S15917

Deliverable	References		Pages		Checklist	
	Form	CLP	From	To	Lab	Audit
8. Total Dissolved Solids Data			307	307		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Shipping / Receiving Documents			308	311		
Chain-of-Custody					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample log-in sheet					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample Receipt					<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Subcontracted Analysis Report						
GEL Laboratories – Radiological Analysis (Total Pages 51)					<input checked="" type="checkbox"/>	<input type="checkbox"/>



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CASE NARRATIVE
CLIENT: BOARD OF WATER & LIGHT
PROJECT: ERICKSON GMP
Merit IDs: S15917.01-S15917.07

- Field Sampling:** Marc Wahrer performed the fieldwork.
- Analytical Bottles:** All bottles were sent with the appropriate preservation in it. Please see the bottle list attached.
- Sample Receiving:** All samples were received by the laboratory (07/22/2020). Dates and signatures can be found on the Chain of Custody Records. The sample receipts specify the actual tags and bottles received and logged into the laboratory “vlims” system.

ANALYSES

Metals: All metal analyses were performed according to Method 200.8. The metal digestion was performed according to Method 3015A. The QC requirements were followed for this specific project and method-specified criteria were met.

Outliers:

Run Batch MT5-20-0728A

- The MS had low recovery for Calcium.

Notes: Dilution test not applicable if measured concentration is less than 100 times MDL.

Mercury: All mercury QC requirements were met according to the specifications in Method 245.1. *Outliers:* None

Fluoride: All fluoride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Chloride: All chloride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Sulfate: All Sulfate QC requirements were met according to the specifications in Method 300.0. *Outliers:* None



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Total Suspended Solids: All total suspended solids QC requirements were met according to the specifications in Method 2540 D. *Outliers:* None

Total Dissolved Solids: All total suspended solids QC requirements were met according to the specifications in Method 2540 C. *Outliers:* None

Radium 226 & 228: All radiological analysis were subcontracted out to GEL Laboratories. GEL Laboratories analytical report is included.

Data Reporting: The analytical reports are reflective of what is on a given Chain-of-Custody record (COC). Merit's IDs were assigned to the samples as they were delivered and accepted by our log-in staff.

"I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness, for other than the condition detailed above. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature."

Barb Ball
QA Officer

09/03/2020

Date



Report ID: S15917.01(01)
Generated on 08/20/2020

Report to
Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary
Lab Sample ID(s): S15917.01-S15917.07
Project: Erickson GMP
Collected Date(s): 07/21/2020
Submitted Date/Time: 07/22/2020 13:53
Sampled by: Marc Wahrer
P.O. #:

Table of Contents
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Sample Summary (Page 5)

Maya Murshak
Technical Director



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

Report Narrative

All metals results are reported as total.

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
E300.0	EPA Method 300.0 Revision 2.1
SM2540C	Standard Method 2540 C 2011
SM2540D	Standard Method 2540 D 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007



Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S15917.01	MW-1 L007009-01	Groundwater	07/21/20 13:35
S15917.02	MW-2 L007009-02	Groundwater	07/21/20 17:06
S15917.03	MW-4 L007009-03	Groundwater	07/21/20 11:05
S15917.04	MW-5 L007009-04	Groundwater	07/21/20 17:50
S15917.05	MW-6 L007009-05	Groundwater	07/21/20 15:23
S15917.06	MW-4 Duplicate L007009-06	Groundwater	07/21/20 11:05
S15917.07	Field Blank L007009-07	Water	07/21/20 07:35



Analytical Laboratory Report

Final Report

Lab Sample ID: S15917.01

Sample Tag: MW-1 L007009-01

Collected Date/Time: 07/21/2020 13:35

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.1	IR
2	1L Plastic	None	Yes	4.1	IR
1	125ml Plastic	HNO3	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/23/20 09:45	JRH	
Metal Digestion	Completed	SW3015A	07/27/20 10:00	JRH	

Inorganics

Method: E300.0, Run Date: 07/23/20 11:01, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 07/23/20 10:58, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	64	10	0.16	mg/L	10	16887-00-6	
Sulfate	75	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 07/24/20 15:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	782	20	1	mg/L	2		

Method: SM2540D, Run Date: 07/28/20 21:00, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	37	3	1	mg/L	5.00		

Metals

Method: E200.8, Run Date: 07/28/20 17:10, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	156	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 07/27/20 15:47, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.004	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.128	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	0.38	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.033	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Final Report

Lab Sample ID: S15917.01 (continued)

Sample Tag: MW-1 L007009-01

Method: E200.8, Run Date: 07/27/20 15:47, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 07/23/20 13:10, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 08/20/20 11:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S15917.02

Sample Tag: MW-2 L007009-02

Collected Date/Time: 07/21/2020 17:06

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.1	IR
2	1L Plastic	None	Yes	4.1	IR
1	125ml Plastic	HNO3	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/23/20 09:45	JRH	
Metal Digestion	Completed	SW3015A	07/27/20 10:00	JRH	

Inorganics

Method: E300.0, Run Date: 07/23/20 11:14, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 07/23/20 11:11, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	81	25	0.40	mg/L	25	16887-00-6	
Sulfate	549	25	1.5	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 07/24/20 15:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,390	20	1	mg/L	2		

Method: SM2540D, Run Date: 07/28/20 21:00, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 07/28/20 17:11, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	271	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 07/27/20 15:49, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.036	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	4.61	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.053	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.007	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Final Report

Lab Sample ID: S15917.02 (continued)

Sample Tag: MW-2 L007009-02

Method: E200.8, Run Date: 07/27/20 15:49, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 07/23/20 13:12, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 08/20/20 11:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S15917.03

Sample Tag: MW-4 L007009-03

Collected Date/Time: 07/21/2020 11:05

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.1	IR
2	1L Plastic	None	Yes	4.1	IR
1	125ml Plastic	HNO3	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/23/20 09:45	JRH	
Metal Digestion	Completed	SW3015A	07/27/20 10:00	JRH	

Inorganics

Method: E300.0, Run Date: 07/23/20 11:26, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 07/23/20 11:24, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	72	10	0.16	mg/L	10	16887-00-6	
Sulfate	56	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 07/24/20 15:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	540	20	1	mg/L	2		

Method: SM2540D, Run Date: 07/28/20 21:00, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 07/28/20 17:15, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	105	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 07/27/20 15:51, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.007	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.146	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	0.06	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.009	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Final Report

Lab Sample ID: S15917.03 (continued)

Sample Tag: MW-4 L007009-03

Method: E200.8, Run Date: 07/27/20 15:51, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 07/23/20 13:14, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 08/20/20 11:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S15917.04

Sample Tag: MW-5 L007009-04

Collected Date/Time: 07/21/2020 17:50

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.1	IR
2	1L Plastic	None	Yes	4.1	IR
1	125ml Plastic	HNO3	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/23/20 09:45	JRH	
Metal Digestion	Completed	SW3015A	07/27/20 10:00	JRH	

Inorganics

Method: E300.0, Run Date: 07/23/20 11:39, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 07/23/20 11:37, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	80	50	0.80	mg/L	50	16887-00-6	
Sulfate	877	50	3.0	mg/L	50	14808-79-8	

Method: SM2540C, Run Date: 07/24/20 15:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,640	20	1	mg/L	2		

Method: SM2540D, Run Date: 07/28/20 21:00, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	37	3	1	mg/L	2.00		

Metals

Method: E200.8, Run Date: 07/28/20 17:16, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	251	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 07/27/20 15:53, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.041	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	4.57	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.074	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.052	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Final Report

Lab Sample ID: S15917.04 (continued)

Sample Tag: MW-5 L007009-04

Method: E200.8, Run Date: 07/27/20 15:53, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 07/23/20 13:15, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 08/20/20 11:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S15917.05

Sample Tag: MW-6 L007009-05

Collected Date/Time: 07/21/2020 15:23

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.1	IR
2	1L Plastic	None	Yes	4.1	IR
1	125ml Plastic	HNO3	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/23/20 09:45	JRH	
Metal Digestion	Completed	SW3015A	07/27/20 10:00	JRH	

Inorganics

Method: E300.0, Run Date: 07/23/20 11:52, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 07/23/20 11:50, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	33	10	0.16	mg/L	10	16887-00-6	
Sulfate	183	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 07/24/20 15:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	738	20	1	mg/L	2		

Method: SM2540D, Run Date: 07/28/20 21:00, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 07/28/20 17:18, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	161	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 07/27/20 15:55, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.044	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	0.75	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.041	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.025	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Final Report

Lab Sample ID: S15917.05 (continued)

Sample Tag: MW-6 L007009-05

Method: E200.8, Run Date: 07/27/20 15:55, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 07/23/20 13:17, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 08/20/20 11:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S15917.06

Sample Tag: MW-4 Duplicate L007009-06

Collected Date/Time: 07/21/2020 11:05

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.1	IR
2	1L Plastic	None	Yes	4.1	IR
1	125ml Plastic	HNO3	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/23/20 09:45	JRH	
Metal Digestion	Completed	SW3015A	07/27/20 10:00	JRH	

Inorganics

Method: E300.0, Run Date: 07/23/20 12:05, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 07/23/20 12:03, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	72	10	0.16	mg/L	10	16887-00-6	
Sulfate	56	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 07/24/20 15:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	534	20	1	mg/L	2		

Method: SM2540D, Run Date: 07/28/20 21:00, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 07/28/20 17:19, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	102	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 07/27/20 15:57, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.007	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.147	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	0.05	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.008	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Final Report

Lab Sample ID: S15917.06 (continued)

Sample Tag: MW-4 Duplicate L007009-06

Method: E200.8, Run Date: 07/27/20 15:57, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 07/23/20 13:26, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 08/20/20 11:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S15917.07

Sample Tag: Field Blank L007009-07

Collected Date/Time: 07/21/2020 07:35

Matrix: Water

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.1	IR
2	1L Plastic	None	Yes	4.1	IR
1	125ml Plastic	HNO3	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	07/23/20 09:45	JRH	
Metal Digestion	Completed	SW3015A	07/27/20 10:00	JRH	

Inorganics

Method: E300.0, Run Date: 07/23/20 12:18, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	0.5	0.04	mg/L	2.5	16984-48-8	

Method: E300.0, Run Date: 07/23/20 12:16, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	2.5	0.04	mg/L	2.5	16887-00-6	
Sulfate	Not detected	2.5	0.15	mg/L	2.5	14808-79-8	

Method: SM2540C, Run Date: 07/24/20 15:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	Not detected	20	1	mg/L	2		

Method: SM2540D, Run Date: 07/28/20 21:00, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 07/28/20 17:27, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	Not detected	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 07/27/20 15:45, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0010	mg/L	2	7440-36-0	
Arsenic	Not detected	0.002	0.00010	mg/L	2	7440-38-2	
Barium	Not detected	0.005	0.000065	mg/L	2	7440-39-3	
Beryllium	Not detected	0.001	0.000086	mg/L	2	7440-41-7	
Boron	Not detected	0.04	0.00070	mg/L	2	7440-42-8	
Cadmium	Not detected	0.0005	0.000076	mg/L	2	7440-43-9	
Chromium	Not detected	0.005	0.000039	mg/L	2	7440-47-3	
Cobalt	Not detected	0.005	0.000043	mg/L	2	7440-48-4	
Lead	Not detected	0.003	0.000076	mg/L	2	7439-92-1	
Lithium*	Not detected	0.005	0.00065	mg/L	2	7439-93-2	
Molybdenum	Not detected	0.005	0.000087	mg/L	2	7439-98-7	
Selenium	Not detected	0.005	0.00084	mg/L	2	7782-49-2	



Analytical Laboratory Report

Final Report

Lab Sample ID: S15917.07 (continued)

Sample Tag: Field Blank L007009-07

Method: E200.8, Run Date: 07/27/20 15:45, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000034	mg/L	2	7440-28-0	

Method: E245.1, Run Date: 07/23/20 13:19, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 08/20/20 11:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Quality Control Cover Page

Report ID: S15917.01(01)
Report Date: 08/20/2020
Project: Erickson GMP
Lab Sample ID(s): S15917.01-S15917.07

Report to:

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Sample ID	Sample Tag	Collected	Matrix	Analysis Departments
S15917.01	MW-1 L007009-01	07/21/2020 13:35	Groundwater	Inorganics, Metals
S15917.02	MW-2 L007009-02	07/21/2020 17:06	Groundwater	Inorganics, Metals
S15917.03	MW-4 L007009-03	07/21/2020 11:05	Groundwater	Inorganics, Metals
S15917.04	MW-5 L007009-04	07/21/2020 17:50	Groundwater	Inorganics, Metals
S15917.05	MW-6 L007009-05	07/21/2020 15:23	Groundwater	Inorganics, Metals
S15917.06	MW-4 Duplicate L007009-06	07/21/2020 11:05	Groundwater	Inorganics, Metals
S15917.07	Field Blank L007009-07	07/21/2020 07:35	Water	Inorganics, Metals

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager



Quality Control Report

Report ID: QC-S15917-01
Generated on 08/26/2020

Report to
Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: 517-702-6372 FAX:

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S15917.01-S15917.07
Project: Erickson GMP
Submitted Date/Time: 07/22/2020 13:53
Sampled by: Marc Wahrer
P.O. #:

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-8)
Prep Batch Summary (Pages 9-12)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S15917.01

Sample Tag: MW-1 L007009-01

Collected Date/Time: 07/21/2020 13:35

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	07/23/20 10:58	CL200723-W1-B	CL200723-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	07/23/20 11:01	FL200723-W1-A	FL200723-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	07/23/20 10:58	SFT200723-W1-B	SFT200723-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A	TDS200724A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A	TSS200728A	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Arsenic	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Barium	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Beryllium	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Boron	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cadmium	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Calcium	E200.8	07/28/20 17:10	MT5-20-0728A	MTD-072720-4	No	BLK/LCS/MS/MSD
Chromium	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cobalt	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lead	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lithium	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/23/20 13:10	HG2-HG3-20-0723AHGD-072320-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Selenium	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Thallium	E200.8	07/27/20 15:47	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S15917.02

Sample Tag: MW-2 L007009-02

Collected Date/Time: 07/21/2020 17:06

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	07/23/20 11:11	CL200723-W1-B	CL200723-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	07/23/20 11:14	FL200723-W1-A	FL200723-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	07/23/20 11:11	SFT200723-W1-B	SFT200723-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A	TDS200724A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A	TSS200728A	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Arsenic	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Barium	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Beryllium	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Boron	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cadmium	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Calcium	E200.8	07/28/20 17:11	MT5-20-0728A	MTD-072720-4	No	BLK/LCS/MS/MSD
Chromium	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cobalt	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lead	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lithium	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/23/20 13:12	HG2-HG3-20-0723AHGD-072320-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Selenium	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Thallium	E200.8	07/27/20 15:49	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S15917.03

Sample Tag: MW-4 L007009-03

Collected Date/Time: 07/21/2020 11:05

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	07/23/20 11:24	CL200723-W1-B	CL200723-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	07/23/20 11:26	FL200723-W1-A	FL200723-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	07/23/20 11:24	SFT200723-W1-B	SFT200723-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A	TDS200724A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A	TSS200728A	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Arsenic	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Barium	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Beryllium	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Boron	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cadmium	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Calcium	E200.8	07/28/20 17:15	MT5-20-0728A	MTD-072720-4	No	BLK/LCS/MS/MSD
Chromium	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cobalt	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lead	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lithium	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/23/20 13:14	HG2-HG3-20-0723AHGD	072320-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Selenium	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Thallium	E200.8	07/27/20 15:51	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S15917.04

Sample Tag: MW-5 L007009-04

Collected Date/Time: 07/21/2020 17:50

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	07/23/20 11:37	CL200723-W1-B	CL200723-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	07/23/20 11:39	FL200723-W1-A	FL200723-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	07/23/20 11:37	SFT200723-W1-B	SFT200723-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A	TDS200724A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A	TSS200728A	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Arsenic	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Barium	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Beryllium	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Boron	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cadmium	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Calcium	E200.8	07/28/20 17:16	MT5-20-0728A	MTD-072720-4	No	BLK/LCS/MS/MSD
Chromium	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cobalt	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lead	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lithium	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/23/20 13:15	HG2-HG3-20-0723AHGD-072320-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Selenium	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Thallium	E200.8	07/27/20 15:53	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S15917.05

Sample Tag: MW-6 L007009-05

Collected Date/Time: 07/21/2020 15:23

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	07/23/20 11:50	CL200723-W1-B	CL200723-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	07/23/20 11:52	FL200723-W1-A	FL200723-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	07/23/20 11:50	SFT200723-W1-B	SFT200723-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A	TDS200724A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A	TSS200728A	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Arsenic	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Barium	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Beryllium	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Boron	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cadmium	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Calcium	E200.8	07/28/20 17:18	MT5-20-0728A	MTD-072720-4	No	BLK/LCS/MS/MSD
Chromium	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cobalt	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lead	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lithium	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/23/20 13:17	HG2-HG3-20-0723AHGD-072320-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Selenium	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Thallium	E200.8	07/27/20 15:55	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S15917.06

Sample Tag: MW-4 Duplicate L007009-06

Collected Date/Time: 07/21/2020 11:05

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	07/23/20 12:03	CL200723-W1-B	CL200723-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	07/23/20 12:05	FL200723-W1-A	FL200723-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	07/23/20 12:03	SFT200723-W1-B	SFT200723-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A	TDS200724A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A	TSS200728A	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Arsenic	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Barium	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Beryllium	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Boron	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cadmium	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Calcium	E200.8	07/28/20 17:19	MT5-20-0728A	MTD-072720-4	No	BLK/LCS/MS/MSD
Chromium	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cobalt	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lead	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lithium	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/23/20 13:26	HG2-HG3-20-0723AHGD-072320-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Selenium	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Thallium	E200.8	07/27/20 15:57	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S15917.07

Sample Tag: Field Blank L007009-07

Collected Date/Time: 07/21/2020 07:35

Matrix: Water

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	07/23/20 12:16	CL200723-W1-B	CL200723-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	07/23/20 12:18	FL200723-W1-A	FL200723-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	07/23/20 12:16	SFT200723-W1-B	SFT200723-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A	TDS200724A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A	TSS200728A	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Arsenic	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Barium	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Beryllium	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Boron	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cadmium	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Calcium	E200.8	07/28/20 17:27	MT5-20-0728A	MTD-072720-4	No	BLK/LCS/MS/MSD
Chromium	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Cobalt	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lead	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Lithium	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Mercury	E245.1	07/23/20 13:19	HG2-HG3-20-0723AHGD-072320-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Selenium	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD
Thallium	E200.8	07/27/20 15:45	MT5-20-0727A	MTD-072720-4	No	BLK/LCS/MS/MSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: CL200723-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15917.01	Chloride	E300.0	07/23/20 10:58	CL200723-W1-B
S15917.02	Chloride	E300.0	07/23/20 11:11	CL200723-W1-B
S15917.03	Chloride	E300.0	07/23/20 11:24	CL200723-W1-B
S15917.04	Chloride	E300.0	07/23/20 11:37	CL200723-W1-B
S15917.05	Chloride	E300.0	07/23/20 11:50	CL200723-W1-B
S15917.06	Chloride	E300.0	07/23/20 12:03	CL200723-W1-B
S15917.07	Chloride	E300.0	07/23/20 12:16	CL200723-W1-B

Inorganics, Prep Batch ID: FL200723-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15917.01	Fluoride (Undistilled)	E300.0	07/23/20 11:01	FL200723-W1-A
S15917.02	Fluoride (Undistilled)	E300.0	07/23/20 11:14	FL200723-W1-A
S15917.03	Fluoride (Undistilled)	E300.0	07/23/20 11:26	FL200723-W1-A
S15917.04	Fluoride (Undistilled)	E300.0	07/23/20 11:39	FL200723-W1-A
S15917.05	Fluoride (Undistilled)	E300.0	07/23/20 11:52	FL200723-W1-A
S15917.06	Fluoride (Undistilled)	E300.0	07/23/20 12:05	FL200723-W1-A
S15917.07	Fluoride (Undistilled)	E300.0	07/23/20 12:18	FL200723-W1-A

Inorganics, Prep Batch ID: SFT200723-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15917.01	Sulfate	E300.0	07/23/20 10:58	SFT200723-W1-B
S15917.02	Sulfate	E300.0	07/23/20 11:11	SFT200723-W1-B
S15917.03	Sulfate	E300.0	07/23/20 11:24	SFT200723-W1-B
S15917.04	Sulfate	E300.0	07/23/20 11:37	SFT200723-W1-B
S15917.05	Sulfate	E300.0	07/23/20 11:50	SFT200723-W1-B
S15917.06	Sulfate	E300.0	07/23/20 12:03	SFT200723-W1-B
S15917.07	Sulfate	E300.0	07/23/20 12:16	SFT200723-W1-B

Inorganics, Prep Batch ID: TDS200724A

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15917.01	Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A
S15917.02	Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A
S15917.03	Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A
S15917.04	Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A
S15917.05	Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A
S15917.06	Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A
S15917.07	Total Dissolved Solids	SM2540C	07/24/20 15:05	TDS200724A

Inorganics, Prep Batch ID: TSS200728A

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15917.01	Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A
S15917.02	Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A
S15917.03	Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A
S15917.04	Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A
S15917.05	Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A
S15917.06	Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TSS200728A (continued)

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15917.07	Total Suspended Solids	SM2540D	07/28/20 21:00	TSS200728A

Metals, Prep Batch ID: HGD-072320-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15917.01	Mercury	E245.1	07/23/20 13:10	HG2-HG3-20-0723A
S15917.02	Mercury	E245.1	07/23/20 13:12	HG2-HG3-20-0723A
S15917.03	Mercury	E245.1	07/23/20 13:14	HG2-HG3-20-0723A
S15917.04	Mercury	E245.1	07/23/20 13:15	HG2-HG3-20-0723A
S15917.05	Mercury	E245.1	07/23/20 13:17	HG2-HG3-20-0723A
S15917.06	Mercury	E245.1	07/23/20 13:26	HG2-HG3-20-0723A
S15917.07	Mercury	E245.1	07/23/20 13:19	HG2-HG3-20-0723A

Metals, Prep Batch ID: MTD-072720-4

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15917.01	Antimony	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.01	Arsenic	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.01	Barium	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.01	Beryllium	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.01	Boron	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.01	Cadmium	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.01	Calcium	E200.8	07/28/20 17:10	MT5-20-0728A
S15917.01	Chromium	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.01	Cobalt	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.01	Lead	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.01	Lithium	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.01	Molybdenum	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.01	Selenium	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.01	Thallium	E200.8	07/27/20 15:47	MT5-20-0727A
S15917.02	Antimony	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.02	Arsenic	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.02	Barium	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.02	Beryllium	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.02	Boron	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.02	Cadmium	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.02	Calcium	E200.8	07/28/20 17:11	MT5-20-0728A
S15917.02	Chromium	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.02	Cobalt	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.02	Lead	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.02	Lithium	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.02	Molybdenum	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.02	Selenium	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.02	Thallium	E200.8	07/27/20 15:49	MT5-20-0727A
S15917.03	Antimony	E200.8	07/27/20 15:51	MT5-20-0727A
S15917.03	Arsenic	E200.8	07/27/20 15:51	MT5-20-0727A
S15917.03	Barium	E200.8	07/27/20 15:51	MT5-20-0727A
S15917.03	Beryllium	E200.8	07/27/20 15:51	MT5-20-0727A
S15917.03	Boron	E200.8	07/27/20 15:51	MT5-20-0727A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-072720-4 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15917.03	Cadmium	E200.8	07/27/20 15:51	MT5-20-0727A
S15917.03	Calcium	E200.8	07/28/20 17:15	MT5-20-0728A
S15917.03	Chromium	E200.8	07/27/20 15:51	MT5-20-0727A
S15917.03	Cobalt	E200.8	07/27/20 15:51	MT5-20-0727A
S15917.03	Lead	E200.8	07/27/20 15:51	MT5-20-0727A
S15917.03	Lithium	E200.8	07/27/20 15:51	MT5-20-0727A
S15917.03	Molybdenum	E200.8	07/27/20 15:51	MT5-20-0727A
S15917.03	Selenium	E200.8	07/27/20 15:51	MT5-20-0727A
S15917.03	Thallium	E200.8	07/27/20 15:51	MT5-20-0727A
S15917.04	Antimony	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.04	Arsenic	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.04	Barium	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.04	Beryllium	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.04	Boron	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.04	Cadmium	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.04	Calcium	E200.8	07/28/20 17:16	MT5-20-0728A
S15917.04	Chromium	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.04	Cobalt	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.04	Lead	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.04	Lithium	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.04	Molybdenum	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.04	Selenium	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.04	Thallium	E200.8	07/27/20 15:53	MT5-20-0727A
S15917.05	Antimony	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.05	Arsenic	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.05	Barium	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.05	Beryllium	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.05	Boron	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.05	Cadmium	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.05	Calcium	E200.8	07/28/20 17:18	MT5-20-0728A
S15917.05	Chromium	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.05	Cobalt	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.05	Lead	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.05	Lithium	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.05	Molybdenum	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.05	Selenium	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.05	Thallium	E200.8	07/27/20 15:55	MT5-20-0727A
S15917.06	Antimony	E200.8	07/27/20 15:57	MT5-20-0727A
S15917.06	Arsenic	E200.8	07/27/20 15:57	MT5-20-0727A
S15917.06	Barium	E200.8	07/27/20 15:57	MT5-20-0727A
S15917.06	Beryllium	E200.8	07/27/20 15:57	MT5-20-0727A
S15917.06	Boron	E200.8	07/27/20 15:57	MT5-20-0727A
S15917.06	Cadmium	E200.8	07/27/20 15:57	MT5-20-0727A
S15917.06	Calcium	E200.8	07/28/20 17:19	MT5-20-0728A
S15917.06	Chromium	E200.8	07/27/20 15:57	MT5-20-0727A
S15917.06	Cobalt	E200.8	07/27/20 15:57	MT5-20-0727A
S15917.06	Lead	E200.8	07/27/20 15:57	MT5-20-0727A
S15917.06	Lithium	E200.8	07/27/20 15:57	MT5-20-0727A
S15917.06	Molybdenum	E200.8	07/27/20 15:57	MT5-20-0727A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-072720-4 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15917.06	Selenium	E200.8	07/27/20 15:57	MT5-20-0727A
S15917.06	Thallium	E200.8	07/27/20 15:57	MT5-20-0727A
S15917.07	Antimony	E200.8	07/27/20 15:45	MT5-20-0727A
S15917.07	Arsenic	E200.8	07/27/20 15:45	MT5-20-0727A
S15917.07	Barium	E200.8	07/27/20 15:45	MT5-20-0727A
S15917.07	Beryllium	E200.8	07/27/20 15:45	MT5-20-0727A
S15917.07	Boron	E200.8	07/27/20 15:45	MT5-20-0727A
S15917.07	Cadmium	E200.8	07/27/20 15:45	MT5-20-0727A
S15917.07	Calcium	E200.8	07/28/20 17:27	MT5-20-0728A
S15917.07	Chromium	E200.8	07/27/20 15:45	MT5-20-0727A
S15917.07	Cobalt	E200.8	07/27/20 15:45	MT5-20-0727A
S15917.07	Lead	E200.8	07/27/20 15:45	MT5-20-0727A
S15917.07	Lithium	E200.8	07/27/20 15:45	MT5-20-0727A
S15917.07	Molybdenum	E200.8	07/27/20 15:45	MT5-20-0727A
S15917.07	Selenium	E200.8	07/27/20 15:45	MT5-20-0727A
S15917.07	Thallium	E200.8	07/27/20 15:45	MT5-20-0727A

Form 0: Sequence Log

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	13:04:27 Mon 27-Jul-20	Blank	Liquid	
002	13:06:31 Mon 27-Jul-20	Std-0.0001	Liquid	
003	13:08:34 Mon 27-Jul-20	Std-0.0005	Liquid	
004	13:10:38 Mon 27-Jul-20	Std-0.001	Liquid	
005	13:12:42 Mon 27-Jul-20	Std-0.005	Liquid	
006	13:14:46 Mon 27-Jul-20	Std-0.02	Liquid	
007	13:16:50 Mon 27-Jul-20	Std-0.05	Liquid	
008	13:18:54 Mon 27-Jul-20	Std-0.2	Liquid	
009	13:20:58 Mon 27-Jul-20	rinse	Liquid	
010	13:34:11 Mon 27-Jul-20	CCV-0.1	Liquid	CCV
011	13:36:15 Mon 27-Jul-20	ICV-0.1	Liquid	ICV
012	13:38:40 Mon 27-Jul-20	rinse	Liquid	
013	13:40:44 Mon 27-Jul-20	ICB	Liquid	ICB
014	13:46:52 Mon 27-Jul-20	CCB	Liquid	CCB
015	13:49:15 Mon 27-Jul-20	BS-0.0001	Liquid	BS
016	13:51:19 Mon 27-Jul-20	BS-0.0005	Liquid	BS
017	13:55:44 Mon 27-Jul-20	BS-0.0002	Liquid	BS
018	14:00:52 Mon 27-Jul-20	BS-0.001	Liquid	BS
019	14:27:34 Mon 27-Jul-20	Solu-AB	Liquid	AB
020	14:29:38 Mon 27-Jul-20	Solu-AA	Liquid	AA
021	14:39:14 Mon 27-Jul-20	Rinse	Liquid	
022	15:14:31 Mon 27-Jul-20	15854.01 dil	Liquid	
023	15:16:35 Mon 27-Jul-20	15854.01s diss	Liquid	S
024	15:18:39 Mon 27-Jul-20	15854.02s	Liquid	S
025	15:20:42 Mon 27-Jul-20	15854.04s diss	Liquid	S
026	15:22:46 Mon 27-Jul-20	15854.05s	Liquid	S
027	15:24:49 Mon 27-Jul-20	15854.07s diss	Liquid	S
028	15:26:53 Mon 27-Jul-20	15854.08s	Liquid	S
029	15:28:56 Mon 27-Jul-20	15854.07 MS-0.05	Liquid	MS
030	15:30:59 Mon 27-Jul-20	15854.07 MSD	Liquid	MSD
031	15:36:12 Mon 27-Jul-20	CCV2-0.1	Liquid	CCV
032	15:38:40 Mon 27-Jul-20	Rinse	Liquid	
033	15:40:44 Mon 27-Jul-20	CCB2	Liquid	CCB
034	15:45:03 Mon 27-Jul-20	15917.07s	Liquid	S
035	15:47:07 Mon 27-Jul-20	15917.01s	Liquid	S
036	15:49:10 Mon 27-Jul-20	15917.02s	Liquid	S
037	15:51:14 Mon 27-Jul-20	15917.03s	Liquid	S
038	15:53:17 Mon 27-Jul-20	15917.04s	Liquid	S
039	15:55:20 Mon 27-Jul-20	15917.05s	Liquid	S
040	15:57:23 Mon 27-Jul-20	15917.06s	Liquid	S
041	16:15:07 Mon 27-Jul-20	15917.04s -d	Liquid	DIL
042	16:19:13 Mon 27-Jul-20	15858.01s	Liquid	
043	16:22:27 Mon 27-Jul-20	15917.03 MS-0.05	Liquid	MS
044	16:24:30 Mon 27-Jul-20	15917.03 MSD	Liquid	MSD
045	16:27:08 Mon 27-Jul-20	15858.01s	Liquid	S
046	16:29:12 Mon 27-Jul-20	CCV3-0.1	Liquid	CCV
047	16:31:16 Mon 27-Jul-20	Rinse	Liquid	
048	16:33:20 Mon 27-Jul-20	CCB3	Liquid	CCB
049	16:46:09 Mon 27-Jul-20	072920_5 LCS-0.05	Liquid	LCS
050	16:48:15 Mon 27-Jul-20	Rinse	Liquid	
051	16:52:36 Mon 27-Jul-20	072920_5 LRB	Liquid	LRB
052	16:55:36 Mon 27-Jul-20	15682.01 dil	Soil	DIL
053	16:57:39 Mon 27-Jul-20	15682.01s	Soil	S
054	16:59:43 Mon 27-Jul-20	Rinse	Liquid	
055	17:01:46 Mon 27-Jul-20	19870.01s	Soil	S
056	17:03:19 Mon 27-Jul-20	Rinse	Liquid	

Form 0: Sequence Log

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	17:05:52 Mon 27-Jul-20	15844.01s	Soil	S
058	17:07:55 Mon 27-Jul-20	15844.01 MS-0.10	Soil	MS
059	17:12:36 Mon 27-Jul-20	15844.01 MSD	Soil	MSD
060	17:17:53 Mon 27-Jul-20	CCV3-0.1	Liquid	CCV
061	17:20:52 Mon 27-Jul-20	Rinse	Liquid	
062	17:53:13 Mon 27-Jul-20	CCB3	Liquid	CCB
063	14:10:17 Mon 27-Jul-20	BS-0.002	Liquid	BS
064	17:30:58 Mon 27-Jul-20	072920_4 LCS-0.05	Liquid	LCS
065	17:36:47 Mon 27-Jul-20	072920_4 LRB	Liquid	LRB

Form 0: Sequence Log

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	09:44:31 Tue 28-Jul-20	Blank	Liquid	
002	09:45:42 Tue 28-Jul-20	Std-0.20	Liquid	
003	09:46:54 Tue 28-Jul-20	Std-0.50	Liquid	
004	09:48:06 Tue 28-Jul-20	Std-1.0	Liquid	
005	09:49:18 Tue 28-Jul-20	Std-2.0	Liquid	
006	09:50:30 Tue 28-Jul-20	Std-5.0	Liquid	
007	09:51:41 Tue 28-Jul-20	ICV-2.0	Liquid	ICV
008	09:55:24 Tue 28-Jul-20	ICB	Liquid	ICB
009	09:56:36 Tue 28-Jul-20	CCB	Liquid	CCB
010	09:57:48 Tue 28-Jul-20	BS-0.05	Liquid	BS
011	10:13:07 Tue 28-Jul-20	072820_1 LCS-1.0	Liquid	LCS
012	10:21:33 Tue 28-Jul-20	072820_1 LRB	Liquid	LRB
013	10:29:30 Tue 28-Jul-20	15664.09 dil	Liquid	DIL
014	10:30:42 Tue 28-Jul-20	15664.09s	Liquid	S
015	10:34:07 Tue 28-Jul-20	rinse	Liquid	
016	10:37:00 Tue 28-Jul-20	15664.10s	Liquid	S
017	10:38:11 Tue 28-Jul-20	rinse	Liquid	
018	10:40:57 Tue 28-Jul-20	15664.11s	Liquid	S
019	10:42:09 Tue 28-Jul-20	rinse	Liquid	
020	10:43:20 Tue 28-Jul-20	15664.12s	Liquid	S
021	10:44:32 Tue 28-Jul-20	rinse	Liquid	
022	10:45:43 Tue 28-Jul-20	15664.13s	Liquid	S
023	10:46:55 Tue 28-Jul-20	rinse	Liquid	
024	10:48:06 Tue 28-Jul-20	15664.14s	Liquid	S
025	10:49:17 Tue 28-Jul-20	rinse	Liquid	
026	10:50:28 Tue 28-Jul-20	15664.15s	Liquid	S
027	10:51:40 Tue 28-Jul-20	rinse	Liquid	
028	10:52:51 Tue 28-Jul-20	15664.16s	Liquid	S
029	10:54:03 Tue 28-Jul-20	rinse	Liquid	
030	10:55:14 Tue 28-Jul-20	15664.17s	Liquid	S
031	10:56:26 Tue 28-Jul-20	rinse	Liquid	
032	10:57:37 Tue 28-Jul-20	15664.18s	Liquid	S
033	11:05:38 Tue 28-Jul-20	15664.18 MS-2.0	Liquid	MS
034	11:08:10 Tue 28-Jul-20	15664.18 MSD	Liquid	MSD
035	11:09:22 Tue 28-Jul-20	CCV2-2.0	Liquid	CCV
036	11:10:34 Tue 28-Jul-20	CCB2	Liquid	CCB
037	11:12:46 Tue 28-Jul-20	15714.01s	Liquid	S
038	11:13:57 Tue 28-Jul-20	rinse	Liquid	
039	11:15:08 Tue 28-Jul-20	15714.02s	Liquid	S
040	11:16:20 Tue 28-Jul-20	rinse	Liquid	
041	11:17:32 Tue 28-Jul-20	15714.03s	Liquid	S
042	11:18:43 Tue 28-Jul-20	rinse	Liquid	
043	11:19:55 Tue 28-Jul-20	15714.04s	Liquid	S
044	11:21:06 Tue 28-Jul-20	rinse	Liquid	
045	11:22:17 Tue 28-Jul-20	15714.05s	Liquid	S
046	11:23:29 Tue 28-Jul-20	rinse	Liquid	
047	11:24:40 Tue 28-Jul-20	15714.06s	Liquid	S
048	11:27:19 Tue 28-Jul-20	rinse	Liquid	
049	11:28:29 Tue 28-Jul-20	15714.02s -d	Liquid	S
050	11:29:41 Tue 28-Jul-20	rinse	Liquid	
051	11:31:52 Tue 28-Jul-20	15714.02s -d	Liquid	DIL
052	11:33:03 Tue 28-Jul-20	rinse	Liquid	
053	11:34:14 Tue 28-Jul-20	15714.07s	Liquid	S
054	11:35:25 Tue 28-Jul-20	rinse	Liquid	
055	11:36:36 Tue 28-Jul-20	15714.08s	Liquid	S
056	11:37:48 Tue 28-Jul-20	rinse	Liquid	

Form 0: Sequence Log

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	11:38:59 Tue 28-Jul-20	15714.09s	Liquid	S
058	11:40:10 Tue 28-Jul-20	rinse	Liquid	
059	11:41:21 Tue 28-Jul-20	15714.10s	Liquid	S
060	11:42:32 Tue 28-Jul-20	15714.10 MS-2.0	Liquid	MS
061	11:43:43 Tue 28-Jul-20	15714.10 MSD	Liquid	MSD
062	11:44:55 Tue 28-Jul-20	CCV3-2.0	Liquid	CCV
063	11:46:07 Tue 28-Jul-20	CCB3	Liquid	CCB
064	11:59:24 Tue 28-Jul-20	072820_2 LCS-1.0	Liquid	LCS
065	12:04:48 Tue 28-Jul-20	072820_2 LRB	Liquid	LRB
066	12:06:00 Tue 28-Jul-20	15628.01 dil	Liquid	DIL
067	12:07:12 Tue 28-Jul-20	15628.01s	Liquid	S
068	12:08:23 Tue 28-Jul-20	rinse	Liquid	
069	12:09:46 Tue 28-Jul-20	15628.02s	Liquid	S
070	12:10:57 Tue 28-Jul-20	rinse	Liquid	
071	12:12:09 Tue 28-Jul-20	15628.03s	Liquid	S
072	12:13:20 Tue 28-Jul-20	rinse	Liquid	
073	12:14:32 Tue 28-Jul-20	15628.04s	Liquid	S
074	12:15:43 Tue 28-Jul-20	rinse	Liquid	
075	12:16:55 Tue 28-Jul-20	15628.05s	Liquid	S
076	12:18:06 Tue 28-Jul-20	rinse	Liquid	
077	12:19:18 Tue 28-Jul-20	15628.06s	Liquid	S
078	12:20:29 Tue 28-Jul-20	rinse	Liquid	
079	12:21:40 Tue 28-Jul-20	15628.07s	Liquid	S
080	12:22:52 Tue 28-Jul-20	rinse	Liquid	
081	12:24:03 Tue 28-Jul-20	15662.01s	Liquid	S
082	12:25:15 Tue 28-Jul-20	rinse	Liquid	
083	12:26:26 Tue 28-Jul-20	15662.02s	Liquid	S
084	12:27:38 Tue 28-Jul-20	rinse	Liquid	
085	12:28:49 Tue 28-Jul-20	15628.08s	Liquid	S
086	12:30:01 Tue 28-Jul-20	15628.09s MS-2.0	Liquid	MS
087	12:31:13 Tue 28-Jul-20	15628.10s MSD	Liquid	MSD
088	12:33:42 Tue 28-Jul-20	CCV4-2.0	Liquid	CCV
089	12:36:05 Tue 28-Jul-20	CCB4	Liquid	CCB
090	12:43:59 Tue 28-Jul-20	15662.03s	Liquid	S
091	12:45:11 Tue 28-Jul-20	rinse	Liquid	
092	12:46:22 Tue 28-Jul-20	15662.04s	Liquid	S
093	12:47:33 Tue 28-Jul-20	rinse	Liquid	
094	12:50:52 Tue 28-Jul-20	15662.05s	Liquid	S
095	12:52:03 Tue 28-Jul-20	rinse	Liquid	
096	12:53:14 Tue 28-Jul-20	15662.06s	Liquid	S
097	12:54:26 Tue 28-Jul-20	rinse	Liquid	
098	12:55:37 Tue 28-Jul-20	15663.01s	Liquid	S
099	12:56:48 Tue 28-Jul-20	rinse	Liquid	
100	12:57:59 Tue 28-Jul-20	15663.02s	Liquid	S
101	12:59:10 Tue 28-Jul-20	rinse	Liquid	
102	13:00:22 Tue 28-Jul-20	15663.03s	Liquid	S
103	13:01:33 Tue 28-Jul-20	rinse	Liquid	
104	13:02:44 Tue 28-Jul-20	15663.04s	Liquid	S
105	13:03:56 Tue 28-Jul-20	rinse	Liquid	
106	13:05:06 Tue 28-Jul-20	15663.05s	Liquid	S
107	13:06:18 Tue 28-Jul-20	rinse	Liquid	
108	13:07:29 Tue 28-Jul-20	15628.11s	Liquid	S
109	13:08:40 Tue 28-Jul-20	15628.12s MS-2.0	Liquid	MS
110	13:09:51 Tue 28-Jul-20	15628.13s MSD	Liquid	MSD
111	13:16:20 Tue 28-Jul-20	CCV5-2.0	Liquid	CCV
112	13:17:44 Tue 28-Jul-20	CCB5	Liquid	CCB

Form 0: Sequence Log

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
113	13:32:48 Tue 28-Jul-20	072820_7 LCS-1.0	Liquid	LCS
114	13:40:27 Tue 28-Jul-20	072820_7 LRB	Liquid	LRB
115	13:43:25 Tue 28-Jul-20	15663.06 dil	Liquid	DIL
116	13:44:37 Tue 28-Jul-20	15663.06s	Liquid	S
117	13:45:49 Tue 28-Jul-20	rinse	Liquid	
118	13:47:00 Tue 28-Jul-20	15663.07s	Liquid	S
119	13:48:12 Tue 28-Jul-20	rinse	Liquid	
120	13:49:23 Tue 28-Jul-20	15663.08s	Liquid	S
121	13:50:35 Tue 28-Jul-20	rinse	Liquid	
122	13:51:46 Tue 28-Jul-20	15663.09s	Liquid	S
123	13:52:58 Tue 28-Jul-20	rinse	Liquid	
124	13:54:09 Tue 28-Jul-20	15663.10s	Liquid	S
125	13:55:21 Tue 28-Jul-20	rinse	Liquid	
126	13:56:32 Tue 28-Jul-20	15663.11s	Liquid	S
127	13:57:44 Tue 28-Jul-20	rinse	Liquid	
128	13:58:55 Tue 28-Jul-20	15663.12s	Liquid	S
129	14:00:06 Tue 28-Jul-20	rinse	Liquid	
130	14:01:18 Tue 28-Jul-20	15663.13s	Liquid	S
131	14:02:29 Tue 28-Jul-20	rinse	Liquid	
132	14:03:41 Tue 28-Jul-20	15663.14s	Liquid	S
133	14:04:52 Tue 28-Jul-20	rinse	Liquid	
134	14:06:04 Tue 28-Jul-20	15663.15s	Liquid	S
135	14:07:15 Tue 28-Jul-20	15663.15 MS-2.0	Liquid	MS
136	14:08:26 Tue 28-Jul-20	15663.15 MSD	Liquid	MSD
137	14:20:40 Tue 28-Jul-20	CCV6-2.0	Liquid	CCV
138	14:21:52 Tue 28-Jul-20	CCB6	Liquid	CCB
139	14:23:03 Tue 28-Jul-20	15663.16s	Liquid	S
140	14:24:15 Tue 28-Jul-20	rinse	Liquid	
141	14:25:25 Tue 28-Jul-20	15663.17s	Liquid	S
142	14:26:37 Tue 28-Jul-20	rinse	Liquid	
143	14:27:49 Tue 28-Jul-20	15664.01s	Liquid	S
144	14:29:00 Tue 28-Jul-20	rinse	Liquid	
145	14:30:12 Tue 28-Jul-20	15664.02s	Liquid	S
146	14:31:23 Tue 28-Jul-20	rinse	Liquid	
147	14:32:34 Tue 28-Jul-20	15664.03s	Liquid	S
148	14:33:46 Tue 28-Jul-20	rinse	Liquid	
149	14:34:57 Tue 28-Jul-20	15664.04s	Liquid	S
150	14:36:09 Tue 28-Jul-20	rinse	Liquid	
151	14:37:19 Tue 28-Jul-20	15664.05s	Liquid	S
152	14:38:31 Tue 28-Jul-20	rinse	Liquid	
153	14:39:42 Tue 28-Jul-20	15664.06s	Liquid	S
154	14:40:53 Tue 28-Jul-20	rinse	Liquid	
155	14:42:04 Tue 28-Jul-20	15664.07s	Liquid	S
156	14:43:16 Tue 28-Jul-20	rinse	Liquid	
157	14:44:27 Tue 28-Jul-20	15664.08s	Liquid	S
158	14:45:38 Tue 28-Jul-20	15664.08 MS-2.0	Liquid	MS
159	14:46:49 Tue 28-Jul-20	15664.08 MSD	Liquid	MSD
160	15:10:04 Tue 28-Jul-20	15664.08s -d	Liquid	DIL
161	15:11:15 Tue 28-Jul-20	15664.08 MS-2.0	Liquid	MS
162	15:13:43 Tue 28-Jul-20	CCV7-2.0	Liquid	CCV
163	15:16:07 Tue 28-Jul-20	CCB7	Liquid	CCB
164	15:33:00 Tue 28-Jul-20	072820_8 LCS-1.0	Liquid	LCS
165	15:34:12 Tue 28-Jul-20	072820_8 LRB	Liquid	LRB
166	15:37:35 Tue 28-Jul-20	15714.11 dil	Liquid	DIL
167	15:38:47 Tue 28-Jul-20	15714.11s	Liquid	S
168	15:41:14 Tue 28-Jul-20	rinse	Liquid	

Form 0: Sequence Log

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
169	15:41:26 Tue 28-Jul-20	15714.12s	Liquid	S
170	15:42:37 Tue 28-Jul-20	15715.01s	Liquid	S
171	15:43:49 Tue 28-Jul-20	15715.02s	Liquid	S
172	15:45:00 Tue 28-Jul-20	15715.03s	Liquid	S
173	15:46:11 Tue 28-Jul-20	15715.04s	Liquid	S
174	15:47:22 Tue 28-Jul-20	15715.05s	Liquid	S
175	15:48:34 Tue 28-Jul-20	15715.06s	Liquid	S
176	15:49:45 Tue 28-Jul-20	15715.07s	Liquid	S
177	15:50:57 Tue 28-Jul-20	15715.08s	Liquid	S
178	15:52:08 Tue 28-Jul-20	15715.08 MS-2.0	Liquid	MS
179	15:53:19 Tue 28-Jul-20	15715.08 MSD	Liquid	MSD
180	15:55:30 Tue 28-Jul-20	CCV8-2.0	Liquid	CCV
181	15:57:54 Tue 28-Jul-20	CCB8	Liquid	CCB
182	15:59:56 Tue 28-Jul-20	15715.09s	Liquid	S
183	16:01:07 Tue 28-Jul-20	15715.10s	Liquid	S
184	16:02:18 Tue 28-Jul-20	15715.11s	Liquid	S
185	16:03:30 Tue 28-Jul-20	15715.12s	Liquid	S
186	16:04:41 Tue 28-Jul-20	15715.13s	Liquid	S
187	16:05:52 Tue 28-Jul-20	15716.01s	Liquid	S
188	16:07:03 Tue 28-Jul-20	15716.02s	Liquid	S
189	16:08:14 Tue 28-Jul-20	15716.03s	Liquid	S
190	16:09:25 Tue 28-Jul-20	15716.04s	Liquid	S
191	16:10:36 Tue 28-Jul-20	15716.05s	Liquid	S
192	16:15:29 Tue 28-Jul-20	15716.05 MS-2.0	Liquid	MS
193	16:24:56 Tue 28-Jul-20	15716.05 MSD	Liquid	MSD
194	16:26:08 Tue 28-Jul-20	CCV9-2.0	Liquid	CCV
195	16:27:20 Tue 28-Jul-20	CCB9	Liquid	CCB
196	16:34:49 Tue 28-Jul-20	072720_4 LCS-1.0	Liquid	LCS
197	16:36:01 Tue 28-Jul-20	072820_4 LRB	Liquid	LRB
198	16:38:40 Tue 28-Jul-20	15854.01 dil	Liquid	S
199	16:42:34 Tue 28-Jul-20	15854.01 dil	Liquid	DIL
200	16:44:08 Tue 28-Jul-20	15854.01s diss	Liquid	S
201	16:45:20 Tue 28-Jul-20	rinse	Liquid	
202	16:46:32 Tue 28-Jul-20	15854.02s	Liquid	S
203	16:48:44 Tue 28-Jul-20	15854.02 dil	Liquid	S
204	16:49:56 Tue 28-Jul-20	rinse	Liquid	
205	16:51:07 Tue 28-Jul-20	15854.04s diss	Liquid	S
206	16:52:19 Tue 28-Jul-20	rinse	Liquid	
207	16:53:30 Tue 28-Jul-20	15854.05s	Liquid	S
208	16:54:41 Tue 28-Jul-20	rinse	Liquid	
209	16:55:52 Tue 28-Jul-20	15854.07s diss	Liquid	S
210	16:57:04 Tue 28-Jul-20	rinse	Liquid	
211	16:58:16 Tue 28-Jul-20	15854.08s	Liquid	S
212	17:02:33 Tue 28-Jul-20	15854.04 MS-2.0	Liquid	MS
213	17:03:44 Tue 28-Jul-20	15854.04 MSD	Liquid	MSD
214	17:04:56 Tue 28-Jul-20	CCV10-2.0	Liquid	CCV
215	17:06:08 Tue 28-Jul-20	CCB10	Liquid	CCB
216	17:10:15 Tue 28-Jul-20	15917.01s	Liquid	S
217	17:11:26 Tue 28-Jul-20	15917.02s	Liquid	S
218	17:13:15 Tue 28-Jul-20	15917.01s	Liquid	DIL
219	17:14:27 Tue 28-Jul-20	15917.02s	Liquid	DIL
220	17:15:38 Tue 28-Jul-20	15917.03s	Liquid	S
221	17:16:49 Tue 28-Jul-20	15917.04s	Liquid	S
222	17:18:00 Tue 28-Jul-20	15917.05s	Liquid	S
223	17:19:11 Tue 28-Jul-20	15917.06s	Liquid	S
224	17:20:23 Tue 28-Jul-20	15917.07s	Liquid	

Form 0: Sequence Log

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
225	17:26:29 Tue 28-Jul-20	rinse	Liquid	
226	17:27:40 Tue 28-Jul-20	15917.07s	Liquid	S
227	17:28:51 Tue 28-Jul-20	15917.05 MS-2.0	Liquid	MS
228	17:30:02 Tue 28-Jul-20	15917.05 MSD	Liquid	MSD
229	17:34:47 Tue 28-Jul-20	15917.05s	Liquid	DIL
230	17:36:03 Tue 28-Jul-20	15917.05 MS-2.0	Liquid	MS
231	17:37:16 Tue 28-Jul-20	CCV11-2.0	Liquid	CCV
232	17:38:28 Tue 28-Jul-20	CCB11	Liquid	CCB
233	17:39:38 Tue 28-Jul-20	072720_5 LCS-1.0	Liquid	LCS
234	17:42:02 Tue 28-Jul-20	072720_5 LRB	Liquid	LRB
235	17:43:13 Tue 28-Jul-20	15682.01 dil	Soil	S
236	17:44:24 Tue 28-Jul-20	15682.01s	Soil	S
237	17:45:52 Tue 28-Jul-20	rinse	Liquid	
238	17:47:03 Tue 28-Jul-20	15870.01s	Soil	S
239	17:48:42 Tue 28-Jul-20	15870.01s	Soil	DIL
240	17:49:52 Tue 28-Jul-20	15844.01s	Soil	S
241	17:52:52 Tue 28-Jul-20	15844.01 MS-2.0	Soil	MS
242	17:54:03 Tue 28-Jul-20	15844.01 MSD	Soil	MSD
243	17:55:15 Tue 28-Jul-20	CCV12-2.0	Liquid	CCV
244	17:56:27 Tue 28-Jul-20	CCB12	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Lab Sample ID: S15917.01

Sample Tag: MW-1 L007009-01

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	07/27/2020	
7440-42-8	Boron	0.38	0.04	0.0018	mg/L	5	07/27/2020	
7440-38-2	Arsenic	0.004	0.002	0.00026	mg/L	5	07/27/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	07/27/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.00022	mg/L	5	07/27/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	07/27/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	07/27/2020	
7440-39-3	Barium	0.128	0.005	0.00016	mg/L	5	07/27/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	07/27/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	07/27/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	07/27/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	07/27/2020	
7439-93-2	Lithium	0.033	0.005	0.0016	mg/L	5	07/27/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Lab Sample ID: S15917.01

Sample Tag: MW-1 L007009-01

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	156	0.5	0.044	mg/L	5	07/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Lab Sample ID: S15917.02

Sample Tag: MW-2 L007009-02

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	07/27/2020	
7440-42-8	Boron	4.61	0.04	0.0018	mg/L	5	07/27/2020	
7440-38-2	Arsenic	Not detected	0.002	0.00026	mg/L	5	07/27/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	07/27/2020	
7439-98-7	Molybdenum	0.007	0.005	0.00022	mg/L	5	07/27/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	07/27/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	07/27/2020	
7440-39-3	Barium	0.036	0.005	0.00016	mg/L	5	07/27/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	07/27/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	07/27/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	07/27/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	07/27/2020	
7439-93-2	Lithium	0.053	0.005	0.0016	mg/L	5	07/27/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Lab Sample ID: S15917.02

Sample Tag: MW-2 L007009-02

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	271	0.5	0.044	mg/L	5	07/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Lab Sample ID: S15917.03

Sample Tag: MW-4 L007009-03

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	07/27/2020	
7440-42-8	Boron	0.06	0.04	0.0018	mg/L	5	07/27/2020	
7440-38-2	Arsenic	0.007	0.002	0.00026	mg/L	5	07/27/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	07/27/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.00022	mg/L	5	07/27/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	07/27/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	07/27/2020	
7440-39-3	Barium	0.146	0.005	0.00016	mg/L	5	07/27/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	07/27/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	07/27/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	07/27/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	07/27/2020	
7439-93-2	Lithium	0.009	0.005	0.0016	mg/L	5	07/27/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Lab Sample ID: S15917.03

Sample Tag: MW-4 L007009-03

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	105	0.5	0.044	mg/L	5	07/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Lab Sample ID: S15917.04

Sample Tag: MW-5 L007009-04

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	07/27/2020	
7440-42-8	Boron	4.57	0.04	0.0018	mg/L	5	07/27/2020	
7440-38-2	Arsenic	Not detected	0.002	0.00026	mg/L	5	07/27/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	07/27/2020	
7439-98-7	Molybdenum	0.052	0.005	0.00022	mg/L	5	07/27/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	07/27/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	07/27/2020	
7440-39-3	Barium	0.041	0.005	0.00016	mg/L	5	07/27/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	07/27/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	07/27/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	07/27/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	07/27/2020	
7439-93-2	Lithium	0.074	0.005	0.0016	mg/L	5	07/27/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Lab Sample ID: S15917.04

Sample Tag: MW-5 L007009-04

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	251	0.5	0.044	mg/L	5	07/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Lab Sample ID: S15917.05

Sample Tag: MW-6 L007009-05

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	07/27/2020	
7440-42-8	Boron	0.75	0.04	0.0018	mg/L	5	07/27/2020	
7440-38-2	Arsenic	Not detected	0.002	0.00026	mg/L	5	07/27/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	07/27/2020	
7439-98-7	Molybdenum	0.025	0.005	0.00022	mg/L	5	07/27/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	07/27/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	07/27/2020	
7440-39-3	Barium	0.044	0.005	0.00016	mg/L	5	07/27/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	07/27/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	07/27/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	07/27/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	07/27/2020	
7439-93-2	Lithium	0.041	0.005	0.0016	mg/L	5	07/27/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Lab Sample ID: S15917.05

Sample Tag: MW-6 L007009-05

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	161	0.5	0.044	mg/L	5	07/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Lab Sample ID: S15917.06

Sample Tag: MW-4 Duplicate L007009-06

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	07/27/2020	
7440-42-8	Boron	0.05	0.04	0.0018	mg/L	5	07/27/2020	
7440-38-2	Arsenic	0.007	0.002	0.00026	mg/L	5	07/27/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	07/27/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.00022	mg/L	5	07/27/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	07/27/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	07/27/2020	
7440-39-3	Barium	0.147	0.005	0.00016	mg/L	5	07/27/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	07/27/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	07/27/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	07/27/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	07/27/2020	
7439-93-2	Lithium	0.008	0.005	0.0016	mg/L	5	07/27/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Lab Sample ID: S15917.06

Sample Tag: MW-4 Duplicate L007009-06

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	102	0.5	0.044	mg/L	5	07/28/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Lab Sample ID: S15917.07

Sample Tag: Field Blank L007009-07

Date Collected: 07/21/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000039	mg/L	2	07/27/2020	
7440-42-8	Boron	Not detected	0.04	0.00070	mg/L	2	07/27/2020	
7440-38-2	Arsenic	Not detected	0.002	0.00010	mg/L	2	07/27/2020	
7782-49-2	Selenium	Not detected	0.005	0.00084	mg/L	2	07/27/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000087	mg/L	2	07/27/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000076	mg/L	2	07/27/2020	
7440-36-0	Antimony	Not detected	0.005	0.0010	mg/L	2	07/27/2020	
7440-39-3	Barium	Not detected	0.005	0.000065	mg/L	2	07/27/2020	
7440-28-0	Thallium	Not detected	0.002	0.000034	mg/L	2	07/27/2020	
7439-92-1	Lead	Not detected	0.003	0.000076	mg/L	2	07/27/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000086	mg/L	2	07/27/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000043	mg/L	2	07/27/2020	
7439-93-2	Lithium	Not detected	0.005	0.00065	mg/L	2	07/27/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Lab Sample ID: S15917.07

Sample Tag: Field Blank L007009-07

Date Collected: 07/21/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	Not detected	0.5	0.044	mg/L	5	07/28/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Note/Qualifier Key

b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
010 CCV-0.1	CCV	1	Li	0.100	0.1	100	90/110	mg/L	Liquid
			Be	0.101	0.1	101	90/110		
			B	0.101	0.1	101	90/110		
			Al	0.101	0.1	101	90/110		
			Se	0.0986	0.1	99	90/110		
			Ti	0.0999	0.1	100	90/110		
			V	0.100	0.1	100	90/110		
			Cr	0.0986	0.1	99	90/110		
			Mn	0.100	0.1	100	90/110		
			Fe	0.101	0.1	101	90/110		
			Co	0.106	0.1	106	90/110		
			Ni	0.0989	0.1	99	90/110		
			Cu	0.0996	0.1	100	90/110		
			Zn	0.100	0.1	100	90/110		
			As	0.101	0.1	101	90/110		
			Sr	0.100	0.1	100	90/110		
			Mo	0.102	0.1	102	90/110		
			Ag	0.105	0.1	105	90/110		
			Cd	0.0994	0.1	99	90/110		
			Sn	0.103	0.1	103	90/110		
Sb	0.100	0.1	100	90/110					
Ba	0.0991	0.1	99	90/110					
Tl	0.102	0.1	102	90/110					
Pb	0.102	0.1	102	90/110					
011 ICV-0.1	ICV	1	Li	0.102	0.1	102	90/110	mg/L	Liquid
			Be	0.104	0.1	104	90/110		
			B	0.105	0.1	105	90/110		
			Al	0.104	0.1	104	90/110		
			Se	0.101	0.1	101	90/110		
			Ti	0.100	0.1	100	90/110		
			V	0.101	0.1	101	90/110		
			Cr	0.0997	0.1	100	90/110		
			Mn	0.103	0.1	103	90/110		
			Fe	0.102	0.1	102	90/110		
			Co	0.108	0.1	108	90/110		
			Ni	0.101	0.1	101	90/110		
			Cu	0.102	0.1	102	90/110		
			Zn	0.102	0.1	102	90/110		
			As	0.104	0.1	104	90/110		
			Sr	0.102	0.1	102	90/110		
			Mo	0.104	0.1	104	90/110		
			Ag	0.109	0.1	109	90/110		
			Cd	0.103	0.1	103	90/110		
			Sn	0.105	0.1	105	90/110		
Sb	0.0984	0.1	98	90/110					
Ba	0.0996	0.1	100	90/110					
Tl	0.105	0.1	105	90/110					
Pb	0.103	0.1	103	90/110					
031 CCV2-0.1	CCV	1	Li	0.0999	0.1	100	90/110	mg/L	Liquid
			Be	0.100	0.1	100	90/110		
			B	0.100	0.1	100	90/110		
			Al	0.0992	0.1	99	90/110		
			Se	0.0981	0.1	98	90/110		
			Ti	0.0976	0.1	98	90/110		
			V	0.0999	0.1	100	90/110		
			Cr	0.0966	0.1	97	90/110		
			Mn	0.0991	0.1	99	90/110		

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
031 CCV2-0.1	CCV	1	Fe	0.0975	0.1	98	90/110	mg/L	Liquid
			Co	0.106	0.1	106	90/110		
			Ni	0.0974	0.1	97	90/110		
			Cu	0.0971	0.1	97	90/110		
			Zn	0.0986	0.1	99	90/110		
			As	0.0998	0.1	100	90/110		
			Sr	0.0974	0.1	97	90/110		
			Mo	0.0961	0.1	96	90/110		
			Ag	0.103	0.1	103	90/110		
			Cd	0.0981	0.1	98	90/110		
			Sn	0.0997	0.1	100	90/110		
			Sb	0.0978	0.1	98	90/110		
			Ba	0.0967	0.1	97	90/110		
			Tl	0.100	0.1	100	90/110		
			Pb	0.101	0.1	101	90/110		
046 CCV3-0.1	CCV	1	Li	0.102	0.1	102	90/110	mg/L	Liquid
			Be	0.105	0.1	105	90/110		
			B	0.106	0.1	106	90/110		
			Al	0.103	0.1	103	90/110		
			Se	0.101	0.1	101	90/110		
			Ti	0.0969	0.1	97	90/110		
			V	0.0952	0.1	95	90/110		
			Cr	0.0914	0.1	91	90/110		
			Mn	0.0940	0.1	94	90/110		
			Fe	0.0953	0.1	95	90/110		
			Co	0.0996	0.1	100	90/110		
			Ni	0.0908	0.1	91	90/110		
			Cu	0.0923	0.1	92	90/110		
			Zn	0.0940	0.1	94	90/110		
			As	0.0957	0.1	96	90/110		
			Sr	0.0925	0.1	93	90/110		
			Mo	0.0907	0.1	91	90/110		
			Ag	0.0983	0.1	98	90/110		
			Cd	0.0939	0.1	94	90/110		
			Sn	0.0944	0.1	94	90/110		
Sb	0.0956	0.1	96	90/110					
Ba	0.0948	0.1	95	90/110					
Tl	0.0973	0.1	97	90/110					
Pb	0.0945	0.1	95	90/110					
060 CCV3-0.1	CCV	1	Li	0.0975	0.1	98	90/110	mg/L	Liquid
			Be	0.0983	0.1	98	90/110		
			B	0.0975	0.1	98	90/110		
			Al	0.0963	0.1	96	90/110		
			Se	0.0995	0.1	100	90/110		
			Ti	0.0926	0.1	93	90/110		
			V	0.0938	0.1	94	90/110		
			Cr	0.089898	0.1	90	90/110		
			Mn	0.0906	0.1	91	90/110		
			Fe	0.0896	0.1	90	90/110		
			Co	0.0968	0.1	97	90/110		
			Ni	0.0902	0.1	90	90/110		
			Cu	0.0904	0.1	90	90/110		
			Zn	0.089626	0.1	90	90/110		
			As	0.0911	0.1	91	90/110		
			Sr	0.0901	0.1	90	90/110		
			Mo	0.089726	0.1	90	90/110		
			Ag	0.0962	0.1	96	90/110		

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
060 CCV3-0.1	CCV	1	Cd	0.0908	0.1	91	90/110	mg/L	Liquid
			Sb	0.0902	0.1	90	90/110		
			Ba	0.0908	0.1	91	90/110		
			Tl	0.0952	0.1	95	90/110		
			Pb	0.0932	0.1	93	90/110		

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
007 ICV-2.0	ICV	1	Na	1.99	2.0	100	90/110	mg/L	Liquid
			Mg	1.95	2.0	98	90/110		
			K	1.92	2.0	96	90/110		
			Ca	1.94	2.0	97	90/110		
035 CCV2-2.0	CCV	1	Na	1.91	2.0	96	90/110	mg/L	Liquid
			Mg	1.92	2.0	96	90/110		
			K	1.86	2.0	93	90/110		
			Ca	1.87	2.0	94	90/110		
062 CCV3-2.0	CCV	1	Na	1.91	2.0	96	90/110	mg/L	Liquid
			Mg	1.89	2.0	95	90/110		
			K	1.85	2.0	93	90/110		
			Ca	1.89	2.0	95	90/110		
088 CCV4-2.0	CCV	1	Na	1.90	2.0	95	90/110	mg/L	Liquid
			Mg	1.88	2.0	94	90/110		
			K	1.86	2.0	93	90/110		
			Ca	1.88	2.0	94	90/110		
111 CCV5-2.0	CCV	1	Na	1.85	2.0	93	90/110	mg/L	Liquid
			Mg	1.87	2.0	94	90/110		
			K	1.79	2.0	90	90/110		
			Ca	1.82	2.0	91	90/110		
137 CCV6-2.0	CCV	1	Na	1.93	2.0	97	90/110	mg/L	Liquid
			Mg	1.94	2.0	97	90/110		
			K	1.91	2.0	96	90/110		
			Ca	1.88	2.0	94	90/110		
162 CCV7-2.0	CCV	1	Na	1.96	2.0	98	90/110	mg/L	Liquid
			Mg	1.92	2.0	96	90/110		
			K	1.89	2.0	95	90/110		
			Ca	1.87	2.0	94	90/110		
180 CCV8-2.0	CCV	1	Na	1.99	2.0	100	90/110	mg/L	Liquid
			Mg	1.95	2.0	98	90/110		
			K	1.87	2.0	94	90/110		
			Ca	1.86	2.0	93	90/110		
194 CCV9-2.0	CCV	1	Na	1.99	2.0	100	90/110	mg/L	Liquid
			Mg	1.96	2.0	98	90/110		
			K	1.91	2.0	96	90/110		
			Ca	1.86	2.0	93	90/110		
214 CCV10-2.0	CCV	1	Na	1.97	2.0	99	90/110	mg/L	Liquid
			Mg	1.90	2.0	95	90/110		
			K	1.90	2.0	95	90/110		
			Ca	1.87	2.0	94	90/110		
231 CCV11-2.0	CCV	1	Na	1.95	2.0	98	90/110	mg/L	Liquid
			Mg	1.93	2.0	97	90/110		
			K	1.92	2.0	96	90/110		
			Ca	1.85	2.0	93	90/110		
243 CCV12-2.0	CCV	1	Na	2.00	2.0	100	90/110	mg/L	Liquid
			Mg	2.00	2.0	100	90/110		
			K	1.95	2.0	98	90/110		
			Ca	1.93	2.0	97	90/110		

Form 3: Blanks

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Sample Name	QC Type	Dilute	Element	Sample Conc	Raw Conc	Units	Matrix
013 ICB	ICB	1	Li	<0.001	-0.000011	mg/L	Liquid
			Be	<0.0002	0.000003		
			B	<0.008	0.000273		
			Al	<0.002	0.000150		
			Se	<0.001	0.000375		
			Ti	<0.001	0.000051		
			V	<0.001	0.000004		
			Cr	<0.001	0.000016		
			Mn	<0.001	0.000005		
			Fe	<0.004	0.000276		
			Co	<0.001	0.000008		
			Ni	<0.001	0.000011		
			Cu	<0.001	0.000002		
			Zn	<0.001	0.000086		
			As	<0.0004	0.000279		
			Sr	<0.001	0.000004		
			Mo	<0.001	0.000910		
			Ag	<0.0001	0.000010		
			Cd	<0.0001	0.000000		
			Sn	<0.004	0.002102		
Sb	<0.001	0.000805					
Ba	<0.001	0.000005					
Tl	<0.0004	0.000010					
Pb	<0.0006	0.000019					
014 CCB	CCB	1	Li	<0.001	0.000010	mg/L	Liquid
			Be	<0.0002	-0.000004		
			B	<0.008	0.000016		
			Al	<0.002	0.000055		
			Se	<0.001	-0.000048		
			Ti	<0.001	-0.000023		
			V	<0.001	-0.000001		
			Cr	<0.001	0.000007		
			Mn	<0.001	0.000003		
			Fe	<0.004	0.000018		
			Co	<0.001	0.000001		
			Ni	<0.001	0.000004		
			Cu	<0.001	0.000002		
			Zn	<0.001	0.000146		
			As	<0.0004	0.000049		
			Sr	<0.001	0.000001		
			Mo	<0.001	0.000068		
			Ag	<0.0001	0.000002		
			Cd	<0.0001	-0.000004		
			Sn	<0.004	0.000437		
Sb	<0.001	0.000182					
Ba	<0.001	-0.000003					
Tl	<0.0004	0.000002					
Pb	<0.0006	0.000002					
033 CCB2	CCB	1	Li	<0.001	0.000029	mg/L	Liquid
			Be	<0.0002	-0.000001		
			B	<0.008	0.000068		
			Al	<0.002	0.000043		
			Se	<0.001	-0.000727		
			Ti	<0.001	0.000021		
			V	<0.001	0.000029		
			Cr	<0.001	0.000039		
			Mn	<0.001	0.000040		

Form 3: Blanks

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Sample Name	QC Type	Dilute	Element	Sample Conc	Raw Conc	Units	Matrix
033 CCB2	CCB	1	Fe	<0.004	0.000176	mg/L	Liquid
			Co	<0.001	0.000028		
			Ni	<0.001	0.000025		
			Cu	<0.001	0.000036		
			Zn	<0.001	0.000092		
			As	<0.0004	0.000133		
			Sr	<0.001	0.000018		
			Mo	<0.001	0.000599		
			Ag	<0.0001	0.000022		
			Cd	<0.0001	0.000013		
			Sn	<0.004	0.001543		
			Sb	<0.001	0.000661		
			Ba	<0.001	0.000016		
			Tl	<0.0004	0.000024		
			Pb	<0.0006	0.000027		
048 CCB3	CCB	1	Li	<0.001	0.000012	mg/L	Liquid
			Be	<0.0002	-0.000001		
			B	<0.008	0.000280		
			Al	<0.002	0.000048		
			Se	<0.001	0.000427		
			Ti	<0.001	0.000597		
			V	<0.001	0.000005		
			Cr	<0.001	0.000011		
			Mn	<0.001	0.000031		
			Fe	<0.004	0.000418		
			Co	<0.001	0.000003		
			Ni	<0.001	0.000013		
			Cu	<0.001	0.000011		
			Zn	<0.001	0.000084		
			As	<0.0004	0.000145		
			Sr	<0.001	0.000005		
			Mo	<0.001	0.000635		
			Ag	<0.0001	0.000006		
			Cd	<0.0001	-0.000003		
			Sn	<0.004	0.001455		
Sb	<0.001	0.000672					
Ba	<0.001	0.000003					
Tl	<0.0004	0.000008					
Pb	<0.0006	0.000013					
051 072920_5 LRB	LRB	1	Li	<0.001	0.000011	mg/L	Liquid
			Be	<0.0002	-0.000003		
			B	<0.008	-0.000020		
			Al	<0.002	-0.000007		
			Se	<0.001	-0.000821		
			Ti	<0.001	0.000026		
			V	<0.001	0.000001		
			Cr	<0.001	-0.000006		
			Mn	<0.001	0.000002		
			Fe	<0.004	0.000005		
			Co	<0.001	0.000001		
			Ni	<0.001	0.000005		
			Cu	<0.001	0.000000		
			Zn	<0.001	0.000024		
			As	<0.0004	-0.000022		
			Sr	<0.001	-0.000001		
			Mo	<0.001	0.000014		
Ag	<0.0001	0.000001					

Form 3: Blanks

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
051 072920_5 LRB	LRB	1	Cd	<0.0001	-0.000003	mg/L	Liquid
			Sn	<0.004	0.000065		
			Sb	<0.001	0.000215		
			Ba	<0.001	0.000001		
			Tl	<0.0004	-0.000000		
			Pb	<0.0006	-0.000001		
062 CCB3	CCB	1	Li	<0.001	0.000040	mg/L	Liquid
			Be	<0.0002	0.000023		
			B	<0.008	0.000035		
			Al	<0.002	0.000078		
			Se	<0.001	-0.000786		
			Ti	<0.001	-0.000016		
			V	<0.001	0.000004		
			Cr	<0.001	0.000003		
			Mn	<0.001	0.000018		
			Fe	<0.004	0.000045		
			Co	<0.001	-0.000000		
			Ni	<0.001	-0.000001		
			Cu	<0.001	0.000004		
			Zn	<0.001	0.000103		
			As	<0.0004	-0.000044		
			Sr	<0.001	0.000001		
			Mo	<0.001	-0.000249		
			Ag	<0.0001	-0.000001		
			Cd	<0.0001	-0.000000		
			Sn	<0.004	-0.000135		
			Sb	<0.001	-0.000208		
			Ba	<0.001	-0.000003		
			Tl	<0.0004	0.000000		
			Pb	<0.0006	-0.000005		
065 072920_4 LRB	LRB	1	Li	<0.001	-0.000009	mg/L	Liquid
			Be	<0.0002	0.000000		
			B	<0.008	0.000025		
			Al	<0.002	0.000006		
			Se	<0.001	-0.000918		
			Ti	<0.001	0.000011		
			V	<0.001	-0.000001		
			Cr	<0.001	0.000007		
			Mn	<0.001	0.000002		
			Fe	<0.004	0.000009		
			Co	<0.001	0.000002		
			Ni	<0.001	0.000001		
			Cu	<0.001	-0.000002		
			Zn	<0.001	0.000040		
			As	<0.0004	0.000059		
			Sr	<0.001	0.000002		
			Mo	<0.001	0.000110		
			Ag	<0.0001	0.000004		
			Cd	<0.0001	-0.000006		
			Sn	<0.004	0.000823		
			Sb	<0.001	0.000208		
			Ba	<0.001	-0.000001		
			Tl	<0.0004	0.000005		
			Pb	<0.0006	0.000002		

Form 3: Blanks

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Sample Name	QC Type	Dilute	Element	Sample Conc	Raw Conc	Units	Matrix
008 ICB	ICB	1	Na	<0.05	0.001629	mg/L	Liquid
			Mg	<0.05	0.000061		
			K	<0.05	0.001639		
			Ca	<0.05	-0.002656		
009 CCB	CCB	1	Na	<0.05	0.001660	mg/L	Liquid
			Mg	<0.05	-0.000003		
			K	<0.05	0.002998		
			Ca	<0.05	-0.003188		
012 072820_1 LRB	LRB	1	Na	<0.05	0.000310	mg/L	Liquid
			Mg	<0.05	0.000170		
			K	<0.05	0.001797		
			Ca	<0.05	0.000874		
036 CCB2	CCB	1	Na	<0.05	0.002374	mg/L	Liquid
			Mg	<0.05	0.000311		
			K	<0.05	0.004788		
			Ca	<0.05	-0.006552		
063 CCB3	CCB	1	Na	<0.05	0.002383	mg/L	Liquid
			Mg	<0.05	0.000414		
			K	<0.05	0.009193		
			Ca	<0.05	-0.001460		
065 072820_2 LRB	LRB	1	Na	<0.05	0.000656	mg/L	Liquid
			Mg	<0.05	0.000166		
			K	<0.05	0.012336		
			Ca	<0.05	-0.005840		
089 CCB4	CCB	1	Na	<0.05	0.000920	mg/L	Liquid
			Mg	<0.05	0.000331		
			K	<0.05	0.011102		
			Ca	<0.05	-0.006633		
112 CCB5	CCB	1	Na	<0.05	0.000667	mg/L	Liquid
			Mg	<0.05	0.000208		
			K	<0.05	0.011091		
			Ca	<0.05	-0.007262		
114 072820_7 LRB	LRB	1	Na	<0.05	0.000537	mg/L	Liquid
			Mg	<0.05	0.000185		
			K	<0.05	0.011660		
			Ca	<0.05	-0.008944		
138 CCB6	CCB	1	Na	<0.05	0.002535	mg/L	Liquid
			Mg	<0.05	0.000358		
			K	<0.05	0.013629		
			Ca	<0.05	-0.010110		
163 CCB7	CCB	1	Na	<0.05	0.002298	mg/L	Liquid
			Mg	<0.05	0.000314		
			K	<0.05	0.011701		
			Ca	<0.05	-0.009090		
165 072820_8 LRB	LRB	1	Na	<0.05	0.000563	mg/L	Liquid
			Mg	<0.05	0.000113		
			K	<0.05	0.010788		
			Ca	<0.05	-0.014338		
181 CCB8	CCB	1	Na	<0.05	0.000878	mg/L	Liquid
			Mg	<0.05	0.000202		
			K	<0.05	0.010560		
			Ca	<0.05	-0.012142		
195 CCB9	CCB	1	Na	<0.05	0.001145	mg/L	Liquid
			Mg	<0.05	0.000491		
			K	<0.05	0.013585		
			Ca	<0.05	-0.006131		

Form 3: Blanks

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
197 072820_4 LRB	LRB	1	Na	<0.05	0.001595	mg/L	Liquid
			Mg	<0.05	0.000466		
			K	<0.05	0.010837		
			Ca	<0.05	-0.012041		
215 CCB10	CCB	1	Na	<0.05	0.000847	mg/L	Liquid
			Mg	<0.05	0.000403		
			K	<0.05	0.012585		
			Ca	<0.05	-0.006336		
232 CCB11	CCB	1	Na	<0.05	0.008557	mg/L	Liquid
			Mg	<0.05	0.007050		
			K	<0.05	0.020661		
			Ca	<0.05	0.006967		
234 072720_5 LRB	LRB	1	Na	<0.05	0.001761	mg/L	Liquid
			Mg	<0.05	0.000309		
			K	<0.05	0.015944		
			Ca	<0.05	-0.009977		
244 CCB12	CCB	1	Na	<0.05	0.001016	mg/L	Liquid
			Mg	<0.05	0.000403		
			K	<0.05	0.014041		
			Ca	<0.05	-0.008501		

Form 4B: ICP Interference Check Sample

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
019 Solu-AB	AB	1	Al	8.88	10	89	65/135	mg/L	Liquid
			Ti	0.219	0.20	110	65/135		
			Cr	0.0216	0.02	108	65/135		
			Mn	0.0230	0.02	115	65/135		
			Fe	9.25	10	93	65/135		
			Co	0.0231	0.02	116	65/135		
			Ni	0.0210	0.02	105	65/135		
			Cu	0.0208	0.02	104	65/135		
			Zn	0.0215	0.02	108	65/135		
			As	0.0224	0.02	112	65/135		
			Mo	0.214	0.20	107	65/135		
			Ag	0.0219	0.02	110	65/135		
			Cd	0.0209	0.02	105	65/135		
			020 Solu-AA	AA	1	Li	<0.010			0.0	N/A	N/A	mg/L	Liquid
Be	<0.001	0.0				N/A	N/A		
B	<0.04	0.0				N/A	N/A		
Se	<0.005	0.0				N/A	N/A		
V	<0.005	0.0				N/A	N/A		
Cr	<0.005	0.0				N/A	N/A		
Mn	<0.005	0.0				N/A	N/A		
Co	<0.005	0.0				N/A	N/A		
Ni	<0.005	0.0				N/A	N/A		
Cu	<0.005	0.0				N/A	N/A		
Zn	<0.005	0.0				N/A	N/A		
As	<0.002	0.0				N/A	N/A		
Sr	<0.005	0.0				N/A	N/A		
Ag	<0.0005	0.0				N/A	N/A		
Cd	<0.0005	0.0				N/A	N/A		
Sn	<0.02	0.0				N/A	N/A		
Sb	<0.005	0.0				N/A	N/A		
Ba	<0.005	0.0				N/A	N/A		
Tl	<0.002	0.0				N/A	N/A		
Pb	<0.003	0.0	N/A	N/A					

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
015 BS-0.0001		1	Ti	0.00009	ND	0.0001	90	70/130	mg/L	Liquid
			V	0.00011	ND	0.0001	110	70/130		
			Cr	0.00012	ND	0.0001	120	70/130		
			Co	0.00012	ND	0.0001	120	70/130		
			Ni	0.00011	ND	0.0001	110	70/130		
			Cu	0.00012	ND	0.0001	120	70/130		
			Sr	0.00010	ND	0.0001	100	70/130		
			Ag	0.00011	ND	0.0001	110	70/130		
			Cd	0.00010	ND	0.0001	100	70/130		
			Sb	0.00011	ND	0.0001	110	70/130		
			Ba	0.00011	ND	0.0001	110	70/130		
			Tl	0.00012	ND	0.0001	120	70/130		
			Pb	0.00011	ND	0.0001	110	70/130		
			016 BS-0.0005		1	Li	0.00057	ND			0.0005	114	70/130	mg/L	Liquid
Be	0.00059	ND				0.0005	118	70/130		
B	0.00048	ND				0.0005	96	70/130		
Ti	0.00054	ND				0.0005	108	70/130		
V	0.00057	ND				0.0005	114	70/130		
Cr	0.00056	ND				0.0005	112	70/130		
Mn	0.00064	ND				0.0005	128	70/130		
Co	0.00060	ND				0.0005	120	70/130		
Ni	0.00057	ND				0.0005	114	70/130		
Cu	0.00054	ND				0.0005	108	70/130		
As	0.00057	ND				0.0005	114	70/130		
Sr	0.00055	ND				0.0005	110	70/130		
Mo	0.00037	ND				0.0005	74	70/130		
Ag	0.00059	ND				0.0005	118	70/130		
Cd	0.00059	ND				0.0005	118	70/130		
Sn	0.00041	ND				0.0005	82	70/130		
Sb	0.00057	ND				0.0005	114	70/130		
Ba	0.00055	ND				0.0005	110	70/130		
Tl	0.00059	ND	0.0005	118	70/130					
Pb	0.00056	ND	0.0005	112	70/130					
017 BS-0.0002		1	Be	0.00023	ND	0.0002	115	70/130	mg/L	Liquid
			Ti	0.00019	ND	0.0002	95	70/130		
			V	0.00023	ND	0.0002	115	70/130		
			Cr	0.00023	ND	0.0002	115	70/130		
			Co	0.00023	ND	0.0002	115	70/130		
			Ni	0.00023	ND	0.0002	115	70/130		
			Cu	0.00023	ND	0.0002	115	70/130		
			As	0.00017	ND	0.0002	85	70/130		
			Sr	0.00021	ND	0.0002	105	70/130		
			Ag	0.00023	ND	0.0002	115	70/130		
			Cd	0.00025	ND	0.0002	125	70/130		
			Sn	0.00020	ND	0.0002	100	70/130		
			Ba	0.00021	ND	0.0002	105	70/130		
			Tl	0.00023	ND	0.0002	115	70/130		
Pb	0.00022	ND	0.0002	110	70/130					
018 BS-0.001		1	Li	0.00113	ND	0.001	113	70/130	mg/L	Liquid
			Be	0.00116	ND	0.001	116	70/130		
			B	0.00107	ND	0.001	107	70/130		
			Se	0.00123	ND	0.001	123	70/130		
			Ti	0.00099	ND	0.001	99	70/130		
			V	0.00108	ND	0.001	108	70/130		
			Cr	0.00109	ND	0.001	109	70/130		
			Mn	0.00115	ND	0.001	115	70/130		
			Co	0.00119	ND	0.001	119	70/130		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
018 BS-0.001		1	Ni	0.00111	ND	0.001	111	70/130	mg/L	Liquid
			Cu	0.00115	ND	0.001	115	70/130		
			Zn	0.0013	ND	0.001	130	70/130		
			As	0.00093	ND	0.001	93	70/130		
			Sr	0.00107	ND	0.001	107	70/130		
			Mo	0.00080	ND	0.001	80	70/130		
			Ag	0.00118	ND	0.001	118	70/130		
			Cd	0.00114	ND	0.001	114	70/130		
			Sn	0.00073	ND	0.001	73	70/130		
			Sb	0.00098	ND	0.001	98	70/130		
			Ba	0.00111	ND	0.001	111	70/130		
			Tl	0.00113	ND	0.001	113	70/130		
			Pb	0.00112	ND	0.001	112	70/130		
029 15854.07	027 15854.07s diss	5	Li	0.229	<0.005	0.25	92	75/125	mg/L	Liquid
			Be	0.223	<0.001	0.25	89	75/125		
			B	0.228	<0.04	0.25	91	75/125		
			Al	0.234	<0.010	0.25	94	75/125		
			Se	0.205	<0.005	0.25	82	75/125		
			Ti	0.226	<0.005	0.25	90	75/125		
			V	0.228	<0.005	0.25	91	75/125		
			Cr	0.220	<0.005	0.25	88	75/125		
			Mn	0.225	<0.005	0.25	90	75/125		
			Fe	0.223	0.02	0.25	81	75/125		
			Co	0.239	<0.005	0.25	96	75/125		
			Ni	0.222	<0.005	0.25	89	75/125		
			Cu	0.272	0.050	0.25	89	75/125		
			Zn	0.225	0.014	0.25	84	75/125		
			As	0.220	<0.002	0.25	88	75/125		
			Sr	0.219	<0.005	0.25	88	75/125		
			Mo	0.206	<0.005	0.25	82	75/125		
			Ag	0.232	<0.0005	0.25	93	75/125		
			Cd	0.217	<0.0005	0.25	87	75/125		
			Sn	0.210	<0.02	0.25	84	75/125		
Sb	0.186967	-0.000370	0.25	75	75/125					
Ba	0.224	<0.005	0.25	90	75/125					
Tl	0.230	<0.002	0.25	92	75/125					
Pb	0.227	0.004	0.25	89	75/125					
043 15917.03	037 15917.03s	5	Li	0.235	0.009	0.25	90	75/125	mg/L	Liquid
			Be	0.231	<0.001	0.25	92	75/125		
			B	0.275	0.06	0.25	86	75/125		
			Al	0.232	<0.010	0.25	93	75/125		
			Se	0.228	<0.005	0.25	91	75/125		
			Ti	0.294	0.053	0.25	96	75/125		
			V	0.237	<0.005	0.25	95	75/125		
			Cr	0.226	<0.005	0.25	90	75/125		
			Mn	0.275	0.054	0.25	88	75/125		
			Co	0.237	<0.005	0.25	95	75/125		
			Ni	0.223	<0.005	0.25	89	75/125		
			Cu	0.215	<0.005	0.25	86	75/125		
			Zn	0.236	0.010	0.25	90	75/125		
			As	0.239	0.007	0.25	93	75/125		
			Sr	0.349	0.122	0.25	91	75/125		
			Mo	0.222	<0.005	0.25	89	75/125		
			Ag	0.236	<0.0005	0.25	94	75/125		
			Cd	0.227	<0.0005	0.25	91	75/125		
Sn	0.217	<0.02	0.25	87	75/125					
Sb	0.203	<0.005	0.25	81	75/125					

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
043 15917.03	037 15917.03s	5	Ba	0.382	0.146	0.25	94	75/125	mg/L	Liquid
			Tl	0.226	<0.002	0.25	90	75/125		
			Pb	0.217	<0.003	0.25	87	75/125		
058 15844.01	057 15844.01s	243	Li	21.8	0.064	24.30	89	75/125	mg/kg	Soil
			Be	22.6	0.013	24.30	93	75/125		
			B	23.1	0.36	24.30	94	75/125		
			Al	37.4	17.7	24.30	81	75/125		
			Se	23.7	<0.005	24.30	98	75/125		
			Ti	21.5	0.274	24.30	87	75/125		
			V	22.4	0.009	24.30	92	75/125		
			Cr	21.4	0.140	24.30	88	75/125		
			Mn	22.1	0.446	24.30	89	75/125		
			Fe	25.6	4.93	24.30	85	75/125		
			Co	22.9	<0.005	24.30	94	75/125		
			Ni	21.4	0.094	24.30	88	75/125		
			Cu	21.8	0.048	24.30	90	75/125		
			Zn	22.4	0.568	24.30	90	75/125		
			As	22.6	0.014	24.30	93	75/125		
			Sr	21.8	0.442	24.30	88	75/125		
			Mo	23.1	<0.005	24.30	95	75/125		
			Ag	22.8	<0.0005	24.30	94	75/125		
			Cd	21.8	0.0005	24.30	90	75/125		
			Sn	24.6	1.31	24.30	96	75/125		
Sb	20.4	0.022	24.30	84	75/125					
Ba	22.1	0.116	24.30	91	75/125					
Tl	22.0	<0.002	24.30	91	75/125					
Pb	21.6	0.050	24.30	89	75/125					
063 BS-0.002		1	Li	0.00198	ND	0.002	99	70/130	mg/L	Liquid
			Be	0.00213	ND	0.002	107	70/130		
			B	0.00199	ND	0.002	100	70/130		
			Al	0.00230	ND	0.002	115	70/130		
			Se	0.00172	ND	0.002	86	70/130		
			Ti	0.00193	ND	0.002	97	70/130		
			V	0.00199	ND	0.002	100	70/130		
			Cr	0.00199	ND	0.002	100	70/130		
			Mn	0.00211	ND	0.002	106	70/130		
			Fe	0.00225	ND	0.002	113	70/130		
			Co	0.00213	ND	0.002	107	70/130		
			Ni	0.00203	ND	0.002	102	70/130		
			Cu	0.00207	ND	0.002	104	70/130		
			Zn	0.00258	ND	0.002	129	70/130		
			As	0.00204	ND	0.002	102	70/130		
			Sr	0.00200	ND	0.002	100	70/130		
			Mo	0.00149	ND	0.002	75	70/130		
			Ag	0.00222	ND	0.002	111	70/130		
			Cd	0.00209	ND	0.002	105	70/130		
			Sn	0.00142	ND	0.002	71	70/130		
Sb	0.00161	ND	0.002	81	70/130					
Ba	0.00205	ND	0.002	103	70/130					
Tl	0.00218	ND	0.002	109	70/130					
Pb	0.00209	ND	0.002	105	70/130					

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Spike Name	Sample Name	Dilute	Element	Spike Conc	Sample Conc	Spike Amount	%Rec	LCL/UCL	Units	Matrix
010 BS-0.05		1	Na	0.0598	ND	0.05	120	70/130	mg/L	Liquid
			Mg	0.0556	ND	0.05	111	70/130		
			K	0.0571	ND	0.05	114	70/130		
			Ca	0.0541	ND	0.05	108	70/130		
033 15664.18 MS-2.0	032 15664.18s	2	Na	34.9	31.8	4.0	78	75/125	mg/L	Liquid
			Mg	10.0	6.58	4.0	86	75/125		
			K	4.59	0.86	4.0	93	75/125		
			Ca	39.7	35.6	4.0	103	75/125		
060 15714.10 MS-2.0	059 15714.10s	2	Na	37.8	34.2	4.0	90	75/125	mg/L	Liquid
			Mg	9.92	6.33	4.0	90	75/125		
			K	5.23	1.52	4.0	93	75/125		
			Ca	42.2	39.2	4.0	75	75/125		
086 15628.09s	085 15628.08s	2	Na	35.7	30.8	4.0	123	75/125	mg/L	Liquid
			Mg	12.7	8.71	4.0	100	75/125		
			K	8.89	5.09	4.0	95	75/125		
			Ca	39.4	35.7	4.0	93	75/125		
109 15628.12s	108 15628.11s	2	Na	34.3	31.2	4.0	78	75/125	mg/L	Liquid
			Mg	12.5	8.95	4.0	89	75/125		
			K	8.49	5.00	4.0	87	75/125		
			Ca	38.5	35.4	4.0	78	75/125		
135 15663.15 MS-2.0	134 15663.15s	2	Na	5.21	1.49	4.0	93	75/125	mg/L	Liquid
			Mg	13.7	9.87	4.0	96	75/125		
			K	4.06	0.42	4.0	91	75/125		
			Ca	51.1	47.3	4.0	95	75/125		
158 15664.08 MS-2.0	157 15664.08s	2	Na	102	96.5	4.0	138*	75/125	mg/L	Liquid
			Mg	13.2	9.34	4.0	97	75/125		
			K	4.79	0.93	4.0	97	75/125		
			Ca	60.9	57.9	4.0	75	75/125		
161 15664.08 MS-2.0	160 15664.08s -d	20	Na	127	90.4	40.0	92	75/125	mg/L	Liquid
178 15715.08 MS-2.0	177 15715.08s	2	Na	14.9	11.1	4.0	95	75/125	mg/L	Liquid
			Mg	11.2	7.52	4.0	92	75/125		
			K	4.37	0.68	4.0	92	75/125		
			Ca	46.9	43.4	4.0	88	75/125		
192 15716.05 MS-2.0	191 15716.05s	2	Na	39.0	34.9	4.0	103	75/125	mg/L	Liquid
			Mg	13.7	9.43	4.0	107	75/125		
			K	6.16	2.19	4.0	99	75/125		
			Ca	58.0	53.3	4.0	118	75/125		
212 15854.04 MS-2.0	205 15854.04s diss	5	Na	9.54	<0.5	10.0	95	75/125	mg/L	Liquid
			Mg	9.54	<0.5	10.0	95	75/125		
			K	9.37	<0.5	10.0	94	75/125		
			Ca	9.83	<0.5	10.0	98	75/125		
227 15917.05 MS-2.0	222 15917.05s	5	Na	56.4	50.0	10.0	64*	75/125	mg/L	Liquid
			Mg	42.6	34.5	10.0	81	75/125		
			K	17.8	8.82	10.0	90	75/125		
			Ca	164	161	10.0	30*	75/125		
230 15917.05 MS-2.0	229 15917.05s	125	Na	287	48.3	250.0	96	75/125	mg/L	Liquid
			Ca	399	160	250.0	96	75/125		
241 15844.01 MS-2.0	240 15844.01s	243	Na	1100	690	486.0	84	75/125	mg/kg	Soil
			Mg	491	11.9	486.0	99	75/125		
			K	561	88.2	486.0	97	75/125		
			Ca	597	89.2	486.0	105	75/125		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Duplicate Name	Sample Name	Dilute	Element	Dup Conc	Samp Conc	%RPD	LCL/UCL	Units	Matrix
030 15854.07 MSD	029 15854.07 MS-0.05	5	Li	0.219	0.229	4	0/20	mg/L	Liquid
			Be	0.220	0.223	1	0/20		
			B	0.226	0.228	1	0/20		
			Al	0.230	0.234	2	0/20		
			Se	0.221	0.205	8	0/20		
			Ti	0.218	0.226	4	0/20		
			V	0.229	0.228	0	0/20		
			Cr	0.219	0.220	0	0/20		
			Mn	0.228	0.225	1	0/20		
			Fe	0.226	0.223	1	0/20		
			Co	0.237	0.239	1	0/20		
			Ni	0.223	0.222	0	0/20		
			Cu	0.276	0.272	1	0/20		
			Zn	0.228	0.225	1	0/20		
			As	0.219	0.220	0	0/20		
			Sr	0.221	0.219	1	0/20		
			Mo	0.221	0.206	7	0/20		
			Ag	0.235	0.232	1	0/20		
			Cd	0.219	0.217	1	0/20		
			Sn	0.224	0.210	6	0/20		
			Sb	0.191874	0.186967	3	0/20		
Ba	0.220	0.224	2	0/20					
Tl	0.232	0.230	1	0/20					
Pb	0.231	0.227	2	0/20					
044 15917.03 MSD	043 15917.03 MS-0.05	5	Li	0.233	0.235	1	0/20	mg/L	Liquid
			Be	0.236	0.231	2	0/20		
			B	0.289	0.275	5	0/20		
			Al	0.242	0.232	4	0/20		
			Se	0.250	0.228	9	0/20		
			Ti	0.282	0.294	4	0/20		
			V	0.238	0.237	0	0/20		
			Cr	0.226	0.226	0	0/20		
			Mn	0.284	0.275	3	0/20		
			Co	0.242	0.237	2	0/20		
			Ni	0.223	0.223	0	0/20		
			Cu	0.220	0.215	2	0/20		
			Zn	0.236	0.236	0	0/20		
			As	0.245	0.239	2	0/20		
			Sr	0.357	0.349	2	0/20		
			Mo	0.235	0.222	6	0/20		
			Ag	0.232	0.236	2	0/20		
			Cd	0.229	0.227	1	0/20		
			Sn	0.229	0.217	5	0/20		
			Sb	0.204	0.203	0	0/20		
			Ba	0.387	0.382	1	0/20		
Tl	0.224	0.226	1	0/20					
Pb	0.216	0.217	0	0/20					
059 15844.01 MSD	058 15844.01 MS-0.10	256	Li	23.2	21.8	6	0/20	mg/kg	Soil
			Be	24.4	22.6	8	0/20		
			B	23.9	23.1	3	0/20		
			Al	40.1	37.4	7	0/20		
			Se	25.0	23.7	5	0/20		
			Ti	23.2	21.5	8	0/20		
			V	24.4	22.4	9	0/20		
			Cr	23.2	21.4	8	0/20		
			Mn	24.0	22.1	8	0/20		
			Fe	27.5	25.6	7	0/20		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
059 15844.01 MSD	058 15844.01 MS-0.10	256	Co	25.0	22.9	9	0/20	mg/kg	Soil
			Ni	23.4	21.4	9	0/20		
			Cu	23.6	21.8	8	0/20		
			Zn	23.7	22.4	6	0/20		
			As	24.3	22.6	7	0/20		
			Sr	23.5	21.8	8	0/20		
			Mo	25.1	23.1	8	0/20		
			Ag	24.1	22.8	6	0/20		
			Cd	23.2	21.8	6	0/20		
			Sn	26.5	24.6	7	0/20		
			Sb	22.2	20.4	8	0/20		
			Ba	23.4	22.1	6	0/20		
			Tl	23.8	22.0	8	0/20		
			Pb	23.2	21.6	7	0/20		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Duplicate Name	Sample Name	Dilute	Element	Dup Conc	Samp Conc	%RPD	LCL/UCL	Units	Matrix
034 15664.18 MSD	033 15664.18 MS-2.0	2	Na	34.9	34.9	0	0/20	mg/L	Liquid
			Mg	10.1	10.0	1	0/20		
			K	4.48	4.59	2	0/20		
			Ca	39.2	39.7	1	0/20		
061 15714.10 MSD	060 15714.10 MS-2.0	2	Na	38.2	37.8	1	0/20	mg/L	Liquid
			Mg	9.94	9.92	0	0/20		
			K	5.16	5.23	1	0/20		
			Ca	43.2	42.2	2	0/20		
087 15628.10s MSD	086 15628.09s MS-2.0	2	Na	36.2	35.7	1	0/20	mg/L	Liquid
			Mg	12.6	12.7	1	0/20		
			K	8.77	8.89	1	0/20		
			Ca	39.6	39.4	1	0/20		
110 15628.13s MSD	109 15628.12s MS-2.0	2	Na	35.7	34.3	4	0/20	mg/L	Liquid
			Mg	12.9	12.5	3	0/20		
			K	8.91	8.49	5	0/20		
			Ca	40.1	38.5	4	0/20		
136 15663.15 MSD	135 15663.15 MS-2.0	2	Na	5.24	5.21	1	0/20	mg/L	Liquid
			Mg	13.3	13.7	3	0/20		
			K	3.99	4.06	2	0/20		
			Ca	50.9	51.1	0	0/20		
159 15664.08 MSD	158 15664.08 MS-2.0	2	Na	<0.005	102	200 *	0/20	mg/L	Liquid
			Mg	13.5	13.2	2	0/20		
			K	4.81	4.79	0	0/20		
			Ca	62.0	60.9	2	0/20		
179 15715.08 MSD	178 15715.08 MS-2.0	2	Na	14.7	14.9	1	0/20	mg/L	Liquid
			Mg	11.4	11.2	2	0/20		
			K	4.31	4.37	1	0/20		
			Ca	46.3	46.9	1	0/20		
193 15716.05 MSD	192 15716.05 MS-2.0	2	Na	38.9	39.0	0	0/20	mg/L	Liquid
			Mg	13.2	13.7	4	0/20		
			K	6.07	6.16	1	0/20		
			Ca	57.9	58.0	0	0/20		
213 15854.04 MSD	212 15854.04 MS-2.0	5	Na	9.59	9.54	1	0/20	mg/L	Liquid
			Mg	9.42	9.54	1	0/20		
			K	9.27	9.37	1	0/20		
			Ca	9.59	9.83	2	0/20		
228 15917.05 MSD	227 15917.05 MS-2.0	5	Na	56.5	56.4	0	0/20	mg/L	Liquid
			Mg	42.7	42.6	0	0/20		
			K	17.8	17.8	0	0/20		
			Ca	170	164	4	0/20		
242 15844.01 MSD	241 15844.01 MS-2.0	256	Na	1160	1100	5	0/20	mg/kg	Soil
			Mg	523	491	6	0/20		
			K	590	561	5	0/20		
			Ca	640	597	7	0/20		

Form 7: Laboratory Control Sample

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
049 072920_5 LCS-0.05	1	Li	0.0451	0.05	90	85/115	mg/L	Liquid
		Be	0.0458	0.05	92	85/115		
		B	0.0468	0.05	94	85/115		
		Al	0.0467	0.05	93	85/115		
		Se	0.0451	0.05	90	85/115		
		Ti	0.0445	0.05	89	85/115		
		V	0.0456	0.05	91	85/115		
		Cr	0.0444	0.05	89	85/115		
		Mn	0.0459	0.05	92	85/115		
		Fe	0.0446	0.05	89	85/115		
		Co	0.0480	0.05	96	85/115		
		Ni	0.0439	0.05	88	85/115		
		Cu	0.0444	0.05	89	85/115		
		Zn	0.0446	0.05	89	85/115		
		As	0.0440	0.05	88	85/115		
		Sr	0.0446	0.05	89	85/115		
		Mo	0.0427	0.05	85	85/115		
		Ag	0.0479	0.05	96	85/115		
		Cd	0.0454	0.05	91	85/115		
		Ba	0.0449	0.05	90	85/115		
		Tl	0.0468	0.05	94	85/115		
		Pb	0.0458	0.05	92	85/115		
064 072920_4 LCS-0.05	1	Li	0.0462	0.05	92	85/115	mg/L	Liquid
		Be	0.0468	0.05	94	85/115		
		B	0.0464	0.05	93	85/115		
		Al	0.0462	0.05	92	85/115		
		Se	0.0427	0.05	85	85/115		
		Ti	0.0456	0.05	91	85/115		
		V	0.0460	0.05	92	85/115		
		Cr	0.0449	0.05	90	85/115		
		Mn	0.0460	0.05	92	85/115		
		Fe	0.0456	0.05	91	85/115		
		Co	0.0467	0.05	93	85/115		
		Ni	0.0439	0.05	88	85/115		
		Cu	0.0453	0.05	91	85/115		
		Zn	0.0430	0.05	86	85/115		
		As	0.0440	0.05	88	85/115		
		Sr	0.0446	0.05	89	85/115		
		Mo	0.0443	0.05	89	85/115		
		Ag	0.0476	0.05	95	85/115		
		Cd	0.0437	0.05	87	85/115		
		Sn	0.0458	0.05	92	85/115		
		Sb	0.0448	0.05	90	85/115		
		Ba	0.0467	0.05	93	85/115		
		Tl	0.0463	0.05	93	85/115		
		Pb	0.0454	0.05	91	85/115		

Form 7: Laboratory Control Sample

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
011 072820_1 LCS-1.0	1	Na	0.952	1.0	95	85/115	mg/L	Liquid
		Mg	0.933	1.0	93	85/115		
		K	0.916	1.0	92	85/115		
		Ca	0.967	1.0	97	85/115		
064 072820_2 LCS-1.0	1	Na	0.928	1.0	93	85/115	mg/L	Liquid
		Mg	0.942	1.0	94	85/115		
		K	0.911	1.0	91	85/115		
		Ca	0.957	1.0	96	85/115		
113 072820_7 LCS-1.0	1	Na	0.964	1.0	96	85/115	mg/L	Liquid
		Mg	0.941	1.0	94	85/115		
		K	0.918	1.0	92	85/115		
		Ca	0.983	1.0	98	85/115		
164 072820_8 LCS-1.0	1	Na	0.951	1.0	95	85/115	mg/L	Liquid
		Mg	0.958	1.0	96	85/115		
		K	0.917	1.0	92	85/115		
		Ca	0.952	1.0	95	85/115		
196 072720_4 LCS-1.0	1	Na	0.938	1.0	94	85/115	mg/L	Liquid
		Mg	0.949	1.0	95	85/115		
		K	0.940	1.0	94	85/115		
		Ca	0.986	1.0	99	85/115		
233 072720_5 LCS-1.0	1	Na	0.938	1.0	94	85/115	mg/L	Liquid
		Mg	0.945	1.0	95	85/115		
		K	0.936	1.0	94	85/115		
		Ca	1.00	1.0	100	85/115		

Form 8: Serial Dilutions

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%D</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
041 15917.04s -d	038 15917.04s	25	Li	0.075	0.074	1	0/10	mg/L	Liquid
			Be	<0.001	<0.001	NC	0/10		
			B	4.50	4.57	2	0/10		
			Al	0.202	0.137	47*	0/10		
			Se	<0.005	<0.005	NC	0/10		
			Ti	0.140	0.132	6	0/10		
			V	<0.005	<0.005	NC	0/10		
			Cr	<0.005	<0.005	NC	0/10		
			Mn	0.111	0.110	1	0/10		
			Fe	0.32	0.31	3	0/10		
			Co	<0.005	<0.005	NC	0/10		
			Ni	0.012	0.010	20*	0/10		
			Cu	<0.005	<0.005	NC	0/10		
			Zn	0.010	0.006	67*	0/10		
			As	0.003	<0.002	NC	0/10		
			Sr	0.743	0.755	2	0/10		
			Mo	0.063	0.052	21*	0/10		
			Ag	0.0016	<0.0005	NC	0/10		
			Cd	0.0017	<0.0005	NC	0/10		
			Sn	0.06	<0.02	NC	0/10		
			Sb	0.015	<0.005	NC	0/10		
Ba	0.048	0.041	17*	0/10					
Tl	0.002	<0.002	NC	0/10					
Pb	<0.003	<0.003	NC	0/10					
052 15682.01 dil	053 15682.01s	270	Li	0.23	<0.20	NC	0/10	mg/kg	Soil
			Be	<0.20	<0.20	NC	0/10		
			B	2.44	2.61	7	0/10		
			Al	58.7	62.1	5	0/10		
			Se	<0.40	<0.40	NC	0/10		
			Ti	6.80	9.74	30*	0/10		
			V	0.77	1.00	23*	0/10		
			Cr	1.00	1.39	28*	0/10		
			Mn	8.36	13.4	38*	0/10		
			Fe	232	366	37*	0/10		
			Co	0.60	0.74	19*	0/10		
			Ni	1.87	2.77	32*	0/10		
			Cu	<0.50	<0.50	NC	0/10		
			Zn	5.41	7.33	26*	0/10		
			As	0.26	<0.20	NC	0/10		
			Sr	3.49	5.70	39*	0/10		
			Mo	<0.50	<0.50	NC	0/10		
			Ag	<0.20	<0.20	NC	0/10		
			Cd	<0.20	<0.20	NC	0/10		
			Sn	<2.0	<2.0	NC	0/10		
			Sb	<0.50	<0.50	NC	0/10		
Ba	1.30	1.96	34*	0/10					
Tl	<0.20	<0.20	NC	0/10					
Pb	<0.30	<0.30	NC	0/10					

Form 8: Serial Dilutions

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Duplicate Name	Sample Name	Dilute	Element	Dup Conc	Samp Conc	%D	LCL/UCL	Units	Matrix
013 15664.09 dil	014 15664.09s	2	Na	14.4	14.9	3	0/10	mg/L	Liquid
			Mg	9.76	10.0	2	0/10		
			K	0.553	0.57	3	0/10		
			Ca	55.0	56.3	2	0/10		
051 15714.02s -d	049 15714.02s -d	2	Na	176	180	2	0/10	mg/L	Liquid
066 15628.01 dil	067 15628.01s	2	Na	5.27	4.91	7	0/10	mg/L	Liquid
			Mg	8.96	8.48	6	0/10		
			K	0.660	0.50	32*	0/10		
			Ca	34.4	32.6	6	0/10		
115 15663.06 dil	116 15663.06s	2	Na	3.94	3.74	5	0/10	mg/L	Liquid
			Mg	8.32	8.00	4	0/10		
			K	0.62	0.46	35*	0/10		
			Ca	37.5	37.6	0	0/10		
160 15664.08s -d	157 15664.08s	20	Na	90.4	96.5	6	0/10	mg/L	Liquid
166 15714.11 dil	167 15714.11s	2	Na	34.8	34.0	2	0/10	mg/L	Liquid
			Mg	6.62	6.27	6	0/10		
			K	1.54	1.38	12*	0/10		
			Ca	35.8	35.3	1	0/10		
199 15854.01 dil	198 15854.01 dil	5	Na	334	345	3	0/10	mg/L	Liquid
			Mg	0.512	0.525	2	0/10		
			K	15.2	15.7	3	0/10		
			Ca	2.27	2.36	4	0/10		
218 15917.01s	216 15917.01s	5	Na	47.3	45.4	4	0/10	mg/L	Liquid
			Mg	44.5	43.5	2	0/10		
			Ca	156	156	0	0/10		
219 15917.02s	217 15917.02s	5	Na	60.4	59.2	2	0/10	mg/L	Liquid
			Mg	71.8	70.8	1	0/10		
			Ca	263	271	3	0/10		
229 15917.05s	222 15917.05s	125	Na	48.3	50.0	3	0/10	mg/L	Liquid
			Ca	160	161	1	0/10		
239 15870.01s	238 15870.01s	816	Na	657	646	2	0/10	mg/kg	Soil
			Mg	4780	4840	1	0/10		
			K	12400	13100	5	0/10		
			Ca	20700	22100	6	0/10		

Form 13: Analysis Run Log

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Blank	13:04:27 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
002 Std-0.0001	13:06:31 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
003 Std-0.0005	13:08:34 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
004 Std-0.001	13:10:38 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
005 Std-0.005	13:12:42 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
006 Std-0.02	13:14:46 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
007 Std-0.05	13:16:50 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
008 Std-0.2	13:18:54 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
009 rinse	13:20:58 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
010 CCV-0.1	13:34:11 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
011 ICV-0.1	13:36:15 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
012 rinse	13:38:40 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
013 ICB	13:40:44 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
014 CCB	13:46:52 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
015 BS-0.0001	13:49:15 Mon	Liquid	Ag,Ba,Cd,Co,Cr,Cu,Ni,Pb,Sb,Sr,Ti,Tl,V
016 BS-0.0005	13:51:19 Mon	Liquid	Ag,As,B,Ba,Be,Cd,Co,Cr,Cu,Li,Mn,Mo,Ni,Pb,Sb,Sn,Sr,Ti,Tl,V
017 BS-0.0002	13:55:44 Mon	Liquid	Ag,As,Ba,Be,Cd,Co,Cr,Cu,Ni,Pb,Sn,Sr,Ti,Tl,V
018 BS-0.001	14:00:52 Mon	Liquid	Ag,As,B,Ba,Be,Cd,Co,Cr,Cu,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
019 Solu-AB	14:27:34 Mon	Liquid	Ag,Al,As,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Ti,Zn
020 Solu-AA	14:29:38 Mon	Liquid	Ag,As,B,Ba,Be,Cd,Co,Cr,Cu,Li,Mn,Ni,Pb,Sb,Se,Sn,Sr,Tl,V,Zn
021 Rinse	14:39:14 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
022 15854.01 dil	15:14:31 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
023 15854.01s diss	15:16:35 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
024 15854.02s	15:18:39 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
025 15854.04s diss	15:20:42 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
026 15854.05s	15:22:46 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
027 15854.07s diss	15:24:49 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
028 15854.08s	15:26:53 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
029 15854.07 MS-0.05	15:28:56 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
030 15854.07 MS-0.1	15:30:59 Mon	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn

Form 13: Analysis Run Log

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
			b, Se, Sn, Sr, Ti, Tl, V, Zn
031 CCV2-0.1	15:36:12 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
032 Rinse	15:38:40 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
033 CCB2	15:40:44 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
034 15917.07s	15:45:03 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
035 15917.01s	15:47:07 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
036 15917.02s	15:49:10 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
037 15917.03s	15:51:14 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
038 15917.04s	15:53:17 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
039 15917.05s	15:55:20 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
040 15917.06s	15:57:23 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
041 15917.04s -d	16:15:07 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
042 15858.01s	16:19:13 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
043 15917.03 MS-0.05	16:22:27 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Li, Mn, Mo, Ni, Pb, Sb, S
			e, Sn, Sr, Ti, Tl, V, Zn
044 15917.03 MSD	16:24:30 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Li, Mn, Mo, Ni, Pb, Sb, S
			e, Sn, Sr, Ti, Tl, V, Zn
045 15858.01s	16:27:08 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
046 CCV3-0.1	16:29:12 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
047 Rinse	16:31:16 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
048 CCB3	16:33:20 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
049 072920_5 LCS-0.05	16:46:09 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			e, Sr, Ti, Tl, V, Zn
050 Rinse	16:48:15 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
051 072920_5 LRB	16:52:36 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
052 15682.01 dil	16:55:36 Mon	Soil	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
053 15682.01s	16:57:39 Mon	Soil	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
054 Rinse	16:59:43 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
055 19870.01s	17:01:46 Mon	Soil	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
056 Rinse	17:03:49 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
057 15844.01s	17:05:52 Mon	Soil	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
058 15844.01s	17:07:55 Mon	Soil	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S

Form 13: Analysis Run Log

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
			b, Se, Sn, Sr, Ti, Tl, V, Zn
059 15844.01 MSD	17:12:36 Mon	Soil	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
060 CCV3-0.1	17:17:53 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sr, Ti, Tl, V, Zn
061 Rinse	17:20:52 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
062 CCB3	17:53:13 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
063 BS-0.002	14:10:17 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
064 072920_4 LCS-0.05	17:30:58 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
065 072920_4 LRB	17:36:47 Mon	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn

Form 13: Analysis Run Log

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Blank	09:44:31 Tue	Liquid	Ca, K, Mg, Na
002 Std-0.20	09:45:42 Tue	Liquid	Ca, K, Mg, Na
003 Std-0.50	09:46:54 Tue	Liquid	Ca, K, Mg, Na
004 Std-1.0	09:48:06 Tue	Liquid	Ca, K, Mg, Na
005 Std-2.0	09:49:18 Tue	Liquid	Ca, K, Mg, Na
006 Std-5.0	09:50:30 Tue	Liquid	Ca, K, Mg, Na
007 ICV-2.0	09:51:41 Tue	Liquid	Ca, K, Mg, Na
008 ICB	09:55:24 Tue	Liquid	Ca, K, Mg, Na
009 CCB	09:56:36 Tue	Liquid	Ca, K, Mg, Na
010 BS-0.05	09:57:48 Tue	Liquid	Ca, K, Mg, Na
011 072820_1 LCS-1.0	10:13:07 Tue	Liquid	Ca, K, Mg, Na
012 072820_1 LRB	10:21:33 Tue	Liquid	Ca, K, Mg, Na
013 15664.09 dil	10:29:30 Tue	Liquid	Ca, K, Mg, Na
014 15664.09s	10:30:42 Tue	Liquid	Ca, K, Mg, Na
015 rinse	10:34:07 Tue	Liquid	Ca, K, Mg, Na
016 15664.10s	10:37:00 Tue	Liquid	Ca, K, Mg, Na
017 rinse	10:38:11 Tue	Liquid	Ca, K, Mg, Na
018 15664.11s	10:40:57 Tue	Liquid	Ca, K, Mg, Na
019 rinse	10:42:09 Tue	Liquid	Ca, K, Mg, Na
020 15664.12s	10:43:20 Tue	Liquid	Ca, K, Mg, Na
021 rinse	10:44:32 Tue	Liquid	Ca, K, Mg, Na
022 15664.13s	10:45:43 Tue	Liquid	Ca, K, Mg, Na
023 rinse	10:46:55 Tue	Liquid	Ca, K, Mg, Na
024 15664.14s	10:48:06 Tue	Liquid	Ca, K, Mg, Na
025 rinse	10:49:17 Tue	Liquid	Ca, K, Mg, Na
026 15664.15s	10:50:28 Tue	Liquid	Ca, K, Mg, Na
027 rinse	10:51:40 Tue	Liquid	Ca, K, Mg, Na
028 15664.16s	10:52:51 Tue	Liquid	Ca, K, Mg, Na
029 rinse	10:54:03 Tue	Liquid	Ca, K, Mg, Na
030 15664.17s	10:55:14 Tue	Liquid	Ca, K, Mg, Na
031 rinse	10:56:26 Tue	Liquid	Ca, K, Mg, Na
032 15664.18s	10:57:37 Tue	Liquid	Ca, K, Mg, Na
033 15664.18 MS-2.0	11:05:38 Tue	Liquid	Ca, K, Mg, Na
034 15664.18 MSD	11:08:10 Tue	Liquid	Ca, K, Mg, Na
035 CCV2-2.0	11:09:22 Tue	Liquid	Ca, K, Mg, Na
036 CCB2	11:10:34 Tue	Liquid	Ca, K, Mg, Na
037 15714.01s	11:12:46 Tue	Liquid	Ca, K, Mg, Na
038 rinse	11:13:57 Tue	Liquid	Ca, K, Mg, Na
039 15714.02s	11:15:08 Tue	Liquid	Ca, K, Mg
040 rinse	11:16:20 Tue	Liquid	Ca, K, Mg, Na
041 15714.03s	11:17:32 Tue	Liquid	Ca, K, Mg, Na
042 rinse	11:18:43 Tue	Liquid	Ca, K, Mg, Na
043 15714.04s	11:19:55 Tue	Liquid	Ca, K, Mg, Na
044 rinse	11:21:06 Tue	Liquid	Ca, K, Mg, Na
045 15714.05s	11:22:17 Tue	Liquid	Ca, K, Mg, Na
046 rinse	11:23:29 Tue	Liquid	Ca, K, Mg, Na
047 15714.06s	11:24:40 Tue	Liquid	Ca, K, Mg, Na
048 rinse	11:27:19 Tue	Liquid	Ca, K, Mg, Na
049 15714.02s -d	11:28:29 Tue	Liquid	Na
050 rinse	11:29:41 Tue	Liquid	Ca, K, Mg, Na
051 15714.02s -d	11:31:52 Tue	Liquid	Na
052 rinse	11:33:03 Tue	Liquid	Ca, K, Mg, Na
053 15714.07s	11:34:14 Tue	Liquid	Ca, K, Mg, Na
054 rinse	11:35:25 Tue	Liquid	Ca, K, Mg, Na
055 15714.08s	11:36:36 Tue	Liquid	Ca, K, Mg, Na
056 rins	11:37:48 Tue	Liquid	Ca, K, Mg, Na

Form 13: Analysis Run Log

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
057 15714.09s	11:38:59 Tue	Liquid	Ca, K, Mg, Na
058 rinse	11:40:10 Tue	Liquid	Ca, K, Mg, Na
059 15714.10s	11:41:21 Tue	Liquid	Ca, K, Mg, Na
060 15714.10 MS-2.0	11:42:32 Tue	Liquid	Ca, K, Mg, Na
061 15714.10 MSD	11:43:43 Tue	Liquid	Ca, K, Mg, Na
062 CCV3-2.0	11:44:55 Tue	Liquid	Ca, K, Mg, Na
063 CCB3	11:46:07 Tue	Liquid	Ca, K, Mg, Na
064 072820_2 LCS-1.0	11:59:24 Tue	Liquid	Ca, K, Mg, Na
065 072820_2 LRB	12:04:48 Tue	Liquid	Ca, K, Mg, Na
066 15628.01 dil	12:06:00 Tue	Liquid	Ca, K, Mg, Na
067 15628.01s	12:07:12 Tue	Liquid	Ca, K, Mg, Na
068 rinse	12:08:23 Tue	Liquid	Ca, K, Mg, Na
069 15628.02s	12:09:46 Tue	Liquid	Ca, K, Mg, Na
070 rinse	12:10:57 Tue	Liquid	Ca, K, Mg, Na
071 15628.03s	12:12:09 Tue	Liquid	Ca, K, Mg, Na
072 rinse	12:13:20 Tue	Liquid	Ca, K, Mg, Na
073 15628.04s	12:14:32 Tue	Liquid	Ca, K, Mg, Na
074 rinse	12:15:43 Tue	Liquid	Ca, K, Mg, Na
075 15628.05s	12:16:55 Tue	Liquid	Ca, K, Mg, Na
076 rinse	12:18:06 Tue	Liquid	Ca, K, Mg, Na
077 15628.06s	12:19:18 Tue	Liquid	Ca, K, Mg, Na
078 rinse	12:20:29 Tue	Liquid	Ca, K, Mg, Na
079 15628.07s	12:21:40 Tue	Liquid	Ca, K, Mg, Na
080 rinse	12:22:52 Tue	Liquid	Ca, K, Mg, Na
081 15662.01s	12:24:03 Tue	Liquid	Ca, K, Mg, Na
082 rinse	12:25:15 Tue	Liquid	Ca, K, Mg, Na
083 15662.02s	12:26:26 Tue	Liquid	Ca, K, Mg, Na
084 rinse	12:27:38 Tue	Liquid	Ca, K, Mg, Na
085 15628.08s	12:28:49 Tue	Liquid	Ca, K, Mg, Na
086 15628.09s MS-2.0	12:30:01 Tue	Liquid	Ca, K, Mg, Na
087 15628.10s MSD	12:31:13 Tue	Liquid	Ca, K, Mg, Na
088 CCV4-2.0	12:33:42 Tue	Liquid	Ca, K, Mg, Na
089 CCB4	12:36:05 Tue	Liquid	Ca, K, Mg, Na
090 15662.03s	12:43:59 Tue	Liquid	Ca, K, Mg, Na
091 rinse	12:45:11 Tue	Liquid	Ca, K, Mg, Na
092 15662.04s	12:46:22 Tue	Liquid	Ca, K, Mg, Na
093 rinse	12:47:33 Tue	Liquid	Ca, K, Mg, Na
094 15662.05s	12:50:52 Tue	Liquid	Ca, K, Mg, Na
095 rinse	12:52:03 Tue	Liquid	Ca, K, Mg, Na
096 15662.06s	12:53:14 Tue	Liquid	Ca, K, Mg, Na
097 rinse	12:54:26 Tue	Liquid	Ca, K, Mg, Na
098 15663.01s	12:55:37 Tue	Liquid	Ca, K, Mg, Na
099 rinse	12:56:48 Tue	Liquid	Ca, K, Mg, Na
100 15663.02s	12:57:59 Tue	Liquid	Ca, K, Mg, Na
101 rinse	12:59:10 Tue	Liquid	Ca, K, Mg, Na
102 15663.03s	13:00:22 Tue	Liquid	Ca, K, Mg, Na
103 rinse	13:01:33 Tue	Liquid	Ca, K, Mg, Na
104 15663.04s	13:02:44 Tue	Liquid	Ca, K, Mg, Na
105 rinse	13:03:56 Tue	Liquid	Ca, K, Mg, Na
106 15663.05s	13:05:06 Tue	Liquid	Ca, K, Mg, Na
107 rinse	13:06:18 Tue	Liquid	Ca, K, Mg, Na
108 15628.11s	13:07:29 Tue	Liquid	Ca, K, Mg, Na
109 15628.12s MS-2.0	13:08:40 Tue	Liquid	Ca, K, Mg, Na
110 15628.13s MSD	13:09:51 Tue	Liquid	Ca, K, Mg, Na
111 CCV5-2.0	13:16:20 Tue	Liquid	Ca, K, Mg, Na
112 CCB5	13:23:44 Tue	Liquid	Ca, K, Mg, Na

Form 13: Analysis Run Log

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
113 072820_7 LCS-1.0	13:32:48 Tue	Liquid	Ca, K, Mg, Na
114 072820_7 LRB	13:40:27 Tue	Liquid	Ca, K, Mg, Na
115 15663.06 dil	13:43:25 Tue	Liquid	Ca, K, Mg, Na
116 15663.06s	13:44:37 Tue	Liquid	Ca, K, Mg, Na
117 rinse	13:45:49 Tue	Liquid	Ca, K, Mg, Na
118 15663.07s	13:47:00 Tue	Liquid	Ca, K, Mg, Na
119 rinse	13:48:12 Tue	Liquid	Ca, K, Mg, Na
120 15663.08s	13:49:23 Tue	Liquid	Ca, K, Mg, Na
121 rinse	13:50:35 Tue	Liquid	Ca, K, Mg, Na
122 15663.09s	13:51:46 Tue	Liquid	Ca, K, Mg, Na
123 rinse	13:52:58 Tue	Liquid	Ca, K, Mg, Na
124 15663.10s	13:54:09 Tue	Liquid	Ca, K, Mg, Na
125 rinse	13:55:21 Tue	Liquid	Ca, K, Mg, Na
126 15663.11s	13:56:32 Tue	Liquid	Ca, K, Mg, Na
127 rinse	13:57:44 Tue	Liquid	Ca, K, Mg, Na
128 15663.12s	13:58:55 Tue	Liquid	Ca, K, Mg, Na
129 rinse	14:00:06 Tue	Liquid	Ca, K, Mg, Na
130 15663.13s	14:01:18 Tue	Liquid	Ca, K, Mg, Na
131 rinse	14:02:29 Tue	Liquid	Ca, K, Mg, Na
132 15663.14s	14:03:41 Tue	Liquid	Ca, K, Mg, Na
133 rinse	14:04:52 Tue	Liquid	Ca, K, Mg, Na
134 15663.15s	14:06:04 Tue	Liquid	Ca, K, Mg, Na
135 15663.15 MS-2.0	14:07:15 Tue	Liquid	Ca, K, Mg, Na
136 15663.15 MSD	14:08:26 Tue	Liquid	Ca, K, Mg, Na
137 CCV6-2.0	14:20:40 Tue	Liquid	Ca, K, Mg, Na
138 CCB6	14:21:52 Tue	Liquid	Ca, K, Mg, Na
139 15663.16s	14:23:03 Tue	Liquid	Ca, K, Mg, Na
140 rinse	14:24:15 Tue	Liquid	Ca, K, Mg, Na
141 15663.17s	14:25:25 Tue	Liquid	Ca, K, Mg, Na
142 rinse	14:26:37 Tue	Liquid	Ca, K, Mg, Na
143 15664.01s	14:27:49 Tue	Liquid	Ca, K, Mg, Na
144 rinse	14:29:00 Tue	Liquid	Ca, K, Mg, Na
145 15664.02s	14:30:12 Tue	Liquid	Ca, K, Mg, Na
146 rinse	14:31:23 Tue	Liquid	Ca, K, Mg, Na
147 15664.03s	14:32:34 Tue	Liquid	Ca, K, Mg, Na
148 rinse	14:33:46 Tue	Liquid	Ca, K, Mg, Na
149 15664.04s	14:34:57 Tue	Liquid	Ca, K, Mg, Na
150 rinse	14:36:09 Tue	Liquid	Ca, K, Mg, Na
151 15664.05s	14:37:19 Tue	Liquid	Ca, K, Mg, Na
152 rinse	14:38:31 Tue	Liquid	Ca, K, Mg, Na
153 15664.06s	14:39:42 Tue	Liquid	Ca, K, Mg, Na
154 rinse	14:40:53 Tue	Liquid	Ca, K, Mg, Na
155 15664.07s	14:42:04 Tue	Liquid	Ca, K, Mg, Na
156 rinse	14:43:16 Tue	Liquid	Ca, K, Mg, Na
157 15664.08s	14:44:27 Tue	Liquid	Ca, K, Mg, Na
158 15664.08 MS-2.0	14:45:38 Tue	Liquid	Ca, K, Mg, Na
159 15664.08 MSD	14:46:49 Tue	Liquid	Ca, K, Mg, Na
160 15664.08s -d	15:10:04 Tue	Liquid	Na
161 15664.08 MS-2.0	15:11:15 Tue	Liquid	Na
162 CCV7-2.0	15:13:43 Tue	Liquid	Ca, K, Mg, Na
163 CCB7	15:16:07 Tue	Liquid	Ca, K, Mg, Na
164 072820_8 LCS-1.0	15:33:00 Tue	Liquid	Ca, K, Mg, Na
165 072820_8 LRB	15:34:12 Tue	Liquid	Ca, K, Mg, Na
166 15714.11 dil	15:37:35 Tue	Liquid	Ca, K, Mg, Na
167 15714.11s	15:38:47 Tue	Liquid	Ca, K, Mg, Na
168 rins	15:40:14 Tue	Liquid	Ca, K, Mg, Na

Form 13: Analysis Run Log

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
169 15714.12s	15:41:26 Tue	Liquid	Ca, K, Mg, Na
170 15715.01s	15:42:37 Tue	Liquid	Ca, K, Mg, Na
171 15715.02s	15:43:49 Tue	Liquid	Ca, K, Mg, Na
172 15715.03s	15:45:00 Tue	Liquid	Ca, K, Mg, Na
173 15715.04s	15:46:11 Tue	Liquid	Ca, K, Mg, Na
174 15715.05s	15:47:22 Tue	Liquid	Ca, K, Mg, Na
175 15715.06s	15:48:34 Tue	Liquid	Ca, K, Mg, Na
176 15715.07s	15:49:45 Tue	Liquid	Ca, K, Mg, Na
177 15715.08s	15:50:57 Tue	Liquid	Ca, K, Mg, Na
178 15715.08 MS-2.0	15:52:08 Tue	Liquid	Ca, K, Mg, Na
179 15715.08 MSD	15:53:19 Tue	Liquid	Ca, K, Mg, Na
180 CCV8-2.0	15:55:30 Tue	Liquid	Ca, K, Mg, Na
181 CCB8	15:57:54 Tue	Liquid	Ca, K, Mg, Na
182 15715.09s	15:59:56 Tue	Liquid	Ca, K, Mg, Na
183 15715.10s	16:01:07 Tue	Liquid	Ca, K, Mg, Na
184 15715.11s	16:02:18 Tue	Liquid	Ca, K, Mg, Na
185 15715.12s	16:03:30 Tue	Liquid	Ca, K, Mg, Na
186 15715.13s	16:04:41 Tue	Liquid	Ca, K, Mg, Na
187 15716.01s	16:05:52 Tue	Liquid	Ca, K, Mg, Na
188 15716.02s	16:07:03 Tue	Liquid	Ca, K, Mg, Na
189 15716.03s	16:08:14 Tue	Liquid	Ca, K, Mg, Na
190 15716.04s	16:09:25 Tue	Liquid	Ca, K, Mg, Na
191 15716.05s	16:10:36 Tue	Liquid	Ca, K, Mg, Na
192 15716.05 MS-2.0	16:15:29 Tue	Liquid	Ca, K, Mg, Na
193 15716.05 MSD	16:24:56 Tue	Liquid	Ca, K, Mg, Na
194 CCV9-2.0	16:26:08 Tue	Liquid	Ca, K, Mg, Na
195 CCB9	16:27:20 Tue	Liquid	Ca, K, Mg, Na
196 072720_4 LCS-1.0	16:34:49 Tue	Liquid	Ca, K, Mg, Na
197 072820_4 LRB	16:36:01 Tue	Liquid	Ca, K, Mg, Na
198 15854.01 dil	16:38:40 Tue	Liquid	Na
199 15854.01 dil	16:42:34 Tue	Liquid	Ca, K, Mg, Na
200 15854.01s diss	16:44:08 Tue	Liquid	Ca, K, Mg
201 rinse	16:45:20 Tue	Liquid	Ca, K, Mg, Na
202 15854.02s	16:46:32 Tue	Liquid	Ca, K, Mg
203 15854.02 dil	16:48:44 Tue	Liquid	Na
204 rinse	16:49:56 Tue	Liquid	Ca, K, Mg, Na
205 15854.04s diss	16:51:07 Tue	Liquid	Ca, K, Mg, Na
206 rinse	16:52:19 Tue	Liquid	Ca, K, Mg, Na
207 15854.05s	16:53:30 Tue	Liquid	Ca, K, Mg, Na
208 rinse	16:54:41 Tue	Liquid	Ca, K, Mg, Na
209 15854.07s diss	16:55:52 Tue	Liquid	Ca, K, Mg, Na
210 rinse	16:57:04 Tue	Liquid	Ca, K, Mg, Na
211 15854.08s	16:58:16 Tue	Liquid	Ca, K, Mg, Na
212 15854.04 MS-2.0	17:02:33 Tue	Liquid	Ca, K, Mg, Na
213 15854.04 MSD	17:03:44 Tue	Liquid	Ca, K, Mg, Na
214 CCV10-2.0	17:04:56 Tue	Liquid	Ca, K, Mg, Na
215 CCB10	17:06:08 Tue	Liquid	Ca, K, Mg, Na
216 15917.01s	17:10:15 Tue	Liquid	Ca, K, Mg, Na
217 15917.02s	17:11:26 Tue	Liquid	Ca, K, Mg, Na
218 15917.01s	17:13:15 Tue	Liquid	Ca, Mg, Na
219 15917.02s	17:14:27 Tue	Liquid	Ca, Mg, Na
220 15917.03s	17:15:38 Tue	Liquid	Ca, K, Mg, Na
221 15917.04s	17:16:49 Tue	Liquid	Ca, K, Mg, Na
222 15917.05s	17:18:00 Tue	Liquid	Ca, K, Mg, Na
223 15917.06s	17:19:11 Tue	Liquid	Ca, K, Mg, Na
224 15917.07s	17:20:23 Tue	Liquid	Ca, K, Mg, Na

Form 13: Analysis Run Log

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
225 rinse	17:26:29 Tue	Liquid	Ca, K, Mg, Na
226 15917.07s	17:27:40 Tue	Liquid	Ca, K, Mg, Na
227 15917.05 MS-2.0	17:28:51 Tue	Liquid	Ca, K, Mg, Na
228 15917.05 MSD	17:30:02 Tue	Liquid	Ca, K, Mg, Na
229 15917.05s	17:34:47 Tue	Liquid	Ca, Na
230 15917.05 MS-2.0	17:36:03 Tue	Liquid	Ca, Na
231 CCV11-2.0	17:37:16 Tue	Liquid	Ca, K, Mg, Na
232 CCB11	17:38:28 Tue	Liquid	Ca, K, Mg, Na
233 072720_5 LCS-1.0	17:39:38 Tue	Liquid	Ca, K, Mg, Na
234 072720_5 LRB	17:42:02 Tue	Liquid	Ca, K, Mg, Na
235 15682.01 dil	17:43:13 Tue	Soil	K
236 15682.01s	17:44:24 Tue	Soil	Ca, Mg, Na
237 rinse	17:45:52 Tue	Liquid	Ca, K, Mg, Na
238 15870.01s	17:47:03 Tue	Soil	Ca, K, Mg, Na
239 15870.01s	17:48:42 Tue	Soil	Ca, K, Mg, Na
240 15844.01s	17:49:52 Tue	Soil	Ca, K, Mg, Na
241 15844.01 MS-2.0	17:52:52 Tue	Soil	Ca, K, Mg, Na
242 15844.01 MSD	17:54:03 Tue	Soil	Ca, K, Mg, Na
243 CCV12-2.0	17:55:15 Tue	Liquid	Ca, K, Mg, Na
244 CCB12	17:56:27 Tue	Liquid	Ca, K, Mg, Na

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\wizard\SmartTune\Tune 2018\daily Optimiza1

Start Time: 7/27/2020 10:44:41 AM

End Time: 7/27/2020 10:53:55 AM

Torch Alignment - [Passed]

Vertical:	0.32 mm
Horizontal:	0.17 mm
Intensity:	163802.74

[STD/KED] Nebulizer Gas Flow - [Passed] Optimum value(s): 1.06

Obtained Intensity (In 115): 162180.39

Obtained Formula (CeO 156 / Ce 140): 0.0184 (=2752.27 / 149885.19)

Mass Calibration and Resolution - [Passed] Optimum value(s): N/A

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.721)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.710)

Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.719)

Target/Obtained mass (207.977/208.025), Target/Obtained resolution (0.7/0.712)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.693)

[KED] QID - Optimum value(s): Correlation Coefficient = 0.978; Intercept = -15.20

[STD/DRC] QID - Optimum value(s): Correlation Coefficient = 0.982; Intercept = -14.82

[STD] Performance Check - [Passed] Optimum value(s): N/A

Obtained Intensity (Be 9): 13775.71

Obtained Intensity (In 115): 165230.79

Obtained Intensity (U 238): 184614.51

Obtained Intensity (Bkgd 220): 0.47

Obtained Formula (Ce++ 70 / Ce 140): 0.023 (=3076.53 / 133591.33)

Obtained Formula (CeO 156 / Ce 140): 0.019 (=2512.75 / 133591.33)

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\wizard\SmartTune\Tune 2018\daily Optimiza

Optimization Status

Start Time: 7/27/2020 10:44:41 AM

Torch Alignment

Optimization Settings:

Method: Torch Alignment.mth.
Intensity Criterion: In 115 Maximum

Optimization Results:

[Passed]

Vertical: 0.32 mm
Horizontal: 0.17 mm
Intensity: 163802.74

[STD/KED] Nebulizer Gas Flow

Optimization Settings:

Method: Optimize.mth.
Initial Try - Start/End/Step: 0.9/1.2/0.02.
Intensity Criterion: In 115 Maximum
Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (In 115): 162180.39
Obtained Formula (CeO 156 / Ce 140): 0.0184 (=2752.27 / 149885.19)

[Passed] Optimum value(s): 1.06

Mass Calibration and Resolution

Optimization Settings:

Method: Tuning.mth.
MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\defaultNEW.tun
Iterations: 6
Target accuracy (+/- amu): 0.05 for Mass Cal. and 0.03 for Resolution
Peak height (%) for Res. Opt.: 10

Optimization Results:

Initial Try

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.721)
Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.710)
Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.719)
Target/Obtained mass (207.977/208.025), Target/Obtained resolution (0.7/0.712)
Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.693)

[Passed] Optimum value(s): N/A

[KED] QID

Optimization Settings:

Method: QID Calibration.mth.
Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.978; Intercept = -15.20

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-15	54274.9
Mg	24	41	-15.5	439824
In	115	41	-12.5	182835
Ce	140	41	-12	115662
Pb	208	41	-7	56792.7
U	238	41	-9.5	130501

[STD/DRC] QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.982; Intercept = -14.82

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-15	80864.2
Mg	24	41	-14.5	400064
In	115	41	-12	175807
Ce	140	41	-9.5	144972
Pb	208	41	-8	96879.4
U	238	41	-7.5	185517

[STD] Performance Check

Optimization Settings:

Method: STD Performance Check.mth.

Intensity Criterion: Be 9 > 4000

Intensity Criterion: In 115 > 40000

Intensity Criterion: U 238 > 35000

Intensity Criterion: Bkgd 220 <= 1

Formula Criterion: Ce++ 70 / Ce 140 <= 0.05

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (Be 9): 13775.71

Obtained Intensity (In 115): 165230.79

Obtained Intensity (U 238): 184614.51

Obtained Intensity (Bkgd 220): 0.47

Obtained Formula (Ce++ 70 / Ce 140): 0.023 (=3076.53 / 133591.33)

Obtained Formula (CeO 156 / Ce 140): 0.019 (=2512.75 / 133591.33)

[Passed] Optimum value(s): N/A

End Time: 7/27/2020 10:53:55 AM

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\wizard\SmartTune\Tune 2018\daily Optimiza

Start Time: 7/28/2020 9:14:45 AM

End Time: 7/28/2020 9:24:17 AM

Torch Alignment - [Passed]

Vertical:	0.24 mm
Horizontal:	0.10 mm
Intensity:	205801.80

[STD/KED] Nebulizer Gas Flow - [Passed] optimum value(s): 1.04

Obtained Intensity (In 115): 198583.72

Obtained Formula (CeO 156 / Ce 140): 0.0199 (=3009.32 / 151317.17)

Mass Calibration and Resolution - [Passed] optimum value(s): N/A

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.704)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.693)

Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.707)

Target/Obtained mass (207.977/207.975), Target/Obtained resolution (0.7/0.716)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.707)

[KED] QID - optimum value(s): Correlation Coefficient = 0.982; Intercept = -15.97

[STD/DRC] QID - optimum value(s): Correlation Coefficient = 0.987; Intercept = -15.19

[STD] Performance Check - [Passed] optimum value(s): N/A

Obtained Intensity (Be 9): 13271.30

Obtained Intensity (In 115): 185772.48

Obtained Intensity (U 238): 204078.60

Obtained Intensity (Bkgd 220): 0.53

Obtained Formula (Ce++ 70 / Ce 140): 0.016 (=2339.32 / 146139.17)

Obtained Formula (CeO 156 / Ce 140): 0.020 (=2947.57 / 146139.17)

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\wizard\SmartTune\Tune 2018\daily Optimiza

Optimization Status

Start Time: 7/28/2020 9:14:45 AM

Torch Alignment

Optimization Settings:

Method: Torch Alignment.mth.

Intensity Criterion: In 115 Maximum

Optimization Results:

[Passed]

Vertical: 0.24 mm

Horizontal: 0.10 mm

Intensity: 205801.80

[STD/KED] Nebulizer Gas Flow

Optimization Settings:

Method: Optimize.mth.

Initial Try - Start/End/Step: 0.9/1.2/0.02.

Intensity Criterion: In 115 Maximum

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (In 115): 198583.72

Obtained Formula (CeO 156 / Ce 140): 0.0199 (=3009.32 / 151317.17)

[Passed] Optimum value(s): 1.04

Mass Calibration and Resolution

Optimization Settings:

Method: Tuning.mth.

MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\defaultNEW.tun

Iterations: 6

Target accuracy (+/- amu): 0.05 for Mass Cal. and 0.03 for Resolution

Peak height (%) for Res. Opt.: 10

Optimization Results:

Initial Try

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.717)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.698)

Target/Obtained mass (114.904/114.875), Target/Obtained resolution (0.7/0.715)

Target/Obtained mass (207.977/207.925), Target/Obtained resolution (0.7/0.711) - <Target not a

Target/Obtained mass (238.05/238.025), Target/Obtained resolution (0.7/0.694)

[Failed]

Retry 1

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.704)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.693)

Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.707)

Target/Obtained mass (207.977/207.975), Target/Obtained resolution (0.7/0.716)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.707)

[Passed] Optimum value(s): N/A

[KED] QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.982; Intercept = -15.97

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-15.5	50998.9
Mg	24	41	-15.5	138209
In	115	41	-12.5	193461
Ce	140	41	-12	114570
Pb	208	41	-7	68761.1
U	238	41	-9.5	133331

[STD/DRC] QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.987; Intercept = -15.19

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-15	75241.6
Mg	24	41	-14	131955
In	115	41	-11.5	205926
Ce	140	41	-9.5	161451
Pb	208	41	-8	105681
U	238	41	-7.5	208060

[STD] Performance Check

Optimization Settings:

Method: STD Performance Check.mth.

Intensity Criterion: Be 9 > 4000

Intensity Criterion: In 115 > 40000

Intensity Criterion: U 238 > 35000

Intensity Criterion: Bkgd 220 <= 1

Formula Criterion: Ce++ 70 / Ce 140 <= 0.05

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (Be 9): 13271.30

Obtained Intensity (In 115): 185772.48

Obtained Intensity (U 238): 204078.60

Obtained Intensity (Bkgd 220): 0.53

Obtained Formula (Ce++ 70 / Ce 140): 0.016 (=2339.32 / 146139.17)

Obtained Formula (CeO 156 / Ce 140): 0.020 (=2947.57 / 146139.17)

[Passed] Optimum value(s): N/A

End Time: 7/28/2020 9:24:17 AM

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Li	91521	70-125	64065-114401	80-120	73217-109825	0
Rh-1	856490	70-125	599543-1070613	80-120	685192-1027788	0
Rh	354331	70-125	248032-442914	80-120	283465-425197	0
Re	338959	70-125	237271-423699	80-120	271167-406751	0

Seq ID	QC Type	Li	Rh-1	Rh	Re
001		100	100	100	100
002		107	102	99	99
003		102	102	100	99
004		105	103	98	99
005		105	105	99	99
006		108	104	100	100
007		106	105	100	100
008		109	103	100	99
009		108	104	101	100
010	CCV	108	104	100	99
011	ICV	107	105	100	99
012		104	103	100	99
013	ICB	107	102	99	98
014	CCB	105	104	99	98
015	BS	106	103	100	99
016	BS	109	106	98	98
017	BS	106	103	98	99
018	BS	105	105	99	98
019	AB	108	98	94	98
020	AA	108	99	94	96
021		108	107	100	98
022	DIL	108	100	102	102
023	S	113	102	98	108
024	S	114	104	99	111
025	S	116	112	108	108
026	S	117	113	107	107
027	S	120	114	107	107
028	S	121	112	107	107
029	MS	122	114	107	108
030	MSD	124	112	107	106
031	CCV	111	103	99	98
032		120	115	109	108
033	CCB	119	113	109	108
034	S	118	113	108	107
035	S	117	106	100	107
036	S	111	102	97	102
037	S	117	106	100	106
038	S	112	100	96	100
039	S	110	103	98	105
040	S	115	107	97	106

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0727A

Instrument ID: PE NEXION 2

Analysis Date: 07/27/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Li	91521	70-125	64065-114401	80-120	73217-109825	0
Rh-1	856490	70-125	599543-1070613	80-120	685192-1027788	0
Rh	354331	70-125	248032-442914	80-120	283465-425197	0
Re	338959	70-125	237271-423699	80-120	271167-406751	0

Seq ID	QC Type	Li	Rh-1	Rh	Re
041	S	114	102	98	107
042	S	115	107	102	106
043	MS	112	100	96	105
044	MSD	111	98	95	104
045	S	107	104	100	107
046	CCV	104	96	95	101
047		114	104	100	107
048	CCB	105	98	95	100
049	LCS	117	104	103	109
050		116	108	106	111
051	LRB	119	107	105	111
052	DIL	106	95	99	109
053	S	100	88	85	103
054		115	109	106	118
055	S	120	106	100	109
056		116	106	102	108
057	S	119	109	107	110
058	MS	123	111	105	110
059	MSD	123	111	104	107
060	CCV	113	98	98	104
061		123	111	107	111
062	CCB	120	107	106	111
063	BS	109	103	100	98
064	LCS	118	107	102	107
065	LRB	117	107	102	108

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	15138	70-125	10597-18923	80-120	12110-18166	0

Seq ID	QC Type	Rh
001		100
002		101
003		99
004		101
005		99
006		100
007	ICV	100
008	ICB	102
009	CCB	101
010	BS	102
011	LCS	100
012	LRB	100
013	DIL	101
014	S	97
015		102
016	S	101
017		99
018	S	99
019		101
020	S	100
021		102
022	S	100
023		100
024	S	99
025		101
026	S	100
027		102
028	S	99
029		101
030	S	98
031		101
032	S	98
033	MS	99
034	MSD	99
035	CCV	100
036	CCB	102
037	S	99
038		99
039	S	95
040	Page 95 of 99	

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	15138	70-125	10597-18923	80-120	12110-18166	0

Seq ID	QC Type	Rh
041	S	97
042		100
043	S	96
044		99
045	S	98
046		100
047	S	99
048		97
049	S	97
050		97
051	S	100
052		98
053	S	96
054		100
055	S	97
056		98
057	S	98
058		98
059	S	97
060	MS	97
061	MSD	97
062	CCV	99
063	CCB	98
064	LCS	99
065	LRB	97
066	DIL	97
067	S	99
068		100
069	S	98
070		100
071	S	97
072		105
073	S	96
074		102
075	S	97
076		102
077	S	97
078		101
079	S	97
080	Page 96 of 300	

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	15138	70-125	10597-18923	80-120	12110-18166	0

Seq ID	QC Type	Rh
081	S	96
082		102
083	S	99
084		101
085	S	95
086	MS	96
087	MSD	97
088	CCV	98
089	CCB	100
090	S	98
091		104
092	S	97
093		101
094	S	97
095		102
096	S	94
097		101
098	S	97
099		101
100	S	96
101		101
102	S	96
103		101
104	S	98
105		100
106	S	97
107		101
108	S	96
109	MS	96
110	MSD	96
111	CCV	99
112	CCB	97
113	LCS	98
114	LRB	100
115	DIL	95
116	S	96
117		101
118	S	97
119		100
120	SPage 97 of 961	

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	15138	70-125	10597-18923	80-120	12110-18166	0

Seq ID	QC Type	Rh
121		98
122	S	95
123		103
124	S	96
125		101
126	S	102
127		109
128	S	102
129		107
130	S	101
131		109
132	S	100
133		104
134	S	102
135	MS	101
136	MSD	102
137	CCV	98
138	CCB	97
139	S	95
140		100
141	S	96
142		100
143	S	97
144		99
145	S	95
146		100
147	S	96
148		101
149	S	96
150		101
151	S	97
152		102
153	S	96
154		100
155	S	96
156		101
157	S	95
158	MS	95
159	MSD	94
160	SPage 98 of 331	

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	15138	70-125	10597-18923	80-120	12110-18166	0

Seq ID	QC Type	Rh
161	MS	94
162	CCV	98
163	CCB	99
164	LCS	98
165	LRB	100
166	DIL	97
167	S	97
168		98
169	S	95
170	S	98
171	S	97
172	S	97
173	S	95
174	S	96
175	S	98
176	S	98
177	S	96
178	MS	96
179	MSD	98
180	CCV	97
181	CCB	99
182	S	96
183	S	96
184	S	94
185	S	95
186	S	96
187	S	94
188	S	96
189	S	97
190	S	96
191	S	96
192	MS	97
193	MSD	95
194	CCV	96
195	CCB	97
196	LCS	96
197	LRB	99
198	DIL	95
199	DIL	97
200	SPage 99 of 261	

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	15138	70-125	10597-18923	80-120	12110-18166	0

Seq ID	QC Type	Rh
201		99
202	S	93
203	DIL	96
204		98
205	S	97
206		97
207	S	97
208		99
209	S	96
210		95
211	S	96
212	MS	97
213	MSD	98
214	CCV	96
215	CCB	96
216	S	96
217	S	92
218	S	97
219	S	96
220	S	99
221	S	96
222	S	97
223	S	96
224	S	96
225		96
226	S	96
227	MS	96
228	MSD	95
229	S	95
230	MS	97
231	CCV	97
232	CCB	96
233	LCS	96
234	LRB	97
235	DIL	98
236	S	97
237		99
238	S	102
239	S	100
240	S	100

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0728A

Instrument ID: PE NEXION 2

Analysis Date: 07/28/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	15138	70-125	10597-18923	80-120	12110-18166	0

Seq ID QC Type Rh

241	MS	103
-----	----	-----

242	MSD	104
-----	-----	-----

243	CCV	97
-----	-----	----

244	CCB	97
-----	-----	----

Form 9

Analysis Date varies
 Analytical Method 6020A/6020/200.8
 Digestion Date varies
 Spiked Value varies (ug/L)
 Estimated Limit varies (ug/L)

Element/Mass	Date	Spike (ug/l)	MDL (ug/l)	Prep Batch
Al-27	4/9/2012	0.50	0.189	MTD-040212-1
Sb-121	3/20/2012	1.00	0.105	MTD-032012-3
As-75	3/20/2012	0.05	0.032	MTD-032012-2
Ba-137	3/20/2012	0.50	0.202	MTD-032012-2
Be-9	4/10/2012	0.10	0.079	MTD-041012-1
B-10	3/20/2012	1.00	0.589	MTD-032012-3
B-11	3/20/2012	1.00	0.277	MTD-032012-3
Cd-111	3/20/2012	0.05	0.038	MTD-032012-2
Cd-114	3/20/2012	0.10	0.030	MTD-032012-2
Cr-52	3/20/2012	0.10	0.023	MTD-032012-2
Cr-53	3/20/2012	0.10	0.054	MTD-032012-2
Co-59	3/20/2012	0.10	0.035	MTD-032012-2
Cu-65	3/20/2012	0.50	0.068	MTD-032012-2
Fe-56	4/9/2012	2.00	0.470	MTD-040912-1
Fe-57	4/9/2012	2.00	0.824	MTD-040912-1
Pb-208	3/20/2012	0.10	0.052	MTD-032012-2
Li-7	3/20/2012	1.00	0.166	MTD-032012-3
Mn-55	3/20/2012	0.10	0.187	MTD-032012-2
Mo-95	4/9/2012	0.50	0.442	MTD-040212-1
Ni-60	4/13/2012	0.10	0.035	MTD-041012-1
Se-78	3/20/2012	0.10	0.058	MTD-032012-2
Se-82	3/20/2012	0.50	0.475	MTD-032012-2
Ag-107	3/20/2012	0.10	0.025	MTD-032012-2
Sr-88	3/20/2012	0.10	0.016	MTD-032012-2
Tl-205	4/9/2012	0.50	0.089	MTD-040212-1
Sn-118	3/20/2012	0.10	0.079	MTD-032012-2
Ti-47	3/20/2012	0.50	0.124	MTD-032012-2
V-51	3/20/2012	0.05	0.018	MTD-032012-2
Zn-66	4/9/2012	2.00	0.366	MTD-040912-1

Element/Mass	Date	Spike (mg/l)	MDL (mg/l)	Prep Batch
Ca-43	4/16/2012	0.01	0.0101	MTD-041012-4
Ca-44	4/16/2012	0.01	0.0041	MTD-041012-4
Mg-24	4/16/2012	0.01	0.0006	MTD-041012-4
K-39	4/16/2012	0.01	0.0030	MTD-041012-4
Na-23	4/16/2012	0.10	0.0101	MTD-041012-4

Linear Range June 2012

		Prep Batch	Run Batch
Aluminum	5.0ppm	MTD-061912-5	MT3-12-0619C
Antimony	5.0ppm	MTD-061912-5	MT3-12-0619C
Arsenic	1.0ppm	MTD-061912-5	MT3-12-0619C
Barium	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-10	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-11	5.0ppm	MTD-061912-5	MT3-12-0619C
Beryllium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-111	5.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-114	5.0ppm	MTD-061912-5	MT3-12-0619C
Chromium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cobalt	2.0ppm	MTD-061912-5	MT3-12-0619C
Copper	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-56	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-57	2.0ppm	MTD-061912-5	MT3-12-0619C
Lead	5.0ppm	MTD-061912-5	MT3-12-0619C
Lithium	2.0ppm	MTD-061912-5	MT3-12-0619C
Manganese	1.0ppm	MTD-061912-5	MT3-12-0619C
Molybdenum	1.0ppm	MTD-061912-5	MT3-12-0619C
Nickel	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-78	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-82	5.0ppm	MTD-061912-5	MT3-12-0619C
Silver	1.0ppm	MTD-061912-5	MT3-12-0619C
Strontium-86	5.0ppm	MTD-061912-5	MT3-12-0619C
Thallium	5.0ppm	MTD-061912-5	MT3-12-0619C
Tin	1.0ppm	MTD-061912-5	MT3-12-0619C
Titanium	1.0ppm	MTD-061912-5	MT3-12-0619C
Vanadium	1.0ppm	MTD-061912-5	MT3-12-0619C
Zinc	2.0ppm	MTD-061912-5	MT3-12-0619C

Sodium-23	50ppm	MTD-061912-5	MT3-12-0619B
Magnesium-24	50ppm	MTD-061912-5	MT3-12-0619B
Potassium-39	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-43	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-44	50ppm	MTD-061912-5	MT3-12-0619B

Maximum spiking levels are instated to ensure the safety and longevity of the instrument. Any sample results above this level result in extended wash runs and sample dilution.

Metals Quantitation Summary Report

Sequence #: 001
Method: 01-long list new.mth
Acq Time: 13:04:27 Mon 27-Jul-20
Sample Name: Blank
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	4322.321	0	mg/L	3
Be	9	6.667	0	mg/L	3
B	11	671.683	0	mg/L	3
Al	27	1208.385	0	mg/L	3
Se	78	4303.204	0	mg/L	3
Ti	48	99.622	0	mg/L	3
V	51	138.334	0	mg/L	3
Cr	52	270.003	0	mg/L	3
Mn	55	133.334	0	mg/L	3
Fe	56	9673.274	0	mg/L	3
Co	59	45.000	0	mg/L	3
Ni	60	36.667	0	mg/L	3
Cu	65	56.667	0	mg/L	3
Zn	66	243.335	0	mg/L	3
As	75	50.000	0	mg/L	3
Sr	88	20.000	0	mg/L	3
Mo	95	1518.415	0	mg/L	3
Ag	107	45.000	0	mg/L	3
Cd	111	15.000	0	mg/L	3
Sn	118	16626.336	0	mg/L	3
Sb	121	1706.769	0	mg/L	3
Ba	137	21.667	0	mg/L	3
Tl	205	128.334	0	mg/L	3
Pb	208	421.669	0	mg/L	3

Metals Quantitation Summary Report

Sequence #: 002
Method: 01-long list new.mth
Acq Time: 13:06:31 Mon 27-Jul-20
Sample Name: Std-0.0001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	6996.877	0.000389	mg/L	3
Be	9	611.690	0.000421	mg/L	3
B	11	1160.059	0.000291	mg/L	3
Al	27	4725.991	0.000547	mg/L	3
Se	78	4747.189	0.000615	mg/L	3
Ti	48	182.278	0.000061	mg/L	3
V	51	636.681	0.000121	mg/L	3
Cr	52	853.359	0.000106	mg/L	3
Mn	55	750.020	0.000185	mg/L	3
Fe	56	11801.540	0.000442	mg/L	3
Co	59	1300.059	0.000116	mg/L	3
Ni	60	403.339	0.000114	mg/L	3
Cu	65	520.009	0.000116	mg/L	3
Zn	66	666.682	0.000486	mg/L	3
As	75	101.667	0.000116	mg/L	3
Sr	88	658.349	0.000129	mg/L	3
Mo	95	1338.396	-0.000050	mg/L	3
Ag	107	1540.083	0.000116	mg/L	3
Cd	111	181.668	0.000096	mg/L	3
Sn	118	16329.330	-0.000023	mg/L	3
Sb	121	1556.751	-0.000032	mg/L	3
Ba	137	310.003	0.000114	mg/L	3
Tl	205	3443.749	0.000113	mg/L	3
Pb	208	5020.353	0.000114	mg/L	3

Metals Quantitation Summary Report

Sequence #: 003
Method: 01-long list new.mth
Acq Time: 13:08:34 Mon 27-Jul-20
Sample Name: Std-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	7905.521	0.000600	mg/L	3
Be	9	821.690	0.000598	mg/L	3
B	11	1333.396	0.000445	mg/L	3
Al	27	5811.185	0.000762	mg/L	3
Se	78	4639.172	0.000462	mg/L	3
Ti	48	799.186	0.000504	mg/L	3
V	51	2445.210	0.000555	mg/L	3
Cr	52	3363.730	0.000557	mg/L	3
Mn	55	2138.494	0.000597	mg/L	3
Fe	56	14115.308	0.000877	mg/L	3
Co	59	6424.779	0.000587	mg/L	3
Ni	60	1830.117	0.000551	mg/L	3
Cu	65	2265.180	0.000550	mg/L	3
Zn	66	1013.369	0.000871	mg/L	3
As	75	336.671	0.000635	mg/L	3
Sr	88	2781.938	0.000553	mg/L	3
Mo	95	2521.889	0.000311	mg/L	3
Ag	107	7633.706	0.000585	mg/L	3
Cd	111	1023.370	0.000577	mg/L	3
Sn	118	17427.293	0.000222	mg/L	3
Sb	121	3192.023	0.000370	mg/L	3
Ba	137	1420.071	0.000546	mg/L	3
Tl	205	17085.211	0.000575	mg/L	3
Pb	208	22590.381	0.000549	mg/L	3

Metals Quantitation Summary Report

Sequence #: 004
Method: 01-long list new.mth
Acq Time: 13:10:38 Mon 27-Jul-20
Sample Name: Std-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11384.543	0.001139	mg/L	3
Be	9	1700.101	0.001199	mg/L	3
B	11	2353.528	0.001102	mg/L	3
Al	27	9077.884	0.001263	mg/L	3
Se	78	4917.948	0.000818	mg/L	3
Ti	48	1501.750	0.001028	mg/L	3
V	51	4847.490	0.001152	mg/L	3
Cr	52	6348.077	0.001114	mg/L	3
Mn	55	4165.608	0.001221	mg/L	3
Fe	56	16968.406	0.001494	mg/L	3
Co	59	13166.066	0.001229	mg/L	3
Ni	60	3723.819	0.001153	mg/L	3
Cu	65	4610.745	0.001154	mg/L	3
Zn	66	1388.401	0.001321	mg/L	3
As	75	590.012	0.001215	mg/L	3
Sr	88	5462.712	0.001108	mg/L	3
Mo	95	3977.221	0.000780	mg/L	3
Ag	107	15278.166	0.001194	mg/L	3
Cd	111	1956.801	0.001131	mg/L	3
Sn	118	19029.333	0.000709	mg/L	3
Sb	121	5724.480	0.001022	mg/L	3
Ba	137	2813.611	0.001109	mg/L	3
Tl	205	34615.229	0.001162	mg/L	3
Pb	208	46333.159	0.001129	mg/L	3

Metals Quantitation Summary Report

Sequence #: 005
Method: 01-long list new.mth
Acq Time: 13:12:42 Mon 27-Jul-20
Sample Name: Std-0.005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	37861.777	0.005558	mg/L	3
Be	9	8257.386	0.005847	mg/L	3
B	11	9154.600	0.005668	mg/L	3
Al	27	38588.717	0.006042	mg/L	3
Se	78	7492.101	0.005103	mg/L	3
Ti	48	7450.758	0.005328	mg/L	3
V	51	23414.178	0.005635	mg/L	3
Cr	52	30913.422	0.005557	mg/L	3
Mn	55	18308.405	0.005445	mg/L	3
Fe	56	40652.782	0.006123	mg/L	3
Co	59	63594.586	0.005891	mg/L	3
Ni	60	17550.775	0.005417	mg/L	3
Cu	65	21613.011	0.005404	mg/L	3
Zn	66	5180.940	0.005617	mg/L	3
As	75	2533.561	0.005529	mg/L	3
Sr	88	27326.113	0.005503	mg/L	3
Mo	95	16723.118	0.004717	mg/L	3
Ag	107	75820.681	0.005878	mg/L	3
Cd	111	9940.124	0.005717	mg/L	3
Sn	118	34468.203	0.004573	mg/L	3
Sb	121	25981.948	0.006059	mg/L	3
Ba	137	13981.842	0.005491	mg/L	3
Tl	205	170432.323	0.005757	mg/L	3
Pb	208	228785.268	0.005632	mg/L	3

Metals Quantitation Summary Report

Sequence #: 006
Method: 01-long list new.mth
Acq Time: 13:14:46 Mon 27-Jul-20
Sample Name: Std-0.02
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	128036.205	0.020046	mg/L	3
Be	9	30582.713	0.021100	mg/L	3
B	11	32628.904	0.020841	mg/L	3
Al	27	134464.952	0.020998	mg/L	3
Se	78	15211.866	0.018455	mg/L	3
Ti	48	27448.263	0.019579	mg/L	3
V	51	84402.005	0.020163	mg/L	3
Cr	52	109543.607	0.019573	mg/L	3
Mn	55	67237.913	0.019858	mg/L	3
Fe	56	111347.370	0.019770	mg/L	3
Co	59	229858.026	0.021047	mg/L	3
Ni	60	64607.438	0.019731	mg/L	3
Cu	65	78820.325	0.019504	mg/L	3
Zn	66	18396.838	0.020394	mg/L	3
As	75	9117.912	0.019921	mg/L	3
Sr	88	98260.151	0.019558	mg/L	3
Mo	95	60114.560	0.017941	mg/L	3
Ag	107	276794.266	0.021207	mg/L	3
Cd	111	35089.718	0.019962	mg/L	3
Sn	118	89566.616	0.018262	mg/L	3
Sb	121	79594.472	0.019190	mg/L	3
Ba	137	50246.587	0.019516	mg/L	3
Tl	205	620318.774	0.020836	mg/L	3
Pb	208	831388.184	0.020365	mg/L	3

Metals Quantitation Summary Report

Sequence #: 007
Method: 01-long list new.mth
Acq Time: 13:16:50 Mon 27-Jul-20
Sample Name: Std-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	314295.291	0.051338	mg/L	3
Be	9	74761.811	0.052635	mg/L	3
B	11	79651.501	0.052613	mg/L	3
Al	27	328859.053	0.052686	mg/L	3
Se	78	32245.227	0.047047	mg/L	3
Ti	48	68278.796	0.048695	mg/L	3
V	51	207641.514	0.049523	mg/L	3
Cr	52	276697.760	0.049387	mg/L	3
Mn	55	168029.291	0.049556	mg/L	3
Fe	56	264891.235	0.049502	mg/L	3
Co	59	575626.679	0.052588	mg/L	3
Ni	60	161614.218	0.049260	mg/L	3
Cu	65	200609.496	0.049572	mg/L	3
Zn	66	45642.803	0.050879	mg/L	3
As	75	23218.854	0.050806	mg/L	3
Sr	88	251871.564	0.050016	mg/L	3
Mo	95	155689.047	0.047082	mg/L	3
Ag	107	692889.536	0.052970	mg/L	3
Cd	111	88726.428	0.050366	mg/L	3
Sn	118	208996.468	0.048002	mg/L	3
Sb	121	201503.199	0.049109	mg/L	3
Ba	137	126849.135	0.049154	mg/L	3
Tl	205	1551878.766	0.052041	mg/L	3
Pb	208	2079831.892	0.050874	mg/L	3

Metals Quantitation Summary Report

Sequence #: 008
Method: 01-long list new.mth
Acq Time: 13:18:54 Mon 27-Jul-20
Sample Name: Std-0.2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	1242017.276	0.199648	mg/L	3
Be	9	290531.510	0.199209	mg/L	3
B	11	307240.270	0.199246	mg/L	3
Al	27	1273504.230	0.199208	mg/L	3
Se	78	120566.335	0.200899	mg/L	3
Ti	48	278547.831	0.200361	mg/L	3
V	51	832155.051	0.200087	mg/L	3
Cr	52	1112288.919	0.200185	mg/L	3
Mn	55	673077.094	0.200114	mg/L	3
Fe	56	1035321.984	0.200142	mg/L	3
Co	59	2164529.557	0.199226	mg/L	3
Ni	60	651772.069	0.200201	mg/L	3
Cu	65	803775.874	0.200146	mg/L	3
Zn	66	177232.639	0.199732	mg/L	3
As	75	90514.205	0.199798	mg/L	3
Sr	88	999515.744	0.200027	mg/L	3
Mo	95	655666.730	0.200963	mg/L	3
Ag	107	2585057.586	0.199115	mg/L	3
Cd	111	349448.307	0.199894	mg/L	3
Sn	118	818470.064	0.200750	mg/L	3
Sb	121	810950.066	0.200287	mg/L	3
Ba	137	512737.641	0.200247	mg/L	3
Tl	205	5915437.503	0.199387	mg/L	3
Pb	208	8122911.226	0.199729	mg/L	3

Metals Quantitation Summary Report

Sequence #: 009
Method: 01-long list new.mth
Acq Time: 13:20:58 Mon 27-Jul-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/22/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5085.907	0.000069	mg/L	3
Be	9	45.000	0.000026	mg/L	3
B	11	1685.100	0.000630	mg/L	3
Al	27	1938.465	0.000100	mg/L	3
Se	78	6003.565	0.002620	mg/L	3
Ti	48	478.584	0.000269	mg/L	3
V	51	310.003	0.000041	mg/L	3
Cr	52	561.678	0.000051	mg/L	3
Mn	55	205.001	0.000021	mg/L	3
Fe	56	13002.589	0.000630	mg/L	3
Co	59	200.001	0.000014	mg/L	3
Ni	60	93.334	0.000017	mg/L	3
Cu	65	145.001	0.000022	mg/L	3
Zn	66	358.338	0.000126	mg/L	3
As	75	408.339	0.000782	mg/L	3
Sr	88	61.667	0.000008	mg/L	3
Mo	95	14340.528	0.003891	mg/L	3
Ag	107	366.671	0.000024	mg/L	3
Cd	111	28.333	0.000007	mg/L	3
Sn	118	43424.336	0.006605	mg/L	3
Sb	121	7331.881	0.001373	mg/L	3
Ba	137	43.333	0.000008	mg/L	3
Tl	205	1325.061	0.000040	mg/L	3
Pb	208	3485.166	0.000075	mg/L	3

Metals Quantitation Summary Report

Sequence #: 010
Method: 01-long list new.mth
Acq Time: 13:34:11 Mon 27-Jul-20
Sample Name: CCV-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/22/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	617025.216	0.100123	mg/L	3
Be	9	146603.671	0.101855	mg/L	3
B	11	154735.392	0.101286	mg/L	3
Al	27	643590.938	0.101891	mg/L	3
Se	78	61713.564	0.098622	mg/L	3
Ti	48	139421.317	0.099963	mg/L	3
V	51	419489.967	0.100554	mg/L	3
Cr	52	549791.692	0.098644	mg/L	3
Mn	55	338194.723	0.100270	mg/L	3
Fe	56	530805.066	0.101421	mg/L	3
Co	59	1159584.853	0.106428	mg/L	3
Ni	60	323203.819	0.098990	mg/L	3
Cu	65	401367.329	0.099651	mg/L	3
Zn	66	89705.782	0.100692	mg/L	3
As	75	46040.749	0.101295	mg/L	3
Sr	88	502614.298	0.100307	mg/L	3
Mo	95	336835.354	0.102759	mg/L	3
Ag	107	1366822.290	0.105006	mg/L	3
Cd	111	174340.873	0.099466	mg/L	3
Sn	118	433005.289	0.103979	mg/L	3
Sb	121	407308.052	0.100140	mg/L	3
Ba	137	254604.122	0.099168	mg/L	3
Tl	205	3016769.621	0.102021	mg/L	3
Pb	208	4148567.433	0.102341	mg/L	3

Metals Quantitation Summary Report

Sequence #: 011
Method: 01-long list new.mth
Acq Time: 13:36:15 Mon 27-Jul-20
Sample Name: ICV-0.1
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 07/22/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	631520.603	0.102588	mg/L	3
Be	9	150476.822	0.104647	mg/L	3
B	11	161345.094	0.105800	mg/L	3
Al	27	660132.527	0.104645	mg/L	3
Se	78	64220.736	0.101749	mg/L	3
Ti	48	139109.754	0.100016	mg/L	3
V	51	422500.361	0.101575	mg/L	3
Cr	52	554561.437	0.099787	mg/L	3
Mn	55	347265.187	0.103242	mg/L	3
Fe	56	532335.152	0.102021	mg/L	3
Co	59	1177891.229	0.108409	mg/L	3
Ni	60	331086.372	0.101702	mg/L	3
Cu	65	413292.250	0.102928	mg/L	3
Zn	66	90933.523	0.102368	mg/L	3
As	75	47139.325	0.104010	mg/L	3
Sr	88	510959.221	0.102251	mg/L	3
Mo	95	341878.299	0.104569	mg/L	3
Ag	107	1416634.470	0.109124	mg/L	3
Cd	111	180488.181	0.103243	mg/L	3
Sn	118	436077.840	0.105024	mg/L	3
Sb	121	399391.226	0.098448	mg/L	3
Ba	137	255252.444	0.099669	mg/L	3
Tl	205	3101541.901	0.105225	mg/L	3
Pb	208	4173722.911	0.103291	mg/L	3

Metals Quantitation Summary Report

Sequence #: 012
Method: 01-long list new.mth
Acq Time: 13:38:40 Mon 27-Jul-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	4902.508	0.000067	mg/L	3
Be	9	18.333	0.000008	mg/L	3
B	11	1348.397	0.000439	mg/L	3
Al	27	2011.808	0.000123	mg/L	3
Se	78	5084.772	0.001120	mg/L	3
Ti	48	273.751	0.000126	mg/L	3
V	51	233.335	0.000023	mg/L	3
Cr	52	576.678	0.000056	mg/L	3
Mn	55	153.334	0.000006	mg/L	3
Fe	56	11965.016	0.000459	mg/L	3
Co	59	198.335	0.000014	mg/L	3
Ni	60	66.667	0.000009	mg/L	3
Cu	65	163.334	0.000027	mg/L	3
Zn	66	370.005	0.000144	mg/L	3
As	75	321.670	0.000600	mg/L	3
Sr	88	60.000	0.000008	mg/L	3
Mo	95	8776.029	0.002233	mg/L	3
Ag	107	265.002	0.000017	mg/L	3
Cd	111	33.333	0.000011	mg/L	3
Sn	118	36149.078	0.004917	mg/L	3
Sb	121	7762.108	0.001502	mg/L	3
Ba	137	35.000	0.000005	mg/L	3
Tl	205	888.361	0.000026	mg/L	3
Pb	208	2256.737	0.000045	mg/L	3

Metals Quantitation Summary Report

Sequence #: 013
Method: 01-long list new.mth
Acq Time: 13:40:44 Mon 27-Jul-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	4552.393	-0.000011	mg/L	3
Be	9	11.667	0.000003	mg/L	3
B	11	1133.379	0.000273	mg/L	3
Al	27	2233.508	0.000150	mg/L	3
Se	78	4621.637	0.000375	mg/L	3
Ti	48	168.404	0.000051	mg/L	3
V	51	153.334	0.000004	mg/L	3
Cr	52	353.338	0.000016	mg/L	3
Mn	55	150.001	0.000005	mg/L	3
Fe	56	10974.214	0.000276	mg/L	3
Co	59	135.001	0.000008	mg/L	3
Ni	60	71.667	0.000011	mg/L	3
Cu	65	65.000	0.000002	mg/L	3
Zn	66	316.670	0.000086	mg/L	3
As	75	175.001	0.000279	mg/L	3
Sr	88	41.667	0.000004	mg/L	3
Mo	95	4444.025	0.000910	mg/L	3
Ag	107	170.001	0.000010	mg/L	3
Cd	111	15.000	0.000000	mg/L	3
Sn	118	24791.543	0.002102	mg/L	3
Sb	121	4919.181	0.000805	mg/L	3
Ba	137	33.333	0.000005	mg/L	3
Tl	205	418.340	0.000010	mg/L	3
Pb	208	1176.686	0.000019	mg/L	3

Metals Quantitation Summary Report

Sequence #: 014
Method: 01-long list new.mth
Acq Time: 13:46:52 Mon 27-Jul-20
Sample Name: CCB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	4595.740	0.000010	mg/L	3
Be	9	1.667	-0.000004	mg/L	3
B	11	728.352	0.000016	mg/L	3
Al	27	1605.090	0.000055	mg/L	3
Se	78	4439.507	-0.000048	mg/L	3
Ti	48	66.288	-0.000023	mg/L	3
V	51	133.334	-0.000001	mg/L	3
Cr	52	303.337	0.000007	mg/L	3
Mn	55	143.334	0.000003	mg/L	3
Fe	56	9666.603	0.000018	mg/L	3
Co	59	58.333	0.000001	mg/L	3
Ni	60	48.333	0.000004	mg/L	3
Cu	65	65.000	0.000002	mg/L	3
Zn	66	370.005	0.000146	mg/L	3
As	75	71.667	0.000049	mg/L	3
Sr	88	25.000	0.000001	mg/L	3
Mo	95	1723.438	0.000068	mg/L	3
Ag	107	65.000	0.000002	mg/L	3
Cd	111	8.333	-0.000004	mg/L	3
Sn	118	18194.919	0.000437	mg/L	3
Sb	121	2421.872	0.000182	mg/L	3
Ba	137	13.333	-0.000003	mg/L	3
Tl	205	176.668	0.000002	mg/L	3
Pb	208	506.670	0.000002	mg/L	3

Metals Quantitation Summary Report

Sequence #: 015
Method: 01-long list new.mth
Acq Time: 13:49:15 Mon 27-Jul-20
Sample Name: BS-0.0001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Ti	48	224.268	0.000089	mg/L	3
V	51	606.680	0.000112	mg/L	3
Cr	52	936.697	0.000119	mg/L	3
Co	59	1396.735	0.000124	mg/L	3
Ni	60	395.006	0.000109	mg/L	3
Cu	65	533.343	0.000118	mg/L	3
Sr	88	538.344	0.000103	mg/L	3
Ag	107	1495.078	0.000111	mg/L	3
Cd	111	190.001	0.000100	mg/L	3
Sb	121	2168.498	0.000113	mg/L	3
Ba	137	295.003	0.000106	mg/L	3
Tl	205	3585.450	0.000117	mg/L	3
Pb	208	4995.341	0.000113	mg/L	3

Metals Quantitation Summary Report

Sequence #: 016
Method: 01-long list new.mth
Acq Time: 13:51:19 Mon 27-Jul-20
Sample Name: BS-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	8259.056	0.000572	mg/L	3
Be	9	875.027	0.000594	mg/L	3
B	11	1468.409	0.000478	mg/L	3
Ti	48	835.855	0.000538	mg/L	3
V	51	2478.549	0.000571	mg/L	3
Cr	52	3340.391	0.000561	mg/L	3
Mn	55	2251.844	0.000640	mg/L	3
Co	59	6459.794	0.000599	mg/L	3
Ni	60	1875.123	0.000572	mg/L	3
Cu	65	2193.502	0.000539	mg/L	3
As	75	303.337	0.000568	mg/L	3
Sr	88	2730.261	0.000550	mg/L	3
Mo	95	2688.587	0.000372	mg/L	3
Ag	107	7627.037	0.000592	mg/L	3
Cd	111	1025.037	0.000586	mg/L	3
Sn	118	17932.917	0.000409	mg/L	3
Sb	121	3940.544	0.000568	mg/L	3
Ba	137	1418.404	0.000553	mg/L	3
Tl	205	17265.427	0.000585	mg/L	3
Pb	208	22984.043	0.000562	mg/L	3

Metals Quantitation Summary Report

Sequence #: 017
Method: 01-long list new.mth
Acq Time: 13:55:44 Mon 27-Jul-20
Sample Name: BS-0.0002
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Be	9	335.004	0.000231	mg/L	3
Ti	48	358.547	0.000191	mg/L	3
V	51	1056.706	0.000225	mg/L	3
Cr	52	1533.416	0.000232	mg/L	3
Co	59	2541.894	0.000233	mg/L	3
Ni	60	778.355	0.000232	mg/L	3
Cu	65	951.698	0.000226	mg/L	3
As	75	123.334	0.000167	mg/L	3
Sr	88	1060.040	0.000211	mg/L	3
Ag	107	2988.646	0.000230	mg/L	3
Cd	111	443.340	0.000249	mg/L	3
Sn	118	17111.910	0.000204	mg/L	3
Ba	137	538.344	0.000205	mg/L	3
Tl	205	6858.314	0.000228	mg/L	3
Pb	208	9406.226	0.000223	mg/L	3

Metals Quantitation Summary Report

Sequence #: 018
Method: 01-long list new.mth
Acq Time: 14:00:52 Mon 27-Jul-20
Sample Name: BS-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11309.477	0.001135	mg/L	3
Be	9	1646.762	0.001166	mg/L	3
B	11	2301.852	0.001075	mg/L	3
Se	82	344.028	0.001232	mg/L	3
Ti	48	1460.747	0.000988	mg/L	3
V	51	4624.082	0.001088	mg/L	3
Cr	52	6324.736	0.001099	mg/L	3
Mn	55	3980.555	0.001154	mg/L	3
Co	59	12949.211	0.001197	mg/L	3
Ni	60	3648.800	0.001118	mg/L	3
Cu	65	4672.431	0.001159	mg/L	3
Zn	68	1090.042	0.001358	mg/L	3
As	75	468.341	0.000933	mg/L	3
Sr	88	5369.344	0.001079	mg/L	3
Mo	95	4095.588	0.000804	mg/L	3
Ag	107	15276.500	0.001183	mg/L	3
Cd	111	2003.474	0.001147	mg/L	3
Sn	118	19299.697	0.000727	mg/L	3
Sb	121	5614.437	0.000980	mg/L	3
Ba	137	2861.954	0.001118	mg/L	3
Tl	205	33277.048	0.001137	mg/L	3
Pb	208	45238.457	0.001122	mg/L	3

Metals Quantitation Summary Report

Sequence #: 019
Method: 01-long list new.mth
Acq Time: 14:27:34 Mon 27-Jul-20
Sample Name: Solu-AB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Al	27	56271790.859	8.880346	mg/L	3
Ti	48	289694.052	0.219967	mg/L	3
Cr	52	114243.559	0.021659	mg/L	3
Mn	55	73455.138	0.023017	mg/L	3
Fe	56	44949073.630	9.255889	mg/L	3
Co	59	238048.707	0.023125	mg/L	3
Ni	60	64959.057	0.021049	mg/L	3
Cu	65	79217.418	0.020808	mg/L	3
Zn	66	18316.739	0.021549	mg/L	3
As	75	9679.946	0.022460	mg/L	3
Mo	95	662184.791	0.214298	mg/L	3
Ag	107	269985.716	0.021949	mg/L	3
Cd	111	34753.906	0.020977	mg/L	3

Metals Quantitation Summary Report

Sequence #: 020
Method: 01-long list new.mth
Acq Time: 14:29:38 Mon 27-Jul-20
Sample Name: Solu-AA
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5189.277	0.000088	mg/L	3
Be	9	1.667	-0.000004	mg/L	3
B	11	2405.203	0.001103	mg/L	3
Se	78	4473.257	0.000405	mg/L	3
V	51	251.669	0.000031	mg/L	3
Cr	52	661.682	0.000078	mg/L	3
Mn	55	7583.679	0.002360	mg/L	3
Co	59	533.343	0.000048	mg/L	3
Ni	60	1253.388	0.000398	mg/L	3
Cu	65	3837.182	0.001003	mg/L	3
Zn	68	3830.514	0.005852	mg/L	3
As	75	71.667	0.000058	mg/L	3
Sr	88	685.017	0.000142	mg/L	3
Ag	107	153.334	0.000009	mg/L	3
Cd	111	461.674	0.000272	mg/L	3
Sn	118	19147.829	0.000957	mg/L	3
Sb	121	570.011	-0.000270	mg/L	3
Ba	137	1633.427	0.000670	mg/L	3
Tl	205	270.003	0.000005	mg/L	3
Pb	208	5405.401	0.000127	mg/L	3

Metals Quantitation Summary Report

Sequence #: 021
Method: 01-long list new.mth
Acq Time: 14:39:14 Mon 27-Jul-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5022.552	0.000055	mg/L	3
Be	9	16.667	0.000007	mg/L	3
B	11	976.700	0.000162	mg/L	3
Al	27	2948.638	0.000257	mg/L	3
Se	78	4951.748	0.000544	mg/L	3
Ti	48	204.198	0.000074	mg/L	3
V	51	156.668	0.000004	mg/L	3
Cr	52	405.006	0.000024	mg/L	3
Mn	55	223.335	0.000026	mg/L	3
Fe	56	17827.814	0.001571	mg/L	3
Co	59	101.667	0.000005	mg/L	3
Ni	60	73.334	0.000011	mg/L	3
Cu	65	105.000	0.000012	mg/L	3
Zn	66	355.004	0.000123	mg/L	3
As	75	123.334	0.000159	mg/L	3
Sr	88	61.667	0.000008	mg/L	3
Mo	95	6509.818	0.001516	mg/L	3
Ag	107	185.001	0.000011	mg/L	3
Cd	111	11.667	-0.000002	mg/L	3
Sn	118	23379.126	0.001657	mg/L	3
Sb	121	3740.490	0.000497	mg/L	3
Ba	137	30.000	0.000003	mg/L	3
Tl	205	448.340	0.000011	mg/L	3
Pb	208	1706.708	0.000032	mg/L	3

Metals Quantitation Summary Report

Sequence #: 031
Method: 01-long list new.mth
Acq Time: 15:36:12 Mon 27-Jul-20
Sample Name: CCV2-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/22/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	634692.354	0.099964	mg/L	3
Be	9	149675.009	0.100950	mg/L	3
B	11	157589.601	0.100136	mg/L	3
Al	27	645888.056	0.099214	mg/L	3
Se	78	60837.929	0.098174	mg/L	3
Ti	48	134460.067	0.097677	mg/L	3
V	51	411828.067	0.099991	mg/L	3
Cr	52	531643.723	0.096610	mg/L	3
Mn	55	330153.736	0.099150	mg/L	3
Fe	56	504430.556	0.097568	mg/L	3
Co	59	1140713.312	0.106064	mg/L	3
Ni	60	314170.845	0.097490	mg/L	3
Cu	65	386351.377	0.097179	mg/L	3
Zn	66	86769.386	0.098661	mg/L	3
As	75	44776.751	0.099823	mg/L	3
Sr	88	481948.155	0.097438	mg/L	3
Mo	95	311215.666	0.096139	mg/L	3
Ag	107	1335680.301	0.103938	mg/L	3
Cd	111	169870.663	0.098169	mg/L	3
Sn	118	410724.596	0.099744	mg/L	3
Sb	121	393092.299	0.097867	mg/L	3
Ba	137	245109.953	0.096706	mg/L	3
Tl	205	2936310.046	0.100121	mg/L	3
Pb	208	4063457.872	0.101059	mg/L	3

Metals Quantitation Summary Report

Sequence #: 032
Method: 01-long list new.mth
Acq Time: 15:38:40 Mon 27-Jul-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5511.064	0.000051	mg/L	3
Be	9	30.000	0.000014	mg/L	3
B	11	1253.388	0.000266	mg/L	3
Al	27	2376.865	0.000133	mg/L	3
Se	78	5026.317	0.000118	mg/L	3
Ti	48	257.681	0.000097	mg/L	3
V	51	238.335	0.000019	mg/L	3
Cr	52	415.006	0.000020	mg/L	3
Mn	55	171.668	0.000007	mg/L	3
Fe	56	12400.380	0.000329	mg/L	3
Co	59	158.334	0.000009	mg/L	3
Ni	60	78.334	0.000011	mg/L	3
Cu	65	103.334	0.000009	mg/L	3
Zn	66	411.673	0.000151	mg/L	3
As	75	241.669	0.000378	mg/L	3
Sr	88	30.000	0.000001	mg/L	3
Mo	95	8670.965	0.001965	mg/L	3
Ag	107	221.668	0.000012	mg/L	3
Cd	111	23.333	0.000004	mg/L	3
Sn	118	38909.734	0.004736	mg/L	3
Sb	121	7033.398	0.001167	mg/L	3
Ba	137	45.000	0.000008	mg/L	3
Tl	205	1038.371	0.000028	mg/L	3
Pb	208	1895.050	0.000033	mg/L	3

Metals Quantitation Summary Report

Sequence #: 033
Method: 01-long list new.mth
Acq Time: 15:40:44 Mon 27-Jul-20
Sample Name: CCB2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5354.338	0.000029	mg/L	3
Be	9	6.667	-0.000001	mg/L	3
B	11	916.696	0.000068	mg/L	3
Al	27	1740.106	0.000043	mg/L	3
Se	78	4412.382	-0.000727	mg/L	3
Ti	48	139.197	0.000021	mg/L	3
V	51	281.671	0.000029	mg/L	3
Cr	52	530.011	0.000039	mg/L	3
Mn	55	290.003	0.000040	mg/L	3
Fe	56	11511.319	0.000176	mg/L	3
Co	59	371.677	0.000028	mg/L	3
Ni	60	128.334	0.000025	mg/L	3
Cu	65	216.669	0.000036	mg/L	3
Zn	66	353.338	0.000092	mg/L	3
As	75	120.001	0.000133	mg/L	3
Sr	88	120.001	0.000018	mg/L	3
Mo	95	3782.169	0.000599	mg/L	3
Ag	107	363.342	0.000022	mg/L	3
Cd	111	40.000	0.000013	mg/L	3
Sn	118	24848.278	0.001543	mg/L	3
Sb	121	4779.134	0.000661	mg/L	3
Ba	137	66.667	0.000016	mg/L	3
Tl	205	908.381	0.000024	mg/L	3
Pb	208	1648.391	0.000027	mg/L	3

Metals Quantitation Summary Report

Sequence #: 034
Method: 01-long list new.mth
Acq Time: 15:45:03 Mon 27-Jul-20
Sample Name: 15917.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 2

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5237.628	0.000050	mg/L	3
Be	9	5.000	-0.000004	mg/L	3
B	11	1141.712	0.000424	mg/L	3
Al	27	8482.520	0.002045	mg/L	3
Se	78	4181.755	-0.002156	mg/L	3
Ti	48	262.980	0.000207	mg/L	3
V	51	393.339	0.000108	mg/L	3
Cr	52	281.669	-0.000003	mg/L	3
Mn	55	553.344	0.000225	mg/L	3
Fe	56	16471.158	0.002178	mg/L	3
Co	59	56.667	0.000001	mg/L	3
Ni	60	156.668	0.000066	mg/L	3
Cu	65	175.001	0.000052	mg/L	3
Zn	66	658.349	0.000825	mg/L	3
As	75	90.000	0.000147	mg/L	3
Sr	88	193.335	0.000063	mg/L	3
Mo	95	2063.482	0.000242	mg/L	3
Ag	107	71.667	0.000003	mg/L	3
Cd	111	13.333	-0.000003	mg/L	3
Sn	118	22319.098	0.002036	mg/L	3
Sb	121	2593.569	0.000344	mg/L	3
Ba	137	285.003	0.000189	mg/L	3
Tl	205	353.338	0.000013	mg/L	3
Pb	208	558.338	0.000005	mg/L	3

Metals Quantitation Summary Report

Sequence #: 035
Method: 01-long list new.mth
Acq Time: 15:47:07 Mon 27-Jul-20
Sample Name: 15917.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	49693.039	0.033484	mg/L	3
Be	9	10.000	0.000007	mg/L	3
B	11	127346.799	0.381968	mg/L	3
Al	27	253969.068	0.183812	mg/L	3
Se	78	4158.466	-0.003546	mg/L	3
Ti	48	21130.643	0.075213	mg/L	3
V	51	1718.437	0.001888	mg/L	3
Cr	52	1256.722	0.000883	mg/L	3
Mn	55	662769.559	0.979412	mg/L	3
Fe	56	5289310.926	5.120021	mg/L	3
Co	59	3743.825	0.001692	mg/L	3
Ni	60	1586.755	0.002367	mg/L	3
Cu	65	463.341	0.000503	mg/L	3
Zn	66	1146.713	0.005066	mg/L	3
As	75	408.339	0.003932	mg/L	3
Sr	88	237167.611	0.235875	mg/L	3
Mo	95	3015.318	0.002283	mg/L	3
Ag	107	93.334	0.000019	mg/L	3
Cd	111	11.667	-0.000010	mg/L	3
Sn	118	18478.616	0.002277	mg/L	3
Sb	121	1926.797	0.000268	mg/L	3
Ba	137	66038.968	0.128147	mg/L	3
Tl	205	866.693	0.000114	mg/L	3
Pb	208	1966.723	0.000173	mg/L	3

Metals Quantitation Summary Report

Sequence #: 036
Method: 01-long list new.mth
Acq Time: 15:49:10 Mon 27-Jul-20
Sample Name: 15917.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	72262.328	0.053323	mg/L	3
Be	9	1.667	-0.000020	mg/L	3
B	11	1455183.387	4.617973	mg/L	3
Al	27	40881.805	0.030287	mg/L	3
Se	78	4284.010	-0.000900	mg/L	3
Ti	48	32816.643	0.120556	mg/L	3
V	51	350.004	0.000265	mg/L	3
Cr	52	470.008	0.000191	mg/L	3
Mn	55	1161060.594	1.768145	mg/L	3
Fe	56	509951.241	0.500192	mg/L	3
Co	59	8690.979	0.004076	mg/L	3
Ni	60	14846.048	0.023295	mg/L	3
Cu	65	663.349	0.000776	mg/L	3
Zn	66	2773.603	0.014664	mg/L	3
As	75	115.000	0.000751	mg/L	3
Sr	88	318648.453	0.326550	mg/L	3
Mo	95	6149.659	0.007353	mg/L	3
Ag	107	48.333	0.000002	mg/L	3
Cd	111	21.667	0.000021	mg/L	3
Sn	118	28468.338	0.015782	mg/L	3
Sb	121	1678.432	0.000025	mg/L	3
Ba	137	18248.315	0.036457	mg/L	3
Tl	205	390.005	0.000043	mg/L	3
Pb	208	1930.051	0.000180	mg/L	3

Metals Quantitation Summary Report

Sequence #: 037
Method: 01-long list new.mth
Acq Time: 15:51:14 Mon 27-Jul-20
Sample Name: 15917.03s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	16401.083	0.008546	mg/L	3
Be	9	1.667	-0.000019	mg/L	3
B	11	20845.209	0.060674	mg/L	3
Al	27	8505.867	0.005174	mg/L	3
Se	78	4335.489	-0.001793	mg/L	3
Ti	48	14932.341	0.053156	mg/L	3
V	51	258.336	0.000144	mg/L	3
Cr	52	311.670	0.000038	mg/L	3
Mn	55	36730.494	0.054205	mg/L	3
Fe	56	1286492.403	1.240667	mg/L	3
Co	59	588.346	0.000249	mg/L	3
Ni	60	760.020	0.001107	mg/L	3
Cu	65	153.334	0.000120	mg/L	3
Zn	66	2056.815	0.010195	mg/L	3
As	75	670.016	0.006820	mg/L	3
Sr	88	123140.174	0.122713	mg/L	3
Mo	95	3293.713	0.002718	mg/L	3
Ag	107	36.667	-0.000003	mg/L	3
Cd	111	10.000	-0.000014	mg/L	3
Sn	118	17609.182	0.001240	mg/L	3
Sb	121	1288.392	-0.000515	mg/L	3
Ba	137	75334.785	0.146494	mg/L	3
Tl	205	150.001	0.000002	mg/L	3
Pb	208	368.335	-0.000009	mg/L	3

Metals Quantitation Summary Report

Sequence #: 038
Method: 01-long list new.mth
Acq Time: 15:53:17 Mon 27-Jul-20
Sample Name: 15917.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	99626.405	0.073987	mg/L	3
Be	9	8.333	0.000003	mg/L	3
B	11	1457046.093	4.573010	mg/L	3
Al	27	182539.788	0.137195	mg/L	3
Se	78	4155.182	-0.001395	mg/L	3
Ti	48	35499.667	0.132010	mg/L	3
V	51	770.021	0.000794	mg/L	3
Cr	52	635.014	0.000350	mg/L	3
Mn	55	71811.729	0.110461	mg/L	3
Fe	56	314306.223	0.308397	mg/L	3
Co	59	1613.425	0.000749	mg/L	3
Ni	60	6406.439	0.010141	mg/L	3
Cu	65	1565.086	0.001949	mg/L	3
Zn	66	1245.054	0.005915	mg/L	3
As	75	86.667	0.000443	mg/L	3
Sr	88	728829.519	0.755735	mg/L	3
Mo	95	33901.849	0.051650	mg/L	3
Ag	107	38.333	-0.000002	mg/L	3
Cd	111	55.000	0.000120	mg/L	3
Sn	118	16124.099	0.000199	mg/L	3
Sb	121	1270.057	-0.000473	mg/L	3
Ba	137	20172.570	0.040778	mg/L	3
Tl	205	543.344	0.000070	mg/L	3
Pb	208	2876.786	0.000300	mg/L	3

Metals Quantitation Summary Report

Sequence #: 039
Method: 01-long list new.mth
Acq Time: 15:55:20 Mon 27-Jul-20
Sample Name: 15917.05s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	56665.520	0.041217	mg/L	3
Be	9	0.000	-0.000025	mg/L	3
B	11	235416.456	0.749374	mg/L	3
Al	27	11919.972	0.008163	mg/L	3
Se	78	4254.154	-0.001545	mg/L	3
Ti	48	20107.209	0.073016	mg/L	3
V	51	496.675	0.000440	mg/L	3
Cr	52	378.338	0.000103	mg/L	3
Mn	55	832839.740	1.255447	mg/L	3
Fe	56	22861.615	0.013220	mg/L	3
Co	59	1176.715	0.000529	mg/L	3
Ni	60	4160.607	0.006422	mg/L	3
Cu	65	820.024	0.000965	mg/L	3
Zn	66	681.683	0.002533	mg/L	3
As	75	35.000	-0.000158	mg/L	3
Sr	88	967944.892	0.981929	mg/L	3
Mo	95	17268.765	0.024575	mg/L	3
Ag	107	21.667	-0.000009	mg/L	3
Cd	111	76.667	0.000180	mg/L	3
Sn	118	15932.213	-0.000497	mg/L	3
Sb	121	1028.370	-0.000812	mg/L	3
Ba	137	22097.090	0.043702	mg/L	3
Tl	205	153.334	0.000003	mg/L	3
Pb	208	536.671	0.000011	mg/L	3

Metals Quantitation Summary Report

Sequence #: 040
Method: 01-long list new.mth
Acq Time: 15:57:23 Mon 27-Jul-20
Sample Name: 15917.06s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	15967.255	0.008348	mg/L	3
Be	9	5.000	-0.000009	mg/L	3
B	11	18021.374	0.052704	mg/L	3
Al	27	7488.630	0.004496	mg/L	3
Se	78	4182.618	-0.003385	mg/L	3
Ti	48	13425.793	0.049109	mg/L	3
V	51	238.335	0.000127	mg/L	3
Cr	52	336.671	0.000069	mg/L	3
Mn	55	36615.206	0.055544	mg/L	3
Fe	56	1272276.835	1.260973	mg/L	3
Co	59	620.013	0.000271	mg/L	3
Ni	60	670.016	0.000997	mg/L	3
Cu	65	411.673	0.000455	mg/L	3
Zn	66	735.019	0.002882	mg/L	3
As	75	658.349	0.006885	mg/L	3
Sr	88	122481.183	0.125440	mg/L	3
Mo	95	3957.215	0.003900	mg/L	3
Ag	107	35.000	-0.000003	mg/L	3
Cd	111	21.667	0.000021	mg/L	3
Sn	118	15711.981	-0.000591	mg/L	3
Sb	121	930.031	-0.000926	mg/L	3
Ba	137	73619.224	0.147103	mg/L	3
Tl	205	88.334	-0.000008	mg/L	3
Pb	208	295.001	-0.000017	mg/L	3

Metals Quantitation Summary Report

Sequence #: 041
Method: 01-long list new.mth
Acq Time: 16:15:07 Mon 27-Jul-20
Sample Name: 15917.04s -d
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 25

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	24464.293	0.074744	mg/L	3
Be	9	1.667	-0.000098	mg/L	3
B	11	293305.425	4.508057	mg/L	3
Al	27	55914.254	0.202751	mg/L	3
Se	78	4089.004	-0.012477	mg/L	3
Ti	48	7772.549	0.140264	mg/L	3
V	51	613.351	0.002911	mg/L	3
Cr	52	686.687	0.001926	mg/L	3
Mn	55	14901.120	0.111406	mg/L	3
Fe	56	75056.819	0.324573	mg/L	3
Co	59	746.695	0.001639	mg/L	3
Ni	60	1513.415	0.011502	mg/L	3
Cu	65	571.679	0.003252	mg/L	3
Zn	66	601.680	0.010365	mg/L	3
As	75	105.000	0.003123	mg/L	3
Sr	88	146485.568	0.743370	mg/L	3
Mo	95	9524.849	0.062550	mg/L	3
Ag	107	875.066	0.001625	mg/L	3
Cd	111	131.668	0.001702	mg/L	3
Sn	118	25564.605	0.058657	mg/L	3
Sb	121	3997.233	0.014545	mg/L	3
Ba	137	4854.165	0.047879	mg/L	3
Tl	205	2555.556	0.001870	mg/L	3
Pb	208	3662.027	0.001813	mg/L	3

Metals Quantitation Summary Report

Sequence #: 043
Method: 01-long list new.mth
Acq Time: 16:22:27 Mon 27-Jul-20
Sample Name: 15917.03 MS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	306351.914	0.235966	mg/L	3
Be	9	69602.556	0.231316	mg/L	3
B	11	88119.867	0.275042	mg/L	3
Al	27	308093.497	0.232816	mg/L	3
Se	78	29930.320	0.228804	mg/L	3
Ti	48	78596.963	0.294227	mg/L	3
V	51	189689.687	0.237436	mg/L	3
Cr	52	241355.183	0.226079	mg/L	3
Mn	55	177879.222	0.275433	mg/L	3
Co	59	495763.212	0.237683	mg/L	3
Ni	60	139630.777	0.223379	mg/L	3
Cu	65	166477.966	0.215895	mg/L	3
Zn	66	40532.424	0.236930	mg/L	3
As	75	20856.889	0.239493	mg/L	3
Sr	88	335571.832	0.349786	mg/L	3
Mo	95	140790.464	0.222977	mg/L	3
Ag	107	589830.054	0.236584	mg/L	3
Cd	111	76328.413	0.227392	mg/L	3
Sn	118	182871.456	0.217773	mg/L	3
Sb	121	159122.973	0.203053	mg/L	3
Ba	137	187946.955	0.382413	mg/L	3
Tl	205	1418249.278	0.226458	mg/L	3
Pb	208	1870198.844	0.217816	mg/L	3

Metals Quantitation Summary Report

Sequence #: 044
Method: 01-long list new.mth
Acq Time: 16:24:30 Mon 27-Jul-20
Sample Name: 15917.03 MSD
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	299162.145	0.233022	mg/L	3
Be	9	70372.914	0.236854	mg/L	3
B	11	91755.593	0.289918	mg/L	3
Al	27	316464.599	0.242053	mg/L	3
Se	78	31726.294	0.250669	mg/L	3
Ti	48	74640.946	0.282194	mg/L	3
V	51	188667.740	0.238478	mg/L	3
Cr	52	239402.675	0.226454	mg/L	3
Mn	55	181852.008	0.284386	mg/L	3
Co	59	500777.740	0.242494	mg/L	3
Ni	60	138350.064	0.223528	mg/L	3
Cu	65	168196.101	0.220261	mg/L	3
Zn	66	40101.208	0.236731	mg/L	3
As	75	21174.015	0.245502	mg/L	3
Sr	88	339735.954	0.357678	mg/L	3
Mo	95	146916.601	0.235147	mg/L	3
Ag	107	574994.269	0.232992	mg/L	3
Cd	111	76435.608	0.229998	mg/L	3
Sn	118	189559.779	0.229018	mg/L	3
Sb	121	158359.601	0.204119	mg/L	3
Ba	137	188754.234	0.387832	mg/L	3
Tl	205	1394387.364	0.224023	mg/L	3
Pb	208	1847673.005	0.216528	mg/L	3

Metals Quantitation Summary Report

Sequence #: 046
Method: 01-long list new.mth
Acq Time: 16:29:12 Mon 27-Jul-20
Sample Name: CCV3-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/22/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	609161.758	0.102269	mg/L	3
Be	9	147525.108	0.105988	mg/L	3
B	11	157346.847	0.106516	mg/L	3
Al	27	634204.203	0.103854	mg/L	3
Se	78	58287.985	0.101326	mg/L	3
Ti	48	128459.718	0.096933	mg/L	3
V	51	377537.582	0.095208	mg/L	3
Cr	52	484140.675	0.091403	mg/L	3
Mn	55	301400.968	0.094030	mg/L	3
Fe	56	474424.544	0.095300	mg/L	3
Co	59	1031504.033	0.099653	mg/L	3
Ni	60	281823.704	0.090836	mg/L	3
Cu	65	353458.152	0.092377	mg/L	3
Zn	66	79604.639	0.094017	mg/L	3
As	75	41379.856	0.095791	mg/L	3
Sr	88	440755.207	0.092579	mg/L	3
Mo	95	282987.757	0.090780	mg/L	3
Ag	107	1216340.205	0.098319	mg/L	3
Cd	111	156566.743	0.093983	mg/L	3
Sn	118	375227.456	0.094444	mg/L	3
Sb	121	369977.373	0.095691	mg/L	3
Ba	137	231441.089	0.094858	mg/L	3
Tl	205	2944559.475	0.097350	mg/L	3
Pb	208	3920129.274	0.094555	mg/L	3

Metals Quantitation Summary Report

Sequence #: 047
Method: 01-long list new.mth
Acq Time: 16:31:16 Mon 27-Jul-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5219.288	0.000048	mg/L	3
Be	9	15.000	0.000005	mg/L	3
B	11	1613.425	0.000529	mg/L	3
Al	27	2326.857	0.000143	mg/L	3
Se	78	4885.058	0.000740	mg/L	3
Ti	48	1862.977	0.001257	mg/L	3
V	51	336.671	0.000047	mg/L	3
Cr	52	430.007	0.000028	mg/L	3
Mn	55	166.668	0.000010	mg/L	3
Fe	56	12860.792	0.000613	mg/L	3
Co	59	170.001	0.000011	mg/L	3
Ni	60	78.334	0.000012	mg/L	3
Cu	65	133.334	0.000019	mg/L	3
Zn	66	373.338	0.000145	mg/L	3
As	75	223.335	0.000379	mg/L	3
Sr	88	78.334	0.000012	mg/L	3
Mo	95	8400.803	0.002101	mg/L	3
Ag	107	381.672	0.000026	mg/L	3
Cd	111	30.000	0.000009	mg/L	3
Sn	118	35032.970	0.004564	mg/L	3
Sb	121	7662.054	0.001464	mg/L	3
Ba	137	48.333	0.000010	mg/L	3
Tl	205	1066.707	0.000029	mg/L	3
Pb	208	2460.082	0.000046	mg/L	3

Metals Quantitation Summary Report

Sequence #: 048
Method: 01-long list new.mth
Acq Time: 16:33:20 Mon 27-Jul-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	4625.749	0.000012	mg/L	3
Be	9	5.000	-0.000001	mg/L	3
B	11	1125.045	0.000280	mg/L	3
Al	27	1570.086	0.000048	mg/L	3
Se	78	4442.290	0.000427	mg/L	3
Ti	48	884.350	0.000597	mg/L	3
V	51	150.001	0.000005	mg/L	3
Cr	52	311.670	0.000011	mg/L	3
Mn	55	226.668	0.000031	mg/L	3
Fe	56	11202.726	0.000418	mg/L	3
Co	59	75.000	0.000003	mg/L	3
Ni	60	75.000	0.000013	mg/L	3
Cu	65	96.667	0.000011	mg/L	3
Zn	66	301.670	0.000084	mg/L	3
As	75	110.000	0.000145	mg/L	3
Sr	88	43.333	0.000005	mg/L	3
Mo	95	3405.406	0.000635	mg/L	3
Ag	107	118.334	0.000006	mg/L	3
Cd	111	10.000	-0.000003	mg/L	3
Sn	118	21279.173	0.001455	mg/L	3
Sb	121	4202.285	0.000672	mg/L	3
Ba	137	26.667	0.000003	mg/L	3
Tl	205	375.005	0.000008	mg/L	3
Pb	208	936.679	0.000013	mg/L	3

Metals Quantitation Summary Report

Sequence #: 049
Method: 01-long list new.mth
Acq Time: 16:46:09 Mon 27-Jul-20
Sample Name: 072920_5 LCS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	306263.100	0.045179	mg/L	3
Be	9	71913.994	0.045801	mg/L	3
B	11	78451.662	0.046819	mg/L	3
Al	27	322475.350	0.046702	mg/L	3
Se	78	30760.607	0.045140	mg/L	3
Ti	48	64422.660	0.044596	mg/L	3
V	51	197281.246	0.045677	mg/L	3
Cr	52	256748.389	0.044487	mg/L	3
Mn	55	160448.662	0.045965	mg/L	3
Fe	56	247250.471	0.044624	mg/L	3
Co	59	541550.246	0.048047	mg/L	3
Ni	60	148569.043	0.043970	mg/L	3
Cu	65	185370.082	0.044471	mg/L	3
Zn	66	41284.586	0.044635	mg/L	3
As	75	20740.053	0.044049	mg/L	3
Sr	88	231305.978	0.044605	mg/L	3
Mo	95	145955.253	0.042739	mg/L	3
Ag	107	646145.335	0.047962	mg/L	3
Cd	111	82407.023	0.045412	mg/L	3
Ba	137	119369.985	0.044916	mg/L	3
Tl	205	1528807.304	0.046836	mg/L	3
Pb	208	2050741.156	0.045827	mg/L	3

Metals Quantitation Summary Report

Sequence #: 050
Method: 01-long list new.mth
Acq Time: 16:48:15 Mon 27-Jul-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5110.914	0.000015	mg/L	3
Be	9	8.333	0.000000	mg/L	3
B	11	1096.709	0.000193	mg/L	3
Al	27	2156.830	0.000111	mg/L	3
Se	78	4738.850	0.000155	mg/L	3
Ti	48	295.567	0.000128	mg/L	3
V	51	213.335	0.000015	mg/L	3
Cr	52	471.675	0.000031	mg/L	3
Mn	55	201.668	0.000017	mg/L	3
Fe	56	11598.046	0.000240	mg/L	3
Co	59	78.334	0.000003	mg/L	3
Ni	60	58.333	0.000006	mg/L	3
Cu	65	78.334	0.000004	mg/L	3
Zn	66	323.337	0.000068	mg/L	3
As	75	151.667	0.000204	mg/L	3
Sr	88	28.333	0.000001	mg/L	3
Mo	95	5642.781	0.001159	mg/L	3
Ag	107	196.668	0.000011	mg/L	3
Cd	111	15.000	-0.000001	mg/L	3
Sn	118	27726.923	0.002354	mg/L	3
Sb	121	5230.958	0.000792	mg/L	3
Ba	137	25.000	0.000001	mg/L	3
Tl	205	478.341	0.000010	mg/L	3
Pb	208	1720.042	0.000028	mg/L	3

Metals Quantitation Summary Report

Sequence #: 051
Method: 01-long list new.mth
Acq Time: 16:52:36 Mon 27-Jul-20
Sample Name: 072920_5 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5200.947	0.000011	mg/L	3
Be	9	3.333	-0.000003	mg/L	3
B	11	763.354	-0.000020	mg/L	3
Al	27	1383.400	-0.000007	mg/L	3
Se	78	4102.037	-0.000821	mg/L	3
Ti	48	142.208	0.000026	mg/L	3
V	51	150.001	0.000001	mg/L	3
Cr	52	246.669	-0.000006	mg/L	3
Mn	55	146.667	0.000002	mg/L	3
Fe	56	10145.271	0.000005	mg/L	3
Co	59	60.000	0.000001	mg/L	3
Ni	60	56.667	0.000005	mg/L	3
Cu	65	60.000	0.000000	mg/L	3
Zn	66	276.669	0.000024	mg/L	3
As	75	41.667	-0.000022	mg/L	3
Sr	88	16.667	-0.000001	mg/L	3
Mo	95	1636.761	0.000014	mg/L	3
Ag	107	58.333	0.000001	mg/L	3
Cd	111	10.000	-0.000003	mg/L	3
Sn	118	17672.613	0.000065	mg/L	3
Sb	121	2696.921	0.000215	mg/L	3
Ba	137	25.000	0.000001	mg/L	3
Tl	205	140.001	-0.000000	mg/L	3
Pb	208	426.669	-0.000001	mg/L	3

Metals Quantitation Summary Report

Sequence #: 060
Method: 01-long list new.mth
Acq Time: 17:17:53 Mon 27-Jul-20
Sample Name: CCV3-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/22/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	632453.677	0.097555	mg/L	3
Be	9	149053.897	0.098370	mg/L	3
B	11	156832.942	0.097539	mg/L	3
Al	27	641022.437	0.096393	mg/L	3
Se	78	58768.127	0.099583	mg/L	3
Ti	48	127312.791	0.092630	mg/L	3
V	51	385843.757	0.093838	mg/L	3
Cr	53	59415.147	0.089898	mg/L	3
Mn	55	301370.497	0.090670	mg/L	3
Fe	56	463643.426	0.089688	mg/L	3
Co	59	1039431.361	0.096815	mg/L	3
Ni	60	290245.646	0.090208	mg/L	3
Cu	65	359046.804	0.090446	mg/L	3
Zn	68	58882.783	0.089626	mg/L	3
As	75	40838.310	0.091162	mg/L	3
Sr	88	445262.194	0.090165	mg/L	3
Mo	98	480697.894	0.089726	mg/L	3
Ag	107	1235138.048	0.096259	mg/L	3
Cd	111	157028.457	0.090881	mg/L	3
Sb	121	362009.683	0.090257	mg/L	3
Ba	137	229770.512	0.090800	mg/L	3
Tl	205	2963734.420	0.095286	mg/L	3
Pb	208	3977411.087	0.093275	mg/L	3

Metals Quantitation Summary Report

Sequence #: 061
Method: 01-long list new.mth
Acq Time: 17:20:52 Mon 27-Jul-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5427.698	0.000016	mg/L	3
Be	9	5.000	-0.000002	mg/L	3
B	11	1256.722	0.000248	mg/L	3
Al	27	2250.177	0.000106	mg/L	3
Se	78	4661.954	-0.000208	mg/L	3
Ti	48	378.753	0.000183	mg/L	3
V	51	193.335	0.000010	mg/L	3
Cr	52	413.339	0.000021	mg/L	3
Mn	55	170.001	0.000008	mg/L	3
Fe	56	11948.328	0.000296	mg/L	3
Co	59	111.667	0.000005	mg/L	3
Ni	60	78.334	0.000011	mg/L	3
Cu	65	115.000	0.000013	mg/L	3
Zn	66	375.005	0.000121	mg/L	3
As	75	203.335	0.000309	mg/L	3
Sr	88	63.333	0.000008	mg/L	3
Mo	95	6244.698	0.001326	mg/L	3
Ag	107	225.002	0.000013	mg/L	3
Cd	111	13.333	-0.000001	mg/L	3
Sn	118	34680.456	0.003959	mg/L	3
Sb	121	6749.930	0.001138	mg/L	3
Ba	137	25.000	0.000001	mg/L	3
Tl	205	1121.711	0.000029	mg/L	3
Pb	208	1598.370	0.000025	mg/L	3

Metals Quantitation Summary Report

Sequence #: 062
Method: 01-long list new.mth
Acq Time: 17:53:13 Mon 27-Jul-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	5482.722	0.000040	mg/L	3
Be	9	45.000	0.000023	mg/L	3
B	11	868.360	0.000035	mg/L	3
Al	27	2011.810	0.000078	mg/L	3
Se	78	4141.692	-0.000786	mg/L	3
Ti	48	82.208	-0.000016	mg/L	3
V	51	163.334	0.000004	mg/L	3
Cr	52	305.003	0.000003	mg/L	3
Mn	55	203.335	0.000018	mg/L	3
Fe	56	10452.156	0.000045	mg/L	3
Co	59	46.667	-0.000000	mg/L	3
Ni	60	35.000	-0.000001	mg/L	3
Cu	65	76.667	0.000004	mg/L	3
Zn	66	353.338	0.000103	mg/L	3
As	75	31.667	-0.000044	mg/L	3
Sr	88	26.667	0.000001	mg/L	3
Mo	95	743.353	-0.000249	mg/L	3
Ag	107	38.333	-0.000001	mg/L	3
Cd	111	15.000	-0.000000	mg/L	3
Sn	118	16978.426	-0.000135	mg/L	3
Sb	121	911.696	-0.000208	mg/L	3
Ba	137	15.000	-0.000003	mg/L	3
Tl	205	146.667	0.000000	mg/L	3
Pb	208	221.667	-0.000005	mg/L	3

Metals Quantitation Summary Report

Sequence #: 063
Method: 01-long list new.mth
Acq Time: 14:10:17 Mon 27-Jul-20
Sample Name: BS-0.002
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	17021.812	0.001985	mg/L	3
Be	9	3130.343	0.002136	mg/L	3
B	11	3803.840	0.001990	mg/L	3
Al	27	16074.043	0.002307	mg/L	3
Se	78	5438.439	0.001722	mg/L	3
Ti	48	2799.918	0.001934	mg/L	3
V	51	8467.513	0.001993	mg/L	3
Cr	52	11407.887	0.001995	mg/L	3
Mn	55	7265.182	0.002111	mg/L	3
Fe	56	21290.862	0.002256	mg/L	3
Co	59	23367.436	0.002137	mg/L	3
Ni	60	6696.570	0.002036	mg/L	3
Cu	65	8442.495	0.002078	mg/L	3
Zn	66	2548.561	0.002589	mg/L	3
As	75	981.701	0.002048	mg/L	3
Sr	88	10073.553	0.002002	mg/L	3
Mo	95	6391.433	0.001490	mg/L	3
Ag	107	29122.989	0.002229	mg/L	3
Cd	111	3688.810	0.002092	mg/L	3
Sn	118	22359.165	0.001427	mg/L	3
Sb	121	8265.726	0.001616	mg/L	3
Ba	137	5297.650	0.002051	mg/L	3
Tl	205	64445.040	0.002187	mg/L	3
Pb	208	84682.912	0.002090	mg/L	3

Metals Quantitation Summary Report

Sequence #: 064
Method: 01-long list new.mth
Acq Time: 17:30:58 Mon 27-Jul-20
Sample Name: 072920_4 LCS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	315064.930	0.046208	mg/L	3
Be	9	74046.408	0.046889	mg/L	3
B	11	78210.193	0.046402	mg/L	3
Al	27	321509.781	0.046271	mg/L	3
Se	78	30140.719	0.042791	mg/L	3
Ti	48	64982.668	0.045628	mg/L	3
V	51	196150.919	0.046063	mg/L	3
Cr	52	255578.169	0.044919	mg/L	3
Mn	55	158737.194	0.046097	mg/L	3
Fe	56	249034.513	0.045617	mg/L	3
Co	59	519921.993	0.046757	mg/L	3
Ni	60	146325.606	0.043907	mg/L	3
Cu	65	186292.703	0.045332	mg/L	3
Zn	66	39293.971	0.043061	mg/L	3
As	75	20451.297	0.044022	mg/L	3
Sr	88	228161.085	0.044609	mg/L	3
Mo	95	149280.972	0.044362	mg/L	3
Ag	107	632669.987	0.047627	mg/L	3
Cd	111	78211.865	0.043713	mg/L	3
Sn	118	204491.925	0.045897	mg/L	3
Sb	121	186965.694	0.044812	mg/L	3
Ba	137	122558.585	0.046778	mg/L	3
Tl	205	1488195.070	0.046389	mg/L	3
Pb	208	1998671.036	0.045443	mg/L	3

Metals Quantitation Summary Report

Sequence #: 065
Method: 01-long list new.mth
Acq Time: 17:36:47 Mon 27-Jul-20
Sample Name: 072920_4 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0727A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.040

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	4989.205	-0.000009	mg/L	3
Be	9	8.333	0.000000	mg/L	3
B	11	825.024	0.000025	mg/L	3
Al	27	1448.407	0.000006	mg/L	3
Se	78	4060.104	-0.000918	mg/L	3
Ti	48	117.208	0.000011	mg/L	3
V	51	135.001	-0.000001	mg/L	3
Cr	52	316.670	0.000007	mg/L	3
Mn	55	143.334	0.000002	mg/L	3
Fe	56	9920.110	0.000009	mg/L	3
Co	59	68.333	0.000002	mg/L	3
Ni	60	40.000	0.000001	mg/L	3
Cu	65	50.000	-0.000002	mg/L	3
Zn	66	285.003	0.000040	mg/L	3
As	75	78.334	0.000059	mg/L	3
Sr	88	28.333	0.000002	mg/L	3
Mo	95	1916.796	0.000110	mg/L	3
Ag	107	105.000	0.000004	mg/L	3
Cd	111	5.000	-0.000006	mg/L	3
Sn	118	20339.517	0.000823	mg/L	3
Sb	121	2603.571	0.000208	mg/L	3
Ba	137	18.333	-0.000001	mg/L	3
Tl	205	283.336	0.000005	mg/L	3
Pb	208	535.004	0.000002	mg/L	3

Metals Quantitation Summary Report

Sequence #: 001
Method: 01-MINERALS.mth
Acq Time: 09:44:31 Tue 28-Jul-20
Sample Name: Blank
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	18731.667	0	mg/L		3
Mg	24	4491.667	0	mg/L		3
K	39	161675.000	0	mg/L		3
Ca	44	5826.667	0	mg/L		3

Metals Quantitation Summary Report

Sequence #: 002
Method: 01-MINERALS.mth
Acq Time: 09:45:42 Tue 28-Jul-20
Sample Name: Std-0.20
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	474615.000	0.200915	mg/L	3
Mg	24	278860.000	0.195629	mg/L	3
K	39	482043.333	0.188381	mg/L	3
Ca	44	13846.667	0.192804	mg/L	3

Metals Quantitation Summary Report

Sequence #: 003
Method: 01-MINERALS.mth
Acq Time: 09:46:54 Tue 28-Jul-20
Sample Name: Std-0.50
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1150128.333	0.510368	mg/L		3
Mg	24	697160.000	0.505191	mg/L		3
K	39	981531.667	0.497273	mg/L		3
Ca	44	26343.333	0.510752	mg/L		3

Metals Quantitation Summary Report

Sequence #: 004
Method: 01-MINERALS.mth
Acq Time: 09:48:06 Tue 28-Jul-20
Sample Name: Std-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	2263760.000	0.992816	mg/L	3
Mg	24	1354093.333	0.965073	mg/L	3
K	39	1784731.667	0.962511	mg/L	3
Ca	44	45283.333	0.959186	mg/L	3

Metals Quantitation Summary Report

Sequence #: 005
Method: 01-MINERALS.mth
Acq Time: 09:49:18 Tue 28-Jul-20
Sample Name: Std-2.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	4352151.667	1.948239	mg/L		3
Mg	24	2656811.667	1.928367	mg/L		3
K	39	3278755.000	1.881443	mg/L		3
Ca	44	83505.000	1.923646	mg/L		3

Metals Quantitation Summary Report

Sequence #: 006
Method: 01-MINERALS.mth
Acq Time: 09:50:30 Tue 28-Jul-20
Sample Name: Std-5.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	11217665.000	5.021068	mg/L		3
Mg	24	6949890.000	5.035294	mg/L		3
K	39	8561103.333	5.055658	mg/L		3
Ca	44	209903.333	5.037917	mg/L		3

Metals Quantitation Summary Report

Sequence #: 007
Method: 01-MINERALS.mth
Acq Time: 09:51:41 Tue 28-Jul-20
Sample Name: ICV-2.0
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 07/08/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	4484541.667	1.995408	mg/L	3
Mg	24	2710551.667	1.955203	mg/L	3
K	39	3367765.000	1.923110	mg/L	3
Ca	44	85073.333	1.949193	mg/L	3

Metals Quantitation Summary Report

Sequence #: 008
Method: 01-MINERALS.mth
Acq Time: 09:55:24 Tue 28-Jul-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	22840.000	0.001629	mg/L		3
Mg	24	4671.667	0.000061	mg/L		3
K	39	167831.667	0.001639	mg/L		3
Ca	44	5838.333	-0.002656	mg/L		3

Metals Quantitation Summary Report

Sequence #: 009
Method: 01-MINERALS.mth
Acq Time: 09:56:36 Tue 28-Jul-20
Sample Name: CCB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	22566.667	0.001660	mg/L		3
Mg	24	4511.667	-0.000003	mg/L		3
K	39	167588.333	0.002998	mg/L		3
Ca	44	5728.333	-0.003188	mg/L		3

Metals Quantitation Summary Report

Sequence #: 010
Method: 01-MINERALS.mth
Acq Time: 09:57:48 Tue 28-Jul-20
Sample Name: BS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	155160.000	0.059875	mg/L		3
Mg	24	82831.667	0.055664	mg/L		3
K	39	261081.667	0.057151	mg/L		3
Ca	44	8158.333	0.054197	mg/L		3

Metals Quantitation Summary Report

Sequence #: 011
Method: 01-MINERALS.mth
Acq Time: 10:13:07 Tue 28-Jul-20
Sample Name: 072820_1 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-1
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2151603.333	0.952462	mg/L		3
Mg	24	1297128.333	0.933512	mg/L		3
K	39	1690008.333	0.916058	mg/L		3
Ca	44	45173.333	0.967283	mg/L		3

Metals Quantitation Summary Report

Sequence #: 012
Method: 01-MINERALS.mth
Acq Time: 10:21:33 Tue 28-Jul-20
Sample Name: 072820_1 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-1
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	19451.667	0.000310	mg/L		3
Mg	24	4733.333	0.000170	mg/L		3
K	39	164896.667	0.001797	mg/L		3
Ca	44	5870.000	0.000874	mg/L		3

Metals Quantitation Summary Report

Sequence #: 035
Method: 01-MINERALS.mth
Acq Time: 11:09:22 Tue 28-Jul-20
Sample Name: CCV2-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-1
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	4306496.667	1.919537	mg/L		3
Mg	24	2669501.667	1.928942	mg/L		3
K	39	3258643.333	1.861175	mg/L		3
Ca	44	81878.333	1.874469	mg/L		3

Metals Quantitation Summary Report

Sequence #: 036
Method: 01-MINERALS.mth
Acq Time: 11:10:34 Tue 28-Jul-20
Sample Name: CCB2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-1
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	24463.333	0.002374	mg/L		3
Mg	24	5008.333	0.000311	mg/L		3
K	39	172643.333	0.004788	mg/L		3
Ca	44	5658.333	-0.006552	mg/L		3

Metals Quantitation Summary Report

Sequence #: 062
Method: 01-MINERALS.mth
Acq Time: 11:44:55 Tue 28-Jul-20
Sample Name: CCV3-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-1
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	4238668.333	1.910814	mg/L		3
Mg	24	2587885.000	1.891712	mg/L		3
K	39	3205713.333	1.851549	mg/L		3
Ca	44	81581.667	1.890077	mg/L		3

Metals Quantitation Summary Report

Sequence #: 063
Method: 01-MINERALS.mth
Acq Time: 11:46:07 Tue 28-Jul-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-1
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	23580.000	0.002383	mg/L		3
Mg	24	4963.333	0.000414	mg/L		3
K	39	173450.000	0.009193	mg/L		3
Ca	44	5651.667	-0.001460	mg/L		3

Metals Quantitation Summary Report

Sequence #: 064
Method: 01-MINERALS.mth
Acq Time: 11:59:24 Tue 28-Jul-20
Sample Name: 072820_2 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-2
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	2066480.000	0.928519	mg/L	3
Mg	24	1290148.333	0.942888	mg/L	3
K	39	1656955.000	0.911863	mg/L	3
Ca	44	44110.000	0.957973	mg/L	3

Metals Quantitation Summary Report

Sequence #: 065
Method: 01-MINERALS.mth
Acq Time: 12:04:48 Tue 28-Jul-20
Sample Name: 072820_2 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-2
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	19611.667	0.000656	mg/L		3
Mg	24	4583.333	0.000166	mg/L		3
K	39	176935.000	0.012336	mg/L		3
Ca	44	5426.667	-0.005840	mg/L		3

Metals Quantitation Summary Report

Sequence #: 088
Method: 01-MINERALS.mth
Acq Time: 12:33:42 Tue 28-Jul-20
Sample Name: CCV4-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-2
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	4170041.667	1.900985	mg/L	3
Mg	24	2549508.333	1.884187	mg/L	3
K	39	3190775.000	1.863800	mg/L	3
Ca	44	80335.000	1.881392	mg/L	3

Metals Quantitation Summary Report

Sequence #: 089
Method: 01-MINERALS.mth
Acq Time: 12:36:05 Tue 28-Jul-20
Sample Name: CCB4
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-2
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	20686.667	0.000920	mg/L		3
Mg	24	4925.000	0.000331	mg/L		3
K	39	179293.333	0.011102	mg/L		3
Ca	44	5530.000	-0.006633	mg/L		3

Metals Quantitation Summary Report

Sequence #: 111
Method: 01-MINERALS.mth
Acq Time: 13:16:20 Tue 28-Jul-20
Sample Name: CCV5-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-2
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	4123645.000	1.853579	mg/L	3
Mg	24	2570673.333	1.873353	mg/L	3
K	39	3117356.667	1.792534	mg/L	3
Ca	44	79251.667	1.826586	mg/L	3

Metals Quantitation Summary Report

Sequence #: 112
Method: 01-MINERALS.mth
Acq Time: 13:23:44 Tue 28-Jul-20
Sample Name: CCB5
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-2
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	19535.000	0.000667	mg/L		3
Mg	24	4616.667	0.000208	mg/L		3
K	39	174063.333	0.011091	mg/L		3
Ca	44	5343.333	-0.007262	mg/L		3

Metals Quantitation Summary Report

Sequence #: 113
Method: 01-MINERALS.mth
Acq Time: 13:32:48 Tue 28-Jul-20
Sample Name: 072820_7 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-7
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2128165.000	0.964965	mg/L		3
Mg	24	1277685.000	0.941925	mg/L		3
K	39	1652801.667	0.918048	mg/L		3
Ca	44	44743.333	0.983408	mg/L		3

Metals Quantitation Summary Report

Sequence #: 114
Method: 01-MINERALS.mth
Acq Time: 13:40:27 Tue 28-Jul-20
Sample Name: 072820_7 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-7
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	20025.000	0.000537	mg/L	3
Mg	24	4770.000	0.000185	mg/L	3
K	39	181948.333	0.011660	mg/L	3
Ca	44	5488.333	-0.008944	mg/L	3

Metals Quantitation Summary Report

Sequence #: 137
Method: 01-MINERALS.mth
Acq Time: 14:20:40 Tue 28-Jul-20
Sample Name: CCV6-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-7
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	4252475.000	1.933998	mg/L	3
Mg	24	2641643.333	1.947684	mg/L	3
K	39	3285201.667	1.917422	mg/L	3
Ca	44	80810.000	1.888826	mg/L	3

Metals Quantitation Summary Report

Sequence #: 138
Method: 01-MINERALS.mth
Acq Time: 14:21:52 Tue 28-Jul-20
Sample Name: CCB6
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-7
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	23678.333	0.002535	mg/L		3
Mg	24	4838.333	0.000358	mg/L		3
K	39	178905.000	0.013629	mg/L		3
Ca	44	5255.000	-0.010110	mg/L		3

Metals Quantitation Summary Report

Sequence #: 162
Method: 01-MINERALS.mth
Acq Time: 15:13:43 Tue 28-Jul-20
Sample Name: CCV7-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-7
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	4301998.333	1.960265	mg/L	3
Mg	24	2609783.333	1.927783	mg/L	3
K	39	3246938.333	1.897598	mg/L	3
Ca	44	80181.667	1.876641	mg/L	3

Metals Quantitation Summary Report

Sequence #: 163
Method: 01-MINERALS.mth
Acq Time: 15:16:07 Tue 28-Jul-20
Sample Name: CCB7
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-7
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	23528.333	0.002298	mg/L		3
Mg	24	4855.000	0.000314	mg/L		3
K	39	178548.333	0.011701	mg/L		3
Ca	44	5378.333	-0.009090	mg/L		3

Metals Quantitation Summary Report

Sequence #: 164
Method: 01-MINERALS.mth
Acq Time: 15:33:00 Tue 28-Jul-20
Sample Name: 072820_8 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-8
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2095648.333	0.951159	mg/L		3
Mg	24	1299213.333	0.958666	mg/L		3
K	39	1650881.667	0.917870	mg/L		3
Ca	44	43483.333	0.952842	mg/L		3

Metals Quantitation Summary Report

Sequence #: 165
Method: 01-MINERALS.mth
Acq Time: 15:34:12 Tue 28-Jul-20
Sample Name: 072820_8 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-8
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	20033.333	0.000563	mg/L		3
Mg	24	4656.667	0.000113	mg/L		3
K	39	180020.000	0.010788	mg/L		3
Ca	44	5255.000	-0.014338	mg/L		3

Metals Quantitation Summary Report

Sequence #: 180
Method: 01-MINERALS.mth
Acq Time: 15:55:30 Tue 28-Jul-20
Sample Name: CCV8-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-8
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	4341843.333	1.991920	mg/L	3
Mg	24	2634486.667	1.959097	mg/L	3
K	39	3192626.667	1.877284	mg/L	3
Ca	44	79288.333	1.867625	mg/L	3

Metals Quantitation Summary Report

Sequence #: 181
Method: 01-MINERALS.mth
Acq Time: 15:57:54 Tue 28-Jul-20
Sample Name: CCB8
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-8
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	20395.000	0.000878	mg/L		3
Mg	24	4701.667	0.000202	mg/L		3
K	39	176651.667	0.010560	mg/L		3
Ca	44	5255.000	-0.012142	mg/L		3

Metals Quantitation Summary Report

Sequence #: 194
Method: 01-MINERALS.mth
Acq Time: 16:26:08 Tue 28-Jul-20
Sample Name: CCV9-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-8
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	4324880.000	1.996293	mg/L	3
Mg	24	2631250.000	1.968820	mg/L	3
K	39	3239165.000	1.918460	mg/L	3
Ca	44	78823.333	1.868031	mg/L	3

Metals Quantitation Summary Report

Sequence #: 195
Method: 01-MINERALS.mth
Acq Time: 16:27:20 Tue 28-Jul-20
Sample Name: CCB9
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072820-8
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	20663.333	0.001145	mg/L		3
Mg	24	5018.333	0.000491	mg/L		3
K	39	178853.333	0.013585	mg/L		3
Ca	44	5413.333	-0.006131	mg/L		3

Metals Quantitation Summary Report

Sequence #: 196
Method: 01-MINERALS.mth
Acq Time: 16:34:49 Tue 28-Jul-20
Sample Name: 072720_4 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2039631.667	0.938975	mg/L		3
Mg	24	1268501.667	0.949657	mg/L		3
K	39	1664361.667	0.940679	mg/L		3
Ca	44	44195.000	0.986459	mg/L		3

Metals Quantitation Summary Report

Sequence #: 197
Method: 01-MINERALS.mth
Acq Time: 16:36:01 Tue 28-Jul-20
Sample Name: 072820_4 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	22041.667	0.001595	mg/L		3
Mg	24	5076.667	0.000466	mg/L		3
K	39	177653.333	0.010837	mg/L		3
Ca	44	5275.000	-0.012041	mg/L		3

Metals Quantitation Summary Report

Sequence #: 214
Method: 01-MINERALS.mth
Acq Time: 17:04:56 Tue 28-Jul-20
Sample Name: CCV10-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	4234280.000	1.970351	mg/L	3
Mg	24	2530445.000	1.908476	mg/L	3
K	39	3185401.667	1.900421	mg/L	3
Ca	44	78465.000	1.875096	mg/L	3

Metals Quantitation Summary Report

Sequence #: 215
Method: 01-MINERALS.mth
Acq Time: 17:06:08 Tue 28-Jul-20
Sample Name: CCB10
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	19798.333	0.000847	mg/L		3
Mg	24	4846.667	0.000403	mg/L		3
K	39	175308.333	0.012585	mg/L		3
Ca	44	5345.000	-0.006336	mg/L		3

Metals Quantitation Summary Report

Sequence #: 216
Method: 01-MINERALS.mth
Acq Time: 17:10:15 Tue 28-Jul-20
Sample Name: 15917.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	19525300.000	45.423441	mg/L		3
Mg	24	11565300.000	43.529692	mg/L		3
K	39	665080.000	1.593851	mg/L		3
Ca	44	1222590.000	156.024753	mg/L		3

Metals Quantitation Summary Report

Sequence #: 217
Method: 01-MINERALS.mth
Acq Time: 17:11:26 Tue 28-Jul-20
Sample Name: 15917.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	24552171.667	59.290713	mg/L		3
Mg	24	18124166.667	70.819079	mg/L		3
K	39	446416.667	0.963240	mg/L		3
Ca	44	2048758.333	271.925674	mg/L		3

Metals Quantitation Summary Report

Sequence #: 218
Method: 01-MINERALS.mth
Acq Time: 17:13:15 Tue 28-Jul-20
Sample Name: 15917.01s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	842870.000	47.348470	mg/L		3
Mg	24	484370.000	44.570121	mg/L		3
Ca	44	55088.333	156.243017	mg/L		3

Metals Quantitation Summary Report

Sequence #: 219
Method: 01-MINERALS.mth
Acq Time: 17:14:27 Tue 28-Jul-20
Sample Name: 15917.02s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1058103.333	60.415210	mg/L		3
Mg	24	768631.667	71.801818	mg/L		3
Ca	44	87930.000	263.224537	mg/L		3

Metals Quantitation Summary Report

Sequence #: 220
Method: 01-MINERALS.mth
Acq Time: 17:15:38 Tue 28-Jul-20
Sample Name: 15917.03s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	521488.333	28.475338	mg/L		3
Mg	24	423808.333	38.384970	mg/L		3
K	39	212605.000	4.031827	mg/L		3
Ca	44	39540.000	105.309174	mg/L		3

Metals Quantitation Summary Report

Sequence #: 221
Method: 01-MINERALS.mth
Acq Time: 17:16:49 Tue 28-Jul-20
Sample Name: 15917.04s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1484751.667	85.062242	mg/L		3
Mg	24	708126.667	65.990527	mg/L		3
K	39	255720.000	7.781752	mg/L		3
Ca	44	84288.333	251.195066	mg/L		3

Metals Quantitation Summary Report

Sequence #: 222
Method: 01-MINERALS.mth
Acq Time: 17:18:00 Tue 28-Jul-20
Sample Name: 15917.05s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	887743.333	50.059479	mg/L		3
Mg	24	375211.667	34.530638	mg/L		3
K	39	271201.667	8.824735	mg/L		3
Ca	44	56613.333	161.422068	mg/L		3

Metals Quantitation Summary Report

Sequence #: 223
Method: 01-MINERALS.mth
Acq Time: 17:19:11 Tue 28-Jul-20
Sample Name: 15917.06s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	528373.333	29.721784	mg/L		3
Mg	24	426885.000	39.789856	mg/L		3
K	39	208380.000	4.163919	mg/L		3
Ca	44	37698.333	102.943093	mg/L		3

Metals Quantitation Summary Report

Sequence #: 224
Method: 01-MINERALS.mth
Acq Time: 17:20:23 Tue 28-Jul-20
Sample Name: 15917.07s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	63676.667	2.641776	mg/L		3
Mg	24	14041.667	0.909259	mg/L		3
K	39	189668.333	2.620311	mg/L		3
Ca	44	6051.667	1.372915	mg/L		3

Metals Quantitation Summary Report

Sequence #: 225
Method: 01-MINERALS.mth
Acq Time: 17:26:29 Tue 28-Jul-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	21983.333	0.001821	mg/L		3
Mg	24	4685.000	0.000267	mg/L		3
K	39	180166.667	0.015128	mg/L		3
Ca	44	5148.333	-0.011910	mg/L		3

Metals Quantitation Summary Report

Sequence #: 226
Method: 01-MINERALS.mth
Acq Time: 17:27:40 Tue 28-Jul-20
Sample Name: 15917.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	33645.000	0.036636	mg/L	3
Mg	24	8171.667	0.014600	mg/L	3
K	39	180516.667	0.080419	mg/L	3
Ca	44	8738.333	0.405525	mg/L	3

Metals Quantitation Summary Report

Sequence #: 227
Method: 01-MINERALS.mth
Acq Time: 17:28:51 Tue 28-Jul-20
Sample Name: 15917.05 MS-2.0
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	985473.333	56.411551	mg/L		3
Mg	24	456368.333	42.615272	mg/L		3
K	39	382646.667	17.824571	mg/L		3
Ca	44	56905.000	164.732661	mg/L		3

Metals Quantitation Summary Report

Sequence #: 228
Method: 01-MINERALS.mth
Acq Time: 17:30:02 Tue 28-Jul-20
Sample Name: 15917.05 MSD
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	983468.333	56.571681	mg/L		3
Mg	24	455805.000	42.767031	mg/L		3
K	39	381050.000	17.834795	mg/L		3
Ca	44	58321.667	170.050210	mg/L		3

Metals Quantitation Summary Report

Sequence #: 229
Method: 01-MINERALS.mth
Acq Time: 17:34:47 Tue 28-Jul-20
Sample Name: 15917.05s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 125

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	836978.333	48.304094	mg/L		3
Ca	44	54915.000	160.334470	mg/L		3

Metals Quantitation Summary Report

Sequence #: 230
Method: 01-MINERALS.mth
Acq Time: 17:36:03 Tue 28-Jul-20
Sample Name: 15917.05 MS-2.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 125

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	5026460.000	287.162195	mg/L	3
Ca	44	132318.333	399.672304	mg/L	3

Metals Quantitation Summary Report

Sequence #: 231
Method: 01-MINERALS.mth
Acq Time: 17:37:16 Tue 28-Jul-20
Sample Name: CCV11-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	4257563.333	1.954814	mg/L		3
Mg	24	2597846.667	1.933676	mg/L		3
K	39	3260643.333	1.921220	mg/L		3
Ca	44	78756.667	1.855863	mg/L		3

Metals Quantitation Summary Report

Sequence #: 232
Method: 01-MINERALS.mth
Acq Time: 17:38:28 Tue 28-Jul-20
Sample Name: CCB11
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	36443.333	0.008557	mg/L		3
Mg	24	13733.333	0.007050	mg/L		3
K	39	187943.333	0.020661	mg/L		3
Ca	44	5860.000	0.006967	mg/L		3

Metals Quantitation Summary Report

Sequence #: 233
Method: 01-MINERALS.mth
Acq Time: 17:39:38 Tue 28-Jul-20
Sample Name: 072720_5 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2039865.000	0.938883	mg/L		3
Mg	24	1264058.333	0.945862	mg/L		3
K	39	1658493.333	0.936845	mg/L		3
Ca	44	45053.333	1.008541	mg/L		3

Metals Quantitation Summary Report

Sequence #: 234
Method: 01-MINERALS.mth
Acq Time: 17:42:02 Tue 28-Jul-20
Sample Name: 072720_5 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	21975.000	0.001761	mg/L		3
Mg	24	4768.333	0.000309	mg/L		3
K	39	182470.000	0.015944	mg/L		3
Ca	44	5255.000	-0.009977	mg/L		3

Metals Quantitation Summary Report

Sequence #: 243
Method: 01-MINERALS.mth
Acq Time: 17:55:15 Tue 28-Jul-20
Sample Name: CCV12-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	4370501.667	2.009136	mg/L		3
Mg	24	2684833.333	2.000786	mg/L		3
K	39	3306143.333	1.951182	mg/L		3
Ca	44	81603.333	1.930517	mg/L		3

Metals Quantitation Summary Report

Sequence #: 244
Method: 01-MINERALS.mth
Acq Time: 17:56:27 Tue 28-Jul-20
Sample Name: CCB12
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	20298.333	0.001016	mg/L		3
Mg	24	4880.000	0.000403	mg/L		3
K	39	178858.333	0.014041	mg/L		3
Ca	44	5296.667	-0.008501	mg/L		3

Metals Digestion 3015A \ 3050B

DATE 7/27/20

PREP BATCH MTD-072720-4

TIME START 10:00

TIME FINISH 10:30

ANALYST 884

Pipet Calibration:

Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria	Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria
2	1			Bias: Mean \pm 2% of nominal value Precision: RSD \leq 1% of nominal value	3	1			Bias: Mean \pm 2% of nominal value Precision: RSD \leq 1% of nominal value
	2					2			
	3					3			

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	FINAL VOLUME (ml)	REMARKS	% TOTAL SOLIDS	DILUTION FACTOR
LCS-072720-4	----	50	50		—	1
LRB-072720-4	----	50	50		—	1
15854.01		10		filter & preserve in lab		5
02						
04				filter & pres. in lab		
04 MS				cat		
04 MSD				cat		
05						
07				filter & pres. in lab		
07 MS						
07 MSD						
08						
15858.01		0.221				206
15917.01		10				5
02						
03						
03 MS						
03 MSD						
04						
05						
05 MS				cat		
05 MSD				cat		
06						
07		25				2

NOTES: 1) Spike values (unless otherwise stated):
 LCS = 0.05 ppm = 50 mls / 0.50 mls of 5ppm Spiking Solution
 Samples: Water = 0.05 ppm = 50 mls / 0.50 mls of 5ppm Spiking Solution
 Soil = 0.10 ppm = 50 mls / 1.0 mls of 5ppm Spiking Solution
 Spiking Solution - Date Prepared: 7/22/20

2) Spike values for minerals (Ca-Mg-K-Na)
 LCS = 1.0 ppm = 50 mls / 0.50 mls HM Stock Solution
 Samples (Water or Soil) = 2.0 ppm = 50 mls / 1.0 mls HM Stock Solution
 High Purity Stock Solution (HM) - Lot # 1927522-500

3) HNO₃ Lot # 248841 4) Centrifuge Tube Lot # 191129-060

5) Balance ID: 712 M4 Reviewed by CCM On 7-29-20
8/3/20

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	7/23/2020 12:08:13 PM	Calibration Blank	Liquid	
002	7/23/2020 12:10:05 PM	Standard #1	Liquid	
003	7/23/2020 12:11:57 PM	Standard #2	Liquid	
004	7/23/2020 12:13:48 PM	Standard #3	Liquid	
005	7/23/2020 12:15:40 PM	Standard #4	Liquid	
006	7/23/2020 12:17:32 PM	Standard #5	Liquid	
007	7/23/2020 12:19:23 PM	Standard #6	Liquid	
008	7/23/2020 12:22:39 PM	Standard #7	Liquid	
009	7/23/2020 12:26:17 PM	Standard #8	Liquid	
010	7/23/2020 12:29:33 PM	ICV-5.0 ppb	Liquid	ICV
011	7/23/2020 12:32:18 PM	ICB	Liquid	ICB
012	7/23/2020 12:35:56 PM	CCV1-2.0 ppb	Liquid	CCV
013	7/23/2020 12:37:47 PM	CCB1	Liquid	CCB
014	7/23/2020 12:39:39 PM	BS-0.10	Liquid	BS
015	7/23/2020 12:41:30 PM	072320_1 LCS-2.0	Liquid	LCS
016	7/23/2020 12:43:20 PM	072320_1 LRB	Liquid	LRB
017	7/23/2020 12:45:07 PM	15807.01s tclp	Liquid	S
018	7/23/2020 12:46:54 PM	15835.01s tclp	Liquid	S
019	7/23/2020 12:48:42 PM	15837.01s tclp	Liquid	S
020	7/23/2020 12:50:30 PM	15847.01s tclp	Liquid	S
021	7/23/2020 12:52:18 PM	15886.01s	Liquid	S
022	7/23/2020 12:54:06 PM	15904.01s	Liquid	S
023	7/23/2020 12:55:55 PM	15926.02s	Liquid	S
024	7/23/2020 12:57:44 PM	15927.01s	Liquid	S
025	7/23/2020 12:59:31 PM	15931.01s	Liquid	S
026	7/23/2020 1:01:18 PM	15929.01s	Liquid	S
027	7/23/2020 1:03:05 PM	15929.01 MS-2.0	Liquid	MS
028	7/23/2020 1:04:53 PM	15929.01 MSD	Liquid	MSD
029	7/23/2020 1:06:44 PM	CCV2-2.0 ppb	Liquid	CCV
030	7/23/2020 1:08:36 PM	CCB2	Liquid	CCB
031	7/23/2020 1:10:24 PM	15917.01s	Liquid	S
032	7/23/2020 1:12:13 PM	15917.02s	Liquid	S
033	7/23/2020 1:14:03 PM	15917.03s	Liquid	S
034	7/23/2020 1:15:50 PM	15917.04s	Liquid	S
035	7/23/2020 1:17:37 PM	15917.05s	Liquid	S
036	7/23/2020 1:19:25 PM	15917.07s	Liquid	S
037	7/23/2020 1:26:05 PM	15917.06s	Liquid	S
038	7/23/2020 1:27:53 PM	15917.06 MS-2.0	Liquid	MS
039	7/23/2020 1:29:41 PM	15917.06 MSD	Liquid	MSD
040	7/23/2020 1:31:33 PM	CCV3-2.0 ppb	Liquid	CCV
041	7/23/2020 1:33:24 PM	CCB3	Liquid	CCB
042	7/23/2020 1:35:15 PM	072320_2 LCS-2.0	Liquid	LCS
043	7/23/2020 1:37:06 PM	072320_2 LRB	Liquid	LRB
044	7/23/2020 1:38:55 PM	15682.01s	Soil	S
045	7/23/2020 1:40:43 PM	15834.02s	Soil	S
046	7/23/2020 1:42:31 PM	15834.03s	Soil	S
047	7/23/2020 1:44:18 PM	15834.04s	Soil	S
048	7/23/2020 1:46:06 PM	15834.05s	Soil	S
049	7/23/2020 1:47:55 PM	15834.06s	Soil	S
050	7/23/2020 1:49:43 PM	15834.06 MS-2.0	Soil	MS
051	7/23/2020 1:51:33 PM	15834.06 MSD	Soil	MSD
052	7/23/2020 1:53:24 PM	CCV4-2.0 ppb	Liquid	CCV
053	7/23/2020 1:55:16 PM	CCB4	Liquid	CCB
054	7/23/2020 1:57:04 PM	15889.01s	Soil	S
055	7/23/2020 1:58:52 PM	15459.08s	Liquid	
056	7/23/2020 2:00:40 PM	15459.08 dp	Liquid	

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	7/23/2020 2:02:32 PM	CCV5-2.0 ppb	Liquid	CCV
058	7/23/2020 2:04:24 PM	CCB5	Liquid	CCB
059	7/23/2020 2:25:48 PM	15459.08s	Soil	
060	7/23/2020 2:27:37 PM	15459.08 dp	Soil	
061	7/23/2020 2:29:28 PM	CCV6-2.0 ppb	Liquid	CCV
062	7/23/2020 2:31:20 PM	CCB6	Liquid	CCB
063	7/23/2020 2:49:09 PM	15459.08s	Soil	S
064	7/23/2020 2:50:57 PM	15459.08 dp	Soil	S
065	7/23/2020 2:52:48 PM	CCV6-2.0 ppb	Liquid	CCV
066	7/23/2020 2:54:40 PM	CCB6	Liquid	CCB
067	7/23/2020 2:56:31 PM	072320_3 LCS-2.0	Liquid	LCS
068	7/23/2020 2:58:21 PM	072320_3 LRB	Liquid	LRB
069	7/23/2020 3:00:10 PM	15849.01s tclp	Liquid	S
070	7/23/2020 3:01:59 PM	15888.01s tclp	Liquid	S
071	7/23/2020 3:03:48 PM	15889.01s tclp	Liquid	S
072	7/23/2020 3:05:37 PM	15889.02s tclp	Liquid	S
073	7/23/2020 3:07:25 PM	15889.02 MS-2.0	Liquid	MS
074	7/23/2020 3:09:14 PM	15889.02 MSD	Liquid	MSD
075	7/23/2020 3:11:05 PM	CCV7-2.0 ppb	Liquid	CCV
076	7/23/2020 3:12:57 PM	CCB7	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

Lab Sample ID: S15917.01

Sample Tag: MW-1 L007009-01

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

Lab Sample ID: S15917.02

Sample Tag: MW-2 L007009-02

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

Lab Sample ID: S15917.03

Sample Tag: MW-4 L007009-03

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

Lab Sample ID: S15917.04

Sample Tag: MW-5 L007009-04

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

Lab Sample ID: S15917.05

Sample Tag: MW-6 L007009-05

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

Lab Sample ID: S15917.06

Sample Tag: MW-4 Duplicate L007009-06

Date Collected: 07/21/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

Lab Sample ID: S15917.07

Sample Tag: Field Blank L007009-07

Date Collected: 07/21/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

Note/Qualifier Key

b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
010 ICV-5.0 ppb	ICV	1.0	Hg	5.298	5.0	106	90/110	ug/L	Liquid
012 CCV1-2.0 ppb	CCV	1.0	Hg	2.024	2.0	101	90/110	ug/L	Liquid
029 CCV2-2.0 ppb	CCV	1.0	Hg	1.915	2.0	96	90/110	ug/L	Liquid
040 CCV3-2.0 ppb	CCV	1.0	Hg	2.047	2.0	102	90/110	ug/L	Liquid
052 CCV4-2.0 ppb	CCV	1.0	Hg	2.053	2.0	103	90/110	ug/L	Liquid
057 CCV5-2.0 ppb	CCV	1.0	Hg	2.068	2.0	103	90/110	ug/L	Liquid
061 CCV6-2.0 ppb	CCV	1.0	Hg	2.035	2.0	102	90/110	ug/L	Liquid
065 CCV6-2.0 ppb	CCV	1.0	Hg	2.042	2.0	102	90/110	ug/L	Liquid
075 CCV7-2.0 ppb	CCV	1.0	Hg	2.015	2.0	101	90/110	ug/L	Liquid

Form 3: Blanks

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
011 ICB	ICB	1.0	Hg	<0.05	-0.0291	ug/L	Liquid
013 CCB1	CCB	1.0	Hg	<0.05	-0.0293	ug/L	Liquid
016 072320_1 LRB	LRB	1.0	Hg	<0.05	-0.0511	ug/L	Liquid
030 CCB2	CCB	1.0	Hg	<0.05	-0.1335	ug/L	Liquid
041 CCB3	CCB	1.0	Hg	<0.05	-0.0305	ug/L	Liquid
043 072320_2 LRB	LRB	1.0	Hg	<0.05	-0.0548	ug/L	Liquid
053 CCB4	CCB	1.0	Hg	<0.05	-0.0284	ug/L	Liquid
058 CCB5	CCB	1.0	Hg	<0.05	-0.0297	ug/L	Liquid
062 CCB6	CCB	1.0	Hg	<0.05	-0.0297	ug/L	Liquid
066 CCB6	CCB	1.0	Hg	<0.05	-0.0280	ug/L	Liquid
068 072320_3 LRB	LRB	1.0	Hg	<0.05	-0.0542	ug/L	Liquid
076 CCB7	CCB	1.0	Hg	<0.05	-0.0304	ug/L	Liquid

Form 5A: Matrix Spike Sample Recovery

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
014 BS-0.10		1.0	Hg	0.079	ND	0.10	79	70/130	ug/L	Liquid
027 15929.01 MS-2.0	026 15929.01s	1.0	Hg	1.759	<0.2	2.0	88	80/120	ug/L	Liquid
038 15917.06 MS-2.0	037 15917.06s	1.0	Hg	1.917	<0.2	2.0	96	80/120	ug/L	Liquid
050 15834.06 MS-2.0	049 15834.06s	68.5	Hg	141.5	<50	137.0	103	80/120	ug/kg	Soil
073 15889.02 MS-2.0	072 15889.02s tclp	2.0	Hg	4.054	<0.2	4.0	101	80/120	ug/L	Liquid

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
028 15929.01 MSD	027 15929.01 MS-2.0	1.0	Hg	1.782	1.759	1	0/20	ug/L	Liquid
039 15917.06 MSD	038 15917.06 MS-2.0	1.0	Hg	1.930	1.917	1	0/20	ug/L	Liquid
051 15834.06 MSD	050 15834.06 MS-2.0	67.0	Hg	138.8	141.5	2	0/20	ug/kg	Soil
074 15889.02 MSD	073 15889.02 MS-2.0	2.0	Hg	4.188	4.054	3	0/20	ug/L	Liquid

Form 7: Laboratory Control Sample

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
015 072320_1 LCS-2.0	1.0	Hg	2.000	2.0	100	85/115	ug/L	Liquid
042 072320_2 LCS-2.0	1.0	Hg	1.996	2.0	100	85/115	ug/L	Liquid
067 072320_3 LCS-2.0	1.0	Hg	1.990	2.0	100	85/115	ug/L	Liquid

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Calibration Blank	7/23/2020 12:08:13	PM Liquid	Hg
002 Standard #1	7/23/2020 12:10:05	PM Liquid	Hg
003 Standard #2	7/23/2020 12:11:57	PM Liquid	Hg
004 Standard #3	7/23/2020 12:13:48	PM Liquid	Hg
005 Standard #4	7/23/2020 12:15:40	PM Liquid	Hg
006 Standard #5	7/23/2020 12:17:32	PM Liquid	Hg
007 Standard #6	7/23/2020 12:19:23	PM Liquid	Hg
008 Standard #7	7/23/2020 12:22:39	PM Liquid	Hg
009 Standard #8	7/23/2020 12:26:17	PM Liquid	Hg
010 ICV-5.0 ppb	7/23/2020 12:29:33	PM Liquid	Hg
011 ICB	7/23/2020 12:32:18	PM Liquid	Hg
012 CCV1-2.0 ppb	7/23/2020 12:35:56	PM Liquid	Hg
013 CCB1	7/23/2020 12:37:47	PM Liquid	Hg
014 BS-0.10	7/23/2020 12:39:39	PM Liquid	Hg
015 072320_1 LCS-2.0	7/23/2020 12:41:30	PM Liquid	Hg
016 072320_1 LRB	7/23/2020 12:43:20	PM Liquid	Hg
017 15807.01s tclp	7/23/2020 12:45:07	PM Liquid	Hg
018 15835.01s tclp	7/23/2020 12:46:54	PM Liquid	Hg
019 15837.01s tclp	7/23/2020 12:48:42	PM Liquid	Hg
020 15847.01s tclp	7/23/2020 12:50:30	PM Liquid	Hg
021 15886.01s	7/23/2020 12:52:18	PM Liquid	Hg
022 15904.01s	7/23/2020 12:54:06	PM Liquid	Hg
023 15926.02s	7/23/2020 12:55:55	PM Liquid	Hg
024 15927.01s	7/23/2020 12:57:44	PM Liquid	Hg
025 15931.01s	7/23/2020 12:59:31	PM Liquid	Hg
026 15929.01s	7/23/2020 1:01:18	PM Liquid	Hg
027 15929.01 MS-2.0	7/23/2020 1:03:05	PM Liquid	Hg
028 15929.01 MSD	7/23/2020 1:04:53	PM Liquid	Hg
029 CCV2-2.0 ppb	7/23/2020 1:06:44	PM Liquid	Hg
030 CCB2	7/23/2020 1:08:36	PM Liquid	Hg
031 15917.01s	7/23/2020 1:10:24	PM Liquid	Hg
032 15917.02s	7/23/2020 1:12:13	PM Liquid	Hg
033 15917.03s	7/23/2020 1:14:03	PM Liquid	Hg
034 15917.04s	7/23/2020 1:15:50	PM Liquid	Hg
035 15917.05s	7/23/2020 1:17:37	PM Liquid	Hg
036 15917.07s	7/23/2020 1:19:25	PM Liquid	Hg
037 15917.06s	7/23/2020 1:26:05	PM Liquid	Hg
038 15917.06 MS-2.0	7/23/2020 1:27:53	PM Liquid	Hg
039 15917.06 MSD	7/23/2020 1:29:41	PM Liquid	Hg
040 CCV3-2.0 ppb	7/23/2020 1:31:33	PM Liquid	Hg
041 CCB3	7/23/2020 1:33:24	PM Liquid	Hg
042 072320_2 LCS-2.0	7/23/2020 1:35:15	PM Liquid	Hg
043 072320_2 LRB	7/23/2020 1:37:06	PM Liquid	Hg
044 15682.01s	7/23/2020 1:38:55	PM Soil	Hg
045 15834.02s	7/23/2020 1:40:43	PM Soil	Hg
046 15834.03s	7/23/2020 1:42:31	PM Soil	Hg
047 15834.04s	7/23/2020 1:44:18	PM Soil	Hg
048 15834.05s	7/23/2020 1:46:06	PM Soil	Hg
049 15834.06s	7/23/2020 1:47:55	PM Soil	Hg
050 15834.06 MS-2.0	7/23/2020 1:49:43	PM Soil	Hg
051 15834.06 MSD	7/23/2020 1:51:33	PM Soil	Hg
052 CCV4-2.0 ppb	7/23/2020 1:53:24	PM Liquid	Hg
053 CCB4	7/23/2020 1:55:16	PM Liquid	Hg
054 15889.01s	7/23/2020 1:57:04	PM Soil	Hg
055 15459.08s	7/23/2020 1:58:52	PM Liquid	Hg
056 15459.08s	7/23/2020 2:00:40	PM Liquid	Hg

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0723A

Instrument ID: HG QuickTrace

Analysis Date: 07/23/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
057 CCV5-2.0 ppb	7/23/2020 2:02:32 PM	Liquid	Hg
058 CCB5	7/23/2020 2:04:24 PM	Liquid	Hg
059 15459.08s	7/23/2020 2:25:48 PM	Soil	Hg
060 15459.08 dp	7/23/2020 2:27:37 PM	Soil	Hg
061 CCV6-2.0 ppb	7/23/2020 2:29:28 PM	Liquid	Hg
062 CCB6	7/23/2020 2:31:20 PM	Liquid	Hg
063 15459.08s	7/23/2020 2:49:09 PM	Soil	Hg
064 15459.08 dp	7/23/2020 2:50:57 PM	Soil	Hg
065 CCV6-2.0 ppb	7/23/2020 2:52:48 PM	Liquid	Hg
066 CCB6	7/23/2020 2:54:40 PM	Liquid	Hg
067 072320_3 LCS-2.0	7/23/2020 2:56:31 PM	Liquid	Hg
068 072320_3 LRB	7/23/2020 2:58:21 PM	Liquid	Hg
069 15849.01s tclp	7/23/2020 3:00:10 PM	Liquid	Hg
070 15888.01s tclp	7/23/2020 3:01:59 PM	Liquid	Hg
071 15889.01s tclp	7/23/2020 3:03:48 PM	Liquid	Hg
072 15889.02s tclp	7/23/2020 3:05:37 PM	Liquid	Hg
073 15889.02 MS-2.0	7/23/2020 3:07:25 PM	Liquid	Hg
074 15889.02 MSD	7/23/2020 3:09:14 PM	Liquid	Hg
075 CCV7-2.0 ppb	7/23/2020 3:11:05 PM	Liquid	Hg
076 CCB7	7/23/2020 3:12:57 PM	Liquid	Hg

Mercury Summary Report

Element	Seq #	Acquisition Time	Sample Name	Peak	Concentration	Units	Matrix	Dilution	Sample Wt.	Sample Vol.
Hg	001	7/23/2020 12:08:13 PM	Calibration Blank	640.7000	0.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	002	7/23/2020 12:10:05 PM	Standard #1	2072.0000	0.1000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	003	7/23/2020 12:11:57 PM	Standard #2	3742.0000	0.2000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	004	7/23/2020 12:13:48 PM	Standard #3	7659.0000	0.5000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	005	7/23/2020 12:15:40 PM	Standard #4	14530.0000	1.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	006	7/23/2020 12:17:32 PM	Standard #5	28190.0000	2.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	007	7/23/2020 12:19:23 PM	Standard #6	82420.0000	6.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	008	7/23/2020 12:22:39 PM	Standard #7	108500.0000	8.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	009	7/23/2020 12:26:17 PM	Standard #8	134800.0000	10.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	010	7/23/2020 12:29:33 PM	ICV-5.0 ppb	72210.0000	5.2980	ug/L	Liquid	1.0	1.0000	1.0000
Hg	011	7/23/2020 12:32:18 PM	ICB	612.2000	-0.0291	ug/L	Liquid	1.0	1.0000	1.0000
Hg	012	7/23/2020 12:35:56 PM	CCV1-2.0 ppb	28200.0000	2.0240	ug/L	Liquid	1.0	1.0000	1.0000
Hg	013	7/23/2020 12:37:47 PM	CCB1	610.1000	-0.0293	ug/L	Liquid	1.0	1.0000	1.0000
Hg	014	7/23/2020 12:39:39 PM	BS-0.10	2067.0000	0.0791	ug/L	Liquid	1.0	1.0000	1.0000
Hg	015	7/23/2020 12:41:30 PM	072320_1 LCS-2.0	27880.0000	2.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	016	7/23/2020 12:43:20 PM	072320_1 LRB	316.4000	-0.0511	ug/L	Liquid	1.0	1.0000	1.0000
Hg	029	7/23/2020 1:06:44 PM	CCV2-2.0 ppb	26740.0000	1.9150	ug/L	Liquid	1.0	1.0000	1.0000
Hg	030	7/23/2020 1:08:36 PM	CCB2	-791.2000	-0.1335	ug/L	Liquid	1.0	1.0000	1.0000
Hg	031	7/23/2020 1:10:24 PM	15917.01s	-836.3000	-0.1369	ug/L	Liquid	1.0	1.0000	1.0000
Hg	032	7/23/2020 1:12:13 PM	15917.02s	-660.1000	-0.1238	ug/L	Liquid	1.0	1.0000	1.0000
Hg	033	7/23/2020 1:14:03 PM	15917.03s	-694.3000	-0.1263	ug/L	Liquid	1.0	1.0000	1.0000
Hg	034	7/23/2020 1:15:50 PM	15917.04s	-583.5000	-0.1181	ug/L	Liquid	1.0	1.0000	1.0000
Hg	035	7/23/2020 1:17:37 PM	15917.05s	-921.6000	-0.1432	ug/L	Liquid	1.0	1.0000	1.0000
Hg	036	7/23/2020 1:19:25 PM	15917.07s	-865.7000	-0.1391	ug/L	Liquid	1.0	1.0000	1.0000
Hg	037	7/23/2020 1:26:05 PM	15917.06s	344.7000	-0.0490	ug/L	Liquid	1.0	1.0000	1.0000
Hg	038	7/23/2020 1:27:53 PM	15917.06 MS-2.0	26770.0000	1.9170	ug/L	Liquid	1.0	1.0000	1.0000
Hg	039	7/23/2020 1:29:41 PM	15917.06 MSD	26940.0000	1.9300	ug/L	Liquid	1.0	1.0000	1.0000
Hg	040	7/23/2020 1:31:33 PM	CCV3-2.0 ppb	28510.0000	2.0470	ug/L	Liquid	1.0	1.0000	1.0000
Hg	041	7/23/2020 1:33:24 PM	CCB3	593.9000	-0.0305	ug/L	Liquid	1.0	1.0000	1.0000
Hg	042	7/23/2020 1:35:15 PM	072320_2 LCS-2.0	27830.0000	1.9960	ug/L	Liquid	1.0	1.0000	1.0000
Hg	043	7/23/2020 1:37:06 PM	072320_2 LRB	267.4000	-0.0548	ug/L	Liquid	1.0	1.0000	1.0000
Hg	052	7/23/2020 1:53:24 PM	CCV4-2.0 ppb	28590.0000	2.0530	ug/L	Liquid	1.0	1.0000	1.0000
Hg	053	7/23/2020 1:55:16 PM	CCB4	622.2000	-0.0284	ug/L	Liquid	1.0	1.0000	1.0000
Hg	057	7/23/2020 2:02:32 PM	CCV5-2.0 ppb	28790.0000	2.0680	ug/L	Liquid	1.0	1.0000	1.0000
Hg	058	7/23/2020 2:04:24 PM	CCB5	604.5000	-0.0297	ug/L	Liquid	1.0	1.0000	1.0000
Hg	061	7/23/2020 2:29:28 PM	CCV6-2.0 ppb	28350.0000	2.0350	ug/L	Liquid	1.0	1.0000	1.0000
Hg	062	7/23/2020 2:31:20 PM	CCB6	604.5000	-0.0297	ug/L	Liquid	1.0	1.0000	1.0000
Hg	065	7/23/2020 2:52:48 PM	CCV6-2.0 ppb	28450.0000	2.0420	ug/L	Liquid	1.0	1.0000	1.0000
Hg	066	7/23/2020 2:54:40 PM	CCB6	626.8000	-0.0280	ug/L	Liquid	1.0	1.0000	1.0000
Hg	067	7/23/2020 2:56:31 PM	072320_3 LCS-2.0	27750.0000	1.9900	ug/L	Liquid	1.0	1.0000	1.0000
Hg	068	7/23/2020 2:58:21 PM	072320_3 LRB	274.5000	-0.0542	ug/L	Liquid	1.0	1.0000	1.0000
Hg	075	7/23/2020 3:11:05 PM	CCV7-2.0 ppb	28080.0000	2.0150	ug/L	Liquid	1.0	1.0000	1.0000
Hg	076	7/23/2020 3:12:57 PM	CCB7	594.7000	-0.0304	ug/L	Liquid	1.0	1.0000	1.0000

Mercury Digestion

Method # 245.1, 7471B, 7470A (OHIO VAP)

TIME START: 9:45
 TIME FINISH: 1:45
 PREP BATCH: HGD-072320-1
 BALANCE ID: M27 822181312

Beginning block #1 95 °C
 End block #1 95 °C
 block #2 _____ °C
 block #3 _____ °C

HP155005
 DATE 7/23/20
 ANALYST [Signature]
 REVIEWED BY [Signature]
 REVIEW DATE 7/31/2020

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	%TOT. SOLIDS	DRY SAMPLE WT.	DILUTION FACTOR	FINAL VOLUME	REMARKS
LCS072320-1	-----	25	-----	-----	1	25g	
LRB 072320-1	-----	25	-----	-----	1	25g	
15807.01		12.5			2		to 0.5
15835.01		12.5			2		
15837.01		12.5			2		
15847.01		5.0			5		
15886.01		25			1		
15904.01							drinking water
15917.01							
02							
03							
04							
05							
06							
06MS							
06MSD							
07							field blank
15926.02							
15927.01							
15929.01							
01MS							
01MSD							
15931.01							

NOTES: 1) Spike values (unless otherwise stated):
 2.0 ppb for LCS; 0.50 ml of HPS solution, 2.0 ppb for liquid samples; 0.50 ml of HPS solution & 0.002 ppm for solid samples; 0.50 ml of HPS solution (Date Prepared: 7/22/20 Exp 8/5/20)
 Centrifuge Tube Lot # 19120-060
 HNO₃ Lot # 24884
 H₂SO₄ Lot # 231834

Pipet Calibration:

Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Notes
1	0.500	0.497	
2		0.501	
3		0.501	

ICS-1100 A Dionex IC / Meth 300.0

072320

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 9:56:15 AM -...	1.0000
2		1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:08:32 AM...	1.0000
3		1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 10:21:21 AM...	1.0000
4		1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 10:34:09 AM...	1.0000
5		1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 10:46:58 AM...	1.0000
6		1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 10:59:49 AM...	1.0000
7		Blank	Unknown		1	Norm Method	Anion	Finished	7/23/2020 10:23:17 A...	1.0000
8		BSpike 11729BS1	Check Standard		2	Norm Method	Anion	Finished	7/23/2020 10:35:33 A...	1.0000
9		LCS 11729LCS1	Check Standard		3	Norm Method	Anion	Finished	7/23/2020 10:48:22 A...	1.0000
10		15917.01	Unknown		4	Norm Method	Anion	Finished	7/23/2020 11:01:11 A...	1.0000
11		15917.02	Unknown		5	Norm Method	Anion	Finished	7/23/2020 11:14:00 A...	1.0000
12		15917.03	Unknown		6	Norm Method	Anion	Finished	7/23/2020 11:26:49 A...	1.0000
13		15917.04	Unknown		7	Norm Method	Anion	Finished	7/23/2020 11:39:38 A...	1.0000
14		15917.05	Unknown		8	Norm Method	Anion	Finished	7/23/2020 11:52:27 A...	1.0000
15		15917.06	Unknown		9	Norm Method	Anion	Finished	7/23/2020 12:05:15 P...	1.0000
16		15917.07	Unknown		10	Norm Method	Anion	Finished	7/23/2020 12:18:04 P...	1.0000
17		15682.01 30/2.99g	Unknown		11	Norm Method	Anion	Finished	7/23/2020 12:30:53 P...	1.0000
18		15917.01 dup	Unknown		12	Norm Method	Anion	Finished	7/23/2020 12:43:43 P...	1.0000
19	Loading...	15917.01 MS 13036...	Unknown		13	Norm Method	Anion	Finished	7/23/2020 12:56:32 P...	1.0000
20	Loading...	15917.01 MSD 1303...	Unknown		14	Norm Method	Anion	Finished	7/23/2020 1:09:20 PM...	1.0000
21	Loading...	BSpike 11729BS1	Check Standard		15	Norm Method	Anion	Finished	7/23/2020 1:22:09 PM...	1.0000
22	Loading...	Blank	Unknown		16	Norm Method	Anion	Finished	7/23/2020 1:34:58 PM...	1.0000















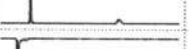



Click here to add a new injection

CALIBRATION # ICSA070720CAL

FL200723-W1-A

072320



#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
7		1.0000	1.0000		Jeff Phifer	
8		1.0000	1.0000		Jeff Phifer	
9		1.0000	1.0000		Jeff Phifer	
10		5.0000	1.0000		Jeff Phifer	
11		5.0000	1.0000		Jeff Phifer	
12		5.0000	1.0000		Jeff Phifer	
13		5.0000	1.0000		Jeff Phifer	
14		5.0000	1.0000		Jeff Phifer	
15		5.0000	1.0000		Jeff Phifer	
16		2.5000	1.0000		Jeff Phifer	
17		25.0000	1.0000		Jeff Phifer	
18		5.0000	1.0000		Jeff Phifer	
19	Loading...	1.0000	1.0000		Jeff Phifer	
20	Loading...	1.0000	1.0000		Jeff Phifer	
21	Loading...	1.0000	1.0000		Jeff Phifer	
22	Loading...	1.0000	1.0000		Jeff Phifer	
Click here to add a new injection						

Norm Method	03/08/11 13:39	Jeff Phifer	Method 300.0	
Stage	Time	Command	Value	Comment
Instrument Setup	min			
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject				
	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run				
	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run			Duration = 10.000 [min]	
	0.000			
	0.500			
		Sampler.BeginOverlap		
Stop Run				
	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

JP 7.23.20

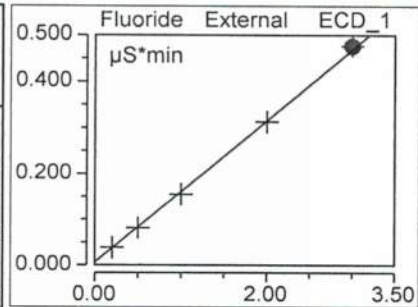
Calibration Batch Report
CAL ID# ICSA070720CAL

Sequence:	072320	Injection Volu:	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 10:59	Column:	AS4A-SC 038777

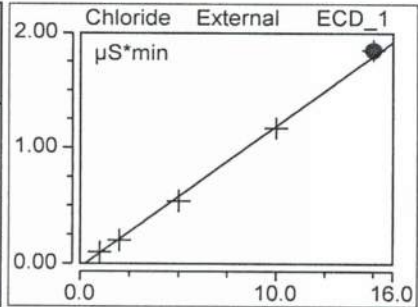
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.01	0.006	0.154	0.000	0.9996
Chloride	Area	Lin, WithOffset, 1/A	0.02	-0.031	0.122	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.03	-0.003	0.227	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.05	-0.001	0.044	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.07	-0.001	0.263	0.000	0.9996
Sulfate	Area	Lin, WithOffset, 1/A	0.33	-0.002	0.080	0.000	0.9996
AVERAGE:				-0.0052	0.1482	0.0000	0.9995

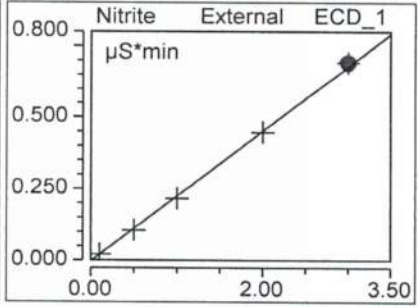
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.114	0.0387	0.521	0.210
1131Cal2	1.114	0.0816	1.223	0.488
1131Cal3	1.114	0.1551	2.427	0.966
1131Cal4	1.114	0.3125	5.047	1.987
1131Cal5	1.114	0.4761	7.811	3.049
Average	1.114			
Rel. Std. Dev.	0.013 %			



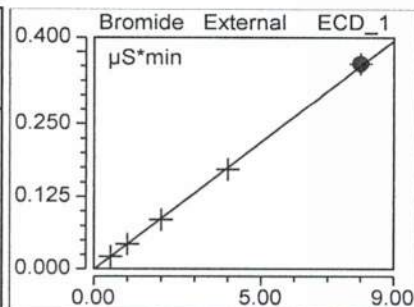
Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Chloride	Chloride	Chloride	Chloride	Chloride
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.637	0.1013	1.651	1.089
1131Cal2	1.638	0.2015	3.302	1.912
1131Cal3	1.641	0.5404	9.060	4.694
1131Cal4	1.644	1.1707	19.722	9.867
1131Cal5	1.647	1.8494	30.847	15.438
Average	1.641			
Rel. Std. Dev.	0.262 %			



Injection Name	Ret.Time min	Area µS*min	Height µS	Amount
Nitrite	Nitrite	Nitrite	Nitrite	Nitrite
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.927	0.0213	0.296	0.106
1131Cal2	1.924	0.1057	1.494	0.479
1131Cal3	1.924	0.2162	3.083	0.966
1131Cal4	1.924	0.4469	6.494	1.984
1131Cal5	1.924	0.6920	10.161	3.065
Average	1.925			
Rel. Std. Dev.	0.075 %			

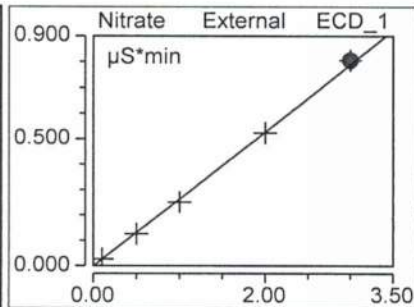


Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Bromide	Bromide	Bromide	Bromide	Bromide
1131Cal1	ECD_1 2.827	ECD_1 0.0217	ECD_1 0.250	ECD_1 0.511
1131Cal2	2.821	0.0433	0.489	1.003
1131Cal3	2.818	0.0852	0.977	1.960
1131Cal4	2.807	0.1717	1.992	3.934
1131Cal5	2.801	0.3540	4.145	8.093
Average	2.815			
Rel. Std. Dev.	0.380 %			

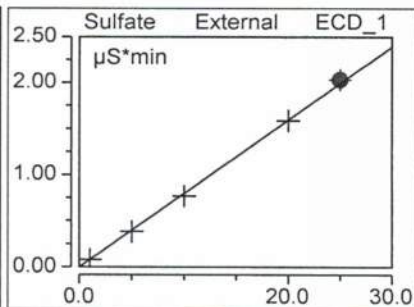


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Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Nitrate	Nitrate	Nitrate	Nitrate	Nitrate
1131Cal1	ECD_1 3.191	ECD_1 0.0271	ECD_1 0.268	ECD_1 0.106
1131Cal2	3.181	0.1260	1.252	0.482
1131Cal3	3.168	0.2515	2.511	0.959
1131Cal4	3.151	0.5229	5.181	1.990
1131Cal5	3.134	0.8054	7.979	3.063
Average	3.165			
Rel. Std. Dev.	0.721 %			



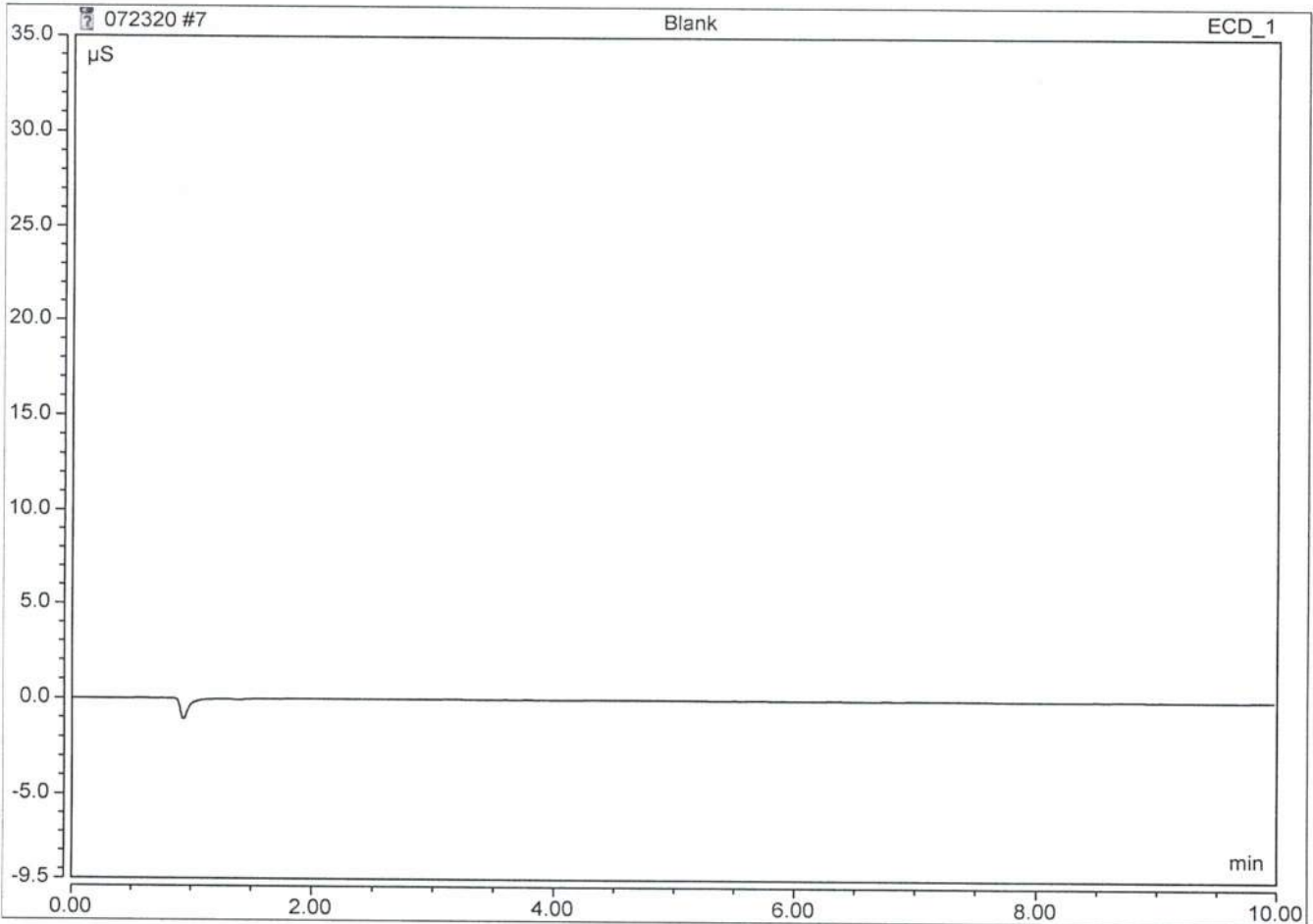
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
1131Cal1	ECD_1 6.617	ECD_1 0.0815	ECD_1 0.364	ECD_1 1.050
1131Cal2	6.608	0.3828	1.734	4.832
1131Cal3	6.594	0.7678	3.517	9.664
1131Cal4	6.571	1.5858	7.313	19.933
1131Cal5	6.557	2.0310	9.317	25.521
Average	6.589			
Rel. Std. Dev.	0.380 %			



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 10:23	Operator:	Jeff Phifer

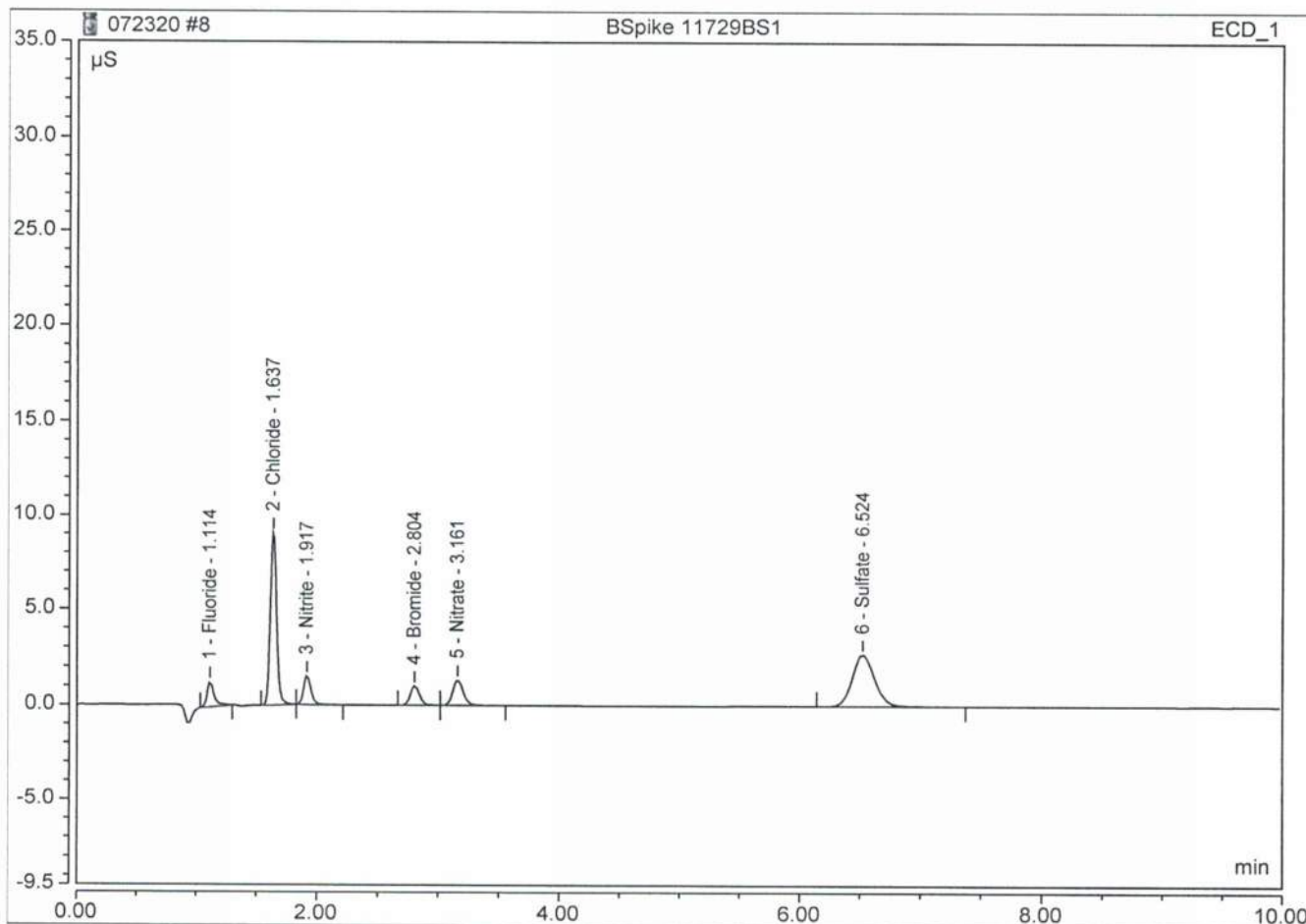
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	BSpike 11729BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 10:35	Operator:	Jeff Phifer

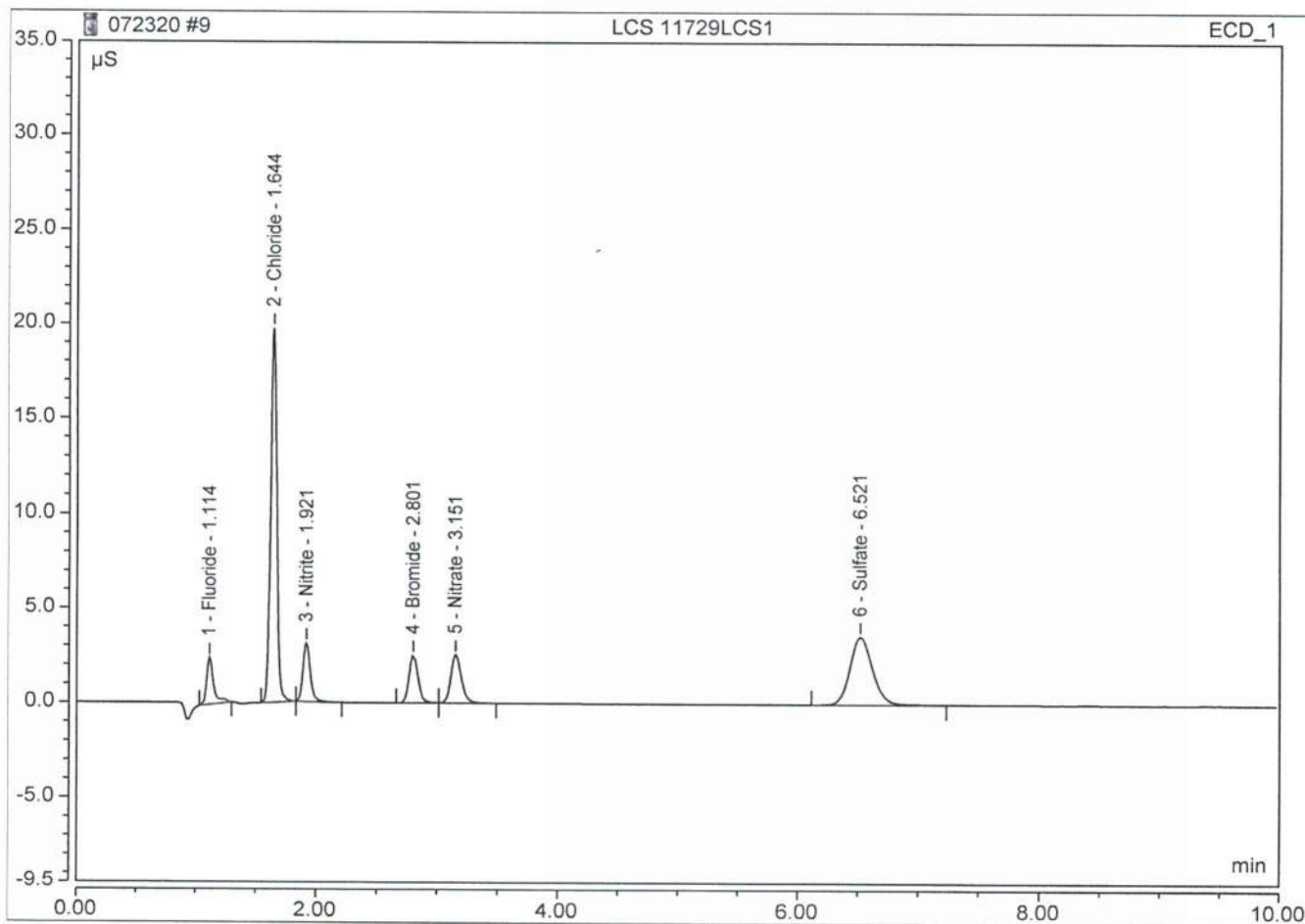
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.089	1.311	0.5343
2	1.64	Chloride	BMB	0.545	9.087	4.7295
3	1.92	Nitrite	BMB	0.105	1.483	0.4739
4	2.80	Bromide	BMB	0.088	0.998	2.0147
5	3.16	Nitrate	BMB	0.132	1.318	0.5048
6	6.52	Sulfate	BMB	0.586	2.698	7.3782
TOTAL:				1.54	16.89	15.64



Peak Integration Report

Sample Name:	LCS 11729LCS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 10:48	Operator:	Jeff Phifer

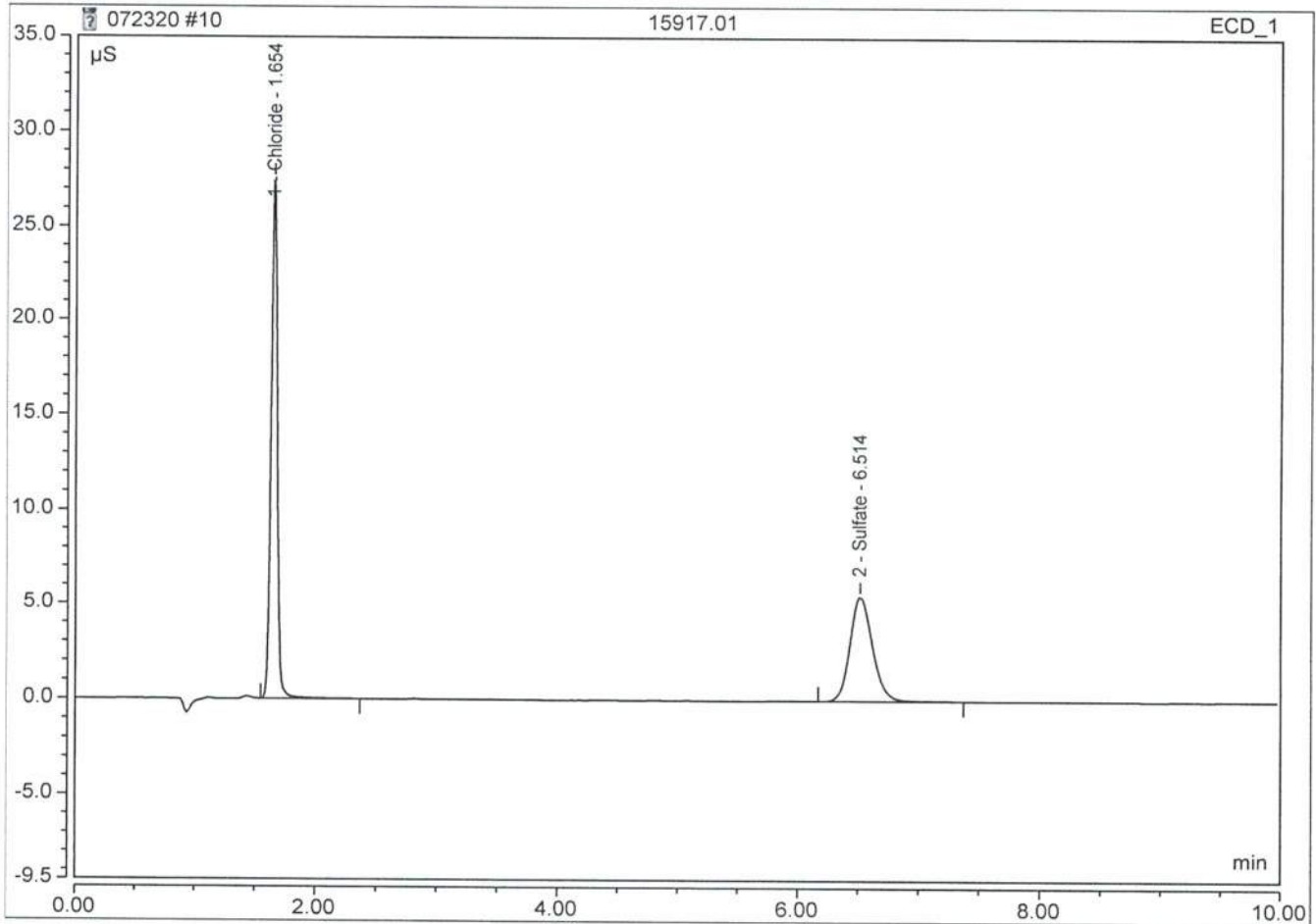
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.163	2.450	1.0162
2	1.64	Chloride	BMB	1.178	19.766	9.9283
3	1.92	Nitrite	BMB	0.215	3.086	0.9596
4	2.80	Bromide	BMB	0.219	2.524	5.0225
5	3.15	Nitrate	BMB	0.253	2.537	0.9658
6	6.52	Sulfate	BMB	0.778	3.593	9.7902
TOTAL:				2.81	33.96	27.68



Peak Integration Report

Sample Name:	15917.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 11:01	Operator:	Jeff Phifer

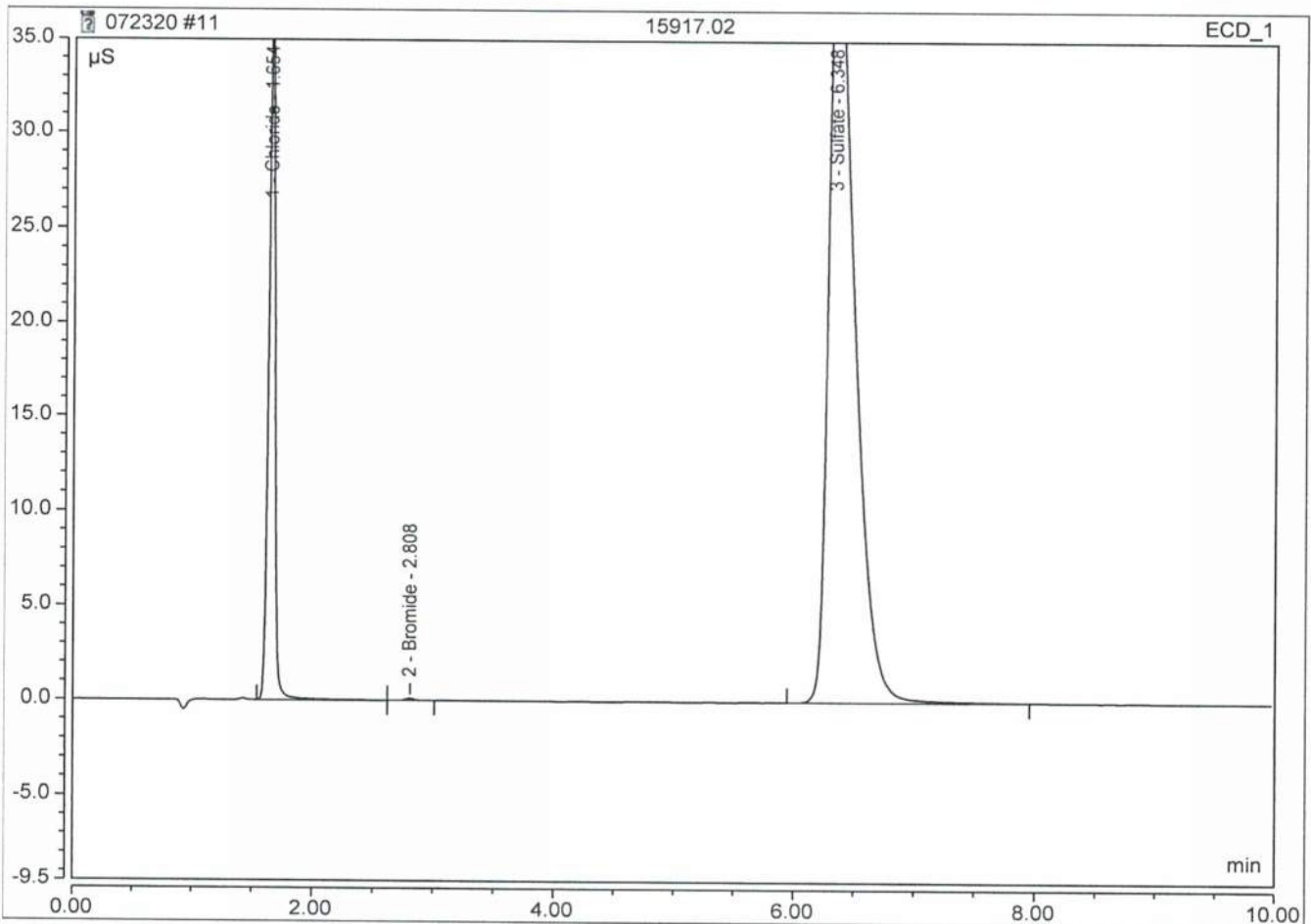
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	1.648	27.522	68.9056
2	6.51	Sulfate	BMB	1.180	5.483	74.1971
TOTAL:				2.83	33.00	143.10



Peak Integration Report

Sample Name:	15917.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 11:14	Operator:	Jeff Phifer

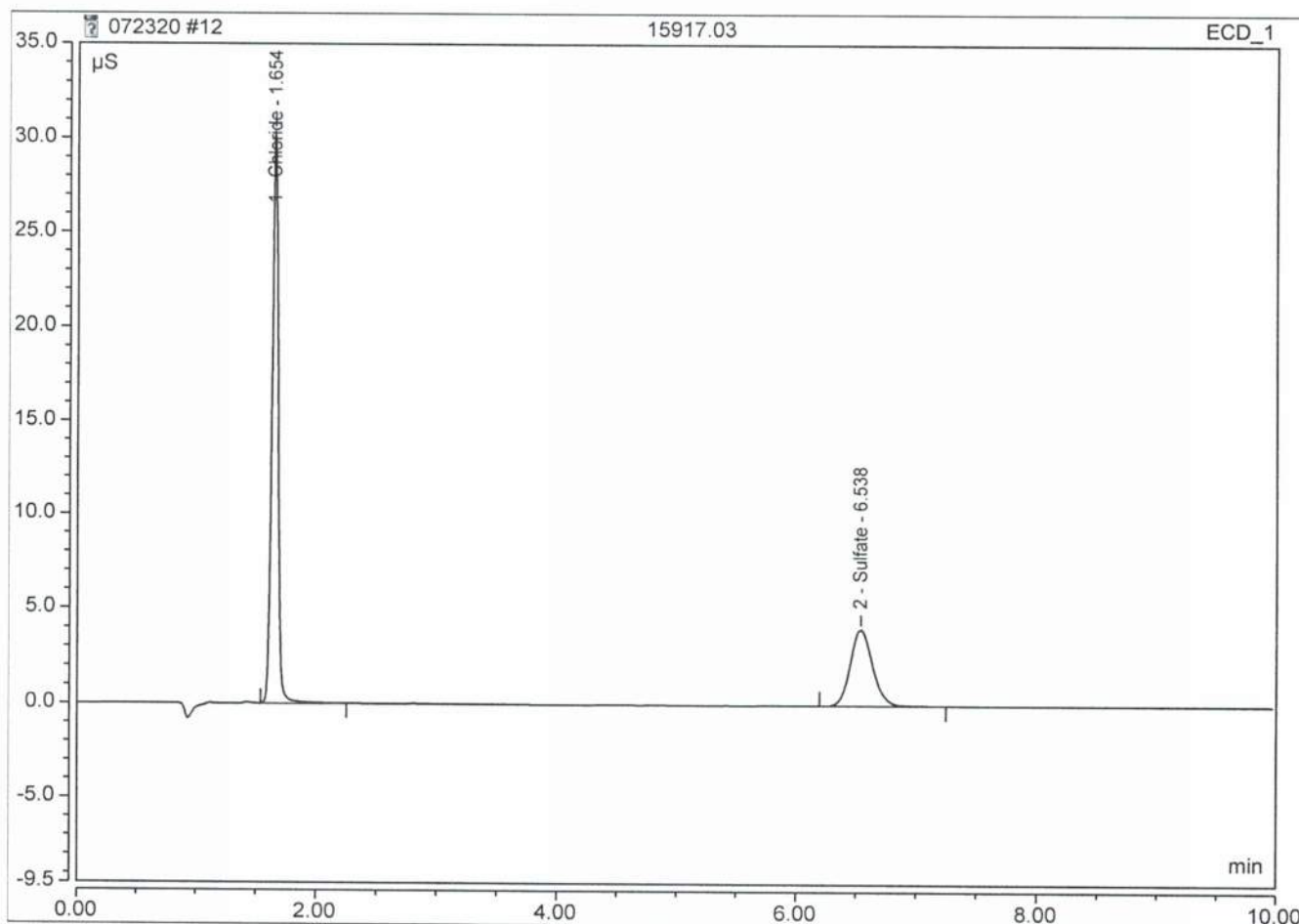
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	2.227	36.318	92.6817
2	2.81	Bromide	BMB	0.011	0.115	1.2810
3	6.35	Sulfate	BMB	10.288	41.991	645.8652
TOTAL:				12.53	78.42	739.83



Peak Integration Report

Sample Name:	15917.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 11:26	Operator:	Jeff Phifer

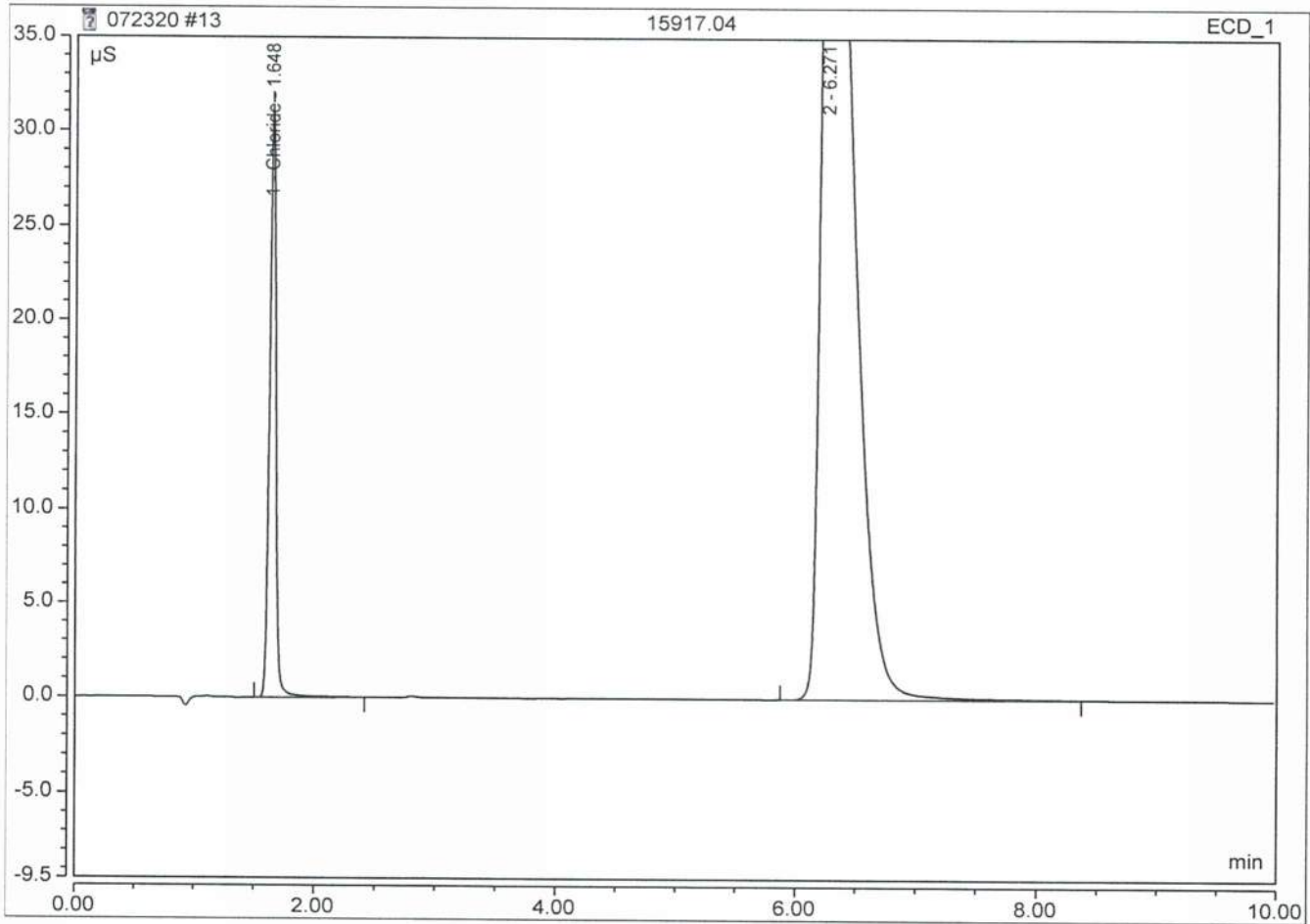
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	1.840	30.426	76.7860
2	6.54	Sulfate	BMB	0.869	4.029	54.6463
TOTAL:				2.71	34.45	131.43



Peak Integration Report

Sample Name:	15917.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 11:39	Operator:	Jeff Phifer

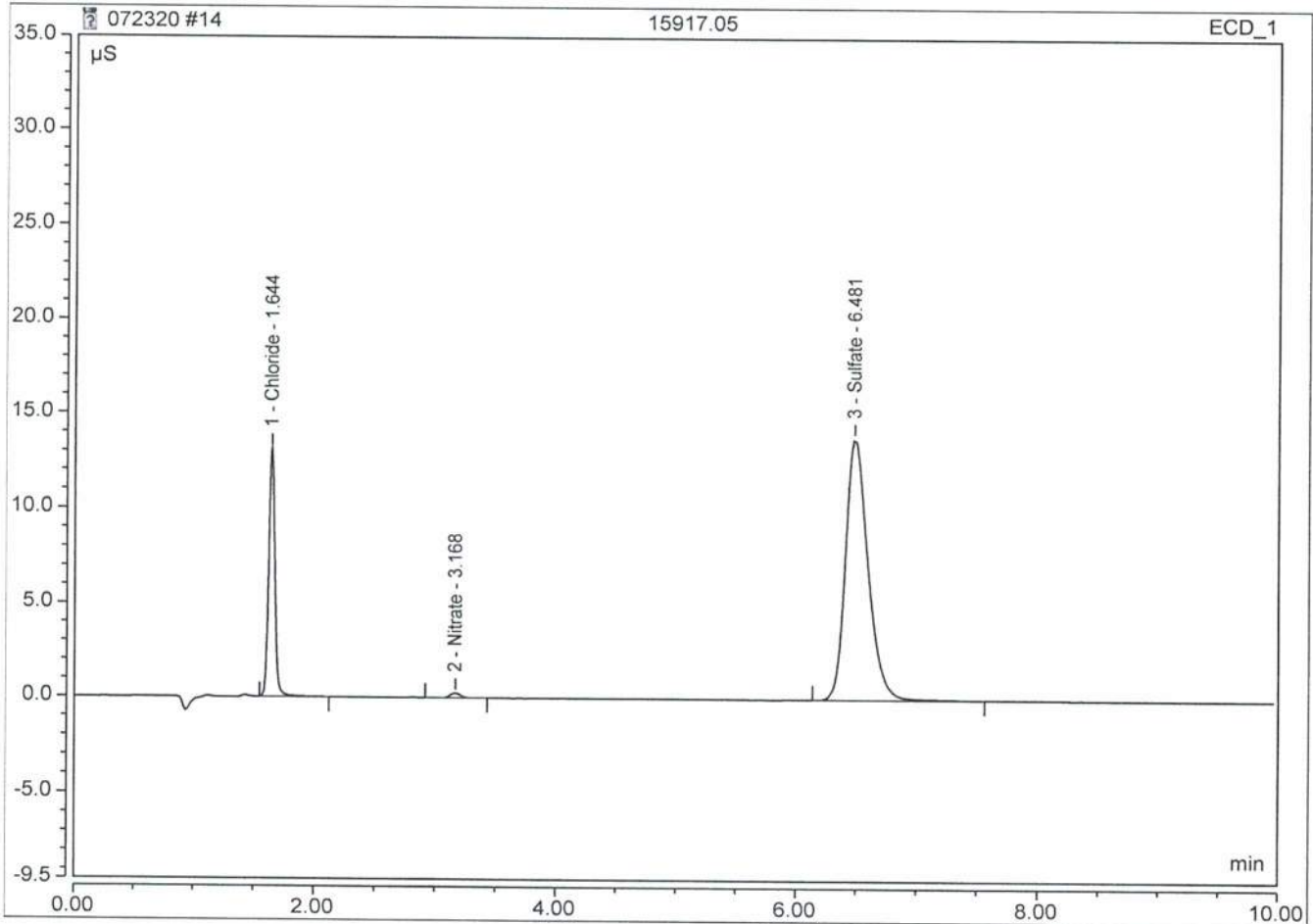
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	1.930	31.318	80.4804
TOTAL:				1.93	31.32	80.48



Peak Integration Report

Sample Name:	15917.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 11:52	Operator:	Jeff Phifer

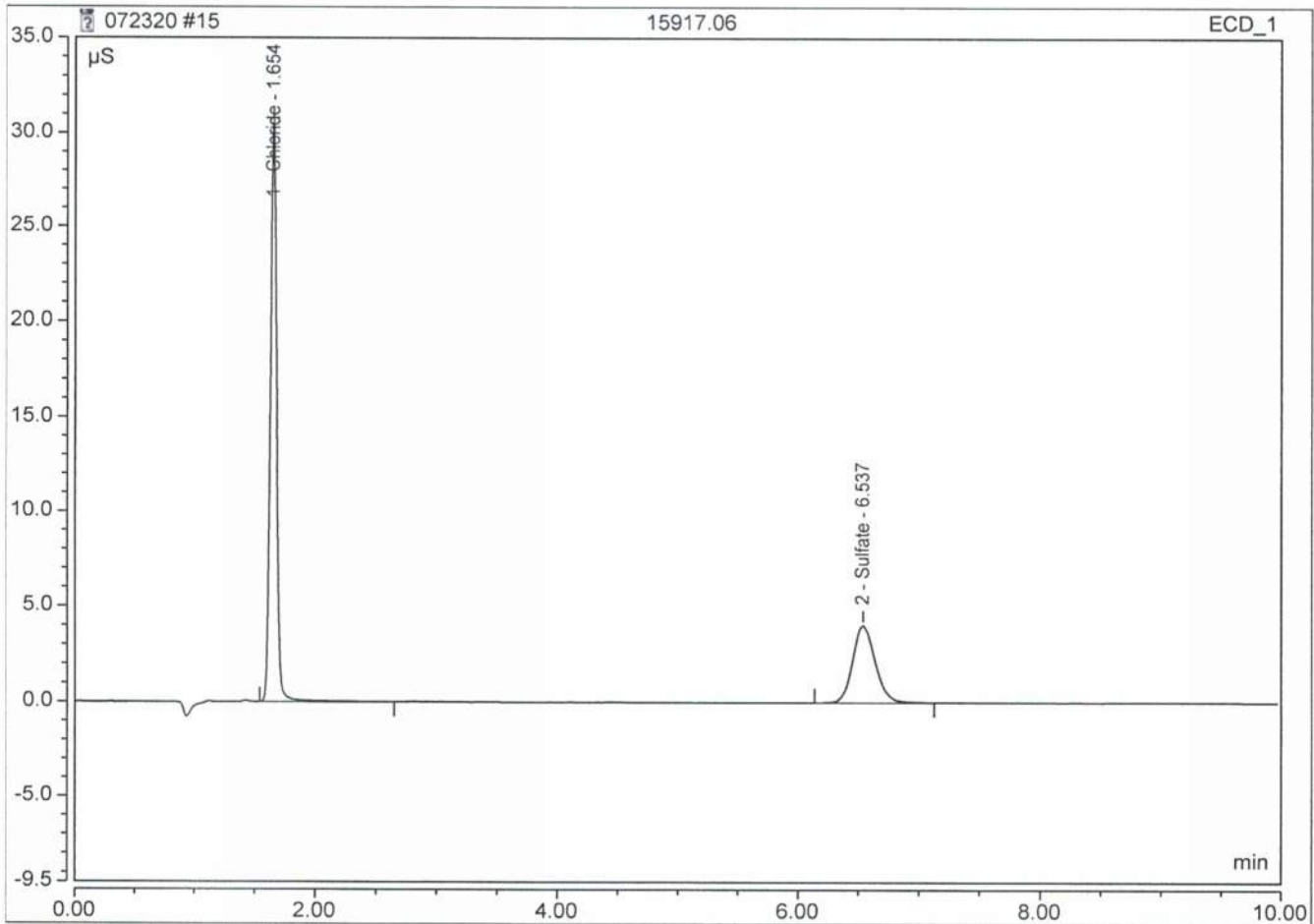
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.64	Chloride	BMB	0.784	13.119	33.4756
2	3.17	Nitrate	BMB	0.026	0.256	0.5052
3	6.48	Sulfate	BMB	3.010	13.808	189.0694
TOTAL:				3.82	27.18	223.05



Peak Integration Report

Sample Name:	15917.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 12:05	Operator:	Jeff Phifer

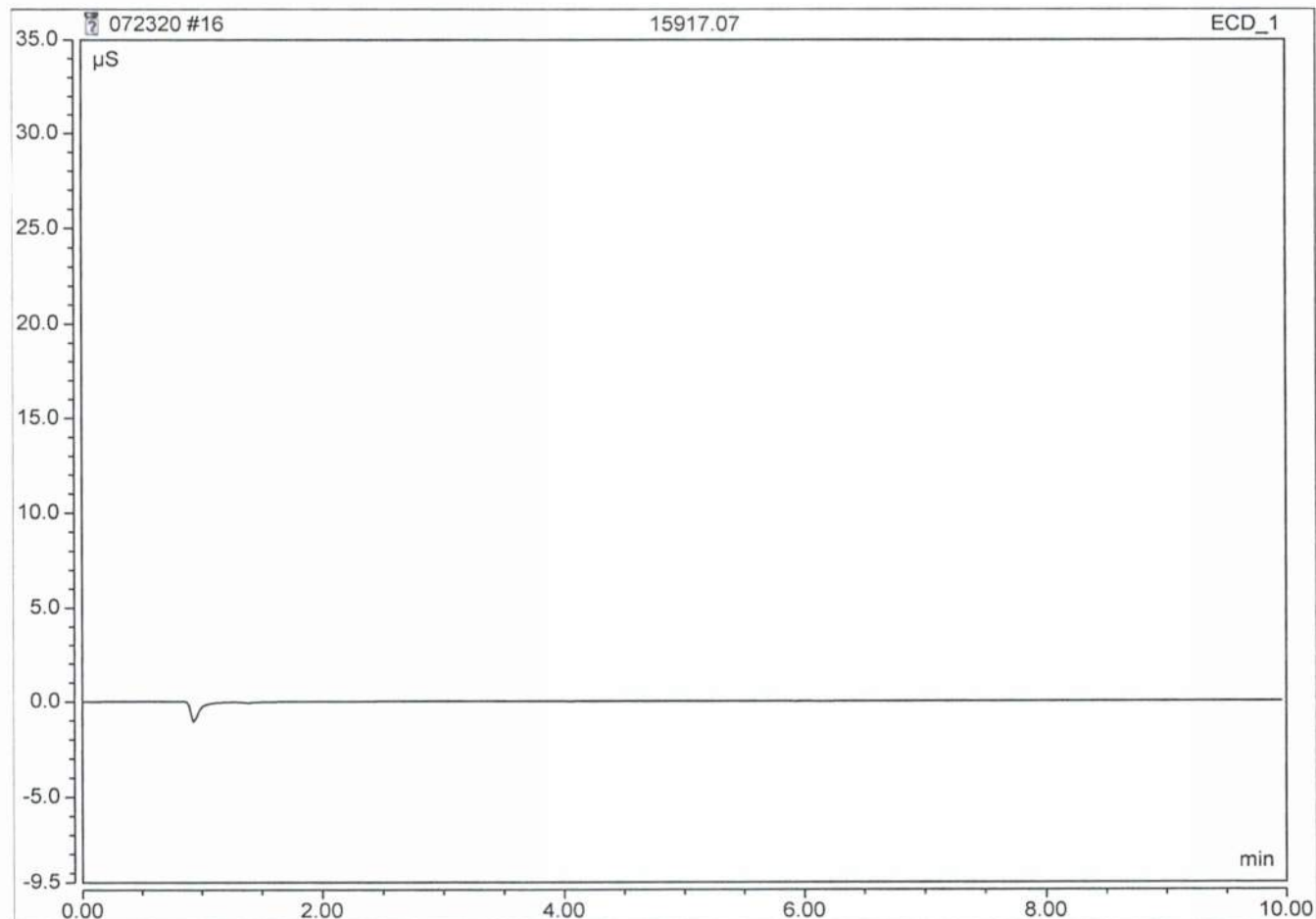
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	1.854	30.516	77.3756
2	6.54	Sulfate	BMB	0.869	4.027	54.6663
TOTAL:				2.72	34.54	132.04



Peak Integration Report

Sample Name:	15917.07	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	2.5000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 12:18	Operator:	Jeff Phifer

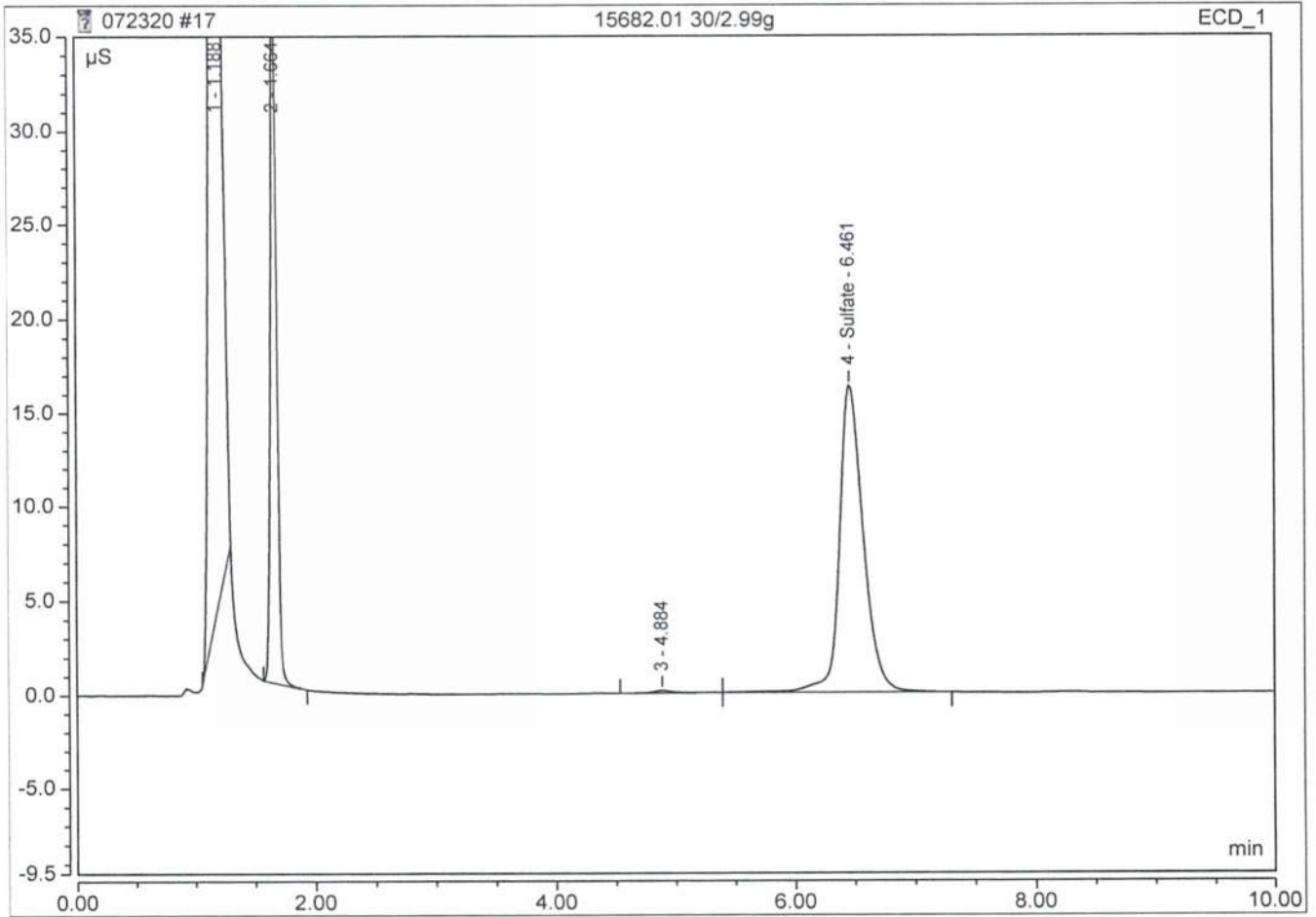
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	15682.01 30/2.99g	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 12:30	Operator:	Jeff Phifer

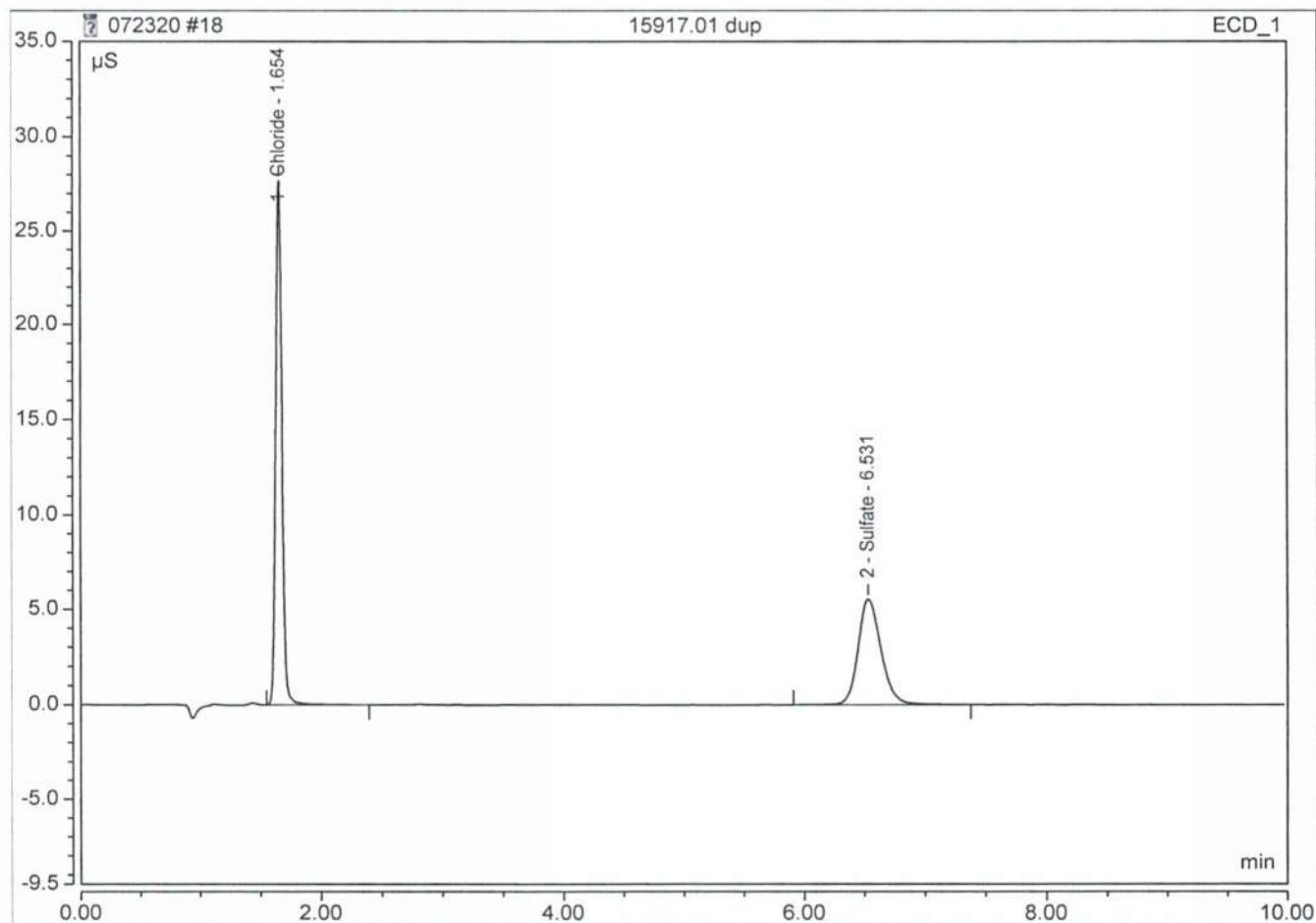
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
4	6.46	Sulfate	BMB	3.749	16.335	1177.3109
TOTAL:				3.75	16.34	1177.31



Peak Integration Report

Sample Name:	15917.01 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 12:43	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	1.664	27.741	69.5732
2	6.53	Sulfate	BMB	1.216	5.563	76.4825
TOTAL:				2.88	33.30	146.06

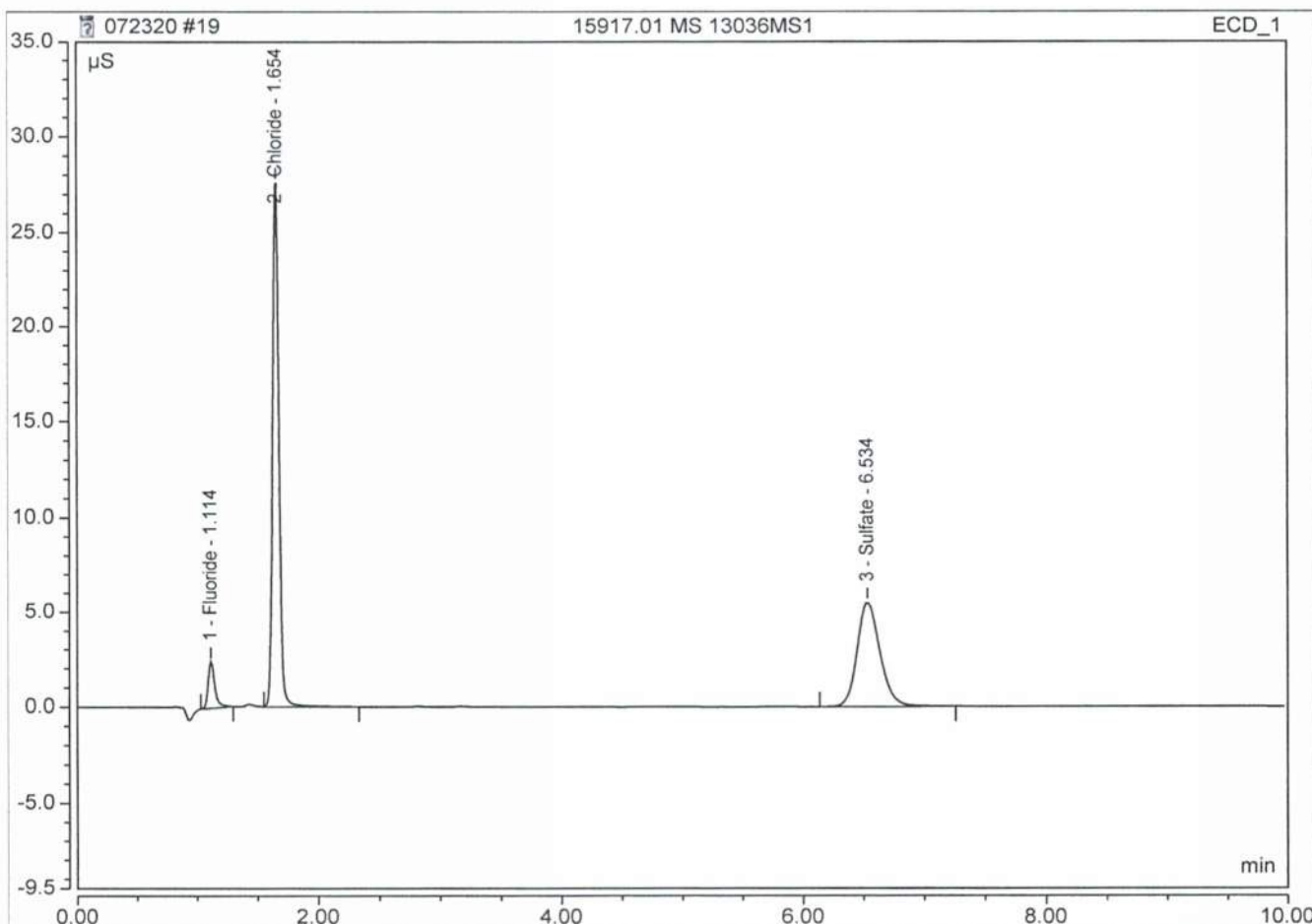


Peak Integration Report

Sample Name:	15917.01 MS 13036MS1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 12:56	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.153	2.408	0.9539
2	1.65	Chloride	BMB	1.659	27.608	13.8758
3	6.53	Sulfate	BMB	1.186	5.494	14.9172
TOTAL:				3.00	35.51	29.75

952

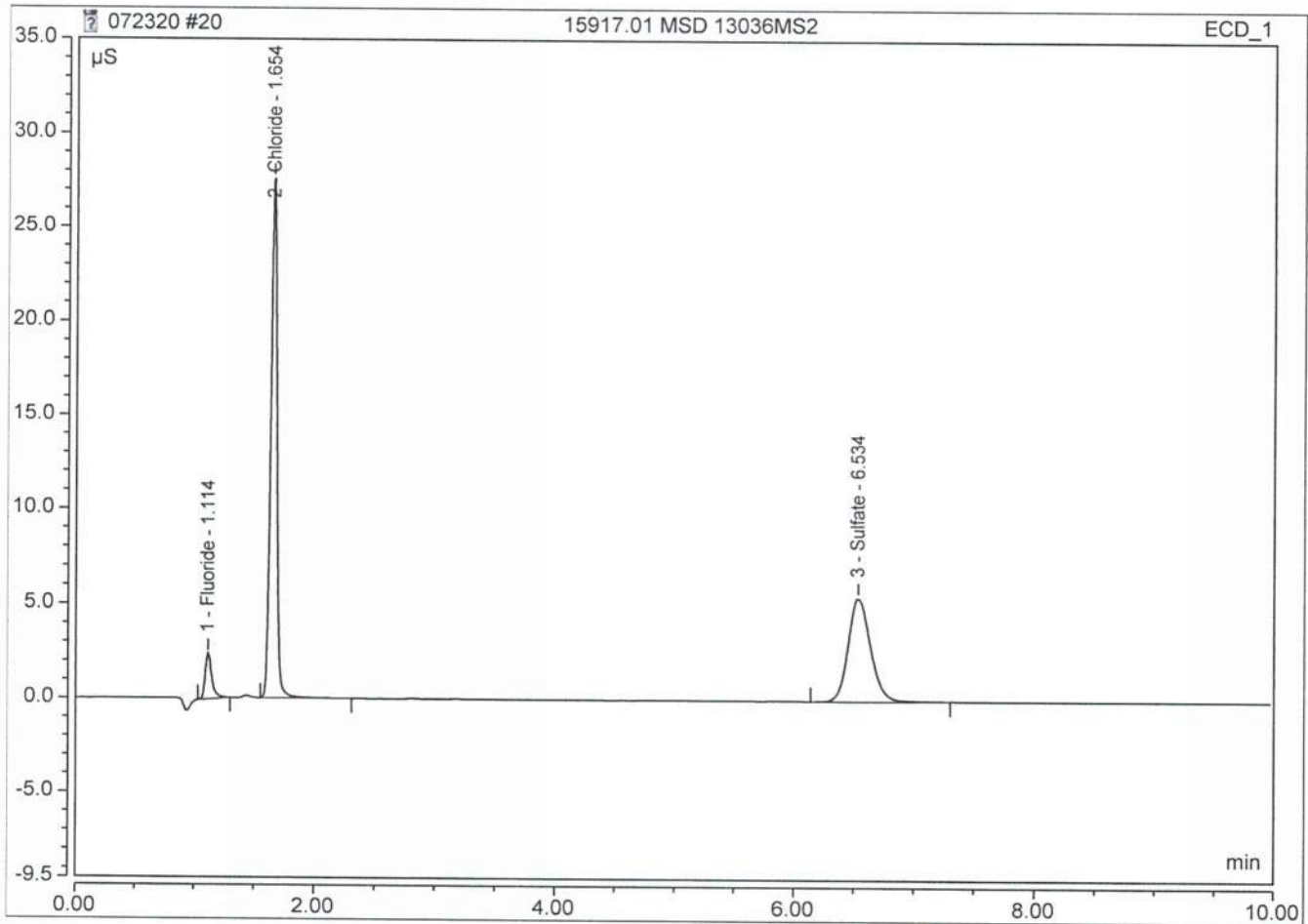


Peak Integration Report

Sample Name:	15917.01 MSD 13036MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 13:09	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.152	2.394	0.9484
2	1.65	Chloride	BMB	1.653	27.602	13.8224
3	6.53	Sulfate	BMB	1.186	5.487	14.9125
TOTAL:				2.99	35.48	29.68

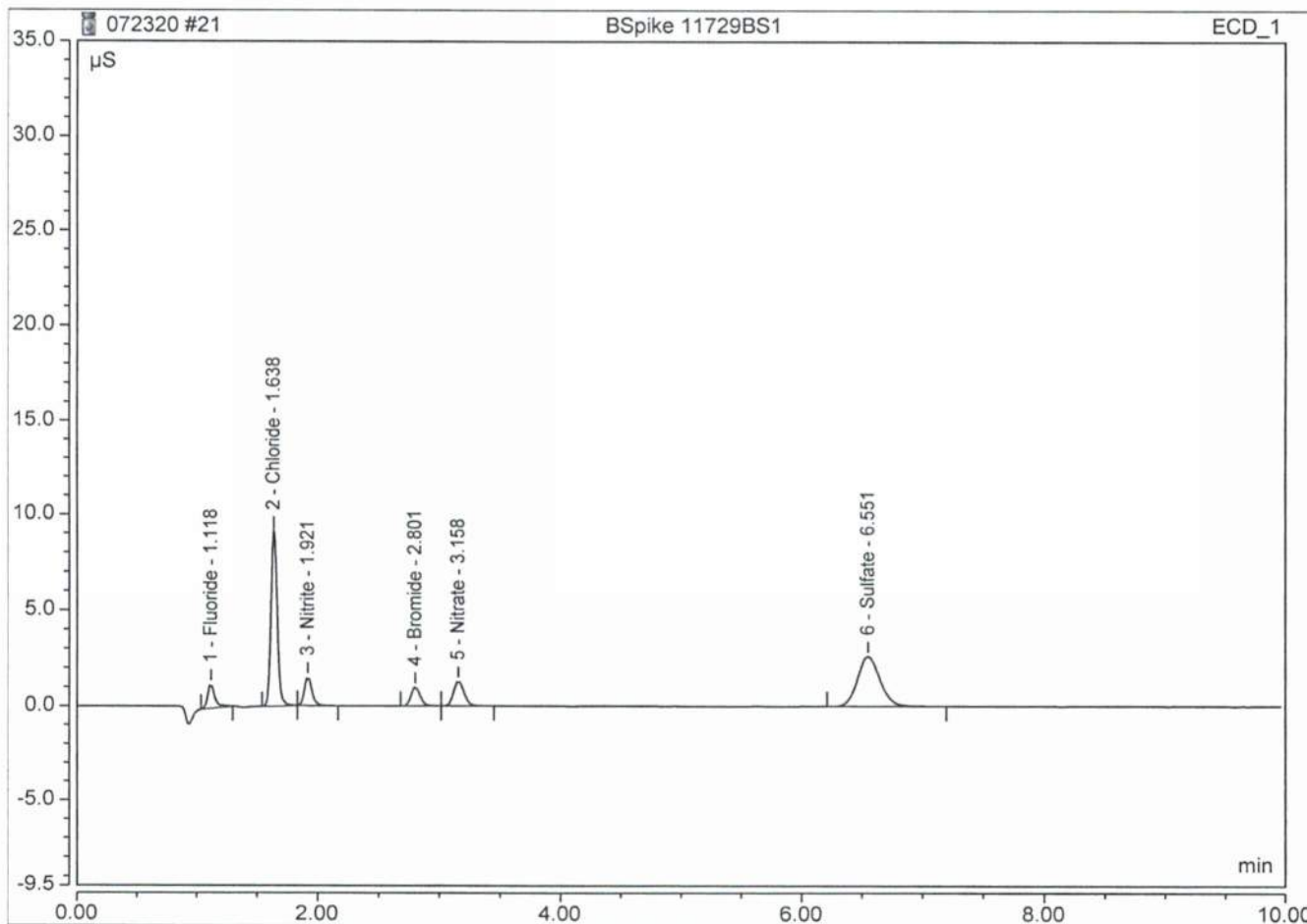
- NP = 95%



Peak Integration Report

Sample Name:	BSpike 11729BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 13:22	Operator:	Jeff Phifer

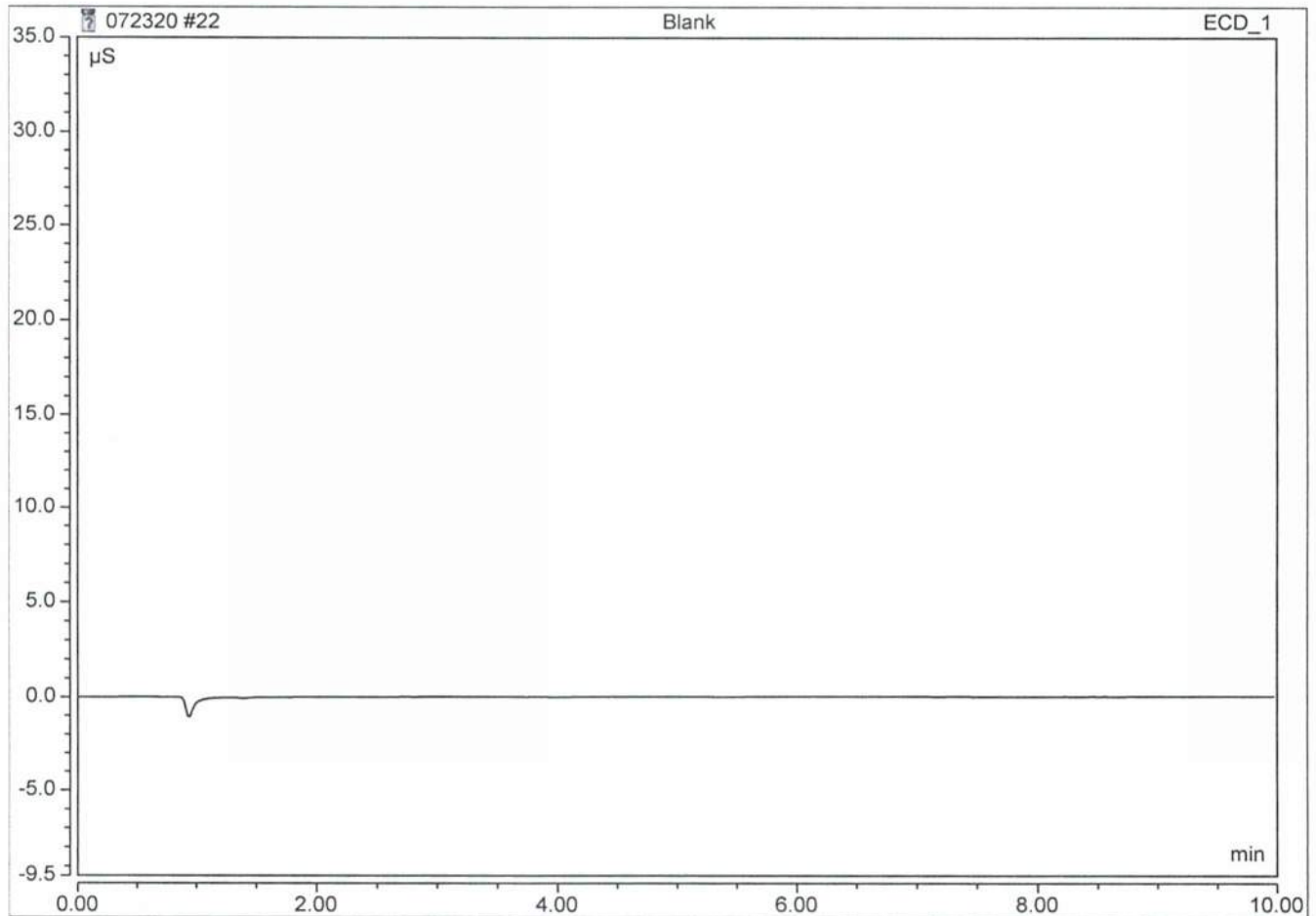
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.085	1.264	0.5128
2	1.64	Chloride	BMB	0.548	9.101	4.7569
3	1.92	Nitrite	BMB	0.105	1.491	0.4778
4	2.80	Bromide	BMB	0.087	0.995	2.0039
5	3.16	Nitrate	BMB	0.130	1.300	0.4971
6	6.55	Sulfate	BMB	0.568	2.628	7.1551
TOTAL:				1.52	16.78	15.40



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	23-Jul-2020 / 13:34	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



ICS-1100 A Dionex IC/Meth 300.0

070720

new CAL

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 9:56:15 AM -...	1.0000
2		1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:08:32 AM...	1.0000
3		1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 10:21:21 AM...	1.0000
4		1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 10:34:09 AM...	1.0000
5		1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 10:46:58 AM...	1.0000
6		1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 10:59:49 AM...	1.0000

[Click here to add a new injection](#)

CAL I# ICSA070720CAL

070720

#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
Click here to add a new injection						

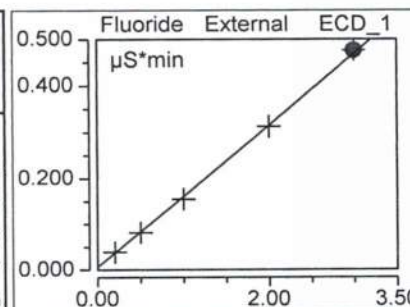
Norm Method	03/08/11 13:39	Jeff Phifer	Method 300.0	
Stage	Time	Command	Value	Comment
Instrument Setup	min			
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Calibration Batch Report CAL ID# ICSA070720CAL

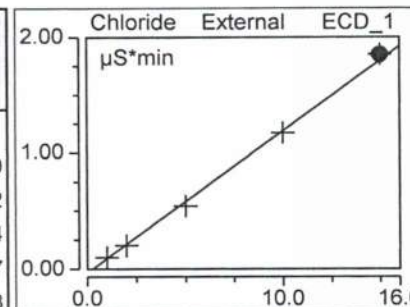
Sequence:	070720	Injection Volu:	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 10:59	Column:	AS4A-SC 038777

Calibration Summary								
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.	
Fluoride	Area	Lin, WithOffset, 1/A	0.01	0.006	0.154	0.000	0.9996	
Chloride	Area	Lin, WithOffset, 1/A	0.02	-0.031	0.122	0.000	0.9988	
Nitrite	Area	Lin, WithOffset, 1/A	0.03	-0.003	0.227	0.000	0.9996	
Bromide	Area	Lin, WithOffset, 1/A	0.05	-0.001	0.044	0.000	0.9998	
Nitrate	Area	Lin, WithOffset, 1/A	0.07	-0.001	0.263	0.000	0.9996	
Sulfate	Area	Lin, WithOffset, 1/A	0.33	-0.002	0.080	0.000	0.9996	
AVERAGE:					-0.0052	0.1482	0.0000	0.9995

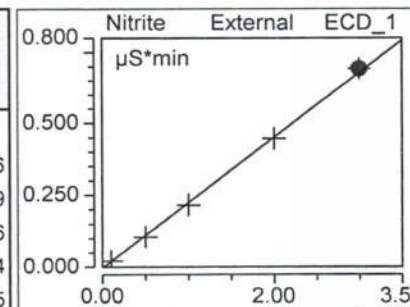
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.114	0.0387	0.521	0.210
1131Cal2	1.114	0.0816	1.223	0.488
1131Cal3	1.114	0.1551	2.427	0.966
1131Cal4	1.114	0.3125	5.047	1.987
1131Cal5	1.114	0.4761	7.811	3.049
Average	1.114			
Rel. Std. Dev.	0.013 %			



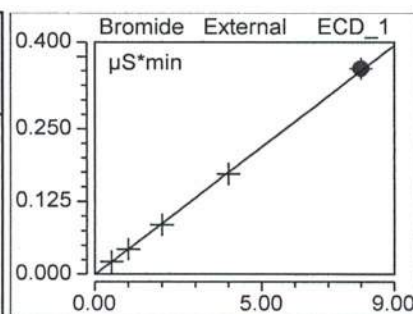
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Chloride	Chloride	Chloride	Chloride	Chloride
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.637	0.1013	1.651	1.089
1131Cal2	1.638	0.2015	3.302	1.912
1131Cal3	1.641	0.5404	9.060	4.694
1131Cal4	1.644	1.1707	19.722	9.867
1131Cal5	1.647	1.8494	30.847	15.438
Average	1.641			
Rel. Std. Dev.	0.262 %			



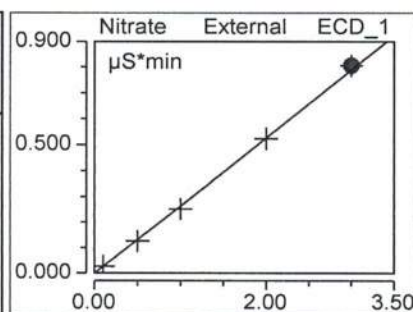
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Nitrite	Nitrite	Nitrite	Nitrite	Nitrite
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.927	0.0213	0.296	0.106
1131Cal2	1.924	0.1057	1.494	0.479
1131Cal3	1.924	0.2162	3.083	0.966
1131Cal4	1.924	0.4469	6.494	1.984
1131Cal5	1.924	0.6920	10.161	3.065
Average	1.925			
Rel. Std. Dev.	0.075 %			



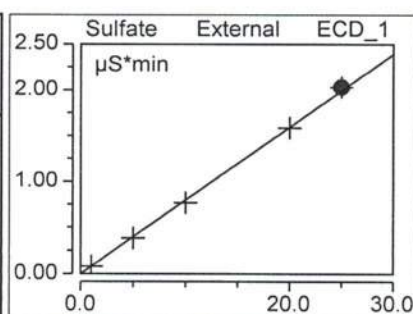
Injection Name	Ret.Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Bromide	Bromide	Bromide	Bromide	Bromide
ECD_1	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	2.827	0.0217	0.250	0.511
1131Cal2	2.821	0.0433	0.489	1.003
1131Cal3	2.818	0.0852	0.977	1.960
1131Cal4	2.807	0.1717	1.992	3.934
1131Cal5	2.801	0.3540	4.145	8.093
Average	2.815			
Rel. Std. Dev.	0.380 %			



Injection Name	Ret.Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Nitrate	Nitrate	Nitrate	Nitrate	Nitrate
ECD_1	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	3.191	0.0271	0.268	0.106
1131Cal2	3.181	0.1260	1.252	0.482
1131Cal3	3.168	0.2515	2.511	0.959
1131Cal4	3.151	0.5229	5.181	1.990
1131Cal5	3.134	0.8054	7.979	3.063
Average	3.165			
Rel. Std. Dev.	0.721 %			



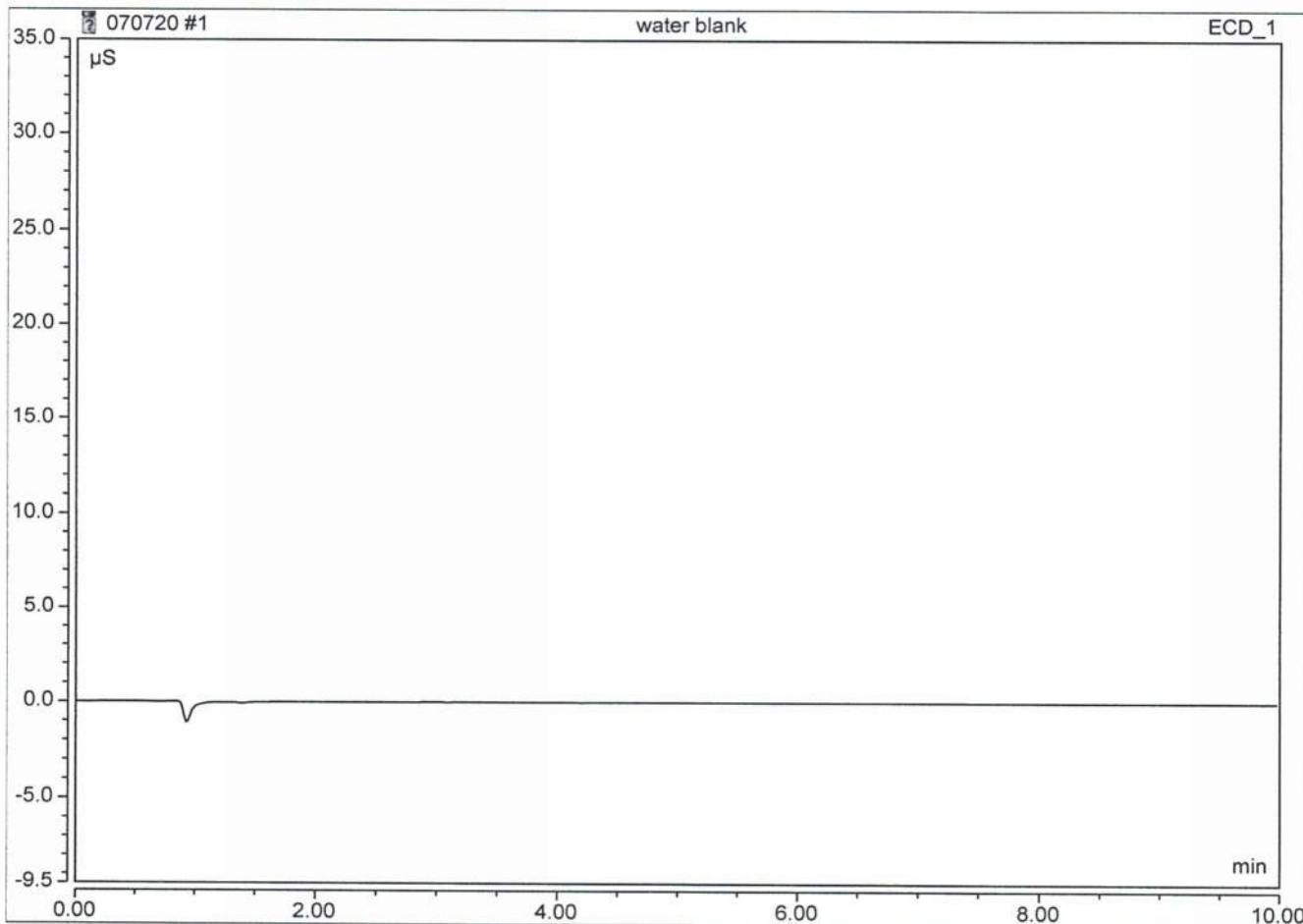
Injection Name	Ret.Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
ECD_1	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	6.617	0.0815	0.364	1.050
1131Cal2	6.608	0.3828	1.734	4.832
1131Cal3	6.594	0.7678	3.517	9.664
1131Cal4	6.571	1.5858	7.313	19.933
1131Cal5	6.557	2.0310	9.317	25.521
Average	6.589			
Rel. Std. Dev.	0.380 %			



Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 09:56	Operator:	Jeff Phifer

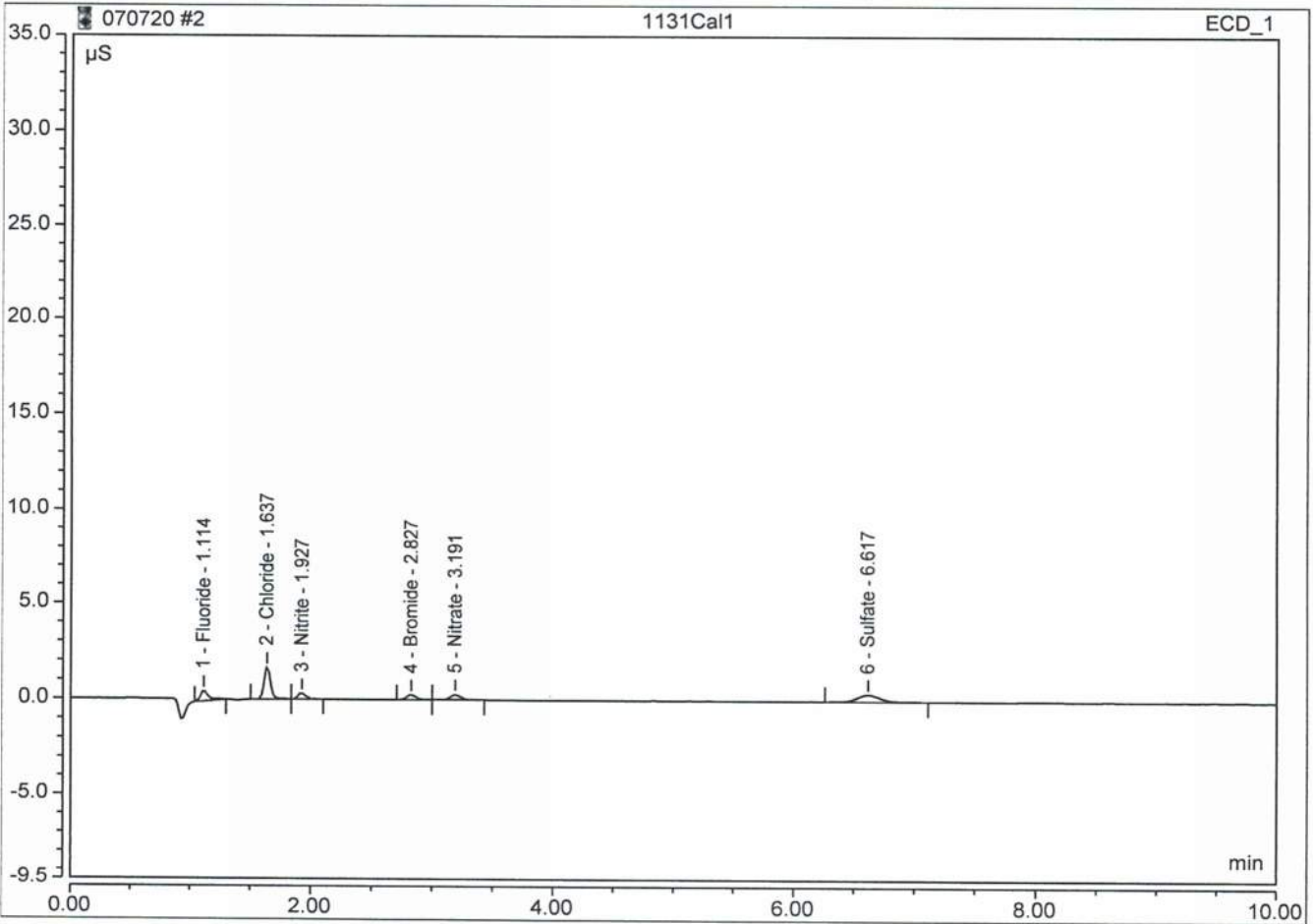
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	1131Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:08	Operator:	Jeff Phifer

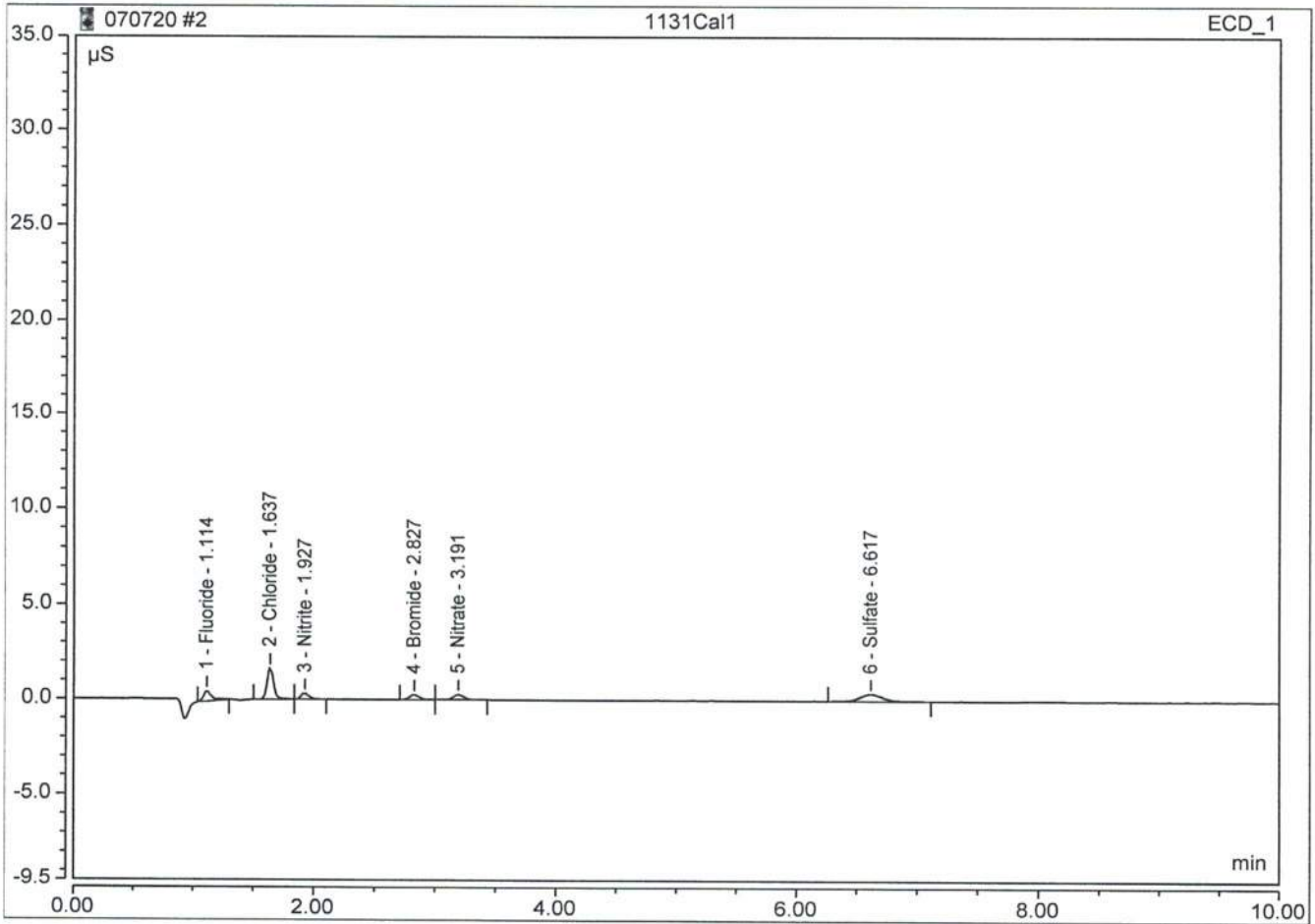
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.039	0.521	0.2096
2	1.64	Chloride	BMB	0.101	1.651	1.0894
3	1.93	Nitrite	BMB	0.021	0.296	0.1063
4	2.83	Bromide	BMB	0.022	0.250	0.5113
5	3.19	Nitrate	BMB	0.027	0.268	0.1061
6	6.62	Sulfate	BMB	0.082	0.364	1.0497
TOTAL:				0.29	3.35	3.07



Peak Integration Report

Sample Name:	1131Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:08	Operator:	Jeff Phifer

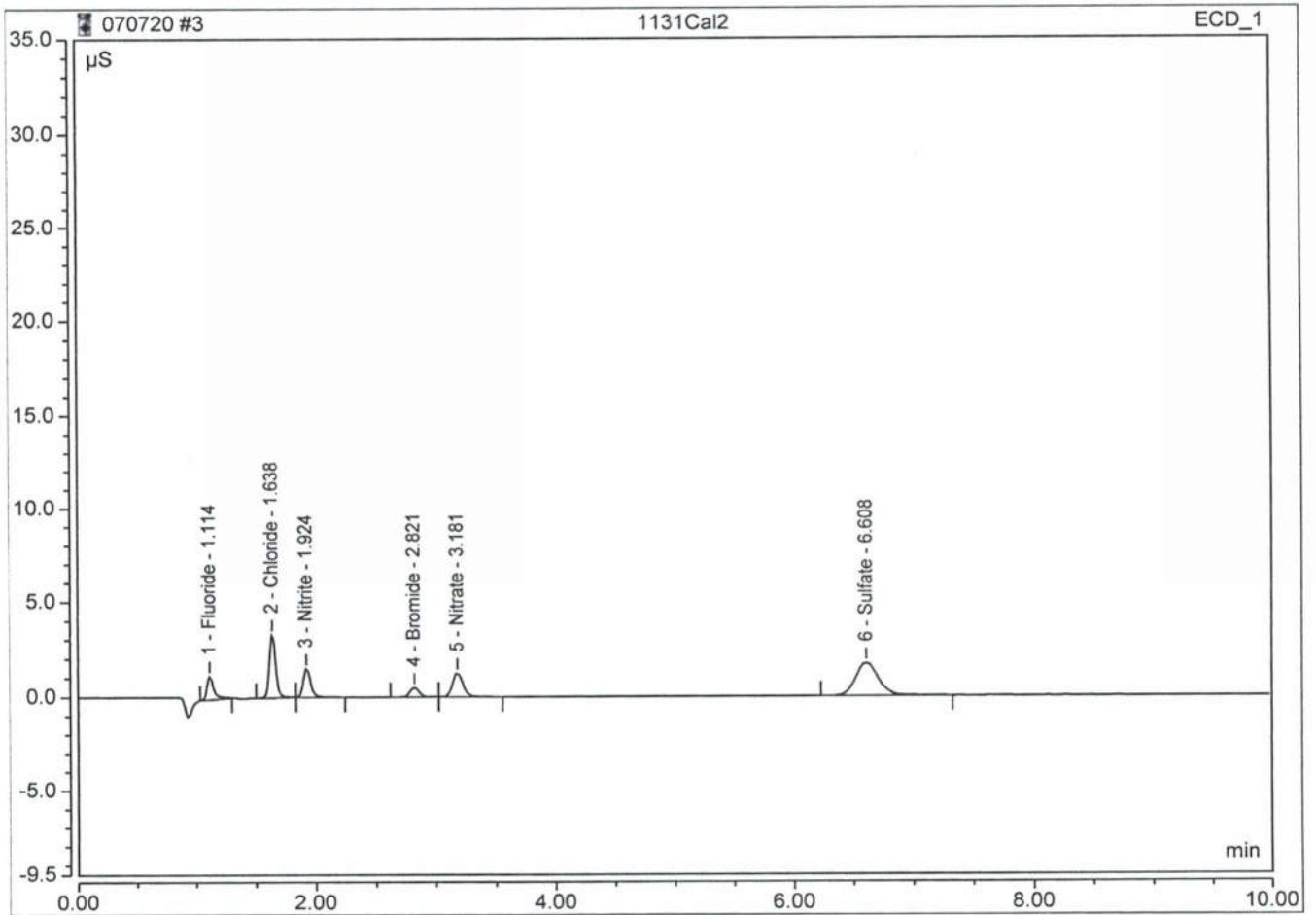
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.039	0.521	n.a.
2	1.64	Chloride	BMB	0.101	1.651	n.a.
3	1.93	Nitrite	BMB	0.021	0.296	n.a.
4	2.83	Bromide	BMB	0.022	0.250	n.a.
5	3.19	Nitrate	BMB	0.027	0.268	n.a.
6	6.62	Sulfate	BMB	0.082	0.364	n.a.
TOTAL:				0.29	3.35	0.00



Peak Integration Report

Sample Name:	1131Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:21	Operator:	Jeff Phifer

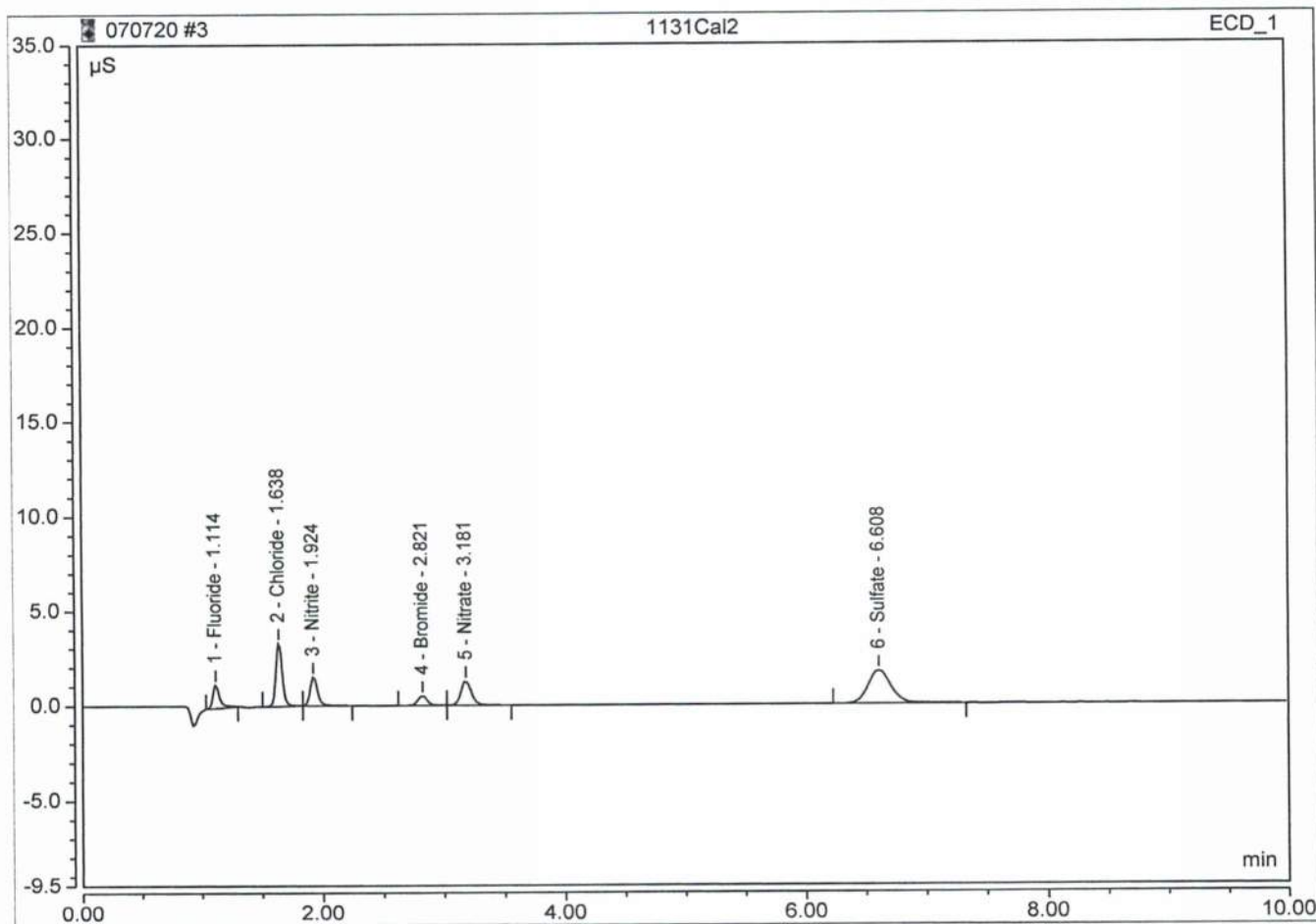
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.082	1.223	0.5 0.4881
2	1.64	Chloride	BMB	0.202	3.302	2 1.9118
3	1.92	Nitrite	BMB	0.106	1.494	0.5 0.4786
4	2.82	Bromide	BMB	0.043	0.489	1 1.0026
5	3.18	Nitrate	BMB	0.126	1.252	0.5 0.4819
6	6.61	Sulfate	BMB	0.383	1.734	3 4.8320
TOTAL:				0.94	9.49	9.19



Peak Integration Report

Sample Name:	1131Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:21	Operator:	Jeff Phifer

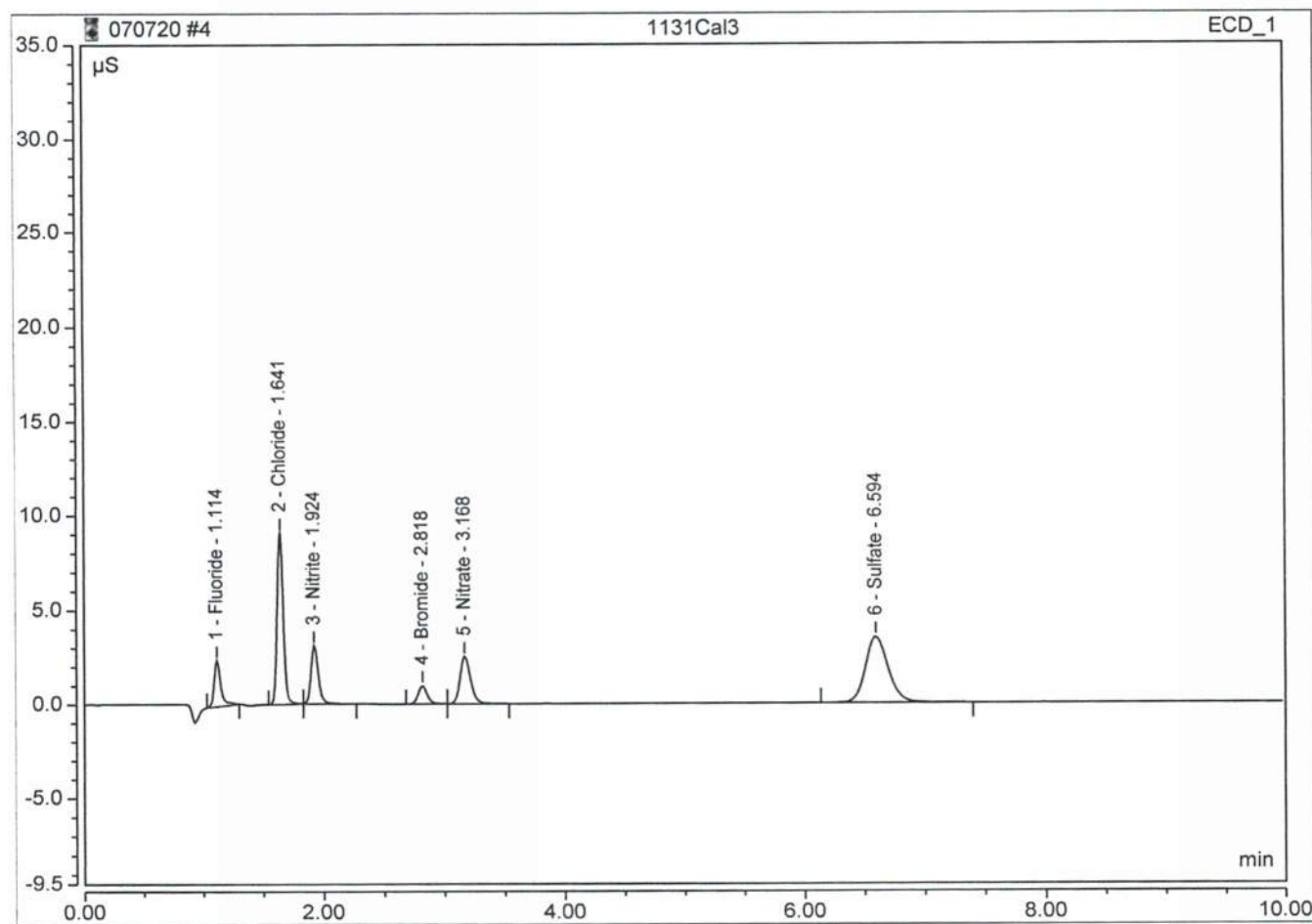
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.082	1.223	0.5000
2	1.64	Chloride	BMB	0.202	3.302	2.0000
3	1.92	Nitrite	BMB	0.106	1.494	0.5000
4	2.82	Bromide	BMB	0.043	0.489	1.0000
5	3.18	Nitrate	BMB	0.126	1.252	0.5000
6	6.61	Sulfate	BMB	0.383	1.734	5.0000
TOTAL:				0.94	9.49	9.50



Peak Integration Report

Sample Name:	1131CaI3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:34	Operator:	Jeff Phifer

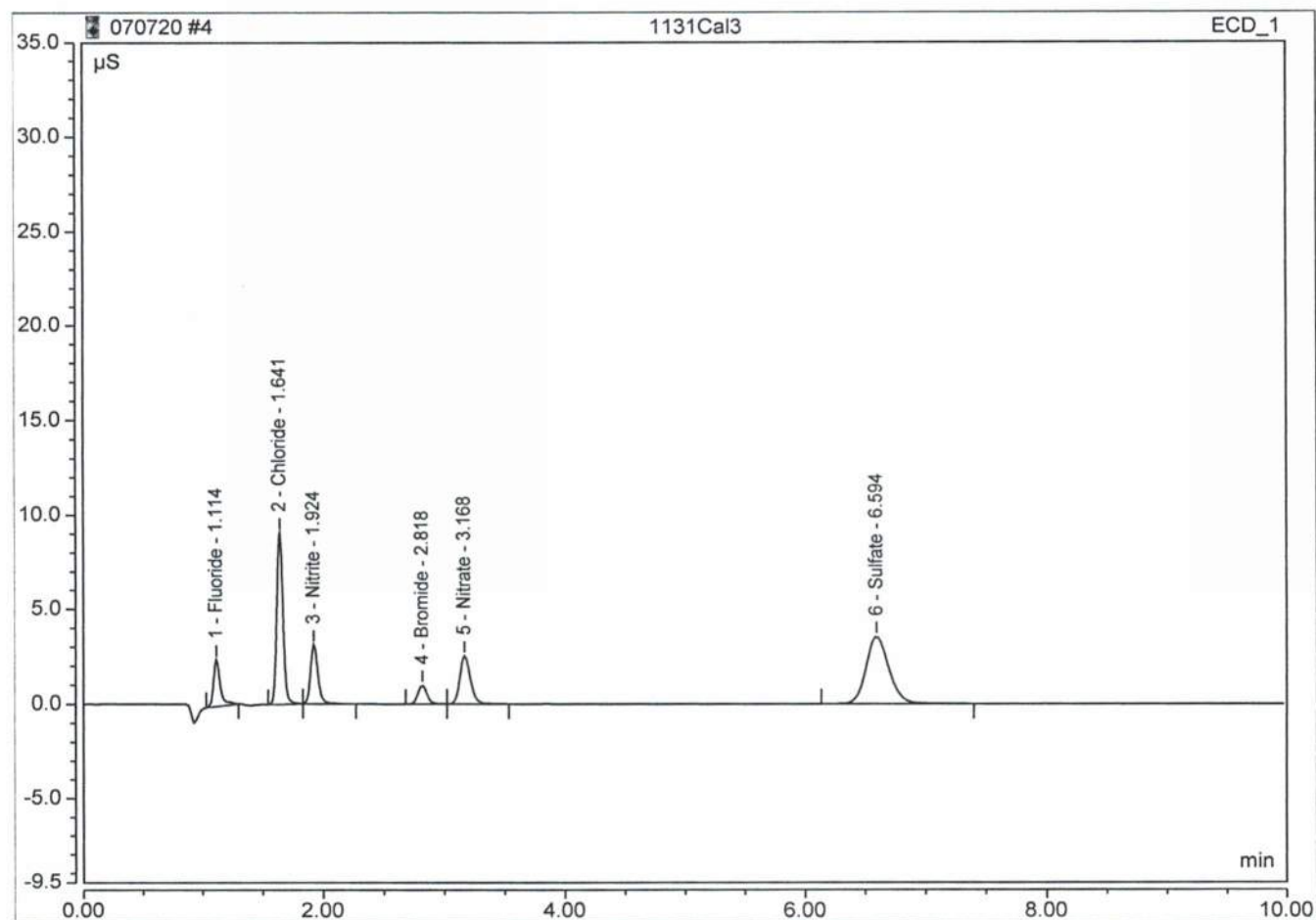
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.155	2.427	0.9656
2	1.64	Chloride	BMB	0.540	9.060	4.6937
3	1.92	Nitrite	BMB	0.216	3.083	0.9661
4	2.82	Bromide	BMB	0.085	0.977	1.9598
5	3.17	Nitrate	BMB	0.251	2.511	0.9588
6	6.59	Sulfate	BMB	0.768	3.517	9.6641
TOTAL:				2.02	21.57	19.21



Peak Integration Report

Sample Name:	1131Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:34	Operator:	Jeff Phifer

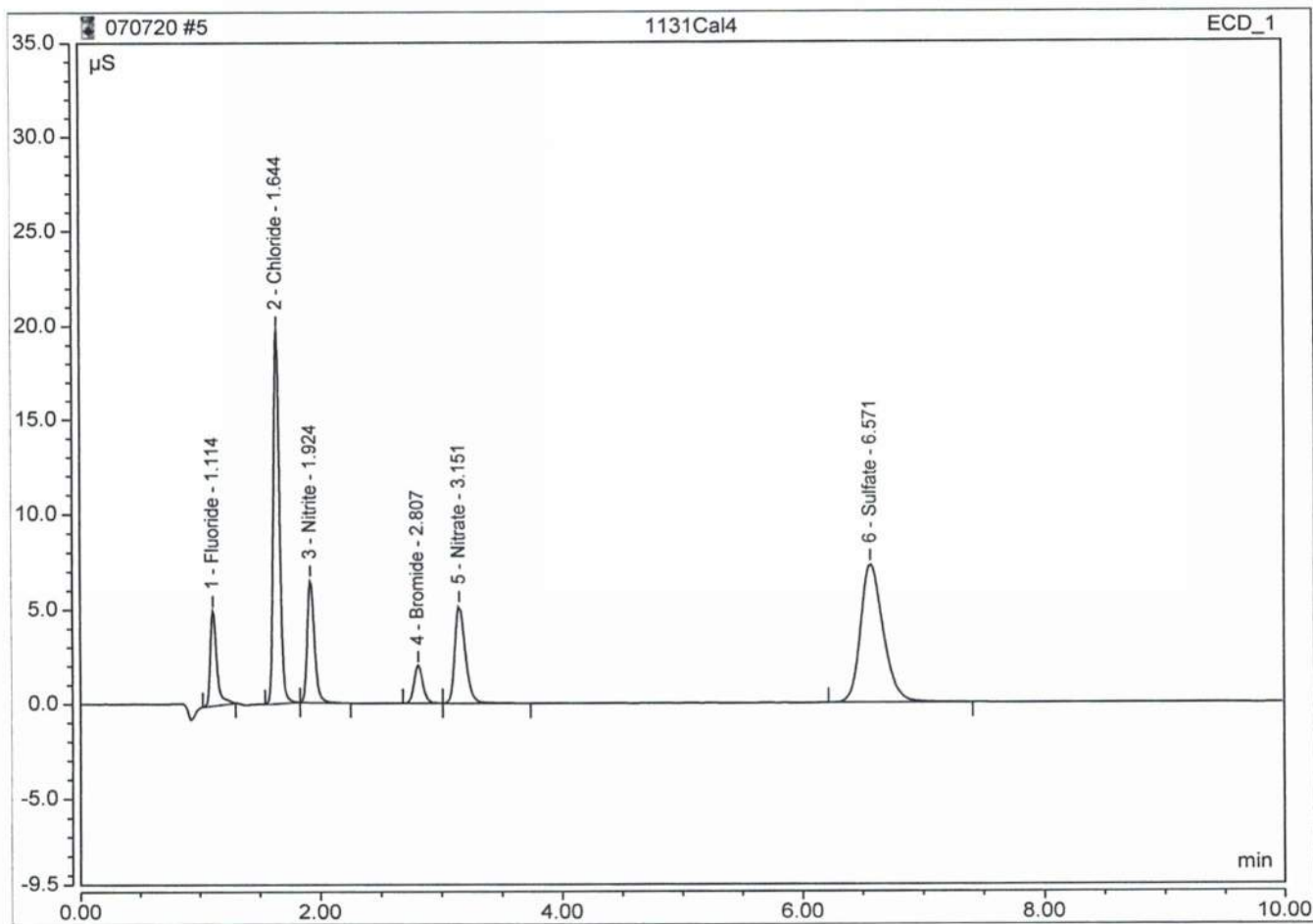
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.155	2.427	1.0028
2	1.64	Chloride	BMB	0.540	9.060	5.0381
3	1.92	Nitrite	BMB	0.216	3.083	1.0063
4	2.82	Bromide	BMB	0.085	0.977	1.9960
5	3.17	Nitrate	BMB	0.251	2.511	1.0021
6	6.59	Sulfate	BMB	0.768	3.517	10.0296
TOTAL:				2.02	21.57	20.07



Peak Integration Report

Sample Name:	1131Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:46	Operator:	Jeff Phifer

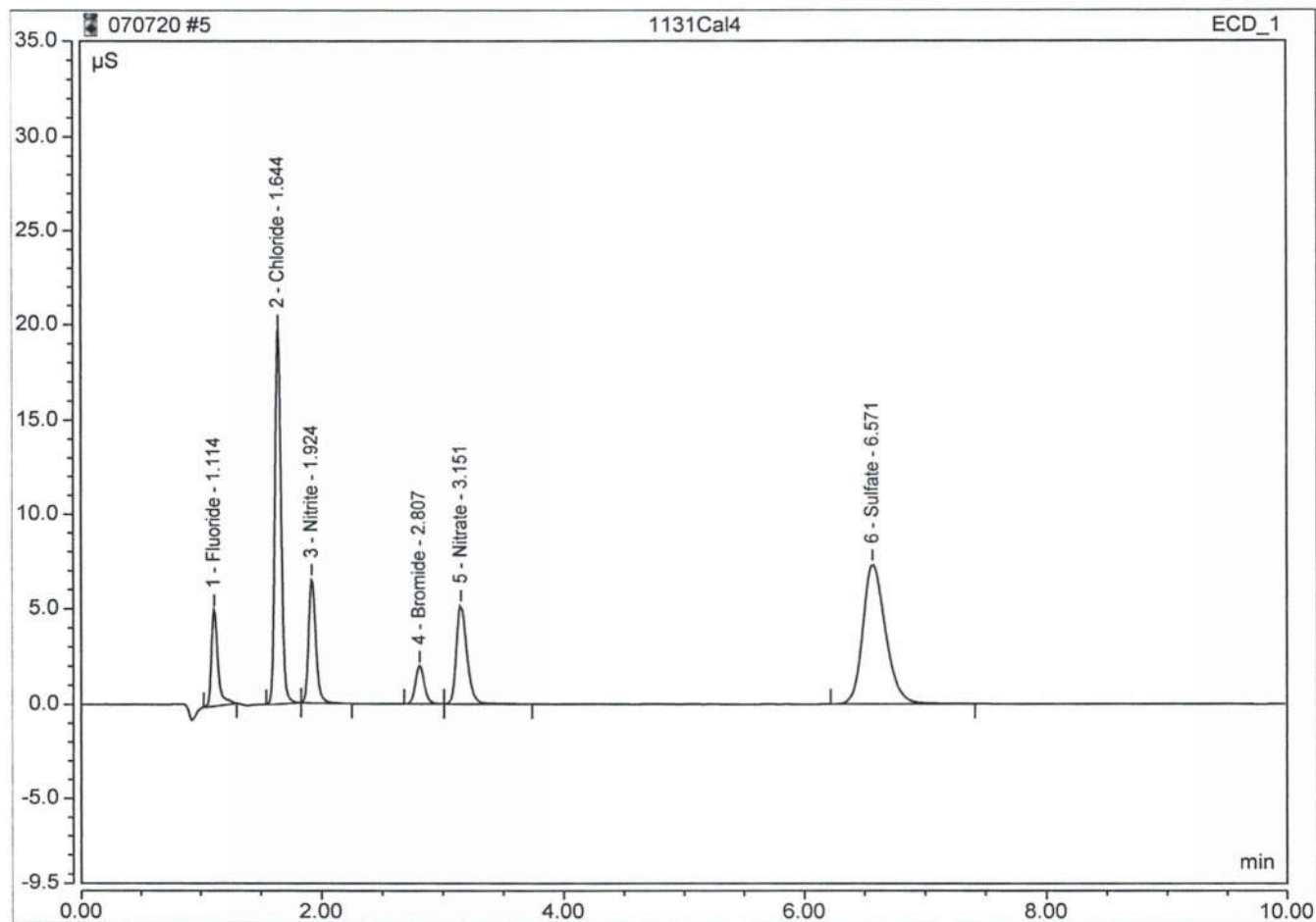
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.313	5.047	2 1.9874
2	1.64	Chloride	BMB	1.171	19.722	10 9.8670
3	1.92	Nitrite	BMB	0.447	6.494	2 1.9838
4	2.81	Bromide	BMB	0.172	1.992	4 3.9335
5	3.15	Nitrate	BMB	0.523	5.181	2 1.9899
6	6.57	Sulfate	BMB	1.586	7.313	20 19.9329
TOTAL:				4.21	45.75	39.69



Peak Integration Report

Sample Name:	1131CaI4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:46	Operator:	Jeff Phifer

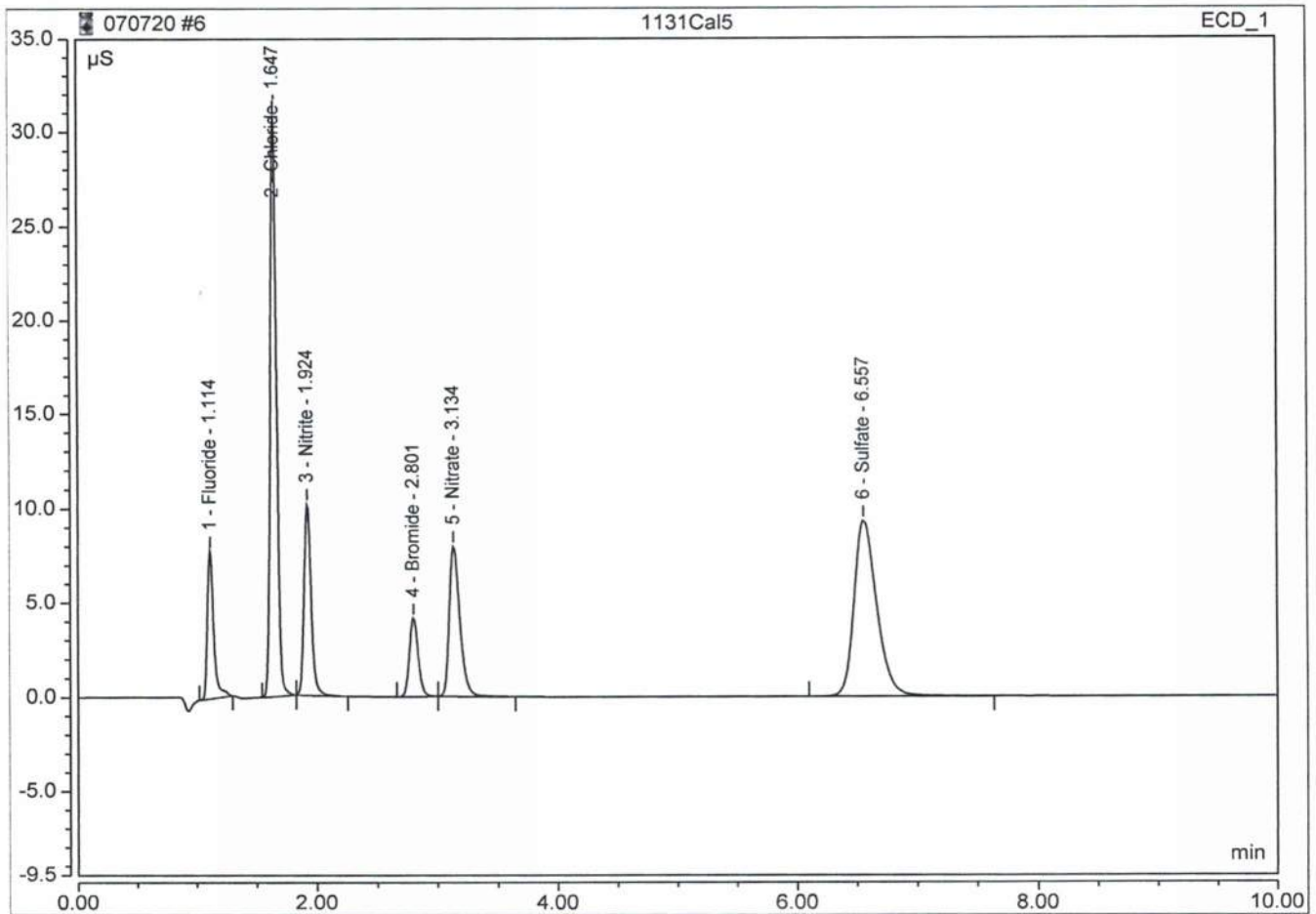
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.313	5.047	2.0249
2	1.64	Chloride	BMB	1.171	19.722	10.2103
3	1.92	Nitrite	BMB	0.447	6.494	2.0275
4	2.81	Bromide	BMB	0.172	1.992	4.0098
5	3.15	Nitrate	BMB	0.523	5.181	2.0325
6	6.57	Sulfate	BMB	1.586	7.313	20.2778
TOTAL:				4.21	45.75	40.58



Peak Integration Report

Sample Name:	1131Cal5	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:59	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.476	7.811	3 3.0493
2	1.65	Chloride	BMB	1.849	30.847	15 15.4380
3	1.92	Nitrite	BMB	0.692	10.161	3 3.0652
4	2.80	Bromide	BMB	0.354	4.145	8 8.0928
5	3.13	Nitrate	BMB	0.805	7.979	3 3.0633
6	6.56	Sulfate	BMB	2.031	9.317	25 25.5213
TOTAL:				6.21	70.26	58.23



ICS-1100 B Dionex IC Meth 300.0

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 10:40:04 AM -C
	1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:52:24 AM -C
	1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 11:05:16 AM -C
	1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 11:18:08 AM -C
	1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 11:31:00 AM -C
	1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 11:43:51 AM -C
	Blank	Unknown		1	Norm Method	Anion	Finished	7/23/2020 9:55:09 AM -C
	BSpike 11729BS1	Check Standard		2	Norm Method	Anion	Finished	7/23/2020 10:07:28 AM -C
	LCS 11729LCS1	Check Standard		3	Norm Method	Anion	Finished	7/23/2020 10:20:20 AM -C
	15905.01	Unknown		4	Norm Method	Anion	Finished	7/23/2020 10:33:13 AM -C
	15906.01	Unknown		5	Norm Method	Anion	Finished	7/23/2020 10:46:05 AM -C
	15917.01	Unknown		6	Norm Method	Anion	Finished	7/23/2020 10:58:57 AM -C
	15917.02	Unknown		7	Norm Method	Anion	Finished	7/23/2020 11:11:48 AM -C
	15917.03	Unknown		8	Norm Method	Anion	Finished	7/23/2020 11:24:40 AM -C
	15917.04	Unknown		9	Norm Method	Anion	Finished	7/23/2020 11:37:32 AM -C
	15917.05	Unknown		10	Norm Method	Anion	Finished	7/23/2020 11:50:23 AM -C
	15917.06	Unknown		11	Norm Method	Anion	Finished	7/23/2020 12:03:15 PM -C
	15917.07	Unknown		12	Norm Method	Anion	Finished	7/23/2020 12:16:07 PM -C
	15925.01	Unknown		13	Norm Method	Anion	Finished	7/23/2020 12:28:59 PM -C
	15925.01	Unknown		14	Norm Method	Anion	Finished	7/23/2020 12:41:51 PM -C
	15917.01 dup	Unknown		15	Norm Method	Anion	Finished	7/23/2020 12:54:42 PM -C
	15917.01 MS 13037MS	Unknown		16	Norm Method	Anion	Finished	7/23/2020 1:07:35 PM -C
	15917.01 MSD 13037M	Unknown		17	Norm Method	Anion	Finished	7/23/2020 1:20:27 PM -C
	BSpike 11729BS1	Check Standard		18	Norm Method	Anion	Finished	7/23/2020 1:33:19 PM -C

CALIB ICSB 070720 CAL

CL200723-WL-B NTRI 200723-WL-B

SFT 200723-WL-B

NTRI 1303723-WL-B

Sequence: 072320
Last Update Operator: pcuser

	Blank	Unknown	19	Norm Method	Anion	Finished	7/23/2020 1:46:11 PM -C
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Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	50.0000	1.0000		Jeff Phifer	
1.0000	25.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	25.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	50.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	2.5000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	25.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

Sequence: 072320
Last Update Operator: pcuser



1.0000	1.0000	1.0000		Jeff Phifer	
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Norm Method	16/06/15 12:18	Jeff Phifer	METHOD 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mM]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Calibration Batch Report
CAL ID# ICSB070720CAL

Sequence:	072320	Injection Volu	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 11:43	Column:	AS4A-SC 040144

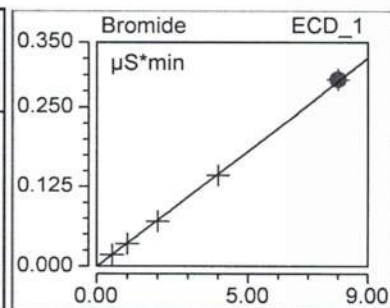
Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.029	0.113	0.000	0.9985
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.023	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.191	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	0.000	0.036	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.003	0.064	0.000	0.9997
AVERAGE:				-0.0002	0.1196	0.0000	0.9994

Injection Name	Ret.Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1131Cal1	Fluoride 1.084	Fluoride 0.0508	Fluoride 0.484	Fluoride 0.189
1131Cal2	1.084	0.0870	0.999	0.510
1131Cal3	1.081	0.1450	1.848	1.024
1131Cal4	1.081	0.2666	3.636	2.101
1131Cal5	1.081	0.3541	5.285	2.876
Average	1.082			
Rel. Std. Dev.	0.164 %			

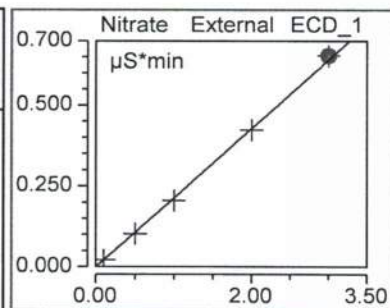
Injection Name	Ret.Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1131Cal1	Chloride 1.627	Chloride 0.0849	Chloride 1.387	Chloride 1.089
1131Cal2	1.627	0.1668	2.765	1.912
1131Cal3	1.628	0.4444	7.521	4.701
1131Cal4	1.631	0.9564	16.335	9.846
1131Cal5	1.634	1.5142	25.720	15.452
Average	1.629			
Rel. Std. Dev.	0.180 %			

Injection Name	Ret.Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1131Cal1	Nitrite 1.934	Nitrite 0.0181	Nitrite 0.252	Nitrite 0.106
1131Cal2	1.934	0.0900	1.251	0.483
1131Cal3	1.931	0.1818	2.556	0.963
1131Cal4	1.931	0.3773	5.333	1.987
1131Cal5	1.931	0.5827	8.298	3.062
Average	1.932			
Rel. Std. Dev.	0.092 %			

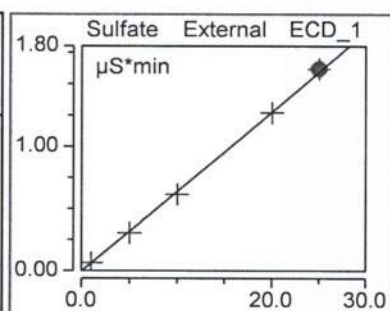
Injection Name	Ret.Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Bromide 2.887	Bromide 0.0182	Bromide 0.193	Bromide 0.515
1131Cal2	2.884	0.0355	0.378	0.993
1131Cal3	2.878	0.0705	0.760	1.960
1131Cal4	2.871	0.1427	1.549	3.949
1131Cal5	2.864	0.2925	3.206	8.083
Average	2.877			
Rel. Std. Dev.	0.332 %			



Injection Name	Ret.Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Nitrate 3.271	Nitrate 0.0215	Nitrate 0.202	Nitrate 0.105
1131Cal2	3.257	0.1026	0.952	0.485
1131Cal3	3.248	0.2057	1.911	0.967
1131Cal4	3.234	0.4230	3.909	1.982
1131Cal5	3.217	0.6540	6.009	3.062
Average	3.245			
Rel. Std. Dev.	0.636 %			



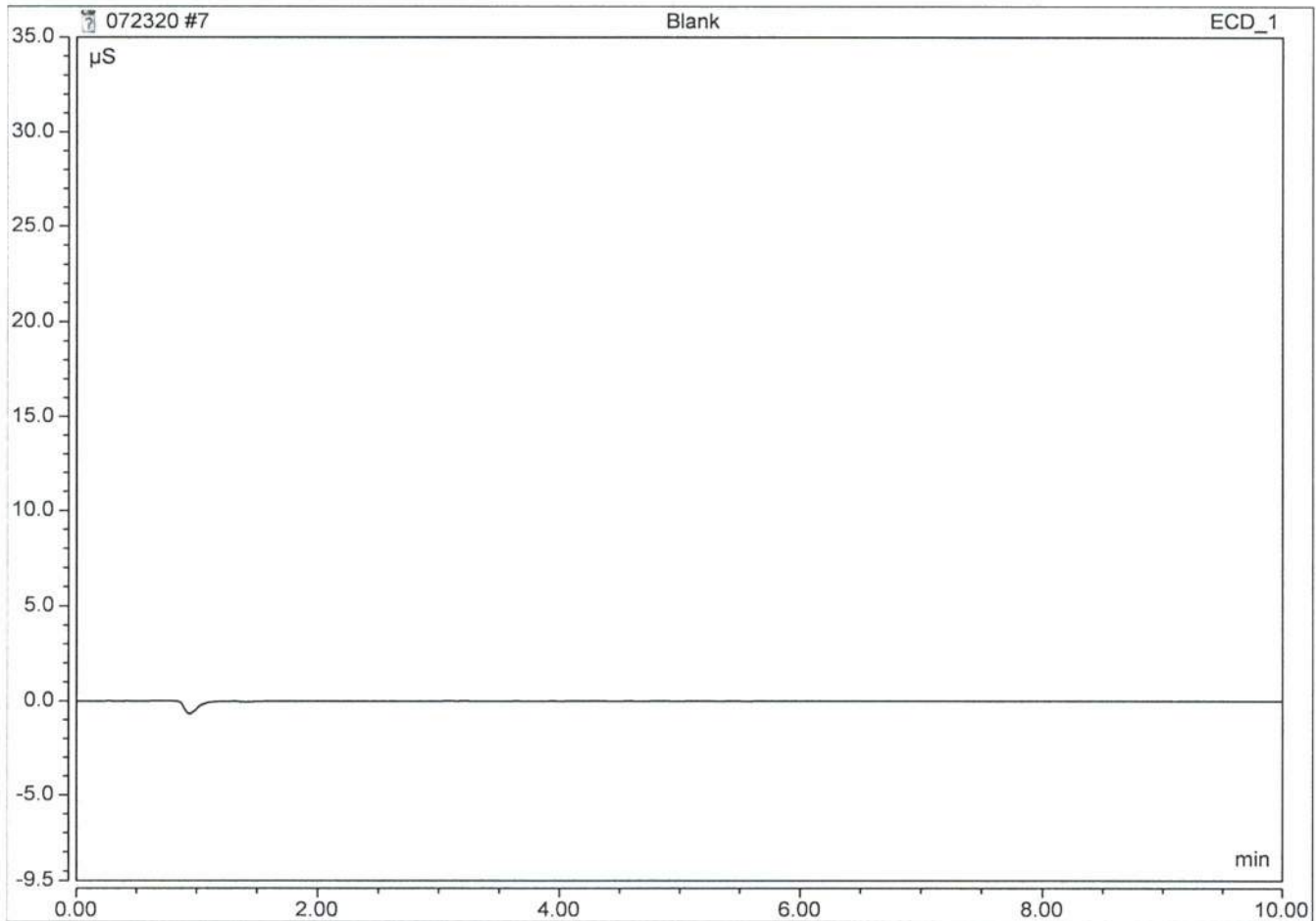
Injection Name	Ret.Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Sulfate 6.867	Sulfate 0.0635	Sulfate 0.271	Sulfate 1.047
1131Cal2	6.867	0.3050	1.300	4.836
1131Cal3	6.854	0.6147	2.631	9.693
1131Cal4	6.837	1.2706	5.439	19.981
1131Cal5	6.824	1.6188	6.926	25.443
Average	6.850			
Rel. Std. Dev.	0.279 %			



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 09:55	Operator:	Jeff Phifer

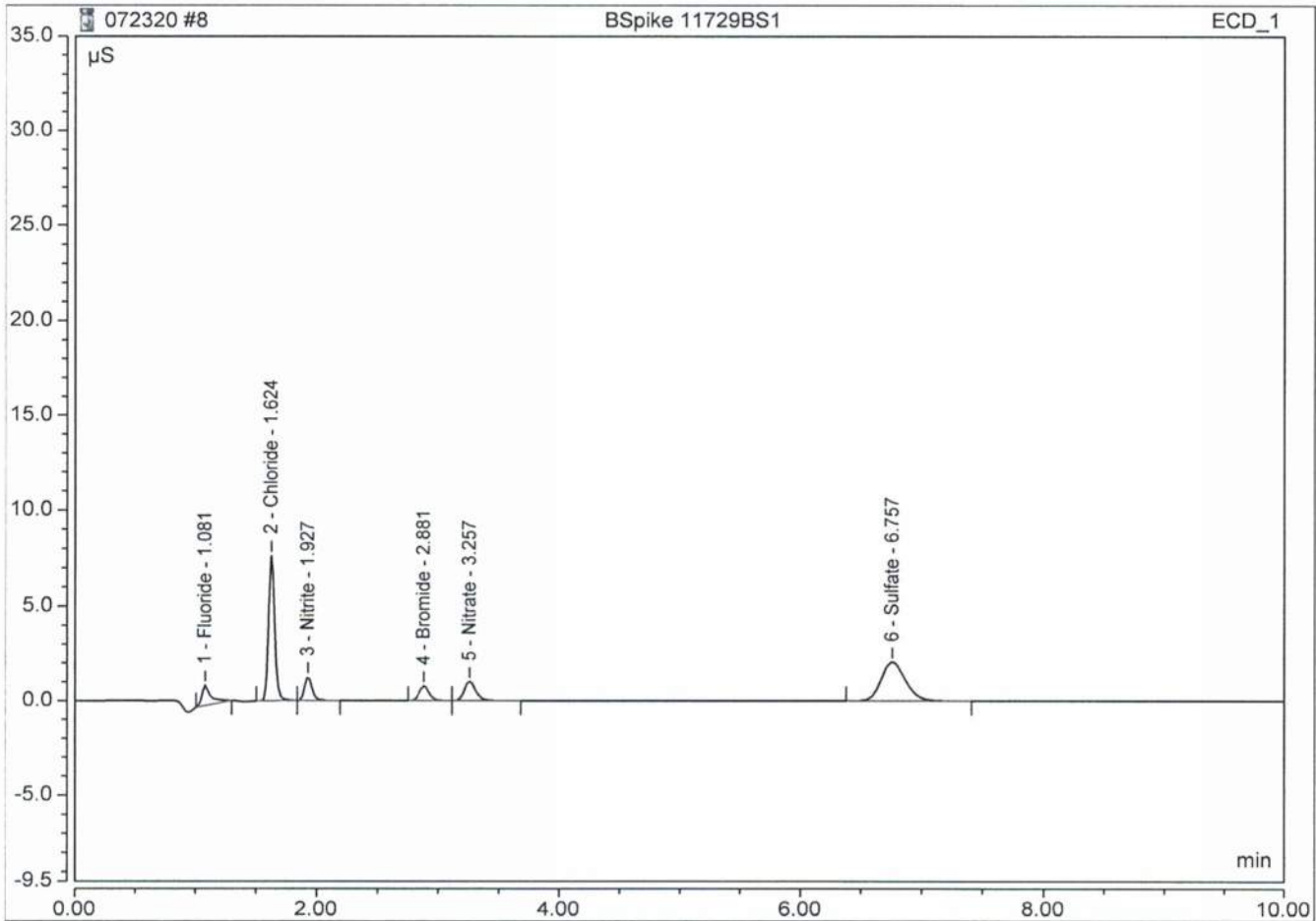
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	BSpoke 11729BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 10:07	Operator:	Jeff Phifer

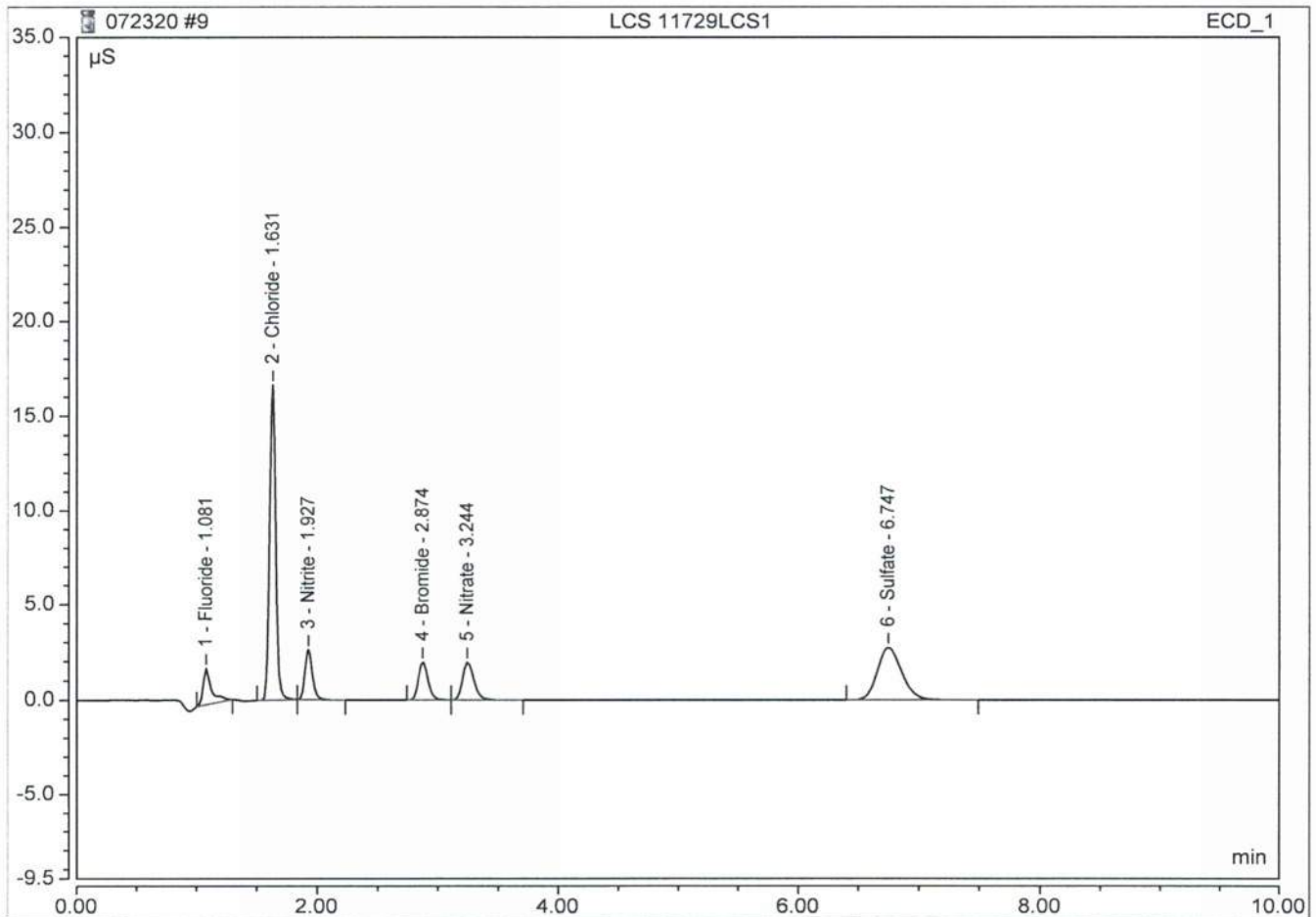
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.094	1.067	0.5707
2	1.62	Chloride	BMB	0.454	7.636	5 4.8027 960
3	1.93	Nitrite	BMB	0.090	1.258	0.5 0.4832 960
4	2.88	Bromide	BMB	0.073	0.782	2.0338
5	3.26	Nitrate	BMB	0.109	1.010	0.5 0.5149 1020
6	6.76	Sulfate	BMB	0.475	2.058	7.5 7.5079 1003
TOTAL:				1.30	13.81	15.91



Peak Integration Report

Sample Name:	LCS 11729LCS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 10:20	Operator:	Jeff Phifer

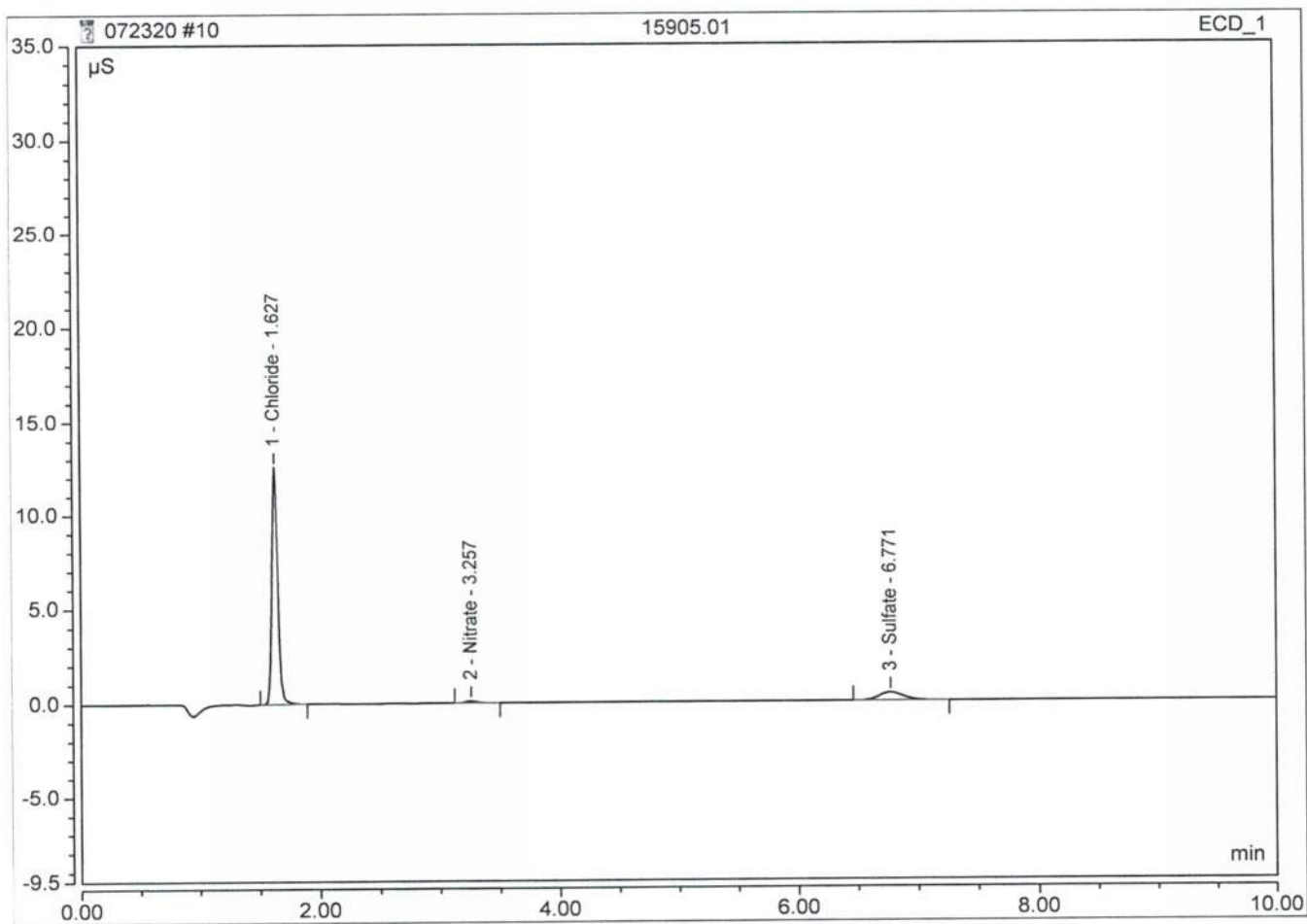
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.153	1.878	1.0960
2	1.63	Chloride	BMB	0.976	16.633	10.0429
3	1.93	Nitrite	BMB	0.185	2.599	0.9777
4	2.87	Bromide	BMB	0.183	1.974	5.0703
5	3.24	Nitrate	BMB	0.211	1.952	0.9902
6	6.75	Sulfate	BMB	0.631	2.736	9.9416
TOTAL:				2.34	27.77	28.12



Peak Integration Report

Sample Name:	15905.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	50.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 10:33	Operator:	Jeff Phifer

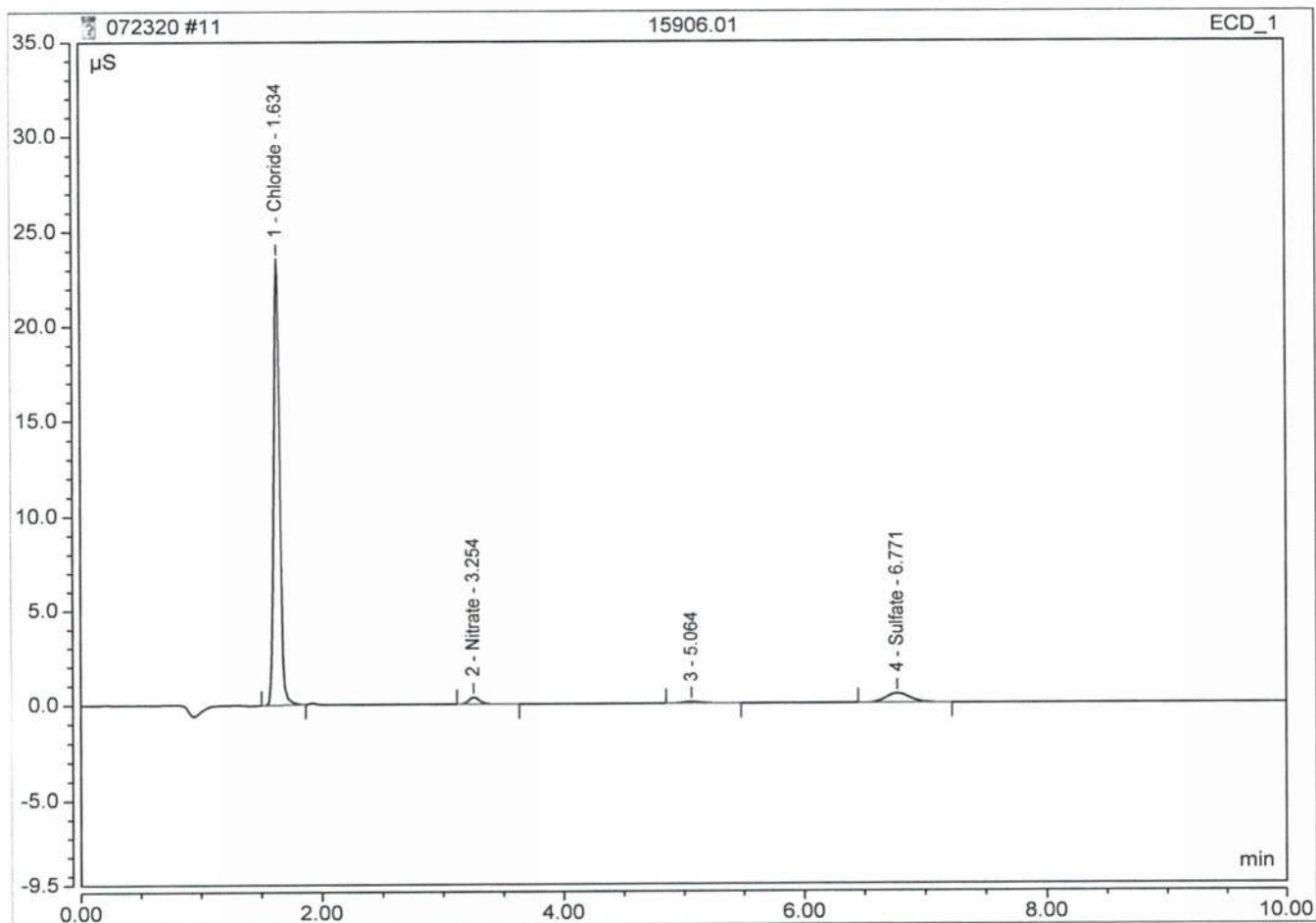
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.738	12.599	382.8247
2	3.26	Nitrate	BMB	0.012	0.110	2.9972
3	6.77	Sulfate	BMB	0.099	0.426	79.9332
TOTAL:				0.85	13.13	465.76



Peak Integration Report

Sample Name:	15906.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 10:46	Operator:	Jeff Phifer

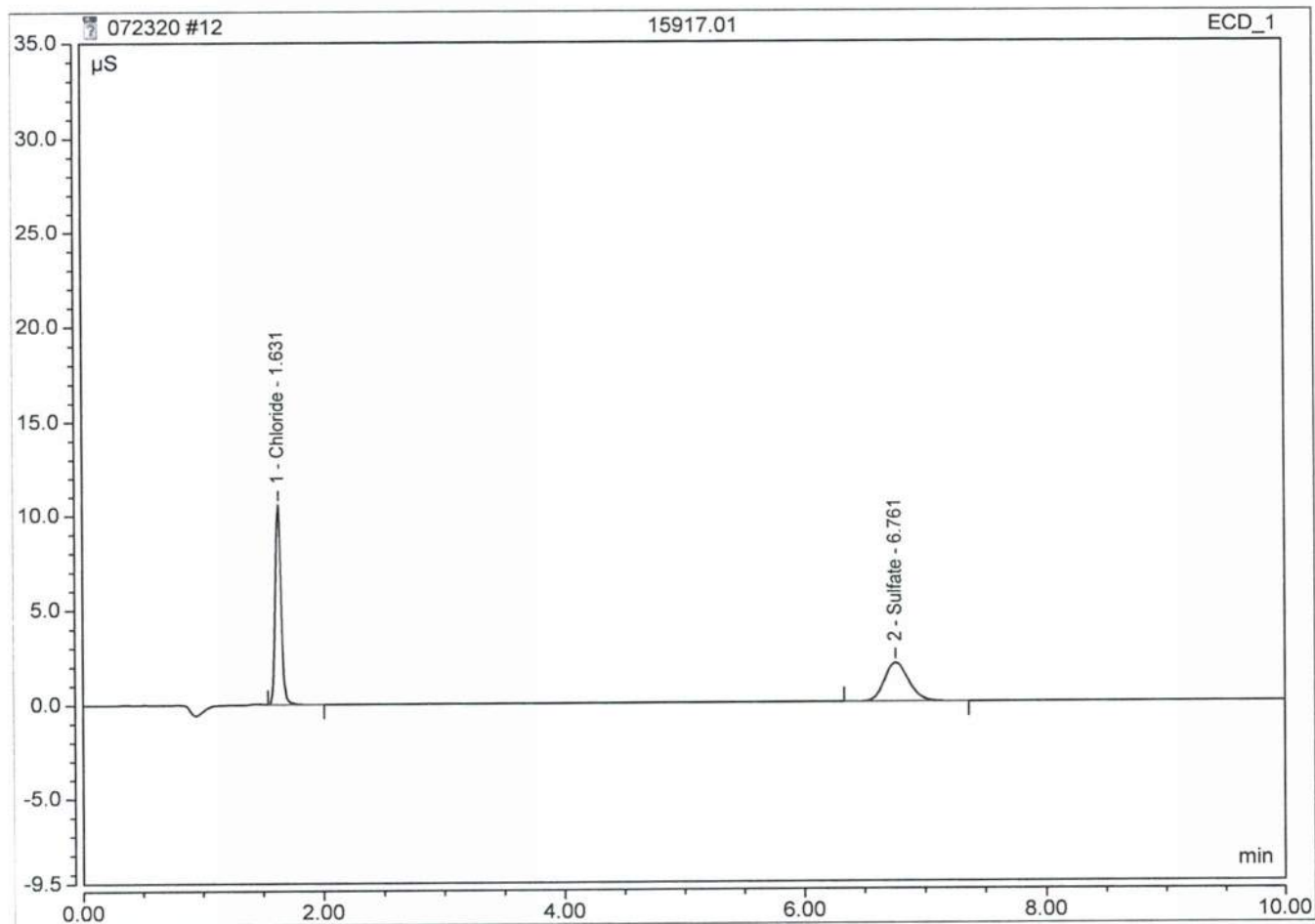
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	1.375	23.582	351.4066
2	3.25	Nitrate	BMB	0.038	0.353	4.5886
4	6.77	Sulfate	BMB	0.112	0.486	45.2194
TOTAL:				1.53	24.42	401.21



Peak Integration Report

Sample Name:	15917.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 10:58	Operator:	Jeff Phifer

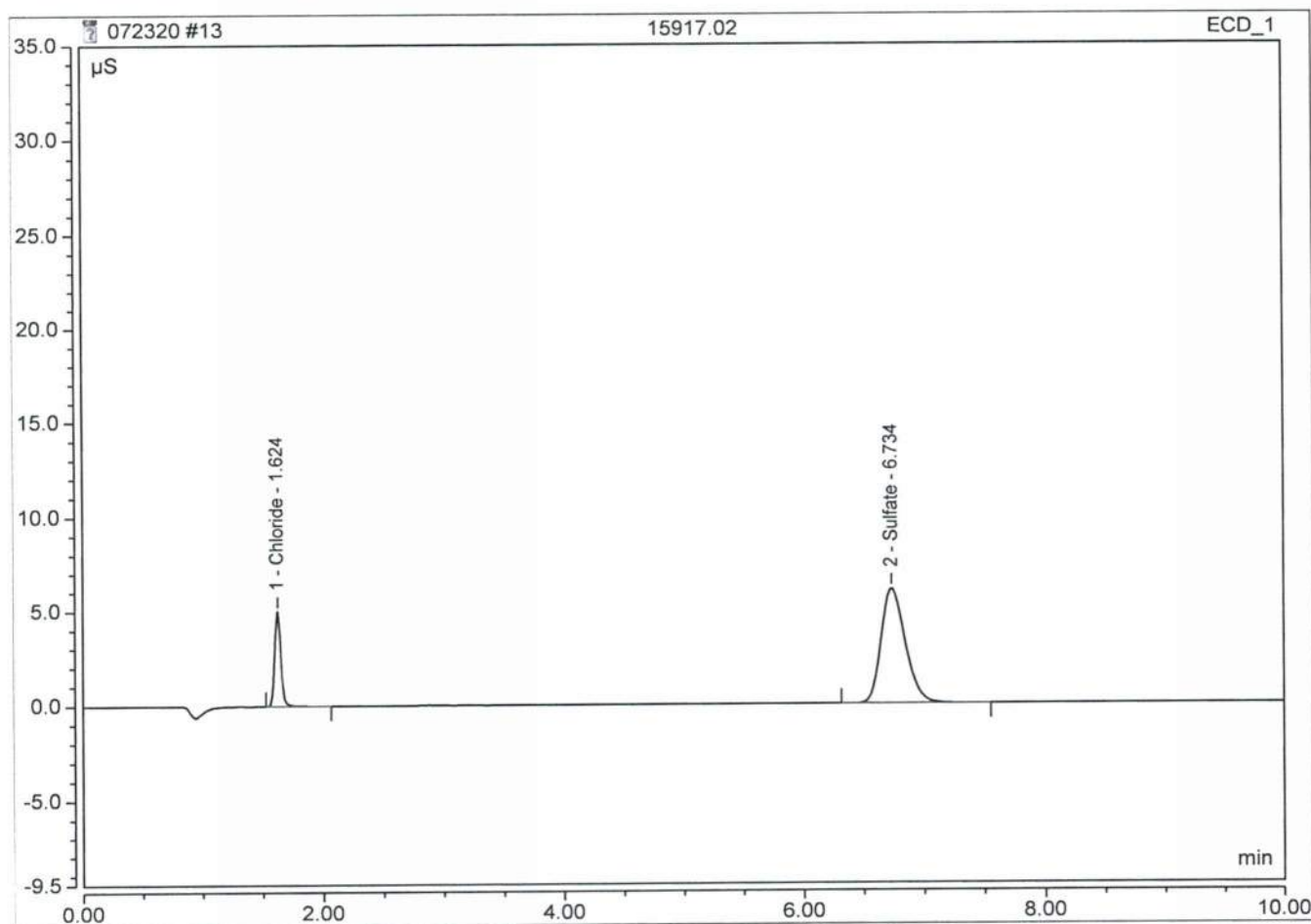
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.614	10.565	64.1001
2	6.76	Sulfate	BMB	0.473	2.052	74.6873
TOTAL:				1.09	12.62	138.79



Peak Integration Report

Sample Name:	15917.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 11:11	Operator:	Jeff Phifer

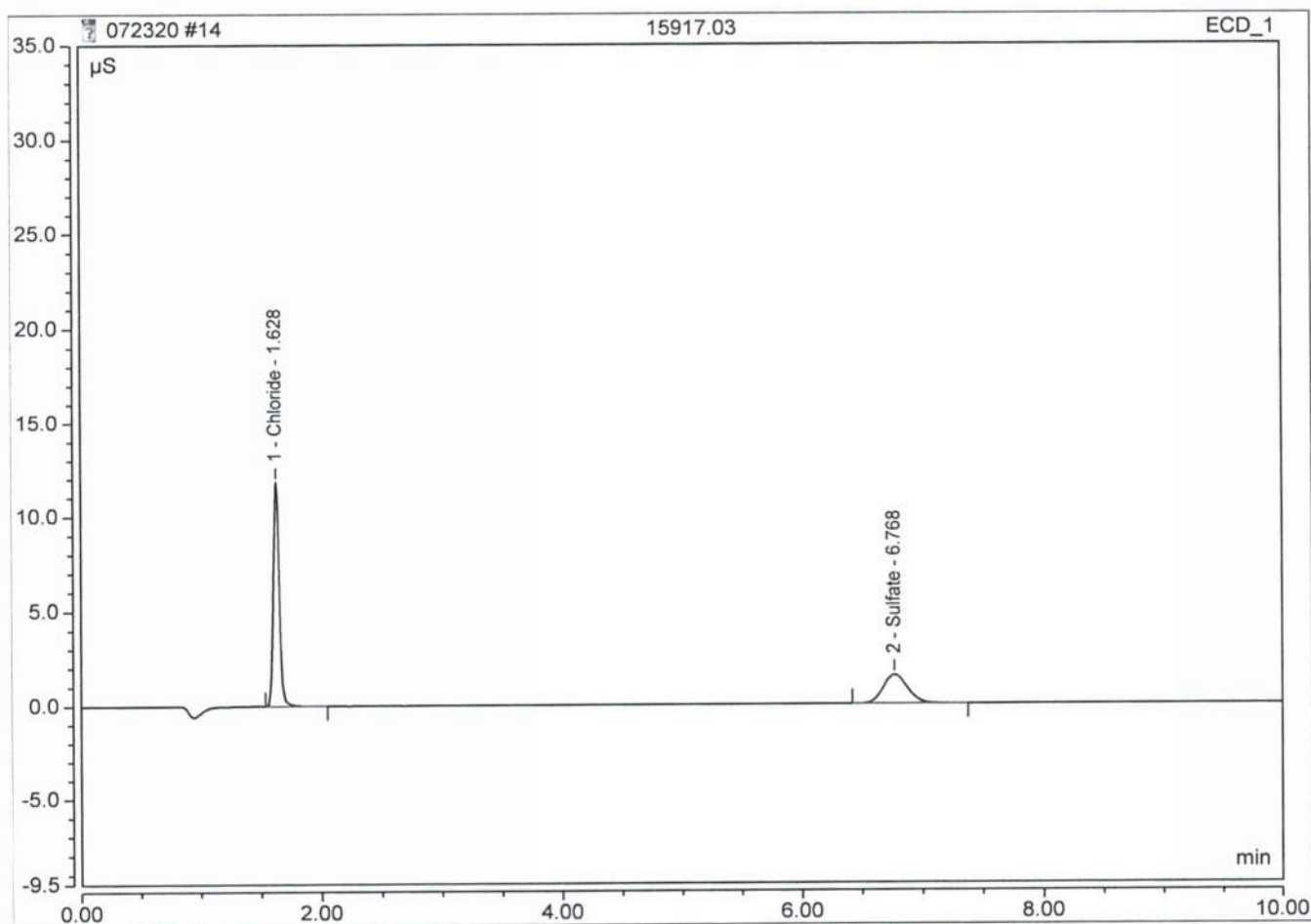
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.62	Chloride	BMB	0.300	5.019	81.3630
2	6.73	Sulfate	BMB	1.397	6.081	549.2221
TOTAL:				1.70	11.10	630.59



Peak Integration Report

Sample Name:	15917.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 11:24	Operator:	Jeff Phifer

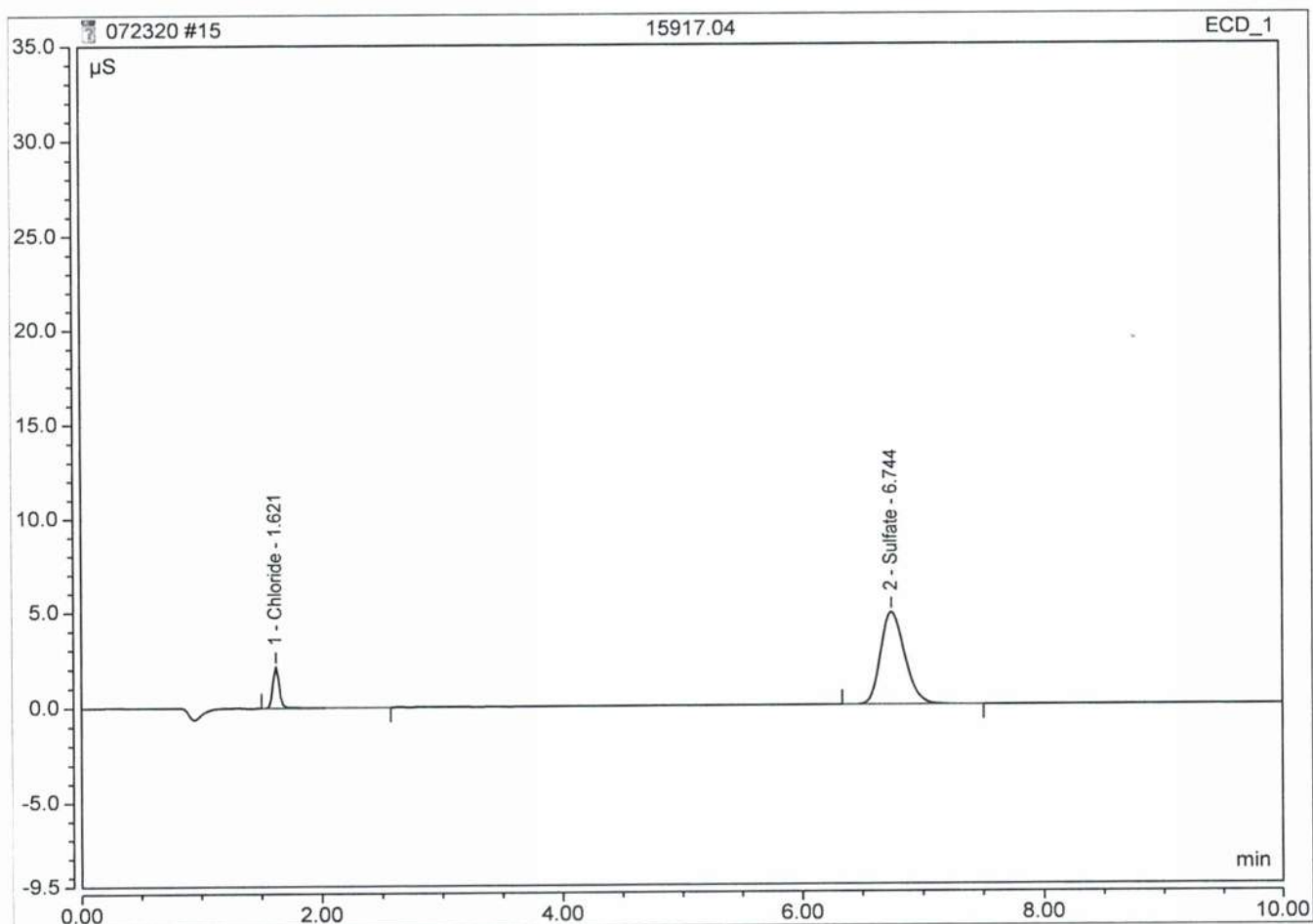
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.689	11.823	71.6321
2	6.77	Sulfate	BMB	0.353	1.531	55.9521
TOTAL:				1.04	13.35	127.58



Peak Integration Report

Sample Name:	15917.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	50.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 11:37	Operator:	Jeff Phifer

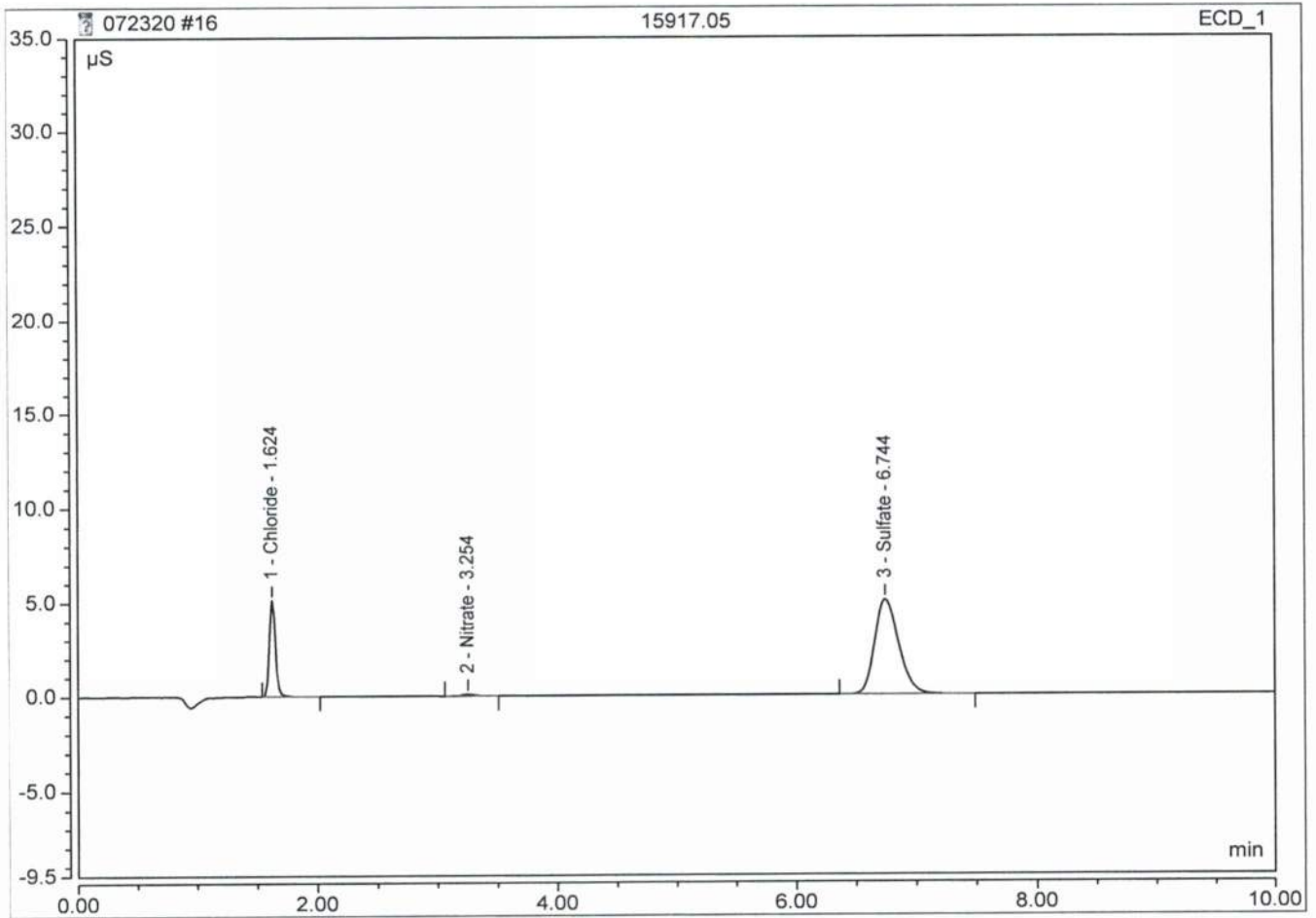
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.62	Chloride	BMB	0.136	2.146	80.2924
2	6.74	Sulfate	BMB	1.115	4.853	877.0527
TOTAL:				1.25	7.00	957.35



Peak Integration Report

Sample Name:	15917.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 11:50	Operator:	Jeff Phifer

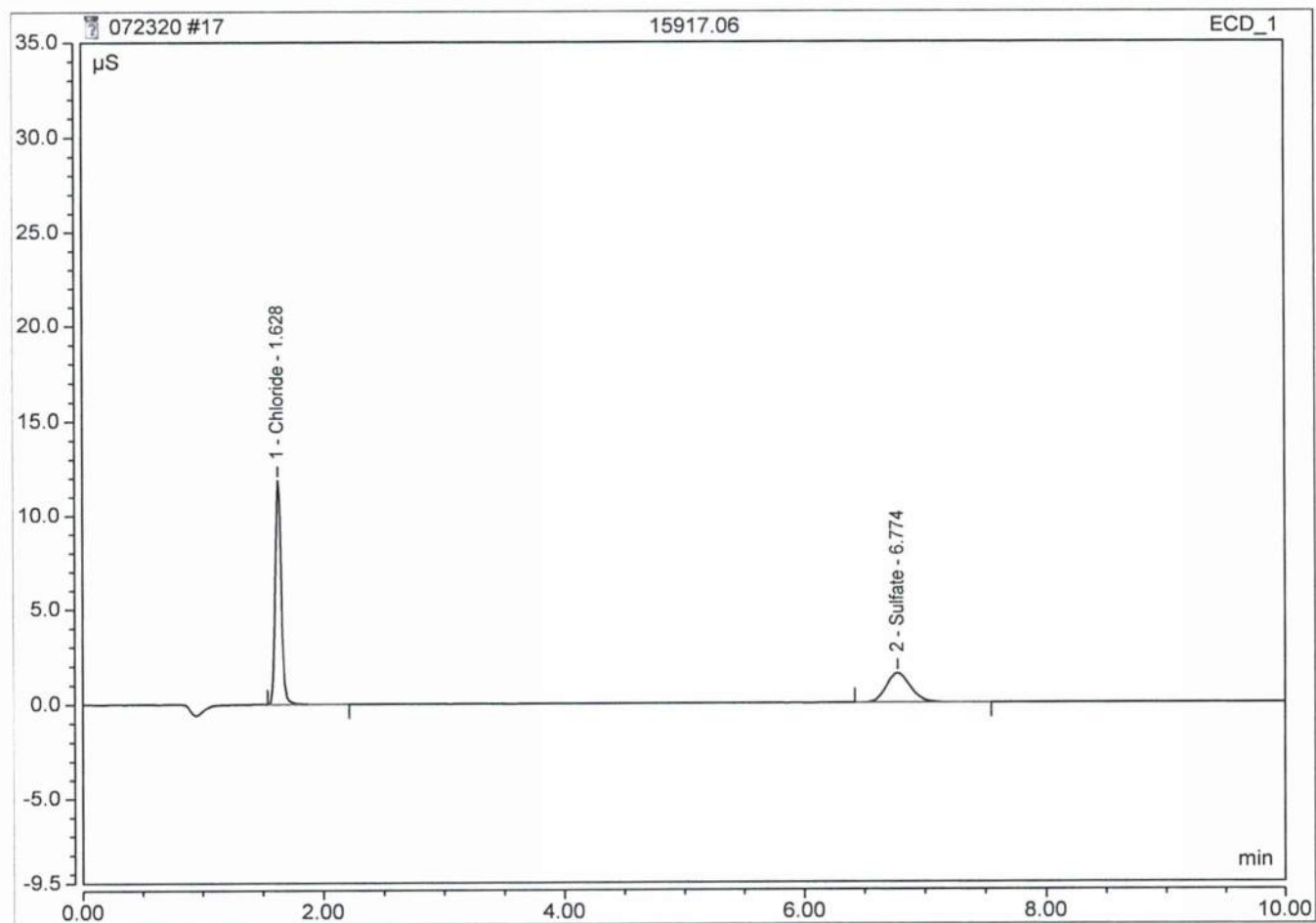
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.62	Chloride	BMB	0.303	5.135	32.8228
2	3.25	Nitrate	BMB	0.011	0.100	0.5529
3	6.74	Sulfate	BMB	1.164	5.073	183.0494
TOTAL:				1.48	10.31	216.43



Peak Integration Report

Sample Name:	15917.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 12:03	Operator:	Jeff Phifer

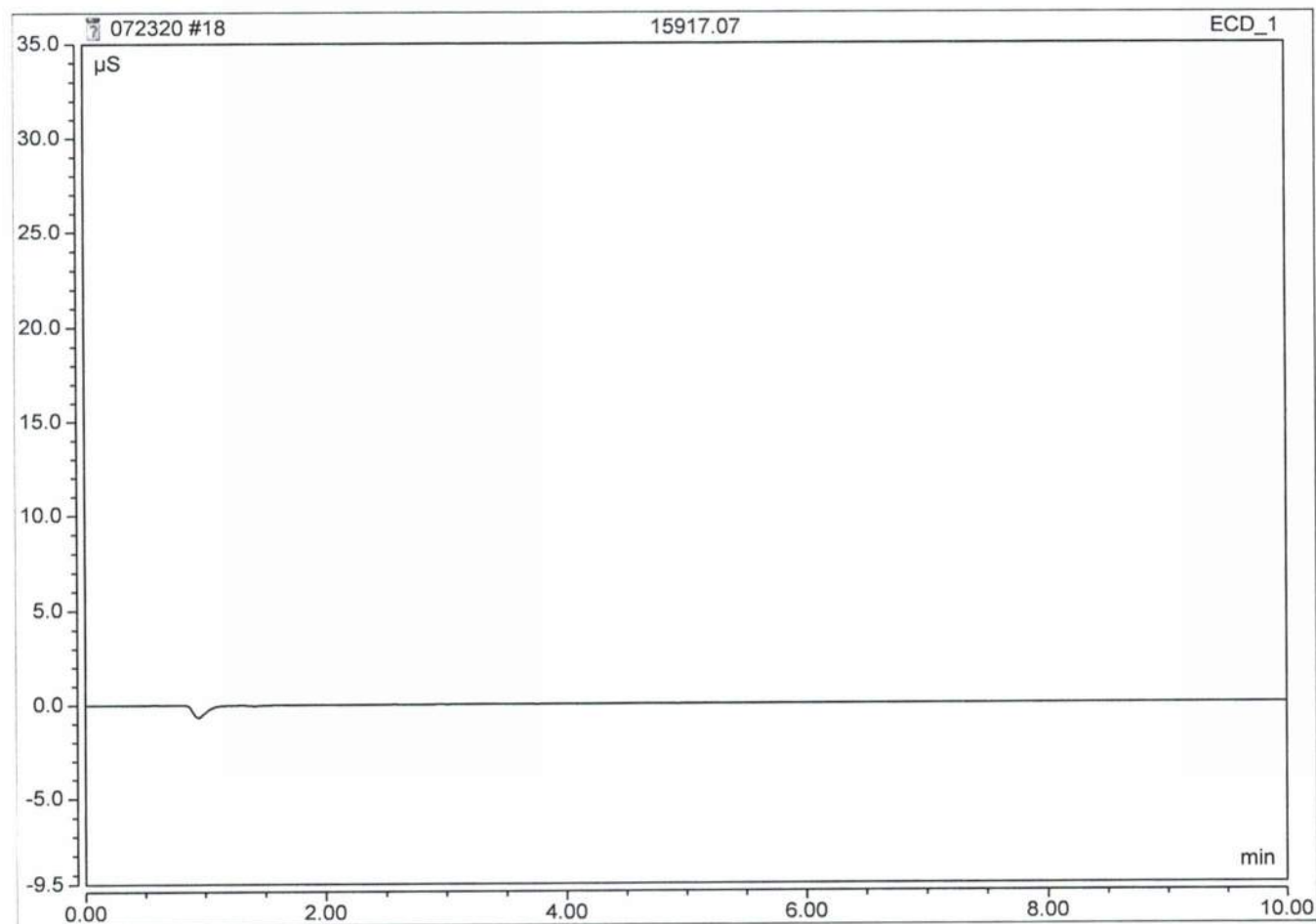
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.694	11.870	72.0812
2	6.77	Sulfate	BMB	0.356	1.537	56.3162
TOTAL:				1.05	13.41	128.40



Peak Integration Report

Sample Name:	15917.07	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	2.5000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 12:16	Operator:	Jeff Phifer

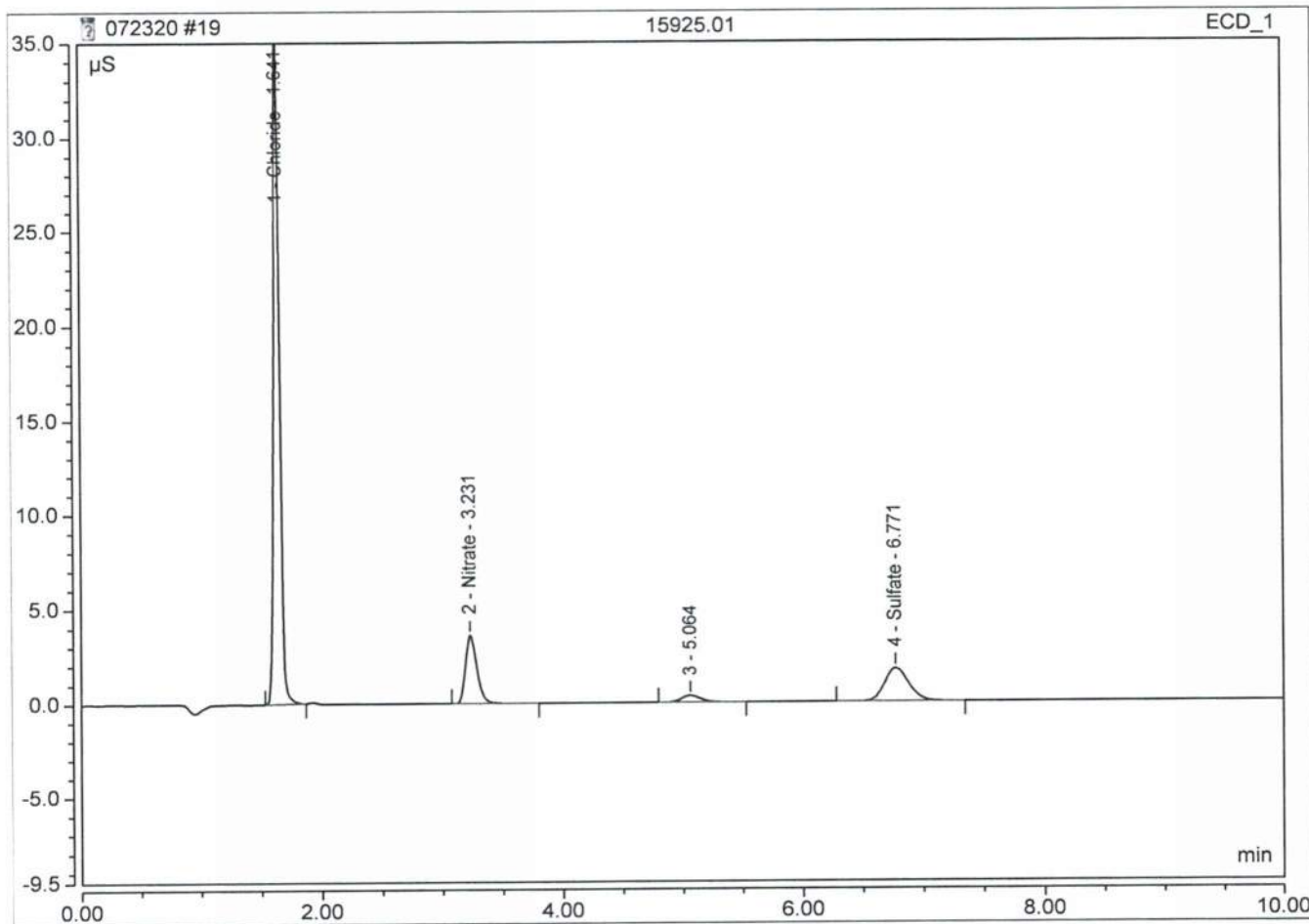
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	15925.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 12:28	Operator:	Jeff Phifer

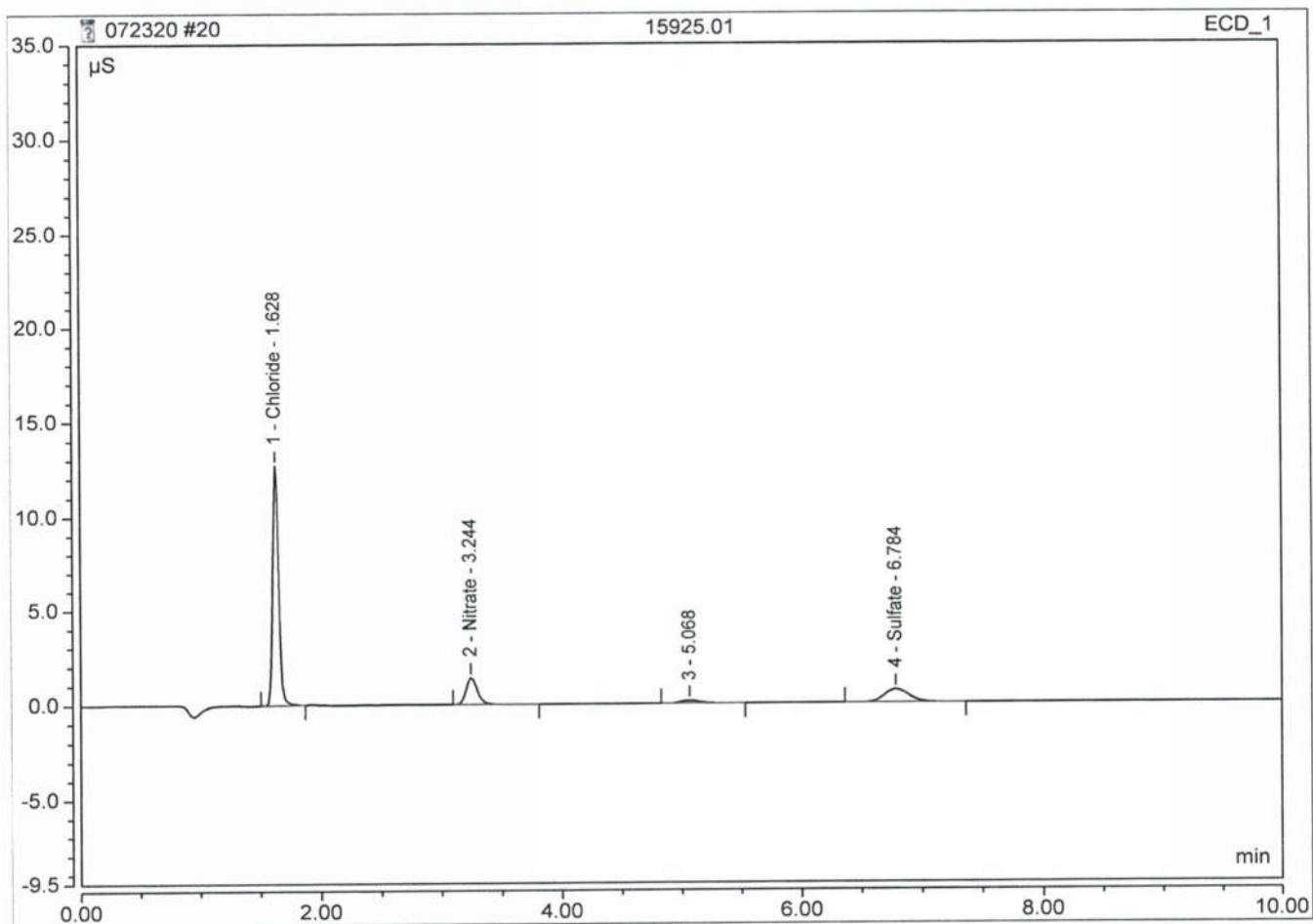
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.64	Chloride	BMB	2.131	35.977	216.4660
2	3.23	Nitrate	BMB	0.392	3.621	18.3838
4	6.77	Sulfate	BMB	0.406	1.759	64.2443
TOTAL:				2.93	41.36	299.09



Peak Integration Report

Sample Name:	15925.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 12:41	Operator:	Jeff Phifer

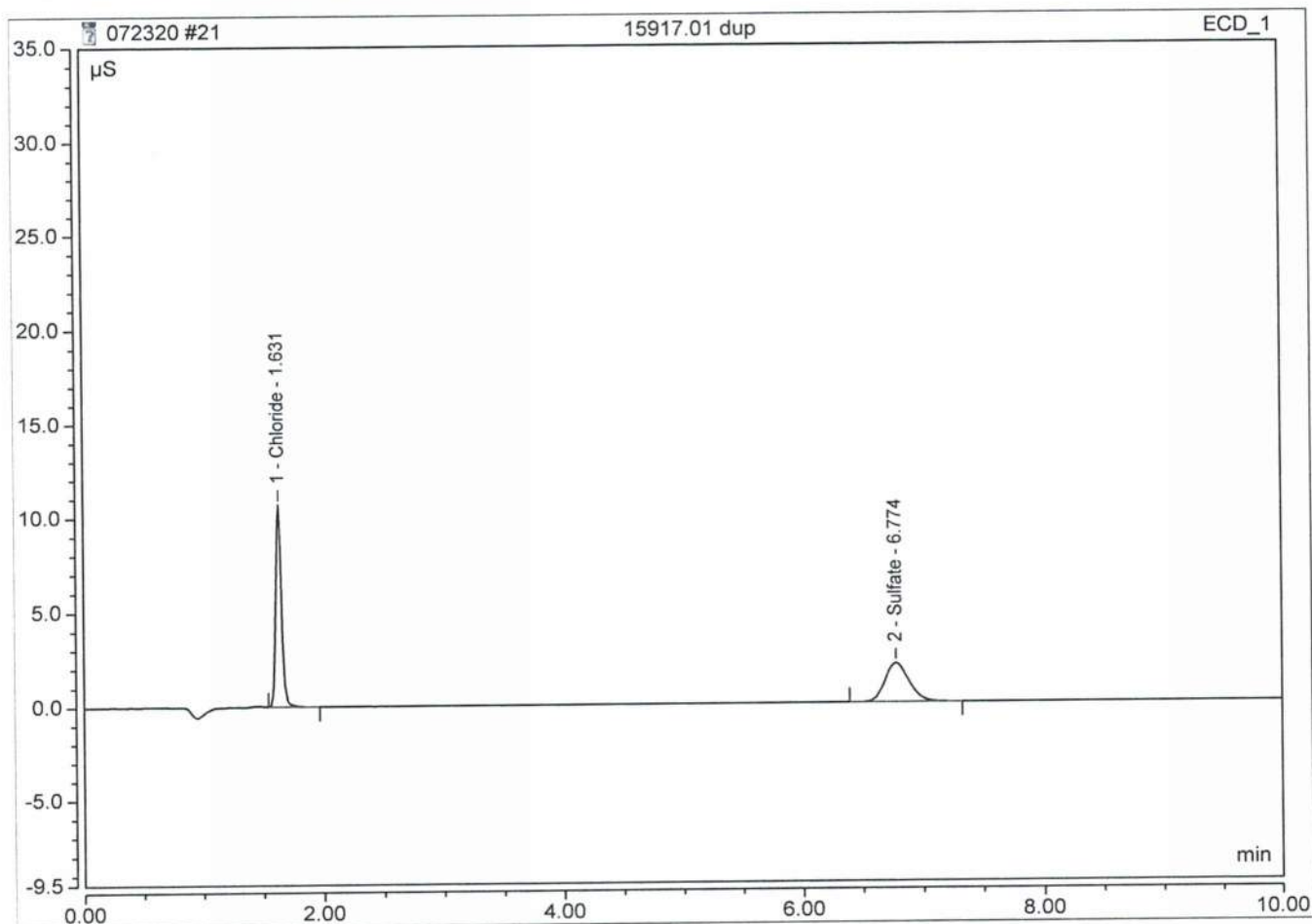
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.745	12.728	193.0858
2	3.24	Nitrate	BMB	0.151	1.401	17.8189
4	6.78	Sulfate	BMB	0.160	0.689	64.0719
TOTAL:				1.06	14.82	274.98



Peak Integration Report

Sample Name:	15917.01 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 12:54	Operator:	Jeff Phifer

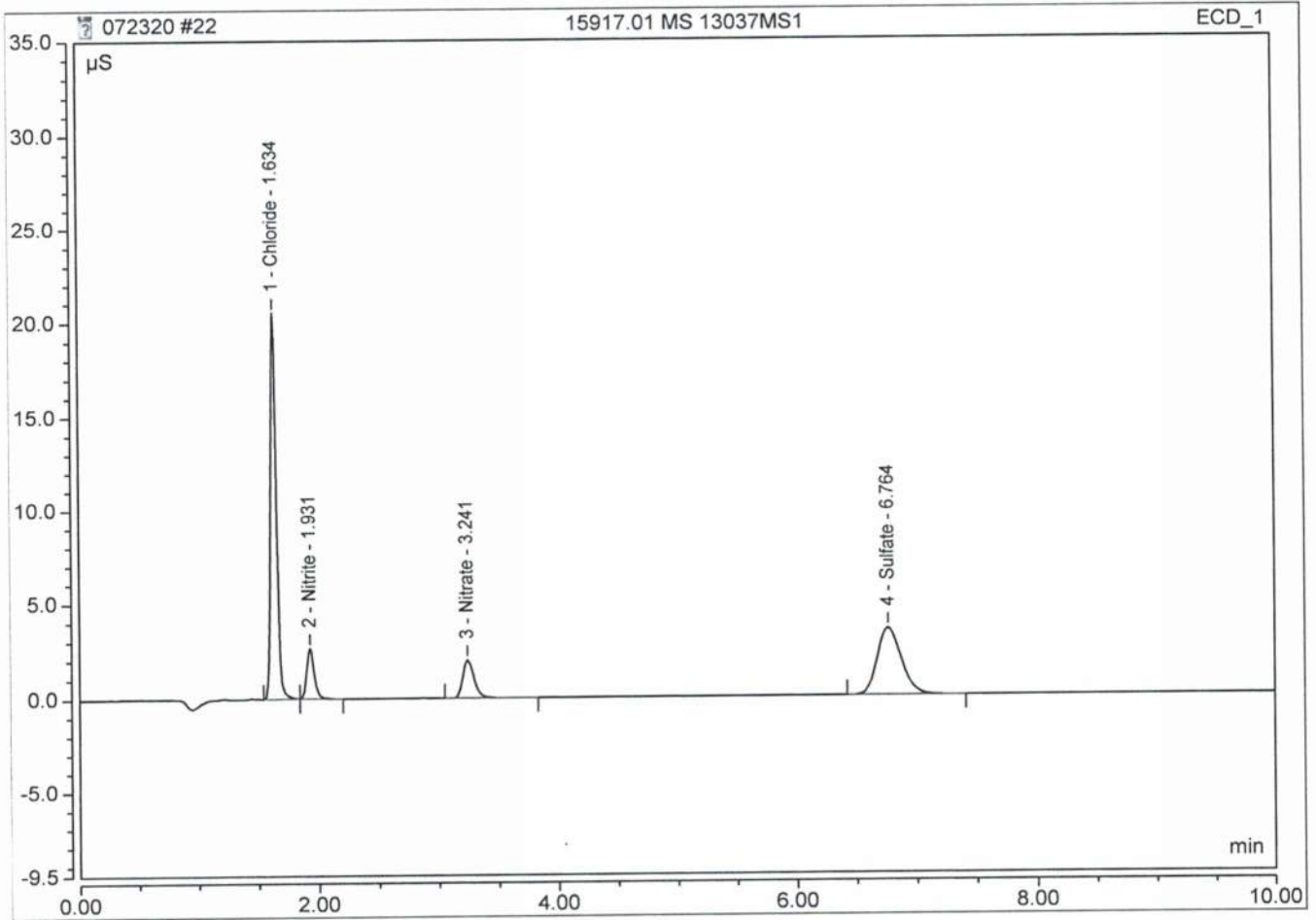
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.621	10.686	64.7260
2	6.77	Sulfate	BMB	0.475	2.061	75.0747
TOTAL:				1.10	12.75	139.80



Peak Integration Report

Sample Name:	15917.01 MS 13037MS1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 13:07	Operator:	Jeff Phifer

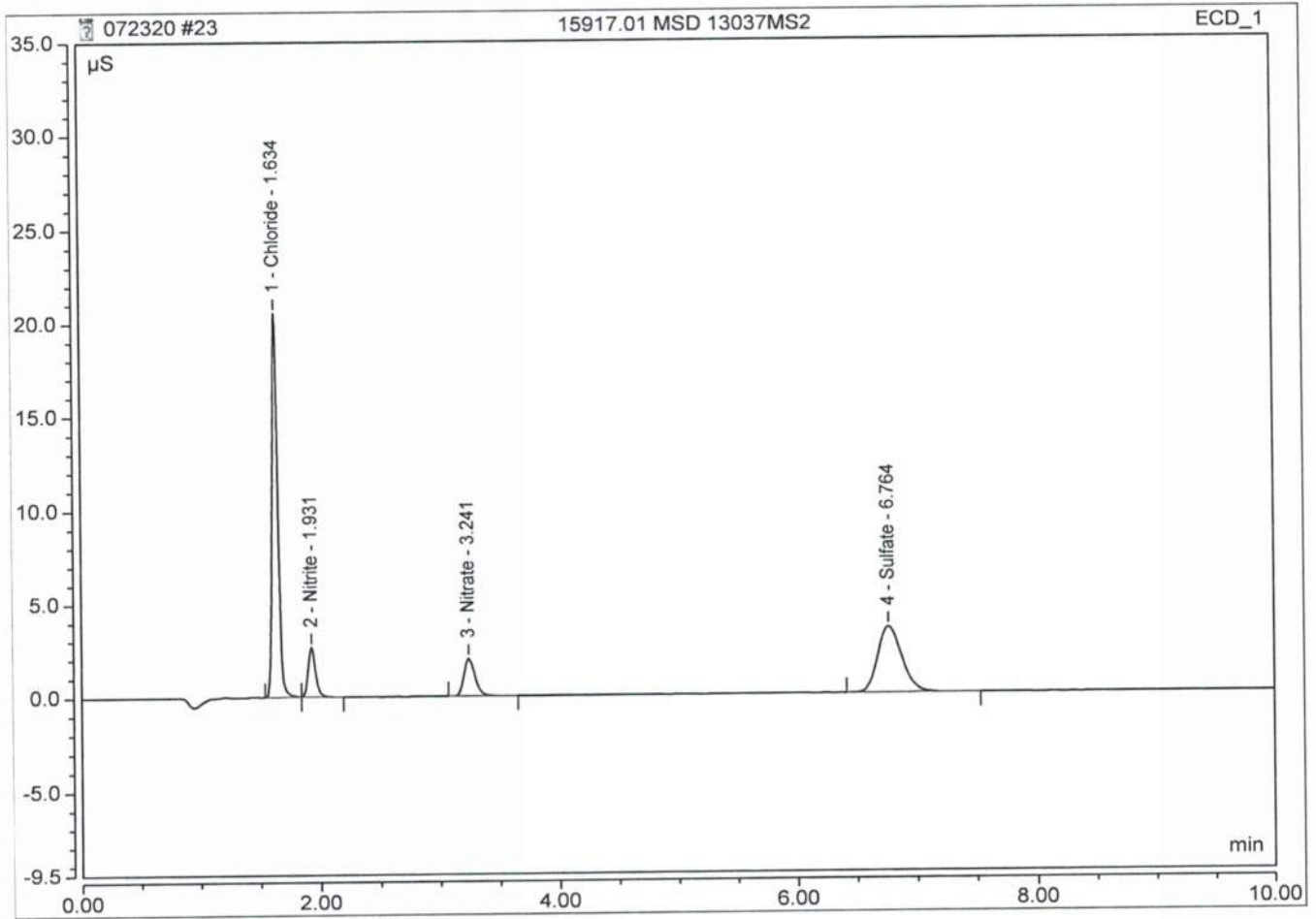
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	1.188	20.519	5 12.1753 - 6.4 = 116.9
2	1.93	Nitrite	BMB	0.186	2.638	1 0.9848 - no = 286
3	3.24	Nitrate	BMB	0.216	1.996	1 1.0145 - no = 101.9
4	6.76	Sulfate	BMB	0.813	3.530	5 12.8081 - 7.5 = 106.8
TOTAL:				2.40	28.68	26.98



Peak Integration Report

Sample Name:	15917.01 MSD 13037MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 13:20	Operator:	Jeff Phifer

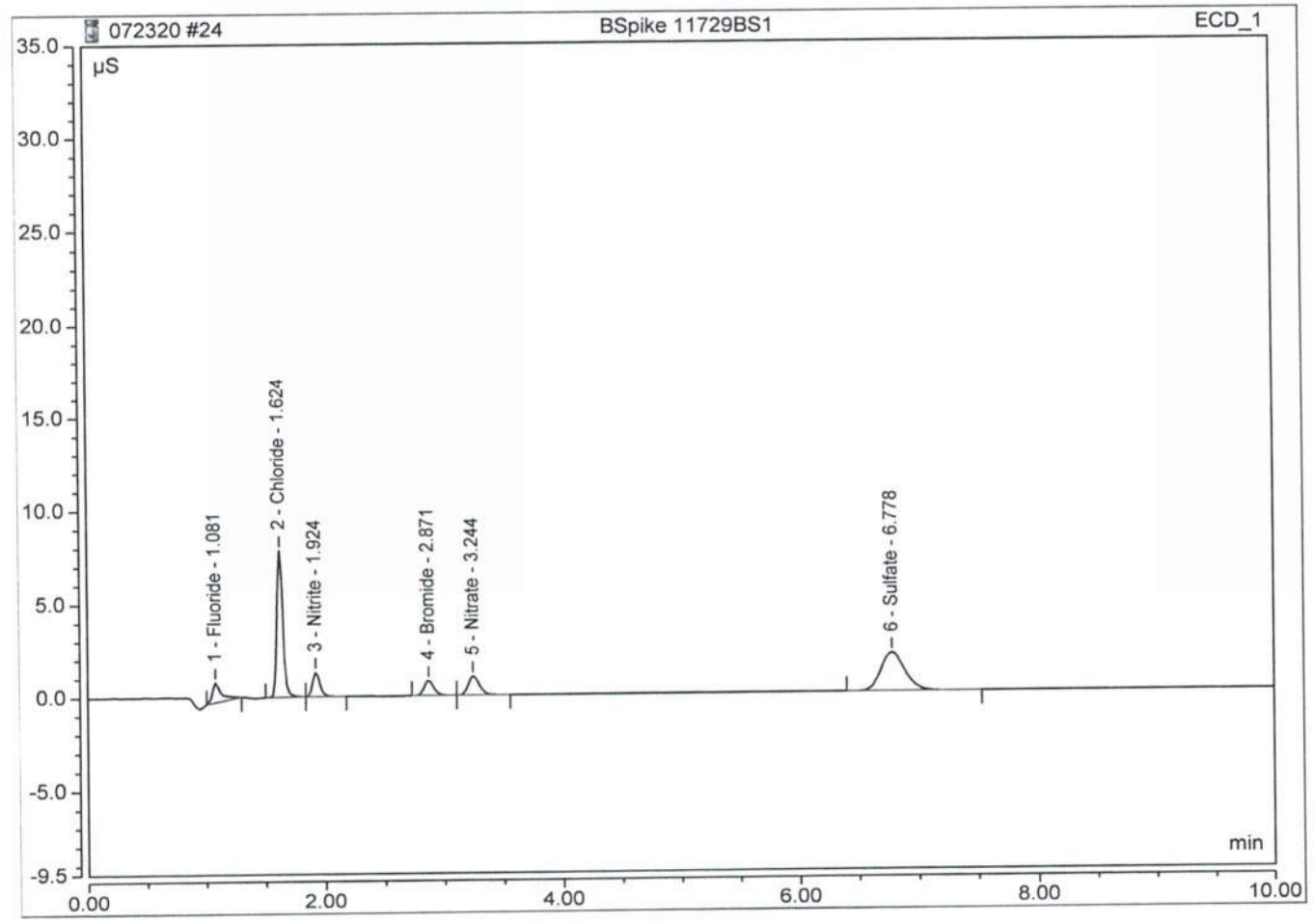
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount	
1	1.63	Chloride	BMB	1.188	20.536	5	12.1753 - 6.4 = 116.5
2	1.93	Nitrite	BMB	0.186	2.638	1	0.9853 - NO = 98.6
3	3.24	Nitrate	BMB	0.216	2.002	1	1.0141 - NO = 101.6
4	6.76	Sulfate	BMB	0.815	3.534	5	12.8291 - 2.5 = 106.2
TOTAL:				2.40	28.71		27.00



Peak Integration Report

Sample Name:	BSpike 11729BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 13:33	Operator:	Jeff Phifer

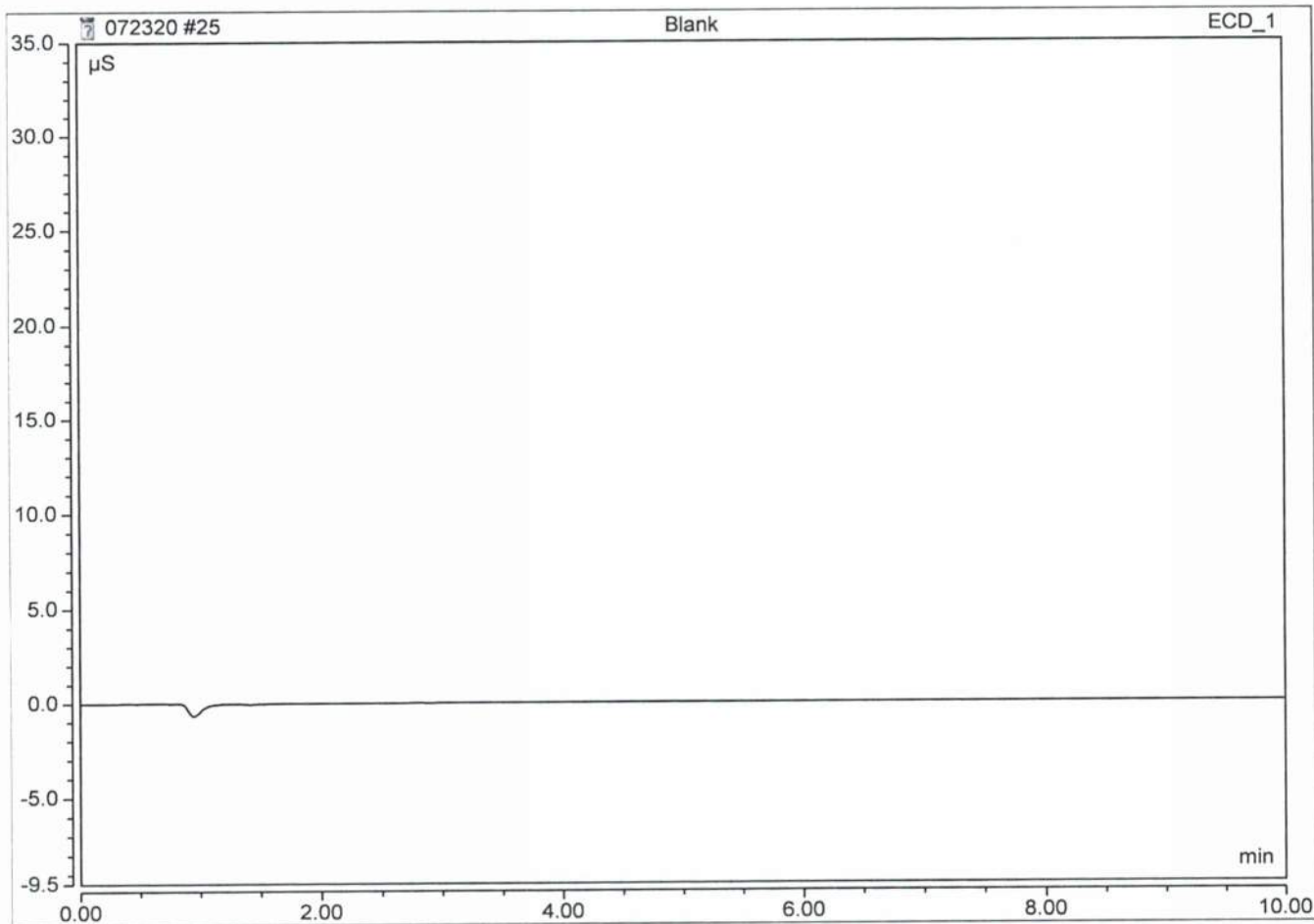
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.095	1.073	0.5799
2	1.62	Chloride	BMB	0.465	7.857	4.9075
3	1.92	Nitrite	BMB	0.093	1.299	0.4967
4	2.87	Bromide	BMB	0.075	0.800	2.0759
5	3.24	Nitrate	BMB	0.110	1.022	0.5176
6	6.78	Sulfate	BMB	0.477	2.060	7.5309
TOTAL:				1.31	14.11	16.11



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	23-Jul-2020 / 13:46	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



new Cal

ICS-1100 B Dionex IC/Meth 3000

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 10:40:04 AM -C
	1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:52:24 AM -C
	1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 11:05:16 AM -C
	1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 11:18:08 AM -C
	1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 11:31:00 AM -C
	1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 11:43:51 AM -C

CALID# ICSB070720CAL



Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

Norm Method		16/06/15 12:18	Jeff Phifer	METHOD 300.0	
Stage	Time	Command	Value	Comment	
Instrument Setup	min				
	initial				
		Sampler.HomeNeedle			
		Sampler.ResetVials	1, 50		
		Pump_ECD.Pressure.UpperLimit	4500 [psi]		
		Sampler.DelayVolume	125 [µl]		
		Pump_ECD.%A.Equate	"Carb - BiCarb"		
		Pump_ECD.Pressure.LowerLimit	100 [psi]		
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]		
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]		
		Pump_ECD.Suppressor_Type	ASRS_4mm		
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]		
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]		
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]		
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]		
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]		
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]		
		Pump_ECD.Suppressor_Current	27 [mA]		
		Sampler.FlushFactor	10		
		Sampler.DeliverSpeed	4.0 [ml/min]		
		Pump_ECD.Flow	2.00		
		Sampler.LoadPosition			
		Sampler.DeliverSample	Full		
		Sampler.EndSamplePrep			
Inject	0.000				
		Wait			
		Sampler.Inject		Sampler.CycleTimeState, Hold,	
Start Run	0.000				
		Pump_ECD.Channel_Pressure.AcqOn			
		Pump_ECD.Autozero			
		Pump_ECD.ECD_1.AcqOn			
		Pump_ECD.ECD_Total.AcqOn			
Run	0.000			Duration = 10.000 [min]	
	0.500				
		Sampler.BeginOverlap			
Stop Run	10.000				
		Pump_ECD.Channel_Pressure.AcqOff			
		Pump_ECD.ECD_1.AcqOff			
		Pump_ECD.ECD_Total.AcqOff			
End					

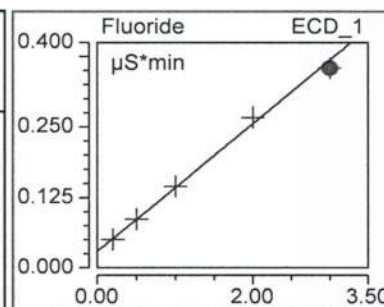
Calibration Batch Report
CAL ID# ICSB070720CAL

Sequence:	070720	Injection Vol.	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 11:43	Column:	AS4A-SC 040144

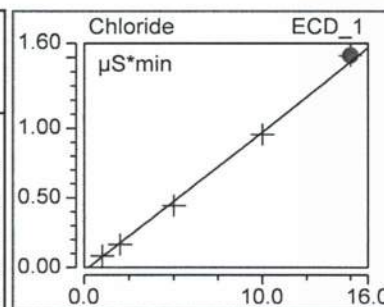
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.029	0.113	0.000	0.9985
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.023	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.191	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	0.000	0.036	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.003	0.064	0.000	0.9997
AVERAGE:				-0.0002	0.1196	0.0000	0.9994

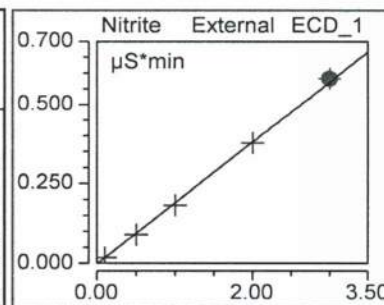
Injection Name	Ret.Time min ECD_1	Area μS*min ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Fluoride 1.084	Fluoride 0.0508	Fluoride 0.484	Fluoride 0.189
1131Cal2	1.084	0.0870	0.999	0.510
1131Cal3	1.081	0.1450	1.848	1.024
1131Cal4	1.081	0.2666	3.636	2.101
1131Cal5	1.081	0.3541	5.285	2.876
Average	1.082			
Rel. Std. Dev.	0.164 %			



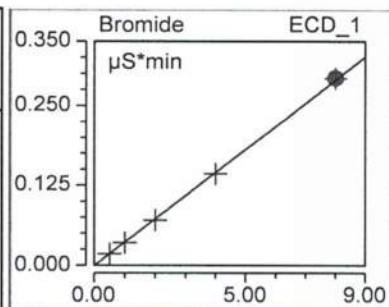
Injection Name	Ret.Time min ECD_1	Area μS*min ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Chloride 1.627	Chloride 0.0849	Chloride 1.387	Chloride 1.089
1131Cal2	1.627	0.1668	2.765	1.912
1131Cal3	1.628	0.4444	7.521	4.701
1131Cal4	1.631	0.9564	16.335	9.846
1131Cal5	1.634	1.5142	25.720	15.452
Average	1.629			
Rel. Std. Dev.	0.180 %			



Injection Name	Ret.Time min ECD_1	Area μS*min ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Nitrite 1.934	Nitrite 0.0181	Nitrite 0.252	Nitrite 0.106
1131Cal2	1.934	0.0900	1.251	0.483
1131Cal3	1.931	0.1818	2.556	0.963
1131Cal4	1.931	0.3773	5.333	1.987
1131Cal5	1.931	0.5827	8.298	3.062
Average	1.932			
Rel. Std. Dev.	0.092 %			

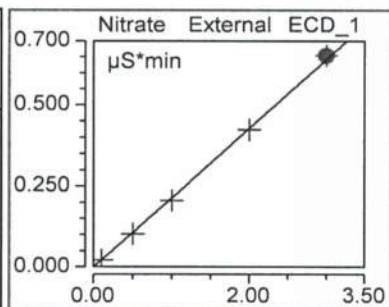


Injection Name	Ret. Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	2.887	0.0182	0.193	0.515
1131Cal2	2.884	0.0355	0.378	0.993
1131Cal3	2.878	0.0705	0.760	1.960
1131Cal4	2.871	0.1427	1.549	3.949
1131Cal5	2.864	0.2925	3.206	8.083
Average	2.877			
Rel. Std. Dev.	0.332 %			

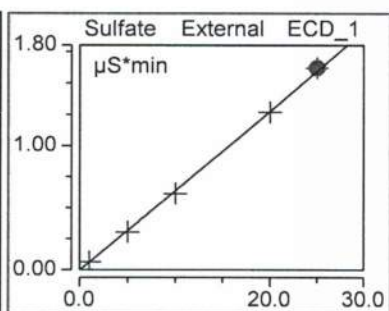


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Injection Name	Ret. Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	3.271	0.0215	0.202	0.105
1131Cal2	3.257	0.1026	0.952	0.485
1131Cal3	3.248	0.2057	1.911	0.967
1131Cal4	3.234	0.4230	3.909	1.982
1131Cal5	3.217	0.6540	6.009	3.062
Average	3.245			
Rel. Std. Dev.	0.636 %			



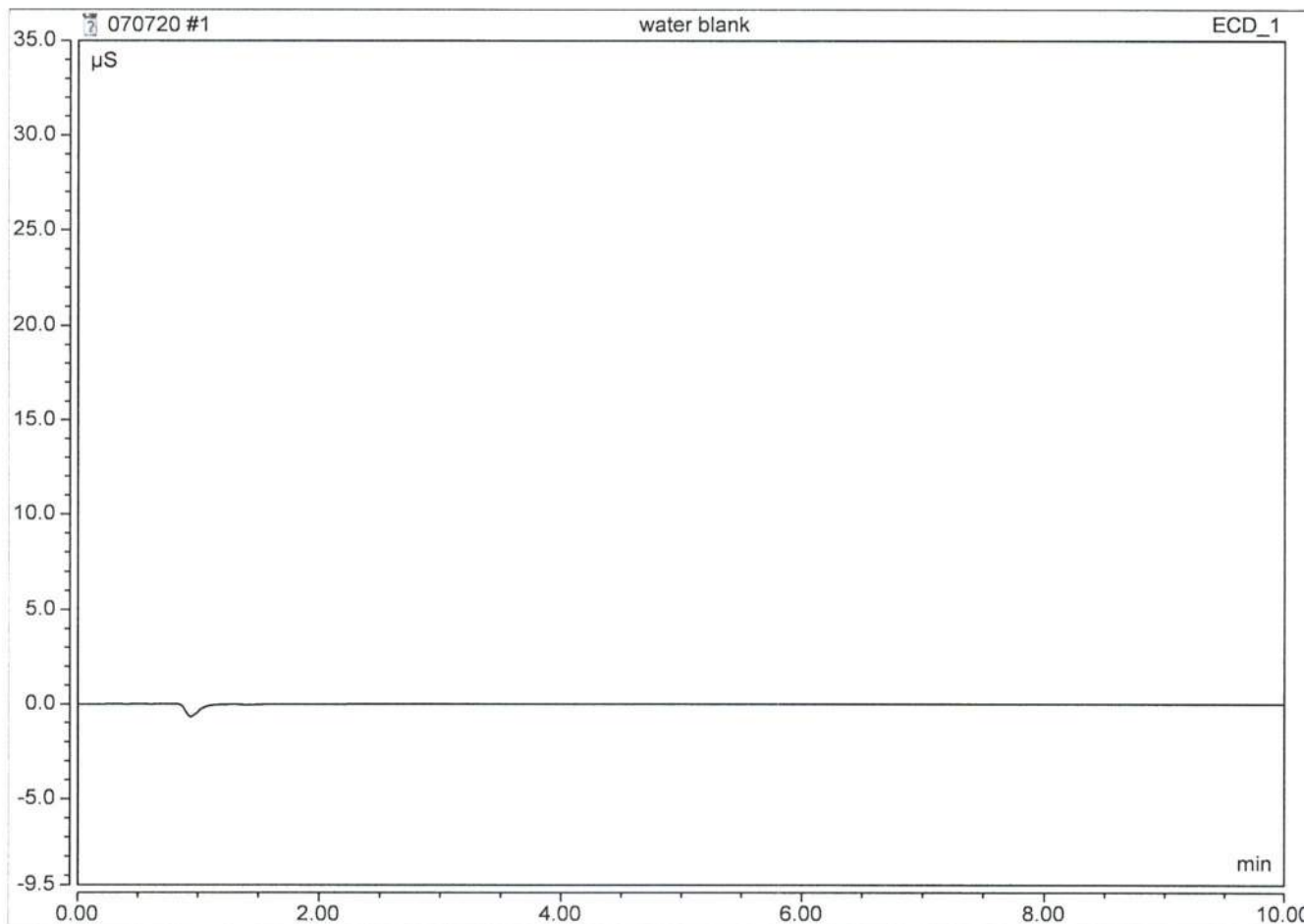
Injection Name	Ret. Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	6.867	0.0635	0.271	1.047
1131Cal2	6.867	0.3050	1.300	4.836
1131Cal3	6.854	0.6147	2.631	9.693
1131Cal4	6.837	1.2706	5.439	19.981
1131Cal5	6.824	1.6188	6.926	25.443
Average	6.850			
Rel. Std. Dev.	0.279 %			



Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 10:40	Operator:	Jeff Phifer

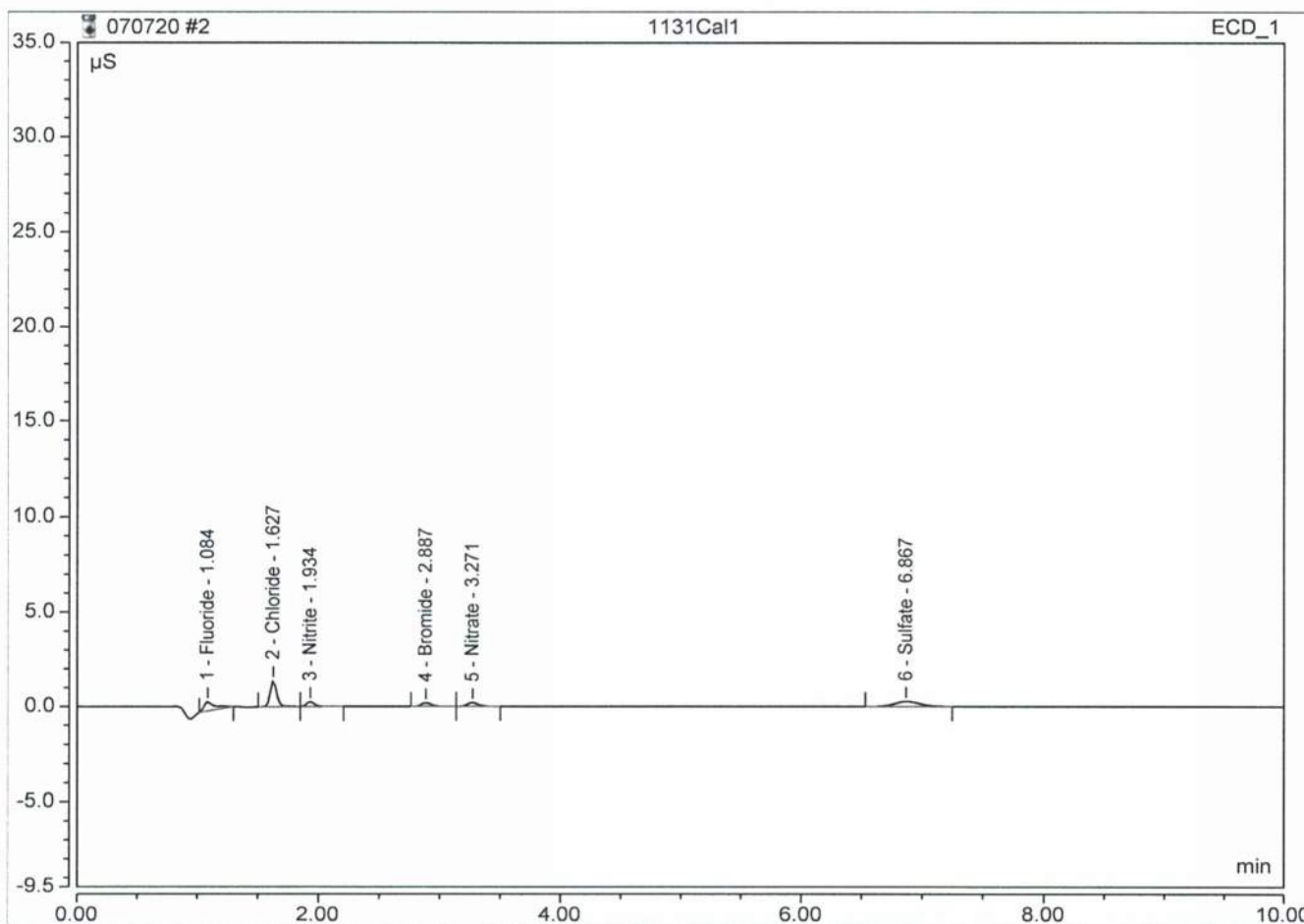
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
TOTAL:				0.00	0.00	n.a.
				0.00	0.00	0.00



Peak Integration Report

Sample Name:	1131Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 10:52	Operator:	Jeff Phifer

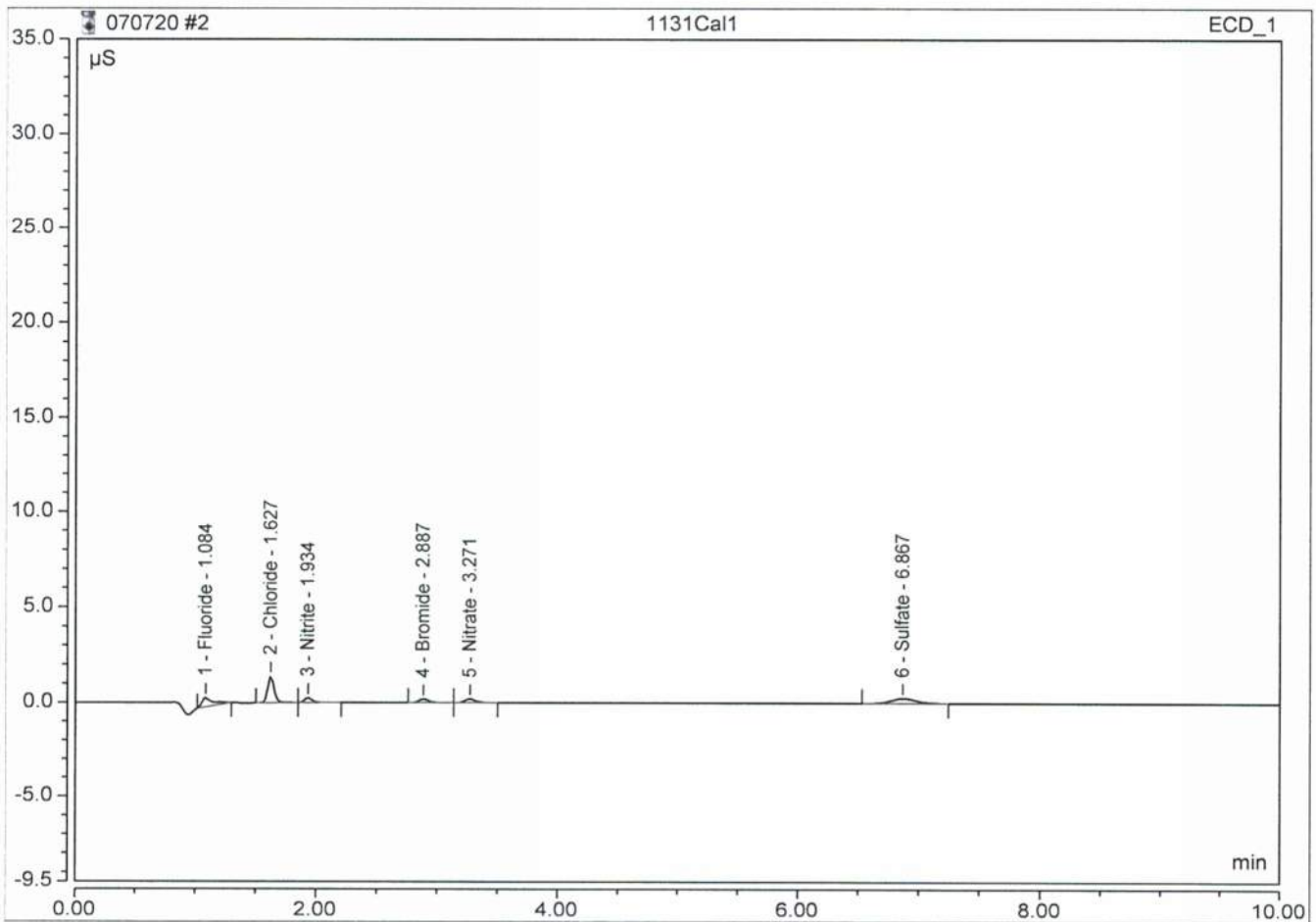
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.051	0.484	0.2 0.1893
2	1.63	Chloride	BMB	0.085	1.387	1 1.0891
3	1.93	Nitrite	BMB	0.018	0.252	0.1 0.1058
4	2.89	Bromide	BMB	0.018	0.193	0.5 0.5148
5	3.27	Nitrate	BMB	0.021	0.202	0.1 0.1053
6	6.87	Sulfate	BMB	0.063	0.271	1 1.0467
TOTAL:				0.26	2.79	3.05



Peak Integration Report

Sample Name:	1131Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 10:52	Operator:	Jeff Phifer

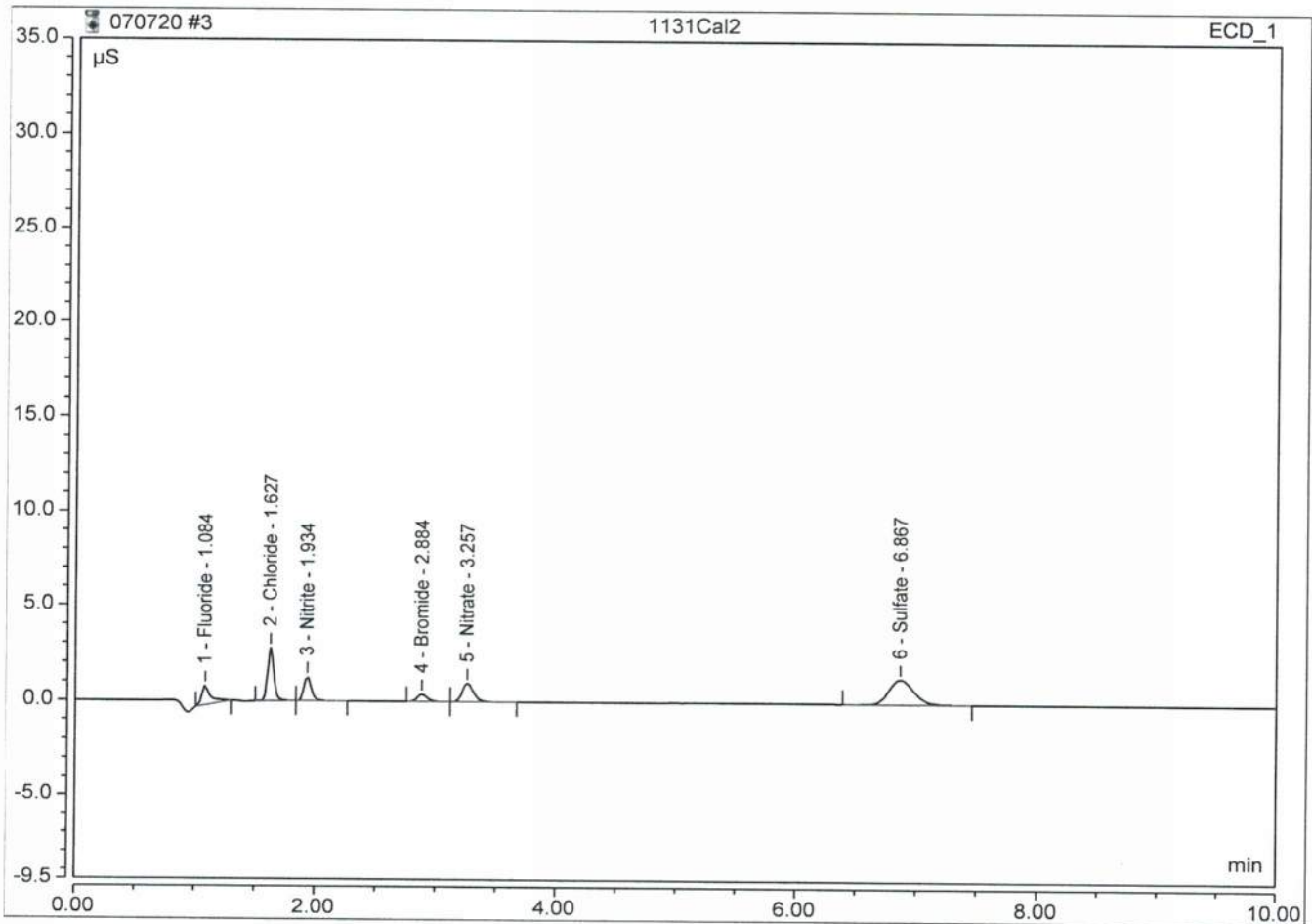
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.051	0.484	n.a.
2	1.63	Chloride	BMB	0.085	1.387	n.a.
3	1.93	Nitrite	BMB	0.018	0.252	n.a.
4	2.89	Bromide	BMB	0.018	0.193	n.a.
5	3.27	Nitrate	BMB	0.021	0.202	n.a.
6	6.87	Sulfate	BMB	0.063	0.271	n.a.
TOTAL:				0.26	2.79	0.00



Peak Integration Report

Sample Name:	1131Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:05	Operator:	Jeff Phifer

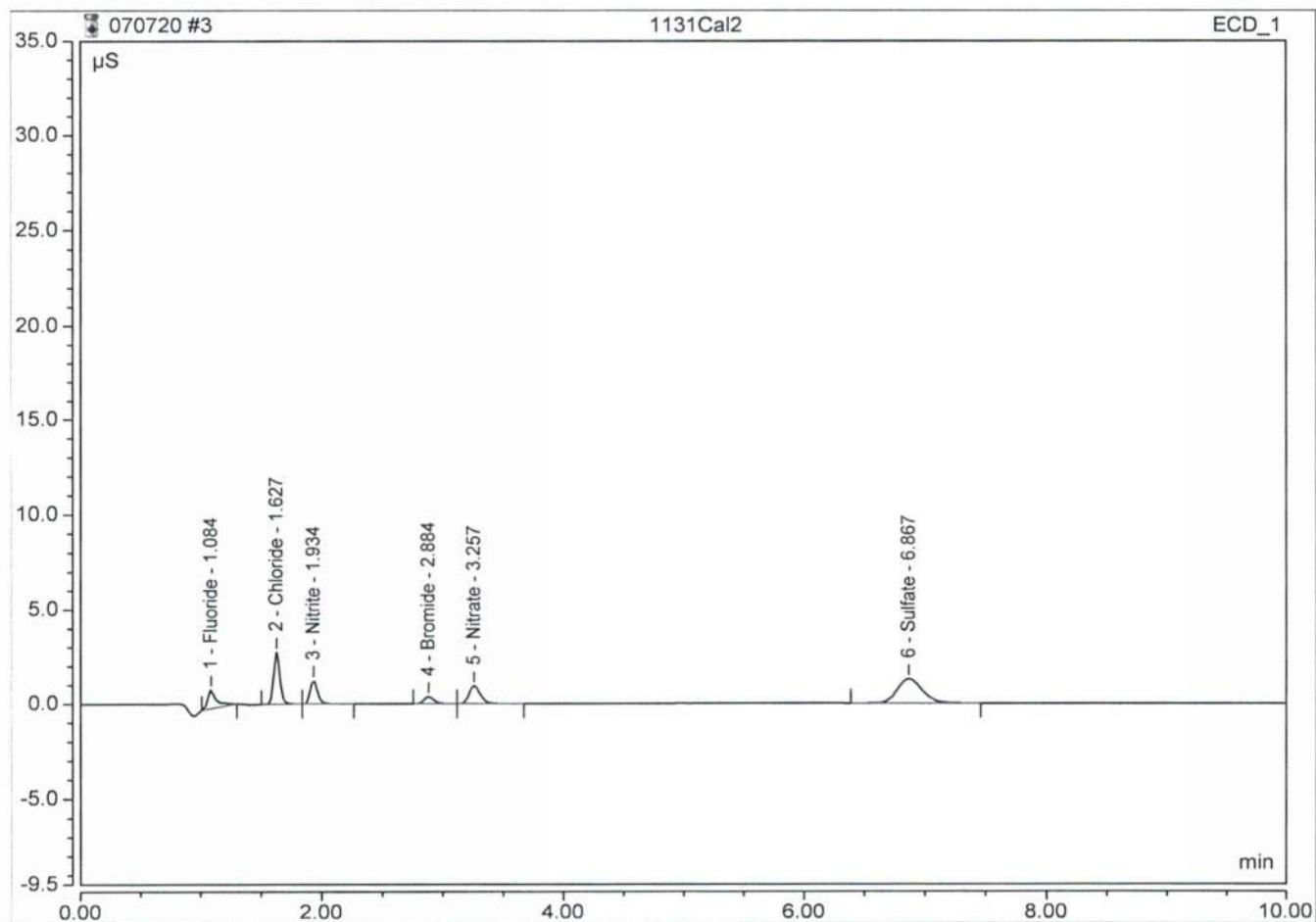
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.087	0.999	0.5103
2	1.63	Chloride	BMB	0.167	2.765	1.9118
3	1.93	Nitrite	BMB	0.090	1.251	0.4826
4	2.88	Bromide	BMB	0.035	0.378	0.9928
5	3.26	Nitrate	BMB	0.103	0.952	0.4846
6	6.87	Sulfate	BMB	0.305	1.300	4.8360
TOTAL:				0.79	7.65	9.22



Peak Integration Report

Sample Name:	1131Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:05	Operator:	Jeff Phifer

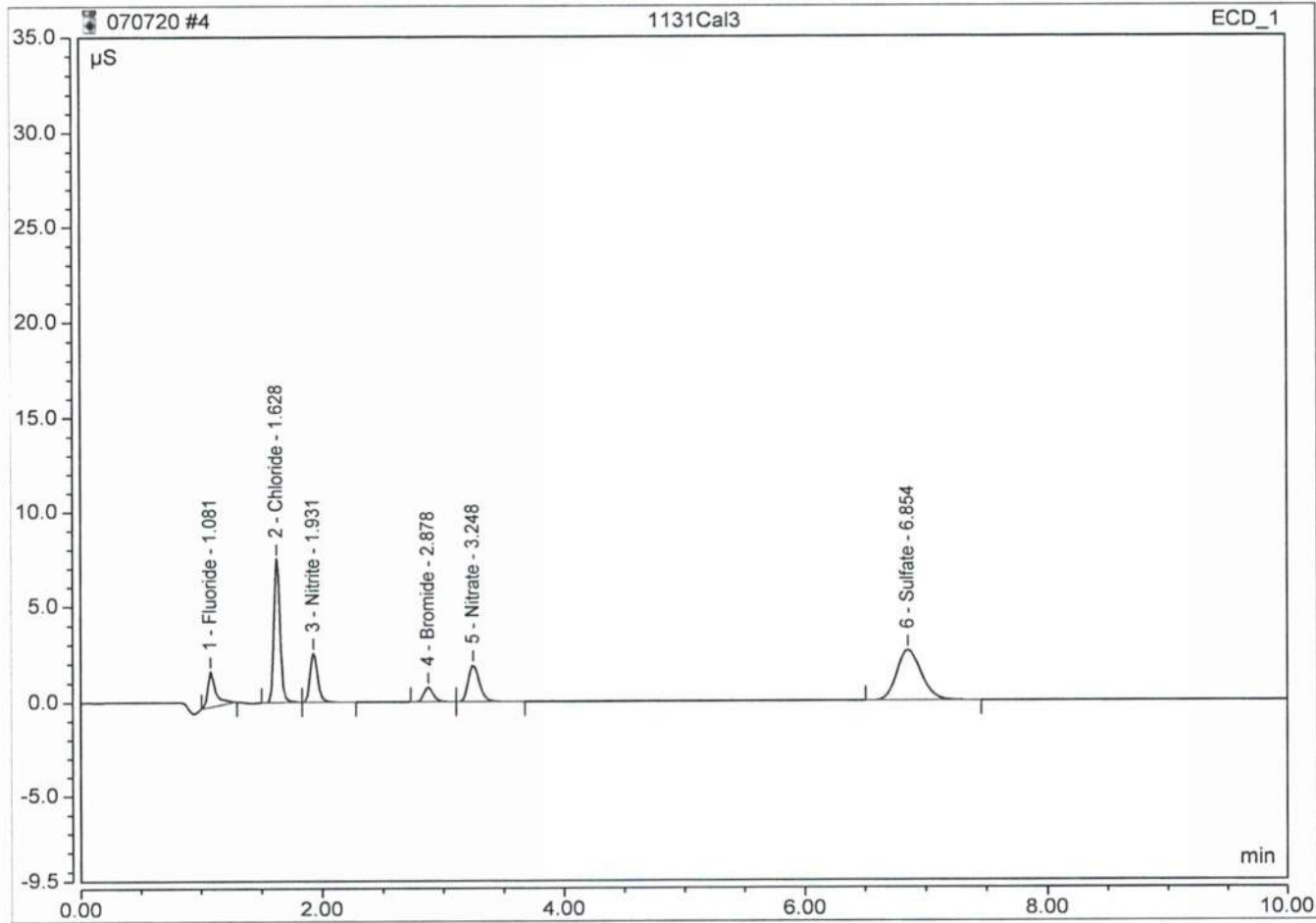
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.087	0.999	0.5000
2	1.63	Chloride	BMB	0.167	2.765	2.0000
3	1.93	Nitrite	BMB	0.090	1.251	0.5000
4	2.88	Bromide	BMB	0.035	0.378	1.0000
5	3.26	Nitrate	BMB	0.103	0.952	0.5000
6	6.87	Sulfate	BMB	0.305	1.300	5.0000
TOTAL:				0.79	7.65	9.50



Peak Integration Report

Sample Name:	1131Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:18	Operator:	Jeff Phifer

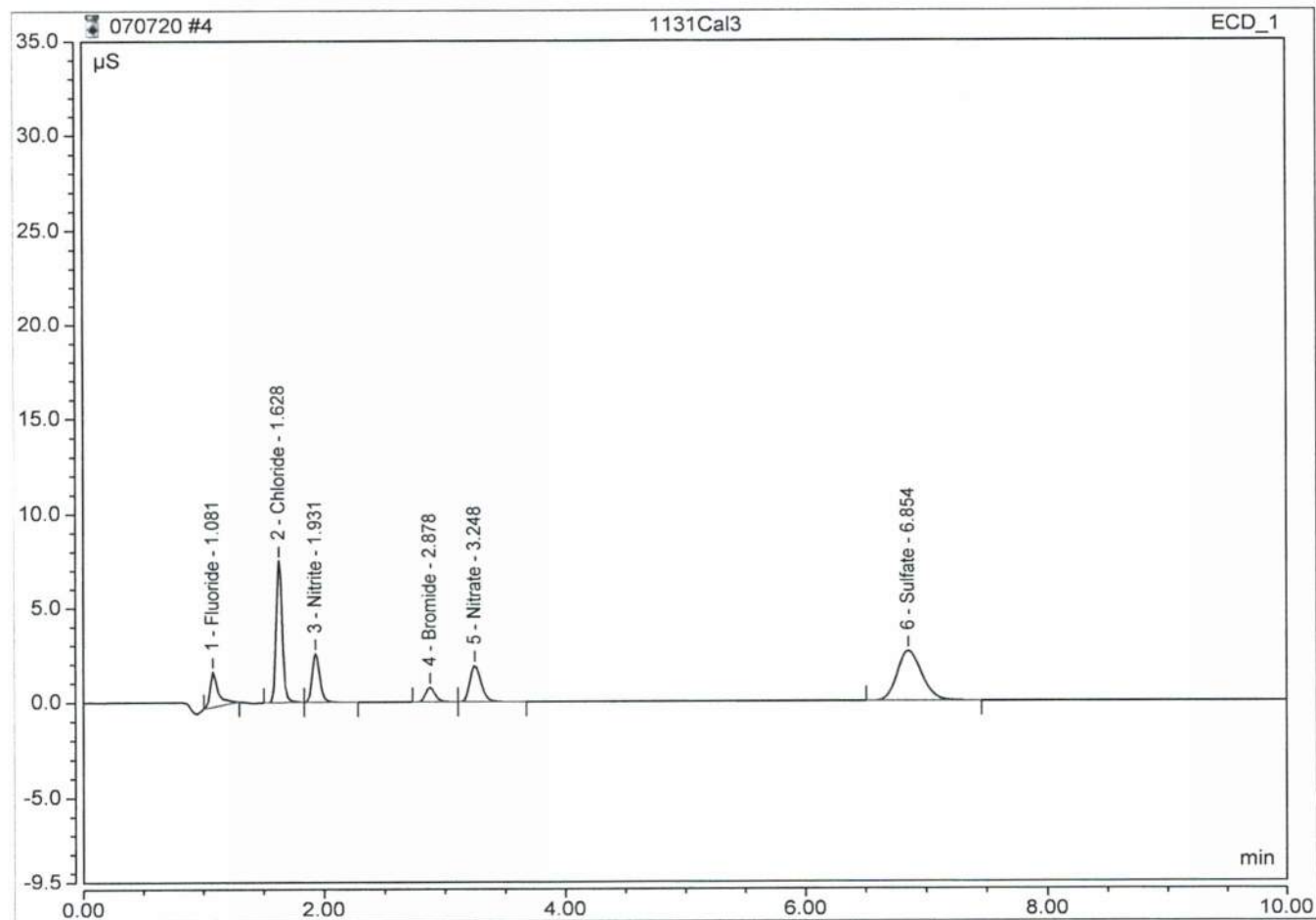
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.145	1.848	1.0239
2	1.63	Chloride	BMB	0.444	7.521	4.7010
3	1.93	Nitrite	BMB	0.182	2.556	0.9630
4	2.88	Bromide	BMB	0.071	0.760	1.9599
5	3.25	Nitrate	BMB	0.206	1.911	0.9666
6	6.85	Sulfate	BMB	0.615	2.631	9.6928
TOTAL:				1.66	17.23	19.31



Peak Integration Report

Sample Name:	1131Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:18	Operator:	Jeff Phifer

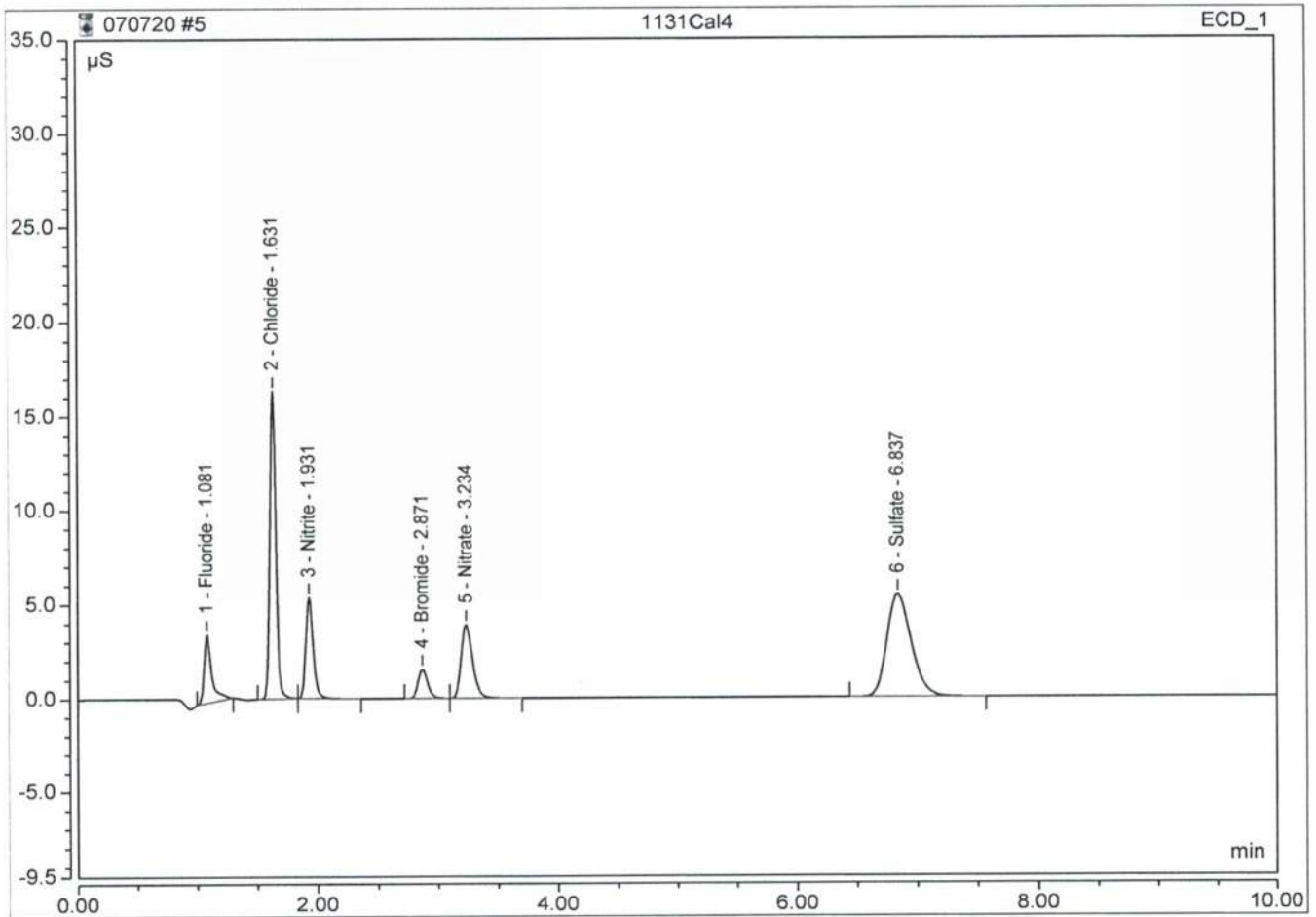
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.145	1.848	0.9960
2	1.63	Chloride	BMB	0.444	7.521	5.0388
3	1.93	Nitrite	BMB	0.182	2.556	1.0027
4	2.88	Bromide	BMB	0.071	0.760	2.0018
5	3.25	Nitrate	BMB	0.206	1.911	1.0022
6	6.85	Sulfate	BMB	0.615	2.631	10.0340
TOTAL:				1.66	17.23	20.08



Peak Integration Report

Sample Name:	1131Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:31	Operator:	Jeff Phifer

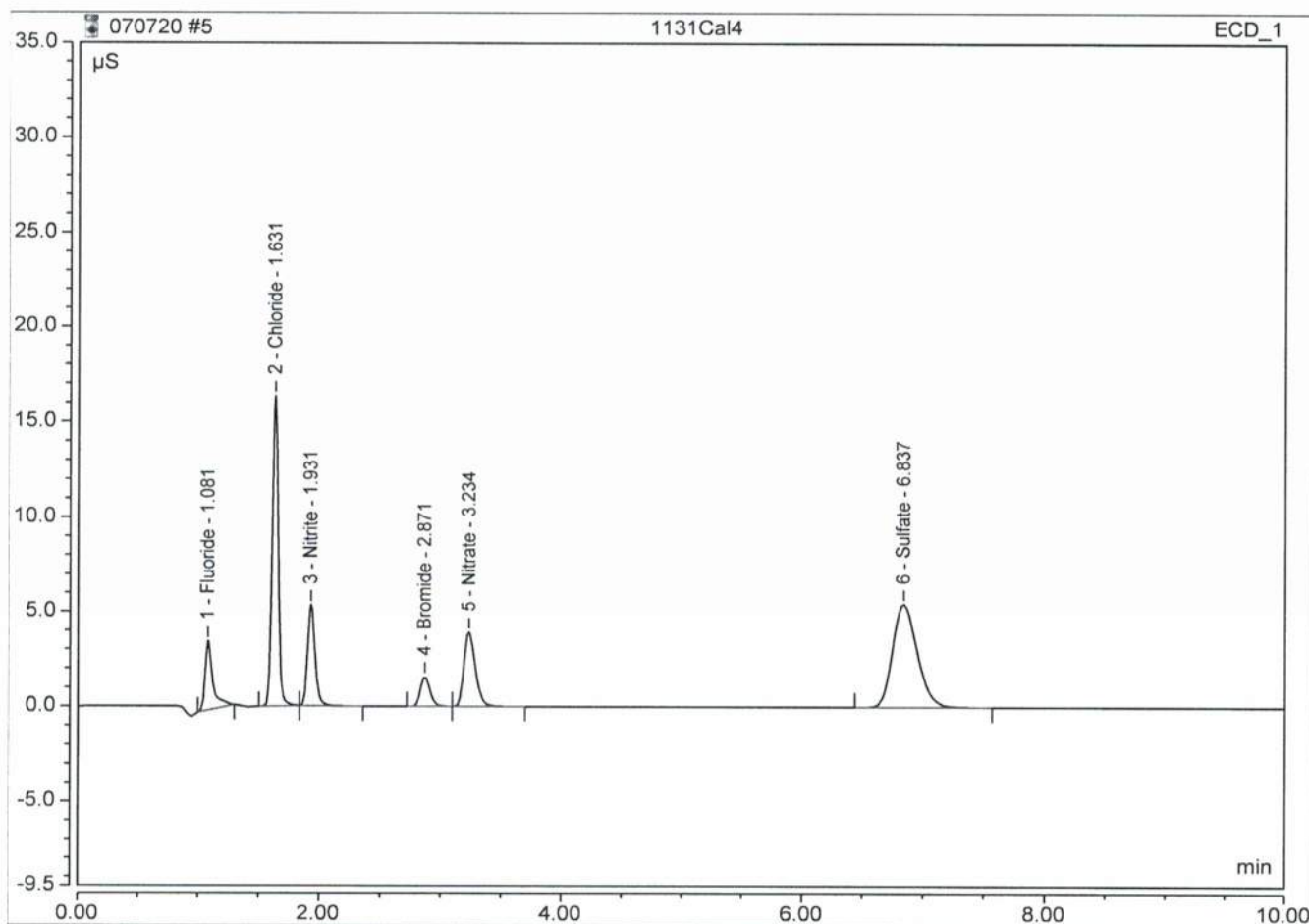
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.267	3.636	2.1005
2	1.63	Chloride	BMB	0.956	16.335	9.8464
3	1.93	Nitrite	BMB	0.377	5.333	1.9867
4	2.87	Bromide	BMB	0.143	1.549	3.9493
5	3.23	Nitrate	BMB	0.423	3.909	1.9820
6	6.84	Sulfate	BMB	1.271	5.439	19.9814
TOTAL:				3.44	36.20	39.85



Peak Integration Report

Sample Name:	1131Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:31	Operator:	Jeff Phifer

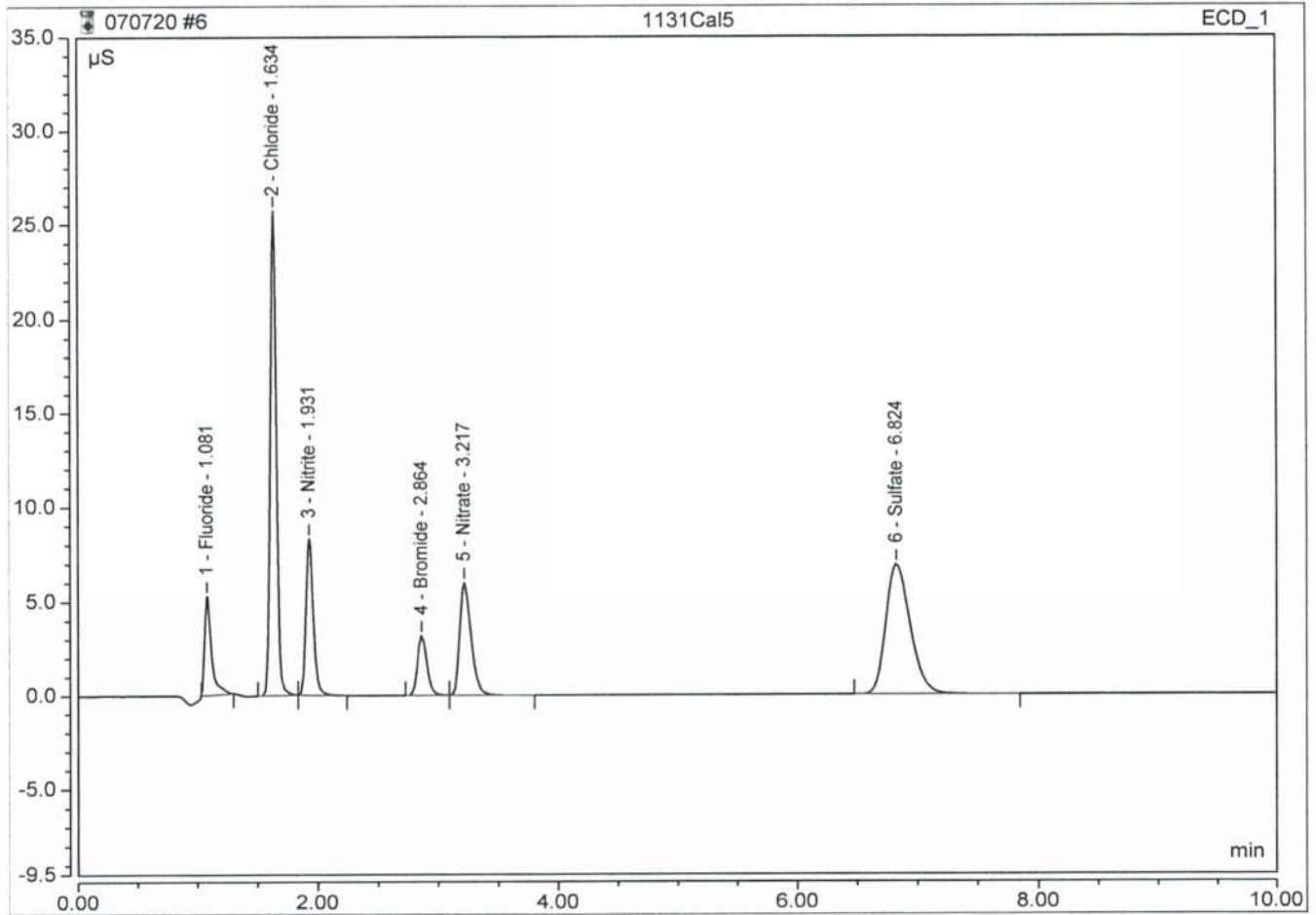
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.267	3.636	2.0072
2	1.63	Chloride	BMB	0.956	16.335	10.2000
3	1.93	Nitrite	BMB	0.377	5.333	2.0283
4	2.87	Bromide	BMB	0.143	1.549	4.0180
5	3.23	Nitrate	BMB	0.423	3.909	2.0231
6	6.84	Sulfate	BMB	1.271	5.439	20.2745
TOTAL:				3.44	36.20	40.55



Peak Integration Report

Sample Name:	1131Cal5	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:43	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.354	5.285	3 2.8759
2	1.63	Chloride	BMB	1.514	25.720	15 15.4517
3	1.93	Nitrite	BMB	0.583	8.298	3 3.0619
4	2.86	Bromide	BMB	0.293	3.206	8 8.0833
5	3.22	Nitrate	BMB	0.654	6.009	3 3.0615
6	6.82	Sulfate	BMB	1.619	6.926	25 25.4431
TOTAL:				5.02	55.44	57.98



Total Suspended Solids

TSS: VLIMS Code: 4630; EPA Method: 2540D

Date Started: 28 JUL 20
 Time Started: 2100
 Analyst: AB
 Batch ID: TSS200728A
 Temperature: 103°C
 Time in Oven: 42:00

Date Finished: 30 JUL 20
 Time Finished: 1500
 Reviewed by: BB
 Review Date: 7/31/2020
 Balance ID: II
 Oven ID/Thermometer ID: 005/AC10848

Merit #	Tin #	MLs sample	g. Filter	g. dry solids + filter 103°C	g. reweigh 15 min. 103°C	TSS mg/L	DF	TVSS Y/N	TVSS Tin #
Blank	f7A93	1000	0.1147	0.1145		0.70 ND	1.00	N	
LCS Lot									
820809B	9K	100	0.1159	0.1245		86	10.0		
15917.01	9L	200	0.1164	0.1238		37	5.00		
Dup									
.01	9M	200	0.1151	0.1226		37.5	5.00		
.02	9N	1000	0.1155	0.1170		1.50 ND	1.00		
.03	f7AAE	1000	0.1154	0.1175		2.10 ND	1.00		
.04	AF	500	0.1169	0.1352		36.60 37	2.00		
.05	AG	1000	0.1155	0.1162		0.70 ND	1.00		
.06	AH	1000	0.1150	0.1166		1.60 ND	1.00		
.07	AI	100	0.1170	0.1169		-0.10 ND	1.00		
15925.01	AJ	300	0.1165	0.1197		10.67 11	3.33		
15926.02	AK	200	0.1163	0.1264		50.50 50	5.00		
15927.01	AL	50	0.1178	0.1245		134	20.0		RL=6

LCS value = 89.7 mg/L
 % Rec = 101.5%
 % RPD = 1.3%

Acceptance Criteria (mg/L): 69.4-94.1 mg/L
 Acceptance Criteria (%): 81.9-111%
 Acceptance Criteria: $\pm 5\%$ of average

Total Dissolved Solids

TDS: VLIMS Code: 4615; EPA Method: 2540C

Date Started: 24 JUL 20
 Time Started: 1505
 Analyst: APB
 Batch ID: TDS200724A
 Temperature: 180°C
 Time in Oven: 93:20

Date Finished: 28 JUL 20
 Time Finished: 1225
 Reviewed by: BB
 Review Date: 7/31/2020
 Balance ID: I1
 Oven ID/Thermometer ID: 007/AP10365

Merit #	Tin #	sample (mls)	Tin (grams)	dry solids + tin 180°C (grams)	reweigh 15 min. 180°C (grams)	Cond.	TDS (mg/L)
Blank	A0571066	50	3.4930	3.4930			0/ND
LCS Lot							
8208-09B	065	50	3.5291	3.5441			600
15917.01	064	50	3.4834	3.5225			782
Dup							
.01	063	50	3.4837	3.5225			776
.02	062	50	3.4738	3.5433			1390
.03	061	50	3.4993	3.5263			540
.04	060	50	3.5335	3.6153			1640* 1636
.05	059	50	3.4956	3.5325			738
.06	058	50	3.5362	3.5630			534
.07	057	50	3.5169	3.5169			0/ND
15907.01	056	50	3.5679	3.5902			446
15978.01	055	50	3.5535	3.5588			106
.02	054	50	3.5789	3.5853			128

LCS value = 567 mg/L
 % Rec = 105.8%
 % RPD = 0.8%

Acceptance Criteria (mg/L): 510-629 mg/L
 Acceptance Criteria (%): 89.9-110%
 Acceptance Criteria: ± 5% of average



2680 East Lansing Dr., East Lansing, MI 48823
 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

REPORT TO **CHAIN OF CUSTODY RECORD** **INVOICE TO**

CONTACT NAME Jennifer Caporale
 COMPANY Lansing Board of Water and Light
 ADDRESS PO Box 13007 48901-3007
 CITY Lansing STATE Mi ZIP CODE 48901
 PHONE NO. 517-702-6372 FAX NO. _____ P.O. NO. _____
 E-MAIL ADDRESS Environmental_Laboratory@lbwl.com QUOTE NO. _____

CONTACT NAME Kelly Gleason SAME
 COMPANY _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP CODE _____
 PHONE NO. _____ E-MAIL ADDRESS Kelly.Gleason@lbwl.com

PROJECT NO./NAME Erickson GMP SAMPLER(S) - PLEASE PRINT/SIGN NAME Marc Wahrer
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER _____
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	# Containers & Preservatives	Total Metals	TSS	TDS, Cl-, SO ₄ , F	Radium 226	Radium 228
	DATE	TIME																
<u>1591701</u>	<u>07/21/20</u>	<u>1335</u>	<u>MW-1 L00T009-01</u>	<u>GW</u>	<u>5</u>		<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>.02</u>		<u>1706</u>	<u>MW-2 -02</u>	<u>GW</u>	<u>5</u>		<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>.03</u>		<u>1105</u>	<u>MW-4 -03</u>	<u>GW</u>	<u>5</u>		<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>.04</u>		<u>1150</u>	<u>MW-5 -04</u>	<u>GW</u>	<u>5</u>		<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>.05</u>		<u>1523</u>	<u>MW-6 -05</u>	<u>GW</u>	<u>5</u>		<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>.06</u>		<u>1105</u>	<u>MW-4 Duplicate -06</u>	<u>GW</u>	<u>5</u>		<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>.07</u>		<u>0735</u>	<u>Field Blank -07</u>	<u>DI</u>	<u>5</u>		<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
 OHIO VAP Drinking Water
 DoD NPDES

Project Locations
 Detroit New York
 Other _____

Special Instructions
 Metals to analyse:
 Sb, As, Ba, Be, B, Cd, Ca, Cr,
 Co, Pb, Li, Hg, Mo, Se, Tl
 Please send a preliminary report

RELINQUISHED BY: [Signature] DATE 7-22-20 TIME 1353
 RECEIVED BY: [Signature] DATE 7/22/20 TIME 1353

RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____

SEAL NO. _____ SEAL INTACT YES NO INITIALS _____
 SEAL NO. _____ SEAL INTACT YES NO INITIALS _____

NOTES: 4.1 TEMP. ON ARRIVAL _____

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Merit Laboratories Login Checklist

Lab Set ID:S15917

Client:BWL01 (Board of Water & Light)

Project: Erickson GMP

Submitted:07/22/2020 13:53 Login User: REJ

Attention: Jennifer Caporale

Address: Board of Water & Light

P.O. Box 13007

Lansing, MI 48901

Phone: 517-702-6372

FAX:

Email: Environmental_Laboratory@LBWL.com

Selection	Description	Note
-----------	-------------	------

Sample Receiving

- | | | | |
|-----|--|--|--------|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # | IR 4.1 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun | |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped | |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box | |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked | |

Chain of Custody

- | | | | |
|-----|--|--|-----|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out | |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab | |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC | |
| 09. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: | GEL |

Preservation

- | | | | |
|-----|--|---|--|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation | |
| 11. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) | |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? | |

Bottle Conditions

- | | | | |
|-----|--|---|--|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact | |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used | |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used | |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received | |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration | |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time | |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace | |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S15917 Submitted: 07/22/2020 13:53

Attention: Jennifer Caporale
Address: Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Client: BWL01 (Board of Water & Light)

Project: Erickson GMP

Initial Preservation Check: 07/22/2020 14:45 REJ

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Preservation Recheck (E200.8): N/A

Lab ID	125 ml Plastic HNO ₃	250 ml Plastic HNO ₃	1 L Plastic HNO ₃	250 ml Plastic H ₂ SO ₄	125 ml Amber H ₂ SO ₄	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber PbCO ₃ NaOH	pH					Notes	
									<2	>12	other	ml add	new pH		
S15917.01	X								X						
S15917.01			X						X						
S15917.01			X						X						
S15917.02	X								X						
S15917.02			X						X						
S15917.02			X						X						
S15917.03	X								X						
S15917.03			X						X						
S15917.03			X						X						
S15917.04	X								X						
S15917.04			X						X						
S15917.04			X						X						
S15917.05	X								X						
S15917.05			X						X						
S15917.05			X						X						
S15917.06	X								X						
S15917.06			X						X						
S15917.06			X						X						
S15917.07	X								X						
S15917.07			X						X						
S15917.07			X						X						

Sample Set Receipt

Report to
 Attention: Jennifer Caporale
 Address: Board of Water & Light
 P.O. Box 13007
 Lansing, MI 48901

Invoice to
 Attention: Kelly Gleason
 Address: Board of Water & Light
 PO Box 13007
 Lansing, MI 48901

Phone: 517-702-6372 FAX:
 Email: Environmental_Laboratory@LBWL.com

Phone: 517-702-6372 FAX: 517-702-6373
 Email: kelly.gleason@lbwl.com

Contacts:
 Set ID: S15917 Location: BWL01 (Board of Water & Light) PO #: Login by: REJ
 Project: Erickson GMP Backlog Note:
 Submitted: 07/22/2020 13:53 Due Date: 08/05/2020 Rush: No Collected by: Marc Wahrer QC Level: 3 Custom Limits Present: No
 Approved by: Site: Work Order#: Bill to Acct: Bill to Dept:

Sample ID	Sample Tag	Matrix	Date/Time Collected	COC Ref
S15917.01	MW-1 L007009-01	Groundwater	07/21/2020 13:35	
S15917.02	MW-2 L007009-02	Groundwater	07/21/2020 17:06	
S15917.03	MW-4 L007009-03	Groundwater	07/21/2020 11:05	
S15917.04	MW-5 L007009-04	Groundwater	07/21/2020 17:50	
S15917.05	MW-6 L007009-05	Groundwater	07/21/2020 15:23	
S15917.06	MW-4 Duplicate L007009-06	Groundwater	07/21/2020 11:05	
S15917.07	Field Blank L007009-07	Water	07/21/2020 07:35	

Samples: S15917.01-07

Analysis Code	Analysis Title	Method	Units	Holding Date
2140WMS	Calcium	E200.8	mg/L	01/17/2021
2145WMS	Chromium	E200.8	mg/L	01/17/2021
2130WMS	Boron	E200.8	mg/L	01/17/2021
2115WMS	Arsenic	E200.8	mg/L	01/17/2021
2205WMS	Selenium	E200.8	mg/L	01/17/2021
2190WMS	Molybdenum	E200.8	mg/L	01/17/2021
2135WMS	Cadmium	E200.8	mg/L	01/17/2021
2110WMS	Antimony	E200.8	mg/L	01/17/2021
2120WMS	Barium	E200.8	mg/L	01/17/2021
2225WMS	Thallium	E200.8	mg/L	01/17/2021
2165WMS	Lead	E200.8	mg/L	01/17/2021
2125WMS	Beryllium	E200.8	mg/L	01/17/2021
2150WMS	Cobalt	E200.8	mg/L	01/17/2021
2170WMS	Lithium	E200.8	mg/L	01/17/2021
2185W	Mercury	E245.1	mg/L	08/18/2020
4630	Total Suspended Solids	SM2540D	mg/L	07/28/2020
4615	Total Dissolved Solids	SM2540C	mg/L	07/28/2020
4425W	Chloride	E300.0	mg/L	08/18/2020
4530W	Sulfate	E300.0	mg/L	08/18/2020
4455W	Fluoride (Undistilled)	E300.0	mg/L	08/18/2020
MISCSUB	Misc. Special Project			04/16/2023
1605W	Metal Digestion	SW3015A		01/17/2021
1605HGW	Mercury Digestion	E245.1		08/18/2020
SUBCONT	Subcontracting			04/16/2023



August 21, 2020

John Laverty
Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan 48823

Re: Routine Analysis
Work Order: 516742
SDG: S15917

Dear John Laverty:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 24, 2020. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. Rev01: This data package is revised to include the correct SDG S15917.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4443.

Sincerely,

Lindsay Fabra
Project Manager

Purchase Order: GELP20-0018
Enclosures



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Case Narrative

Rev01: This data package is revised to include the correct SDG S15917.

**Receipt Narrative
for
Merit Laboratories, Inc.
SDG: S15917
Work Order: 516742**

August 21, 2020

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on July 24, 2020 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

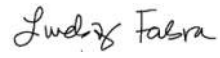
Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
516742001	S15917.01
516742002	S15917.02
516742003	S15917.03
516742004	S15917.04
516742005	S15917.05
516742006	S15917.06
516742007	S15917.07 (Field Blank)

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Radiochemistry.

A handwritten signature in cursive script that reads "Lindsay Fabra".

Lindsay Fabra
Project Manager

Chain of Custody and Supporting Documentation



REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: John Laverty
 COMPANY: Merit Laboratories
 ADDRESS: 2680 East Lansing Drive
 CITY: East Lansing
 STATE: MI
 ZIP CODE: 48823
 PHONE NO.: 517-332-0167
 E-MAIL ADDRESS: johnlaverty@meritlabs.com

CONTACT NAME: Julie Teague
 COMPANY: Merit Laboratories
 ADDRESS: 2680 East Lansing Drive
 CITY: East Lansing
 STATE: MI
 ZIP CODE: 48823
 PHONE NO.: 517-332-0167
 E-MAIL ADDRESS: juliet@meritlabs.com

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR	DATE	TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	# OF BOTTLES	# Containers & Preservatives					OTHER	CERTIFICATIONS
						HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH		
	7/21/20	1335		S15917.01	CW	2	2					Radium 226* Radium 228**
	7/21/20	1706		S15917.02	CW	2	2					* E903.1 Mod. ** E904.0/SW 9320 Mod.
	7/21/20	1105		S15917.03	GW	2	2					Please use calculation product & provide Radium 226/228 combined results on the report
	7/21/20	1750		S15917.04	GW	2	2					
	7/21/20	1523		S15917.05	GW	2	2					
	7/21/20	1105		S15917.06	GW	2	2					
	7/21/20	0735		S15917.07 (Field Blank)	L	2	2					** Subcontracted to GEL Laboratories, Inc. 2040 Savage Road Charleston, SC 29407

TURNAROUND TIME REQUIRED: 1 DAY 2 DAYS 3 DAYS STANDARD OTHER

DELIVERABLES REQUIRED: STD LEVEL II LEVEL III LEVEL IV EDD OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIP A=AIR W=WASTE

SAMPLER(S) - PLEASE PRINT/SIGN NAME

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

REINQUISHED BY: SIGNATURE/ORGANIZATION
 RECEIVED BY: SIGNATURE/ORGANIZATION
 DATE: 7/21/20 TIME: 0945
 DATE: 7/21/20 TIME: 0945

SEAL NO. SEAL INTACT YES/NO INITIALS NO. INITIALS

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



2680 East Lansing Dr., East Lansing, MI 48823
 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

REPORT TO

CONTACT NAME: John Laverty
 COMPANY: Merit Laboratories
 ADDRESS: 2680 East Lansing Drive
 CITY: East Lansing
 STATE: MI ZIP CODE: 48823
 PHONE NO.: 517-332-0167 FAX NO.: 517-332-4034
 E-MAIL ADDRESS: johnlaverty@meritlabs.com

CHAIN OF CUSTODY RECORD

CONTACT NAME: Julie Teague
 COMPANY: Merit Laboratories
 ADDRESS: 2680 East Lansing Drive
 CITY: East Lansing
 STATE: MI ZIP CODE: 48823
 PHONE NO.: 517-332-0167
 E-MAIL ADDRESS: juliet@meritlabs.com

INVOICE TO

CONTACT NAME: Julie Teague
 COMPANY: Merit Laboratories
 ADDRESS: 2680 East Lansing Drive
 CITY: East Lansing
 STATE: MI ZIP CODE: 48823
 PHONE NO.: 517-332-0167
 E-MAIL ADDRESS: juliet@meritlabs.com

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME: S15197
 SAMPLER(S) - PLEASE PRINT/SIGN NAME

TURNAROUND TIME REQUIRED: 1 DAY 2 DAYS 3 DAYS STANDARD OTHER
 DELIVERABLES REQUIRED: STD LEVEL II LEVEL III LEVEL IV EDD OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE A=AIR W=WASTE

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR	DATE	TIME	IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives									
							NONE	H ₂ O	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER			
	7/21/20	1335		S15197.01	GW	2		2								
	7/21/20	1706		S15197.02	GW	2		2								
	7/21/20	1105		S15197.03	GW	2		2								
	7/21/20	1750		S15197.04	GW	2		2								
	7/21/20	1523		S15197.05	GW	2		2								
	7/21/20	1105		S15197.06	GW	2		2								
	7/21/20	0735		S15197.07 (Field Blank)	L	2		2								

Certifications	
<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water
<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES
Project Locations	
<input type="checkbox"/> Detroit	<input type="checkbox"/> New York
<input type="checkbox"/> Other	
Special Instructions	
* E903.1 Mod.	
** E904.0/SW 9320 Mod.	
Please use calculation product & provide Radium 226/228 combined results on the report	
** Subcontracted to	
GEL Laboratories, Inc.	
2040 Savage Road	
Charleston, SC 29407	

RELINQUISHED BY: *John Smith* DATE: 7/22/20 TIME: 10:46
 RECEIVED BY: *URS* DATE: 7/22/20 TIME: 10:46

RELINQUISHED BY: *A. Adams* DATE: 7/22/20 TIME: 9:45
 RECEIVED BY: *A. Adams* DATE: 7/22/20 TIME: 9:45

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

LF SAMPLE RECEIPT & REVIEW FORM

Client: **MEBI** SDG/AR/COC/Work Order: **S15917**
 Received By: **JA** Date Received: **7/24/20**
 Carrier and Tracking Number: **LZ 466 477 03 6278 7978 - 21°**
LZ 466 477 01 6308 0205 - 1° (solids)

Suspected Hazard Information: Yes No
 *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
 A) Shipped as a DOT Hazardous? Yes No
 Hazard Class Shipped: _____ UN#: _____
 If UN2910, Is the Radioactive Shipment Survey Compliant? Yes ___ No ___
 B) Did the client designate the samples are to be received as radioactive? Yes No
 COC notation or radioactive stickers on containers equal client designation.
 C) Did the RSO classify the samples as radioactive? Yes No
 Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM / mR/hr
 Classified as: Rad 1 Rad 2 Rad 3
 D) Did the client designate samples are hazardous? Yes No
 COC notation or hazard labels on containers equal client designation.
 E) Did the RSO identify possible hazards? Yes No
 If D or E is yes, select Hazards below.
 PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Client contacted and provided COC COC created upon receipt
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Wet Ice</u> Ice Packs Dry ice <u>None</u> Other: *all temperatures are recorded in Celsius TEMP: See above
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>284-16</u> Secondary Temperature Device Serial # (If Applicable):
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#:
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If Yes, are Encores or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes ___ No ___ NA ___ (If unknown, select No) Are liquid VOA vials free of headspace? Yes ___ No ___ NA ___ Sample ID's and containers affected:
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and containers affected: Bichem bottle ID's start with S15917 instead of S15997
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No container count on COC Other (describe) Dates & times on all bottles except Field Blank do not match COC
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Not relinquished Other (describe)
12 Are sample containers identifiable as GEL provided by use of GEL labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials **NRG** Date **7/27/20** Page **1** of **1**

Laboratory Certifications

List of current GEL Certifications as of 21 August 2020

State	Certification
Alabama	42200
Alaska	17-018
Alaska Drinking Water	SC00012
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-165
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-20-17
Utah NELAP	SC000122020-32
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

Radiological Analysis

Case Narrative

**Radiochemistry
Technical Case Narrative
Merit Laboratories, Inc.
SDG #: S15917
Work Order #: 516742**

Product: GFPC Ra228, Liquid

Analytical Method: EPA 904.0/SW846 9320 Modified

Analytical Procedure: GL-RAD-A-009 REV# 17

Analytical Batch: 2023656

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
516742001	S15917.01
516742002	S15917.02
516742003	S15917.03
516742004	S15917.04
516742005	S15917.05
516742006	S15917.06
516742007	S15917.07 (Field Blank)
1204605797	Method Blank (MB)
1204605798	516638001(NonSDG) Sample Duplicate (DUP)
1204605799	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: Lucas Cell, Ra226, Liquid

Analytical Method: EPA 903.1 Modified

Analytical Procedure: GL-RAD-A-008 REV# 15

Analytical Batch: 2023441

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
516742001	S15917.01
516742002	S15917.02
516742003	S15917.03
516742004	S15917.04
516742005	S15917.05
516742006	S15917.06
516742007	S15917.07 (Field Blank)
1204605247	Method Blank (MB)

1204605248	516742001(S15917.01) Sample Duplicate (DUP)
1204605249	516742001(S15917.01) Matrix Spike (MS)
1204605250	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Sample 1204605249 (S15917.01MS) was recounted due to high recovery. The recount is reported.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

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Qualifier Definition Report for

MERI001 Merit Laboratories, Inc.

Client SDG: S15917 GEL Work Order: 516742

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:



Name: Theresa Austin

Date: 21 AUG 2020

Title: Group Leader

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: August 21, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S15917.01	Project: MERI00120
Sample ID: 516742001	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 21-JUL-20 13:35	
Receive Date: 24-JUL-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.254	+/-0.959	1.74	3.00	pCi/L			JXC9	07/31/20	1114	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.553	+/-1.03			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.299	+/-0.365	0.614	1.00	pCi/L			MXH8	08/14/20	0907	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			83.4	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: August 21, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S15917.02	Project: MERI00120
Sample ID: 516742002	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 21-JUL-20 17:06	
Receive Date: 24-JUL-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.0326	+/-0.690	1.32	3.00	pCi/L			JXC9	07/31/20	1124	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.362	+/-0.798			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.329	+/-0.402	0.677	1.00	pCi/L			MXH8	08/14/20	0907	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			91.2	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: August 21, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S15917.03	Project: MERI00120
Sample ID: 516742003	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 21-JUL-20 11:05	
Receive Date: 24-JUL-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.863	+/-0.677	1.05	3.00	pCi/L			JXC9	07/31/20	1124	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.20	+/-0.720			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.339	+/-0.245	0.289	1.00	pCi/L			MXH8	08/14/20	0945	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			91.6	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: August 21, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive
East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S15917.04 Project: MERI00120
Sample ID: 516742004 Client ID: MERI001
Matrix: Ground Water
Collect Date: 21-JUL-20 17:50
Receive Date: 24-JUL-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	0.721	+/-1.06	1.82	3.00	pCi/L			JXC9	07/31/20	1116 2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"												
Radium-226+228 Sum		1.53	+/-1.14			pCi/L		1	AEA	08/17/20	0425 2025824	2
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226		0.811	+/-0.418	0.472	1.00	pCi/L			MXH8	08/14/20	0945 2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			96	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: August 21, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S15917.05 Project: MERI00120
Sample ID: 516742005 Client ID: MERI001
Matrix: Ground Water
Collect Date: 21-JUL-20 15:23
Receive Date: 24-JUL-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.460	+/-1.23	2.18	3.00	pCi/L			JXC9	07/31/20	1116	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.460	+/-1.24			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	-0.0445	+/-0.151	0.426	1.00	pCi/L			MXH8	08/14/20	0945	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			83.2	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: August 21, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S15917.06 Project: MERI00120
Sample ID: 516742006 Client ID: MERI001
Matrix: Ground Water
Collect Date: 21-JUL-20 11:05
Receive Date: 24-JUL-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.0421	+/-0.647	1.27	3.00	pCi/L			JXC9	07/31/20	1142	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.06	+/-0.789			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		1.06	+/-0.452	0.353	1.00	pCi/L			MXH8	08/14/20	0945	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			91.5	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: August 21, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S15917.07 (Field Blank) Project: MERI00120
Sample ID: 516742007 Client ID: MERI001
Matrix: Water
Collect Date: 21-JUL-20 07:35
Receive Date: 24-JUL-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228		2.13	+/-0.999	1.37	3.00	pCi/L			JXC9	07/31/20	1142	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		2.66	+/-1.05			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.526	+/-0.322	0.336	1.00	pCi/L			MXH8	08/14/20	0944	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			90	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: August 21, 2020

Page 1 of 2

Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan

Contact: John Laverty

Workorder: 516742

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	2023656										
QC1204605798	516638001	DUP									
Radium-228	U	-1.22	U	0.693	pCi/L	N/A		N/A	JXC9	07/31/20	11:42
	Uncertainty	+/-0.643		+/-0.806							
QC1204605799	LCS										
Radium-228	55.3			45.4	pCi/L		82.2	(75%-125%)		07/31/20	11:42
	Uncertainty			+/-3.33							
QC1204605797	MB										
Radium-228			U	0.467	pCi/L					07/31/20	11:42
	Uncertainty			+/-1.26							
Rad Ra-226											
Batch	2023441										
QC1204605248	516742001	DUP									
Radium-226	U	0.299		0.722	pCi/L	83		(0% - 100%)	MXH8	08/14/20	09:44
	Uncertainty	+/-0.365		+/-0.416							
QC1204605250	LCS										
Radium-226	27.1			28.2	pCi/L		104	(75%-125%)		08/14/20	10:19
	Uncertainty			+/-2.03							
QC1204605247	MB										
Radium-226			U	-0.0394	pCi/L					08/14/20	09:44
	Uncertainty			+/-0.256							
QC1204605249	516742001	MS									
Radium-226	27.1	U	0.299	33.7	pCi/L		125	(75%-125%)		08/14/20	12:05
	Uncertainty	+/-0.365		+/-2.65							

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded

GEL LABORATORIES LLC

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QC Summary

Workorder: 516742

Page 2 of 2

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J											
J											
K											
L											
M											
M											
N/A											
N1											
ND											
NJ											
Q											
R											
U											
UI											
UJ											
UL											
X											
Y											
^											
h											

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Gas Flow Raw Data

Batch 2023656 Check-list

This check-list was completed on 03-AUG-20 by Nat Long

This batch was reviewed by Kenshalla Oston on 03-AUG-20 and Nat Long on 03-AUG-20.

Batch ID:
2023656

Product:
GFC28RAL

Description: Gas Flow Radium 228
GL-RAD-A-009

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?	Yes		
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
11	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
12	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-228 in Liquid

Batch ID: 2023656

Analyst: Jasmine Conley (JXC9)

Method: EPA 904.0/SW846 9320 Modified

Lab SOP: GL-RAD-A-009 REV# 17

Instrument: GFC-8949708441

Due Dates for Lab: 05-AUG-2020

Package: 19-AUG-2020

SDG: 07-AUG-2020

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1204605799	Radium-228 SPIKE	1919-A	.2	mL

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	Ac-228 Ingrow (date)	Ac-228 Separation (date)
1	516638001	28-JUL-2020	3	300	07/29/20 13:40	07/31/20 09:40
2	516641001	28-JUL-2020	3	300	07/29/20 13:40	07/31/20 09:40
3	516742001	28-JUL-2020	3	300	07/29/20 13:40	07/31/20 09:40
4	516742002	28-JUL-2020	3	300	07/29/20 13:40	07/31/20 09:40
5	516742003	28-JUL-2020	3	300	07/29/20 13:40	07/31/20 09:40
6	516742004	28-JUL-2020	3	300	07/29/20 13:40	07/31/20 09:40
7	516742005	28-JUL-2020	3	300	07/29/20 13:40	07/31/20 09:40
8	516742006	28-JUL-2020	3	300	07/29/20 13:40	07/31/20 09:40
9	516742007	28-JUL-2020	3	300	07/29/20 13:40	07/31/20 09:40
10	1204605797 MB	28-JUL-2020	3	300	07/29/20 13:40	07/31/20 09:40
11	1204605798 DUP (516638001)	28-JUL-2020	3	300	07/29/20 13:40	07/31/20 09:40
12	1204605799 LCS	28-JUL-2020	3	300	07/29/20 13:40	07/31/20 09:40

Reagent/Solvent Lot ID	Description	Amount	Comments:
WORK 0487-G	Barium-133 TRACER	.1 mL	
REGNT 2947553	RGF-Neodymium 500mg/L	.2 mL	Pipet Id: RAD-GFC-1795419
REGNT 3064966	RGF-50% Potassium Carbonate	2 mL	Data Entry Date2: 28-JUL-2020 00:00
REGNT 3069850	Barium Carrier Ra228 REG	1 mL	
REGNT 3075535.6	Acetic Acid Glacial ACS Poly Coated Bottle	10 mL	
REGNT 3086856	Lot #DGA0014	2 g	
REGNT 3095920.3	RGF-Hydrofluoric Acid	4 mL	
REGNT 3098465	RGF-1M Citric Acid	5 mL	
REGNT 3098468	RGF-1.5M Ammonium Sulfate	10 mL	
REGNT 3098939.26	HNO3	5 mL	
REGNT 3099413	2M HCl	20 mL	
REGNT 3099514	RGF-Neodymium Subtrate	5 mL	
REGNT 3100855	7M HNO3	25 mL	

Radium-228 Liquid

Filename : RA228.XLS
 File type : Excel
 Version # : 1.4.2

Tracer S/N : 0487-G
 Tracer Exp Date : 2/27/2021
 Tracer Volume Added: 0.10

Batch : 2023656
 Analyst : JAS02031
 Prep Date : 7/28/2020
 Ra-228 Method Uncertainty : 0.1268

Procedure Code : GFC28RAL
 Parmname : Radium-228
 Required MDA : 3 pCi/L
 Ra-228 Abundance : 1.00
 Halflife of Ra-228 : 5.75 years
 Halflife of Ac-228 : 6.15 hours

Geometry: 25mm Filter

Sample Characteristics					Tracer Calculations		Tracer Samp.		Tracer	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Tracer Ref. Activity (CPM)	Tracer Ref. Count Uncertainty (%)	Tracer Samp. Activity (CPM)	Tracer Samp. Count Uncertainty (%)	Tracer Aliquot (mL)	Tracer Aliquot StDev. (mL)
1	516638001.1	0.3000	1.8459E-05	7/23/2020 10:00	279.5	3.45%	222.8	3.87%	0.1	0.000200
2	516641001.1	0.3000	1.8459E-05	7/23/2020 11:00	279.5	3.45%	216.5	3.92%	0.1	0.000200
3	516742001.1	0.3000	1.8459E-05	7/21/2020 13:35	279.5	3.45%	233.1	3.78%	0.1	0.000200
4	516742002.1	0.3000	1.8459E-05	7/21/2020 17:06	279.5	3.45%	254.8	3.62%	0.1	0.000200
5	516742003.1	0.3000	1.8459E-05	7/21/2020 11:05	279.5	3.45%	255.9	3.61%	0.1	0.000200
6	516742004.1	0.3000	1.8459E-05	7/21/2020 17:50	279.5	3.45%	268.3	3.52%	0.1	0.000200
7	516742005.1	0.3000	1.8459E-05	7/21/2020 15:23	279.5	3.45%	232.5	3.79%	0.1	0.000200
8	516742006.1	0.3000	1.8459E-05	7/21/2020 11:05	279.5	3.45%	255.6	3.61%	0.1	0.000200
9	516742007.1	0.3000	1.8459E-05	7/21/2020 7:35	279.5	3.45%	251.5	3.64%	0.1	0.000200
10	1204605797.1	0.3000	1.8459E-05	7/28/2020 0:00	279.5	3.45%	238.6	3.74%	0.1	0.000200
11	1204605798.1	0.3000	1.8459E-05	7/23/2020 10:00	279.5	3.45%	247.8	3.67%	0.1	0.000200
12	1204605799.1	0.3000	1.8459E-05	7/28/2020 0:00	279.5	3.45%	247.5	3.67%	0.1	0.000200

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-009
 Instrument SOP: GL-RAD-I-016

Count raw Data													Calculated Sample Recovery %	Sample Recovery Error %
Pos.	Detector ID	Counting Time (min.)	Gross Counts		Beta cpm	Count Start Date/Time	Ac-228 Ingrowth Date/Time	Ac-228 Decay Date/Time	Ra-228 Decay	Ac-228 Decay	Ac-228 Ingrowth	Ac-228 Count Correction		
1	2A	60	7	23	0.383	7/31/2020 11:14	7/29/2020 13:40	7/31/2020 9:40	0.997	0.838	0.993	1.057	79.7%	2.61%
2	2B	60	11	22	0.367	7/31/2020 11:14	7/29/2020 13:40	7/31/2020 9:40	0.997	0.838	0.993	1.057	77.5%	2.63%
3	2C	60	15	58	0.967	7/31/2020 11:14	7/29/2020 13:40	7/31/2020 9:40	0.997	0.837	0.993	1.057	83.4%	2.57%
4	7A	60	3	37	0.617	7/31/2020 11:24	7/29/2020 13:40	7/31/2020 9:40	0.997	0.823	0.993	1.057	91.2%	2.52%
5	7B	60	2	37	0.617	7/31/2020 11:24	7/29/2020 13:40	7/31/2020 9:40	0.997	0.822	0.993	1.057	91.6%	2.51%
6	2D	60	8	89	1.483	7/31/2020 11:16	7/29/2020 13:40	7/31/2020 9:40	0.997	0.834	0.993	1.057	96.0%	2.48%
7	3B	60	7	90	1.500	7/31/2020 11:16	7/29/2020 13:40	7/31/2020 9:40	0.997	0.834	0.993	1.057	83.2%	2.58%
8	3C	60	2	30	0.500	7/31/2020 11:42	7/29/2020 13:40	7/31/2020 9:40	0.997	0.794	0.993	1.057	91.5%	2.51%
9	3D	60	11	70	1.167	7/31/2020 11:42	7/29/2020 13:40	7/31/2020 9:40	0.997	0.794	0.993	1.057	90.0%	2.52%
10	4A	60	4	100	1.667	7/31/2020 11:42	7/29/2020 13:40	7/31/2020 9:40	0.999	0.794	0.993	1.057	85.4%	2.56%
11	4B	60	21	44	0.733	7/31/2020 11:42	7/29/2020 13:40	7/31/2020 9:40	0.997	0.794	0.993	1.057	88.7%	2.53%
12	4C	60	31	781	13.017	7/31/2020 11:42	7/29/2020 13:40	7/31/2020 9:40	0.999	0.794	0.993	1.057	88.5%	2.53%

Calibration Data								
Pos.	Counted on	Calibration Date	Calibration Due Date	Detector Efficiency (cpm/dpm)	Detector Efficiency Error (cpm/dpm)	Bkg cpm	Weekly Bkg Count Start Date/Time	Bkg Count Time (min.)
1	PIC	6/1/2020	5/31/2021	0.6160	0.01914	0.696	7/24/2020 19:07	1000
2	PIC	6/1/2020	5/31/2021	0.6250	0.02111	0.421	7/24/2020 19:07	1000
3	PIC	6/1/2020	5/31/2021	0.6118	0.01274	0.899	7/24/2020 19:07	1000
4	PIC	6/1/2020	5/31/2021	0.6340	0.00594	0.607	7/24/2020 12:23	1000
5	PIC	6/1/2020	5/31/2021	0.6359	0.00627	0.359	7/24/2020 12:23	1000
6	PIC	6/1/2020	5/31/2021	0.5978	0.00745	1.268	7/24/2020 19:07	1000
7	PIC	6/1/2020	5/31/2021	0.5984	0.01614	1.381	7/24/2020 12:16	1000
8	PIC	6/1/2020	5/31/2021	0.6296	0.00988	0.512	7/24/2020 19:08	1000
9	PIC	6/1/2020	5/31/2021	0.6234	0.02297	0.574	7/24/2020 19:08	1000
10	PIC	6/1/2020	5/31/2021	0.6297	0.01123	1.542	7/24/2020 12:16	1000
11	PIC	6/1/2020	5/31/2021	0.6255	0.01519	0.543	7/25/2020 16:51	1000
12	PIC	6/1/2020	5/31/2021	0.6256	0.00889	0.531	7/25/2020 16:51	1000

Notes:

- 1 - Results are decay corrected to Sample Date/Time
- 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
- 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : N/A
 Spike Exp Date : N/A
 Spike Activity (dpm/ml): N/A
 Spike Volume Added: N/A

* - RPD changed to 0% due to sample & dup activity below MDA

LCS S/N : 1919-A
 LCS Exp Date : 4/7/2021
 LCS Activity (dpm/ml): 184.13
 LCS Volume Added: 0.20

Results														2 SIGMA	2 SIGMA			
Pos.	Decision Level pCi/L	Critical Level pCi/L	Required MDA pCi/L	MDA pCi/L	Sample Act. Conc. pCi/L	Sample Act. Error %	Net Count Rate CPM	Net Count Rate Error CPM	Counting Uncertainty pCi/L	Total Prop. Uncertainty pCi/L	Sample QC	Sample Type	RPD RER	Nominal pCi/L	Recovery			
1	1.0069	0.7109	3	1.6167	-1.2186	27.11%	-0.3127	0.0842	0.6430	0.6432		SAMPLE						
2	0.7945	0.5609	3	1.3195	-0.2148	148.79%	-0.0543	0.0808	0.6263	0.6265		SAMPLE						
3	1.1020	0.7780	3	1.7437	0.2539	192.76%	0.0677	0.1304	0.9594	0.9615		SAMPLE						
4	0.8141	0.5747	3	1.3182	0.0326	1079.28%	0.0097	0.1043	0.6899	0.6901		SAMPLE						
5	0.6215	0.4388	3	1.0450	0.8630	40.11%	0.2577	0.1031	0.6770	0.7116		SAMPLE						
6	1.1683	0.8248	3	1.8171	0.7214	74.91%	0.2153	0.1612	1.0585	1.0742		SAMPLE						
7	1.4061	0.9927	3	2.1787	0.4598	136.52%	0.1190	0.1624	1.2300	1.2356		SAMPLE						
8	0.7774	0.5488	3	1.2730	-0.0421	783.75%	-0.0120	0.0940	0.6466	0.6468		SAMPLE						
9	0.8451	0.5967	3	1.3734	2.1348	24.12%	0.5927	0.1415	0.9989	1.1400		SAMPLE						
10	1.4413	1.0176	3	2.2226	0.4672	137.38%	0.1247	0.1712	1.2578	1.2635		MB						
11	0.8305	0.5863	3	1.3546	0.6926	59.43%	0.1903	0.1130	0.8059	0.8250	516638001.1	DUP	* 0.0%					
12	0.8213	0.5798	3	1.3416	45.4371	4.60%	12.4857	0.4663	3.3263	12.0126		LCS		55.2941	82.2%			

SampleID	Instr	Time (min.)	Alpha Counts	Beta Counts	Count Start Time	Count End Time	Machine	Batch ID
516638001	2A	60	7	23	7/31/2020 11:14	7/31/2020 12:14	PIC	2023656
516641001	2B	60	11	22	7/31/2020 11:14	7/31/2020 12:14	PIC	2023656
516742001	2C	60	15	58	7/31/2020 11:14	7/31/2020 12:14	PIC	2023656
516742002	7A	60	3	37	7/31/2020 11:24	7/31/2020 12:24	PIC	2023656
516742003	7B	60	2	37	7/31/2020 11:24	7/31/2020 12:24	PIC	2023656
516742004	2D	60	8	89	7/31/2020 11:16	7/31/2020 12:16	PIC	2023656
516742005	3B	60	7	90	7/31/2020 11:16	7/31/2020 12:16	PIC	2023656
516742006	3C	60	2	30	7/31/2020 11:42	7/31/2020 12:42	PIC	2023656
516742007	3D	60	11	70	7/31/2020 11:42	7/31/2020 12:42	PIC	2023656
1204605797	4A	60	4	100	7/31/2020 11:42	7/31/2020 12:42	PIC	2023656
1204605798	4B	60	21	44	7/31/2020 11:42	7/31/2020 12:42	PIC	2023656
1204605799	4C	60	31	781	7/31/2020 11:42	7/31/2020 12:42	PIC	2023656

ASSAY 31-Jul-20 10:18:51

Protocol id 8 Ba-133
Time limit
Count limit
Isotope Ba-133
Protocol date 7/31/2020
Run id. 1615

Samp_ID	POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR	% RECOVERY	COUNT TIME
REF	1	93	1	180	838.5	279.46	3.45		10:18:51
516638001	2	93	2	180	668.5	222.78	3.87	79.72	10:22:05
516641001	3	93	3	180	649.5	216.45	3.92	77.45	10:25:20
516742001	4	93	4	180	699.5	233.12	3.78	83.42	10:28:33
516742002	5	93	5	180	764.5	254.78	3.62	91.17	10:31:47
516742003	1	10	1	180	768	255.93	3.61	91.58	10:35:35
516742004	2	10	2	180	805	268.28	3.52	96.00	10:38:49
516742005	3	10	3	180	697.5	232.45	3.79	83.18	10:42:04
516742006	4	10	4	180	767	255.61	3.61	91.47	10:45:18
516742007	5	10	5	180	754.5	251.45	3.64	89.98	10:48:31
1204605797	1	19	1	180	716	238.61	3.74	85.38	10:52:07
1204605798	2	19	2	180	743.5	247.8	3.67	88.67	10:55:21
1204605799	3	19	3	180	742.5	247.45	3.67	88.55	10:58:35

END OF ASSAY

Continuing Calibration Data

Gas Flow Proportional Counter Checks for 31-Jul-2020

Detectors LB4100 A1 through J4 and PIC 1A through 14D and G5400W 1W through 1Z

Short Name	Status	Parmname	Run Time	Count Time	CPM or dec	Low Limit	High Limit	Stdev
LB4100C1	Above	Beta bkg	31-Jul 04:02	60	2.017	0.534	3.326	+0.19
LB4100E1	Above	Alpha bkg	31-Jul 04:00	60	0.400	-5.45E-2	0.290	+4.92
LB4100E2	Above	Beta bkg	31-Jul 04:00	60	2.433	0.950	2.756	+1.93
LB4100E3	Above	Alpha bkg	31-Jul 04:00	60	2.417	-4.47E-2	0.174	+64.44
LB4100E3	Above	Beta bkg	31-Jul 04:00	60	3.500	-1.31E+0	6.766	+0.57
LB4100E3	need 2nd	Beta XTalk	31-Jul 05:05	5	2.87E-4	8.54E-5	4.65E-4	+0.19
LB4100E4	Above	Beta bkg	31-Jul 04:00	60	2.167	0.326	2.646	+1.76
LB4100F1	Above	Beta bkg	31-Jul 04:00	60	2.083	0.531	1.960	+3.52
LB4100F3	Above	Alpha bkg	31-Jul 04:00	60	0.367	-7.68E-2	0.332	+3.51
LB4100G1	need 2nd	Beta eff	31-Jul 05:12	5	15264	14840	16920	-1.78
LB4100G2	Above	Beta bkg	31-Jul 04:01	60	563	0.721	1.648	+3,639.36
LB4100G3	Above	Beta bkg	31-Jul 04:01	60	10.450	0.810	1.674	+63.94
LB4100I2	Above	Beta bkg	31-Jul 04:00	60	21.067	0.425	2.438	+58.51
LB4100I4	Above	Beta bkg	31-Jul 04:00	60	2.550	-1.74E-2	2.470	+3.19
PIC4D	Above	Alpha bkg	31-Jul 07:29	60	0.350	0.023	0.377	+2.55
PIC5A	Above	Alpha bkg	31-Jul 05:19	60	0.467	0.021	0.432	+3.50
PIC5A	Above	Beta bkg	31-Jul 05:19	60	2.183	-2.35E-2	1.250	+7.40
PIC8C	Above	Alpha bkg	31-Jul 07:40	60	0.417	0.049	0.405	+3.19
PIC10C	Above	Beta bkg	31-Jul 07:11	60	1.700	-1.20E-1	1.672	+3.09
PIC11D	Above	Alpha bkg	31-Jul 05:52	60	0.433	0.007	0.361	+4.23
PIC11D	Above	Beta bkg	31-Jul 05:52	60	3.933	0.609	2.096	+10.41
PIC12A	Above	Beta bkg	31-Jul 05:53	60	2.317	0.074	1.397	+7.17
PIC12D	Below	Alpha eff	31-Jul 05:44	5	13585	14580	17560	-5.00
PIC14D	Above	Alpha bkg	31-Jul 05:53	60	0.333	-1.35E-1	0.344	+2.87
PIC14D	Above	Beta bkg	31-Jul 05:53	60	1.883	-3.77E-1	1.863	+3.05

INSTRUMENTS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

The following detectors may not have properly transferred to the LIMS system

LB4100B1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC3A	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC6D	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC13C	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk

Reviewed by *A. Deil-Harrison*

Date 7-31-2020

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: GFPC

Batch ID: 2023656

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
516638001	SAMPLE	JXC9	PIC2A	JUL-31-20 11:14:19	DONE	25mm Filter	01-JUN-20 00:00
516641001	SAMPLE	JXC9	PIC2B	JUL-31-20 11:14:21	DONE	25mm Filter	01-JUN-20 00:00
516742001	SAMPLE	JXC9	PIC2C	JUL-31-20 11:14:25	DONE	25mm Filter	01-JUN-20 00:00
516742004	SAMPLE	JXC9	PIC2D	JUL-31-20 11:16:27	DONE	25mm Filter	01-JUN-20 00:00
516742005	SAMPLE	JXC9	PIC3B	JUL-31-20 11:16:34	DONE	25mm Filter	01-JUN-20 00:00
516742002	SAMPLE	JXC9	PIC7A	JUL-31-20 11:24:01	DONE	25mm Filter	01-JUN-20 00:00
516742003	SAMPLE	JXC9	PIC7B	JUL-31-20 11:24:03	DONE	25mm Filter	01-JUN-20 00:00
1204605797	MB	JXC9	PIC4A	JUL-31-20 11:42:34	DONE	25mm Filter	01-JUN-20 00:00
1204605798	DUP	JXC9	PIC4B	JUL-31-20 11:42:37	DONE	25mm Filter	01-JUN-20 00:00
1204605799	LCS	JXC9	PIC4C	JUL-31-20 11:42:42	DONE	25mm Filter	01-JUN-20 00:00
516742006	SAMPLE	JXC9	PIC3C	JUL-31-20 11:42:44	DONE	25mm Filter	01-JUN-20 00:00
516742007	SAMPLE	JXC9	PIC3D	JUL-31-20 11:42:47	DONE	25mm Filter	01-JUN-20 00:00

Lucas Cell Raw Data

Batch 2023441 Check-list

This check-list was completed on 15-AUG-20 by Elizabeth Krouse

This batch was reviewed by Elizabeth Krouse on 15-AUG-20 and Lyndsey Pace on 16-AUG-20.

Batch ID:
2023441

Product:
LUC26RAL

Description: Lucas Cell Radium 226
GL-RAD-A-008

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the matrix spike (MS/MSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-226 in Liquid

Batch ID: 2023441
Analyst: Michael Hance (MXH8)
Method: EPA 903.1 Modified
Lab SOP: GL-RAD-A-008 REV# 15
Instrument: GFC-18150253

Due Dates for Lab: 17-AUG-2020			Package: 19-AUG-2020	SDG: 21-AUG-2020		
Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units	
LCS	1204605250	Radium-226 SPIKE	1715-E	.1	mL	
MS	1204605249	Radium-226 SPIKE	1715-E	.1	mL	

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	End Degas (date)	CELL #	End Transfer (date)	Start Count Time (date)	Background Counts	Total Counts
1	516742001	11-AUG-2020	1	500	08/11/20 11:15	705	08/14/20 06:07	08/14/20 09:07	6	13
2	516742002	11-AUG-2020	1	500	08/11/20 11:15	802	08/14/20 06:07	08/14/20 09:07	6	13
3	516742003	11-AUG-2020	1	500	08/11/20 11:15	106	08/14/20 06:45	08/14/20 09:45	1	10
4	516742004	11-AUG-2020	1	500	08/11/20 11:15	202	08/14/20 06:45	08/14/20 09:45	3	22
5	516742005	11-AUG-2020	1	500	08/11/20 11:15	301	08/14/20 06:45	08/14/20 09:45	2	1
6	516742006	11-AUG-2020	1	500	08/11/20 11:15	402	08/14/20 06:45	08/14/20 09:45	1	24
7	516742007	11-AUG-2020	1	500	08/11/20 11:15	505	08/14/20 06:45	08/14/20 09:44	1	13
8	1204605247 MB	11-AUG-2020	1	500	08/11/20 11:15	601	08/14/20 06:45	08/14/20 09:44	6	5
9	1204605248 DUP (516742001)	11-AUG-2020	1	500	08/11/20 11:15	704	08/14/20 06:45	08/14/20 09:44	4	21
10	1204605249 MS (516742001)	11-AUG-2020	1	500	08/11/20 11:15	805	08/14/20 06:45	08/14/20 12:05	4	635
11	1204605250 LCS	11-AUG-2020	1	500	08/11/20 11:15	108	08/14/20 07:20	08/14/20 10:19	2	745

Reagent/Solvent Lot ID	Description	Amount	Comments:
			Spike Pipet ID: RAD-RA226-2766953 Bkg Count Time: 30 Minutes Sample Count Time: 30 Minutes Data Entry Date2: 11-AUG-2020 00:00

Radium-226 Liquid

Filename : RA226.XLS
 File type : Excel
 Version # : 1.3.2

Procedure Code : LUC26RAL
 Parmname : Radium-226
 Required MDA : 1 pCi/L
 Halflife of Ra-226 : 1600 years
 Ra-226 Abundance : 1.00
 Halflife of Rn-222 : 3.8235 days

Batch : 2023441
 Analyst : MIC02086
 Prep Date : 8/11/2020
 Ra-226 Method Uncertainty : 0.073648

Batch counted on : LUCAS CELL DETECTOR
 BKG Count time : 30 min

Sample Characteristics					Count Raw Data						Background	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Cell Number	Counting Time (min.)	Gross Counts	Gross CPM	Background Counts	Background CPM	Count Time (min.)	Cell Efficiency (cpm/dpm)
1	516742001.1	0.5000	2.0256E-05	7/21/2020 13:35	705	30	13	0.433	6	0.200	30	1.8190
2	516742002.1	0.5000	2.0256E-05	7/21/2020 17:06	802	30	13	0.433	6	0.200	30	1.6510
3	516742003.1	0.5000	2.0256E-05	7/21/2020 11:05	106	30	10	0.333	1	0.033	30	2.0437
4	516742004.1	0.5000	2.0256E-05	7/21/2020 17:50	202	30	22	0.733	3	0.100	30	1.8050
5	516742005.1	0.5000	2.0256E-05	7/21/2020 15:23	301	30	1	0.033	2	0.067	30	1.7333
6	516742006.1	0.5000	2.0256E-05	7/21/2020 11:05	402	30	24	0.800	1	0.033	30	1.6720
7	516742007.1	0.5000	2.0256E-05	7/21/2020 7:35	505	30	13	0.433	1	0.033	30	1.7560
8	1204605247.1	0.5000	2.0256E-05	8/11/2020 0:00	601	30	5	0.167	6	0.200	30	1.9550
9	1204605248.1	0.5000	2.0256E-05	7/21/2020 13:35	704	30	21	0.700	4	0.133	30	1.8140
10	1204605249.1	0.5000	2.0256E-05	7/21/2020 13:35	805	30	635	21.167	4	0.133	30	1.4670
11	1204605250.1	0.5000	2.0256E-05	8/11/2020 0:00	108	30	745	24.833	2	0.067	30	2.0199

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-008
 Instrument SOP: GL-RAD-I-007

Cell Efficiency Error (%)	Cell Calibration Date	Cell Calibration Due Date	De-Gas Date/Time	Rn-222 Ingrow End Date/Time	Count Start Date/Time	Rn-222 Corrections			Ra-226 Decay
						De-Gas to Ingrowth	Ingrowth to Count	During Count	
4.200%	11/1/2019	10/31/2020	8/11/2020 11:15	8/14/2020 6:07	8/14/2020 9:07	0.397	0.978	1.002	1.000
8.500%	3/31/2020	3/31/2021	8/11/2020 11:15	8/14/2020 6:07	8/14/2020 9:07	0.397	0.978	1.002	1.000
5.285%	5/1/2020	4/30/2021	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:45	0.399	0.978	1.002	1.000
4.200%	8/1/2020	7/31/2021	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:45	0.399	0.978	1.002	1.000
4.681%	1/20/2020	12/31/2020	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:45	0.399	0.978	1.002	1.000
4.400%	3/1/2020	1/31/2021	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:45	0.399	0.978	1.002	1.000
1.900%	6/2/2020	5/31/2021	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:44	0.399	0.978	1.002	1.000
3.800%	7/2/2020	6/30/2021	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:44	0.399	0.978	1.002	1.000
2.000%	11/1/2019	10/31/2020	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:44	0.399	0.978	1.002	1.000
6.300%	3/31/2020	3/31/2021	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 12:05	0.399	0.961	1.002	1.000
6.875%	5/1/2020	4/30/2021	8/11/2020 11:15	8/14/2020 7:20	8/14/2020 10:19	0.402	0.978	1.002	1.000

- Res:
 1 - Results are decay corrected to Sample Date/Time
 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : 1715-E
Spike Exp Date : 5/21/2021
Spike Activity (dpm/ml): 300.27
Spike Volume Added: 0.10

LCS S/N : 1715-E
LCS Exp Date : 5/21/2021
LCS Activity (dpm/ml): 300.27
LCS Volume Added: 0.10

Results Pos.	Decision	Critical	Required	Sample Act.		Net Count	Net Count	2 SIGMA	2 SIGMA	Sample	Sample	RPD	RER	Nominal	Recovery
	Level	Level	MDA	MDA	Conc.	Error	Rate	Rate Error	Counting							Total Prop.	QC	Type	pCi/L	pCi/L
	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	CPM	CPM	Uncertainty	Uncertainty						
1	0.3444	0.2431	1	0.6143	0.2987	62.41%	0.2333	0.1453	0.3645	0.3679					
2	0.3794	0.2679	1	0.6768	0.3291	62.85%	0.2333	0.1453	0.4016	0.4081					
3	0.1242	0.0877	1	0.2885	0.3393	37.23%	0.3000	0.1106	0.2451	0.2524					
4	0.2436	0.1720	1	0.4721	0.8111	26.65%	0.6333	0.1667	0.4184	0.4395					
5	0.2072	0.1463	1	0.4259	-0.0445	173.27%	-0.0333	0.0577	0.1509	0.1511					
6	0.1519	0.1072	1	0.3527	1.0599	22.18%	0.7667	0.1667	0.4516	0.4855					
7	0.1446	0.1021	1	0.3358	0.5265	31.24%	0.4000	0.1247	0.3218	0.3312					
8	0.3181	0.2246	1	0.5673	-0.0394	331.68%	-0.0333	0.1106	0.2562	0.2563					
9	0.2799	0.1976	1	0.5226	0.7220	29.48%	0.5667	0.1667	0.4162	0.4300	516742001.1	DUP	83.0%		
10	0.3523	0.2487	1	0.6578	33.7324	7.47%	21.0333	0.8426	2.6486	6.9336	516742001.1	MS		27.0523	124.7%
11	0.1766	0.1247	1	0.3630	28.1535	7.80%	24.7667	0.9110	2.0298	5.9186		LCS		27.0517	104.1%

Continuing Calibration Data

[IMAGE]

Ludlum Alpha Scintillation Counter Checks for 14-AUG-2020

Short Name	Parmname	Run Time	Count Time	Counts	CPM	Stdev	Status	Comments
LUCAS1	EFF	06:43	1	1.26E+05	125972	-0.61		
LUCAS2	EFF	06:47	1	1.37E+05	136646	2.48		
LUCAS3	EFF	06:49	1	1.39E+05	138912	2.24		
LUCAS4	EFF	06:51	1	1.31E+05	130530	1.11		
LUCAS5	EFF	06:55	1	1.33E+05	133180	1.54		
LUCAS6	EFF	06:57	1	1.34E+05	133955	-0.6		
LUCAS7	EFF	06:58	1	1.37E+05	137272	1.42		
LUCAS8	EFF	07:01	1	1.41E+05	141447	2.6		

Reviewed by:



Elizabeth Krouse

Date: 14-AUG-20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: LUCAS CELL DETECTOR

Batch ID: 2023441

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
516742001	SAMPLE	MXH8	LUCAS7	AUG-14-20 09:07:00	DONE	Lucas Cell	01-NOV-19 00:00
516742002	SAMPLE	MXH8	LUCAS8	AUG-14-20 09:07:00	DONE	Lucas Cell	31-MAR-20 00:00
516742007	SAMPLE	MXH8	LUCAS5	AUG-14-20 09:44:00	DONE	Lucas Cell	02-JUN-20 00:00
1204605247	MB	MXH8	LUCAS6	AUG-14-20 09:44:00	DONE	Lucas Cell	02-JUL-20 00:00
1204605248	DUP	MXH8	LUCAS7	AUG-14-20 09:44:00	DONE	Lucas Cell	01-NOV-19 00:00
516742003	SAMPLE	MXH8	LUCAS1	AUG-14-20 09:45:00	DONE	Lucas Cell	01-MAY-20 00:00
516742004	SAMPLE	MXH8	LUCAS2	AUG-14-20 09:45:00	DONE	Lucas Cell	01-AUG-20 00:00
516742005	SAMPLE	MXH8	LUCAS3	AUG-14-20 09:45:00	DONE	Lucas Cell	20-JAN-20 00:00
516742006	SAMPLE	MXH8	LUCAS4	AUG-14-20 09:45:00	DONE	Lucas Cell	01-MAR-20 00:00
1204605250	LCS	MXH8	LUCAS1	AUG-14-20 10:19:00	DONE	Lucas Cell	01-MAY-20 00:00
1204605249	MS	MXH8	LUCAS8	AUG-14-20 12:05:00	DONE	Lucas Cell	31-MAR-20 00:00



Lansing Board of Water and Light
Environmental Services Laboratory
1232 Haco Dr.
Lansing, Michigan 48901

12 October 2020

BWL - Erickson Station
Attn: Cheryl Louden
3725 S. Canal
Lansing, MI 48917

Project: Erickson GMP

Dear Cheryl Louden,

Enclosed is a copy of the laboratory report for the following work order(s) received by Lansing Board of Water and Light Environmental Services Laboratory:

Work Order
L008009

Received
8/19/2020 7:00:00AM

Account Number
30926 10021

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

Sincerely,

A handwritten signature in blue ink that reads "Jennifer Caporale".

Jennifer Caporale, Supervisor



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/12/2020

Sample Name: MW-1

Lab #: L008009-01 Ground Water

Collected: 18-Aug-20 13:24

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	1200	1.0	uS/cm	1		18-Aug-20 13:24	maw	SM 2510B	
Dissolved oxygen	0.520	0.100	mg/L	1		18-Aug-20 13:24	maw	FIELD	
Gallons Purged	5.00		Gallons	1		18-Aug-20 13:24	maw	FIELD	
Oxidation Reduction Potential	-34.70	-999.0	mV	1		18-Aug-20 13:24	maw	FIELD	
pH	6.9	7.0	pH Units	1		18-Aug-20 13:24	maw	SM 4500H+B	
Static Head Measurement	17.1		Feet	1		18-Aug-20 13:24	maw	FIELD	
Temperature	16		°C	1		18-Aug-20 13:24	maw	SM 2550B	
Turbidity	21	0.10	NTU	1		18-Aug-20 13:24	maw	SM 2130B	

Sample Name: MW-2

Lab #: L008009-02 Ground Water

Collected: 18-Aug-20 16:45

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	1800	1.0	uS/cm	1		18-Aug-20 16:45	maw	SM 2510B	
Dissolved oxygen	0.150	0.100	mg/L	1		18-Aug-20 16:45	maw	FIELD	
Gallons Purged	2.50		Gallons	1		18-Aug-20 16:45	maw	FIELD	
Oxidation Reduction Potential	38.20	-999.0	mV	1		18-Aug-20 16:45	maw	FIELD	
pH	6.8	7.0	pH Units	1		18-Aug-20 16:45	maw	SM 4500H+B	
Static Head Measurement	20.8		Feet	1		18-Aug-20 16:45	maw	FIELD	
Temperature	14		°C	1		18-Aug-20 16:45	maw	SM 2550B	
Turbidity	6.0	0.10	NTU	1		18-Aug-20 16:45	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/12/2020

Sample Name: MW-4

Lab #: L008009-03 Ground Water

Collected: 18-Aug-20 10:05

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory		Analysis Date/Time	By	Method	Notes
	Result	Limit	Units		Limit					
Conductivity	880	1.0	uS/cm	1		18-Aug-20 10:05	maw	SM 2510B		
Dissolved oxygen	ND	0.100	mg/L	1		18-Aug-20 10:05	maw	FIELD		
Gallons Purged	2.50		Gallons	1		18-Aug-20 10:05	maw	FIELD		
Oxidation Reduction Potential	-75.00	-999.0	mV	1		18-Aug-20 10:05	maw	FIELD		
pH	7.2	7.0	pH Units	1		18-Aug-20 10:05	maw	SM 4500H+B		
Static Head Measurement	18.4		Feet	1		18-Aug-20 10:05	maw	FIELD		
Temperature	14		°C	1		18-Aug-20 10:05	maw	SM 2550B		
Turbidity	1.6	0.10	NTU	1		18-Aug-20 10:05	maw	SM 2130B		

Sample Name: MW-5

Lab #: L008009-04 Ground Water

Collected: 18-Aug-20 17:25

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory		Analysis Date/Time	By	Method	Notes
	Result	Limit	Units		Limit					
Conductivity	1800	1.0	uS/cm	1		18-Aug-20 17:25	maw	SM 2510B		
Dissolved oxygen	2.50	0.100	mg/L	1		18-Aug-20 17:25	maw	FIELD		
Gallons Purged	3.50		Gallons	1		18-Aug-20 17:25	maw	FIELD		
Oxidation Reduction Potential	69.50	-999.0	mV	1		18-Aug-20 17:25	maw	FIELD		
pH	7.3	7.0	pH Units	1		18-Aug-20 17:25	maw	SM 4500H+B		
Static Head Measurement	18.8		Feet	1		18-Aug-20 17:25	maw	FIELD		
Temperature	13		°C	1		18-Aug-20 17:25	maw	SM 2550B		
Turbidity	20	0.10	NTU	1		18-Aug-20 17:25	maw	SM 2130B		



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Loudon

Report Date: 10/12/2020

Sample Name: MW-6

Lab #: L008009-05 Ground Water

Collected: 18-Aug-20 15:08

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	1100	1.0	uS/cm	1		18-Aug-20 15:08	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		18-Aug-20 15:08	maw	FIELD	
Gallons Purged	3.00		Gallons	1		18-Aug-20 15:08	maw	FIELD	
Oxidation Reduction Potential	91.10	-999.0	mV	1		18-Aug-20 15:08	maw	FIELD	
pH	6.8	7.0	pH Units	1		18-Aug-20 15:08	maw	SM 4500H+B	
Static Head Measurement	20.4		Feet	1		18-Aug-20 15:08	maw	FIELD	
Temperature	13		°C	1		18-Aug-20 15:08	maw	SM 2550B	
Turbidity	9.0	0.10	NTU	1		18-Aug-20 15:08	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/12/2020

Approved By: _____

Jennifer Caporale

Notes and Definitions

AL Action Level (Action Level = Regulatory Limit)
MCL Maximum Contaminant Level
PEL Permissible Exposure Limit (Permissible Exposure Limit = Regulatory Limit)
RPD Relative Percent Difference
OT Odor Threshold
ND Non Detect

All drinking water regulatory limits are MCL's with the exception of Lead and Copper unless otherwise noted.



MERIT LABORATORIES, INC.

2680 EAST LANSING DRIVE
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BOARD OF WATER & LIGHT

ERICKSON GMP

SDG Batch:

16695

Pages 1 - 275



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BOARD OF WATER & LIGHT

PROJECT: ERICKSON GMP

SDG Batch:
16695.01

Prepared by:
Merit Laboratories, Inc.

September 28, 2020

Inorganics Inventory Sheet - SDG: S16695

Laboratory Name: Merit Laboratories, Inc.
City / State: East Lansing, MI
Sample Delivery Group: S16695.01 - .07

Deliverable	References		Pages		Checklist	
	Form	CLP	From	To	Lab	Audit
1. Inventory Sheet (not numbered)	This	DC-2			<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. SDG Case Narrative			1	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Analytical Summary Report			3	34	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. ICP/MS Metals Data			35	168		
Sequence / Injection Log		F.0			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Sheet		F. I			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initial Calibration and Calibration Verification		F. IIA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRDL Standards		F. IIB			<input type="checkbox"/>	<input type="checkbox"/>
Blanks		F. III			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Interference Check Sample		F. IVB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		F. VA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Digest Spike Sample Recovery		F. VB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duplicates		F. VI			<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		F. VII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Serial Dilutions		F. VIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		F. XIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP/MS Tune		F. XIV			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Internal Standard Relative Intensity Summary		F. XV			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument Detection Limits (IDL) & MDLs		F. IX			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Linear Ranges		F. XI			<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP/MS Raw Data					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation / Digestion Log		F. XII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Mercury Data			169	187		
Sequence / Injection Log		F.0			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Sheet		F. I			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initial Calibration and Calibration Verification		F. IIA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRDL Standards		F. IIB			<input type="checkbox"/>	<input type="checkbox"/>
Blanks		F. III			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		F. VA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Digest Spike Sample Recovery		F. VB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duplicates		F. VI			<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		F. VII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		F. XIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Mercury Cold Vapor Raw Data					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation / Digestion Log					<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Ion Chromatography Data			188	268		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Calibration Curve - data and evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Total Suspended Solids Data			269	269		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>

Inorganics Inventory Sheet - SDG: S16695

Deliverable	References		Pages		Checklist	
	Form	CLP	From	To	Lab	Audit
8. Total Dissolved Solids Data			270	270		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Shipping / Receiving Documents			271	275		
Chain-of-Custody					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample log-in sheet					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample Receipt					<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Subcontracted Analysis Report						
GEL Laboratories – Radiological Analysis (Total Pages 54)					<input checked="" type="checkbox"/>	<input type="checkbox"/>



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CASE NARRATIVE
CLIENT: BOARD OF WATER & LIGHT
PROJECT: ERICKSON GMP
Merit IDs: S16695.01-S16695.07

- Field Sampling:** Marc Wahrer performed the fieldwork.
- Analytical Bottles:** All bottles were sent with the appropriate preservation in it. Please see the bottle list attached.
- Sample Receiving:** All samples were received by the laboratory (08/19/2020). Dates and signatures can be found on the Chain of Custody Records. The sample receipts specify the actual tags and bottles received and logged into the laboratory “vlms” system.

ANALYSES

- Metals:** All metal analyses were performed according to Method 200.8. The metal digestion was performed according to Method 3015A. The QC requirements were followed for this specific project and method-specified criteria were met. *Outliers:* None
- Mercury:** All mercury QC requirements were met according to the specifications in Method 245.1. *Outliers:* None
- Fluoride:** All fluoride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None
- Chloride:** All chloride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None
- Sulfate:** All Sulfate QC requirements were met according to the specifications in Method 300.0. *Outliers:* None
- Total Suspended Solids:** All total suspended solids QC requirements were met according to the specifications in Method 2540 D. *Outliers:* None
- Total Dissolved Solids:** All total suspended solids QC requirements were met according to the specifications in Method 2540 C. *Outliers:* None
- Radium 226 & 228:** All radiological analysis were subcontracted out to GEL Laboratories. GEL Laboratories analytical report is included.



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Data Reporting:

The analytical reports are reflective of what is on a given Chain-of-Custody record (COC). Merit's IDs were assigned to the samples as they were delivered and accepted by our log-in staff.

"I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness, for other than the condition detailed above. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature."

Barb Ball
QA Officer

09/28/2020

Date



Analytical Laboratory Report

Report ID: S16695.01(01)
Generated on 09/21/2020

Report to
Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S16695.01-S16695.07
Project: Erickson GMP
Collected Date(s): 08/18/2020
Submitted Date/Time: 08/19/2020 09:27
Sampled by: Marc Wahrer
P.O. #:

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

All Metal Results Are Reported As Total



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
E300.0	EPA Method 300.0 Revision 2.1
SM2540C	Standard Method 2540 C 2011
SM2540D	Standard Method 2540 D 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S16695.01	MW-1 L008009-01	Groundwater	08/18/20 13:24
S16695.02	MW-2 L008009-02	Groundwater	08/18/20 16:45
S16695.03	MW-4 L008009-03	Groundwater	08/18/20 10:05
S16695.04	MW-5 L008009-04	Groundwater	08/18/20 17:25
S16695.05	MW-6 L008009-05	Groundwater	08/18/20 15:02
S16695.06	MW-4 Duplicate L008009-06	Groundwater	08/18/20 10:05
S16695.07	Field Blank L008009-07	Water	08/18/20 07:25



Analytical Laboratory Report

Lab Sample ID: S16695.01

Sample Tag: MW-1 L008009-01

Collected Date/Time: 08/18/2020 13:24

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 10:17, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	65	5	0.06	mg/L	5	16887-00-6	
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	
Sulfate	75	5	0.52	mg/L	5	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	776	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	48	3	1	mg/L	2.86		

Metals

Method: E200.8, Run Date: 08/19/20 16:45, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	161	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:05, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.006	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.152	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	0.41	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	0.034	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	



Analytical Laboratory Report

Lab Sample ID: S16695.01 (continued)

Sample Tag: MW-1 L008009-01

Method: E245.1, Run Date: 08/26/20 12:46, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S16695.02

Sample Tag: MW-2 L008009-02

Collected Date/Time: 08/18/2020 16:45

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 10:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 08/20/20 10:04, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	85	25	0.40	mg/L	25	16887-00-6	
Sulfate	580	25	1.5	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,430	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	14	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 08/19/20 16:50, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	272	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:08, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.045	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	5.19	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	0.057	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	0.011	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S16695.02 (continued)

Sample Tag: MW-2 L008009-02

Method: E200.8, Run Date: 08/19/20 13:08, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 08/26/20 12:47, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S16695.03

Sample Tag: MW-4 L008009-03

Collected Date/Time: 08/18/2020 10:05

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 10:43, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 08/20/20 10:17, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	70	10	0.16	mg/L	10	16887-00-6	
Sulfate	58	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	582	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 08/19/20 16:52, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	111	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:15, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.008	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.166	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	0.06	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	Not detected	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S16695.03 (continued)

Sample Tag: MW-4 L008009-03

Method: E200.8, Run Date: 08/19/20 13:15, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 08/26/20 12:49, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S16695.04

Sample Tag: MW-5 L008009-04

Collected Date/Time: 08/18/2020 17:25

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 10:56, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 08/20/20 10:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	76	50	0.80	mg/L	50	16887-00-6	
Sulfate	714	50	3.0	mg/L	50	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,520	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	20	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 08/19/20 16:56, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	266	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:37, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.003	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.056	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	4.48	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	0.003	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	0.085	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	0.067	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S16695.04 (continued)

Sample Tag: MW-5 L008009-04

Method: E200.8, Run Date: 08/19/20 13:37, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 08/26/20 12:51, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S16695.05

Sample Tag: MW-6 L008009-05

Collected Date/Time: 08/18/2020 15:02

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 11:08, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 08/20/20 10:43, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	37	10	0.16	mg/L	10	16887-00-6	
Sulfate	222	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	820	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 08/19/20 16:58, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	170	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:44, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.053	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	0.86	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	0.044	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	0.030	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S16695.05 (continued)

Sample Tag: MW-6 L008009-05

Method: E200.8, Run Date: 08/19/20 13:44, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 08/26/20 12:53, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S16695.06

Sample Tag: MW-4 Duplicate L008009-06

Collected Date/Time: 08/18/2020 10:05

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 11:21, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 08/20/20 11:47, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	71	10	0.16	mg/L	10	16887-00-6	
Sulfate	59	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	552	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 08/19/20 16:47, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	107	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:51, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.007	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.167	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	0.06	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	Not detected	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S16695.06 (continued)

Sample Tag: MW-4 Duplicate L008009-06

Method: E200.8, Run Date: 08/19/20 13:51, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 08/26/20 12:55, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S16695.07

Sample Tag: Field Blank L008009-07

Collected Date/Time: 08/18/2020 07:25

Matrix: Water

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 12:25, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	2.5	0.03	mg/L	2.5	16887-00-6	
Fluoride (Undistilled)	Not detected	0.5	0.04	mg/L	2.5	16984-48-8	
Sulfate	Not detected	2.5	0.26	mg/L	2.5	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	Not detected	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 08/19/20 16:43, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	Not detected	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:34, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Barium	Not detected	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	Not detected	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	Not detected	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	



Analytical Laboratory Report

Lab Sample ID: S16695.07 (continued)

Sample Tag: Field Blank L008009-07

Method: E245.1, Run Date: 08/26/20 13:29, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Quality Control Cover Page

Report ID: S16695.01(01)
Report Date: 09/21/2020
Project: Erickson GMP
Lab Sample ID(s): S16695.01-S16695.07

Report to:

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Sample ID	Sample Tag	Collected	Matrix	Analysis Departments
S16695.01	MW-1 L008009-01	08/18/2020 13:24	Groundwater	Inorganics, Metals
S16695.02	MW-2 L008009-02	08/18/2020 16:45	Groundwater	Inorganics, Metals
S16695.03	MW-4 L008009-03	08/18/2020 10:05	Groundwater	Inorganics, Metals
S16695.04	MW-5 L008009-04	08/18/2020 17:25	Groundwater	Inorganics, Metals
S16695.05	MW-6 L008009-05	08/18/2020 15:02	Groundwater	Inorganics, Metals
S16695.06	MW-4 Duplicate L008009-06	08/18/2020 10:05	Groundwater	Inorganics, Metals
S16695.07	Field Blank L008009-07	08/18/2020 07:25	Water	Inorganics, Metals

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager



Quality Control Report

Report ID: QC-S16695-01
Generated on 09/25/2020

Report to
Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: 517-702-6372 FAX:

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S16695.01-S16695.07
Project: Erickson GMP
Submitted Date/Time: 08/19/2020 09:27
Sampled by: Marc Wahrer
P.O. #:

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-8)
Prep Batch Summary (Pages 9-12)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S16695.01

Sample Tag: MW-1 L008009-01

Collected Date/Time: 08/18/2020 13:24

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	08/20/20 10:17	CL200820-W1-A	CL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 10:17	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 10:17	SFT200820-W1-A	SFT200820-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:45	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 12:46	HG2-HG3-20-0826AHGD-082620-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S16695.02

Sample Tag: MW-2 L008009-02

Collected Date/Time: 08/18/2020 16:45

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	08/20/20 10:04	CL200820-W1-B	CL200820-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 10:30	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 10:04	SFT200820-W1-B	SFT200820-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:50	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 12:47	HG2-HG3-20-0826AHGD-082620-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S16695.03

Sample Tag: MW-4 L008009-03

Collected Date/Time: 08/18/2020 10:05

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	08/20/20 10:17	CL200820-W1-B	CL200820-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 10:43	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 10:17	SFT200820-W1-B	SFT200820-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:52	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 12:49	HG2-HG3-20-0826AHGD-082620-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S16695.04

Sample Tag: MW-5 L008009-04

Collected Date/Time: 08/18/2020 17:25

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	08/20/20 10:30	CL200820-W1-B	CL200820-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 10:56	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 10:30	SFT200820-W1-B	SFT200820-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:56	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 12:51	HG2-HG3-20-0826AHGD-082620-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S16695.05

Sample Tag: MW-6 L008009-05

Collected Date/Time: 08/18/2020 15:02

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	08/20/20 10:43	CL200820-W1-B	CL200820-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 11:08	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 10:43	SFT200820-W1-B	SFT200820-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:58	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 12:53	HG2-HG3-20-0826AHGD-082620-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S16695.06

Sample Tag: MW-4 Duplicate L008009-06

Collected Date/Time: 08/18/2020 10:05

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	08/20/20 11:47	CL200820-W1-B	CL200820-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 11:21	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 11:47	SFT200820-W1-B	SFT200820-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:47	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 12:55	HG2-HG3-20-0826AHGD	082620-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S16695.07

Sample Tag: Field Blank L008009-07

Collected Date/Time: 08/18/2020 07:25

Matrix: Water

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	08/20/20 12:25	CL200820-W1-A	CL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 12:25	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 12:25	SFT200820-W1-A	SFT200820-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:43	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 13:29	HG2-HG3-20-0826AHGD-082620-1		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: CL200820-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Chloride	E300.0	08/20/20 10:17	CL200820-W1-A
S16695.07	Chloride	E300.0	08/20/20 12:25	CL200820-W1-A

Inorganics, Prep Batch ID: CL200820-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.02	Chloride	E300.0	08/20/20 10:04	CL200820-W1-B
S16695.03	Chloride	E300.0	08/20/20 10:17	CL200820-W1-B
S16695.04	Chloride	E300.0	08/20/20 10:30	CL200820-W1-B
S16695.05	Chloride	E300.0	08/20/20 10:43	CL200820-W1-B
S16695.06	Chloride	E300.0	08/20/20 11:47	CL200820-W1-B

Inorganics, Prep Batch ID: FL200820-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Fluoride (Undistilled)	E300.0	08/20/20 10:17	FL200820-W1-A
S16695.02	Fluoride (Undistilled)	E300.0	08/20/20 10:30	FL200820-W1-A
S16695.03	Fluoride (Undistilled)	E300.0	08/20/20 10:43	FL200820-W1-A
S16695.04	Fluoride (Undistilled)	E300.0	08/20/20 10:56	FL200820-W1-A
S16695.05	Fluoride (Undistilled)	E300.0	08/20/20 11:08	FL200820-W1-A
S16695.06	Fluoride (Undistilled)	E300.0	08/20/20 11:21	FL200820-W1-A
S16695.07	Fluoride (Undistilled)	E300.0	08/20/20 12:25	FL200820-W1-A

Inorganics, Prep Batch ID: SFT200820-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Sulfate	E300.0	08/20/20 10:17	SFT200820-W1-A
S16695.07	Sulfate	E300.0	08/20/20 12:25	SFT200820-W1-A

Inorganics, Prep Batch ID: SFT200820-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.02	Sulfate	E300.0	08/20/20 10:04	SFT200820-W1-B
S16695.03	Sulfate	E300.0	08/20/20 10:17	SFT200820-W1-B
S16695.04	Sulfate	E300.0	08/20/20 10:30	SFT200820-W1-B
S16695.05	Sulfate	E300.0	08/20/20 10:43	SFT200820-W1-B
S16695.06	Sulfate	E300.0	08/20/20 11:47	SFT200820-W1-B

Inorganics, Prep Batch ID: TDS200825A

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A
S16695.02	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A
S16695.03	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A
S16695.04	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A
S16695.05	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A
S16695.06	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A
S16695.07	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TSS200823A

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A
S16695.02	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A
S16695.03	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A
S16695.04	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A
S16695.05	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A
S16695.06	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A
S16695.07	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A

Metals, Prep Batch ID: HGD-082620-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Mercury	E245.1	08/26/20 12:46	HG2-HG3-20-0826A
S16695.02	Mercury	E245.1	08/26/20 12:47	HG2-HG3-20-0826A
S16695.03	Mercury	E245.1	08/26/20 12:49	HG2-HG3-20-0826A
S16695.04	Mercury	E245.1	08/26/20 12:51	HG2-HG3-20-0826A
S16695.05	Mercury	E245.1	08/26/20 12:53	HG2-HG3-20-0826A
S16695.06	Mercury	E245.1	08/26/20 12:55	HG2-HG3-20-0826A
S16695.07	Mercury	E245.1	08/26/20 13:29	HG2-HG3-20-0826A

Metals, Prep Batch ID: MTD-081920-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Antimony	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Arsenic	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Barium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Beryllium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Boron	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Cadmium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Calcium	E200.8	08/19/20 16:45	MT4-20-0819B
S16695.01	Chromium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Cobalt	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Lead	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Lithium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Molybdenum	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Selenium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Thallium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.02	Antimony	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Arsenic	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Barium	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Beryllium	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Boron	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Cadmium	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Calcium	E200.8	08/19/20 16:50	MT4-20-0819B
S16695.02	Chromium	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Cobalt	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Lead	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Lithium	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Molybdenum	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Selenium	E200.8	08/19/20 13:08	MT4-20-0819A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-081920-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.02	Thallium	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.03	Antimony	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Arsenic	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Barium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Beryllium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Boron	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Cadmium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Calcium	E200.8	08/19/20 16:52	MT4-20-0819B
S16695.03	Chromium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Cobalt	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Lead	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Lithium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Molybdenum	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Selenium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Thallium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.04	Antimony	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Arsenic	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Barium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Beryllium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Boron	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Cadmium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Calcium	E200.8	08/19/20 16:56	MT4-20-0819B
S16695.04	Chromium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Cobalt	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Lead	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Lithium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Molybdenum	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Selenium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Thallium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.05	Antimony	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Arsenic	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Barium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Beryllium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Boron	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Cadmium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Calcium	E200.8	08/19/20 16:58	MT4-20-0819B
S16695.05	Chromium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Cobalt	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Lead	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Lithium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Molybdenum	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Selenium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Thallium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.06	Antimony	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Arsenic	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Barium	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Beryllium	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Boron	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Cadmium	E200.8	08/19/20 13:51	MT4-20-0819A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-081920-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.06	Calcium	E200.8	08/19/20 16:47	MT4-20-0819B
S16695.06	Chromium	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Cobalt	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Lead	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Lithium	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Molybdenum	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Selenium	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Thallium	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.07	Antimony	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Arsenic	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Barium	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Beryllium	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Boron	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Cadmium	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Calcium	E200.8	08/19/20 16:43	MT4-20-0819B
S16695.07	Chromium	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Cobalt	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Lead	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Lithium	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Molybdenum	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Selenium	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Thallium	E200.8	08/19/20 13:34	MT4-20-0819A

Form 0: Sequence Log

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	11:17:02 Wed 19-Aug-20	Blank	Liquid	
002	11:18:32 Wed 19-Aug-20	Std-0.0	Liquid	
003	11:20:03 Wed 19-Aug-20	Std-0.0001	Liquid	
004	11:21:33 Wed 19-Aug-20	Std-0.0005	Liquid	
005	11:23:04 Wed 19-Aug-20	Std-0.005	Liquid	
006	11:24:34 Wed 19-Aug-20	Std-0.02	Liquid	
007	11:26:05 Wed 19-Aug-20	Std-0.05	Liquid	
008	11:27:37 Wed 19-Aug-20	Std-0.2	Liquid	
009	11:29:07 Wed 19-Aug-20	ICV-0.1	Liquid	ICV
010	11:30:56 Wed 19-Aug-20	CCV-0.1	Liquid	CCV
011	11:37:37 Wed 19-Aug-20	rinse	Liquid	
012	11:39:07 Wed 19-Aug-20	ICB	Liquid	ICB
013	11:40:37 Wed 19-Aug-20	CCB	Liquid	CCB
014	11:45:47 Wed 19-Aug-20	BS-0.0001	Liquid	BS
015	11:47:34 Wed 19-Aug-20	rinse	Liquid	
016	11:49:07 Wed 19-Aug-20	BS-0.0005	Liquid	BS
017	11:53:56 Wed 19-Aug-20	rinse	Liquid	
018	11:55:27 Wed 19-Aug-20	BS-0.0005	Liquid	BS
019	11:57:28 Wed 19-Aug-20	BS-0.001	Liquid	BS
020	11:59:04 Wed 19-Aug-20	BS-0.002	Liquid	BS
021	12:00:51 Wed 19-Aug-20	Solu-AB	Liquid	AB
022	12:06:24 Wed 19-Aug-20	rinse	Liquid	
023	12:07:54 Wed 19-Aug-20	Solu-AA	Liquid	AA
024	12:10:22 Wed 19-Aug-20	081920_1 LCS-0.05	Liquid	LCS
025	12:25:41 Wed 19-Aug-20	Rinse	Liquid	
026	12:27:11 Wed 19-Aug-20	081920_1 LRB	Liquid	LRB
027	12:34:00 Wed 19-Aug-20	16653.01s	Liquid	S
028	12:40:24 Wed 19-Aug-20	Rinse	Liquid	
029	12:42:02 Wed 19-Aug-20	16402.01 dil	Liquid	DIL
030	12:43:31 Wed 19-Aug-20	16402.01s dis	Liquid	S
031	12:45:20 Wed 19-Aug-20	Rinse	Liquid	
032	12:46:54 Wed 19-Aug-20	16402.02s	Liquid	S
033	12:49:11 Wed 19-Aug-20	Rinse	Liquid	
034	12:50:45 Wed 19-Aug-20	16531.01s dis	Liquid	S
035	12:52:17 Wed 19-Aug-20	Rinse	Liquid	
036	12:54:12 Wed 19-Aug-20	16531.01s tot	Liquid	S
037	12:55:45 Wed 19-Aug-20	Rinse	Liquid	
038	12:57:21 Wed 19-Aug-20	16513.02s	Liquid	S
039	12:59:37 Wed 19-Aug-20	Rinse	Liquid	
040	13:01:51 Wed 19-Aug-20	16561.01s	Liquid	S
041	13:03:33 Wed 19-Aug-20	Rinse	Liquid	
042	13:05:27 Wed 19-Aug-20	16695.01s	Liquid	S
043	13:07:00 Wed 19-Aug-20	Rinse	Liquid	
044	13:08:48 Wed 19-Aug-20	16695.02s	Liquid	S
045	13:13:22 Wed 19-Aug-20	Rinse	Liquid	
046	13:15:02 Wed 19-Aug-20	16695.03s	Liquid	S
047	13:16:45 Wed 19-Aug-20	Rinse	Liquid	
048	13:18:41 Wed 19-Aug-20	16402.02 MS-0.05	Liquid	MS
049	13:20:11 Wed 19-Aug-20	16402.02 MSD-0.05	Liquid	MSD
050	13:21:52 Wed 19-Aug-20	CCV2-0.1	Liquid	CCV
051	13:29:41 Wed 19-Aug-20	Rinse	Liquid	
052	13:31:11 Wed 19-Aug-20	CCB2	Liquid	CCB
053	13:34:20 Wed 19-Aug-20	16695.07s	Liquid	S
054	13:35:53 Wed 19-Aug-20	Rinse	Liquid	
055	13:37:26 Wed 19-Aug-20	16695.04s	Liquid	S
056	13:42:53 Wed 19-Aug-20	Rinse	Liquid	

Form 0: Sequence Log

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	13:44:08 Wed 19-Aug-20	16695.05s	Liquid	S
058	13:47:15 Wed 19-Aug-20	Rinse	Liquid	
059	13:51:54 Wed 19-Aug-20	16695.06s	Liquid	S
060	13:53:26 Wed 19-Aug-20	Rinse	Liquid	
061	13:55:05 Wed 19-Aug-20	16689.01s	Liquid	S
062	13:56:37 Wed 19-Aug-20	Rinse	Liquid	
063	13:59:10 Wed 19-Aug-20	16663.01s	Liquid	S
064	14:00:42 Wed 19-Aug-20	Rinse	Liquid	
065	14:02:15 Wed 19-Aug-20	16663.02s	Liquid	S
066	14:03:48 Wed 19-Aug-20	Rinse	Liquid	
067	14:05:20 Wed 19-Aug-20	16663.03s	Liquid	S
068	14:06:53 Wed 19-Aug-20	Rinse	Liquid	
069	14:08:25 Wed 19-Aug-20	16663.04s	Liquid	S
070	14:09:58 Wed 19-Aug-20	Rinse	Liquid	
071	14:11:30 Wed 19-Aug-20	16663.05s	Liquid	S
072	14:13:04 Wed 19-Aug-20	Rinse	Liquid	
073	14:14:51 Wed 19-Aug-20	16695.06 MS-0.05	Liquid	MS
074	14:16:22 Wed 19-Aug-20	16695.06 MSD-0.05	Liquid	MSD
075	14:18:26 Wed 19-Aug-20	CCV3-0.1	Liquid	CCV
076	14:26:21 Wed 19-Aug-20	Rinse	Liquid	
077	14:27:52 Wed 19-Aug-20	CCB3	Liquid	CCB
078	14:30:12 Wed 19-Aug-20	081920_2 LCS-0.05	Liquid	LCS
079	14:36:18 Wed 19-Aug-20	Rinse	Liquid	
080	14:37:48 Wed 19-Aug-20	081920_2 LRB	Liquid	LRB
081	14:41:49 Wed 19-Aug-20	Rinse	Liquid	
082	14:43:20 Wed 19-Aug-20	16479.01s	Soil	DIL
083	14:44:52 Wed 19-Aug-20	Rinse	Liquid	
084	14:46:58 Wed 19-Aug-20	16479.01s	Soil	S
085	14:48:36 Wed 19-Aug-20	Rinse	Liquid	
086	14:50:35 Wed 19-Aug-20	16479.01s	Soil	
087	15:09:59 Wed 19-Aug-20	Rinse	Liquid	
088	15:11:44 Wed 19-Aug-20	16479.01 MS-0.1	Soil	MS
089	15:14:06 Wed 19-Aug-20	16479.01 MSD-0.1	Soil	MSD
090	15:16:01 Wed 19-Aug-20	Rinse	Liquid	
091	15:17:49 Wed 19-Aug-20	CCV4-0.1	Liquid	CCV
092	15:28:34 Wed 19-Aug-20	Rinse	Liquid	
093	15:30:05 Wed 19-Aug-20	CCB4	Liquid	CCB

Form 0: Sequence Log

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	16:09:08 Wed 19-Aug-20	Blank	Liquid	
002	16:09:51 Wed 19-Aug-20	Std-0.0	Liquid	
003	16:10:34 Wed 19-Aug-20	Std-0.20	Liquid	
004	16:11:17 Wed 19-Aug-20	Std-0.50	Liquid	
005	16:12:00 Wed 19-Aug-20	Std-1.0	Liquid	
006	16:12:43 Wed 19-Aug-20	Std-2.0	Liquid	
007	16:13:26 Wed 19-Aug-20	Std-5.0	Liquid	
008	16:14:09 Wed 19-Aug-20	ICV-2.0	Liquid	ICV
009	16:15:02 Wed 19-Aug-20	CCV-2.0	Liquid	CCV
010	16:16:01 Wed 19-Aug-20	ICB	Liquid	ICB
011	16:16:44 Wed 19-Aug-20	CCB	Liquid	CCB
012	16:17:33 Wed 19-Aug-20	BS-0.05	Liquid	BS
013	16:18:18 Wed 19-Aug-20	BS-0.1	Liquid	BS
014	16:20:03 Wed 19-Aug-20	081920_1 LCS-1.0	Liquid	LCS
015	16:21:01 Wed 19-Aug-20	081920_2 LRB	Liquid	LRB
016	16:26:02 Wed 19-Aug-20	16402.01 dil	Liquid	DIL
017	16:26:45 Wed 19-Aug-20	16402.01s dis	Liquid	S
018	16:27:51 Wed 19-Aug-20	rinse	Liquid	
019	16:28:38 Wed 19-Aug-20	16402.02s	Liquid	S
020	16:35:04 Wed 19-Aug-20	rinse	Liquid	
021	16:35:53 Wed 19-Aug-20	16531.01s dis	Liquid	S
022	16:36:40 Wed 19-Aug-20	rinse	Liquid	
023	16:37:35 Wed 19-Aug-20	16531.01s	Liquid	S
024	16:40:35 Wed 19-Aug-20	16402.02 MS-2.0	Liquid	MS
025	16:41:20 Wed 19-Aug-20	16402.02 MSD-2.0	Liquid	MSD
026	16:42:12 Wed 19-Aug-20	CCV2-2.0	Liquid	CCV
027	16:42:58 Wed 19-Aug-20	CCB2	Liquid	CCB
028	16:43:58 Wed 19-Aug-20	16695.07s	Liquid	S
029	16:44:55 Wed 19-Aug-20	rinse	Liquid	
030	16:45:41 Wed 19-Aug-20	16695.01s	Liquid	S
031	16:47:11 Wed 19-Aug-20	rinse	Liquid	
032	16:47:57 Wed 19-Aug-20	16695.06s	Liquid	S
033	16:49:36 Wed 19-Aug-20	rinse	Liquid	
034	16:50:22 Wed 19-Aug-20	16695.02s	Liquid	S
035	16:51:52 Wed 19-Aug-20	rinse	Liquid	
036	16:52:39 Wed 19-Aug-20	16695.03s	Liquid	S
037	16:54:09 Wed 19-Aug-20	rinse	Liquid	
038	16:54:55 Wed 19-Aug-20	16695.02 dil	Liquid	DIL
039	16:55:41 Wed 19-Aug-20	rinse	Liquid	
040	16:56:33 Wed 19-Aug-20	16695.04s	Liquid	S
041	16:58:02 Wed 19-Aug-20	rinse	Liquid	
042	16:58:48 Wed 19-Aug-20	16695.05s	Liquid	S
043	16:59:34 Wed 19-Aug-20	rinse	Liquid	
044	17:00:36 Wed 19-Aug-20	16695.06 MS-2.0	Liquid	MS
045	17:01:19 Wed 19-Aug-20	16695.06 MSD-2.0	Liquid	MSD
046	17:02:13 Wed 19-Aug-20	rinse	Liquid	
047	17:03:03 Wed 19-Aug-20	CCV3-2.0	Liquid	CCV
048	17:03:48 Wed 19-Aug-20	CCB3	Liquid	CCB
049	17:05:11 Wed 19-Aug-20	081920_2 LCS-1.0	Liquid	LCS
050	17:06:01 Wed 19-Aug-20	081920_2 LRB	Liquid	LRB
051	17:07:09 Wed 19-Aug-20	16479.01s	Soil	S
052	17:08:13 Wed 19-Aug-20	rinse	Liquid	
053	17:09:29 Wed 19-Aug-20	16479.01s	Soil	S
054	17:10:14 Wed 19-Aug-20	rinse	Liquid	
055	17:11:48 Wed 19-Aug-20	16479.01s	Soil	S
056	17:12:17 Wed 19-Aug-20	rinse	Liquid	

Form 0: Sequence Log

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	17:15:31 Wed 19-Aug-20	16479.01 MS-2.0	Soil	MS
058	17:16:28 Wed 19-Aug-20	16479.01 MSD-2.0	Soil	MSD
059	17:17:49 Wed 19-Aug-20	CCV4-2.0	Liquid	CCV
060	17:18:34 Wed 19-Aug-20	CCB4	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.01

Sample Tag: MW-1 L008009-01

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	0.41	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	0.006	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	0.152	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	0.034	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.01

Sample Tag: MW-1 L008009-01

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	161	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.02

Sample Tag: MW-2 L008009-02

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	5.19	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	Not detected	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	0.011	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	0.045	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	0.057	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.02

Sample Tag: MW-2 L008009-02

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	272	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.03

Sample Tag: MW-4 L008009-03

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	0.06	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	0.008	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	0.166	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	Not detected	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.03

Sample Tag: MW-4 L008009-03

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	111	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.04

Sample Tag: MW-5 L008009-04

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	4.48	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	0.003	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	0.067	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	0.056	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	0.003	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	0.085	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.04

Sample Tag: MW-5 L008009-04

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	266	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.05

Sample Tag: MW-6 L008009-05

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	0.86	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	Not detected	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	0.030	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	0.053	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	0.044	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.05

Sample Tag: MW-6 L008009-05

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	170	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.06

Sample Tag: MW-4 Duplicate L008009-06

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	0.06	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	0.007	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	0.167	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	Not detected	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.06

Sample Tag: MW-4 Duplicate L008009-06

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	107	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.07

Sample Tag: Field Blank L008009-07

Date Collected: 08/18/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	Not detected	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	Not detected	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	Not detected	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	Not detected	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Lab Sample ID: S16695.07

Sample Tag: Field Blank L008009-07

Date Collected: 08/18/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	Not detected	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Note/Qualifier Key

b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
009 ICV-0.1	ICV	1	Li	0.104	0.1	104	90/110	mg/L	Liquid
			Be	0.103	0.1	103	90/110		
			B	0.109	0.1	109	90/110		
			Al	0.108	0.1	108	90/110		
			Ti	0.101	0.1	101	90/110		
			V	0.0971	0.1	97	90/110		
			Cr	0.0969	0.1	97	90/110		
			Mn	0.0997	0.1	100	90/110		
			Fe	0.100	0.1	100	90/110		
			Co	0.0960	0.1	96	90/110		
			Ni	0.0976	0.1	98	90/110		
			Cu	0.0993	0.1	99	90/110		
			Zn	0.100	0.1	100	90/110		
			As	0.0995	0.1	100	90/110		
			Sr	0.0984	0.1	98	90/110		
			Mo	0.106	0.1	106	90/110		
			Ag	0.0997	0.1	100	90/110		
			Cd	0.0993	0.1	99	90/110		
			Sn	0.106	0.1	106	90/110		
			Sb	0.0942	0.1	94	90/110		
			Ba	0.0967	0.1	97	90/110		
Tl	0.109	0.1	109	90/110					
Pb	0.0925	0.1	93	90/110					
Se	0.106	0.1	106	90/110					
010 CCV-0.1	CCV	1	Li	0.102	0.1	102	90/110	mg/L	Liquid
			Be	0.0999	0.1	100	90/110		
			B	0.104	0.1	104	90/110		
			Al	0.102	0.1	102	90/110		
			Ti	0.100	0.1	100	90/110		
			V	0.0993	0.1	99	90/110		
			Cr	0.0965	0.1	97	90/110		
			Mn	0.100	0.1	100	90/110		
			Fe	0.100	0.1	100	90/110		
			Co	0.0981	0.1	98	90/110		
			Ni	0.0998	0.1	100	90/110		
			Cu	0.0987	0.1	99	90/110		
			Zn	0.100	0.1	100	90/110		
			As	0.0993	0.1	99	90/110		
			Sr	0.0997	0.1	100	90/110		
			Mo	0.107	0.1	107	90/110		
			Ag	0.0985	0.1	99	90/110		
			Cd	0.101	0.1	101	90/110		
			Sn	0.108	0.1	108	90/110		
			Sb	0.0945	0.1	95	90/110		
			Ba	0.0972	0.1	97	90/110		
Tl	0.101	0.1	101	90/110					
Pb	0.0936	0.1	94	90/110					
Se	0.101	0.1	101	90/110					
050 CCV2-0.1	CCV	1	Li	0.0979	0.1	98	90/110	mg/L	Liquid
			Be	0.100	0.1	100	90/110		
			B	0.101	0.1	101	90/110		
			Al	0.0989	0.1	99	90/110		
			Ti	0.0997	0.1	100	90/110		
			V	0.0996	0.1	100	90/110		
			Cr	0.100	0.1	100	90/110		
			Mn	0.102	0.1	102	90/110		
			Fe	0.103	0.1	103	90/110		

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
050 CCV2-0.1	CCV	1	Co	0.0960	0.1	96	90/110	mg/L	Liquid
			Ni	0.101	0.1	101	90/110		
			Cu	0.0978	0.1	98	90/110		
			Zn	0.103	0.1	103	90/110		
			As	0.0983	0.1	98	90/110		
			Sr	0.103	0.1	103	90/110		
			Mo	0.103	0.1	103	90/110		
			Ag	0.0991	0.1	99	90/110		
			Cd	0.103	0.1	103	90/110		
			Sn	0.100	0.1	100	90/110		
			Sb	0.0977	0.1	98	90/110		
			Ba	0.100	0.1	100	90/110		
			Tl	0.104	0.1	104	90/110		
			Pb	0.0961	0.1	96	90/110		
			Se	0.104	0.1	104	90/110		
075 CCV3-0.1	CCV	1	Li	0.0994	0.1	99	90/110	mg/L	Liquid
			Be	0.0977	0.1	98	90/110		
			B	0.0991	0.1	99	90/110		
			Al	0.0978	0.1	98	90/110		
			Ti	0.102	0.1	102	90/110		
			V	0.101	0.1	101	90/110		
			Cr	0.101	0.1	101	90/110		
			Mn	0.104	0.1	104	90/110		
			Fe	0.104	0.1	104	90/110		
			Co	0.100	0.1	100	90/110		
			Ni	0.102	0.1	102	90/110		
			Cu	0.100	0.1	100	90/110		
			Zn	0.103	0.1	103	90/110		
			As	0.0999	0.1	100	90/110		
			Sr	0.101	0.1	101	90/110		
			Mo	0.103	0.1	103	90/110		
			Ag	0.100	0.1	100	90/110		
			Cd	0.104	0.1	104	90/110		
			Sn	0.0998	0.1	100	90/110		
			Sb	0.0986	0.1	99	90/110		
Ba	0.0978	0.1	98	90/110					
Tl	0.0990	0.1	99	90/110					
Pb	0.0936	0.1	94	90/110					
Se	0.102	0.1	102	90/110					
091 CCV4-0.1	CCV	1	Al	0.100	0.1	100	90/110	mg/L	Liquid
			Ti	0.106	0.1	106	90/110		
			V	0.102	0.1	102	90/110		
			Mn	0.104	0.1	104	90/110		
			Fe	0.104	0.1	104	90/110		
			Cu	0.101	0.1	101	90/110		
			Zn	0.104	0.1	104	90/110		
			Sr	0.105	0.1	105	90/110		
Ba	0.0990	0.1	99	90/110					

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
008 ICV-2.0	ICV	1	Na	1.97	2.0	99	90/110	mg/L	Liquid
			Mg	1.99	2.0	100	90/110		
			K	2.02	2.0	101	90/110		
			Ca	1.97	2.0	99	90/110		
009 CCV-2.0	CCV	1	Na	1.92	2.0	96	90/110	mg/L	Liquid
			Mg	1.92	2.0	96	90/110		
			K	1.92	2.0	96	90/110		
			Ca	1.94	2.0	97	90/110		
026 CCV2-2.0	CCV	1	Na	1.95	2.0	98	90/110	mg/L	Liquid
			Mg	1.97	2.0	99	90/110		
			K	1.98	2.0	99	90/110		
			Ca	1.95	2.0	98	90/110		
047 CCV3-2.0	CCV	1	Na	1.94	2.0	97	90/110	mg/L	Liquid
			Mg	1.96	2.0	98	90/110		
			K	1.91	2.0	96	90/110		
			Ca	1.95	2.0	98	90/110		
059 CCV4-2.0	CCV	1	Na	1.97	2.0	99	90/110	mg/L	Liquid
			Mg	1.91	2.0	96	90/110		
			K	1.98	2.0	99	90/110		
			Ca	1.95	2.0	98	90/110		

Form 3: Blanks

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
012 ICB	ICB	1	Li	<0.002	0.000012	mg/L	Liquid
			Be	<0.0002	0.000089		
			B	<0.008	0.000253		
			Al	<0.002	-0.000003		
			Ti	<0.001	0.000047		
			V	<0.001	0.000055		
			Cr	<0.001	0.000065		
			Mn	<0.001	0.000060		
			Fe	<0.004	-0.000104		
			Co	<0.001	0.000052		
			Ni	<0.001	0.000057		
			Cu	<0.001	0.000060		
			Zn	<0.001	0.000016		
			As	<0.0004	0.000156		
			Sr	<0.001	0.000048		
			Mo	<0.001	0.000824		
			Ag	<0.0001	0.000072		
			Cd	<0.0001	0.000061		
			Sn	<0.004	0.001425		
			Sb	<0.001	0.000492		
			Ba	<0.001	0.000042		
			Tl	<0.0004	0.000067		
			Pb	<0.0006	0.000060		
			Se	<0.001	0.000324		
013 CCB	CCB	1	Li	<0.002	-0.000055	mg/L	Liquid
			Be	<0.0002	0.000075		
			B	<0.008	0.000183		
			Al	<0.002	-0.000044		
			Ti	<0.001	-0.000164		
			V	<0.001	0.000048		
			Cr	<0.001	0.000040		
			Mn	<0.001	0.000025		
			Fe	<0.004	-0.000126		
			Co	<0.001	0.000041		
			Ni	<0.001	0.000042		
			Cu	<0.001	0.000046		
			Zn	<0.001	-0.000002		
			As	<0.0004	0.000085		
			Sr	<0.001	0.000042		
			Mo	<0.001	0.000707		
			Ag	<0.0001	0.000065		
			Cd	<0.0001	0.000074		
			Sn	<0.004	0.001121		
			Sb	<0.001	0.000425		
			Ba	<0.001	0.000018		
			Tl	<0.0004	0.000050		
			Pb	<0.0006	0.000044		
			Se	<0.001	0.000130		
026 081920_1 LRB	LRB	1	Li	<0.002	-0.000243	mg/L	Liquid
			Be	<0.0002	0.000006		
			B	<0.008	-0.000023		
			Al	<0.002	0.001112		
			Ti	<0.001	-0.000057		
			V	<0.001	0.000004		
			Cr	<0.001	0.000007		
			Mn	<0.001	0.000010		
			Fe	<0.004	0.000503		

Form 3: Blanks

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
026 081920_1 LRB	LRB	1	Co	<0.001	0.000007	mg/L	Liquid
			Ni	<0.001	0.000009		
			Cu	<0.001	0.000014		
			Zn	<0.001	0.000131		
			As	<0.0004	0.000035		
			Sr	<0.001	0.000017		
			Mo	<0.001	0.000179		
			Ag	<0.0001	0.000018		
			Cd	<0.0001	-0.000034		
			Sn	<0.004	0.000092		
			Sb	<0.001	0.000027		
			Ba	<0.001	-0.000029		
			Tl	<0.0004	0.000009		
			Pb	<0.0006	0.000005		
			Se	<0.001	-0.000234		
			052 CCB2	CCB	1	Li	<0.002	-0.000006	mg/L	Liquid
Be	<0.0002	0.000046					
B	<0.008	0.000371					
Al	<0.002	-0.000014					
Ti	<0.001	0.000402					
V	<0.001	0.000023					
Cr	<0.001	0.000007					
Mn	<0.001	0.000022					
Fe	<0.004	0.000207					
Co	<0.001	0.000013					
Ni	<0.001	0.000013					
Cu	<0.001	0.000026					
Zn	<0.001	0.000017					
As	<0.0004	-0.000060					
Sr	<0.001	0.000044					
Mo	<0.001	0.000531					
Ag	<0.0001	0.000026					
Cd	<0.0001	0.000018					
Sn	<0.004	0.000634					
Sb	<0.001	0.000347					
Ba	<0.001	-0.000017					
Tl	<0.0004	0.000023					
Pb	<0.0006	0.000020					
Se	<0.001	-0.000240					
077 CCB3	CCB	1	Li	<0.002	-0.000101	mg/L	Liquid
			Be	<0.0002	0.000030		
			B	<0.008	0.000232		
			Al	<0.002	-0.000068		
			Ti	<0.001	-0.000203		
			V	<0.001	0.000024		
			Cr	<0.001	0.000025		
			Mn	<0.001	0.000031		
			Fe	<0.004	0.000028		
			Co	<0.001	0.000018		
			Ni	<0.001	0.000012		
			Cu	<0.001	0.000016		
			Zn	<0.001	0.000090		
			As	<0.0004	0.000082		
			Sr	<0.001	0.000020		
			Mo	<0.001	0.000519		
Ag	<0.0001	0.000027					
Cd	<0.0001	0.000014					

Form 3: Blanks

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
077 CCB3	CCB	1	Sn	<0.004	0.000575	mg/L	Liquid
			Sb	<0.001	0.000366		
			Ba	<0.001	-0.000011		
			Tl	<0.0004	0.000022		
			Pb	<0.0006	0.000021		
			Se	<0.001	-0.000188		
080 081920_2 LRB	LRB	1	Al	<0.002	0.000357	mg/L	Liquid
			Ti	<0.001	-0.000057		
			V	<0.001	0.000003		
			Mn	<0.001	0.000032		
			Fe	<0.004	0.000007		
			Cu	<0.001	0.000017		
			Zn	<0.001	0.000161		
			Sr	<0.001	0.000053		
			Ba	<0.001	-0.000005		
093 CCB4	CCB	1	Al	<0.002	-0.000099	mg/L	Liquid
			Ti	<0.001	-0.000109		
			V	<0.001	0.000034		
			Mn	<0.001	0.000037		
			Fe	<0.004	0.000148		
			Cu	<0.001	0.000907		
			Zn	<0.001	0.000749		
			Sr	<0.001	0.000066		
			Ba	<0.001	0.000046		

Form 3: Blanks

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
010 ICB	ICB	1	Na	<0.05	0.005486	mg/L	Liquid
			Mg	<0.05	0.005230		
			K	<0.05	0.002275		
			Ca	<0.05	0.003850		
011 CCB	CCB	1	Na	<0.05	0.001468	mg/L	Liquid
			Mg	<0.05	0.000892		
			K	<0.05	0.000040		
			Ca	<0.05	-0.004807		
015 081920_2 LRB	LRB	1	Na	<0.05	0.001758	mg/L	Liquid
			Mg	<0.05	0.001155		
			K	<0.05	0.000426		
			Ca	<0.05	-0.006774		
027 CCB2	CCB	1	Na	<0.05	0.012181	mg/L	Liquid
			Mg	<0.05	0.008724		
			K	<0.05	0.005892		
			Ca	<0.05	-0.007937		
048 CCB3	CCB	1	Na	<0.05	0.012008	mg/L	Liquid
			Mg	<0.05	0.009468		
			K	<0.05	-0.002649		
			Ca	<0.05	-0.003047		
050 081920_2 LRB	LRB	1	Na	<0.05	0.010531	mg/L	Liquid
			Mg	<0.05	0.006305		
			K	<0.05	-0.000580		
			Ca	<0.05	-0.005661		
060 CCB4	CCB	1	Na	<0.05	0.010917	mg/L	Liquid
			Mg	<0.05	0.007753		
			K	<0.05	0.003540		
			Ca	<0.05	-0.011117		

Form 4B: ICP Interference Check Sample

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
021 Solu-AB	AB	1	Al	10.0	10	100	65/135	mg/L	Liquid
			Ti	0.224	0.20	112	65/135		
			Cr	0.0216	0.02	108	65/135		
			Mn	0.0235	0.02	118	65/135		
			Fe	11.0	10	110	65/135		
			Co	0.0209	0.02	105	65/135		
			Ni	0.0212	0.020	106	65/135		
			Cu	0.0201	0.02	101	65/135		
			Zn	0.0214	0.02	107	65/135		
			As	0.0215	0.02	108	65/135		
			Mo	0.211	0.20	106	65/135		
			Ag	0.0198	0.02	99	65/135		
			Cd	0.0217	0.02	109	65/135		
			023 Solu-AA	AA	1	Li	<0.010			0.0	N/A	N/A	mg/L	Liquid
Be	<0.001	0.0				N/A	N/A		
B	<0.04	0.0				N/A	N/A		
Al	<0.010	0.0				N/A	N/A		
Ti	<0.005	0.0				N/A	N/A		
V	<0.005	0.0				N/A	N/A		
Cr	<0.005	0.0				N/A	N/A		
Mn	<0.005	0.0				N/A	N/A		
Fe	<0.02	0.0				N/A	N/A		
Co	<0.005	0.0				N/A	N/A		
Ni	<0.005	0.0				N/A	N/A		
Cu	<0.005	0.0				N/A	N/A		
Zn	<0.005	0.0				N/A	N/A		
As	<0.002	0.0				N/A	N/A		
Sr	<0.005	0.0				N/A	N/A		
Mo	<0.005	0.0				N/A	N/A		
Ag	<0.0005	0.0				N/A	N/A		
Cd	<0.0005	0.0				N/A	N/A		
Sn	<0.02	0.0				N/A	N/A		
Sb	<0.005	0.0				N/A	N/A		
Ba	<0.005	0.0	N/A	N/A					
Tl	<0.002	0.0	N/A	N/A					
Pb	<0.003	0.0	N/A	N/A					
Se	<0.005	0.0	N/A	N/A					

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
014 BS-0.0001		1	Be	0.000123	ND	0.0001	123	70/130	mg/L	Liquid
			V	0.000127	ND	0.0001	127	70/130		
			Cr	0.000113	ND	0.0001	113	70/130		
			Sr	0.000129	ND	0.0001	129	70/130		
			Ag	0.000105	ND	0.0001	105	70/130		
			Cd	0.000107	ND	0.0001	107	70/130		
			Ba	0.000130	ND	0.0001	130	70/130		
			Pb	0.000130	ND	0.0001	130	70/130		
016 BS-0.0005		1	Li	0.000376	ND	0.0005	75	70/130	mg/L	Liquid
			Be	0.000548	ND	0.0005	110	70/130		
			B	0.000592	ND	0.0005	118	70/130		
			Al	0.000442	ND	0.0005	88	70/130		
			Ti	0.000452	ND	0.0005	90	70/130		
			V	0.000489	ND	0.0005	98	70/130		
			Cr	0.000546	ND	0.0005	109	70/130		
			Mn	0.000605	ND	0.0005	121	70/130		
			Fe	0.000490	ND	0.0005	98	70/130		
			Co	0.000521	ND	0.0005	104	70/130		
			Ni	0.000527	ND	0.0005	105	70/130		
			Cu	0.000556	ND	0.0005	111	70/130		
			As	0.000481	ND	0.0005	96	70/130		
			Sr	0.000531	ND	0.0005	106	70/130		
			Ag	0.000386	ND	0.0005	77	70/130		
			Cd	0.000549	ND	0.0005	110	70/130		
			Ba	0.000624	ND	0.0005	125	70/130		
			Tl	0.000528	ND	0.0005	106	70/130		
Pb	0.000457	ND	0.0005	91	70/130					
Se	0.000496	ND	0.0005	99	70/130					
018 BS-0.0005		1	Sb	0.000632	ND	0.0005	126	70/130	mg/L	Liquid
019 BS-0.001		1	Li	0.000750	ND	0.001	75	70/130	mg/L	Liquid
			Be	0.000987	ND	0.001	99	70/130		
			B	0.00122	ND	0.001	122	70/130		
			Al	0.00125	ND	0.001	125	70/130		
			Ti	0.000966	ND	0.001	97	70/130		
			V	0.00103	ND	0.001	103	70/130		
			Cr	0.00104	ND	0.001	104	70/130		
			Mn	0.00109	ND	0.001	109	70/130		
			Fe	0.000929	ND	0.001	93	70/130		
			Co	0.00105	ND	0.001	105	70/130		
			Ni	0.00108	ND	0.001	108	70/130		
			Cu	0.00104	ND	0.001	104	70/130		
			Zn	0.00105	ND	0.001	105	70/130		
			As	0.00120	ND	0.001	120	70/130		
			Sr	0.00108	ND	0.001	108	70/130		
			Mo	0.00111	ND	0.001	111	70/130		
			Ag	0.000860	ND	0.001	86	70/130		
			Cd	0.000986	ND	0.001	99	70/130		
Sb	0.00112	ND	0.001	112	70/130					
Ba	0.00109	ND	0.001	109	70/130					
Tl	0.00104	ND	0.001	104	70/130					
Pb	0.000893	ND	0.001	89	70/130					
Se	0.000704	ND	0.001	70	70/130					
020 BS-0.002		1	Li	0.00174	ND	0.002	87	70/130	mg/L	Liquid
			Be	0.00195	ND	0.002	98	70/130		
			B	0.00210	ND	0.002	105	70/130		
			Al	0.00186	ND	0.002	93	70/130		
			Ti	0.00244	ND	0.002	122	70/130		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
020 BS-0.002		1	V	0.00198	ND	0.002	99	70/130	mg/L	Liquid
			Cr	0.00201	ND	0.002	101	70/130		
			Mn	0.00212	ND	0.002	106	70/130		
			Fe	0.00196	ND	0.002	98	70/130		
			Co	0.00203	ND	0.002	102	70/130		
			Ni	0.00216	ND	0.002	108	70/130		
			Cu	0.00202	ND	0.002	101	70/130		
			Zn	0.00223	ND	0.002	112	70/130		
			As	0.00177	ND	0.002	89	70/130		
			Sr	0.00207	ND	0.002	104	70/130		
			Mo	0.00193	ND	0.002	97	70/130		
			Ag	0.00171	ND	0.002	86	70/130		
			Cd	0.00189	ND	0.002	95	70/130		
			Sn	0.00223	ND	0.002	112	70/130		
			Sb	0.00203	ND	0.002	102	70/130		
			Ba	0.00210	ND	0.002	105	70/130		
			Tl	0.00210	ND	0.002	105	70/130		
			Pb	0.00187	ND	0.002	94	70/130		
Se	0.00163	ND	0.002	82	70/130					
048 16402.02	032 16402.02s	5	Li	0.252	<0.010	0.25	101	75/125	mg/L	Liquid
			Be	0.253	<0.001	0.25	101	75/125		
			B	0.267	<0.04	0.25	107	75/125		
			Al	0.260	<0.010	0.25	104	75/125		
			Ti	0.272	<0.005	0.25	109	75/125		
			V	0.260	<0.005	0.25	104	75/125		
			Cr	0.261	<0.005	0.25	104	75/125		
			Mn	0.273	<0.005	0.25	109	75/125		
			Fe	0.279	<0.02	0.25	112	75/125		
			Co	0.258	<0.005	0.25	103	75/125		
			Ni	0.270	<0.005	0.25	108	75/125		
			Cu	0.269	0.007	0.25	105	75/125		
			Zn	0.279	0.009	0.25	108	75/125		
			As	0.261	<0.002	0.25	104	75/125		
			Sr	0.272	<0.005	0.25	109	75/125		
			Mo	0.246	<0.005	0.25	98	75/125		
			Ag	0.250	<0.0005	0.25	100	75/125		
			Cd	0.272	<0.0005	0.25	109	75/125		
Sn	0.245	<0.02	0.25	98	75/125					
Sb	0.202	<0.005	0.25	81	75/125					
Ba	0.264	<0.005	0.25	106	75/125					
Tl	0.266	<0.002	0.25	106	75/125					
Pb	0.243	<0.003	0.25	97	75/125					
Se	0.265	<0.005	0.25	106	75/125					
073 16695.06	059 16695.06s	5	Li	0.264	<0.010	0.25	106	75/125	mg/L	Liquid
			Be	0.254	<0.001	0.25	102	75/125		
			B	0.314	0.06	0.25	102	75/125		
			Al	0.255	<0.010	0.25	102	75/125		
			Ti	0.275	<0.005	0.25	110	75/125		
			V	0.267	<0.005	0.25	107	75/125		
			Cr	0.266	<0.005	0.25	106	75/125		
			Mn	0.335	0.057	0.25	111	75/125		
			Fe	1.72	1.48	0.25	96	75/125		
			Co	0.258	<0.005	0.25	103	75/125		
			Ni	0.258	<0.005	0.25	103	75/125		
			Cu	0.254	<0.005	0.25	102	75/125		
			Zn	0.272	<0.005	0.25	109	75/125		
			As	0.274	0.007	0.25	107	75/125		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
073 16695.06	059 16695.06s	5	Sr	0.408	0.144	0.25	106	75/125	mg/L	Liquid
			Mo	0.258	0.005	0.25	101	75/125		
			Ag	0.245	<0.0005	0.25	98	75/125		
			Cd	0.271	<0.0005	0.25	108	75/125		
			Sn	0.251	<0.02	0.25	100	75/125		
			Sb	0.206	<0.005	0.25	82	75/125		
			Ba	0.428	0.167	0.25	104	75/125		
			Tl	0.257	<0.002	0.25	103	75/125		
			Pb	0.230	<0.003	0.25	92	75/125		
			Se	0.262	<0.005	0.25	105	75/125		
088 16479.01 MS-0.1	084 16479.01s	11737	Al	1250	14.0	1173.7	105	75/125	mg/kg	Soil
			Ti	1300	2.40	1173.7	111	75/125		
			V	1260	<0.50	1173.7	107	75/125		
			Mn	1370	77.0	1173.7	110	75/125		
			Fe	1910	596	1173.7	112	75/125		
			Cu	4180	2950	1173.7	105	75/125		
			Zn	4010	2820	1173.7	101	75/125		
			Sr	1480	217	1173.7	108	75/125		
			Ba	1280	95.0	1173.7	101	75/125		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
012 BS-0.05		1	Na	0.0503	ND	0.05	101	70/130	mg/L	Liquid
			Mg	0.0469	ND	0.05	94	70/130		
			K	0.0440	ND	0.05	88	70/130		
			Ca	0.0392	ND	0.05	78	70/130		
013 BS-0.1		1	Na	0.103	ND	0.1	103	70/130	mg/L	Liquid
			Mg	0.101	ND	0.1	101	70/130		
			K	0.0930	ND	0.1	93	70/130		
			Ca	0.0844	ND	0.1	84	70/130		
024 16402.02 MS-2.0 019 16402.02s		5	Na	10.1	<0.50	10.0	101	75/125	mg/L	Liquid
			Mg	10.0	<0.50	10.0	100	75/125		
			K	10.0	<0.50	10.0	100	75/125		
			Ca	10.8	<0.50	10.0	108	75/125		
044 16695.06 MS-2.0 032 16695.06s		5	Na	35.5	26.2	10.0	93	75/125	mg/L	Liquid
			Mg	47.1	38.3	10.0	88	75/125		
			K	11.6	1.36	10.0	102	75/125		
			Ca	119	107	10.0	120	75/125		
057 16479.01 MS-2.0 051 16479.01s		117370	Na	239000	823234740.0		102	75/125	mg/kg	Soil
			Mg	263000	33100234740.0		98	75/125		
			K	243000	<0.50234740.0		104	75/125		
			Ca	588000	334000234740.0		108	75/125		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Duplicate Name	Sample Name	Dilute	Element	Dup Conc	Samp Conc	%RPD	LCL/UCL	Units	Matrix
049 16402.02	048 16402.02 MS-0.05	5	Li	0.264	0.252	5	0/20	mg/L	Liquid
			Be	0.264	0.253	4	0/20		
			B	0.264	0.267	1	0/20		
			Al	0.274	0.260	5	0/20		
			Ti	0.257	0.272	6	0/20		
			V	0.268	0.260	3	0/20		
			Cr	0.269	0.261	3	0/20		
			Mn	0.272	0.273	0	0/20		
			Fe	0.277	0.279	1	0/20		
			Co	0.266	0.258	3	0/20		
			Ni	0.261	0.270	3	0/20		
			Cu	0.273	0.269	1	0/20		
			Zn	0.280	0.279	0	0/20		
			As	0.261	0.261	0	0/20		
			Sr	0.269	0.272	1	0/20		
			Mo	0.269	0.246	9	0/20		
			Ag	0.262	0.250	5	0/20		
			Cd	0.271	0.272	0	0/20		
			Se	0.274	0.265	3	0/20		
			074 16695.06	073 16695.06 MS-0.05	5	Li	0.271			0.264	3	0/20	mg/L	Liquid
Be	0.266	0.254				5	0/20		
B	0.309	0.314				2	0/20		
Al	0.259	0.255				2	0/20		
Ti	0.285	0.275				4	0/20		
V	0.267	0.267				0	0/20		
Cr	0.262	0.266				2	0/20		
Mn	0.333	0.335				1	0/20		
Fe	1.74	1.72				1	0/20		
Co	0.256	0.258				1	0/20		
Ni	0.257	0.258				0	0/20		
Cu	0.253	0.254				0	0/20		
Zn	0.278	0.272				2	0/20		
As	0.272	0.274				1	0/20		
Sr	0.412	0.408				1	0/20		
Mo	0.279	0.258				8	0/20		
Ag	0.252	0.245				3	0/20		
Cd	0.268	0.271				1	0/20		
Se	0.272	0.262				4	0/20		
089 16479.01 MSD-0.1	088 16479.01 MS-0.1	11737				Al	1250	1250	0	0/20	mg/kg	Soil
			Ti	1350	1300	4	0/20		
			V	1330	1260	5	0/20		
			Mn	1430	1370	4	0/20		
			Fe	1960	1910	3	0/20		
			Cu	4370	4180	4	0/20		
			Zn	4250	4010	6	0/20		
			Sr	1540	1480	4	0/20		
			Ba	1380	1280	8	0/20		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
025 16402.02 MSD-2.0	024 16402.02 MS-2.0	5	Na	9.92	10.1	2	0/20	mg/L	Liquid
			Mg	9.80	10.0	2	0/20		
			K	9.92	10.0	1	0/20		
			Ca	11.1	10.8	3	0/20		
045 16695.06 MSD-2.0	044 16695.06 MS-2.0	5	Na	36.5	35.5	3	0/20	mg/L	Liquid
			Mg	47.8	47.1	1	0/20		
			K	11.7	11.6	1	0/20		
			Ca	119	119	0	0/20		
058 16479.01 MSD-2.0	057 16479.01 MS-2.0	117370	Na	249000	239000	4	0/20	mg/kg	Soil
			Mg	270000	263000	3	0/20		
			K	247000	243000	2	0/20		
			Ca	590000	588000	0	0/20		

Form 7: Laboratory Control Sample

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
024 081920_1 LCS-0.05	1	Li	0.0487	0.05	97	85/115	mg/L	Liquid
		Be	0.0484	0.05	97	85/115		
		B	0.0493	0.05	99	85/115		
		Al	0.0564	0.05	113	85/115		
		Ti	0.0510	0.05	102	85/115		
		V	0.0484	0.05	97	85/115		
		Cr	0.0483	0.05	97	85/115		
		Mn	0.0497	0.05	99	85/115		
		Fe	0.0550	0.05	110	85/115		
		Co	0.0484	0.05	97	85/115		
		Ni	0.0487	0.05	97	85/115		
		Cu	0.0491	0.05	98	85/115		
		Zn	0.0507	0.05	101	85/115		
		As	0.0473	0.05	95	85/115		
		Sr	0.0498	0.05	100	85/115		
		Mo	0.0480	0.05	96	85/115		
		Ag	0.0483	0.05	97	85/115		
		Cd	0.0499	0.05	100	85/115		
		Sn	0.0475	0.05	95	85/115		
		Sb	0.0475	0.05	95	85/115		
		Ba	0.0477	0.05	95	85/115		
		Tl	0.0518	0.05	104	85/115		
		Pb	0.0469	0.05	94	85/115		
		Se	0.0499	0.05	100	85/115		
078 081920_2 LCS-0.05	1	Al	0.0485	0.05	97	85/115	mg/L	Liquid
		Ti	0.0524	0.05	105	85/115		
		V	0.0483	0.05	97	85/115		
		Mn	0.0519	0.05	104	85/115		
		Fe	0.0522	0.05	104	85/115		
		Cu	0.0501	0.05	100	85/115		
		Zn	0.0514	0.05	103	85/115		
		Sr	0.0511	0.05	102	85/115		
		Ba	0.0481	0.05	96	85/115		

Form 7: Laboratory Control Sample

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
014 081920_1 LCS-1.0	1	Na	0.950	1.0	95	85/115	mg/L	Liquid
		Mg	0.955	1.0	96	85/115		
		K	0.988	1.0	99	85/115		
		Ca	0.976	1.0	98	85/115		
049 081920_2 LCS-1.0	1	Na	0.993	1.0	99	85/115	mg/L	Liquid
		Mg	0.965	1.0	97	85/115		
		K	0.992	1.0	99	85/115		
		Ca	0.974	1.0	97	85/115		

Form 8: Serial Dilutions

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Duplicate Name	Sample Name	Dilute	Element	Dup Conc	Samp Conc	%D	LCL/UCL	Units	Matrix
029 16402.01 dil	030 16402.01s dis	25	Li	<0.010	<0.010	NC	0/10	mg/L	Liquid
			Be	<0.001	<0.001	NC	0/10		
			B	<0.04	<0.04	NC	0/10		
			Al	0.023	<0.010	NC	0/10		
			Ti	<0.005	<0.005	NC	0/10		
			V	<0.005	<0.005	NC	0/10		
			Cr	<0.005	<0.005	NC	0/10		
			Mn	<0.005	<0.005	NC	0/10		
			Fe	0.03	<0.02	NC	0/10		
			Co	<0.005	<0.005	NC	0/10		
			Ni	<0.005	<0.005	NC	0/10		
			Cu	0.006	0.006	0	0/10		
			Zn	0.016	0.011	45 *	0/10		
			As	<0.002	<0.002	NC	0/10		
			Sr	0.013	<0.005	NC	0/10		
			Mo	0.005	<0.005	NC	0/10		
			Ag	<0.0005	<0.0005	NC	0/10		
			Cd	<0.0005	<0.0005	NC	0/10		
			Sn	<0.02	<0.02	NC	0/10		
			Sb	<0.005	<0.005	NC	0/10		
			Ba	0.011	<0.005	NC	0/10		
Tl	<0.002	<0.002	NC	0/10					
Pb	<0.003	<0.003	NC	0/10					
Se	<0.005	<0.005	NC	0/10					
082 16479.01s	084 16479.01s	117371	Al	18.7	14.0	34 *	0/10	mg/kg	Soil
			Ti	<1.0	2.40	100 *	0/10		
			V	1.49	<0.50	NC	0/10		
			Mn	87.5	77.0	14 *	0/10		
			Fe	605	596	2	0/10		
			Cu	3070	2950	4	0/10		
			Zn	2860	2820	1	0/10		
			Sr	224	217	3	0/10		
Ba	97.1	95.0	2	0/10					

Form 8: Serial Dilutions

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%D</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
016 16402.01 dil	017 16402.01s dis	25	Na	0.148	<0.50	NC	0/10	mg/L	Liquid
			Mg	0.0101	<0.50	NC	0/10		
			K	<0.00005	<0.50	NC	0/10		
			Ca	1.68	<0.50	NC	0/10		
038 16695.02 dil	034 16695.02s	50	Na	63.3	61.6	3	0/10	mg/L	Liquid
			Mg	66.9	67.6	1	0/10		
			K	1.56	1.00	56*	0/10		
			Ca	266	272	2	0/10		

Form 13: Analysis Run Log

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Blank	11:17:02 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
002 Std-0.0	11:18:32 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
003 Std-0.0001	11:20:03 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
004 Std-0.0005	11:21:33 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
005 Std-0.005	11:23:04 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
006 Std-0.02	11:24:34 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
007 Std-0.05	11:26:05 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
008 Std-0.2	11:27:37 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
009 ICV-0.1	11:29:07 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
010 CCV-0.1	11:30:56 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
011 rinse	11:37:37 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
012 ICB	11:39:07 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
013 CCB	11:40:37 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
014 BS-0.0001	11:45:47 Wed	Liquid	Ag,Ba,Be,Cd,Cr,Pb,Sr,V
015 rinse	11:47:34 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
016 BS-0.0005	11:49:07 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Ni,Pb,Se,Sr,Ti,Tl,V
017 rinse	11:53:56 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
018 BS-0.0005	11:55:27 Wed	Liquid	Sb
019 BS-0.001	11:57:28 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sr,Ti,Tl,V,Zn
020 BS-0.002	11:59:04 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
021 Solu-AB	12:00:51 Wed	Liquid	Ag,Al,As,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Ti,Zn
022 rinse	12:06:24 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
023 Solu-AA	12:07:54 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
024 081920_1 LCS-0.05	12:10:22 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
025 Rinse	12:25:41 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
026 081920_1 LRB	12:27:11 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
027 16653.01s	12:34:00 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
028 Rinse	12:40:24 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
029 16402.01 dil	12:42:02 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
030 16402.01s dil	12:43:31 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn

Form 13: Analysis Run Log

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
			b, Se, Sn, Sr, Ti, Tl, V, Zn
031 Rinse	12:45:20 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
032 16402.02s	12:46:54 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
033 Rinse	12:49:11 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
034 16531.01s dis	12:50:45 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
035 Rinse	12:52:17 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
036 16531.01s tot	12:54:12 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
037 Rinse	12:55:45 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
038 16513.02s	12:57:21 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
039 Rinse	12:59:37 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
040 16561.01s	13:01:51 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
041 Rinse	13:03:33 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
042 16695.01s	13:05:27 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
043 Rinse	13:07:00 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
044 16695.02s	13:08:48 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
045 Rinse	13:13:22 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
046 16695.03s	13:15:02 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
047 Rinse	13:16:45 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
048 16402.02 MS-0.05	13:18:41 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
049 16402.02 MSD-0.05	13:20:11 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
050 CCV2-0.1	13:21:52 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
051 Rinse	13:29:41 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
052 CCB2	13:31:11 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
053 16695.07s	13:34:20 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
054 Rinse	13:35:53 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
055 16695.04s	13:37:26 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
056 Rinse	13:42:33 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
057 16695.05s	13:44:08 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
058 Rins	13:47:15 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S

Form 13: Analysis Run Log

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Filename	Run Time	Matrix	Analytes
			b, Se, Sn, Sr, Ti, Tl, V, Zn
059 16695.06s	13:51:54 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
060 Rinse	13:53:26 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
061 16689.01s	13:55:05 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
062 Rinse	13:56:37 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
063 16663.01s	13:59:10 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
064 Rinse	14:00:42 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
065 16663.02s	14:02:15 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
066 Rinse	14:03:48 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
067 16663.03s	14:05:20 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
068 Rinse	14:06:53 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
069 16663.04s	14:08:25 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
070 Rinse	14:09:58 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
071 16663.05s	14:11:30 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
072 Rinse	14:13:04 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
073 16695.06 MS-0.05	14:14:51 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
074 16695.06 MSD-0.05	14:16:22 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
075 CCV3-0.1	14:18:26 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
076 Rinse	14:26:21 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
077 CCB3	14:27:52 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
078 081920_2 LCS-0.05	14:30:12 Wed	Liquid	Al, Ba, Cu, Fe, Mn, Sr, Ti, V, Zn
079 Rinse	14:36:18 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
080 081920_2 LRB	14:37:48 Wed	Liquid	Al, Ba, Cu, Fe, Mn, Sr, Ti, V, Zn
081 Rinse	14:41:49 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
082 16479.01s	14:43:20 Wed	Soil	Al, Ba, Cu, Fe, Mn, Sr, Ti, V, Zn
083 Rinse	14:44:52 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
084 16479.01s	14:46:58 Wed	Soil	Al, Ba, Cu, Fe, Mn, Sr, Ti, V, Zn
085 Rinse	14:48:36 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
086 16479.01s	14:50:35 Wed	Soil	Al, Ba, Cu, Fe, Mn, Sr, Ti, V, Zn
087 Rinse	15:09:59 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, S
			b, Se, Sn, Sr, Ti, Tl, V, Zn
088 16479.01 MS-0.1	15:11:44 Wed	Soil	Al, Ba, Cu, Fe, Mn, Sr, Ti, V, Zn
089 16479.01 MSD-0.1	15:14:06 Wed	Soil	Al, Ba, Cu, Fe, Mn, Sr, Ti, V, Zn

Form 13: Analysis Run Log

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
090 Rinse	15:16:01 Wed	Liquid	Al, Ba, Cu, Fe, Mn, Sr, Ti, V, Zn
091 CCV4-0.1	15:17:49 Wed	Liquid	Al, Ba, Cu, Fe, Mn, Sr, Ti, V, Zn
092 Rinse	15:28:34 Wed	Liquid	Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Ti, Tl, V, Zn
093 CCB4	15:30:05 Wed	Liquid	Al, Ba, Cu, Fe, Mn, Sr, Ti, V, Zn

Form 13: Analysis Run Log

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Blank	16:09:08 Wed	Liquid	Ca, K, Mg, Na
002 Std-0.0	16:09:51 Wed	Liquid	Ca, K, Mg, Na
003 Std-0.20	16:10:34 Wed	Liquid	Ca, K, Mg, Na
004 Std-0.50	16:11:17 Wed	Liquid	Ca, K, Mg, Na
005 Std-1.0	16:12:00 Wed	Liquid	Ca, K, Mg, Na
006 Std-2.0	16:12:43 Wed	Liquid	Ca, K, Mg, Na
007 Std-5.0	16:13:26 Wed	Liquid	Ca, K, Mg, Na
008 ICV-2.0	16:14:09 Wed	Liquid	Ca, K, Mg, Na
009 CCV-2.0	16:15:02 Wed	Liquid	Ca, K, Mg, Na
010 ICB	16:16:01 Wed	Liquid	Ca, K, Mg, Na
011 CCB	16:16:44 Wed	Liquid	Ca, K, Mg, Na
012 BS-0.05	16:17:33 Wed	Liquid	Ca, K, Mg, Na
013 BS-0.1	16:18:18 Wed	Liquid	Ca, K, Mg, Na
014 081920_1 LCS-1.0	16:20:03 Wed	Liquid	Ca, K, Mg, Na
015 081920_2 LRB	16:21:01 Wed	Liquid	Ca, K, Mg, Na
016 16402.01 dil	16:26:02 Wed	Liquid	Ca, K, Mg, Na
017 16402.01s dis	16:26:45 Wed	Liquid	Ca, K, Mg, Na
018 rinse	16:27:51 Wed	Liquid	Ca, K, Mg, Na
019 16402.02s	16:28:38 Wed	Liquid	Ca, K, Mg, Na
020 rinse	16:35:04 Wed	Liquid	Ca, K, Mg, Na
021 16531.01s dis	16:35:53 Wed	Liquid	Ca, K, Mg, Na
022 rinse	16:36:40 Wed	Liquid	Ca, K, Mg, Na
023 16531.01s	16:37:35 Wed	Liquid	Ca, K, Mg, Na
024 16402.02 MS-2.0	16:40:35 Wed	Liquid	Ca, K, Mg, Na
025 16402.02 MSD-2.0	16:41:20 Wed	Liquid	Ca, K, Mg, Na
026 CCV2-2.0	16:42:12 Wed	Liquid	Ca, K, Mg, Na
027 CCB2	16:42:58 Wed	Liquid	Ca, K, Mg, Na
028 16695.07s	16:43:58 Wed	Liquid	Ca, K, Mg, Na
029 rinse	16:44:55 Wed	Liquid	Ca, K, Mg, Na
030 16695.01s	16:45:41 Wed	Liquid	Ca, K, Mg, Na
031 rinse	16:47:11 Wed	Liquid	Ca, K, Mg, Na
032 16695.06s	16:47:57 Wed	Liquid	Ca, K, Mg, Na
033 rinse	16:49:36 Wed	Liquid	Ca, K, Mg, Na
034 16695.02s	16:50:22 Wed	Liquid	Ca, K, Mg, Na
035 rinse	16:51:52 Wed	Liquid	Ca, K, Mg, Na
036 16695.03s	16:52:39 Wed	Liquid	Ca, K, Mg, Na
037 rinse	16:54:09 Wed	Liquid	Ca, K, Mg, Na
038 16695.02 dil	16:54:55 Wed	Liquid	Ca, K, Mg, Na
039 rinse	16:55:41 Wed	Liquid	Ca, K, Mg, Na
040 16695.04s	16:56:33 Wed	Liquid	Ca, K, Mg, Na
041 rinse	16:58:02 Wed	Liquid	Ca, K, Mg, Na
042 16695.05s	16:58:48 Wed	Liquid	Ca, K, Mg, Na
043 rinse	16:59:34 Wed	Liquid	Ca, K, Mg, Na
044 16695.06 MS-2.0	17:00:36 Wed	Liquid	Ca, K, Mg, Na
045 16695.06 MSD-2.0	17:01:19 Wed	Liquid	Ca, K, Mg, Na
046 rinse	17:02:13 Wed	Liquid	Ca, K, Mg, Na
047 CCV3-2.0	17:03:03 Wed	Liquid	Ca, K, Mg, Na
048 CCB3	17:03:48 Wed	Liquid	Ca, K, Mg, Na
049 081920_2 LCS-1.0	17:05:11 Wed	Liquid	Ca, K, Mg, Na
050 081920_2 LRB	17:06:01 Wed	Liquid	Ca, K, Mg, Na
051 16479.01s	17:07:09 Wed	Soil	Ca, K, Mg, Na
052 rinse	17:08:13 Wed	Liquid	Ca, K, Mg, Na
053 16479.01s	17:09:29 Wed	Soil	Ca, K, Mg, Na
054 rinse	17:10:14 Wed	Liquid	Ca, K, Mg, Na
055 16479.01s	17:11:48 Wed	Soil	Ca, K, Mg, Na
056 rins	17:13:17 Wed	Liquid	Ca, K, Mg, Na

Form 13: Analysis Run Log

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
057 16479.01 MS-2.0	17:15:31 Wed	Soil	Ca,K,Mg,Na
058 16479.01 MSD-2.0	17:16:28 Wed	Soil	Ca,K,Mg,Na
059 CCV4-2.0	17:17:49 Wed	Liquid	Ca,K,Mg,Na
060 CCB4	17:18:34 Wed	Liquid	Ca,K,Mg,Na

Performance Check Report

Sample ID: STD Performance Check

Sample Date/Time: Wednesday, August 19, 2020 11:01:50

Sample Description:

Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\STD Performance Check.mth

Dataset File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\DataSet\Optimize2020\STD Performance Check.1328

MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun

Conditions File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac

Dual Detector Mode: Pulse

Acq. Dead Time (ns): 35

Current Dead Time (ns): 35

Torch Z position (mm): 0.00

Summary

Analyte	Mass	Meas. Intens.	Mean	Net Intens.	Mean	Net Intens.	SD	Net Intens.	RSD	Mode	
Be	9.0		9732.4		9732.448		150.241		1.5	Standard	
In	114.9		63458.8		63458.835		244.636		0.4	Standard	
U	238.1		47710.8		47710.808		318.229		0.7	Standard	
[	CeO	155.9		1155.7		0.020		0.001		2.7	Standard
|>	Ce	139.9		58201.3		58201.252		175.092		0.3	Standard
]	Ce++	70.0		1296.9		0.022		0.000		2.1	Standard
	Bkgd	220.0		0.1		0.067		0.091		136.9	Standard

Current Conditions File Data

Current Value	Description
0.92	Nebulizer Gas Flow STD/KED [NEB]
1.20	Auxiliary Gas Flow
18.00	Plasma Gas Flow
-12.00	Deflector Voltage
1600.00	ICP RF Power
-1675.00	Analog Stage Voltage
1300.00	Pulse Stage Voltage
-4.00	Quadrupole Rod Offset STD [QRO]
-15.00	Cell Rod Offset STD [CRO]
14.00	Discriminator Threshold
-9.00	Cell Entrance/Exit Voltage STD
0.00	RPa
0.45	RPq
0.92	DRC Mode NEB
-9.00	DRC Mode QRO
-2.00	DRC Mode CRO
-7.00	DRC Mode Cell Entrance/Exit Voltage
0.60	Cell Gas A
200.00	Axial Field Voltage
-13.00	KED Mode CRO
-12.00	KED Mode QRO
-8.00	KED Mode Cell Entrance Voltage
-32.00	KED Mode Cell Exit Voltage
4.00	KED Cell Gas A
0.00	KED RPa
0.25	KED RPq
475.00	KED Mode Axial Field Voltage

SmartTune Wizard - Summary

Optimization Summary

smartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\daily optimization.swz

start Time: 8/19/2020 10:56:29 AM

end Time: 8/19/2020 11:03:55 AM

Laser Alignment - [Passed]

Vertical	Horizontal	Intensity
0.62 mm	-0.05 mm	67134.38

nebulizer Gas Flow STD/KED [NEB] - [Passed] Optimum value(s): 0.92

Obtained Intensity (In 115): 66294.47

Obtained Formula (CeO 156 / Ce 140): 0.0204 (=1223.05 / 59874.21)

QID STD/DRC - Optimum value(s): Correlation Coefficient = 1.000; Intercept = -12.55

KED Mode QID - Optimum value(s): Correlation Coefficient = 0.999; Intercept = -13.47

Mass Calibration and Resolution - [Passed] Optimum value(s): N/A

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.708)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.716)

Target/Obtained mass (114.904/114.875), Target/Obtained resolution (0.7/0.711)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.705)

STD Performance Check - [Passed] Optimum value(s): N/A

Obtained Intensity (Be 9): 9732.45

Obtained Intensity (In 115): 63458.84

Obtained Intensity (U 238): 47710.81

Obtained Intensity (Bkgd 220): 0.07

Obtained Formula (CeO 156 / Ce 140): 0.020 (=1155.71 / 58201.25)

Obtained Formula (Ce++ 70 / Ce 140): 0.022 (=1296.86 / 58201.25)

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\daily optimization.swz

Optimization Status

Start Time: 8/19/2020 10:56:29 AM

Torch Alignment

Optimization Settings:

Method: Torch Alignment.mth.

Intensity Criterion: In 115 Maximum

Optimization Results:

	Vertical	Horizontal	Intensity
[Passed]	0.62 mm	-0.05 mm	67134.38

Nebulizer Gas Flow STD/KED [NEB]

Optimization Settings:

Method: Optimize.mth.

Initial Try - Start/End/Step: 0.9/0.96/0.01.

Intensity Criterion: In 115 Maximum

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (In 115): 66294.47

Obtained Formula (CeO 156 / Ce 140): 0.0204 (=1223.05 / 59874.21)

[Passed] Optimum value(s): 0.92

QID STD/DRC

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 1.000; Intercept = -12.55

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-13	41151.2
Mg	24	41	-13.5	49365.1
In	115	41	-10.5	64645.9
Ce	140	41	-9.5	59499.6
Pb	208	41	-8.5	25855.4
U	238	41	-8	47526.9

KED Mode QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.999; Intercept = -13.47

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-13.5	31927.6
Mg	24	41	-13.5	55636.1
In	115	41	-11	61757.2
Ce	140	41	-10.5	45067
Pb	208	41	-9	18191.6
U	238	41	-8.5	44914.5

Mass Calibration and Resolution

Optimization Settings:

Method: Tuning.mth.

MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun

Iterations: 6

Target accuracy (+/- amu): 0.05 for Mass Cal. and 0.03 for Resolution

Peak height (%) for Res. Opt.: 10

Optimization Results:

Initial Try

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.708)

Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.716)

Target/Obtained mass (114.904/114.875), Target/Obtained resolution (0.7/0.711)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.705)

[Passed] Optimum value(s): N/A

STD Performance Check

Optimization Settings:

Method: STD Performance Check.mth.

Intensity Criterion: Be 9 > 2000

Intensity Criterion: In 115 > 30000

Intensity Criterion: U 238 > 30000

Intensity Criterion: Bkgd 220 <= 5

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Formula Criterion: Ce++ 70 / Ce 140 <= 0.03

Optimization Results:

Initial Try

Obtained Intensity (Be 9): 9732.45

Obtained Intensity (In 115): 63458.84

Obtained Intensity (U 238): 47710.81

Obtained Intensity (Bkgd 220): 0.07

Obtained Formula (CeO 156 / Ce 140): 0.020 (=1155.71 / 58201.25)

Obtained Formula (Ce++ 70 / Ce 140): 0.022 (=1296.86 / 58201.25)

[Passed] Optimum value(s): N/A

End Time: 8/19/2020 11:03:55 AM

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Li	206620	70-125	144634-258275	80-120	165296-247944	0
Rh	754128	70-125	527890-942660	80-120	603302-904954	1
Re	867486	70-125	607240-1084358	80-120	693989-1040983	1
Rh-1	1890288	70-125	1323202-2362860	80-120	1512230-2268346	1

Seq ID	QC Type	Li	Rh	Re	Rh-1
001		100	100	100	100
002		101	97	102	98
003		103	102	104	104
004		103	99	102	100
005		102	99	101	100
006		100	100	100	99
007		99	99	104	100
008		102	101	107	99
009	ICV	97	104	107	102
010	CCV	99	104	108	101
011		100	97	100	99
012	ICB	99	98	98	100
013	CCB	99	99	104	100
014	BS	103	103	105	101
015		101	99	101	99
016	BS	103	100	105	103
017		101	99	104	99
018	BS	101	101	101	99
019	BS	106	100	107	107
020	BS	107	102	103	108
021	AB	102	94	105	99
022		98	97	101	98
023	AA	99	98	102	99
024	LCS	103	103	105	99
025		102	99	102	99
026	LRB	102	96	103	99
027	S	100	89	99	91
028		106	100	102	100
029	DIL	107	100	107	105
030	S	105	98	104	100
031		108	100	105	99
032	S	106	99	103	104
033		108	99	107	107
034	S	103	90	104	92
035		106	97	103	105
036	S	102	92	104	91
037		104	100	105	104
038	S	105	93	102	91
039		110	102	106	101
040	S	75	75	91	78

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Li	206620	70-125	144634-258275	80-120	165296-247944	0
Rh	754128	70-125	527890-942660	80-120	603302-904954	1
Re	867486	70-125	607240-1084358	80-120	693989-1040983	1
Rh-1	1890288	70-125	1323202-2362860	80-120	1512230-2268346	1

Seq ID	QC Type	Li	Rh	Re	Rh-1
041		102	97	104	100
042	S	99	91	104	90
043		101	96	103	98
044	S	99	91	103	91
045		104	98	102	101
046	S	103	93	102	94
047		105	100	106	105
048	MS	103	97	104	97
049	MSD	98	96	104	94
050	CCV	105	100	105	99
051		103	98	102	99
052	CCB	101	97	99	99
053	S	105	97	104	99
054		103	96	101	99
055	S	98	88	102	91
056		104	96	102	99
057	S	103	91	103	92
058		106	97	102	99
059	S	100	93	104	93
060		106	99	105	100
061	S	99	85	97	88
062		105	96	103	98
063	S	104	95	102	95
064		107	97	106	99
065	S	105	91	103	92
066		104	97	103	98
067	S	103	89	102	91
068		106	93	100	97
069	S	103	91	102	93
070		104	97	105	97
071	S	104	96	104	96
072		105	94	103	100
073	MS	100	92	103	92
074	MSD	98	91	101	93
075	CCV	104	99	108	99
076		106	97	101	96
077	CCB	102	95	101	98
078	LCS	106	100	106	98
079		103	95	101	98
080	Page 83 of 205	95	95	101	95

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Li	206620	70-125	144634-258275	80-120	165296-247944	0
Rh	754128	70-125	527890-942660	80-120	603302-904954	1
Re	867486	70-125	607240-1084358	80-120	693989-1040983	1
Rh-1	1890288	70-125	1323202-2362860	80-120	1512230-2268346	1

Seq ID	QC Type	Li	Rh	Re	Rh-1
081		107	93	98	99
082	S	106	97	103	100
083		103	97	101	97
084	S	109	96	105	97
085		110	95	100	99
086	S	74	59***	65***	54***
087		101	96	95	92
088	MS	95	93	93	87
089	MSD	95	89	95	87
090		97	93	94	93
091	CCV	96	94	97	93
092		95	88	96	89
093	CCB	94	90	92	89

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	53758	70-125	37631-67198	80-120	43006-64510	0

Seq ID	QC Type	Rh
001		100
002		101
003		104
004		103
005		102
006		101
007		103
008	ICV	102
009	CCV	103
010	ICB	99
011	CCB	100
012	BS	102
013	BS	104
014	LCS	103
015	LRB	99
016	DIL	104
017	S	106
018		101
019	S	102
020		101
021	S	104
022		105
023	S	102
024	MS	102
025	MSD	100
026	CCV	103
027	CCB	100
028	S	104
029		103
030	S	102
031		100
032	S	100
033		100
034	S	101
035		101
036	S	99
037		101
038	DIL	102
039		99
040	SPage 85 of 202	

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	53758	70-125	37631-67198	80-120	43006-64510	0

Seq ID	QC Type	Rh
041		102
042	S	103
043		101
044	MS	100
045	MSD	100
046		101
047	CCV	105
048	CCB	102
049	LCS	103
050	LRB	101
051	S	102
052		100
053	S	103
054		102
055	S	103
056		99
057	MS	100
058	MSD	99
059	CCV	102
060	CCB	102

Form 9

Analysis Date varies
 Analytical Method 6020A/6020/200.8
 Digestion Date varies
 Spiked Value varies (ug/L)
 Estimated Limit varies (ug/L)

Element/Mass	Date	Spike (ug/l)	MDL (ug/l)	Prep Batch
Al-27	4/9/2012	0.50	0.189	MTD-040212-1
Sb-121	3/20/2012	1.00	0.105	MTD-032012-3
As-75	3/20/2012	0.05	0.032	MTD-032012-2
Ba-137	3/20/2012	0.50	0.202	MTD-032012-2
Be-9	4/10/2012	0.10	0.079	MTD-041012-1
B-10	3/20/2012	1.00	0.589	MTD-032012-3
B-11	3/20/2012	1.00	0.277	MTD-032012-3
Cd-111	3/20/2012	0.05	0.038	MTD-032012-2
Cd-114	3/20/2012	0.10	0.030	MTD-032012-2
Cr-52	3/20/2012	0.10	0.023	MTD-032012-2
Cr-53	3/20/2012	0.10	0.054	MTD-032012-2
Co-59	3/20/2012	0.10	0.035	MTD-032012-2
Cu-65	3/20/2012	0.50	0.068	MTD-032012-2
Fe-56	4/9/2012	2.00	0.470	MTD-040912-1
Fe-57	4/9/2012	2.00	0.824	MTD-040912-1
Pb-208	3/20/2012	0.10	0.052	MTD-032012-2
Li-7	3/20/2012	1.00	0.166	MTD-032012-3
Mn-55	3/20/2012	0.10	0.187	MTD-032012-2
Mo-95	4/9/2012	0.50	0.442	MTD-040212-1
Ni-60	4/13/2012	0.10	0.035	MTD-041012-1
Se-78	3/20/2012	0.10	0.058	MTD-032012-2
Se-82	3/20/2012	0.50	0.475	MTD-032012-2
Ag-107	3/20/2012	0.10	0.025	MTD-032012-2
Sr-88	3/20/2012	0.10	0.016	MTD-032012-2
Tl-205	4/9/2012	0.50	0.089	MTD-040212-1
Sn-118	3/20/2012	0.10	0.079	MTD-032012-2
Ti-47	3/20/2012	0.50	0.124	MTD-032012-2
V-51	3/20/2012	0.05	0.018	MTD-032012-2
Zn-66	4/9/2012	2.00	0.366	MTD-040912-1

Element/Mass	Date	Spike (mg/l)	MDL (mg/l)	Prep Batch
Ca-43	4/16/2012	0.01	0.0101	MTD-041012-4
Ca-44	4/16/2012	0.01	0.0041	MTD-041012-4
Mg-24	4/16/2012	0.01	0.0006	MTD-041012-4
K-39	4/16/2012	0.01	0.0030	MTD-041012-4
Na-23	4/16/2012	0.10	0.0101	MTD-041012-4

Linear Range June 2012

		Prep Batch	Run Batch
Aluminum	5.0ppm	MTD-061912-5	MT3-12-0619C
Antimony	5.0ppm	MTD-061912-5	MT3-12-0619C
Arsenic	1.0ppm	MTD-061912-5	MT3-12-0619C
Barium	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-10	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-11	5.0ppm	MTD-061912-5	MT3-12-0619C
Beryllium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-111	5.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-114	5.0ppm	MTD-061912-5	MT3-12-0619C
Chromium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cobalt	2.0ppm	MTD-061912-5	MT3-12-0619C
Copper	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-56	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-57	2.0ppm	MTD-061912-5	MT3-12-0619C
Lead	5.0ppm	MTD-061912-5	MT3-12-0619C
Lithium	2.0ppm	MTD-061912-5	MT3-12-0619C
Manganese	1.0ppm	MTD-061912-5	MT3-12-0619C
Molybdenum	1.0ppm	MTD-061912-5	MT3-12-0619C
Nickel	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-78	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-82	5.0ppm	MTD-061912-5	MT3-12-0619C
Silver	1.0ppm	MTD-061912-5	MT3-12-0619C
Strontium-86	5.0ppm	MTD-061912-5	MT3-12-0619C
Thallium	5.0ppm	MTD-061912-5	MT3-12-0619C
Tin	1.0ppm	MTD-061912-5	MT3-12-0619C
Titanium	1.0ppm	MTD-061912-5	MT3-12-0619C
Vanadium	1.0ppm	MTD-061912-5	MT3-12-0619C
Zinc	2.0ppm	MTD-061912-5	MT3-12-0619C

Sodium-23	50ppm	MTD-061912-5	MT3-12-0619B
Magnesium-24	50ppm	MTD-061912-5	MT3-12-0619B
Potassium-39	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-43	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-44	50ppm	MTD-061912-5	MT3-12-0619B

Maximum spiking levels are instated to ensure the safety and longevity of the instrument. Any sample results above this level result in extended wash runs and sample dilution.

Metals Quantitation Summary Report

Sequence #: 001
Method: 01-LONG LIST.mth
Acq Time: 11:17:02 Wed 19-Aug-20
Sample Name: Blank
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11769.861	0	mg/L	3
Be	9	5.000	0	mg/L	3
B	11	225.002	0	mg/L	3
Al	27	965.033	0	mg/L	3
Ti	47	41.667	0	mg/L	3
V	51	60.000	0	mg/L	3
Cr	52	161.668	0	mg/L	3
Mn	55	85.000	0	mg/L	3
Fe	56	3262.039	0	mg/L	3
Co	59	50.000	0	mg/L	3
Ni	60	50.000	0	mg/L	3
Cu	65	80.000	0	mg/L	3
Zn	66	65.000	0	mg/L	3
As	75	58.333	0	mg/L	3
Sr	88	96.667	0	mg/L	3
Mo	95	229.201	0	mg/L	3
Ag	107	120.001	0	mg/L	3
Cd	111	88.334	0	mg/L	3
Sn	118	660.015	0	mg/L	3
Sb	121	151.668	0	mg/L	3
Ba	137	96.667	0	mg/L	3
Tl	205	21.667	0	mg/L	3
Pb	208	340.334	0	mg/L	3
Se	78	1198.916	0	mg/L	3

Metals Quantitation Summary Report

Sequence #: 002
Method: 01-LONG LIST.mth
Acq Time: 11:18:32 Wed 19-Aug-20
Sample Name: Std-0.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11159.360	-0.000207	mg/L	3
Be	9	1.667	-0.000003	mg/L	3
B	11	233.335	0.000008	mg/L	3
Al	27	851.693	-0.000047	mg/L	3
Ti	47	50.000	0.000171	mg/L	3
V	51	43.333	-0.000008	mg/L	3
Cr	52	128.334	-0.000011	mg/L	3
Mn	55	63.333	-0.000013	mg/L	3
Fe	56	3192.024	0.000019	mg/L	3
Co	59	36.667	-0.000002	mg/L	3
Ni	60	40.000	-0.000006	mg/L	3
Cu	65	103.334	0.000014	mg/L	3
Zn	66	70.000	0.000018	mg/L	3
As	75	53.333	-0.000013	mg/L	3
Sr	88	91.667	-0.000001	mg/L	3
Mo	95	193.652	-0.000017	mg/L	3
Ag	107	148.334	0.000005	mg/L	3
Cd	111	100.000	0.000019	mg/L	3
Sn	118	628.347	-0.000005	mg/L	3
Sb	121	125.001	-0.000011	mg/L	3
Ba	137	71.667	-0.000022	mg/L	3
Tl	205	25.000	0.000000	mg/L	3
Pb	208	332.000	-0.000001	mg/L	3
Se	78	1214.323	0.000159	mg/L	3

Metals Quantitation Summary Report

Sequence #: 003
Method: 01-LONG LIST.mth
Acq Time: 11:20:03 Wed 19-Aug-20
Sample Name: Std-0.0001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11993.369	-0.000020	mg/L	3
Be	9	113.334	0.000102	mg/L	3
B	11	408.339	0.000203	mg/L	3
Al	27	3918.871	0.001128	mg/L	3
Ti	47	48.333	0.000099	mg/L	3
V	51	273.336	0.000102	mg/L	3
Cr	52	436.673	0.000101	mg/L	3
Mn	55	1186.716	0.000750	mg/L	3
Fe	56	4322.322	0.000432	mg/L	3
Co	59	606.680	0.000101	mg/L	3
Ni	60	365.005	0.000208	mg/L	3
Cu	65	535.010	0.000227	mg/L	3
Zn	66	905.029	0.001951	mg/L	3
As	75	73.334	0.000060	mg/L	3
Sr	88	331.671	0.000108	mg/L	3
Mo	95	345.710	0.000067	mg/L	3
Ag	107	390.005	0.000040	mg/L	3
Cd	111	183.335	0.000116	mg/L	3
Sn	118	1460.075	0.000475	mg/L	3
Sb	121	375.005	0.000109	mg/L	3
Ba	137	230.002	0.000125	mg/L	3
Tl	205	1958.468	0.000106	mg/L	3
Pb	208	2230.415	0.000091	mg/L	3
Se	78	1182.036	-0.000180	mg/L	3

Metals Quantitation Summary Report

Sequence #: 004
Method: 01-LONG LIST.mth
Acq Time: 11:21:33 Wed 19-Aug-20
Sample Name: Std-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	13189.436	0.000305	mg/L	3
Be	9	540.010	0.000502	mg/L	3
B	11	708.351	0.000551	mg/L	3
Al	27	2605.238	0.000623	mg/L	3
Ti	47	45.000	0.000065	mg/L	3
V	51	1066.707	0.000494	mg/L	3
Cr	52	1465.076	0.000492	mg/L	3
Mn	55	946.698	0.000602	mg/L	3
Fe	56	4689.104	0.000639	mg/L	3
Co	59	2823.613	0.000518	mg/L	3
Ni	60	755.020	0.000481	mg/L	3
Cu	65	1060.040	0.000503	mg/L	3
Zn	66	321.670	0.000616	mg/L	3
As	75	181.668	0.000547	mg/L	3
Sr	88	1236.721	0.000539	mg/L	3
Mo	95	932.769	0.000432	mg/L	3
Ag	107	2053.481	0.000298	mg/L	3
Cd	111	521.676	0.000551	mg/L	3
Sn	118	1356.731	0.000433	mg/L	3
Sb	121	1166.714	0.000513	mg/L	3
Ba	137	748.353	0.000638	mg/L	3
Tl	205	9273.010	0.000517	mg/L	3
Pb	208	9008.542	0.000428	mg/L	3
Se	78	1298.925	0.000323	mg/L	3

Metals Quantitation Summary Report

Sequence #: 005
Method: 01-LONG LIST.mth
Acq Time: 11:23:04 Wed 19-Aug-20
Sample Name: Std-0.005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	29303.398	0.004739	mg/L	3
Be	9	5155.932	0.004852	mg/L	3
B	11	4462.365	0.004938	mg/L	3
Al	27	13971.838	0.004998	mg/L	3
Ti	47	361.671	0.005500	mg/L	3
V	51	10080.223	0.004902	mg/L	3
Cr	52	13573.112	0.005052	mg/L	3
Mn	55	7772.114	0.005361	mg/L	3
Fe	56	15398.295	0.005323	mg/L	3
Co	59	26853.560	0.004999	mg/L	3
Ni	60	7813.803	0.005283	mg/L	3
Cu	65	9986.824	0.005069	mg/L	3
Zn	66	2448.544	0.005684	mg/L	3
As	75	1210.051	0.005073	mg/L	3
Sr	88	10870.802	0.005085	mg/L	3
Mo	95	7355.526	0.004352	mg/L	3
Ag	107	28403.211	0.004362	mg/L	3
Cd	111	4077.250	0.005054	mg/L	3
Sn	118	8165.670	0.004624	mg/L	3
Sb	121	9970.145	0.004950	mg/L	3
Ba	137	5032.553	0.004813	mg/L	3
Tl	205	92429.779	0.005213	mg/L	3
Pb	208	90996.087	0.004524	mg/L	3
Se	78	2554.747	0.004708	mg/L	3

Metals Quantitation Summary Report

Sequence #: 006
Method: 01-LONG LIST.mth
Acq Time: 11:24:34 Wed 19-Aug-20
Sample Name: Std-0.02
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	81753.553	0.019643	mg/L	3
Be	9	20109.214	0.019302	mg/L	3
B	11	17183.682	0.020208	mg/L	3
Al	27	52279.041	0.020157	mg/L	3
Ti	47	1288.391	0.021243	mg/L	3
V	51	40764.754	0.019766	mg/L	3
Cr	52	54585.757	0.020347	mg/L	3
Mn	55	29493.749	0.020357	mg/L	3
Fe	56	50176.314	0.020381	mg/L	3
Co	59	105815.821	0.019593	mg/L	3
Ni	60	30290.436	0.020437	mg/L	3
Cu	65	39873.930	0.020215	mg/L	3
Zn	66	8904.444	0.020920	mg/L	3
As	75	4604.076	0.019870	mg/L	3
Sr	88	44746.647	0.020919	mg/L	3
Mo	95	29357.323	0.017649	mg/L	3
Ag	107	124680.097	0.019066	mg/L	3
Cd	111	16396.070	0.020509	mg/L	3
Sn	118	31127.240	0.018621	mg/L	3
Sb	121	39305.669	0.019595	mg/L	3
Ba	137	20768.422	0.020002	mg/L	3
Tl	205	372451.236	0.021220	mg/L	3
Pb	208	381953.224	0.019241	mg/L	3
Se	78	6867.036	0.020021	mg/L	3

Metals Quantitation Summary Report

Sequence #: 007
Method: 01-LONG LIST.mth
Acq Time: 11:26:05 Wed 19-Aug-20
Sample Name: Std-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	188624.216	0.050171	mg/L	3
Be	9	51750.537	0.050294	mg/L	3
B	11	41299.766	0.049476	mg/L	3
Al	27	131217.762	0.051762	mg/L	3
Ti	47	2960.307	0.050269	mg/L	3
V	51	102546.775	0.050271	mg/L	3
Cr	52	136091.853	0.051339	mg/L	3
Mn	55	74924.347	0.052339	mg/L	3
Fe	56	118843.989	0.050740	mg/L	3
Co	59	274846.740	0.051411	mg/L	3
Ni	60	75914.511	0.051764	mg/L	3
Cu	65	98882.956	0.050694	mg/L	3
Zn	66	21791.611	0.051929	mg/L	3
As	75	11641.409	0.051135	mg/L	3
Sr	88	108834.721	0.051472	mg/L	3
Mo	95	77818.567	0.047476	mg/L	3
Ag	107	324689.445	0.050177	mg/L	3
Cd	111	40231.579	0.050984	mg/L	3
Sn	118	78367.772	0.047981	mg/L	3
Sb	121	99409.698	0.050167	mg/L	3
Ba	137	50984.151	0.049739	mg/L	3
Tl	205	902899.207	0.049491	mg/L	3
Pb	208	947357.258	0.045950	mg/L	3
Se	78	15664.097	0.050232	mg/L	3

Metals Quantitation Summary Report

Sequence #: 008
Method: 01-LONG LIST.mth
Acq Time: 11:27:37 Wed 19-Aug-20
Sample Name: Std-0.2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	691724.117	0.187879	mg/L	3
Be	9	198146.423	0.187846	mg/L	3
B	11	170464.435	0.200112	mg/L	3
Al	27	515847.356	0.199544	mg/L	3
Ti	47	11833.233	0.199797	mg/L	3
V	51	414154.696	0.199958	mg/L	3
Cr	52	537185.377	0.199629	mg/L	3
Mn	55	289742.546	0.199370	mg/L	3
Fe	56	465675.530	0.199769	mg/L	3
Co	59	1084876.942	0.199688	mg/L	3
Ni	60	297097.785	0.199508	mg/L	3
Cu	65	395818.021	0.199803	mg/L	3
Zn	66	84832.861	0.199408	mg/L	3
As	75	46013.988	0.199727	mg/L	3
Sr	88	428364.706	0.199538	mg/L	3
Mo	95	333618.217	0.200883	mg/L	3
Ag	107	1314645.674	0.200066	mg/L	3
Cd	111	159824.672	0.199702	mg/L	3
Sn	118	330953.055	0.200652	mg/L	3
Sb	121	343447.168	0.170786	mg/L	3
Ba	137	208035.485	0.200069	mg/L	3
Tl	205	4361293.421	0.232668	mg/L	3
Pb	208	4255556.470	0.201100	mg/L	3
Se	78	58131.726	0.199948	mg/L	3

Metals Quantitation Summary Report

Sequence #: 009
Method: 01-LONG LIST.mth
Acq Time: 11:29:07 Wed 19-Aug-20
Sample Name: ICV-0.1
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 08/19/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	372241.982	0.104764	mg/L	3
Be	9	104059.757	0.103776	mg/L	3
B	11	89134.498	0.109787	mg/L	3
Al	27	266766.610	0.108336	mg/L	3
Ti	47	6254.703	0.101684	mg/L	3
V	51	208328.433	0.097167	mg/L	3
Cr	52	270012.012	0.096915	mg/L	3
Mn	55	150076.082	0.099728	mg/L	3
Fe	56	243121.217	0.100064	mg/L	3
Co	59	539773.770	0.096001	mg/L	3
Ni	60	150562.787	0.097669	mg/L	3
Cu	65	203847.530	0.099396	mg/L	3
Zn	66	44433.998	0.100830	mg/L	3
As	75	23763.088	0.099526	mg/L	3
Sr	88	218805.370	0.098446	mg/L	3
Mo	95	182354.367	0.106013	mg/L	3
Ag	107	678565.843	0.099761	mg/L	3
Cd	111	82333.244	0.099348	mg/L	3
Sn	118	181431.749	0.106094	mg/L	3
Sb	121	196151.048	0.094211	mg/L	3
Ba	137	104141.711	0.096724	mg/L	3
Tl	205	2061160.659	0.109920	mg/L	3
Pb	208	1962202.082	0.092561	mg/L	3
Se	78	32775.630	0.106869	mg/L	3

Metals Quantitation Summary Report

Sequence #: 010
Method: 01-LONG LIST.mth
Acq Time: 11:30:56 Wed 19-Aug-20
Sample Name: CCV-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 08/19/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	372709.095	0.102346	mg/L	3
Be	9	102774.744	0.099964	mg/L	3
B	11	86619.387	0.104143	mg/L	3
Al	27	258884.914	0.102539	mg/L	3
Ti	47	6179.671	0.100417	mg/L	3
V	51	213087.913	0.099314	mg/L	3
Cr	52	269228.907	0.096574	mg/L	3
Mn	55	151565.300	0.100680	mg/L	3
Fe	56	245440.928	0.100939	mg/L	3
Co	59	552289.317	0.098128	mg/L	3
Ni	60	154106.895	0.099895	mg/L	3
Cu	65	202645.655	0.098714	mg/L	3
Zn	66	44288.550	0.100429	mg/L	3
As	75	23743.048	0.099351	mg/L	3
Sr	88	221860.046	0.099753	mg/L	3
Mo	95	184993.152	0.107451	mg/L	3
Ag	107	671269.600	0.098598	mg/L	3
Cd	111	84376.854	0.101701	mg/L	3
Sn	118	186439.399	0.108976	mg/L	3
Sb	121	196924.739	0.094513	mg/L	3
Ba	137	104769.525	0.097237	mg/L	3
Tl	205	1932194.490	0.101945	mg/L	3
Pb	208	2005142.188	0.093604	mg/L	3
Se	78	30655.333	0.101452	mg/L	3

Metals Quantitation Summary Report

Sequence #: 011
Method: 01-LONG LIST.mth
Acq Time: 11:37:37 Wed 19-Aug-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11464.624	-0.000092	mg/L	3
Be	9	105.000	0.000097	mg/L	3
B	11	430.007	0.000245	mg/L	3
Al	27	975.033	0.000004	mg/L	3
Ti	47	51.667	0.000199	mg/L	3
V	51	193.335	0.000068	mg/L	3
Cr	52	336.671	0.000069	mg/L	3
Mn	55	183.335	0.000072	mg/L	3
Fe	56	2930.302	-0.000107	mg/L	3
Co	59	420.006	0.000071	mg/L	3
Ni	60	130.001	0.000057	mg/L	3
Cu	65	221.668	0.000075	mg/L	3
Zn	66	83.334	0.000052	mg/L	3
As	75	95.000	0.000174	mg/L	3
Sr	88	230.002	0.000066	mg/L	3
Mo	95	2034.185	0.001131	mg/L	3
Ag	107	735.019	0.000098	mg/L	3
Cd	111	136.667	0.000067	mg/L	3
Sn	118	3615.460	0.001870	mg/L	3
Sb	121	1215.052	0.000550	mg/L	3
Ba	137	166.668	0.000073	mg/L	3
Tl	205	1455.074	0.000082	mg/L	3
Pb	208	1923.726	0.000080	mg/L	3
Se	78	1341.204	0.000541	mg/L	3

Metals Quantitation Summary Report

Sequence #: 012
Method: 01-LONG LIST.mth
Acq Time: 11:39:07 Wed 19-Aug-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11683.143	0.000012	mg/L	3
Be	9	95.000	0.000089	mg/L	3
B	11	430.006	0.000253	mg/L	3
Al	27	938.364	-0.000003	mg/L	3
Ti	47	43.333	0.000047	mg/L	3
V	51	168.334	0.000055	mg/L	3
Cr	52	326.670	0.000065	mg/L	3
Mn	55	168.334	0.000060	mg/L	3
Fe	56	2950.305	-0.000104	mg/L	3
Co	59	323.337	0.000052	mg/L	3
Ni	60	130.001	0.000057	mg/L	3
Cu	65	193.335	0.000060	mg/L	3
Zn	66	70.000	0.000016	mg/L	3
As	75	91.667	0.000156	mg/L	3
Sr	88	195.001	0.000048	mg/L	3
Mo	95	1551.682	0.000824	mg/L	3
Ag	107	578.345	0.000072	mg/L	3
Cd	111	133.334	0.000061	mg/L	3
Sn	118	2921.969	0.001425	mg/L	3
Sb	121	1108.377	0.000492	mg/L	3
Ba	137	136.667	0.000042	mg/L	3
Tl	205	1178.382	0.000067	mg/L	3
Pb	208	1490.367	0.000060	mg/L	3
Se	78	1289.025	0.000324	mg/L	3

Metals Quantitation Summary Report

Sequence #: 013
Method: 01-LONG LIST.mth
Acq Time: 11:40:37 Wed 19-Aug-20
Sample Name: CCB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11421.234	-0.000055	mg/L	3
Be	9	81.667	0.000075	mg/L	3
B	11	373.338	0.000183	mg/L	3
Al	27	840.025	-0.000044	mg/L	3
Ti	47	31.667	-0.000164	mg/L	3
V	51	156.668	0.000048	mg/L	3
Cr	52	265.002	0.000040	mg/L	3
Mn	55	120.001	0.000025	mg/L	3
Fe	56	2930.301	-0.000126	mg/L	3
Co	59	268.336	0.000041	mg/L	3
Ni	60	110.000	0.000042	mg/L	3
Cu	65	168.334	0.000046	mg/L	3
Zn	66	63.333	-0.000002	mg/L	3
As	75	76.667	0.000085	mg/L	3
Sr	88	183.335	0.000042	mg/L	3
Mo	95	1376.709	0.000707	mg/L	3
Ag	107	536.677	0.000065	mg/L	3
Cd	111	145.001	0.000074	mg/L	3
Sn	118	2460.213	0.001121	mg/L	3
Sb	121	986.701	0.000425	mg/L	3
Ba	137	113.334	0.000018	mg/L	3
Tl	205	931.698	0.000050	mg/L	3
Pb	208	1255.356	0.000044	mg/L	3
Se	78	1235.890	0.000130	mg/L	3

Metals Quantitation Summary Report

Sequence #: 014
Method: 01-LONG LIST.mth
Acq Time: 11:45:47 Wed 19-Aug-20
Sample Name: BS-0.0001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Be	9	136.667	0.000123	mg/L	3
V	51	330.004	0.000127	mg/L	3
Cr	52	478.341	0.000113	mg/L	3
Sr	88	381.672	0.000129	mg/L	3
Ag	107	830.024	0.000105	mg/L	3
Cd	111	178.334	0.000107	mg/L	3
Ba	137	238.335	0.000130	mg/L	3
Pb	208	3053.827	0.000130	mg/L	3

Metals Quantitation Summary Report

Sequence #: 015
Method: 01-LONG LIST.mth
Acq Time: 11:47:34 Wed 19-Aug-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11097.650	-0.000214	mg/L	3
Be	9	38.333	0.000032	mg/L	3
B	11	253.336	0.000031	mg/L	3
Al	27	723.352	-0.000096	mg/L	3
Ti	47	36.667	-0.000075	mg/L	3
V	51	110.000	0.000025	mg/L	3
Cr	52	205.001	0.000017	mg/L	3
Mn	55	103.334	0.000014	mg/L	3
Fe	56	2786.939	-0.000192	mg/L	3
Co	59	160.001	0.000021	mg/L	3
Ni	60	85.000	0.000024	mg/L	3
Cu	65	130.001	0.000026	mg/L	3
Zn	66	56.667	-0.000018	mg/L	3
As	75	60.000	0.000008	mg/L	3
Sr	88	148.334	0.000025	mg/L	3
Mo	95	789.039	0.000346	mg/L	3
Ag	107	468.341	0.000054	mg/L	3
Cd	111	111.667	0.000031	mg/L	3
Sn	118	1553.418	0.000558	mg/L	3
Sb	121	656.682	0.000257	mg/L	3
Ba	137	80.000	-0.000015	mg/L	3
Tl	205	501.675	0.000027	mg/L	3
Pb	208	982.012	0.000032	mg/L	3
Se	78	1207.157	0.000091	mg/L	3

Metals Quantitation Summary Report

Sequence #: 016
Method: 01-LONG LIST.mth
Acq Time: 11:49:07 Wed 19-Aug-20
Sample Name: BS-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	13466.355	0.000376	mg/L	3
Be	9	590.012	0.000548	mg/L	3
B	11	740.019	0.000592	mg/L	3
Al	27	2140.161	0.000442	mg/L	3
Ti	47	68.334	0.000452	mg/L	3
V	51	1068.373	0.000489	mg/L	3
Cr	52	1623.426	0.000546	mg/L	3
Mn	55	960.032	0.000605	mg/L	3
Fe	56	4392.342	0.000490	mg/L	3
Co	59	2868.622	0.000521	mg/L	3
Ni	60	831.691	0.000527	mg/L	3
Cu	65	1175.048	0.000556	mg/L	3
As	75	168.334	0.000481	mg/L	3
Sr	88	1230.053	0.000531	mg/L	3
Ag	107	2645.245	0.000386	mg/L	3
Cd	111	525.010	0.000549	mg/L	3
Ba	137	741.686	0.000624	mg/L	3
Tl	205	9775.012	0.000528	mg/L	3
Pb	208	9893.873	0.000457	mg/L	3
Se	78	1380.346	0.000496	mg/L	3

Metals Quantitation Summary Report

Sequence #: 017
Method: 01-LONG LIST.mth
Acq Time: 11:53:56 Wed 19-Aug-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11601.396	-0.000086	mg/L	3
Be	9	28.333	0.000022	mg/L	3
B	11	295.003	0.000079	mg/L	3
Al	27	698.350	-0.000107	mg/L	3
Ti	47	45.000	0.000066	mg/L	3
V	51	73.334	0.000007	mg/L	3
Cr	52	176.668	0.000006	mg/L	3
Mn	55	85.000	0.000001	mg/L	3
Fe	56	2603.571	-0.000274	mg/L	3
Co	59	110.000	0.000011	mg/L	3
Ni	60	58.333	0.000006	mg/L	3
Cu	65	118.334	0.000020	mg/L	3
Zn	66	73.334	0.000021	mg/L	3
As	75	78.334	0.000091	mg/L	3
Sr	88	93.334	-0.000001	mg/L	3
Mo	95	509.757	0.000172	mg/L	3
Ag	107	311.670	0.000030	mg/L	3
Cd	111	111.667	0.000031	mg/L	3
Sn	118	1240.054	0.000362	mg/L	3
Sb	121	465.008	0.000159	mg/L	3
Ba	137	106.667	0.000011	mg/L	3
Tl	205	430.007	0.000022	mg/L	3
Pb	208	677.005	0.000016	mg/L	3
Se	78	1192.308	0.000010	mg/L	3

Metals Quantitation Summary Report

Sequence #: 018
Method: 01-LONG LIST.mth
Acq Time: 11:55:27 Wed 19-Aug-20
Sample Name: BS-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Sb	121	1423.405	0.000632	mg/L	3

Metals Quantitation Summary Report

Sequence #: 019
Method: 01-LONG LIST.mth
Acq Time: 11:57:28 Wed 19-Aug-20
Sample Name: BS-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	15228.113	0.000750	mg/L	3
Be	9	1086.708	0.000987	mg/L	3
B	11	1321.728	0.001223	mg/L	3
Al	27	4369.002	0.001250	mg/L	3
Ti	47	98.334	0.000966	mg/L	3
V	51	2188.502	0.001032	mg/L	3
Cr	52	2971.977	0.001047	mg/L	3
Mn	55	1663.430	0.001090	mg/L	3
Fe	56	5414.360	0.000929	mg/L	3
Co	59	5736.152	0.001050	mg/L	3
Ni	60	1660.097	0.001085	mg/L	3
Cu	65	2131.826	0.001040	mg/L	3
Zn	66	510.009	0.001050	mg/L	3
As	75	335.004	0.001209	mg/L	3
Sr	88	2420.205	0.001087	mg/L	3
Mo	95	2068.825	0.001113	mg/L	3
Ag	107	5752.825	0.000860	mg/L	3
Cd	111	875.027	0.000986	mg/L	3
Sb	121	2401.869	0.001124	mg/L	3
Ba	137	1226.719	0.001091	mg/L	3
Tl	205	19676.894	0.001044	mg/L	3
Pb	208	19354.398	0.000893	mg/L	3
Se	78	1485.204	0.000704	mg/L	3

Metals Quantitation Summary Report

Sequence #: 020
Method: 01-LONG LIST.mth
Acq Time: 11:59:04 Wed 19-Aug-20
Sample Name: BS-0.002
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	19151.209	0.001741	mg/L	3
Be	9	2166.832	0.001952	mg/L	3
B	11	2108.489	0.002102	mg/L	3
Al	27	6049.615	0.001860	mg/L	3
Ti	47	188.335	0.002444	mg/L	3
V	51	4218.956	0.001987	mg/L	3
Cr	52	5634.445	0.002012	mg/L	3
Mn	55	3200.358	0.002121	mg/L	3
Fe	56	7910.523	0.001965	mg/L	3
Co	59	11224.413	0.002037	mg/L	3
Ni	60	3302.048	0.002161	mg/L	3
Cu	65	4137.266	0.002026	mg/L	3
Zn	66	1023.370	0.002230	mg/L	3
As	75	471.675	0.001772	mg/L	3
Sr	88	4599.076	0.002074	mg/L	3
Mo	95	3469.440	0.001930	mg/L	3
Ag	107	11507.967	0.001715	mg/L	3
Cd	111	1621.759	0.001895	mg/L	3
Sn	118	4390.676	0.002235	mg/L	3
Sb	121	4287.311	0.002034	mg/L	3
Ba	137	2308.520	0.002106	mg/L	3
Tl	205	38013.844	0.002105	mg/L	3
Pb	208	38596.444	0.001876	mg/L	3
Se	78	1792.769	0.001633	mg/L	3

Metals Quantitation Summary Report

Sequence #: 021
Method: 01-LONG LIST.mth
Acq Time: 12:00:51 Wed 19-Aug-20
Sample Name: Solu-AB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Al	27	26000315.823	10.015137	mg/L	3
Ti	47	12433.744	0.224712	mg/L	3
Cr	52	54612.553	0.021661	mg/L	3
Mn	55	32102.702	0.023574	mg/L	3
Fe	56	23943259.718	11.062352	mg/L	3
Co	59	106448.730	0.020956	mg/L	3
Ni	60	29575.594	0.021217	mg/L	3
Cu	65	37335.425	0.020126	mg/L	3
Zn	66	8565.901	0.021404	mg/L	3
As	75	4682.434	0.021516	mg/L	3
Mo	95	328730.877	0.211761	mg/L	3
Ag	107	122104.657	0.019862	mg/L	3
Cd	111	16366.037	0.021777	mg/L	3

Metals Quantitation Summary Report

Sequence #: 022
Method: 01-LONG LIST.mth
Acq Time: 12:06:24 Wed 19-Aug-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11075.981	-0.000124	mg/L	3
Be	9	16.667	0.000012	mg/L	3
B	11	280.003	0.000074	mg/L	3
Al	27	22057.038	0.008562	mg/L	3
Ti	47	33.333	-0.000120	mg/L	3
V	51	73.334	0.000008	mg/L	3
Cr	52	188.335	0.000012	mg/L	3
Mn	55	105.000	0.000017	mg/L	3
Fe	56	17610.849	0.006501	mg/L	3
Co	59	143.334	0.000018	mg/L	3
Ni	60	95.000	0.000032	mg/L	3
Cu	65	131.667	0.000029	mg/L	3
Zn	66	58.333	-0.000009	mg/L	3
As	75	46.667	-0.000045	mg/L	3
Sr	88	121.667	0.000014	mg/L	3
Mo	95	2499.991	0.001429	mg/L	3
Ag	107	506.676	0.000062	mg/L	3
Cd	111	120.001	0.000044	mg/L	3
Sn	118	838.358	0.000128	mg/L	3
Sb	121	340.004	0.000101	mg/L	3
Ba	137	96.667	0.000004	mg/L	3
Tl	205	241.669	0.000012	mg/L	3
Pb	208	507.002	0.000008	mg/L	3
Se	78	1099.822	-0.000258	mg/L	3

Metals Quantitation Summary Report

Sequence #: 023
Method: 01-LONG LIST.mth
Acq Time: 12:07:54 Wed 19-Aug-20
Sample Name: Solu-AA
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11055.964	-0.000178	mg/L	3
Be	9	8.333	0.000003	mg/L	3
B	11	230.002	0.000009	mg/L	3
Al	27	14719.249	0.005467	mg/L	3
Ti	47	51.667	0.000190	mg/L	3
V	51	70.000	0.000006	mg/L	3
Cr	52	195.001	0.000014	mg/L	3
Mn	55	90.000	0.000005	mg/L	3
Fe	56	13097.679	0.004412	mg/L	3
Co	59	96.667	0.000009	mg/L	3
Ni	60	55.000	0.000004	mg/L	3
Cu	65	98.334	0.000011	mg/L	3
Zn	66	55.000	-0.000020	mg/L	3
As	75	65.000	0.000037	mg/L	3
Sr	88	123.334	0.000014	mg/L	3
Mo	95	1855.098	0.001011	mg/L	3
Ag	107	425.006	0.000048	mg/L	3
Cd	111	101.667	0.000020	mg/L	3
Sn	118	808.357	0.000102	mg/L	3
Sb	121	296.670	0.000076	mg/L	3
Ba	137	100.000	0.000006	mg/L	3
Tl	205	216.668	0.000011	mg/L	3
Pb	208	497.002	0.000007	mg/L	3
Se	78	1103.561	-0.000266	mg/L	3

Metals Quantitation Summary Report

Sequence #: 024
Method: 01-LONG LIST.mth
Acq Time: 12:10:22 Wed 19-Aug-20
Sample Name: 081920_1 LCS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	190299.688	0.048763	mg/L	3
Be	9	51603.137	0.048453	mg/L	3
B	11	42635.253	0.049350	mg/L	3
Al	27	148393.975	0.056499	mg/L	3
Ti	47	3133.678	0.051044	mg/L	3
V	51	103208.192	0.048481	mg/L	3
Cr	52	133866.707	0.048392	mg/L	3
Mn	55	74379.831	0.049797	mg/L	3
Fe	56	134305.309	0.055047	mg/L	3
Co	59	270047.436	0.048405	mg/L	3
Ni	60	74574.266	0.048745	mg/L	3
Cu	65	100051.058	0.049130	mg/L	3
Zn	66	22250.650	0.050799	mg/L	3
As	75	11257.768	0.047379	mg/L	3
Sr	88	109958.346	0.049809	mg/L	3
Mo	95	82166.026	0.048048	mg/L	3
Ag	107	326704.073	0.048386	mg/L	3
Cd	111	41117.425	0.049934	mg/L	3
Sn	118	80947.215	0.047506	mg/L	3
Sb	121	98255.087	0.047514	mg/L	3
Ba	137	51084.535	0.047749	mg/L	3
Tl	205	957860.115	0.051871	mg/L	3
Pb	208	980762.803	0.046991	mg/L	3
Se	78	15499.254	0.049902	mg/L	3

Metals Quantitation Summary Report

Sequence #: 025
Method: 01-LONG LIST.mth
Acq Time: 12:25:41 Wed 19-Aug-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	10979.225	-0.000282	mg/L	3
Be	9	18.333	0.000013	mg/L	3
B	11	230.002	0.000001	mg/L	3
Al	27	3285.379	0.000891	mg/L	3
Ti	47	50.000	0.000141	mg/L	3
V	51	61.667	0.000001	mg/L	3
Cr	52	185.001	0.000009	mg/L	3
Mn	55	98.334	0.000010	mg/L	3
Fe	56	4455.695	0.000531	mg/L	3
Co	59	91.667	0.000008	mg/L	3
Ni	60	56.667	0.000005	mg/L	3
Cu	65	103.334	0.000012	mg/L	3
Zn	66	65.000	0.000001	mg/L	3
As	75	61.667	0.000016	mg/L	3
Sr	88	96.667	0.000000	mg/L	3
Mo	95	551.059	0.000197	mg/L	3
Ag	107	203.335	0.000013	mg/L	3
Cd	111	98.334	0.000013	mg/L	3
Sn	118	770.021	0.000071	mg/L	3
Sb	121	230.002	0.000040	mg/L	3
Ba	137	76.667	-0.000019	mg/L	3
Tl	205	206.668	0.000010	mg/L	3
Pb	208	498.668	0.000007	mg/L	3
Se	78	1156.493	-0.000091	mg/L	3

Metals Quantitation Summary Report

Sequence #: 026
Method: 01-LONG LIST.mth
Acq Time: 12:27:11 Wed 19-Aug-20
Sample Name: 081920_1 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11050.957	-0.000243	mg/L	3
Be	9	11.667	0.000006	mg/L	3
B	11	208.335	-0.000023	mg/L	3
Al	27	3842.183	0.001112	mg/L	3
Ti	47	36.667	-0.000057	mg/L	3
V	51	65.000	0.000004	mg/L	3
Cr	52	173.334	0.000007	mg/L	3
Mn	55	95.000	0.000010	mg/L	3
Fe	56	4225.626	0.000503	mg/L	3
Co	59	83.334	0.000007	mg/L	3
Ni	60	60.000	0.000009	mg/L	3
Cu	65	103.334	0.000014	mg/L	3
Zn	66	115.000	0.000131	mg/L	3
As	75	63.333	0.000035	mg/L	3
Sr	88	126.667	0.000017	mg/L	3
Mo	95	501.445	0.000179	mg/L	3
Ag	107	225.002	0.000018	mg/L	3
Cd	111	58.333	-0.000034	mg/L	3
Sn	118	775.021	0.000092	mg/L	3
Sb	121	196.668	0.000027	mg/L	3
Ba	137	63.333	-0.000029	mg/L	3
Tl	205	176.668	0.000009	mg/L	3
Pb	208	452.001	0.000005	mg/L	3
Se	78	1113.858	-0.000234	mg/L	3

Metals Quantitation Summary Report

Sequence #: 042
Method: 01-LONG LIST.mth
Acq Time: 13:05:27 Wed 19-Aug-20
Sample Name: 16695.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	35609.376	0.034050	mg/L	3
Be	9	13.333	0.000044	mg/L	3
B	11	68305.223	0.410660	mg/L	3
Al	27	67161.214	0.131760	mg/L	3
Ti	47	120.001	0.007720	mg/L	3
V	51	745.020	0.001850	mg/L	3
Cr	52	576.678	0.000885	mg/L	3
Mn	55	316223.434	1.207123	mg/L	3
Fe	57	74579.245	6.987622	mg/L	3
Co	59	1791.779	0.001783	mg/L	3
Ni	60	791.689	0.002781	mg/L	3
Cu	65	458.341	0.001081	mg/L	3
Zn	66	230.002	0.002232	mg/L	3
As	75	286.670	0.005625	mg/L	3
Sr	88	109728.212	0.283390	mg/L	3
Mo	95	1100.361	0.002981	mg/L	3
Ag	107	155.001	0.000039	mg/L	3
Cd	111	83.334	0.000022	mg/L	3
Sn	118	546.677	-0.000171	mg/L	3
Sb	121	168.334	0.000085	mg/L	3
Ba	137	28618.648	0.152255	mg/L	3
Tl	205	65.000	0.000012	mg/L	3
Pb	208	1035.347	0.000165	mg/L	3
Se	78	1121.490	0.000707	mg/L	3

Metals Quantitation Summary Report

Sequence #: 044
Method: 01-LONG LIST.mth
Acq Time: 13:08:48 Wed 19-Aug-20
Sample Name: 16695.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	51671.769	0.056930	mg/L	3
Be	9	6.667	0.000008	mg/L	3
B	11	859832.962	5.198889	mg/L	3
Al	27	105152.723	0.207764	mg/L	3
Ti	47	118.334	0.007536	mg/L	3
V	51	305.003	0.000668	mg/L	3
Cr	52	381.672	0.000481	mg/L	3
Mn	55	532061.456	2.021362	mg/L	3
Fe	56	331670.257	0.783880	mg/L	3
Co	59	4470.701	0.004498	mg/L	3
Ni	60	7588.682	0.027967	mg/L	3
Cu	65	581.679	0.001418	mg/L	3
Zn	66	1246.721	0.015424	mg/L	3
As	75	90.000	0.000884	mg/L	3
Sr	88	148996.406	0.382983	mg/L	3
Mo	95	3402.370	0.010626	mg/L	3
Ag	107	138.334	0.000024	mg/L	3
Cd	111	91.667	0.000077	mg/L	3
Sn	118	541.677	-0.000200	mg/L	3
Sb	121	148.334	0.000028	mg/L	3
Ba	137	8530.881	0.044843	mg/L	3
Tl	205	148.334	0.000035	mg/L	3
Pb	208	1690.377	0.000329	mg/L	3
Se	78	1084.829	-0.000125	mg/L	3

Metals Quantitation Summary Report

Sequence #: 046
Method: 01-LONG LIST.mth
Acq Time: 13:15:02 Wed 19-Aug-20
Sample Name: 16695.03s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	18311.730	0.008452	mg/L	3
Be	9	0.000	-0.000024	mg/L	3
B	11	10465.499	0.059377	mg/L	3
Al	27	3438.749	0.004664	mg/L	3
Ti	47	46.667	0.000734	mg/L	3
V	51	73.334	0.000046	mg/L	3
Cr	52	180.001	0.000060	mg/L	3
Mn	55	15778.710	0.058520	mg/L	3
Fe	56	639429.701	1.488945	mg/L	3
Co	59	315.004	0.000268	mg/L	3
Ni	60	336.671	0.001056	mg/L	3
Cu	65	126.667	0.000143	mg/L	3
Zn	66	171.668	0.001419	mg/L	3
As	75	395.005	0.008023	mg/L	3
Sr	88	56837.885	0.143184	mg/L	3
Mo	95	1390.203	0.003842	mg/L	3
Ag	107	131.667	0.000017	mg/L	3
Cd	111	68.334	-0.000093	mg/L	3
Sn	118	555.012	-0.000190	mg/L	3
Sb	121	131.667	-0.000025	mg/L	3
Ba	137	32014.170	0.166348	mg/L	3
Tl	205	61.667	0.000011	mg/L	3
Pb	208	373.667	0.000007	mg/L	3
Se	78	1185.692	0.001163	mg/L	3

Metals Quantitation Summary Report

Sequence #: 050
Method: 01-LONG LIST.mth
Acq Time: 13:21:52 Wed 19-Aug-20
Sample Name: CCV2-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 08/19/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	377343.349	0.097928	mg/L	3
Be	9	108968.369	0.100326	mg/L	3
B	11	89479.695	0.101841	mg/L	3
Al	27	263787.729	0.098917	mg/L	3
Ti	47	5922.895	0.099752	mg/L	3
V	51	206110.833	0.099676	mg/L	3
Cr	52	270496.666	0.100664	mg/L	3
Mn	55	148481.148	0.102249	mg/L	3
Fe	56	242150.114	0.103328	mg/L	3
Co	59	521220.302	0.096079	mg/L	3
Ni	60	151355.998	0.101758	mg/L	3
Cu	65	193667.418	0.097855	mg/L	3
Zn	66	44123.039	0.103788	mg/L	3
As	75	22656.290	0.098316	mg/L	3
Sr	88	221553.242	0.103289	mg/L	3
Mo	95	170944.829	0.103000	mg/L	3
Ag	107	650800.668	0.099152	mg/L	3
Cd	111	83082.691	0.103927	mg/L	3
Sn	118	165375.607	0.100168	mg/L	3
Sb	121	196265.743	0.097709	mg/L	3
Ba	137	104722.792	0.100850	mg/L	3
Tl	205	1937871.741	0.104619	mg/L	3
Pb	208	2012116.949	0.096120	mg/L	3
Se	78	30873.823	0.104141	mg/L	3

Metals Quantitation Summary Report

Sequence #: 051
Method: 01-LONG LIST.mth
Acq Time: 13:29:41 Wed 19-Aug-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	12050.092	-0.000008	mg/L	3
Be	9	46.667	0.000039	mg/L	3
B	11	571.678	0.000399	mg/L	3
Al	27	1013.369	0.000010	mg/L	3
Ti	47	33.333	-0.000129	mg/L	3
V	51	98.334	0.000020	mg/L	3
Cr	52	196.668	0.000015	mg/L	3
Mn	55	178.334	0.000067	mg/L	3
Fe	56	3635.464	0.000196	mg/L	3
Co	59	176.668	0.000024	mg/L	3
Ni	60	73.334	0.000017	mg/L	3
Cu	65	111.667	0.000017	mg/L	3
Zn	66	61.667	-0.000005	mg/L	3
As	75	55.000	-0.000010	mg/L	3
Sr	88	190.001	0.000046	mg/L	3
Mo	95	1220.919	0.000617	mg/L	3
Ag	107	351.671	0.000037	mg/L	3
Cd	111	113.334	0.000035	mg/L	3
Sn	118	1901.794	0.000784	mg/L	3
Sb	121	918.363	0.000393	mg/L	3
Ba	137	120.001	0.000025	mg/L	3
Tl	205	463.341	0.000025	mg/L	3
Pb	208	908.677	0.000028	mg/L	3
Se	78	1130.585	-0.000171	mg/L	3

Metals Quantitation Summary Report

Sequence #: 052
Method: 01-LONG LIST.mth
Acq Time: 13:31:11 Wed 19-Aug-20
Sample Name: CCB2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11858.257	-0.000006	mg/L	3
Be	9	53.333	0.000046	mg/L	3
B	11	540.010	0.000371	mg/L	3
Al	27	933.364	-0.000014	mg/L	3
Ti	47	63.333	0.000402	mg/L	3
V	51	105.000	0.000023	mg/L	3
Cr	52	175.001	0.000007	mg/L	3
Mn	55	113.334	0.000022	mg/L	3
Fe	56	3628.795	0.000207	mg/L	3
Co	59	118.334	0.000013	mg/L	3
Ni	60	66.667	0.000013	mg/L	3
Cu	65	126.667	0.000026	mg/L	3
Zn	66	70.000	0.000017	mg/L	3
As	75	43.333	-0.000060	mg/L	3
Sr	88	185.001	0.000044	mg/L	3
Mo	95	1073.692	0.000531	mg/L	3
Ag	107	283.336	0.000026	mg/L	3
Cd	111	100.000	0.000018	mg/L	3
Sn	118	1646.763	0.000634	mg/L	3
Sb	121	820.024	0.000347	mg/L	3
Ba	137	76.667	-0.000017	mg/L	3
Tl	205	421.673	0.000023	mg/L	3
Pb	208	732.005	0.000020	mg/L	3
Se	78	1113.004	-0.000240	mg/L	3

Metals Quantitation Summary Report

Sequence #: 053
Method: 01-LONG LIST.mth
Acq Time: 13:34:20 Wed 19-Aug-20
Sample Name: 16695.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	12088.452	-0.000374	mg/L	3
Be	9	36.667	0.000144	mg/L	3
B	11	671.682	0.002472	mg/L	3
Al	27	2415.205	0.002624	mg/L	3
Ti	47	36.667	-0.000309	mg/L	3
V	51	68.334	0.000026	mg/L	3
Cr	52	225.002	0.000134	mg/L	3
Mn	55	173.334	0.000326	mg/L	3
Fe	56	3513.766	0.000821	mg/L	3
Co	59	93.334	0.000043	mg/L	3
Ni	60	51.667	0.000012	mg/L	3
Cu	65	136.667	0.000157	mg/L	3
Zn	66	125.001	0.000766	mg/L	3
As	75	45.000	-0.000254	mg/L	3
Sr	88	211.668	0.000287	mg/L	3
Mo	95	721.820	0.001569	mg/L	3
Ag	107	263.336	0.000117	mg/L	3
Cd	111	83.334	-0.000012	mg/L	3
Sn	118	1265.056	0.001989	mg/L	3
Sb	121	666.682	0.001348	mg/L	3
Ba	137	198.335	0.000525	mg/L	3
Tl	205	308.337	0.000078	mg/L	3
Pb	208	707.005	0.000085	mg/L	3
Se	78	1142.761	-0.000712	mg/L	3

Metals Quantitation Summary Report

Sequence #: 055
Method: 01-LONG LIST.mth
Acq Time: 13:37:26 Wed 19-Aug-20
Sample Name: 16695.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	70915.801	0.085087	mg/L	3
Be	9	45.000	0.000198	mg/L	3
B	11	737453.445	4.489940	mg/L	3
Al	27	1087441.736	2.182040	mg/L	3
Ti	47	810.023	0.075170	mg/L	3
V	51	2573.566	0.006982	mg/L	3
Cr	52	2330.190	0.004671	mg/L	3
Mn	55	63976.312	0.252417	mg/L	3
Fe	56	1906670.786	4.721309	mg/L	3
Co	59	3228.699	0.003365	mg/L	3
Ni	60	4477.369	0.017097	mg/L	3
Cu	65	2376.865	0.006686	mg/L	3
Zn	66	1340.063	0.017319	mg/L	3
As	75	153.334	0.002558	mg/L	3
Sr	88	307019.355	0.820699	mg/L	3
Mo	95	19707.774	0.067470	mg/L	3
Ag	107	338.337	0.000204	mg/L	3
Cd	111	98.334	0.000153	mg/L	3
Sn	118	1166.714	0.002051	mg/L	3
Sb	121	631.681	0.001424	mg/L	3
Ba	137	10237.000	0.056064	mg/L	3
Tl	205	815.023	0.000222	mg/L	3
Pb	208	14335.943	0.003462	mg/L	3
Se	78	1115.576	0.000540	mg/L	3

Metals Quantitation Summary Report

Sequence #: 057
Method: 01-LONG LIST.mth
Acq Time: 13:44:08 Wed 19-Aug-20
Sample Name: 16695.05s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	44308.688	0.044223	mg/L	3
Be	9	13.333	0.000039	mg/L	3
B	11	148845.982	0.864896	mg/L	3
Al	27	4178.945	0.006140	mg/L	3
Ti	47	33.333	-0.000396	mg/L	3
V	51	203.335	0.000399	mg/L	3
Cr	52	206.668	0.000123	mg/L	3
Mn	55	410140.986	1.561397	mg/L	3
Fe	56	7163.467	0.010024	mg/L	3
Co	59	635.014	0.000600	mg/L	3
Ni	60	2155.163	0.007852	mg/L	3
Cu	65	521.676	0.001255	mg/L	3
Zn	66	378.338	0.004154	mg/L	3
As	75	61.667	0.000194	mg/L	3
Sr	88	471476.692	1.214723	mg/L	3
Mo	95	9130.661	0.029754	mg/L	3
Ag	107	253.336	0.000122	mg/L	3
Cd	111	101.667	0.000148	mg/L	3
Sn	118	778.355	0.000599	mg/L	3
Sb	121	385.005	0.000679	mg/L	3
Ba	137	10130.260	0.053443	mg/L	3
Tl	205	248.336	0.000063	mg/L	3
Pb	208	873.675	0.000128	mg/L	3
Se	78	1121.896	0.000333	mg/L	3

Metals Quantitation Summary Report

Sequence #: 059
Method: 01-LONG LIST.mth
Acq Time: 13:51:54 Wed 19-Aug-20
Sample Name: 16695.06s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	18326.779	0.009094	mg/L	3
Be	9	6.667	0.000008	mg/L	3
B	11	9908.450	0.057515	mg/L	3
Al	27	3193.694	0.004369	mg/L	3
Ti	47	23.333	-0.001400	mg/L	3
V	51	75.000	0.000051	mg/L	3
Cr	52	220.002	0.000141	mg/L	3
Mn	55	15455.024	0.057300	mg/L	3
Fe	56	637190.114	1.483399	mg/L	3
Co	59	250.002	0.000203	mg/L	3
Ni	60	310.003	0.000960	mg/L	3
Cu	65	100.000	0.000070	mg/L	3
Zn	66	176.668	0.001482	mg/L	3
As	75	368.338	0.007387	mg/L	3
Sr	88	57242.850	0.144126	mg/L	3
Mo	95	1609.268	0.004554	mg/L	3
Ag	107	160.001	0.000040	mg/L	3
Cd	111	73.334	-0.000058	mg/L	3
Sn	118	651.682	0.000127	mg/L	3
Sb	121	331.671	0.000514	mg/L	3
Ba	137	32217.981	0.167344	mg/L	3
Tl	205	108.334	0.000024	mg/L	3
Pb	208	427.001	0.000018	mg/L	3
Se	78	1029.258	-0.001682	mg/L	3

Metals Quantitation Summary Report

Sequence #: 073
Method: 01-LONG LIST.mth
Acq Time: 14:14:51 Wed 19-Aug-20
Sample Name: 16695.06 MS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	201121.732	0.264950	mg/L	3
Be	9	52984.897	0.254421	mg/L	3
B	11	53063.683	0.314308	mg/L	3
Al	27	130966.734	0.255106	mg/L	3
Ti	47	3018.652	0.275193	mg/L	3
V	51	101598.571	0.267237	mg/L	3
Cr	52	131892.718	0.266879	mg/L	3
Mn	55	89559.884	0.335624	mg/L	3
Fe	56	734377.983	1.721783	mg/L	3
Co	59	257557.812	0.258336	mg/L	3
Ni	60	70771.576	0.258887	mg/L	3
Cu	65	92678.006	0.254803	mg/L	3
Zn	66	21314.223	0.272474	mg/L	3
As	75	11636.405	0.274303	mg/L	3
Sr	88	160928.341	0.408351	mg/L	3
Mo	95	78859.147	0.258235	mg/L	3
Ag	107	296568.905	0.245885	mg/L	3
Cd	111	39885.612	0.271227	mg/L	3
Sn	118	76715.508	0.251961	mg/L	3
Sb	121	76435.641	0.206881	mg/L	3
Ba	137	81840.433	0.428622	mg/L	3
Tl	205	926511.066	0.257149	mg/L	3
Pb	208	940311.481	0.230907	mg/L	3
Se	78	14986.494	0.262116	mg/L	3

Metals Quantitation Summary Report

Sequence #: 074
Method: 01-LONG LIST.mth
Acq Time: 14:16:22 Wed 19-Aug-20
Sample Name: 16695.06 MSD-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	200337.268	0.271488	mg/L	3
Be	9	53888.186	0.266012	mg/L	3
B	11	50888.886	0.309818	mg/L	3
Al	27	129811.345	0.259792	mg/L	3
Ti	47	3098.670	0.285541	mg/L	3
V	51	100700.542	0.267616	mg/L	3
Cr	52	128565.943	0.262868	mg/L	3
Mn	55	88127.664	0.333700	mg/L	3
Fe	56	737963.510	1.748280	mg/L	3
Co	59	253027.179	0.256435	mg/L	3
Ni	60	69654.451	0.257458	mg/L	3
Cu	65	91195.222	0.253368	mg/L	3
Zn	66	21579.623	0.278777	mg/L	3
As	75	11427.906	0.272169	mg/L	3
Sr	88	161030.898	0.412829	mg/L	3
Mo	95	84360.980	0.279175	mg/L	3
Ag	107	301020.185	0.252190	mg/L	3
Cd	111	39065.033	0.268414	mg/L	3
Sn	118	78964.330	0.262178	mg/L	3
Sb	121	77849.888	0.212900	mg/L	3
Ba	137	80315.180	0.425007	mg/L	3
Tl	205	944000.519	0.265350	mg/L	3
Pb	208	932469.638	0.231876	mg/L	3
Se	78	15692.058	0.272198	mg/L	3

Metals Quantitation Summary Report

Sequence #: 075
Method: 01-LONG LIST.mth
Acq Time: 14:18:26 Wed 19-Aug-20
Sample Name: CCV3-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 08/19/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	381552.495	0.099494	mg/L	3
Be	9	105770.907	0.097773	mg/L	3
B	11	86851.966	0.099184	mg/L	3
Al	27	260076.851	0.097821	mg/L	3
Ti	47	5996.259	0.102325	mg/L	3
V	51	206446.341	0.101028	mg/L	3
Cr	52	268822.800	0.101247	mg/L	3
Mn	55	149816.498	0.104480	mg/L	3
Fe	56	240968.978	0.104110	mg/L	3
Co	59	536454.873	0.100125	mg/L	3
Ni	60	150072.888	0.102181	mg/L	3
Cu	65	196114.003	0.100336	mg/L	3
Zn	66	43517.877	0.103616	mg/L	3
As	75	22744.762	0.099978	mg/L	3
Sr	88	213988.453	0.101025	mg/L	3
Mo	95	168982.569	0.103069	mg/L	3
Ag	107	651581.374	0.100529	mg/L	3
Cd	111	82510.935	0.104488	mg/L	3
Sn	118	162772.586	0.099845	mg/L	3
Sb	121	195699.786	0.098634	mg/L	3
Ba	137	100360.058	0.097805	mg/L	3
Tl	205	1876011.097	0.099017	mg/L	3
Pb	208	2006391.448	0.093613	mg/L	3
Se	78	30361.490	0.102684	mg/L	3

Metals Quantitation Summary Report

Sequence #: 076
Method: 01-LONG LIST.mth
Acq Time: 14:26:21 Wed 19-Aug-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11784.867	-0.000194	mg/L	3
Be	9	33.333	0.000025	mg/L	3
B	11	416.673	0.000201	mg/L	3
Al	27	775.021	-0.000092	mg/L	3
Ti	47	35.000	-0.000095	mg/L	3
V	51	83.334	0.000013	mg/L	3
Cr	52	166.668	0.000004	mg/L	3
Mn	55	120.001	0.000027	mg/L	3
Fe	56	3278.710	0.000055	mg/L	3
Co	59	168.334	0.000023	mg/L	3
Ni	60	86.667	0.000027	mg/L	3
Cu	65	128.334	0.000027	mg/L	3
Zn	66	86.667	0.000059	mg/L	3
As	75	65.000	0.000039	mg/L	3
Sr	88	166.668	0.000035	mg/L	3
Mo	95	1151.666	0.000582	mg/L	3
Ag	107	355.004	0.000038	mg/L	3
Cd	111	130.001	0.000058	mg/L	3
Sn	118	1828.451	0.000751	mg/L	3
Sb	121	875.027	0.000376	mg/L	3
Ba	137	116.667	0.000023	mg/L	3
Tl	205	530.010	0.000029	mg/L	3
Pb	208	858.675	0.000026	mg/L	3
Se	78	1152.762	0.000024	mg/L	3

Metals Quantitation Summary Report

Sequence #: 077
Method: 01-LONG LIST.mth
Acq Time: 14:27:52 Wed 19-Aug-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11633.069	-0.000101	mg/L	3
Be	9	36.667	0.000030	mg/L	3
B	11	426.673	0.000232	mg/L	3
Al	27	805.023	-0.000068	mg/L	3
Ti	47	28.333	-0.000203	mg/L	3
V	51	105.000	0.000024	mg/L	3
Cr	52	216.668	0.000025	mg/L	3
Mn	55	123.334	0.000031	mg/L	3
Fe	56	3168.686	0.000028	mg/L	3
Co	59	141.667	0.000018	mg/L	3
Ni	60	65.000	0.000012	mg/L	3
Cu	65	106.667	0.000016	mg/L	3
Zn	66	98.334	0.000090	mg/L	3
As	75	73.334	0.000082	mg/L	3
Sr	88	133.334	0.000020	mg/L	3
Mo	95	1033.872	0.000519	mg/L	3
Ag	107	281.669	0.000027	mg/L	3
Cd	111	95.000	0.000014	mg/L	3
Sn	118	1525.083	0.000575	mg/L	3
Sb	121	841.692	0.000366	mg/L	3
Ba	137	81.667	-0.000011	mg/L	3
Tl	205	416.673	0.000022	mg/L	3
Pb	208	758.673	0.000021	mg/L	3
Se	78	1120.077	-0.000188	mg/L	3

Metals Quantitation Summary Report

Sequence #: 078
Method: 01-LONG LIST.mth
Acq Time: 14:30:12 Wed 19-Aug-20
Sample Name: 081920_2 LCS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-2
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Al	27	132188.798	0.048567	mg/L	3
Ti	47	3130.343	0.052448	mg/L	3
V	51	99955.193	0.048332	mg/L	3
Mn	55	75363.338	0.051927	mg/L	3
Fe	56	123940.540	0.052246	mg/L	3
Cu	65	99117.711	0.050115	mg/L	3
Zn	66	21885.084	0.051435	mg/L	3
Sr	88	109755.038	0.051193	mg/L	3
Ba	137	50059.233	0.048172	mg/L	3

Metals Quantitation Summary Report

Sequence #: 079
Method: 01-LONG LIST.mth
Acq Time: 14:36:18 Wed 19-Aug-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-2
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Li	7	11544.676	-0.000156	mg/L	3
Be	9	23.333	0.000017	mg/L	3
B	11	353.338	0.000142	mg/L	3
Al	27	748.353	-0.000093	mg/L	3
Ti	47	35.000	-0.000085	mg/L	3
V	51	75.000	0.000009	mg/L	3
Cr	52	155.001	0.000001	mg/L	3
Mn	55	110.000	0.000022	mg/L	3
Fe	56	2978.644	-0.000050	mg/L	3
Co	59	121.667	0.000015	mg/L	3
Ni	60	63.333	0.000011	mg/L	3
Cu	65	95.000	0.000011	mg/L	3
Zn	66	66.667	0.000012	mg/L	3
As	75	68.334	0.000058	mg/L	3
Sr	88	143.334	0.000026	mg/L	3
Mo	95	1036.109	0.000524	mg/L	3
Ag	107	288.336	0.000028	mg/L	3
Cd	111	110.000	0.000036	mg/L	3
Sn	118	1606.758	0.000631	mg/L	3
Sb	121	506.676	0.000191	mg/L	3
Ba	137	81.667	-0.000010	mg/L	3
Tl	205	378.338	0.000020	mg/L	3
Pb	208	775.340	0.000021	mg/L	3
Se	78	1087.502	-0.000282	mg/L	3

Metals Quantitation Summary Report

Sequence #: 080
Method: 01-LONG LIST.mth
Acq Time: 14:37:48 Wed 19-Aug-20
Sample Name: 081920_2 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-2
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Al	27	1928.464	0.000357	mg/L	3
Ti	47	36.667	-0.000057	mg/L	3
V	51	63.333	0.000003	mg/L	3
Mn	55	125.001	0.000032	mg/L	3
Fe	56	3117.007	0.000007	mg/L	3
Cu	65	108.334	0.000017	mg/L	3
Zn	66	126.667	0.000161	mg/L	3
Sr	88	200.001	0.000053	mg/L	3
Ba	137	86.667	-0.000005	mg/L	3

Metals Quantitation Summary Report

Sequence #: 091
Method: 01-LONG LIST.mth
Acq Time: 15:17:49 Wed 19-Aug-20
Sample Name: CCV4-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 08/19/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-2
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Al	27	246150.798	0.100127	mg/L	3
Ti	47	5922.895	0.106518	mg/L	3
V	51	199672.572	0.102989	mg/L	3
Mn	55	142325.480	0.104598	mg/L	3
Fe	56	228875.860	0.104211	mg/L	3
Cu	65	188711.741	0.101755	mg/L	3
Zn	66	41786.051	0.104888	mg/L	3
Sr	88	211321.779	0.105151	mg/L	3
Ba	137	96436.197	0.099038	mg/L	3

Metals Quantitation Summary Report

Sequence #: 093
Method: 01-LONG LIST.mth
Acq Time: 15:30:05 Wed 19-Aug-20
Sample Name: CCB4
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-2
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass	Concentration	Units	RSD %	Rep
Al	27	668.349	-0.000099	mg/L	3
Ti	47	31.667	-0.000109	mg/L	3
V	51	116.667	0.000034	mg/L	3
Mn	55	125.001	0.000037	mg/L	3
Fe	56	3240.368	0.000148	mg/L	3
Cu	65	1680.099	0.000907	mg/L	3
Zn	66	343.338	0.000749	mg/L	3
Sr	88	213.335	0.000066	mg/L	3
Ba	137	130.001	0.000046	mg/L	3

Metals Quantitation Summary Report

Sequence #: 001
Method: 01-MINERALS.mth
Acq Time: 16:09:08 Wed 19-Aug-20
Sample Name: Blank
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	14802.222	0	mg/L	3
Mg	24	6590.000	0	mg/L	3
K	39	268954.444	0	mg/L	3
Ca	44	7297.778	0	mg/L	3

Metals Quantitation Summary Report

Sequence #: 002
Method: 01-MINERALS.mth
Acq Time: 16:09:51 Wed 19-Aug-20
Sample Name: Std-0.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	14884.444	-0.000020	mg/L	3
Mg	24	6557.778	-0.000080	mg/L	3
K	39	268707.778	-0.002192	mg/L	3
Ca	44	7411.111	0.001115	mg/L	3

Metals Quantitation Summary Report

Sequence #: 003
Method: 01-MINERALS.mth
Acq Time: 16:10:34 Wed 19-Aug-20
Sample Name: Std-0.20
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	394821.111	0.194840	mg/L		3
Mg	24	237491.111	0.193342	mg/L		3
K	39	541193.333	0.188271	mg/L		3
Ca	44	15787.778	0.216797	mg/L		3

Metals Quantitation Summary Report

Sequence #: 004
Method: 01-MINERALS.mth
Acq Time: 16:11:17 Wed 19-Aug-20
Sample Name: Std-0.50
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	941514.444	0.480944	mg/L		3
Mg	24	575721.111	0.482200	mg/L		3
K	39	960594.444	0.495106	mg/L		3
Ca	44	25152.222	0.469291	mg/L		3

Metals Quantitation Summary Report

Sequence #: 005
Method: 01-MINERALS.mth
Acq Time: 16:12:00 Wed 19-Aug-20
Sample Name: Std-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1841988.889	0.955711	mg/L		3
Mg	24	1177678.889	0.999406	mg/L		3
K	39	1625416.667	0.983341	mg/L		3
Ca	44	44152.222	0.982364	mg/L		3

Metals Quantitation Summary Report

Sequence #: 006
Method: 01-MINERALS.mth
Acq Time: 16:12:43 Wed 19-Aug-20
Sample Name: Std-2.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	3700607.778	1.946811	mg/L	3
Mg	24	2240352.222	1.923955	mg/L	3
K	39	2964880.000	1.980607	mg/L	3
Ca	44	81551.111	2.004132	mg/L	3

Metals Quantitation Summary Report

Sequence #: 007
Method: 01-MINERALS.mth
Acq Time: 16:13:26 Wed 19-Aug-20
Sample Name: Std-5.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	9708108.889	5.032245	mg/L	3
Mg	24	5945384.444	5.032583	mg/L	3
K	39	7208971.111	5.012047	mg/L	3
Ca	44	196137.778	5.004273	mg/L	3

Metals Quantitation Summary Report

Sequence #: 008
Method: 01-MINERALS.mth
Acq Time: 16:14:09 Wed 19-Aug-20
Sample Name: ICV-2.0
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 08/19/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	3782345.556	1.974697	mg/L	3
Mg	24	2335302.222	1.991811	mg/L	3
K	39	3053921.111	2.029475	mg/L	3
Ca	44	80887.778	1.970390	mg/L	3

Metals Quantitation Summary Report

Sequence #: 009
Method: 01-MINERALS.mth
Acq Time: 16:15:02 Wed 19-Aug-20
Sample Name: CCV-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 08/19/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	3760445.556	1.929133	mg/L	3
Mg	24	2303420.000	1.929841	mg/L	3
K	39	2967694.444	1.929414	mg/L	3
Ca	44	81432.222	1.947032	mg/L	3

Metals Quantitation Summary Report

Sequence #: 010
Method: 01-MINERALS.mth
Acq Time: 16:16:01 Wed 19-Aug-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	24827.778	0.005486	mg/L		3
Mg	24	12461.111	0.005230	mg/L		3
K	39	269732.222	0.002275	mg/L		3
Ca	44	7374.444	0.003850	mg/L		3

Metals Quantitation Summary Report

Sequence #: 011
Method: 01-MINERALS.mth
Acq Time: 16:16:44 Wed 19-Aug-20
Sample Name: CCB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	17394.444	0.001468	mg/L		3
Mg	24	7546.667	0.000892	mg/L		3
K	39	267460.000	0.000040	mg/L		3
Ca	44	7077.778	-0.004807	mg/L		3

Metals Quantitation Summary Report

Sequence #: 012
Method: 01-MINERALS.mth
Acq Time: 16:17:33 Wed 19-Aug-20
Sample Name: BS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	111625.556	0.050337	mg/L	3
Mg	24	61946.667	0.046970	mg/L	3
K	39	334922.222	0.044041	mg/L	3
Ca	44	8907.778	0.039292	mg/L	3

Metals Quantitation Summary Report

Sequence #: 013
Method: 01-MINERALS.mth
Acq Time: 16:18:18 Wed 19-Aug-20
Sample Name: BS-0.1
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	216364.444	0.103230	mg/L		3
Mg	24	127680.000	0.101217	mg/L		3
K	39	409095.556	0.093046	mg/L		3
Ca	44	10783.333	0.084442	mg/L		3

Metals Quantitation Summary Report

Sequence #: 014
Method: 01-MINERALS.mth
Acq Time: 16:20:03 Wed 19-Aug-20
Sample Name: 081920_1 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	1851971.111	0.950283	mg/L	3
Mg	24	1138238.889	0.955805	mg/L	3
K	39	1649831.111	0.988735	mg/L	3
Ca	44	44397.778	0.976746	mg/L	3

Metals Quantitation Summary Report

Sequence #: 015
Method: 01-MINERALS.mth
Acq Time: 16:21:01 Wed 19-Aug-20
Sample Name: 081920_2 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	17903.333	0.001758	mg/L		3
Mg	24	7832.222	0.001155	mg/L		3
K	39	267521.111	0.000426	mg/L		3
Ca	44	6995.556	-0.006774	mg/L		3

Metals Quantitation Summary Report

Sequence #: 026
Method: 01-MINERALS.mth
Acq Time: 16:42:12 Wed 19-Aug-20
Sample Name: CCV2-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 08/19/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	3805674.444	1.959857	mg/L	3
Mg	24	2342795.556	1.971056	mg/L	3
K	39	3025302.222	1.980152	mg/L	3
Ca	44	81342.222	1.953258	mg/L	3

Metals Quantitation Summary Report

Sequence #: 027
Method: 01-MINERALS.mth
Acq Time: 16:42:58 Wed 19-Aug-20
Sample Name: CCB2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	37528.889	0.012181	mg/L		3
Mg	24	16558.889	0.008724	mg/L		3
K	39	277058.889	0.005892	mg/L		3
Ca	44	7010.000	-0.007937	mg/L		3

Metals Quantitation Summary Report

Sequence #: 028
Method: 01-MINERALS.mth
Acq Time: 16:43:58 Wed 19-Aug-20
Sample Name: 16695.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	24106.667	0.022485	mg/L		3
Mg	24	8678.889	0.007727	mg/L		3
K	39	267112.222	-0.042729	mg/L		3
Ca	44	9424.444	0.243113	mg/L		3

Metals Quantitation Summary Report

Sequence #: 030
Method: 01-MINERALS.mth
Acq Time: 16:45:41 Wed 19-Aug-20
Sample Name: 16695.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	17062208.889	44.719525	mg/L	3
Mg	24	10261497.778	43.849372	mg/L	3
K	39	709602.222	1.593576	mg/L	3
Ca	44	1215951.111	161.779672	mg/L	3

Metals Quantitation Summary Report

Sequence #: 032
Method: 01-MINERALS.mth
Acq Time: 16:47:57 Wed 19-Aug-20
Sample Name: 16695.06s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	9827771.111	26.230909	mg/L		3
Mg	24	8787531.111	38.304203	mg/L		3
K	39	634485.556	1.365458	mg/L		3
Ca	44	791594.444	107.183286	mg/L		3

Metals Quantitation Summary Report

Sequence #: 034
Method: 01-MINERALS.mth
Acq Time: 16:50:22 Wed 19-Aug-20
Sample Name: 16695.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	23359270.000	61.690233	mg/L	3
Mg	24	15690910.000	67.653349	mg/L	3
K	39	544432.222	1.007535	mg/L	3
Ca	44	2025595.556	272.270717	mg/L	3

Metals Quantitation Summary Report

Sequence #: 036
Method: 01-MINERALS.mth
Acq Time: 16:52:39 Wed 19-Aug-20
Sample Name: 16695.03s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	10066836.667	27.113757	mg/L		3
Mg	24	8979383.333	39.506833	mg/L		3
K	39	652203.333	1.455304	mg/L		3
Ca	44	817580.000	111.706542	mg/L		3

Metals Quantitation Summary Report

Sequence #: 038
Method: 01-MINERALS.mth
Acq Time: 16:54:55 Wed 19-Aug-20
Sample Name: 16695.02 dil
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 50

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2447815.556	63.344518	mg/L		3
Mg	24	1579847.778	66.902740	mg/L		3
K	39	318312.222	1.560520	mg/L		3
Ca	44	207823.333	266.651132	mg/L		3

Metals Quantitation Summary Report

Sequence #: 040
Method: 01-MINERALS.mth
Acq Time: 16:56:33 Wed 19-Aug-20
Sample Name: 16695.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	29946588.889	78.053076	mg/L		3
Mg	24	15916087.778	67.702303	mg/L		3
K	39	1764714.444	5.406258	mg/L		3
Ca	44	2009961.111	266.909237	mg/L		3

Metals Quantitation Summary Report

Sequence #: 042
Method: 01-MINERALS.mth
Acq Time: 16:58:48 Wed 19-Aug-20
Sample Name: 16695.05s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	18429127.778	47.749706	mg/L		3
Mg	24	8065147.778	34.093805	mg/L		3
K	39	2014395.556	6.280398	mg/L		3
Ca	44	1295755.556	170.906278	mg/L		3

Metals Quantitation Summary Report

Sequence #: 044
Method: 01-MINERALS.mth
Acq Time: 17:00:36 Wed 19-Aug-20
Sample Name: 16695.06 MS-2.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	13415193.333	35.521179	mg/L		3
Mg	24	10889816.667	47.106713	mg/L		3
K	39	3413141.111	11.606728	mg/L		3
Ca	44	885953.333	119.135371	mg/L		3

Metals Quantitation Summary Report

Sequence #: 045
Method: 01-MINERALS.mth
Acq Time: 17:01:19 Wed 19-Aug-20
Sample Name: 16695.06 MSD-2.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	13689394.444	36.550674	mg/L	3
Mg	24	10985086.667	47.863477	mg/L	3
K	39	3427812.222	11.759010	mg/L	3
Ca	44	881706.667	119.436280	mg/L	3

Metals Quantitation Summary Report

Sequence #: 047
Method: 01-MINERALS.mth
Acq Time: 17:03:03 Wed 19-Aug-20
Sample Name: CCV3-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 08/19/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	3853935.556	1.948622	mg/L	3
Mg	24	2372631.111	1.962819	mg/L	3
K	39	2991024.444	1.917967	mg/L	3
Ca	44	82925.556	1.956542	mg/L	3

Metals Quantitation Summary Report

Sequence #: 048
Method: 01-MINERALS.mth
Acq Time: 17:03:48 Wed 19-Aug-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-1
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	37835.556	0.012008	mg/L	3
Mg	24	17702.222	0.009468	mg/L	3
K	39	269317.778	-0.002649	mg/L	3
Ca	44	7290.000	-0.003047	mg/L	3

Metals Quantitation Summary Report

Sequence #: 049
Method: 01-MINERALS.mth
Acq Time: 17:05:11 Wed 19-Aug-20
Sample Name: 081920_2 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-2
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1944207.778	0.993367	mg/L		3
Mg	24	1155540.000	0.965568	mg/L		3
K	39	1661200.000	0.992733	mg/L		3
Ca	44	44557.778	0.974799	mg/L		3

Metals Quantitation Summary Report

Sequence #: 050
Method: 01-MINERALS.mth
Acq Time: 17:06:01 Wed 19-Aug-20
Sample Name: 081920_2 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-2
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	35006.667	0.010531	mg/L		3
Mg	24	14035.556	0.006305	mg/L		3
K	39	271017.778	-0.000580	mg/L		3
Ca	44	7166.667	-0.005661	mg/L		3

Metals Quantitation Summary Report

Sequence #: 059
Method: 01-MINERALS.mth
Acq Time: 17:17:49 Wed 19-Aug-20
Sample Name: CCV4-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 08/19/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-2
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass	Concentration	Units	RSD %	Rep
Na	23	3786732.222	1.979634	mg/L	3
Mg	24	2237841.111	1.910342	mg/L	3
K	39	2986438.889	1.984373	mg/L	3
Ca	44	80278.889	1.957353	mg/L	3

Metals Quantitation Summary Report

Sequence #: 060
Method: 01-MINERALS.mth
Acq Time: 17:18:34 Wed 19-Aug-20
Sample Name: CCB4
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819B.cal
Cal Type: External Calibration
Last Calib: mtd-081920-2
Bkg File:
Int Correct:
Blank File: Blank.034

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	35653.333	0.010917	mg/L		3
Mg	24	15633.333	0.007753	mg/L		3
K	39	277630.000	0.003540	mg/L		3
Ca	44	6988.889	-0.011117	mg/L		3

Metals Digestion 3015A 3050B

DATE 8-19-20

PREP BATCH MTD-081920-1

TIME START 10:30

TIME FINISH 11:00

ANALYST CCM

Pipet Calibration:

Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria	Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria
2	1	1.0	1.001	Bias: Mean ± 2% of nominal value Precision: RSD ≤ 1% of nominal value	3	1	0.5	0.501	Bias: Mean ± 2% of nominal value Precision: RSD ≤ 1% of nominal value
	2	1	1.002			2	1	0.501	
	3	1	1.002			3	1	0.500	

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	FINAL VOLUME (ml)	REMARKS	% TOTAL SOLIDS	DILUTION FACTOR
LCS-081920-1	----	50	50		—	1
LRB-081920-1	----	50	50		—	1
16402.01		10				5
.02						
.02 MS						
.02 MSD						
16513.02						
16531.01				TOT		
.01				DIS		
16561.01		↓				↓
16653.01		25				2
16663.01		10				5
.02						
.03						
.04						
.05						
16689.01						
16695.01						
.02						
.03						
.04						
.05						
.06						
.06 MS						
.06 MSD						
.07						

NOTES: 1) Spike values (unless otherwise stated):
 LCS = 0.05 ppm = 50 mls + 0.50 mls of 5ppm Spiking Solution
 Samples: Water = 0.05 ppm = 50 mls + 0.50 mls of 5ppm Spiking Solution
 Soil = 0.10 ppm = 50 mls + 1.0 mls of 5ppm Spiking Solution
 Spiking Solution - Date Prepared: 8-19-20

2) Spike values for minerals (Ca-Mg-K-Na)
 LCS = 1.0 ppm = 50 mls + 0.50 mls HM Stock Solution
 Samples (Water or Soil) = 2.0 ppm = 50 mls + 1.0 mls HM Stock Solution
 High Purity Stock Solution (HM) - Lot # 1927522-500

3) HNO₃ Lot # 248841

4) Centrifuge Tube Lot # 191210-060

5) Balance ID: M1

Reviewed by: [Signature] On 8/19/20

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

Filename	Run Time	Sample ID	Matrix	QC Type
001	8/26/2020 12:05:16 PM	Calibration Blank	Liquid	
002	8/26/2020 12:07:07 PM	Standard #1	Liquid	
003	8/26/2020 12:08:59 PM	Standard #2	Liquid	
004	8/26/2020 12:10:51 PM	Standard #3	Liquid	
005	8/26/2020 12:12:42 PM	Standard #4	Liquid	
006	8/26/2020 12:14:34 PM	Standard #5	Liquid	
007	8/26/2020 12:16:25 PM	Standard #6	Liquid	
008	8/26/2020 12:19:44 PM	Standard #7	Liquid	
009	8/26/2020 12:22:59 PM	Standard #8	Liquid	
010	8/26/2020 12:26:35 PM	ICV-5.0 ppb	Liquid	ICV
011	8/26/2020 12:29:24 PM	ICB	Liquid	ICB
012	8/26/2020 12:31:15 PM	CCV1-2.0 ppb	Liquid	CCV
013	8/26/2020 12:33:07 PM	CCB1	Liquid	CCB
014	8/26/2020 12:34:59 PM	BS-0.10	Liquid	BS
015	8/26/2020 12:36:49 PM	082620_1 LCS-2.0	Liquid	
016	8/26/2020 12:38:40 PM	082620_1 LCS-2.0	Liquid	
017	8/26/2020 12:42:25 PM	082620_1 LCS-2.0	Liquid	LCS
018	8/26/2020 12:44:16 PM	082620_1 LRB	Liquid	LRB
019	8/26/2020 12:46:02 PM	16695.01s	Liquid	S
020	8/26/2020 12:47:49 PM	16695.02s	Liquid	S
021	8/26/2020 12:49:36 PM	16695.03s	Liquid	S
022	8/26/2020 12:51:24 PM	16695.04s	Liquid	S
023	8/26/2020 12:53:13 PM	16695.05s	Liquid	S
024	8/26/2020 12:55:02 PM	16695.06s	Liquid	S
025	8/26/2020 12:56:49 PM	16712.01s	Liquid	S
026	8/26/2020 12:58:37 PM	16712.02s	Liquid	S
027	8/26/2020 1:00:25 PM	16712.03s	Liquid	S
028	8/26/2020 1:02:13 PM	16897.01s	Liquid	S
029	8/26/2020 1:05:55 PM	16897.01 MS-2.0	Liquid	MS
030	8/26/2020 1:07:43 PM	16897.01 MSD	Liquid	MSD
031	8/26/2020 1:09:34 PM	CCV2-2.0 ppb	Liquid	CCV
032	8/26/2020 1:11:26 PM	CCB2	Liquid	CCB
033	8/26/2020 1:13:15 PM	16712.04s	Liquid	S
034	8/26/2020 1:15:04 PM	16712.05s	Liquid	S
035	8/26/2020 1:16:51 PM	16735.01s	Liquid	S
036	8/26/2020 1:18:38 PM	16767.01s	Liquid	S
037	8/26/2020 1:20:26 PM	16768.01s	Liquid	S
038	8/26/2020 1:22:14 PM	16768.02s	Liquid	S
039	8/26/2020 1:24:02 PM	16768.03s	Liquid	S
040	8/26/2020 1:25:51 PM	16738.04s	Liquid	S
041	8/26/2020 1:27:40 PM	16738.05s	Liquid	S
042	8/26/2020 1:29:29 PM	16695.07s	Liquid	S
043	8/26/2020 1:31:16 PM	16695.07 MS-2.0	Liquid	MS
044	8/26/2020 1:33:03 PM	16695.07 MSD	Liquid	MSD
045	8/26/2020 1:34:54 PM	CCV3-2.0 ppb	Liquid	CCV
046	8/26/2020 1:36:46 PM	CCB3	Liquid	CCB
047	8/26/2020 1:38:37 PM	082620_2 LCS-2.0	Liquid	
048	8/26/2020 1:40:27 PM	082620_2 LRB	Liquid	
049	8/26/2020 1:42:15 PM	16866.01s	Liquid	
050	8/26/2020 1:44:04 PM	16867.01s	Liquid	
051	8/26/2020 1:45:52 PM	16868.01s	Liquid	
052	8/26/2020 1:47:42 PM	16796.06s	Liquid	
053	8/26/2020 1:51:08 PM	16738.06s	Liquid	
054	8/26/2020 1:52:56 PM	16738.05s	Liquid	
055	8/26/2020 1:54:44 PM	16738.05 MS-2.0	Liquid	
056	8/26/2020 1:56:32 PM	16738.05 MSD	Liquid	

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	8/26/2020 1:58:24 PM	CCV4-2.0 ppb	Liquid	
058	8/26/2020 2:00:15 PM	CCV4-2.0 ppb	Liquid	
059	8/26/2020 2:02:07 PM	CCB4	Liquid	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

Lab Sample ID: S16695.01

Sample Tag: MW-1 L008009-01

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	08/26/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

Lab Sample ID: S16695.02

Sample Tag: MW-2 L008009-02

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	08/26/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

Lab Sample ID: S16695.03

Sample Tag: MW-4 L008009-03

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	08/26/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

Lab Sample ID: S16695.04

Sample Tag: MW-5 L008009-04

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	08/26/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

Lab Sample ID: S16695.05

Sample Tag: MW-6 L008009-05

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	08/26/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

Lab Sample ID: S16695.06

Sample Tag: MW-4 Duplicate L008009-06

Date Collected: 08/18/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	08/26/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

Lab Sample ID: S16695.07

Sample Tag: Field Blank L008009-07

Date Collected: 08/18/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	08/26/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

Note/Qualifier Key

b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
010 ICV-5.0 ppb	ICV	1.0	Hg	5.230	5.0	105	90/110	ug/L	Liquid
012 CCV1-2.0 ppb	CCV	1.0	Hg	2.017	2.0	101	90/110	ug/L	Liquid
031 CCV2-2.0 ppb	CCV	1.0	Hg	1.962	2.0	98	90/110	ug/L	Liquid
045 CCV3-2.0 ppb	CCV	1.0	Hg	1.927	2.0	96	90/110	ug/L	Liquid

Form 3: Blanks

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
011 ICB	ICB	1.0	Hg	<0.05	-0.0150	ug/L	Liquid
013 CCB1	CCB	1.0	Hg	<0.05	-0.0169	ug/L	Liquid
018 082620_1 LRB	LRB	1.0	Hg	<0.05	-0.0227	ug/L	Liquid
032 CCB2	CCB	1.0	Hg	<0.05	-0.0149	ug/L	Liquid
046 CCB3	CCB	1.0	Hg	<0.05	-0.0165	ug/L	Liquid

Form 5A: Matrix Spike Sample Recovery

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
014 BS-0.10		1.0	Hg	0.093	ND	0.10	93	70/130	ug/L	Liquid
029 16897.01 MS-2.0	028 16897.01s	1.0	Hg	2.050	<0.2	2.0	103	80/120	ug/L	Liquid
043 16695.07 MS-2.0	042 16695.07s	1.0	Hg	2.125	<0.2	2.0	106	80/120	ug/L	Liquid

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
030 16897.01 MSD	029 16897.01 MS-2.0	1.0	Hg	2.039	2.050	1	0/20	ug/L	Liquid
044 16695.07 MSD	043 16695.07 MS-2.0	1.0	Hg	2.080	2.125	2	0/20	ug/L	Liquid

Form 7: Laboratory Control Sample

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
017 082620_1 LCS-2.0	1.0	Hg	2.100	2.0	105	85/115	ug/L	Liquid

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Calibration Blank	8/26/2020 12:05:16	PM Liquid	Hg
002 Standard #1	8/26/2020 12:07:07	PM Liquid	Hg
003 Standard #2	8/26/2020 12:08:59	PM Liquid	Hg
004 Standard #3	8/26/2020 12:10:51	PM Liquid	Hg
005 Standard #4	8/26/2020 12:12:42	PM Liquid	Hg
006 Standard #5	8/26/2020 12:14:34	PM Liquid	Hg
007 Standard #6	8/26/2020 12:16:25	PM Liquid	Hg
008 Standard #7	8/26/2020 12:19:44	PM Liquid	Hg
009 Standard #8	8/26/2020 12:22:59	PM Liquid	Hg
010 ICV-5.0 ppb	8/26/2020 12:26:35	PM Liquid	Hg
011 ICB	8/26/2020 12:29:24	PM Liquid	Hg
012 CCV1-2.0 ppb	8/26/2020 12:31:15	PM Liquid	Hg
013 CCB1	8/26/2020 12:33:07	PM Liquid	Hg
014 BS-0.10	8/26/2020 12:34:59	PM Liquid	Hg
015 082620_1 LCS-2.0	8/26/2020 12:36:49	PM Liquid	Hg
016 082620_1 LCS-2.0	8/26/2020 12:38:40	PM Liquid	Hg
017 082620_1 LCS-2.0	8/26/2020 12:42:25	PM Liquid	Hg
018 082620_1 LRB	8/26/2020 12:44:16	PM Liquid	Hg
019 16695.01s	8/26/2020 12:46:02	PM Liquid	Hg
020 16695.02s	8/26/2020 12:47:49	PM Liquid	Hg
021 16695.03s	8/26/2020 12:49:36	PM Liquid	Hg
022 16695.04s	8/26/2020 12:51:24	PM Liquid	Hg
023 16695.05s	8/26/2020 12:53:13	PM Liquid	Hg
024 16695.06s	8/26/2020 12:55:02	PM Liquid	Hg
025 16712.01s	8/26/2020 12:56:49	PM Liquid	Hg
026 16712.02s	8/26/2020 12:58:37	PM Liquid	Hg
027 16712.03s	8/26/2020 1:00:25	PM Liquid	Hg
028 16897.01s	8/26/2020 1:02:13	PM Liquid	Hg
029 16897.01 MS-2.0	8/26/2020 1:05:55	PM Liquid	Hg
030 16897.01 MSD	8/26/2020 1:07:43	PM Liquid	Hg
031 CCV2-2.0 ppb	8/26/2020 1:09:34	PM Liquid	Hg
032 CCB2	8/26/2020 1:11:26	PM Liquid	Hg
033 16712.04s	8/26/2020 1:13:15	PM Liquid	Hg
034 16712.05s	8/26/2020 1:15:04	PM Liquid	Hg
035 16735.01s	8/26/2020 1:16:51	PM Liquid	Hg
036 16767.01s	8/26/2020 1:18:38	PM Liquid	Hg
037 16768.01s	8/26/2020 1:20:26	PM Liquid	Hg
038 16768.02s	8/26/2020 1:22:14	PM Liquid	Hg
039 16768.03s	8/26/2020 1:24:02	PM Liquid	Hg
040 16738.04s	8/26/2020 1:25:51	PM Liquid	Hg
041 16738.05s	8/26/2020 1:27:40	PM Liquid	Hg
042 16695.07s	8/26/2020 1:29:29	PM Liquid	Hg
043 16695.07 MS-2.0	8/26/2020 1:31:16	PM Liquid	Hg
044 16695.07 MSD	8/26/2020 1:33:03	PM Liquid	Hg
045 CCV3-2.0 ppb	8/26/2020 1:34:54	PM Liquid	Hg
046 CCB3	8/26/2020 1:36:46	PM Liquid	Hg
047 082620_2 LCS-2.0	8/26/2020 1:38:37	PM Liquid	Hg
048 082620_2 LRB	8/26/2020 1:40:27	PM Liquid	Hg
049 16866.01s	8/26/2020 1:42:15	PM Liquid	Hg
050 16867.01s	8/26/2020 1:44:04	PM Liquid	Hg
051 16868.01s	8/26/2020 1:45:52	PM Liquid	Hg
052 16796.06s	8/26/2020 1:47:42	PM Liquid	Hg
053 16738.06s	8/26/2020 1:51:08	PM Liquid	Hg
054 16738.05s	8/26/2020 1:52:56	PM Liquid	Hg
055 16738.05 MS-2.0	8/26/2020 1:54:44	PM Liquid	Hg
056 16738.05 MSD	8/26/2020 1:56:32	PM Liquid	Hg

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0826A

Instrument ID: HG QuickTrace

Analysis Date: 08/26/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
057 CCV4-2.0 ppb	8/26/2020 1:58:24 PM	Liquid	Hg
058 CCV4-2.0 ppb	8/26/2020 2:00:15 PM	Liquid	Hg
059 CCB4	8/26/2020 2:02:07 PM	Liquid	Hg

Mercury Summary Report

Element	Seq #	Acquisition Time	Sample Name	Peak	Concentration	Units	Matrix	Dilution	Sample Wt.	Sample Vol.
Hg	001	8/26/2020 12:05:16 PM	Calibration Blank	145.0000	0.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	002	8/26/2020 12:07:07 PM	Standard #1	1498.0000	0.1000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	003	8/26/2020 12:08:59 PM	Standard #2	2721.0000	0.2000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	004	8/26/2020 12:10:51 PM	Standard #3	6685.0000	0.5000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	005	8/26/2020 12:12:42 PM	Standard #4	13290.0000	1.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	006	8/26/2020 12:14:34 PM	Standard #5	25840.0000	2.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	007	8/26/2020 12:16:25 PM	Standard #6	76640.0000	6.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	008	8/26/2020 12:19:44 PM	Standard #7	101300.0000	8.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	009	8/26/2020 12:22:59 PM	Standard #8	127600.0000	10.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	010	8/26/2020 12:26:35 PM	ICV-5.0 ppb	66710.0000	5.2300	ug/L	Liquid	1.0	1.0000	1.0000
Hg	011	8/26/2020 12:29:24 PM	ICB	112.1000	-0.0150	ug/L	Liquid	1.0	1.0000	1.0000
Hg	012	8/26/2020 12:31:15 PM	CCV1-2.0 ppb	25910.0000	2.0170	ug/L	Liquid	1.0	1.0000	1.0000
Hg	013	8/26/2020 12:33:07 PM	CCB1	87.8000	-0.0169	ug/L	Liquid	1.0	1.0000	1.0000
Hg	014	8/26/2020 12:34:59 PM	BS-0.10	1481.0000	0.0928	ug/L	Liquid	1.0	1.0000	1.0000
Hg	015	8/26/2020 12:36:49 PM	082620_1 LCS-2.0	2356.0000	0.1618	ug/L	Liquid	1.0	1.0000	1.0000
Hg	016	8/26/2020 12:38:40 PM	082620_1 LCS-2.0	2369.0000	0.1627	ug/L	Liquid	1.0	1.0000	1.0000
Hg	017	8/26/2020 12:42:25 PM	082620_1 LCS-2.0	26970.0000	2.1000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	018	8/26/2020 12:44:16 PM	082620_1 LRB	14.2700	-0.0227	ug/L	Liquid	1.0	1.0000	1.0000
Hg	019	8/26/2020 12:46:02 PM	16695.01s	104.3000	-0.0156	ug/L	Liquid	1.0	1.0000	1.0000
Hg	020	8/26/2020 12:47:49 PM	16695.02s	155.9000	-0.0115	ug/L	Liquid	1.0	1.0000	1.0000
Hg	021	8/26/2020 12:49:36 PM	16695.03s	184.0000	-0.0093	ug/L	Liquid	1.0	1.0000	1.0000
Hg	022	8/26/2020 12:51:24 PM	16695.04s	308.3000	0.0005	ug/L	Liquid	1.0	1.0000	1.0000
Hg	023	8/26/2020 12:53:13 PM	16695.05s	134.5000	-0.0132	ug/L	Liquid	1.0	1.0000	1.0000
Hg	024	8/26/2020 12:55:02 PM	16695.06s	93.5400	-0.0165	ug/L	Liquid	1.0	1.0000	1.0000
Hg	031	8/26/2020 1:09:34 PM	CCV2-2.0 ppb	25220.0000	1.9620	ug/L	Liquid	1.0	1.0000	1.0000
Hg	032	8/26/2020 1:11:26 PM	CCB2	113.3000	-0.0149	ug/L	Liquid	1.0	1.0000	1.0000
Hg	042	8/26/2020 1:29:29 PM	16695.07s	82.3100	-0.0173	ug/L	Liquid	1.0	1.0000	1.0000
Hg	043	8/26/2020 1:31:16 PM	16695.07 MS-2.0	27280.0000	2.1250	ug/L	Liquid	1.0	1.0000	1.0000
Hg	044	8/26/2020 1:33:03 PM	16695.07 MSD	26710.0000	2.0800	ug/L	Liquid	1.0	1.0000	1.0000
Hg	045	8/26/2020 1:34:54 PM	CCV3-2.0 ppb	24770.0000	1.9270	ug/L	Liquid	1.0	1.0000	1.0000
Hg	046	8/26/2020 1:36:46 PM	CCB3	93.0000	-0.0165	ug/L	Liquid	1.0	1.0000	1.0000

Mercury Digestion
Method # 245.1, 7471B, 7470A (OHIO VAP)

TIME START: 940
 TIME FINISH: 1140
 PREP BATCH: HGD-082620-1
 BALANCE ID: M4

Beginning End
 block #1 95° C block #1 95° C ID # HB155
 block #2 _____° C block #2 _____° C ID # _____
 block #3 _____° C block #3 _____° C ID # _____

DATE 8/26/20
 ANALYST RPJ
 REVIEWED BY CCM
 REVIEW DATE 8-27-20

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	%TOT. SOLIDS	DRY SAMPLE WT.	DILUTION FACTOR	FINAL VOLUME	REMARKS
LCS <u>082620-1</u>	-----	<u>25</u>	-----	-----	<u>2</u>	25g	
LRB <u>082620-1</u>	-----		-----	-----		25g	
<u>16695.01</u>							
<u>02</u>							
<u>03</u>							
<u>04</u>							
<u>05</u>							
<u>06</u>							
<u>07</u>							
<u>07MS</u>							
<u>07MSD</u>							
<u>16712.01</u>							
<u>02</u>							
<u>03</u>							
<u>04</u>							
<u>05</u>							
<u>16735.01</u>							
<u>16767.01</u>							
<u>16768.01</u>							
<u>02</u>							
<u>03</u>							
<u>04</u>							
<u>05</u>							
<u>16897.01</u>							
<u>01MS</u>							
<u>01MSD</u>							

NOTES: 1) Spike values (unless otherwise stated):
 2.0 ppb for LCS: 0.50 ml of HPS solution, 2.0 ppb for liquid samples: 0.50 ml of HPS solution & 0.002 ppm for solid samples: 0.50 ml of HPS solution (Date Prepared: 8/19/20 Exp 9/10/20)
 Centrifuge Tube Lot # 191210-060
 HNO₃ Lot # 248841
 H₂SO₄ Lot # 231834

Pipet Calibration:

Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Notes
1	<u>0.500</u>	<u>0.503</u>	
2		<u>0.502</u>	
3		<u>0.504</u>	

Ics-1100 A Dionex IC / Meth 3000

082020

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 9:56:15 AM -...	1.0000
2		1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:08:32 AM...	1.0000
3		1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 10:21:21 AM...	1.0000
4		1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 10:34:09 AM...	1.0000
5		1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 10:46:58 AM...	1.0000
6		1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 10:59:49 AM...	1.0000
7		Blank	Unknown		1	Norm Method	Anion	Finished	8/20/2020 8:48:24 AM...	1.0000
8		BSpoke 11738BS1	Check Standard		2	Norm Method	Anion	Finished	8/20/2020 9:00:41 AM...	1.0000
9		LCS 11738LCS1	Check Standard		3	Norm Method	Anion	Finished	8/20/2020 9:13:29 AM...	1.0000
10		16750.01	Unknown		4	Norm Method	Anion	Finished	8/20/2020 9:26:18 AM...	1.0000
11		16750.02	Unknown		5	Norm Method	Anion	Finished	8/20/2020 9:39:06 AM...	1.0000
12		16750.03	Unknown		6	Norm Method	Anion	Finished	8/20/2020 9:51:58 AM...	1.0000
13		16750.04	Unknown		7	Norm Method	Anion	Finished	8/20/2020 10:04:47 A...	1.0000
14		16695.01	Unknown		8	Norm Method	Anion	Finished	8/20/2020 10:17:36 A...	1.0000
15		16695.02	Unknown		9	Norm Method	Anion	Finished	8/20/2020 10:30:24 A...	1.0000
16		16695.03	Unknown		10	Norm Method	Anion	Finished	8/20/2020 10:43:13 A...	1.0000
17		16695.04	Unknown		11	Norm Method	Anion	Finished	8/20/2020 10:56:01 A...	1.0000
18		16695.05	Unknown		12	Norm Method	Anion	Finished	8/20/2020 11:08:50 A...	1.0000
19		16695.06	Unknown		13	Norm Method	Anion	Finished	8/20/2020 11:21:38 A...	1.0000
20		16750.01 dup	Unknown		14	Norm Method	Anion	Finished	8/20/2020 11:34:27 A...	1.0000
21		16750.01 MS 13060...	Unknown		15	Norm Method	Anion	Finished	8/20/2020 11:47:15 A...	1.0000
22		16750.01 MSD 1306...	Unknown		16	Norm Method	Anion	Finished	8/20/2020 12:00:04 P...	1.0000
23		BSpoke 11738BS1	Check Standard		17	Norm Method	Anion	Finished	8/20/2020 12:12:52 P...	1.0000
24		16695.07	Unknown		18	Norm Method	Anion	Finished	8/20/2020 12:25:41 P...	1.0000

PALISA ICSA070720 CAL

FL200820-WL-A

CL200820-WL-A

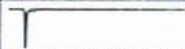




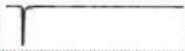






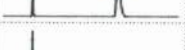






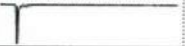


NRH200820-WL-A

MTT0820-WL-A

NRH200820-WL-A

082020



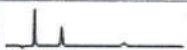

#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
7		1.0000	1.0000		Jeff Phifer	
8		1.0000	1.0000		Jeff Phifer	
9		1.0000	1.0000		Jeff Phifer	
10		5.0000	1.0000		Jeff Phifer	
11		5.0000	1.0000		Jeff Phifer	
12		5.0000	1.0000		Jeff Phifer	
13		5.0000	1.0000		Jeff Phifer	
14		5.0000	1.0000		Jeff Phifer	
15		5.0000	1.0000		Jeff Phifer	
16		5.0000	1.0000		Jeff Phifer	
17		5.0000	1.0000		Jeff Phifer	
18		5.0000	1.0000		Jeff Phifer	
19		5.0000	1.0000		Jeff Phifer	
20		5.0000	1.0000		Jeff Phifer	
21		1.0000	1.0000		Jeff Phifer	
22		1.0000	1.0000		Jeff Phifer	
23		1.0000	1.0000		Jeff Phifer	
24		2.5000	1.0000		Jeff Phifer	

082020

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
25		16750.04 dup	Unknown		19	Norm Method	Anion	Finished	8/20/2020 12:38:30 P...	1.0000
26		BSpike 11738BS1	Check Standard		20	Norm Method	Anion	Finished	8/20/2020 12:51:18 P...	1.0000
27	Loading...	Blank	Unknown		21	Norm Method	Anion	Finished	8/20/2020 1:04:07 PM...	1.0000

[Click here to add a new injection](#)

082020

#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
25		5.0000	1.0000		Jeff Phifer	
26		1.0000	1.0000		Jeff Phifer	
27	Loading...	1.0000	1.0000		Jeff Phifer	
Click here to add a new injection						



Norm Method	03/08/11 13:39	Jeff Phifer	Method 300.0	
Stage	Time	Command	Value	Comment
	min			
Instrument Setup				
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject				
	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run				
	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run			Duration = 10.000 [min]	
	0.000			
	0.500			
		Sampler.BeginOverlap		
Stop Run				
	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

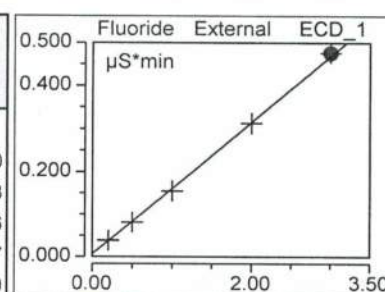
Calibration Batch Report
CAL ID# ICSA070720CAL

Sequence:	082020	Injection Volu:	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 10:59	Column:	AS4A-SC 038777

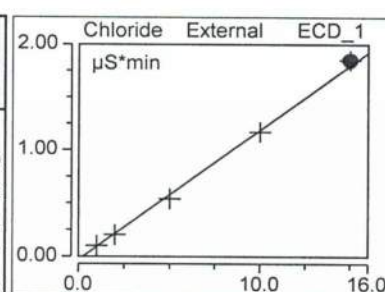
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.01	0.006	0.154	0.000	0.9996
Chloride	Area	Lin, WithOffset, 1/A	0.02	-0.031	0.122	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.03	-0.003	0.227	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.05	-0.001	0.044	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.07	-0.001	0.263	0.000	0.9996
Sulfate	Area	Lin, WithOffset, 1/A	0.33	-0.002	0.080	0.000	0.9996
AVERAGE:				-0.0052	0.1482	0.0000	0.9995

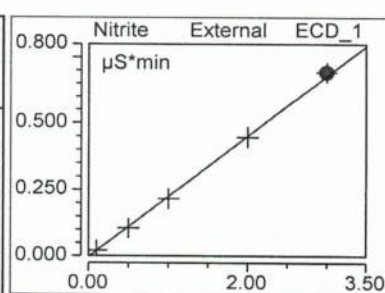
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
ECD_1	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.114	0.0387	0.521	0.210
1131Cal2	1.114	0.0816	1.223	0.488
1131Cal3	1.114	0.1551	2.427	0.966
1131Cal4	1.114	0.3125	5.047	1.987
1131Cal5	1.114	0.4761	7.811	3.049
Average	1.114			
Rel. Std. Dev.	0.013 %			



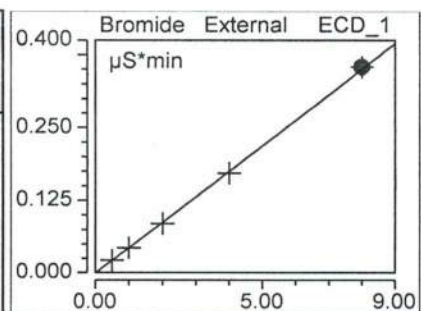
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Chloride	Chloride	Chloride	Chloride	Chloride
ECD_1	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.637	0.1013	1.651	1.089
1131Cal2	1.638	0.2015	3.302	1.912
1131Cal3	1.641	0.5404	9.060	4.694
1131Cal4	1.644	1.1707	19.722	9.867
1131Cal5	1.647	1.8494	30.847	15.438
Average	1.641			
Rel. Std. Dev.	0.262 %			



Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Nitrite	Nitrite	Nitrite	Nitrite	Nitrite
ECD_1	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.927	0.0213	0.296	0.106
1131Cal2	1.924	0.1057	1.494	0.479
1131Cal3	1.924	0.2162	3.083	0.966
1131Cal4	1.924	0.4469	6.494	1.984
1131Cal5	1.924	0.6920	10.161	3.065
Average	1.925			
Rel. Std. Dev.	0.075 %			

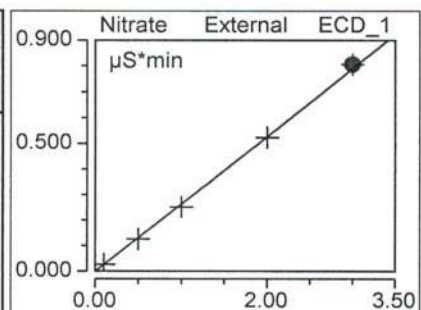


Injection Name	Ret.Time min	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
Bromide	Bromide	Bromide	Bromide	Bromide
ECD_1	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	2.827	0.0217	0.250	0.511
1131Cal2	2.821	0.0433	0.489	1.003
1131Cal3	2.818	0.0852	0.977	1.960
1131Cal4	2.807	0.1717	1.992	3.934
1131Cal5	2.801	0.3540	4.145	8.093
Average	2.815			
Rel. Std. Dev.	0.380 %			

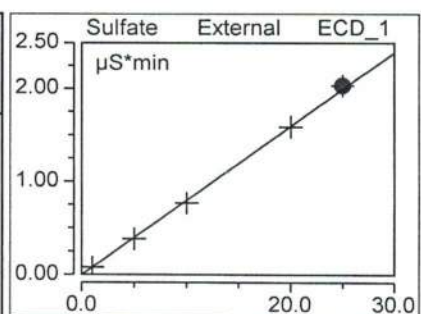


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Injection Name	Ret.Time min	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
Nitrate	Nitrate	Nitrate	Nitrate	Nitrate
ECD_1	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	3.191	0.0271	0.268	0.106
1131Cal2	3.181	0.1260	1.252	0.482
1131Cal3	3.168	0.2515	2.511	0.959
1131Cal4	3.151	0.5229	5.181	1.990
1131Cal5	3.134	0.8054	7.979	3.063
Average	3.165			
Rel. Std. Dev.	0.721 %			



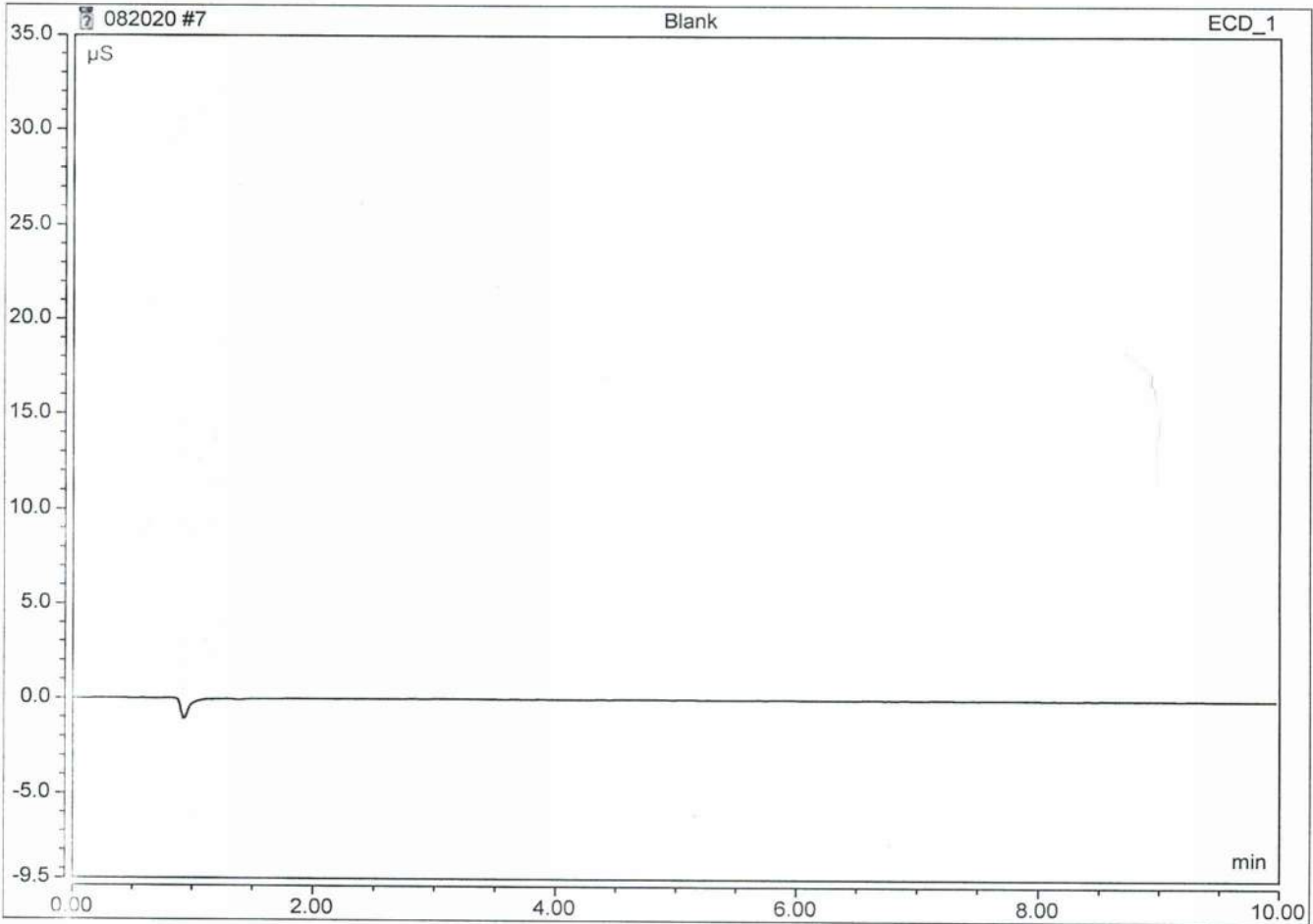
Injection Name	Ret.Time min	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
ECD_1	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	6.617	0.0815	0.364	1.050
1131Cal2	6.608	0.3828	1.734	4.832
1131Cal3	6.594	0.7678	3.517	9.664
1131Cal4	6.571	1.5858	7.313	19.933
1131Cal5	6.557	2.0310	9.317	25.521
Average	6.589			
Rel. Std. Dev.	0.380 %			



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 08:48	Operator:	Jeff Phifer

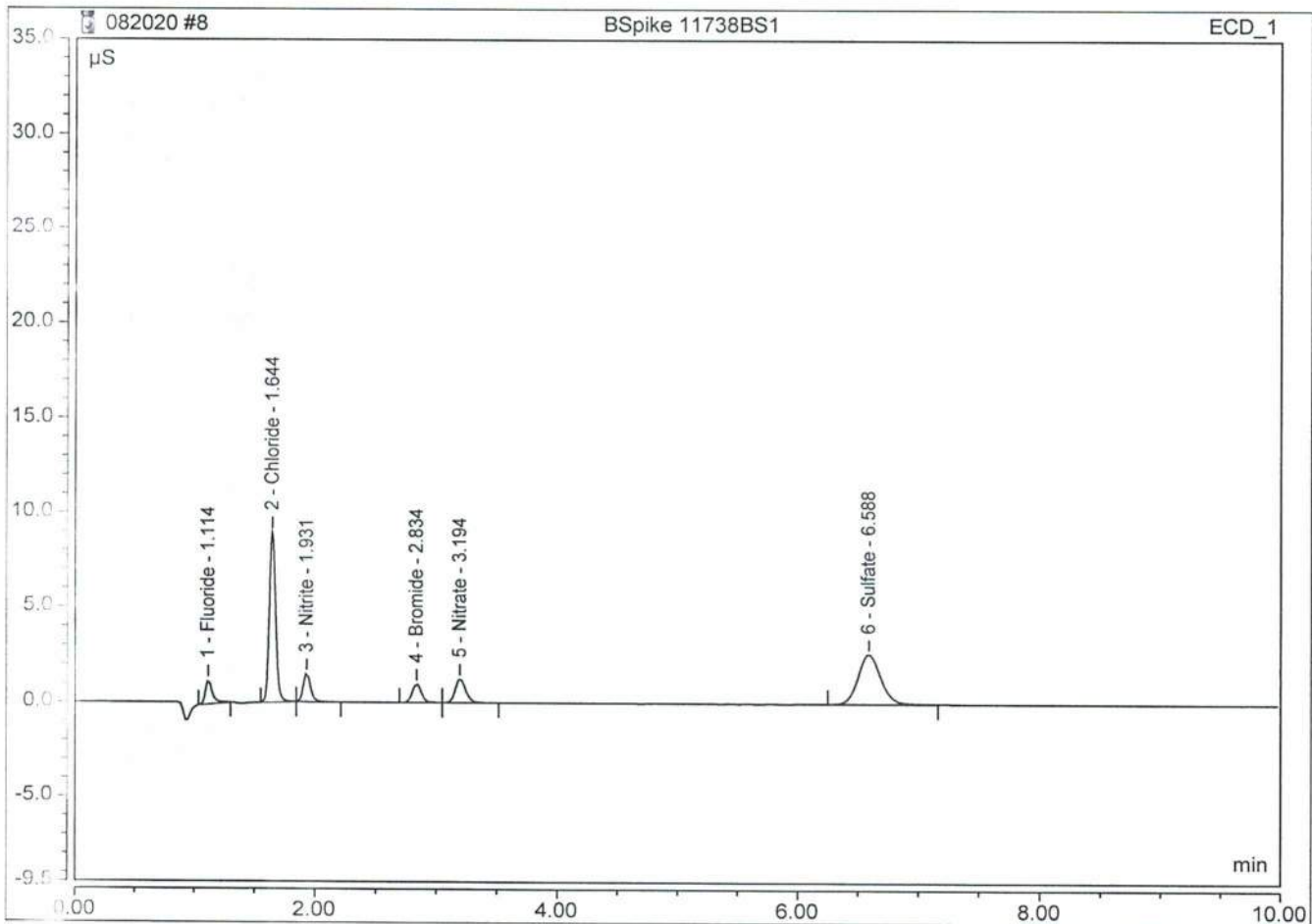
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	BSpike 11738BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 09:00	Operator:	Jeff Phifer

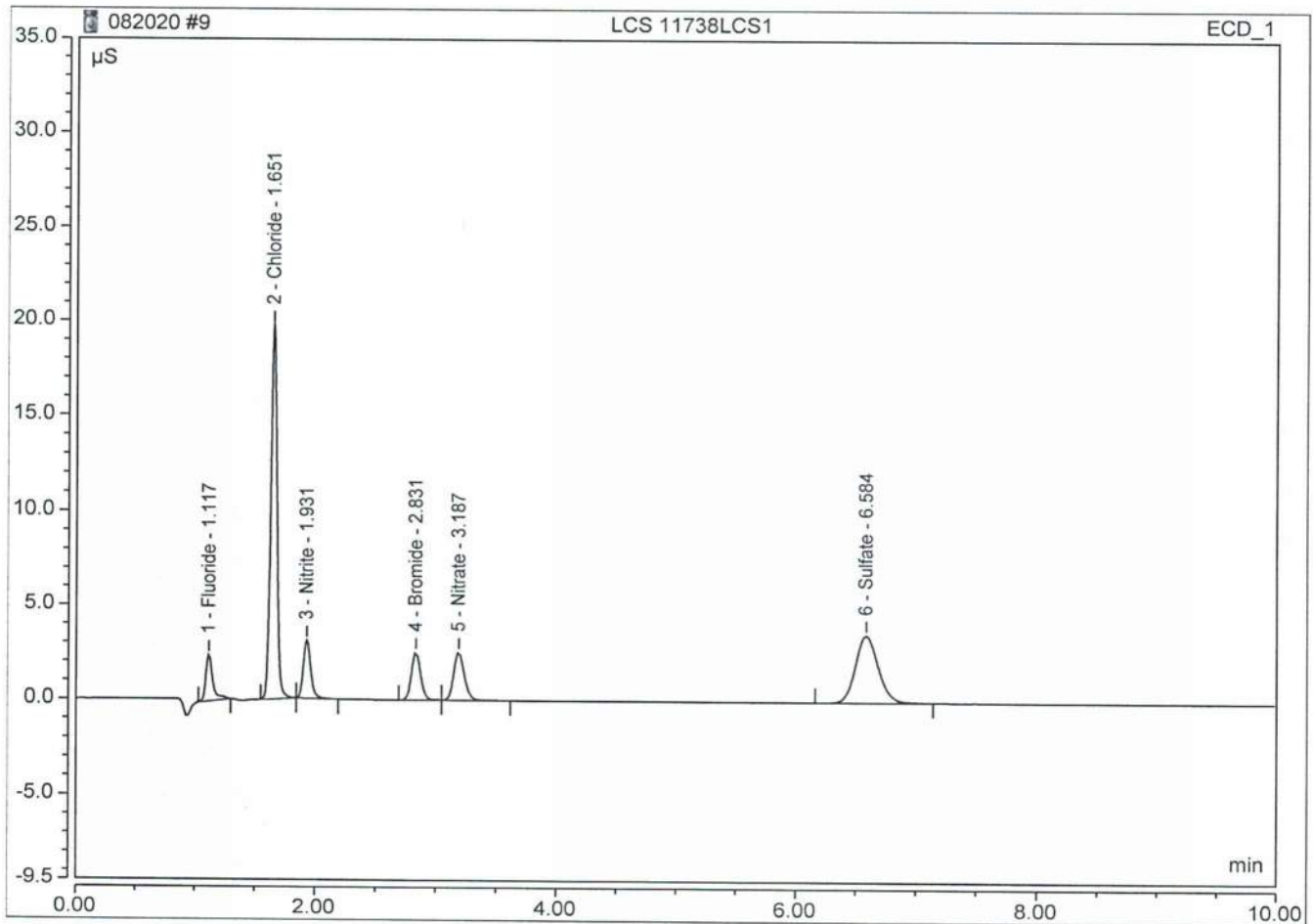
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.085	1.267	0.5 0.5095 102 ^o
2	1.64	Chloride	BMB	0.545	8.988	5 4.7317 94 ^o
3	1.93	Nitrite	BMB	0.106	1.484	0.5 0.4796 96 ^o
4	2.83	Bromide	BMB	0.088	0.986	2.0143
5	3.19	Nitrate	BMB	0.127	1.260	0.5 0.4870 98 ^o
6	6.59	Sulfate	BMB	0.571	2.619	7.5 7.1979 96 ^o
TOTAL:				1.52	16.60	15.42



Peak Integration Report

Sample Name:	LCS 11738LCS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 09:13	Operator:	Jeff Phifer

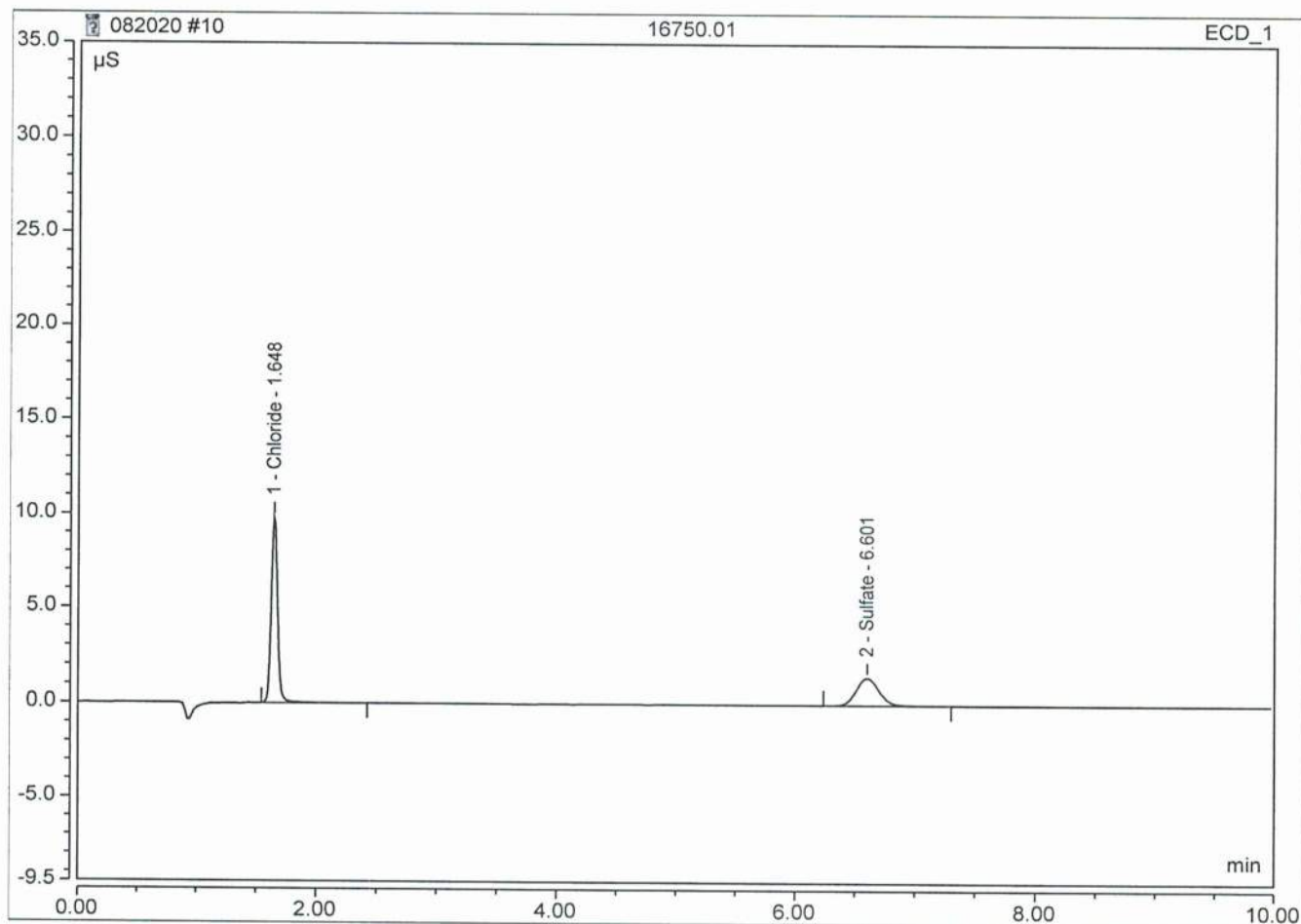
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.160	2.416	0.9956
2	1.65	Chloride	BMB	1.184	19.736	9.9757
3	1.93	Nitrite	BMB	0.215	3.058	0.9610
4	2.83	Bromide	BMB	0.220	2.495	5.0262
5	3.19	Nitrate	BMB	0.254	2.509	0.9694
6	6.58	Sulfate	BMB	0.773	3.548	9.7279
TOTAL:				2.81	33.76	27.66



Peak Integration Report

Sample Name:	16750.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 09:26	Operator:	Jeff Phifer

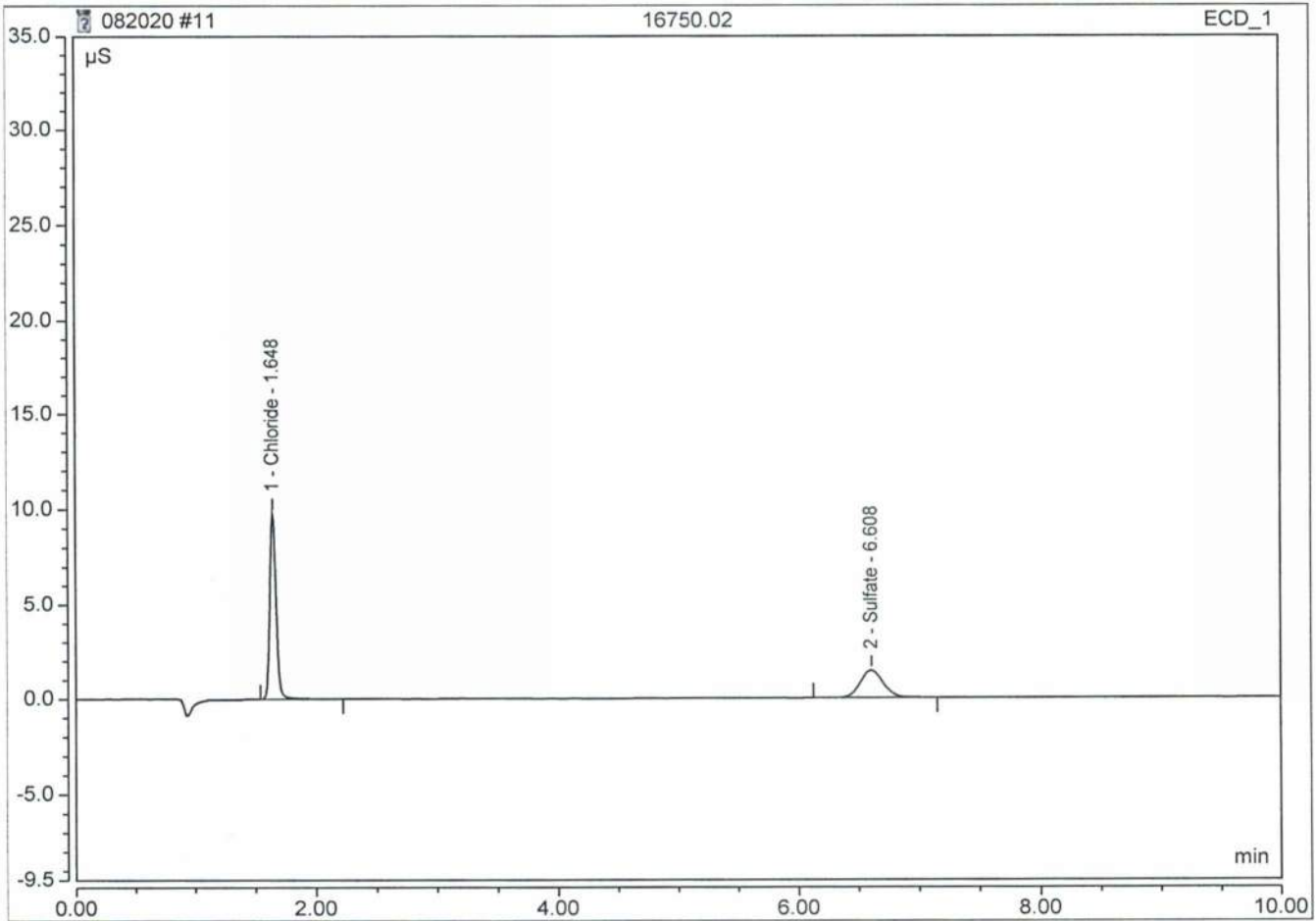
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.606	9.867	26.1621
2	6.60	Sulfate	BMB	0.319	1.444	20.1389
TOTAL:				0.92	11.31	46.30



Peak Integration Report

Sample Name:	16750.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 09:39	Operator:	Jeff Phifer

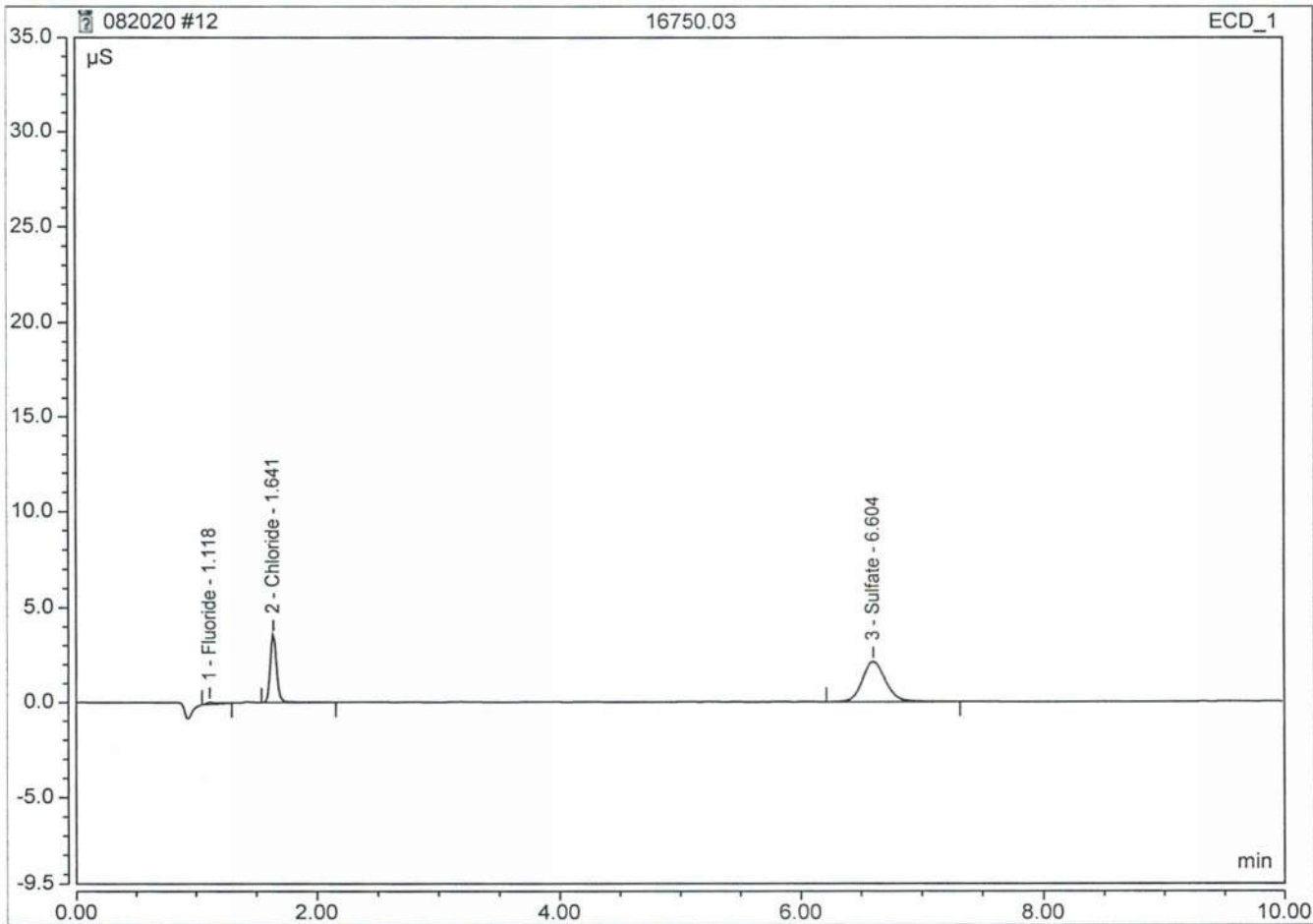
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.600	9.810	25.9152
2	6.61	Sulfate	BMB	0.320	1.458	20.2473
TOTAL:				0.92	11.27	46.16



Peak Integration Report

Sample Name:	16750.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 09:51	Operator:	Jeff Phifer

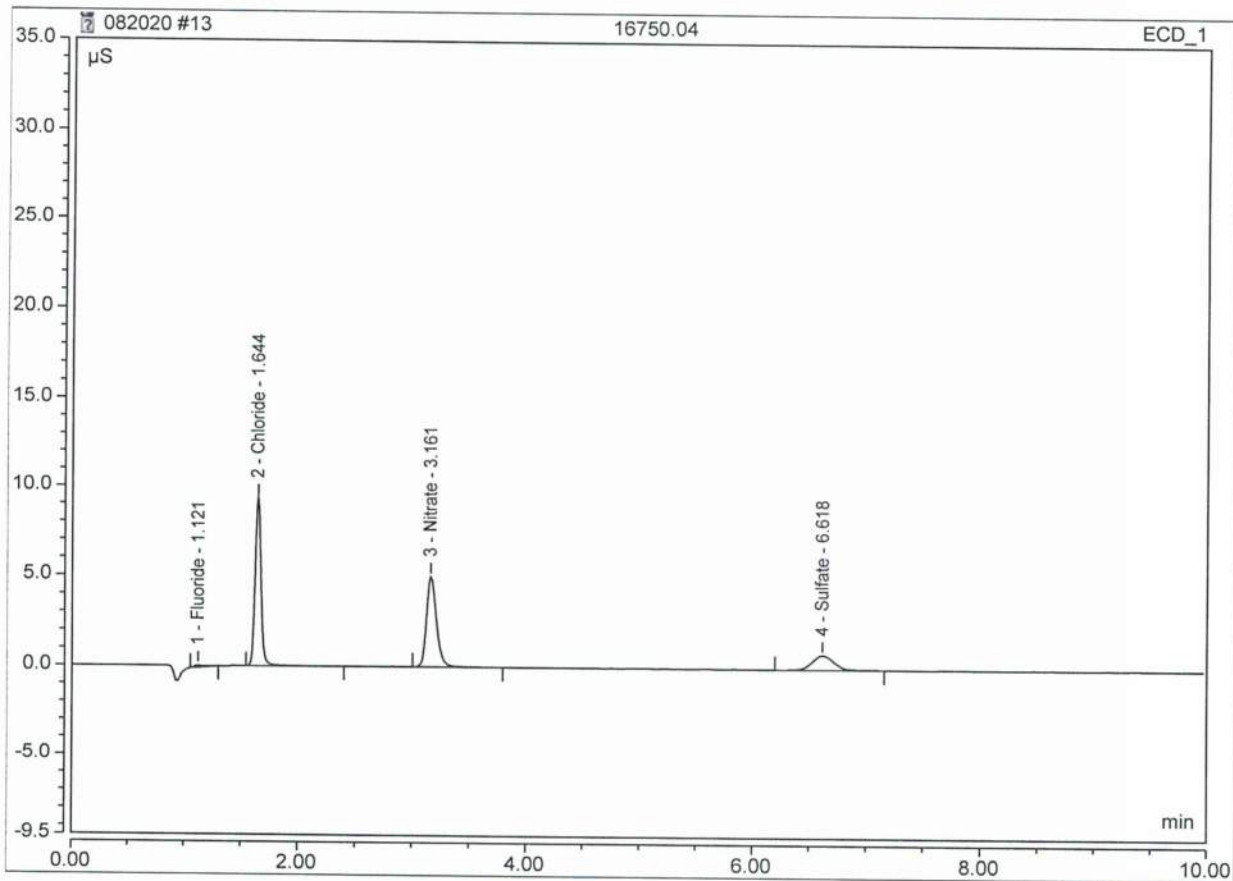
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.011	0.118	0.1610
2	1.64	Chloride	BMB	0.222	3.588	10.4025
3	6.60	Sulfate	BMB	0.470	2.136	29.6048
TOTAL:				0.70	5.84	40.17



Peak Integration Report

Sample Name:	16750.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 10:04	Operator:	Jeff Phifer

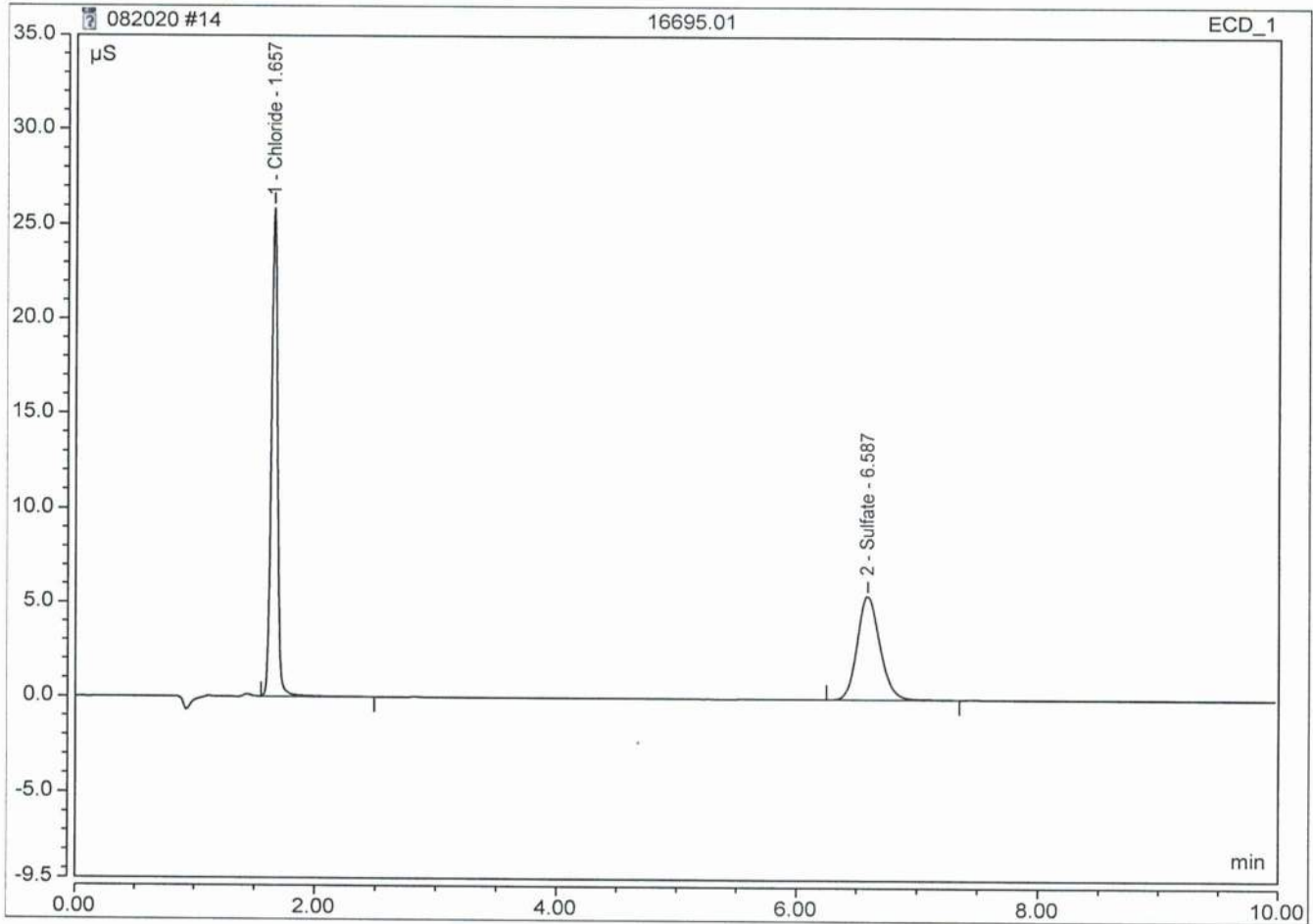
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.010	0.106	0.1197
2	1.64	Chloride	BMB	0.571	9.342	24.7031
3	3.16	Nitrate	BMB	0.510	5.004	9.7030
4	6.62	Sulfate	BMB	0.180	0.814	11.4405
TOTAL:				1.27	15.27	45.97



Peak Integration Report

Sample Name:	16695.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 10:17	Operator:	Jeff Phifer

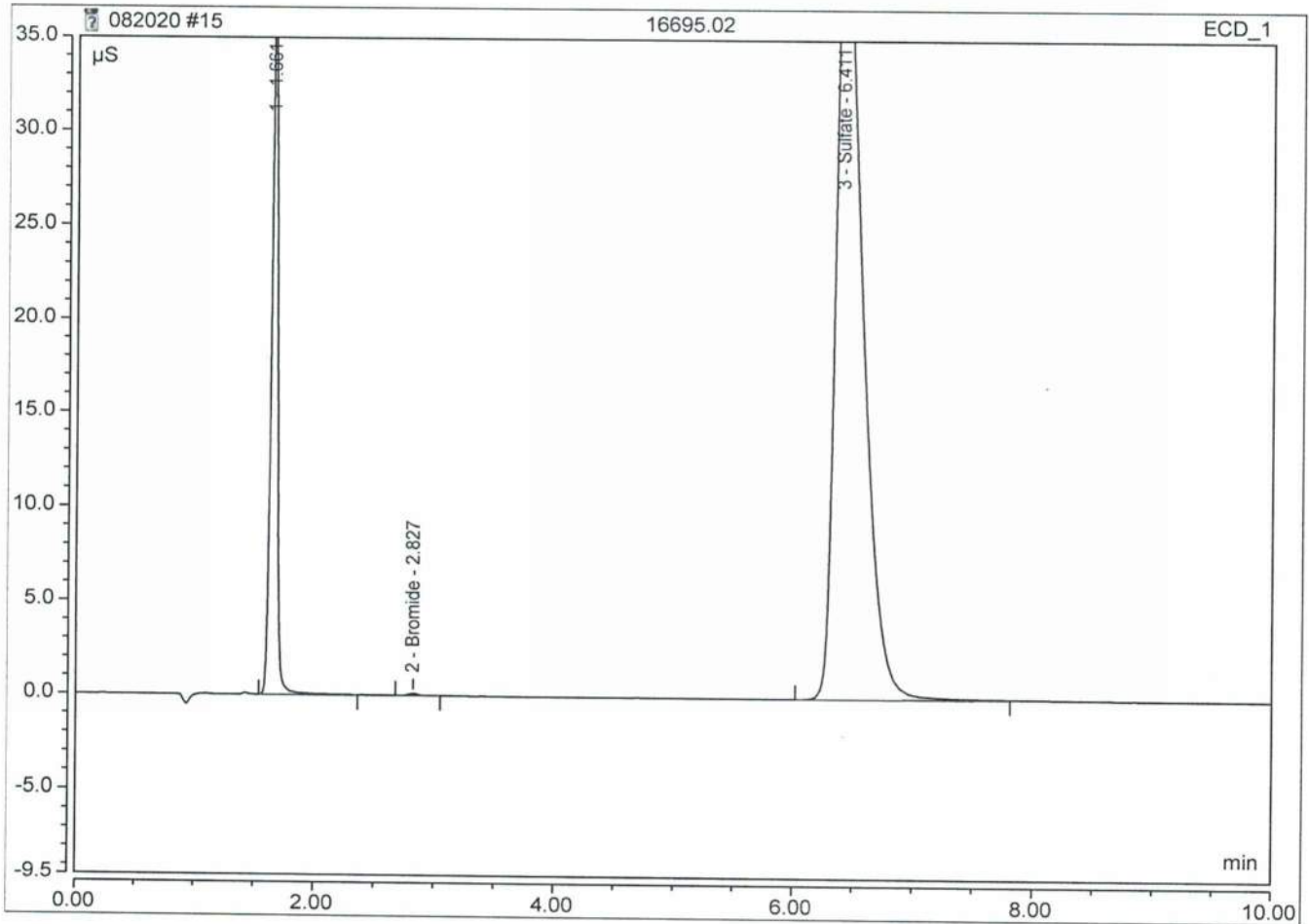
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	1.559	25.897	65.2650
2	6.59	Sulfate	BMB	1.195	5.498	75.1540
TOTAL:				2.75	31.40	140.42



Peak Integration Report

Sample Name:	16695.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 10:30	Operator:	Jeff Phifer

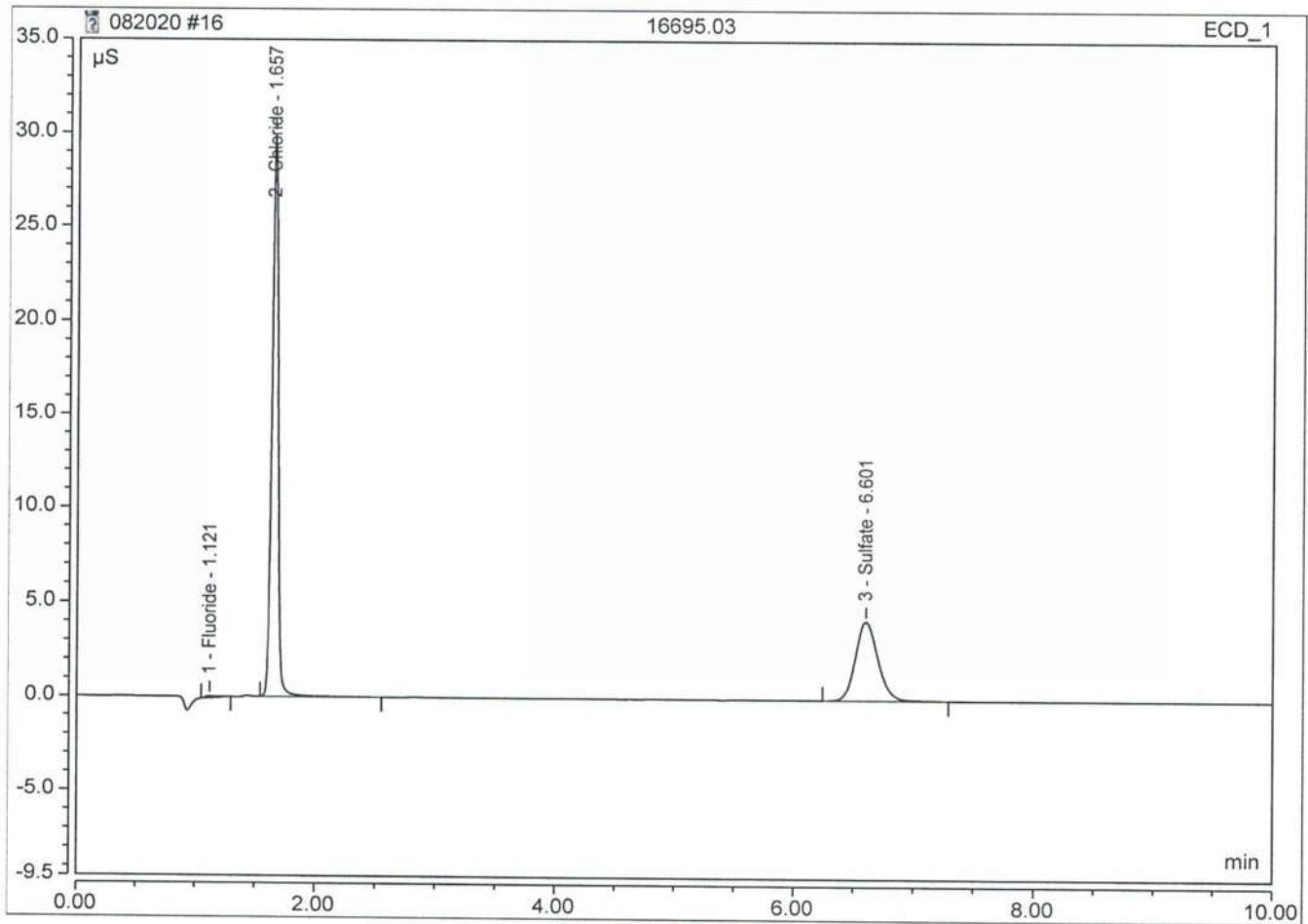
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
2	2.83	Bromide	BMB	0.010	0.115	1.2592
3	6.41	Sulfate	BMB	10.845	43.446	680.8320
TOTAL:				10.86	43.56	682.09



Peak Integration Report

Sample Name:	16695.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 10:43	Operator:	Jeff Phifer

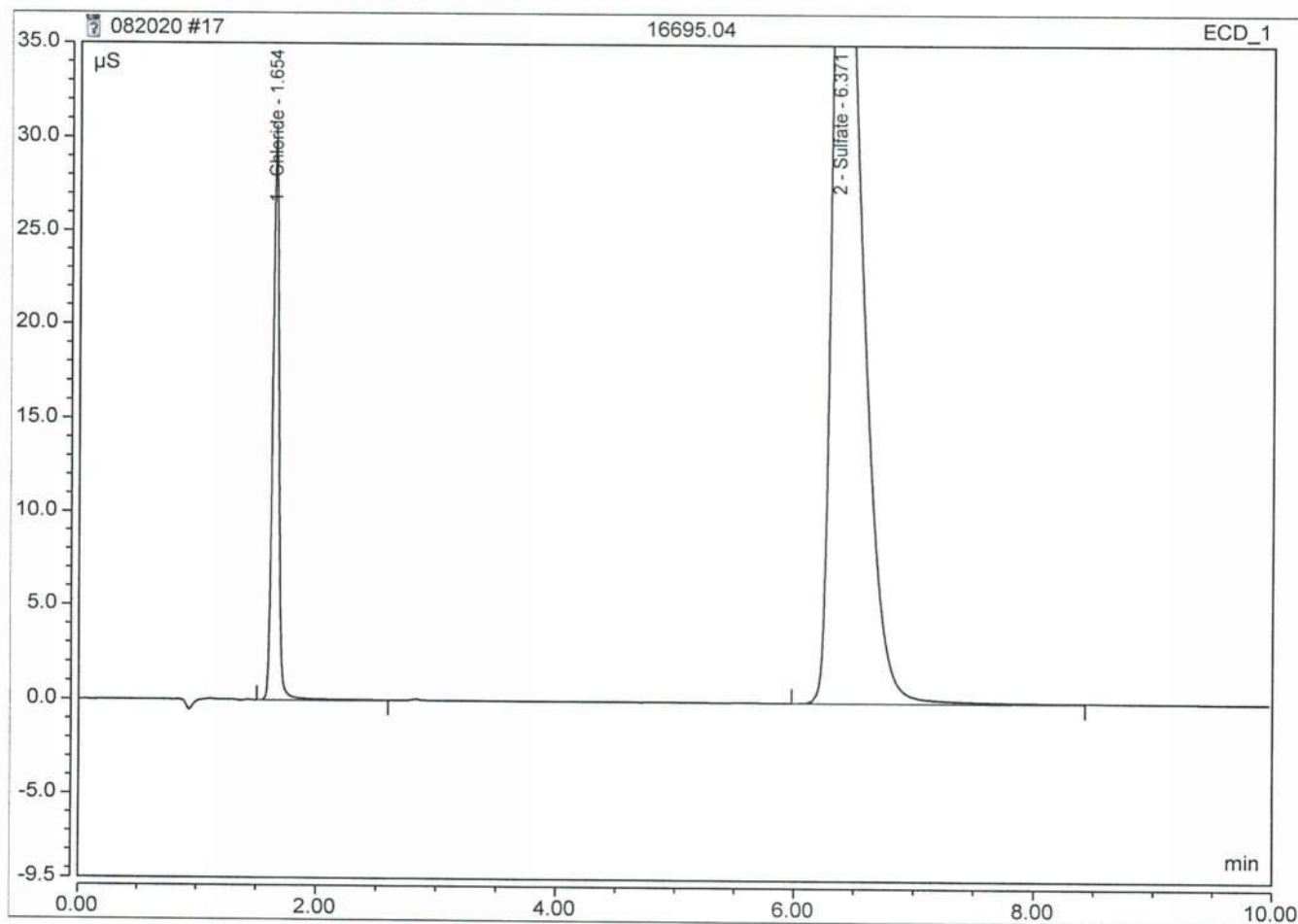
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.011	0.110	0.1407
2	1.66	Chloride	BMB	1.832	30.001	76.4939
3	6.60	Sulfate	BMB	0.914	4.193	57.5018
TOTAL:				2.76	34.30	134.14



Peak Integration Report

Sample Name:	16695.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 10:56	Operator:	Jeff Phifer

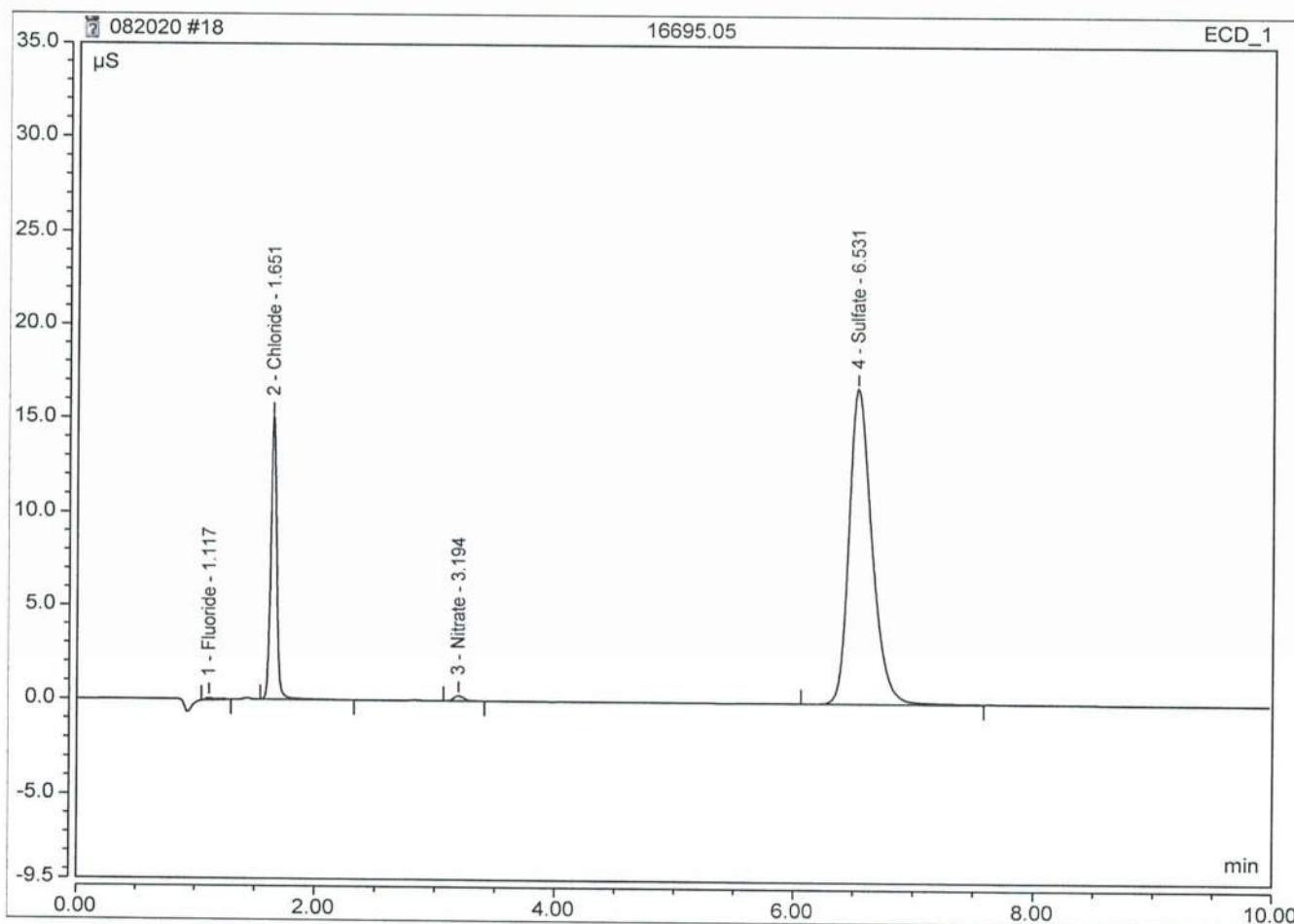
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	1.858	29.927	77.5627
2	6.37	Sulfate	BMB	14.189	53.792	890.7205
TOTAL:				16.05	83.72	968.28



Peak Integration Report

Sample Name:	16695.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 11:08	Operator:	Jeff Phifer

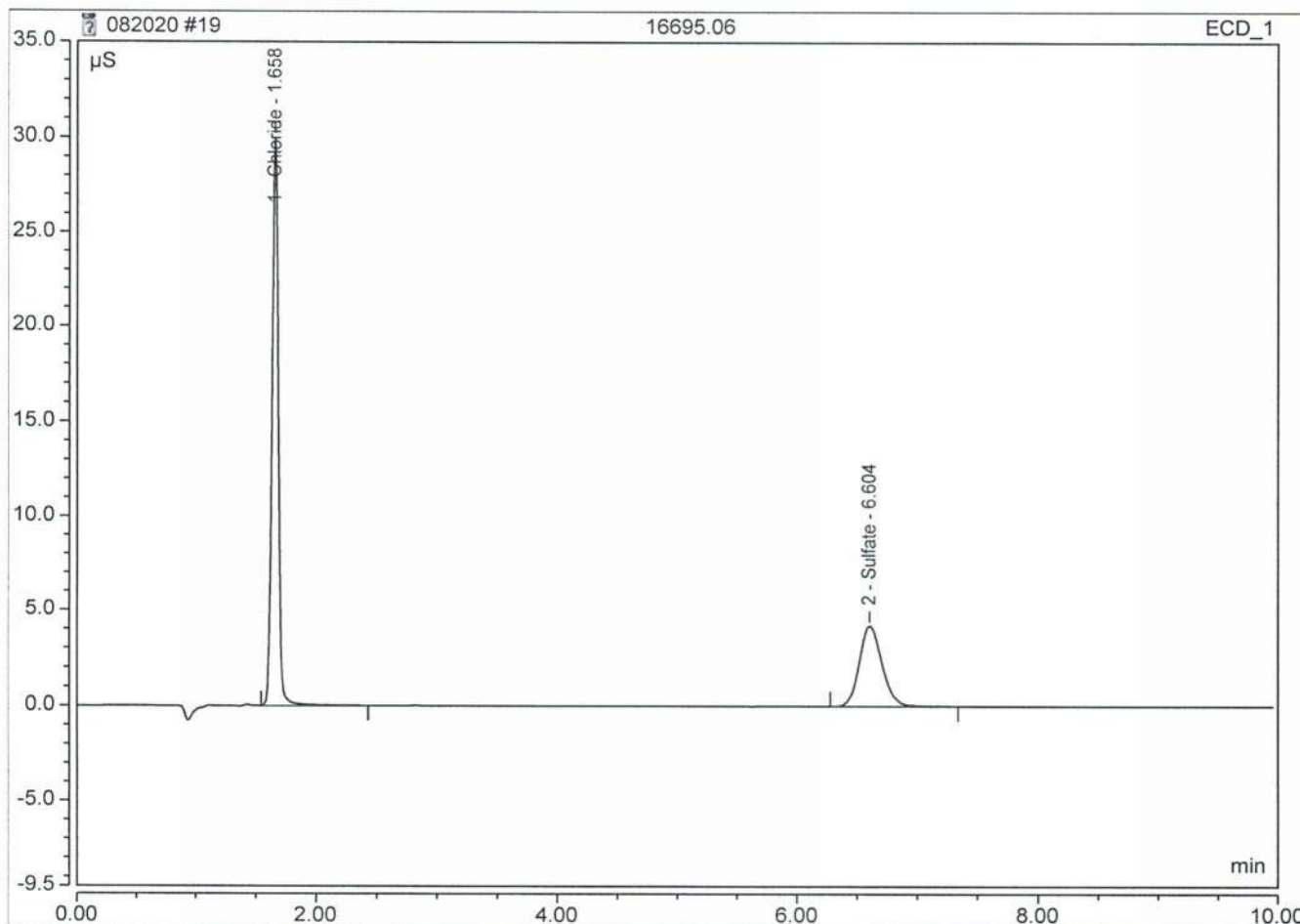
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.010	0.121	0.1325
2	1.65	Chloride	BMB	0.910	15.058	38.6365
3	3.19	Nitrate	BMB	0.027	0.267	0.5236
4	6.53	Sulfate	BMB	3.717	16.747	233.4505
TOTAL:				4.66	32.19	272.74



Peak Integration Report

Sample Name:	16695.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 11:21	Operator:	Jeff Phifer

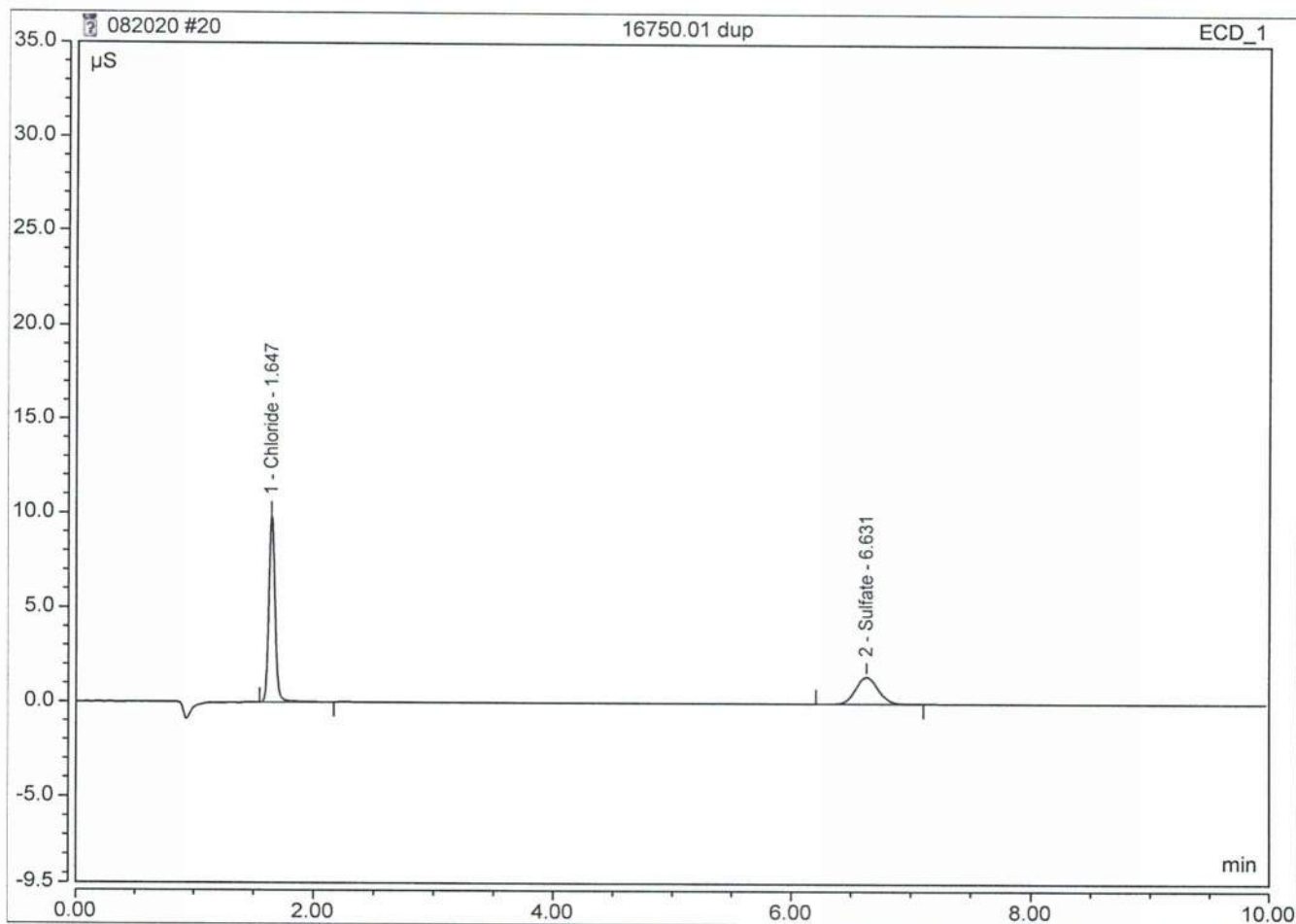
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.66	Chloride	BMB	1.834	30.034	76.5504
2	6.60	Sulfate	BMB	0.919	4.201	57.8319
TOTAL:				2.75	34.24	134.38



Peak Integration Report

Sample Name:	16750.01 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 11:34	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.601	9.849	25.9463
2	6.63	Sulfate	BMB	0.313	1.433	19.7868
TOTAL:				0.91	11.28	45.73

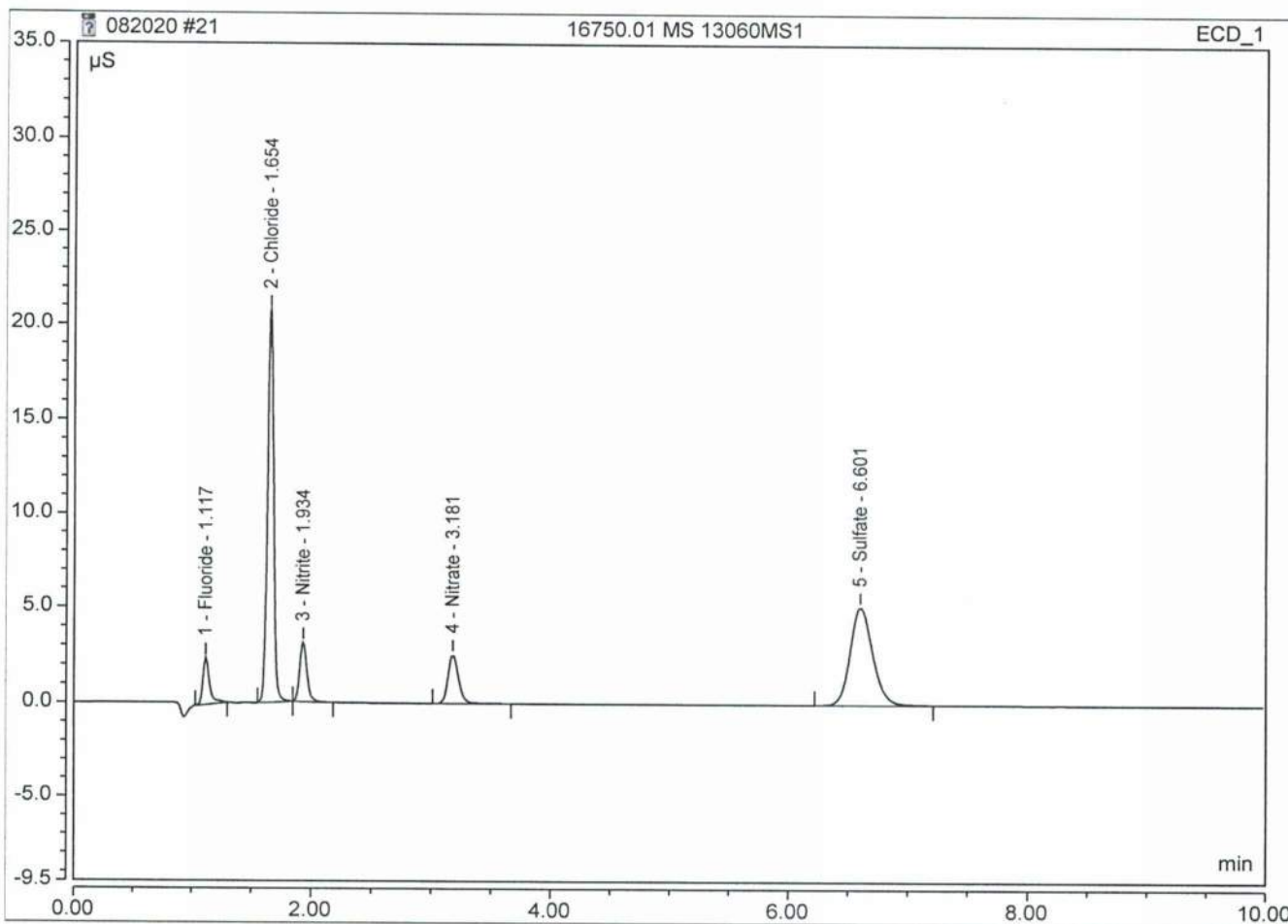


Peak Integration Report

Sample Name:	16750.01 MS 13060MS1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 11:47	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.156	2.418	0.9693
2	1.65	Chloride	BMB	1.241	20.746	10.4441
3	1.93	Nitrite	BMB	0.215	3.081	0.9611
4	3.18	Nitrate	BMB	0.260	2.557	0.9923
5	6.60	Sulfate	BMB	1.112	5.110	13.9908
TOTAL:				2.98	33.91	27.36

Handwritten notes:
 1 - NO = 97.5
 5 - 5.2 = 104.5
 1 - NO = 96.5
 1 - NO = 99.5
 10 - 4.0 = 100.5

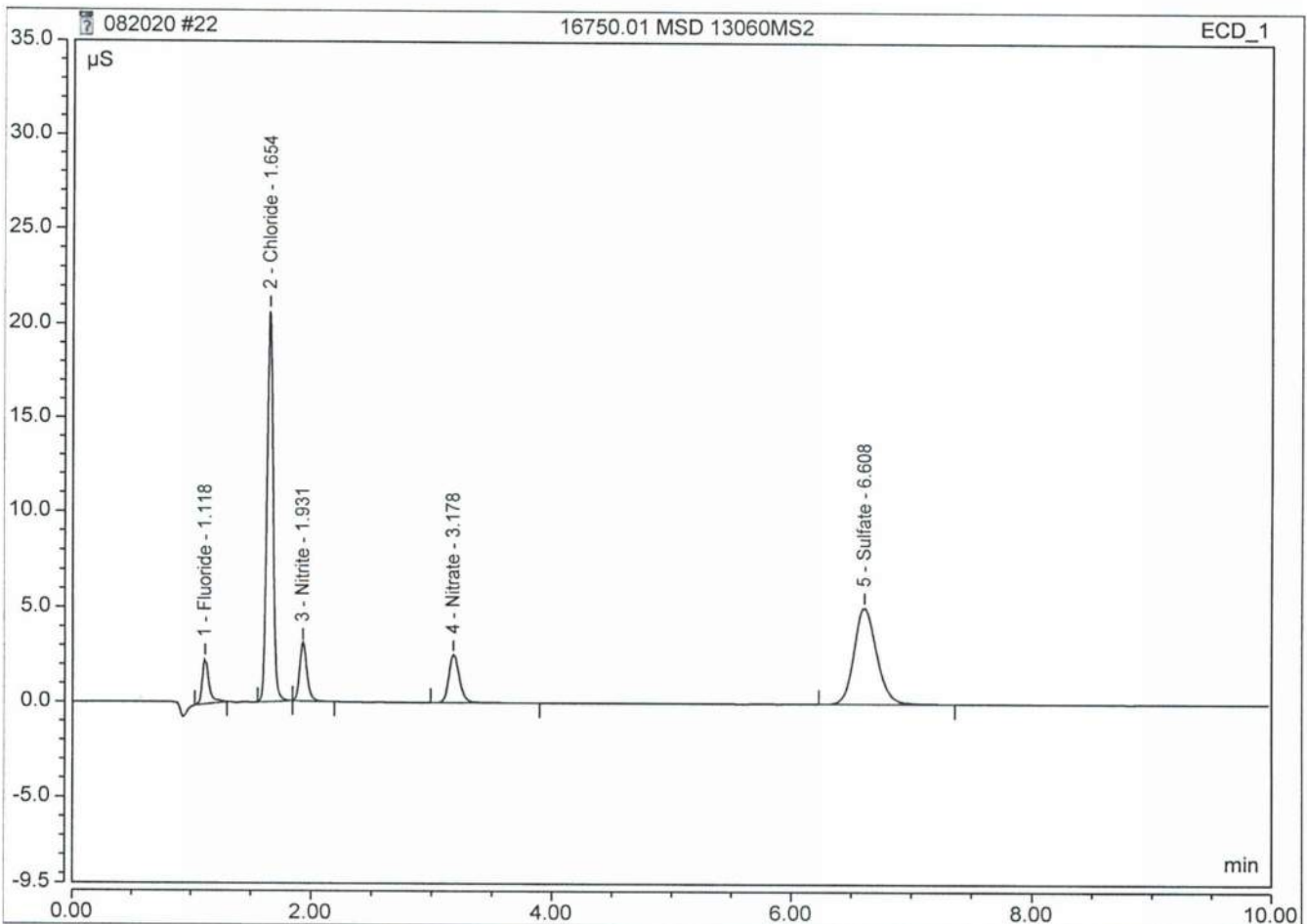


Peak Integration Report

Sample Name:	16750.01 MSD 13060MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 12:00	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.155	2.406	0.9658
2	1.65	Chloride	BMB	1.237	20.706	10.4139
3	1.93	Nitrite	BMB	0.216	3.086	0.9632
4	3.18	Nitrate	BMB	0.265	2.562	1.0108
5	6.61	Sulfate	BMB	1.118	5.122	14.0640
TOTAL:				2.99	33.88	27.42

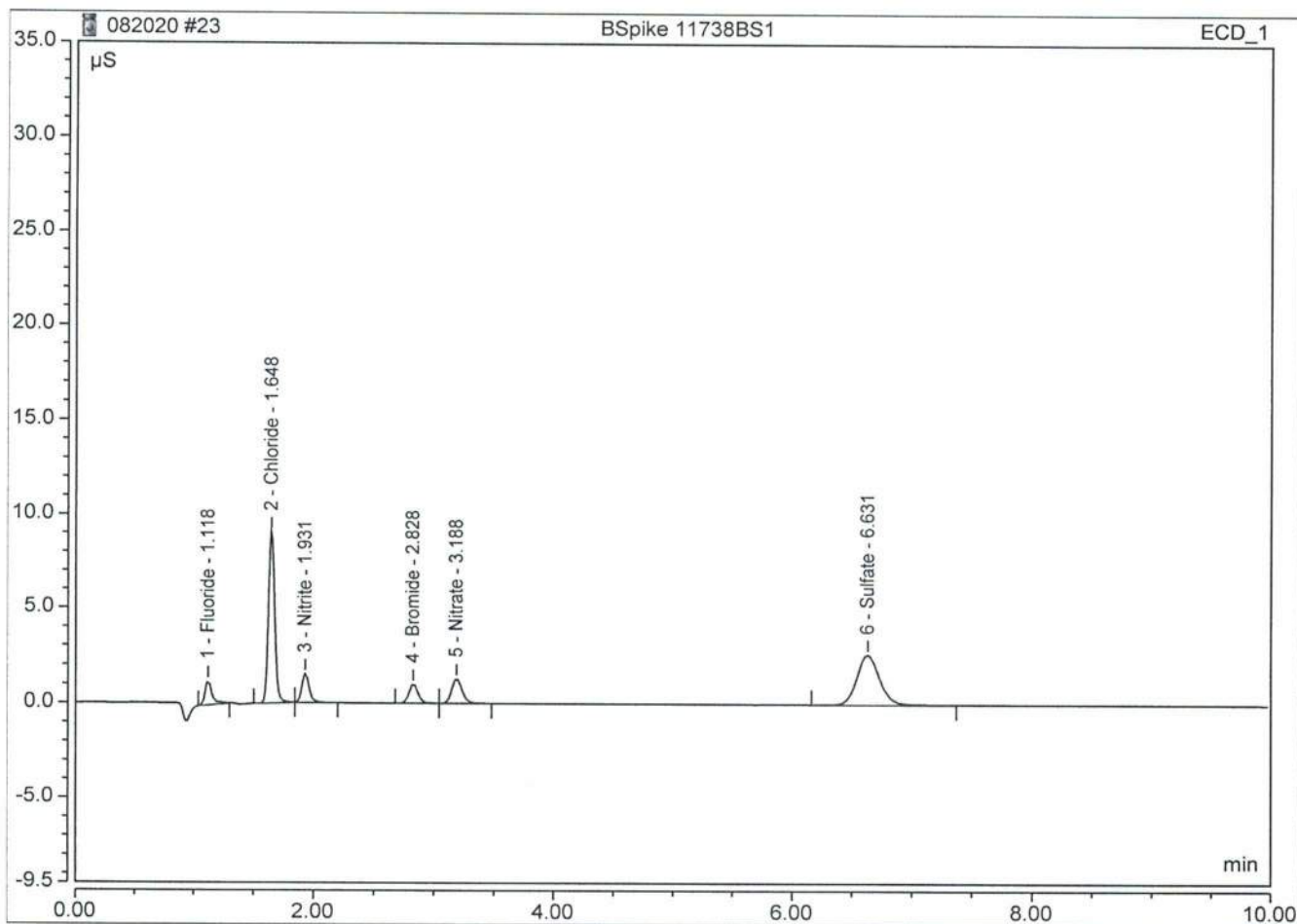
Handwritten notes:
 1 - Mo = 96.5
 2 - 5.2 = 104.5
 3 - NO = 96.5
 4 - NO = 101.5
 5 - 4.0 = 101.5



Peak Integration Report

Sample Name:	BSpike 11738BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 12:12	Operator:	Jeff Phifer

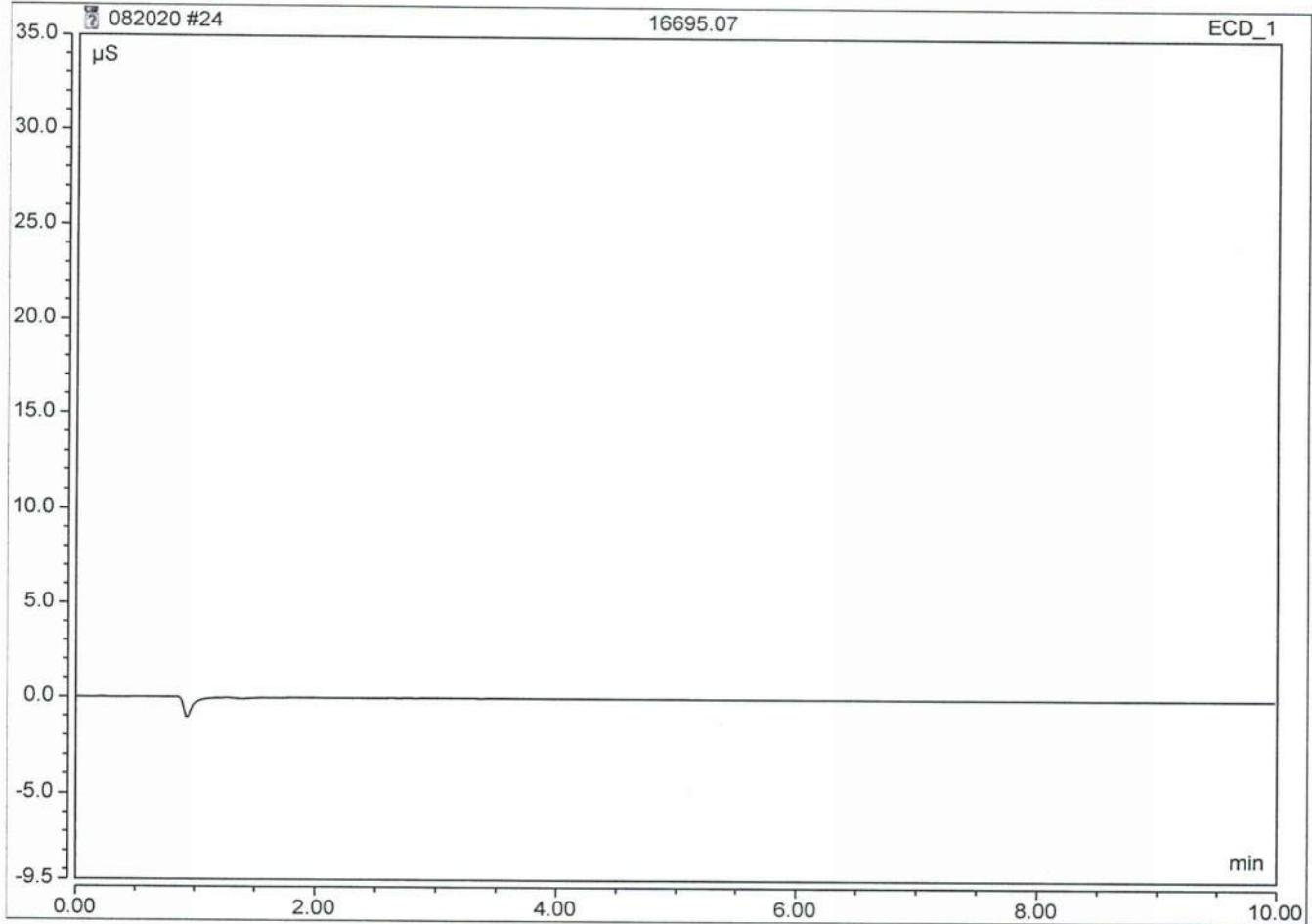
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.083	1.242	0.5 0.4986 100%
2	1.65	Chloride	BMB	0.550	9.067	5 4.7699 96%
3	1.93	Nitrite	BMB	0.106	1.489	0.5 0.4805 96%
4	2.83	Bromide	BMB	0.089	0.994	2.0389
5	3.19	Nitrate	BMB	0.130	1.287	0.5 0.4957 100%
6	6.63	Sulfate	BMB	0.574	2.605	7.5 7.2382 96%
TOTAL:				1.53	16.68	15.52



Peak Integration Report

Sample Name:	16695.07	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	2.5000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 12:25	Operator:	Jeff Phifer

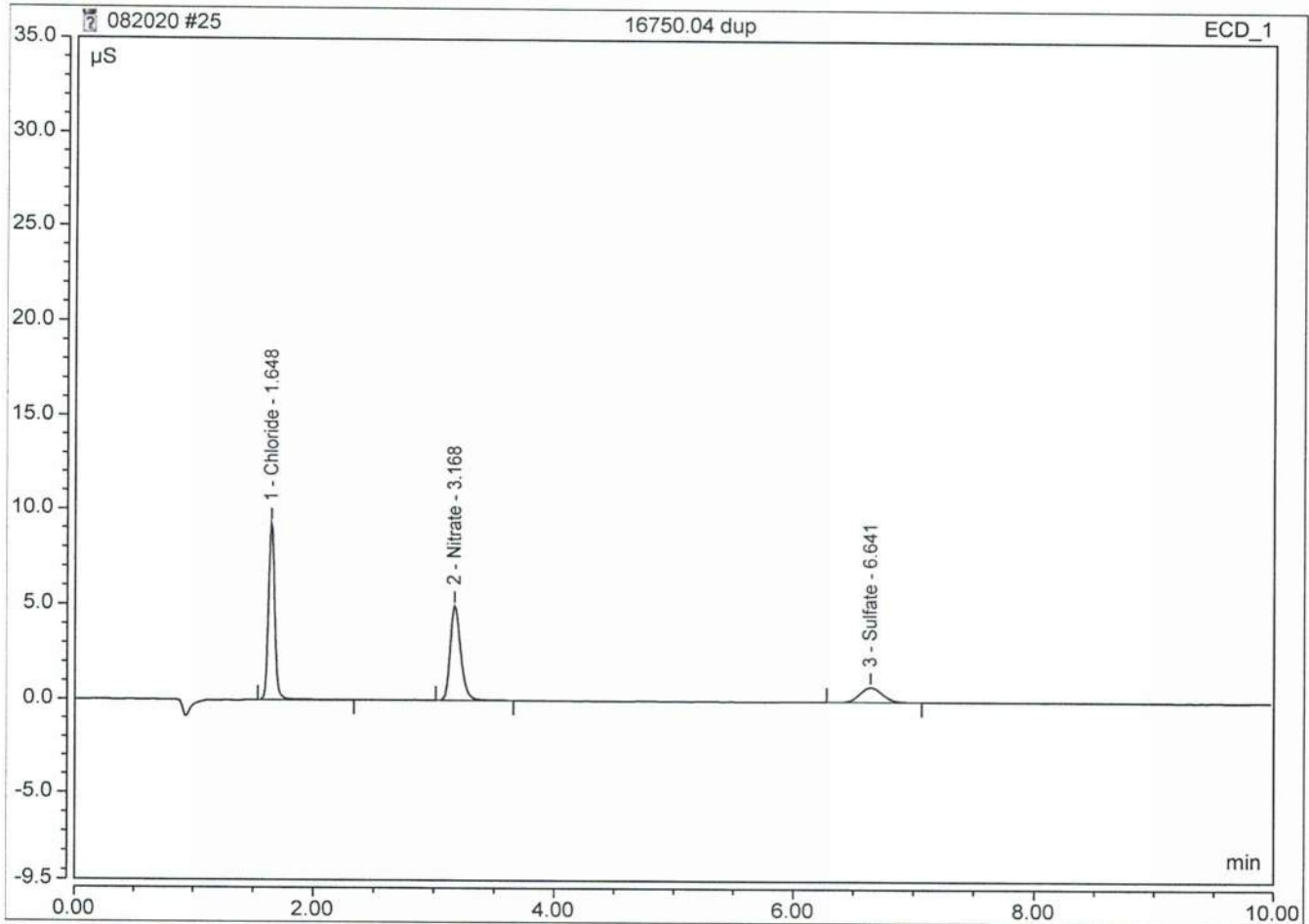
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	16750.04 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 12:38	Operator:	Jeff Phifer

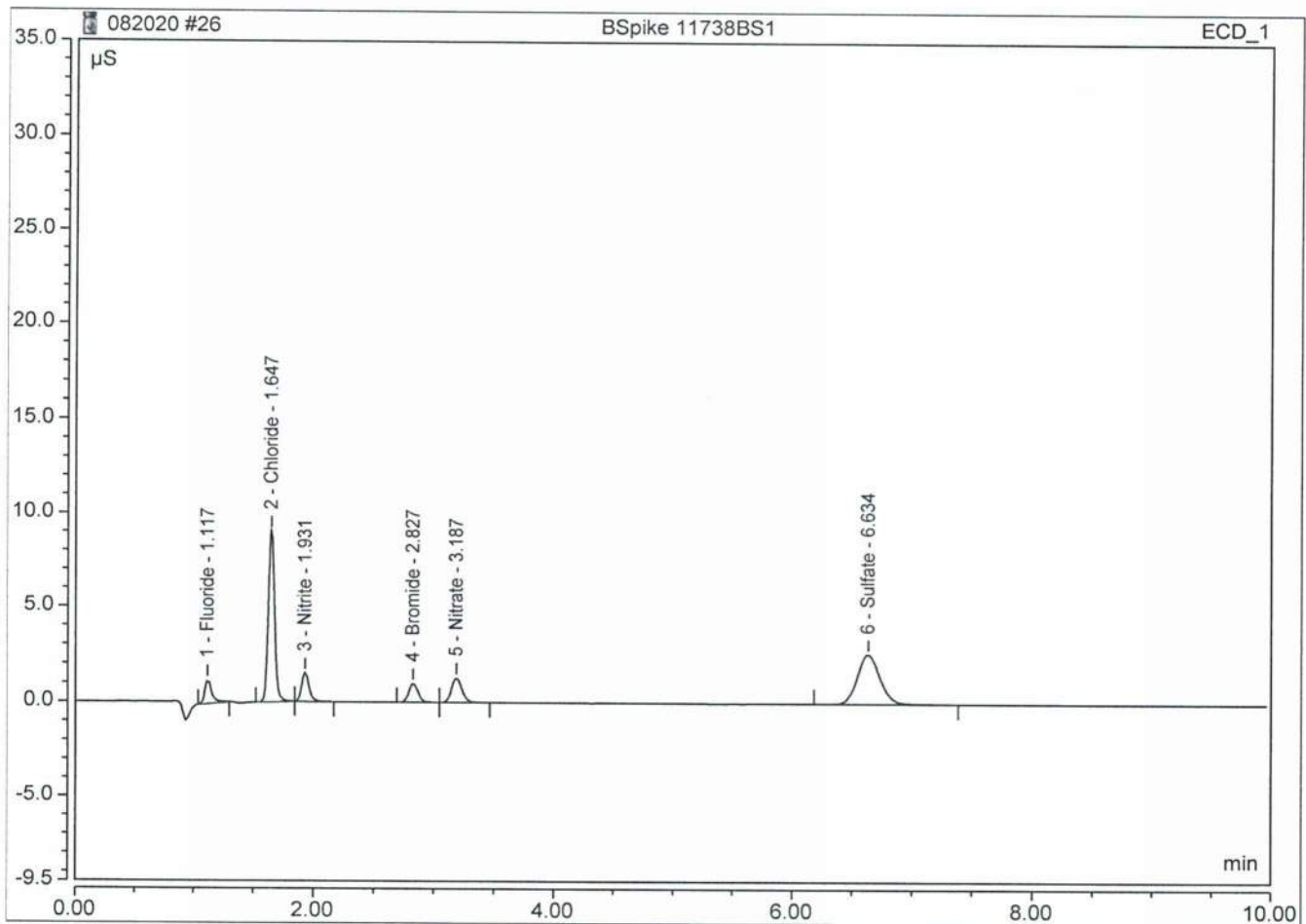
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	0.573	9.319	24.8188
2	3.17	Nitrate	BMB	0.507	4.971	9.6446
3	6.64	Sulfate	BMB	0.179	0.806	11.3427
TOTAL:				1.26	15.10	45.81



Peak Integration Report

Sample Name:	BSpike 11738BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 12:51	Operator:	Jeff Phifer

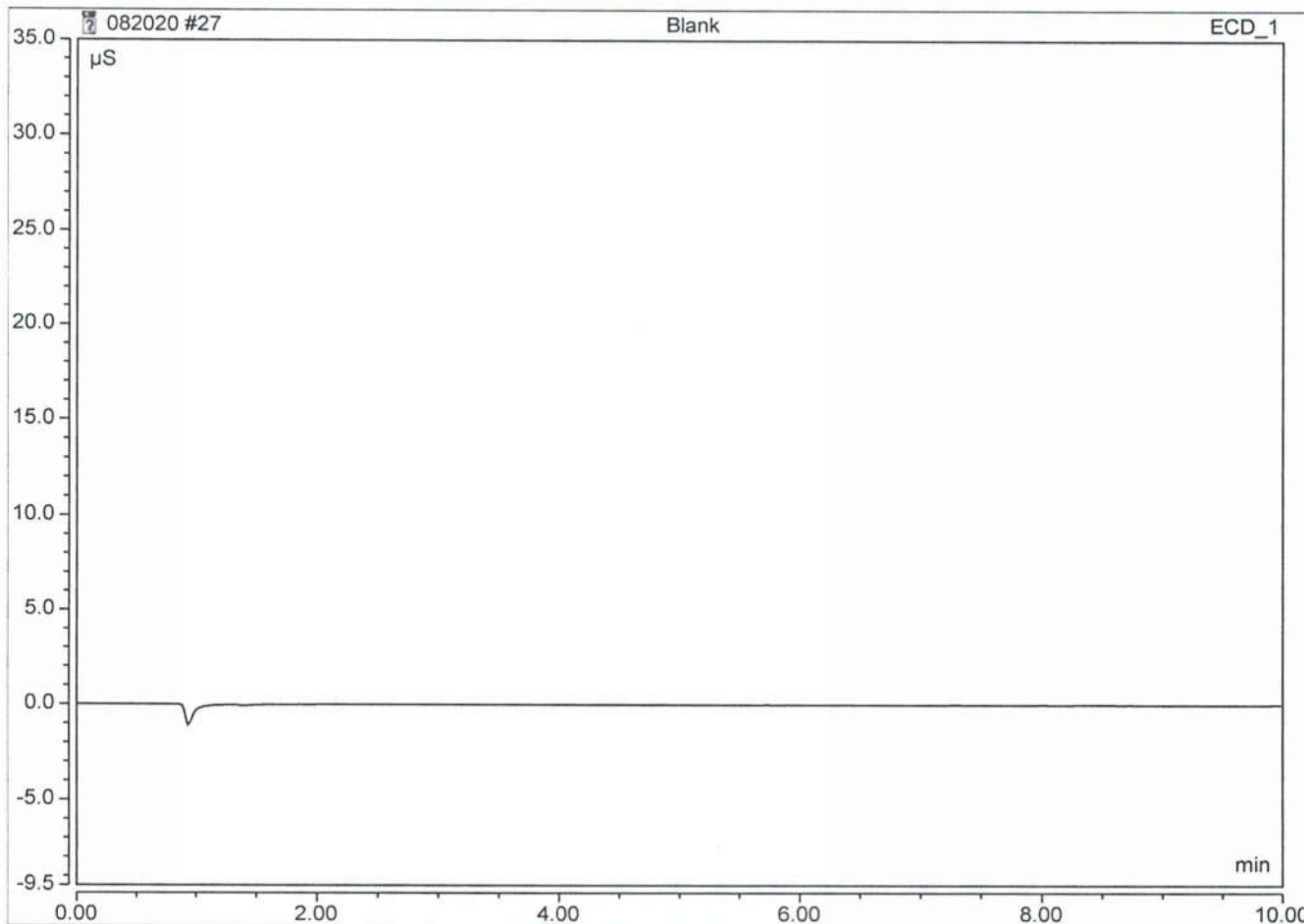
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.083	1.246	0.5 0.4961 100%
2	1.65	Chloride	BMB	0.549	9.071	5 4.7673 96%
3	1.93	Nitrite	BMB	0.106	1.490	0.5 0.4807 96%
4	2.83	Bromide	BMB	0.087	0.991	2.0060
5	3.19	Nitrate	BMB	0.130	1.292	0.5 0.4964 100%
6	6.63	Sulfate	BMB	0.572	2.600	2.5 7.2076 96%
TOTAL:				1.53	16.69	15.45



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	20-Aug-2020 / 13:04	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



ICS-1100 A Dionex IC/Meth 300.0

070720

new CAL







#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 9:56:15 AM -...	1.0000
2		1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:08:32 AM...	1.0000
3		1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 10:21:21 AM...	1.0000
4		1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 10:34:09 AM...	1.0000
5		1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 10:46:58 AM...	1.0000
6		1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 10:59:49 AM...	1.0000

[Click here to add a new injection](#)

CAL I# ICSA070720CAL

070720



#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
Click here to add a new injection						

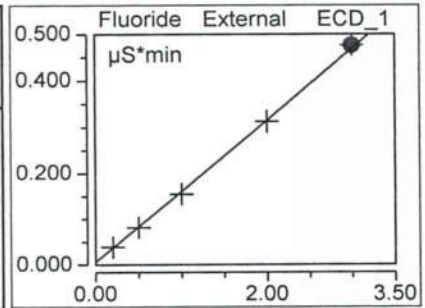
Norm Method	03/08/11 13:39	Jeff Phifer	Method 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Calibration Batch Report
CAL ID# ICSA070720CAL

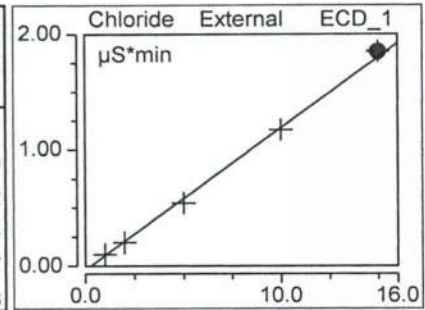
Sequence:	070720	Injection Volu. 2,500.00
Instrument Method:	Norm Method	Operator: Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 10:59	Column: AS4A-SC 038777

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.01	0.006	0.154	0.000	0.9996
Chloride	Area	Lin, WithOffset, 1/A	0.02	-0.031	0.122	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.03	-0.003	0.227	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.05	-0.001	0.044	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.07	-0.001	0.263	0.000	0.9996
Sulfate	Area	Lin, WithOffset, 1/A	0.33	-0.002	0.080	0.000	0.9996
AVERAGE:				-0.0052	0.1482	0.0000	0.9995

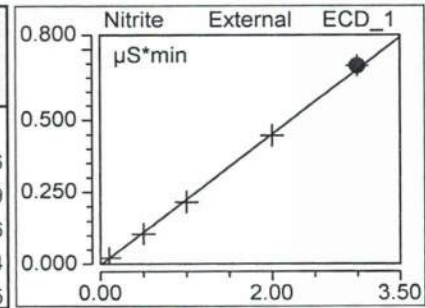
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
1131Cal1	ECD_1 1.114	ECD_1 0.0387	ECD_1 0.521	ECD_1 0.210
1131Cal2	1.114	0.0816	1.223	0.488
1131Cal3	1.114	0.1551	2.427	0.966
1131Cal4	1.114	0.3125	5.047	1.987
1131Cal5	1.114	0.4761	7.811	3.049
Average	1.114			
Rel. Std. Dev.	0.013 %			



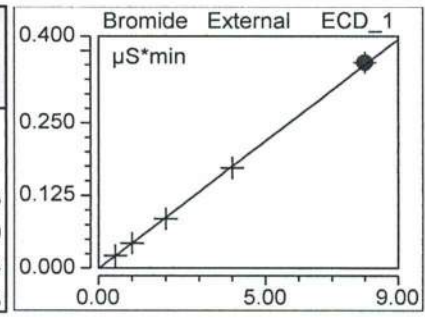
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Chloride	Chloride	Chloride	Chloride	Chloride
1131Cal1	ECD_1 1.637	ECD_1 0.1013	ECD_1 1.651	ECD_1 1.089
1131Cal2	1.638	0.2015	3.302	1.912
1131Cal3	1.641	0.5404	9.060	4.694
1131Cal4	1.644	1.1707	19.722	9.867
1131Cal5	1.647	1.8494	30.847	15.438
Average	1.641			
Rel. Std. Dev.	0.262 %			



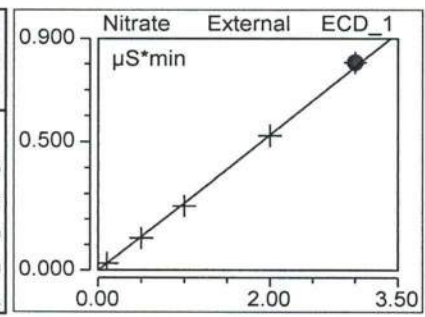
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Nitrite	Nitrite	Nitrite	Nitrite	Nitrite
1131Cal1	ECD_1 1.927	ECD_1 0.0213	ECD_1 0.296	ECD_1 0.106
1131Cal2	1.924	0.1057	1.494	0.479
1131Cal3	1.924	0.2162	3.083	0.966
1131Cal4	1.924	0.4469	6.494	1.984
1131Cal5	1.924	0.6920	10.161	3.065
Average	1.925			
Rel. Std. Dev.	0.075 %			



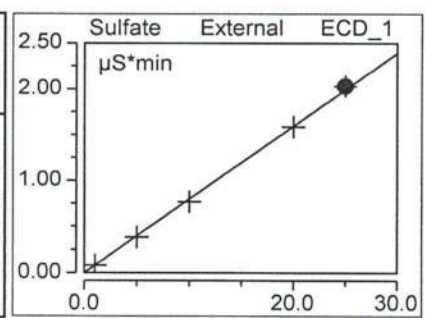
Injection Name	Ret.Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Bromide	Bromide	Bromide	Bromide	Bromide
1131Cal1	ECD_1 2.827	ECD_1 0.0217	ECD_1 0.250	ECD_1 0.511
1131Cal2	2.821	0.0433	0.489	1.003
1131Cal3	2.818	0.0852	0.977	1.960
1131Cal4	2.807	0.1717	1.992	3.934
1131Cal5	2.801	0.3540	4.145	8.093
Average	2.815			
Rel. Std. Dev.	0.380 %			



Injection Name	Ret.Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Nitrate	Nitrate	Nitrate	Nitrate	Nitrate
1131Cal1	ECD_1 3.191	ECD_1 0.0271	ECD_1 0.268	ECD_1 0.106
1131Cal2	3.181	0.1260	1.252	0.482
1131Cal3	3.168	0.2515	2.511	0.959
1131Cal4	3.151	0.5229	5.181	1.990
1131Cal5	3.134	0.8054	7.979	3.063
Average	3.165			
Rel. Std. Dev.	0.721 %			



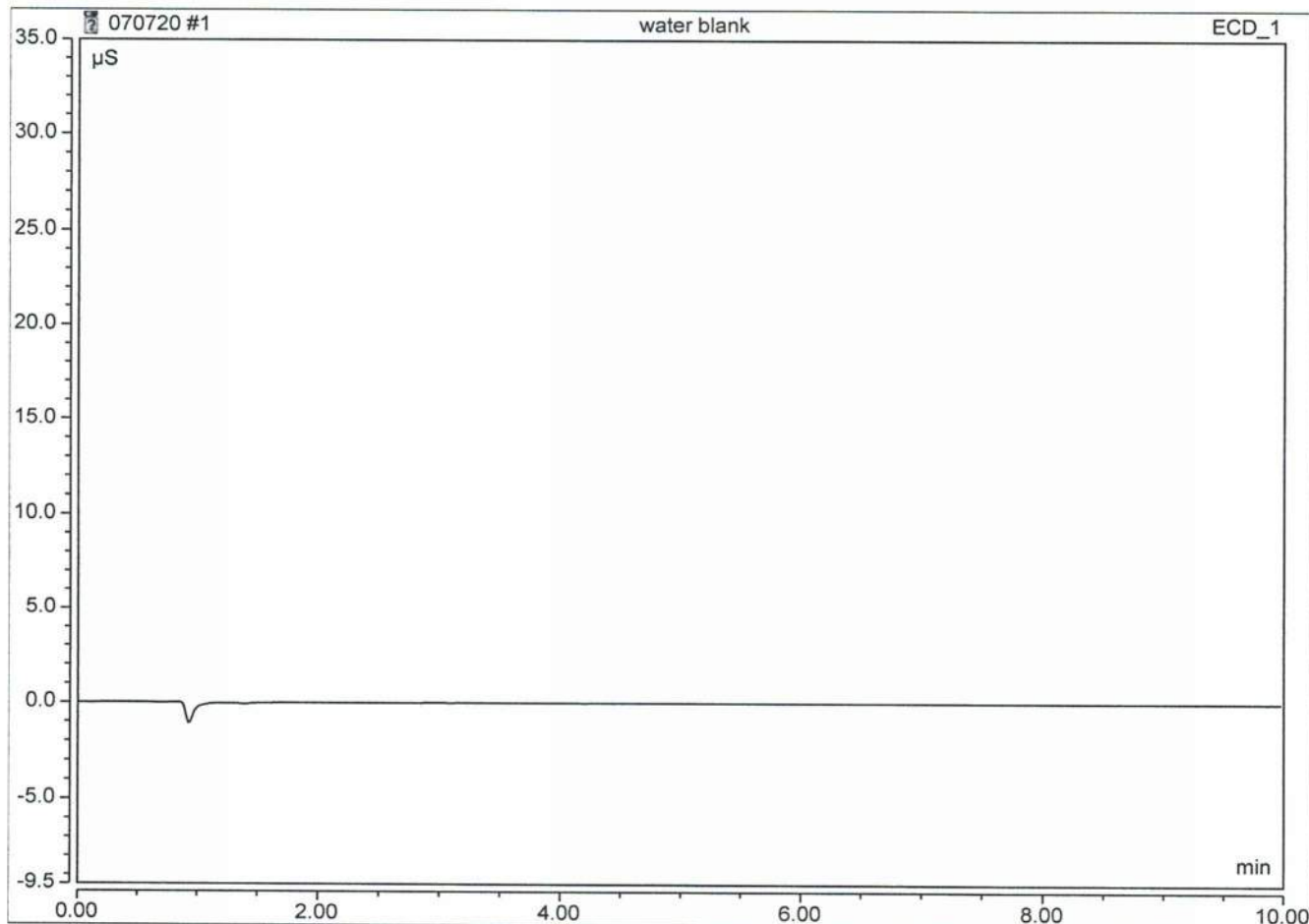
Injection Name	Ret.Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
1131Cal1	ECD_1 6.617	ECD_1 0.0815	ECD_1 0.364	ECD_1 1.050
1131Cal2	6.608	0.3828	1.734	4.832
1131Cal3	6.594	0.7678	3.517	9.664
1131Cal4	6.571	1.5858	7.313	19.933
1131Cal5	6.557	2.0310	9.317	25.521
Average	6.589			
Rel. Std. Dev.	0.380 %			



Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 09:56	Operator:	Jeff Phifer

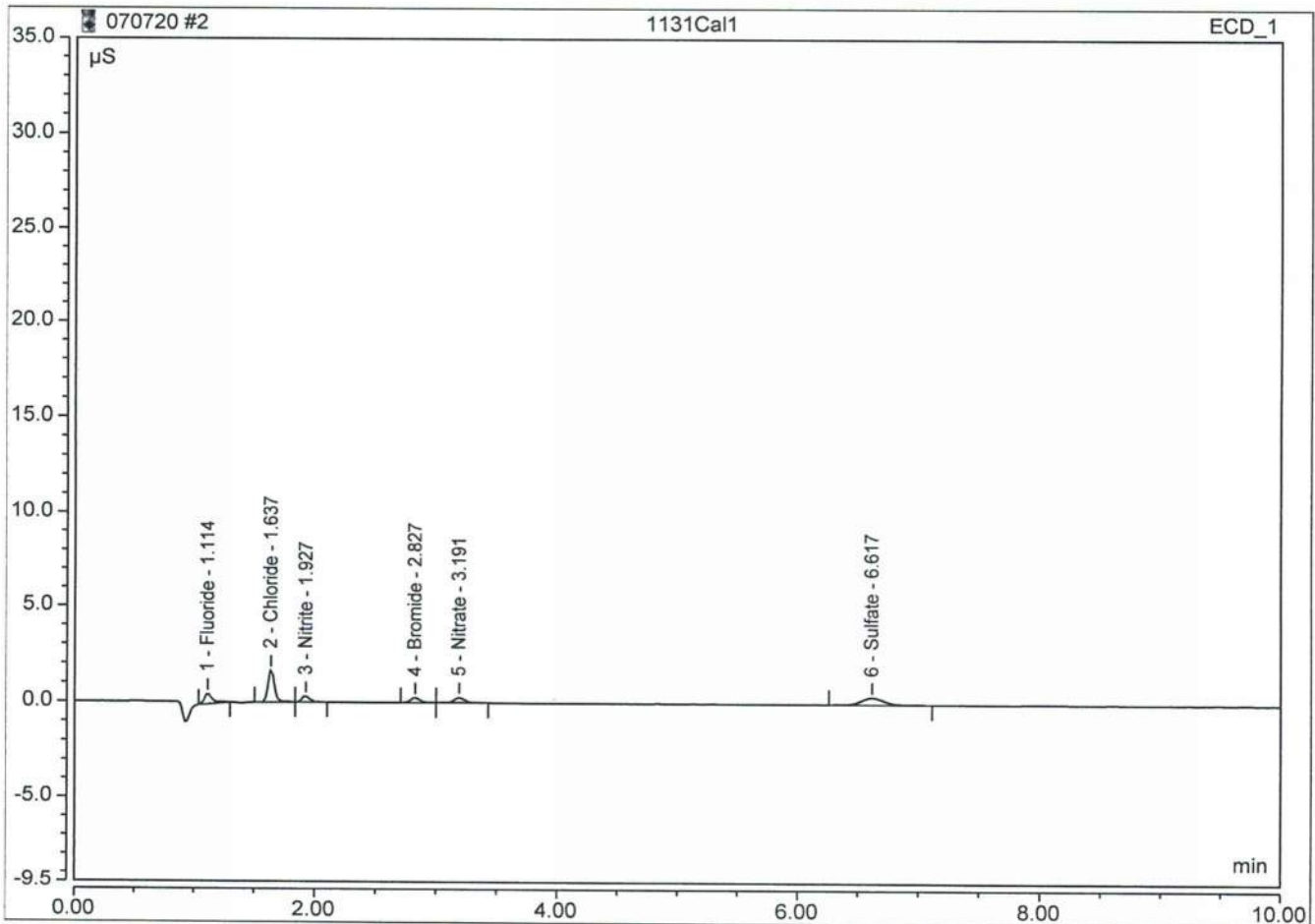
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	1131Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:08	Operator:	Jeff Phifer

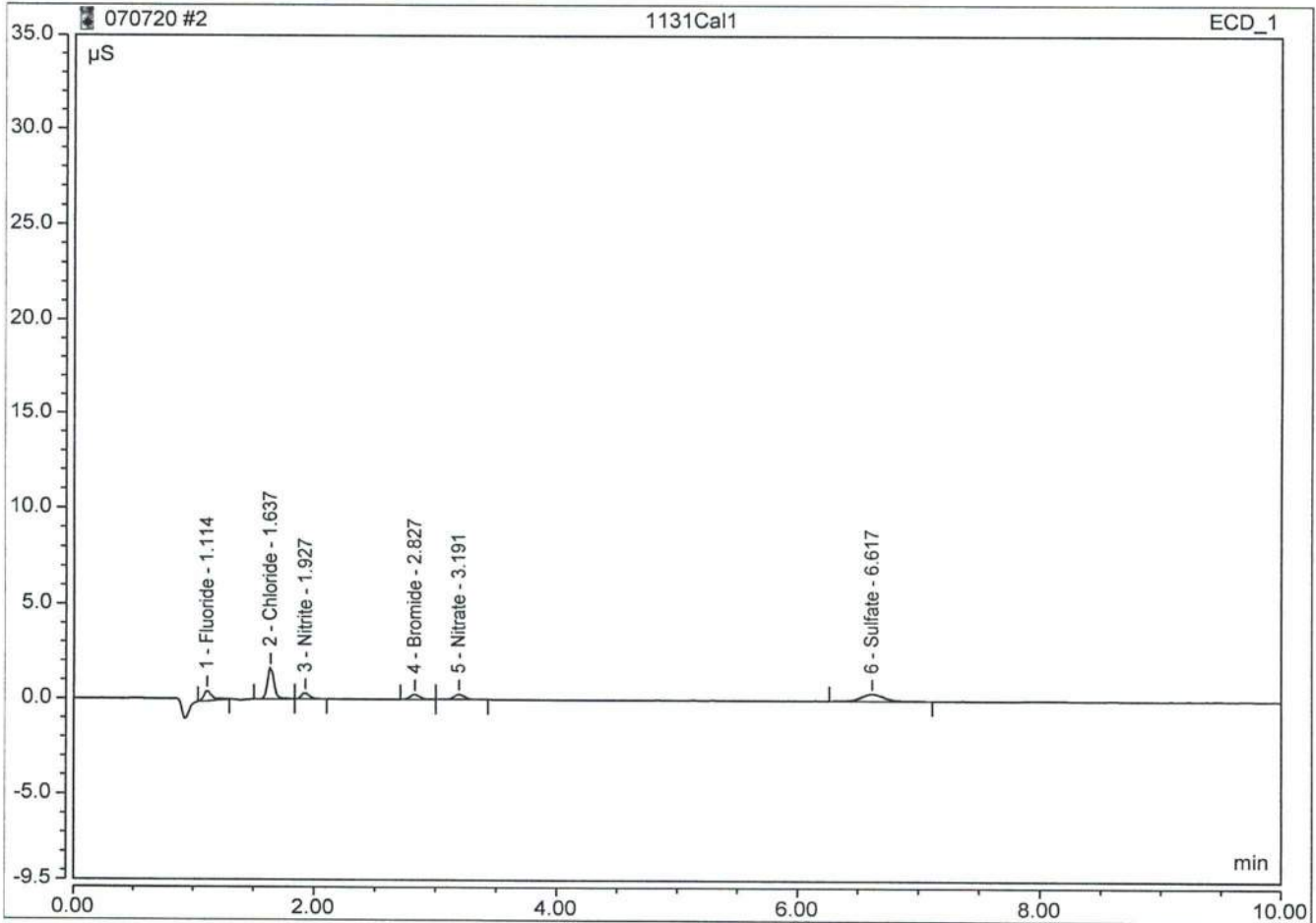
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.039	0.521	0.2 0.2096
2	1.64	Chloride	BMB	0.101	1.651	1 1.0894
3	1.93	Nitrite	BMB	0.021	0.296	0.1 0.1063
4	2.83	Bromide	BMB	0.022	0.250	0.5 0.5113
5	3.19	Nitrate	BMB	0.027	0.268	0.1 0.1061
6	6.62	Sulfate	BMB	0.082	0.364	1 1.0497
TOTAL:				0.29	3.35	3.07



Peak Integration Report

Sample Name:	1131Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:08	Operator:	Jeff Phifer

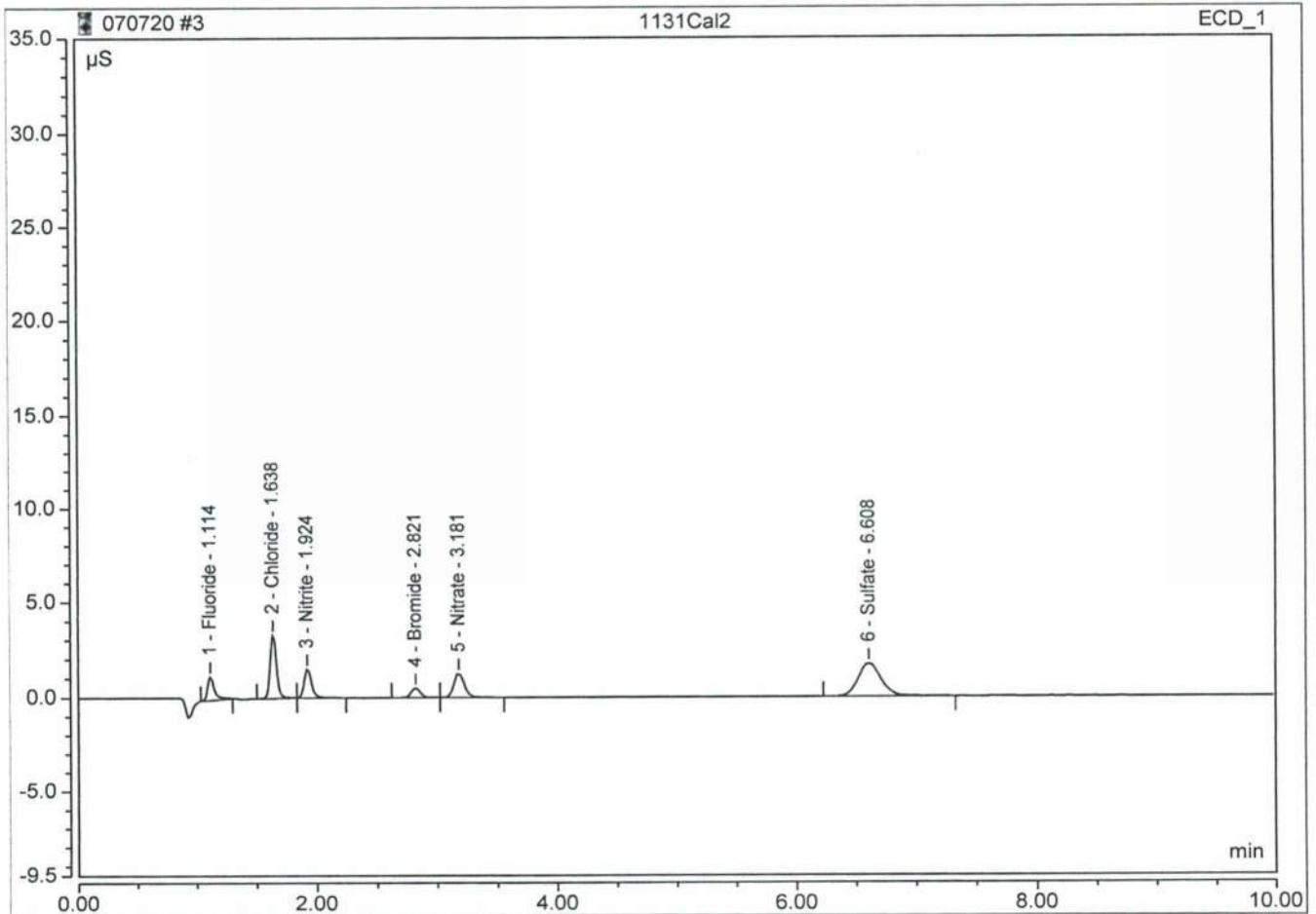
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.039	0.521	n.a.
2	1.64	Chloride	BMB	0.101	1.651	n.a.
3	1.93	Nitrite	BMB	0.021	0.296	n.a.
4	2.83	Bromide	BMB	0.022	0.250	n.a.
5	3.19	Nitrate	BMB	0.027	0.268	n.a.
6	6.62	Sulfate	BMB	0.082	0.364	n.a.
TOTAL:				0.29	3.35	0.00



Peak Integration Report

Sample Name:	1131Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:21	Operator:	Jeff Phifer

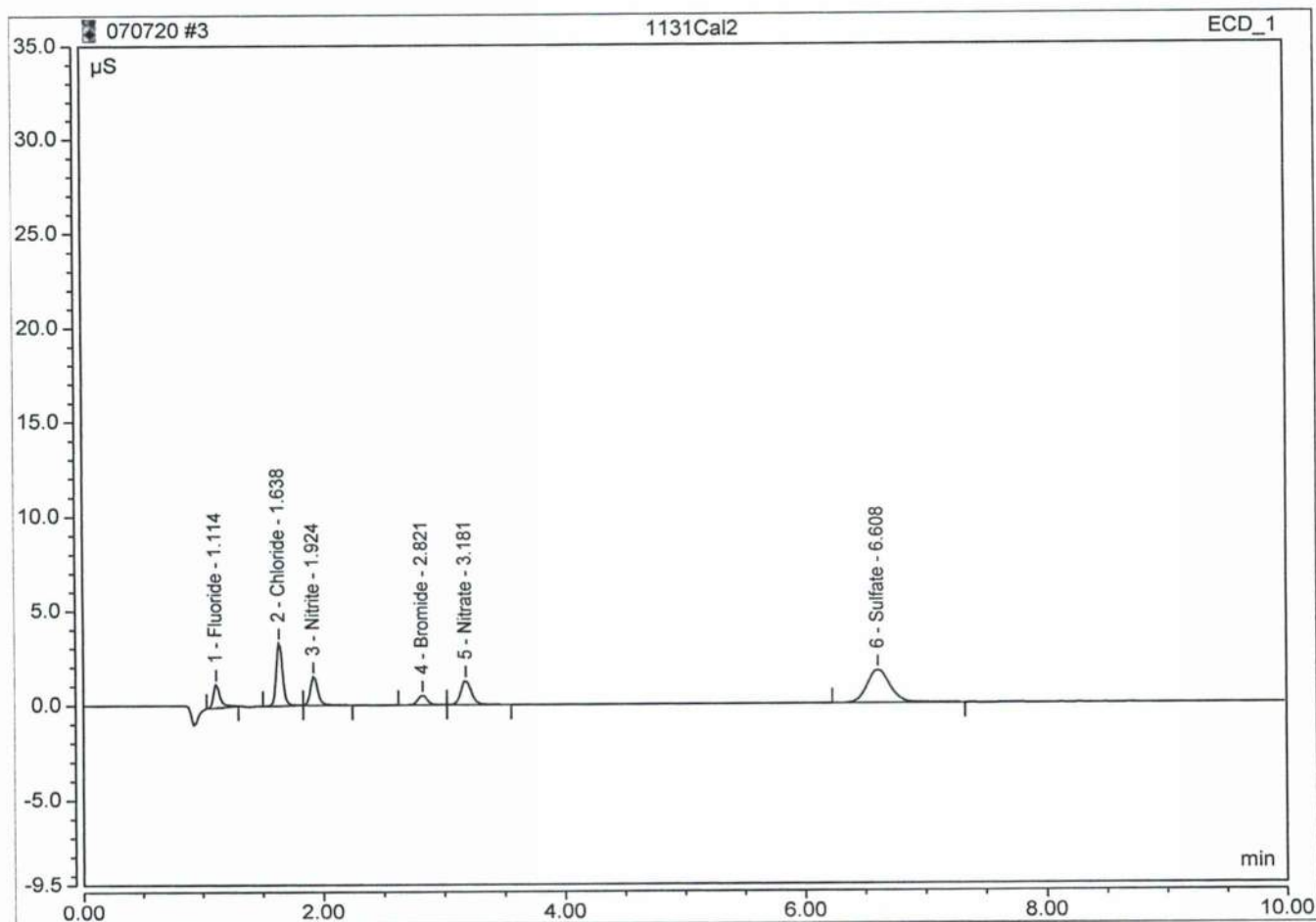
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.082	1.223	0.5 0.4881
2	1.64	Chloride	BMB	0.202	3.302	2 1.9118
3	1.92	Nitrite	BMB	0.106	1.494	0.5 0.4786
4	2.82	Bromide	BMB	0.043	0.489	1 1.0026
5	3.18	Nitrate	BMB	0.126	1.252	0.5 0.4819
6	6.61	Sulfate	BMB	0.383	1.734	3 4.8320
TOTAL:				0.94	9.49	9.19



Peak Integration Report

Sample Name:	1131Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:21	Operator:	Jeff Phifer

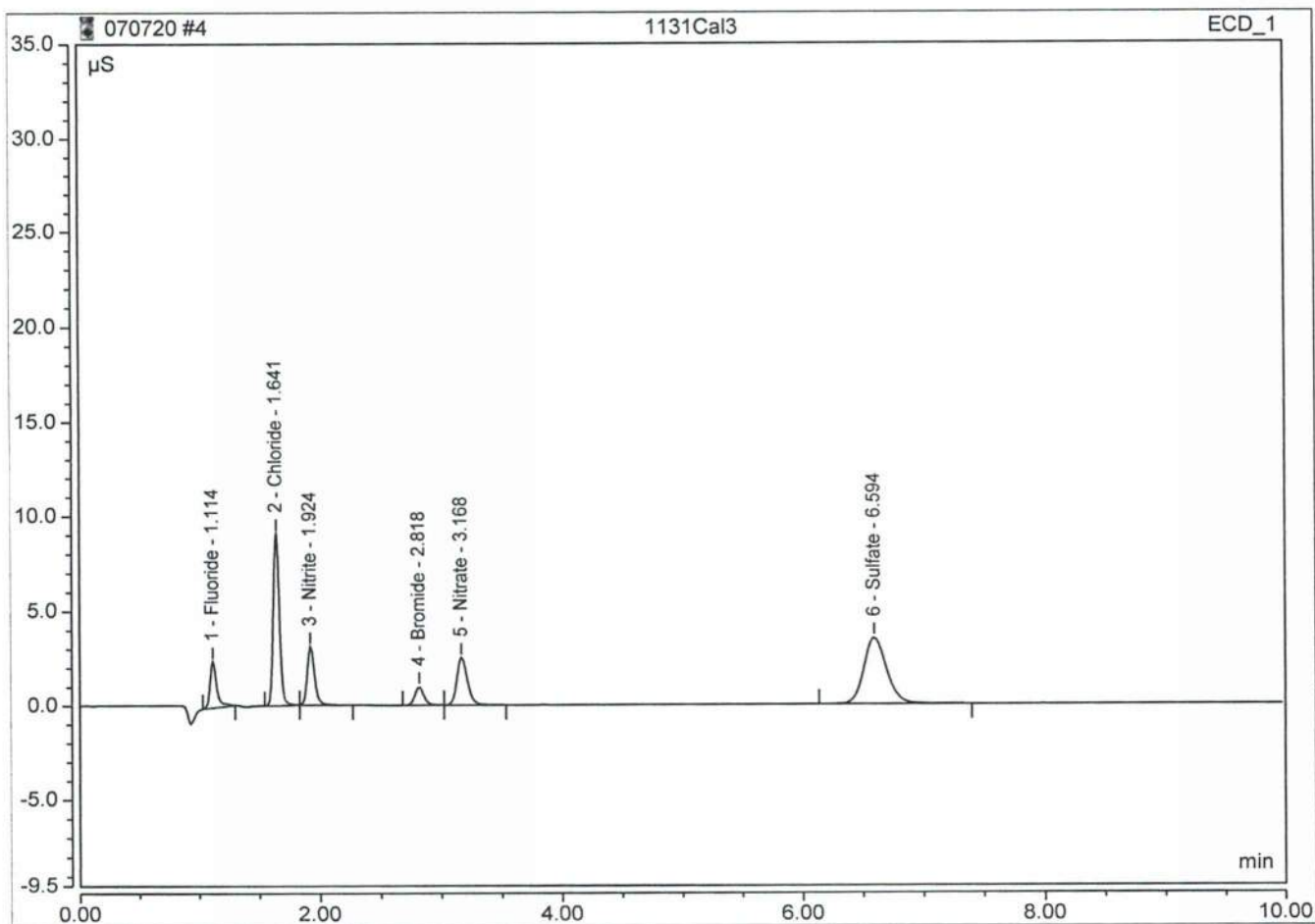
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.082	1.223	0.5000
2	1.64	Chloride	BMB	0.202	3.302	2.0000
3	1.92	Nitrite	BMB	0.106	1.494	0.5000
4	2.82	Bromide	BMB	0.043	0.489	1.0000
5	3.18	Nitrate	BMB	0.126	1.252	0.5000
6	6.61	Sulfate	BMB	0.383	1.734	5.0000
TOTAL:				0.94	9.49	9.50



Peak Integration Report

Sample Name:	1131Ca13	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:34	Operator:	Jeff Phifer

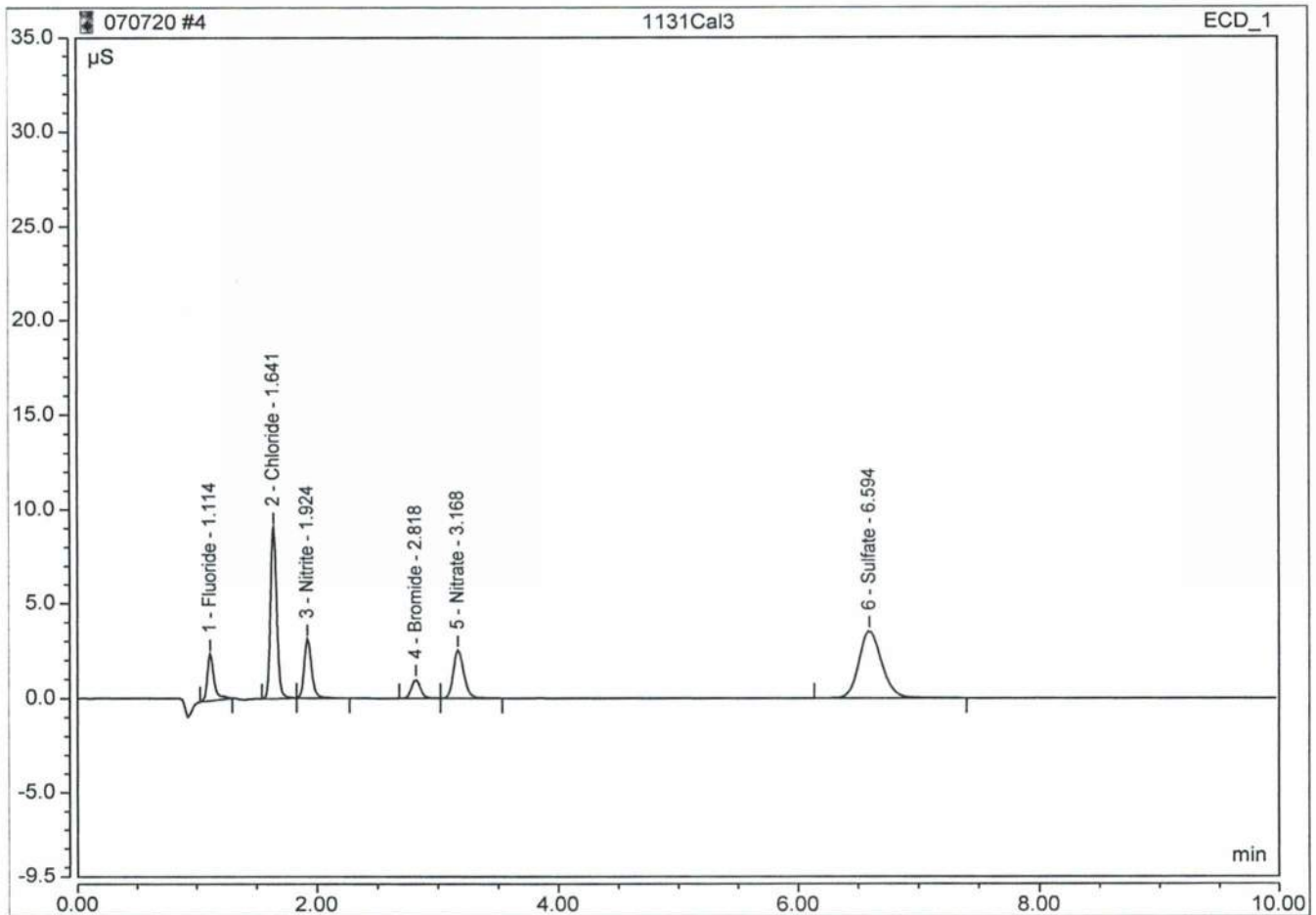
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.155	2.427	1 0.9656
2	1.64	Chloride	BMB	0.540	9.060	5 4.6937
3	1.92	Nitrite	BMB	0.216	3.083	1 0.9661
4	2.82	Bromide	BMB	0.085	0.977	2 1.9598
5	3.17	Nitrate	BMB	0.251	2.511	7 0.9588
6	6.59	Sulfate	BMB	0.768	3.517	10 9.6641
TOTAL:				2.02	21.57	19.21



Peak Integration Report

Sample Name:	1131Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:34	Operator:	Jeff Phifer

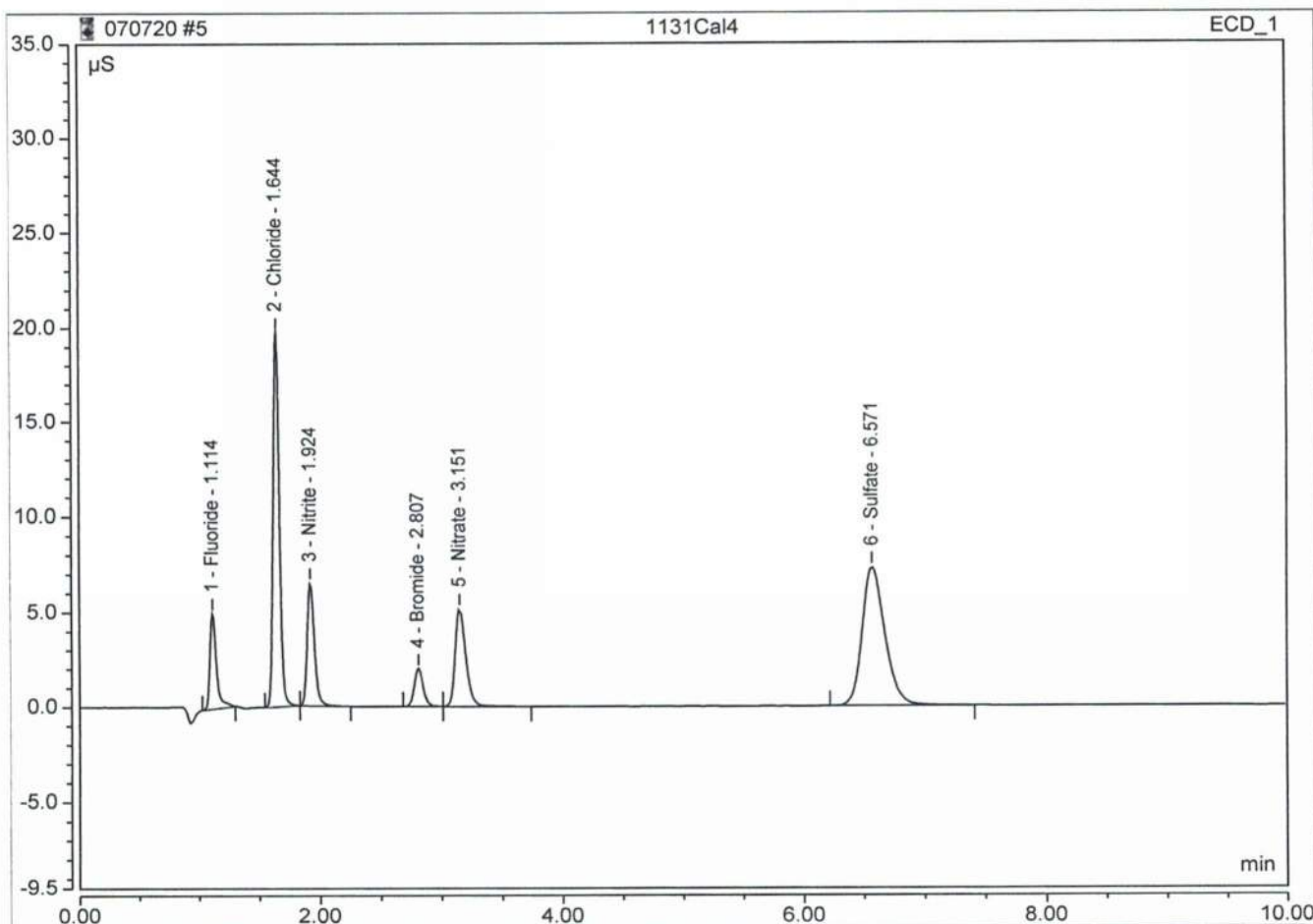
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.155	2.427	1.0028
2	1.64	Chloride	BMB	0.540	9.060	5.0381
3	1.92	Nitrite	BMB	0.216	3.083	1.0063
4	2.82	Bromide	BMB	0.085	0.977	1.9960
5	3.17	Nitrate	BMB	0.251	2.511	1.0021
6	6.59	Sulfate	BMB	0.768	3.517	10.0296
TOTAL:				2.02	21.57	20.07



Peak Integration Report

Sample Name:	1131Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:46	Operator:	Jeff Phifer

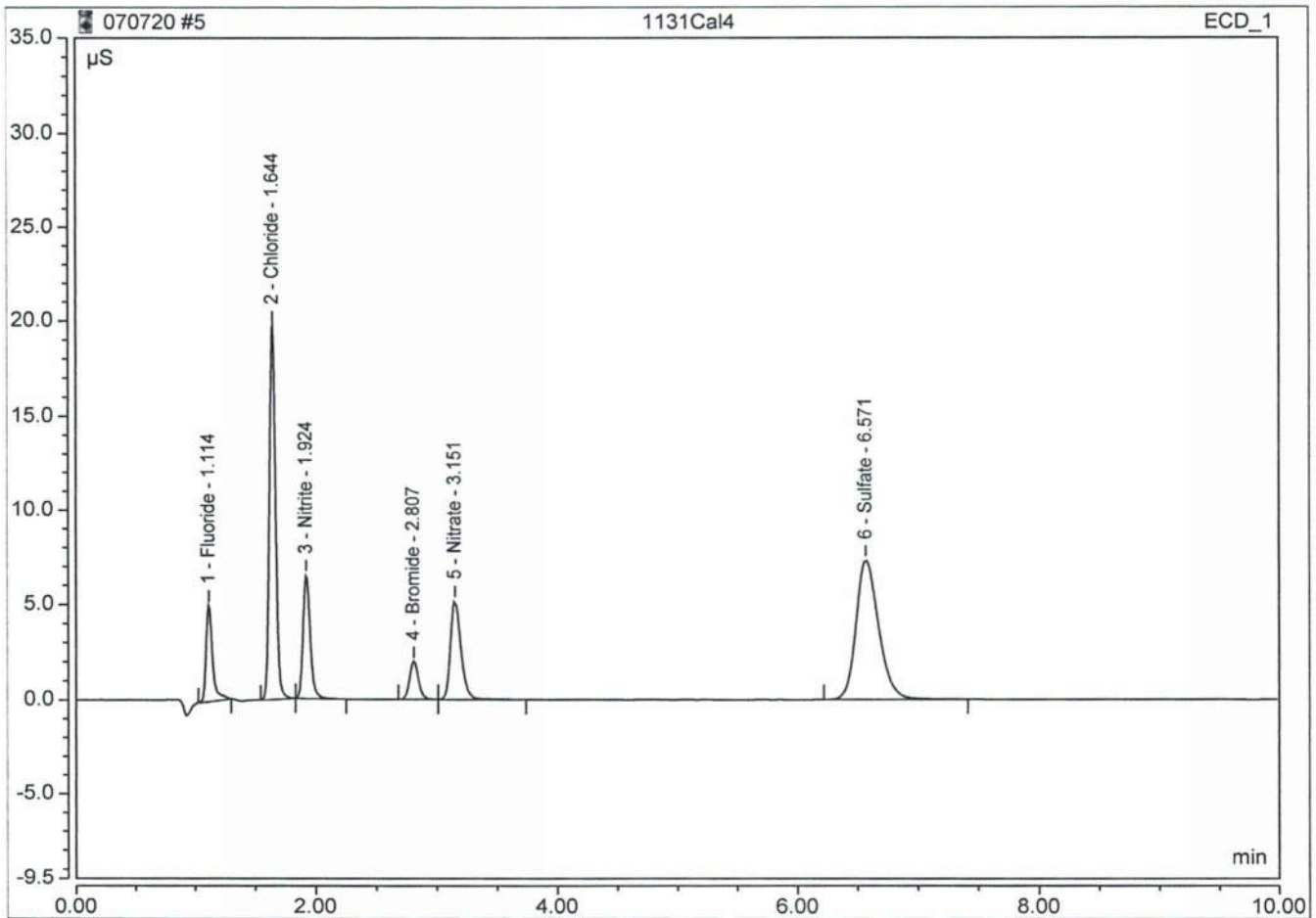
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.313	5.047	2 1.9874
2	1.64	Chloride	BMB	1.171	19.722	10 9.8670
3	1.92	Nitrite	BMB	0.447	6.494	2 1.9838
4	2.81	Bromide	BMB	0.172	1.992	4 3.9335
5	3.15	Nitrate	BMB	0.523	5.181	2 1.9899
6	6.57	Sulfate	BMB	1.586	7.313	20 19.9329
TOTAL:				4.21	45.75	39.69



Peak Integration Report

Sample Name:	1131Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:46	Operator:	Jeff Phifer

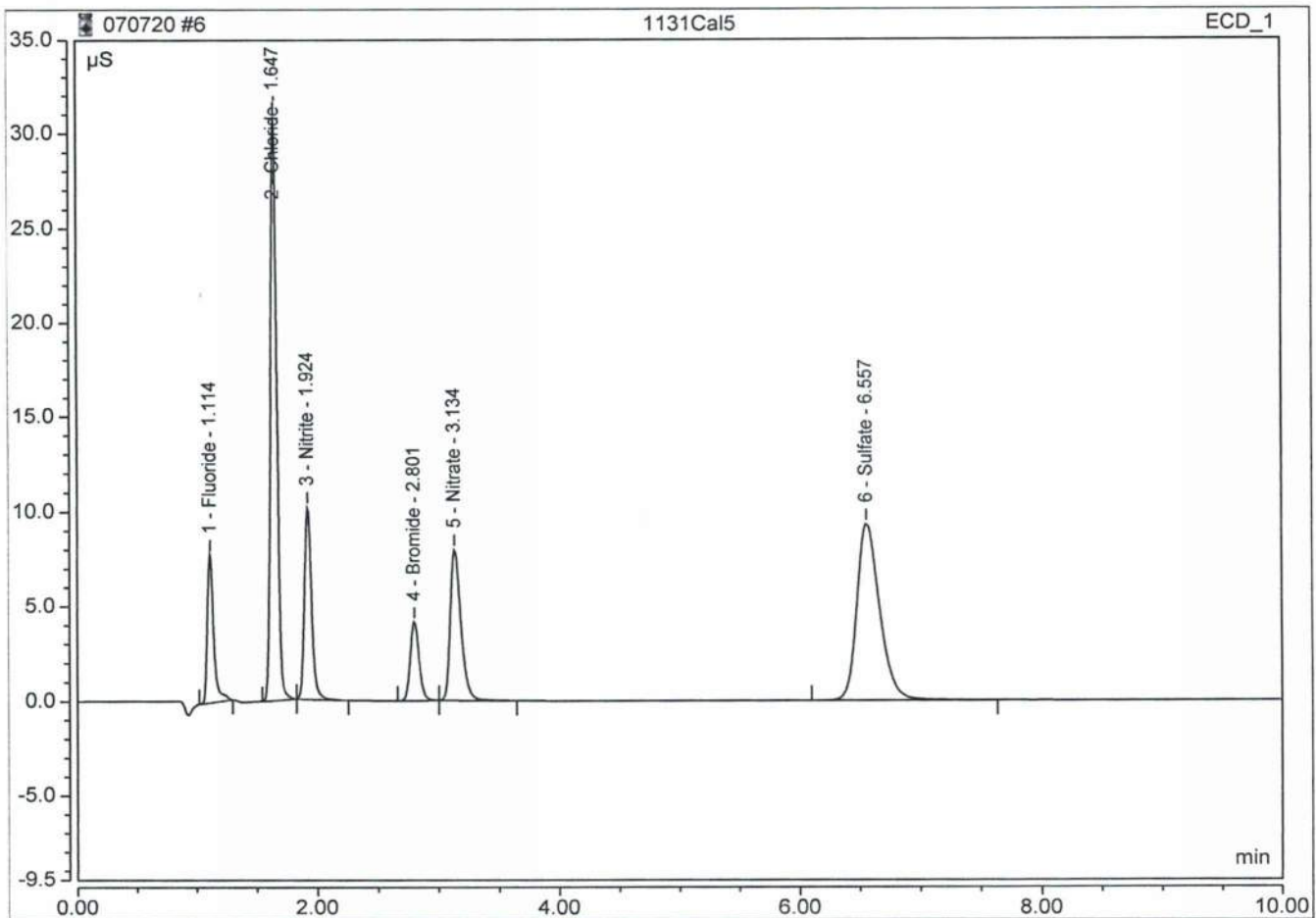
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.313	5.047	2.0249
2	1.64	Chloride	BMB	1.171	19.722	10.2103
3	1.92	Nitrite	BMB	0.447	6.494	2.0275
4	2.81	Bromide	BMB	0.172	1.992	4.0098
5	3.15	Nitrate	BMB	0.523	5.181	2.0325
6	6.57	Sulfate	BMB	1.586	7.313	20.2778
TOTAL:				4.21	45.75	40.58



Peak Integration Report

Sample Name:	1131Cal5	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:59	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.476	7.811	3 3.0493
2	1.65	Chloride	BMB	1.849	30.847	15 15.4380
3	1.92	Nitrite	BMB	0.692	10.161	3 3.0652
4	2.80	Bromide	BMB	0.354	4.145	8 8.0928
5	3.13	Nitrate	BMB	0.805	7.979	3 3.0633
6	6.56	Sulfate	BMB	2.031	9.317	25 25.5213
TOTAL:				6.21	70.26	58.23



ICS-1100 B Biduexic / Meth 300.0

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 10:40:04 AM -C
	1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:52:24 AM -C
	1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 11:05:16 AM -C
	1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 11:18:08 AM -C
	1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 11:31:00 AM -C
	1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 11:43:51 AM -C
	Blank	Unknown		1	Norm Method	Anion	Finished	8/20/2020 8:48:04 AM -C
	BSpoke 11738BS1	Check Standard		2	Norm Method	Anion	Finished	8/20/2020 9:00:23 AM -C
	LCS 11738LCS1	Check Standard		3	Norm Method	Anion	Finished	8/20/2020 9:13:15 AM -C
	16725.01	Unknown		4	Norm Method	Anion	Finished	8/20/2020 9:26:07 AM -C
	16725.02	Unknown		5	Norm Method	Anion	Finished	8/20/2020 9:38:59 AM -C
	16725.03	Unknown		6	Norm Method	Anion	Finished	8/20/2020 9:51:51 AM -C
	16695.02	Unknown		7	Norm Method	Anion	Finished	8/20/2020 10:04:43 AM -C
	16695.03	Unknown		8	Norm Method	Anion	Finished	8/20/2020 10:17:35 AM -C
	16695.04	Unknown		9	Norm Method	Anion	Finished	8/20/2020 10:30:26 AM -C
	16695.05	Unknown		10	Norm Method	Anion	Finished	8/20/2020 10:43:18 AM -C
	16695.06	Unknown		11	Norm Method	Anion	Finished	8/20/2020 10:56:10 AM -C
	16695.03 dup	Unknown		12	Norm Method	Anion	Finished	8/20/2020 11:09:01 AM -C
	16695.03 MS 13061MS	Unknown		13	Norm Method	Anion	Finished	8/20/2020 11:21:54 AM -C
	16695.03 MSD 13061M	Unknown		14	Norm Method	Anion	Finished	8/20/2020 11:34:46 AM -C
	16695.06	Unknown		15	Norm Method	Anion	Finished	8/20/2020 11:47:37 AM -C
	BSpoke 11738BS1	Check Standard		16	Norm Method	Anion	Finished	8/20/2020 12:00:29 PM -C
	Blank	Unknown		17	Norm Method	Anion	Finished	8/20/2020 12:13:21 PM -C

CALIB# ICS B070720 CAL

*CL200820-WI-B
 SFT200820-WI-B
 NTRA 200820-WI-B
 NTRI 200820-WI-B*

Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	25.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	50.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	50.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

Norm Method	16/06/15 12:18	Jeff Phifer	METHOD 300.0	
Stage	Time	Command	Value	Comment
Instrument Setup	min			
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Calibration Batch Report
CAL ID# ICSB070720CAL

Sequence:	082020	Injection Vol:	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 11:43	Column:	AS4A-SC 040144

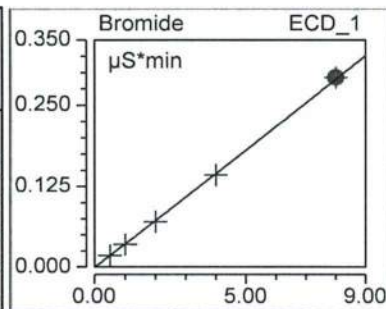
Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.029	0.113	0.000	0.9985
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.023	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.191	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	0.000	0.036	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.003	0.064	0.000	0.9997
AVERAGE:				-0.0002	0.1196	0.0000	0.9994

Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1131Cal1	Fluoride 1.084	Fluoride 0.0508	Fluoride 0.484	Fluoride 0.189
1131Cal2	1.084	0.0870	0.999	0.510
1131Cal3	1.081	0.1450	1.848	1.024
1131Cal4	1.081	0.2666	3.636	2.101
1131Cal5	1.081	0.3541	5.285	2.876
Average	1.082			
Rel. Std. Dev.	0.164 %			

Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1131Cal1	Chloride 1.627	Chloride 0.0849	Chloride 1.387	Chloride 1.089
1131Cal2	1.627	0.1668	2.765	1.912
1131Cal3	1.628	0.4444	7.521	4.701
1131Cal4	1.631	0.9564	16.335	9.846
1131Cal5	1.634	1.5142	25.720	15.452
Average	1.629			
Rel. Std. Dev.	0.180 %			

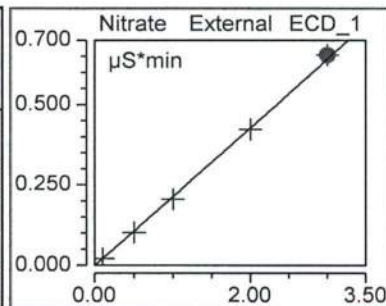
Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1131Cal1	Nitrite 1.934	Nitrite 0.0181	Nitrite 0.252	Nitrite 0.106
1131Cal2	1.934	0.0900	1.251	0.483
1131Cal3	1.931	0.1818	2.556	0.963
1131Cal4	1.931	0.3773	5.333	1.987
1131Cal5	1.931	0.5827	8.298	3.062
Average	1.932			
Rel. Std. Dev.	0.092 %			

Injection Name	Ret. Time min ECD 1	Area $\mu\text{S} \cdot \text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1131Cal1	2.887	0.0182	0.193	0.515
1131Cal2	2.884	0.0355	0.378	0.993
1131Cal3	2.878	0.0705	0.760	1.960
1131Cal4	2.871	0.1427	1.549	3.949
1131Cal5	2.864	0.2925	3.206	8.083
Average	2.877			
Rel. Std. Dev.	0.332 %			

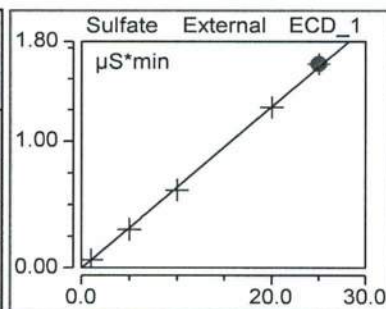


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Injection Name	Ret. Time min ECD 1	Area $\mu\text{S} \cdot \text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1131Cal1	3.271	0.0215	0.202	0.105
1131Cal2	3.257	0.1026	0.952	0.485
1131Cal3	3.248	0.2057	1.911	0.967
1131Cal4	3.234	0.4230	3.909	1.982
1131Cal5	3.217	0.6540	6.009	3.062
Average	3.245			
Rel. Std. Dev.	0.636 %			



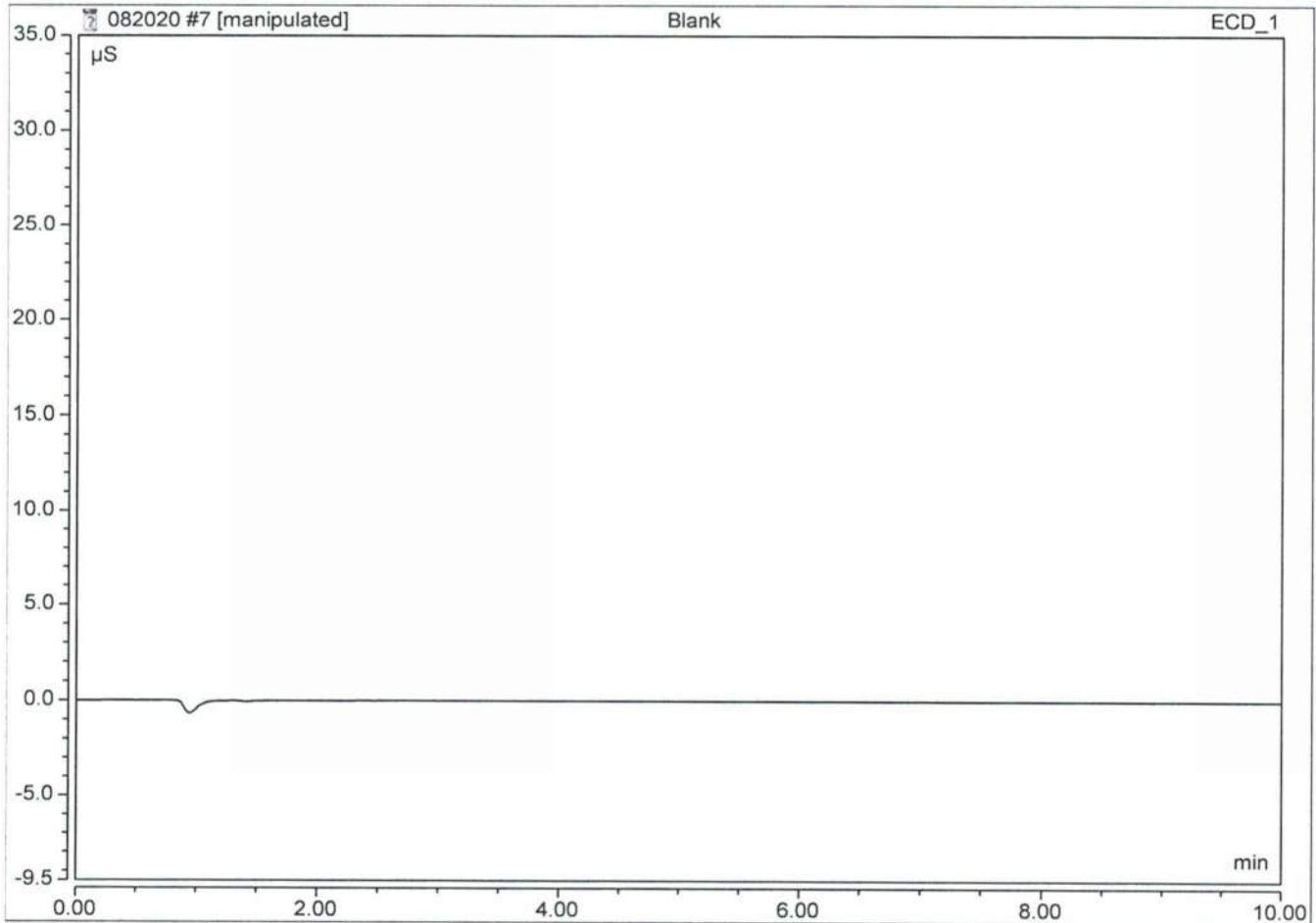
Injection Name	Ret. Time min ECD 1	Area $\mu\text{S} \cdot \text{min}$ ECD 1	Height μS ECD 1	Amount ECD 1
1131Cal1	6.867	0.0635	0.271	1.047
1131Cal2	6.867	0.3050	1.300	4.836
1131Cal3	6.854	0.6147	2.631	9.693
1131Cal4	6.837	1.2706	5.439	19.981
1131Cal5	6.824	1.6188	6.926	25.443
Average	6.850			
Rel. Std. Dev.	0.279 %			



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 08:48	Operator:	Jeff Phifer

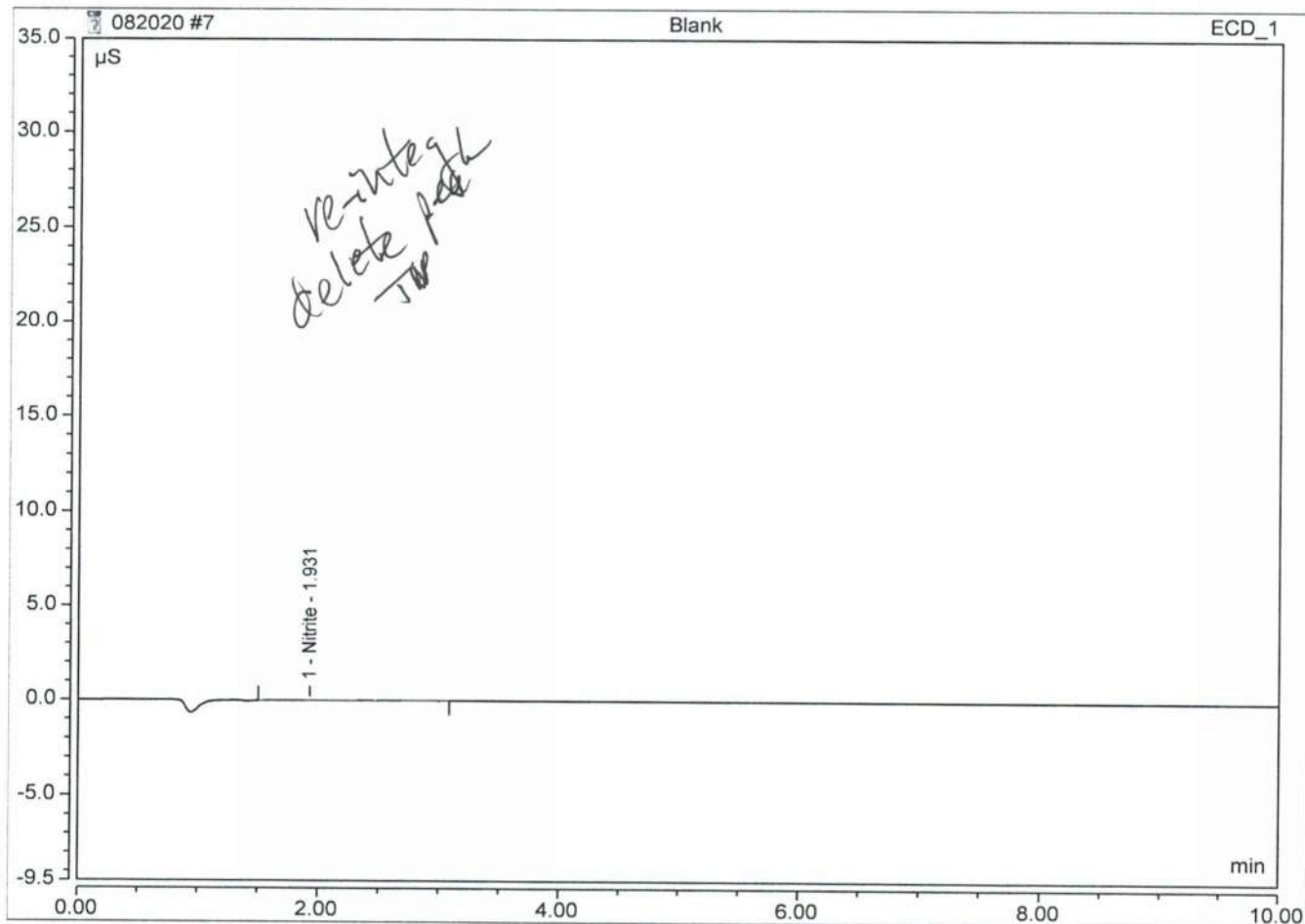
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 08:48	Operator:	Jeff Phifer

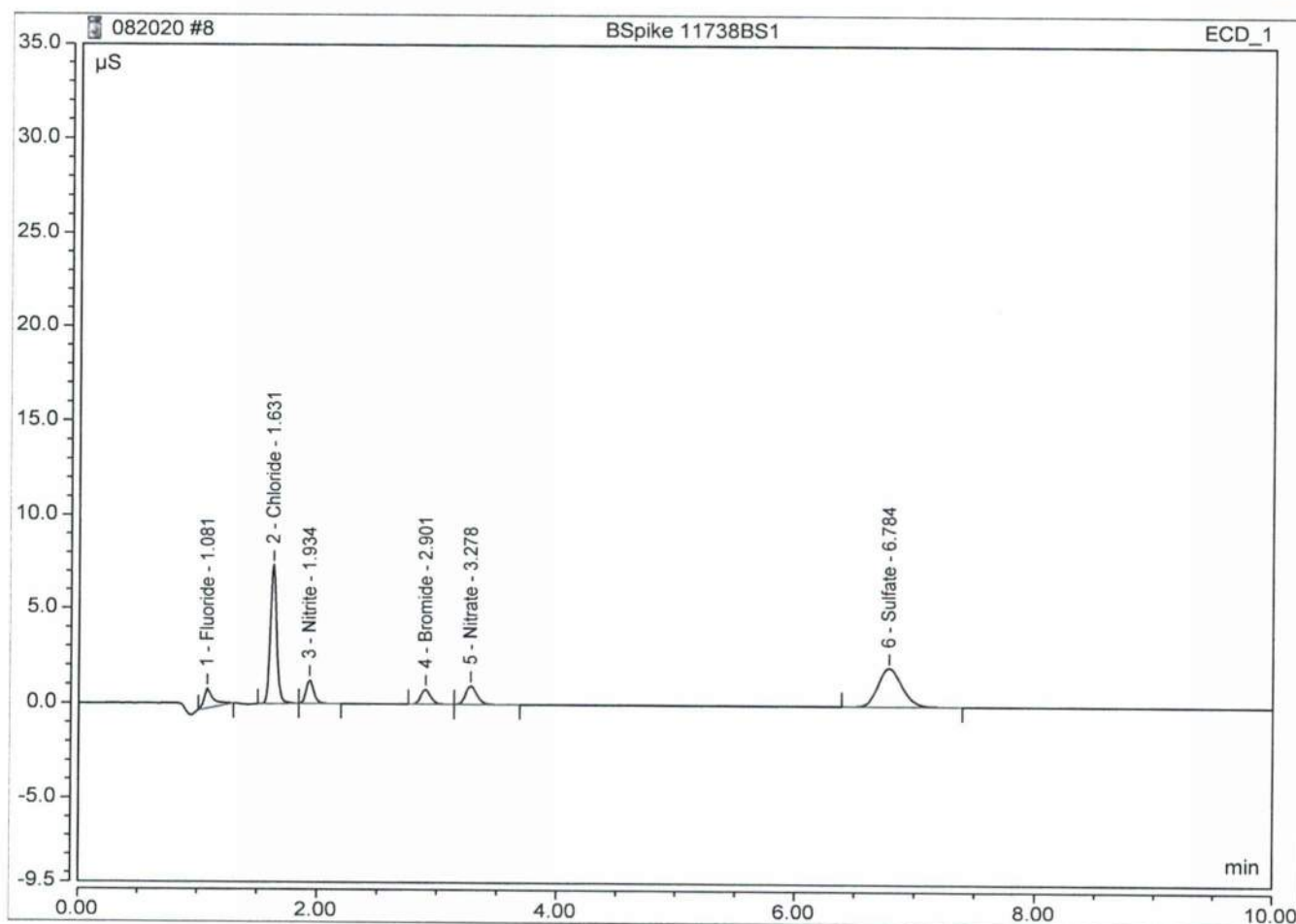
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.93	Nitrite	BMB	0.014	0.015	0.0859
TOTAL:				0.01	0.02	0.09



Peak Integration Report

Sample Name:	BSpoke 11738BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 09:00	Operator:	Jeff Phifer

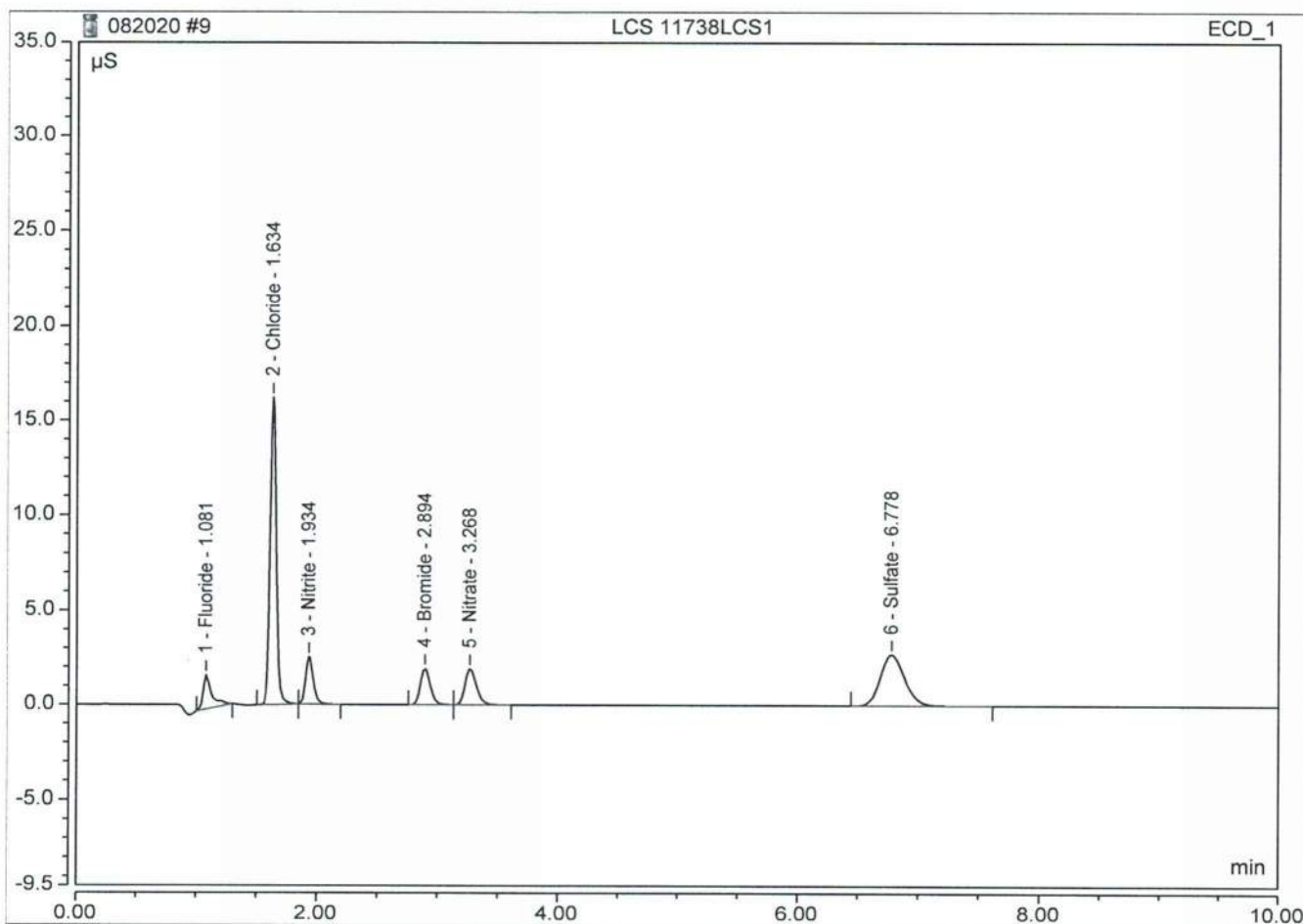
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.091	1.023	0.5487
2	1.63	Chloride	BMB	0.448	7.367	4.7416
3	1.93	Nitrite	BMB	0.090	1.236	0.4835
4	2.90	Bromide	BMB	0.073	0.763	2.0224
5	3.28	Nitrate	BMB	0.106	0.967	0.5010
6	6.78	Sulfate	BMB	0.469	2.022	7.4002
TOTAL:				1.28	13.38	15.70



Peak Integration Report

Sample Name:	LCS 11738LCS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 09:13	Operator:	Jeff Phifer

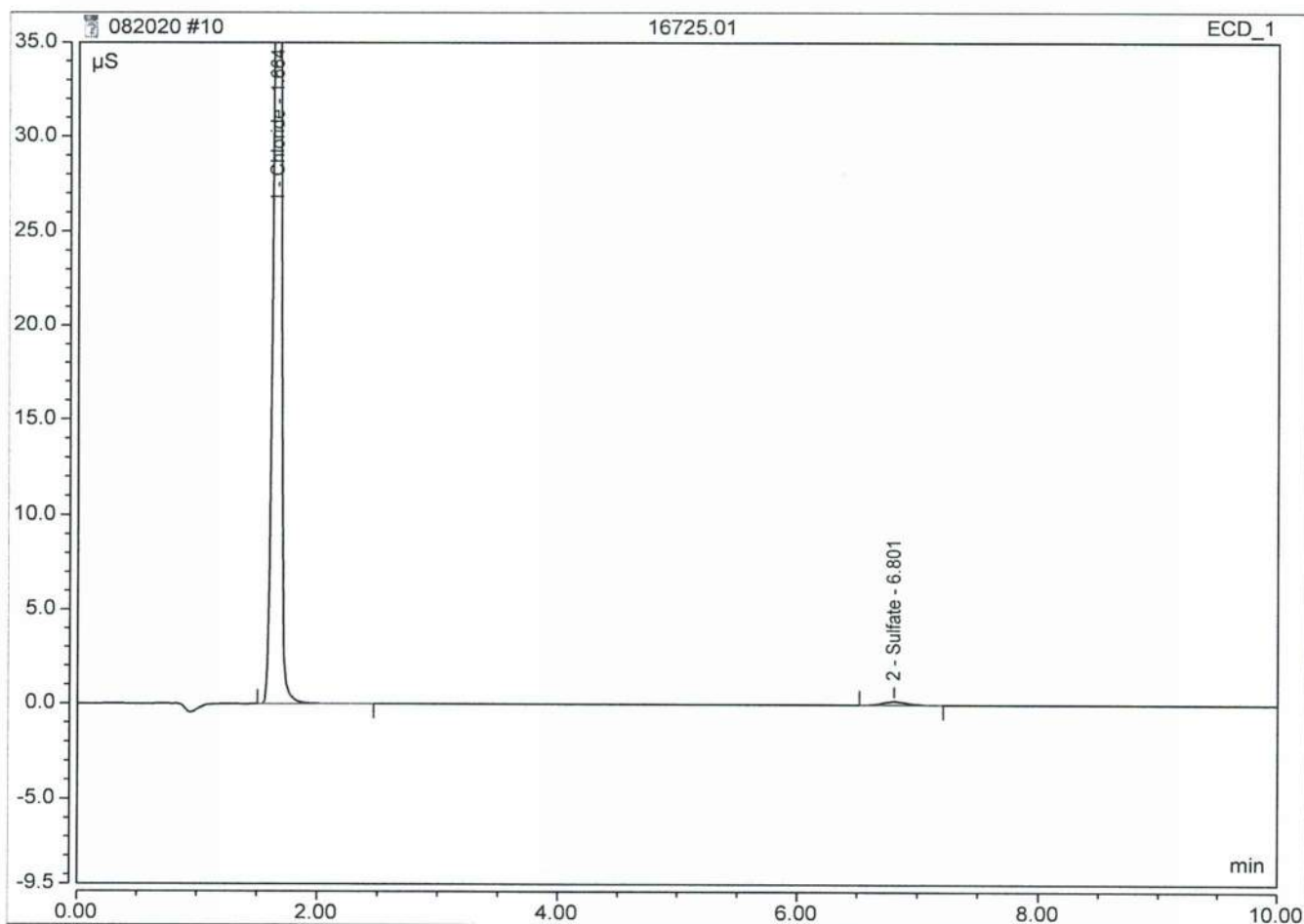
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.151	1.813	1.0791
2	1.63	Chloride	BMB	0.971	16.226	9.9903
3	1.93	Nitrite	BMB	0.184	2.526	0.9725
4	2.89	Bromide	BMB	0.183	1.934	5.0663
5	3.27	Nitrate	BMB	0.210	1.912	0.9846
6	6.78	Sulfate	BMB	0.628	2.717	9.9088
TOTAL:				2.33	27.13	28.00



Peak Integration Report

Sample Name:	16725.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 09:26	Operator:	Jeff Phifer

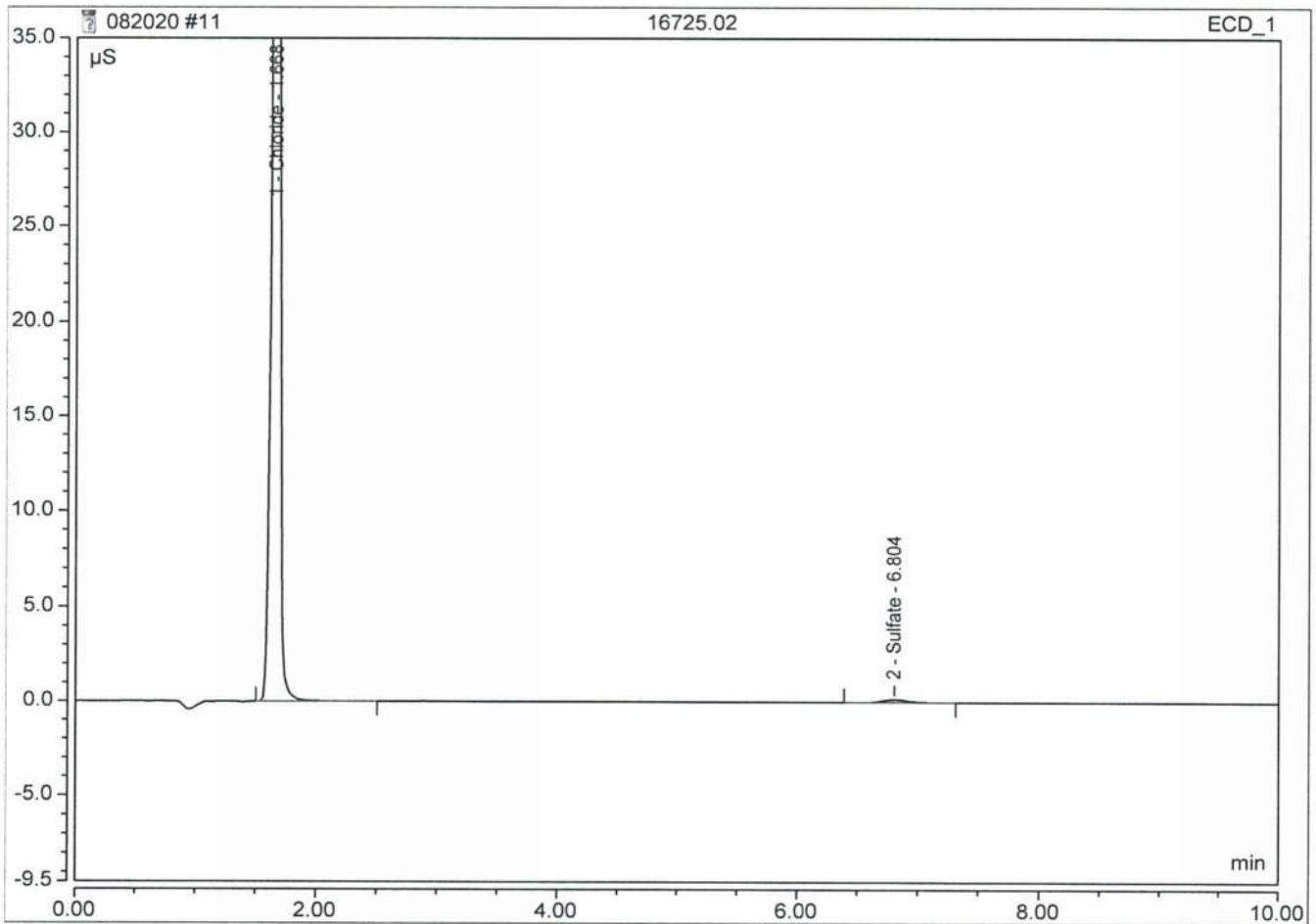
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.66	Chloride	BMB	4.271	64.463	431.5017
2	6.80	Sulfate	BMB	0.044	0.191	7.4326
TOTAL:				4.31	64.65	438.93



Peak Integration Report

Sample Name:	16725.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 09:38	Operator:	Jeff Phifer

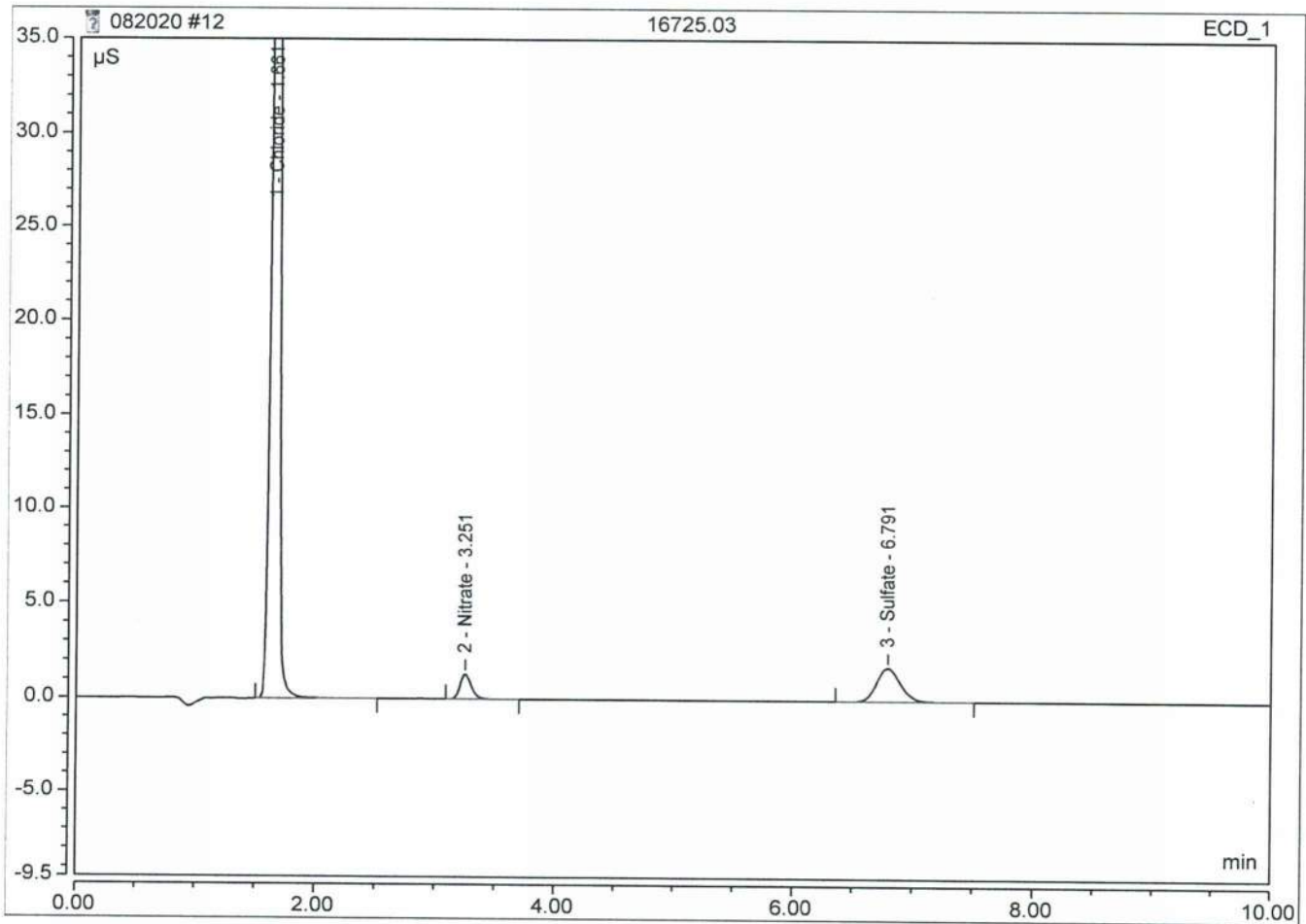
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.67	Chloride	BMB	4.959	72.530	500.6522
2	6.80	Sulfate	BMB	0.036	0.151	6.1037
TOTAL:				4.99	72.68	506.76



Peak Integration Report

Sample Name:	16725.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 09:51	Operator:	Jeff Phifer

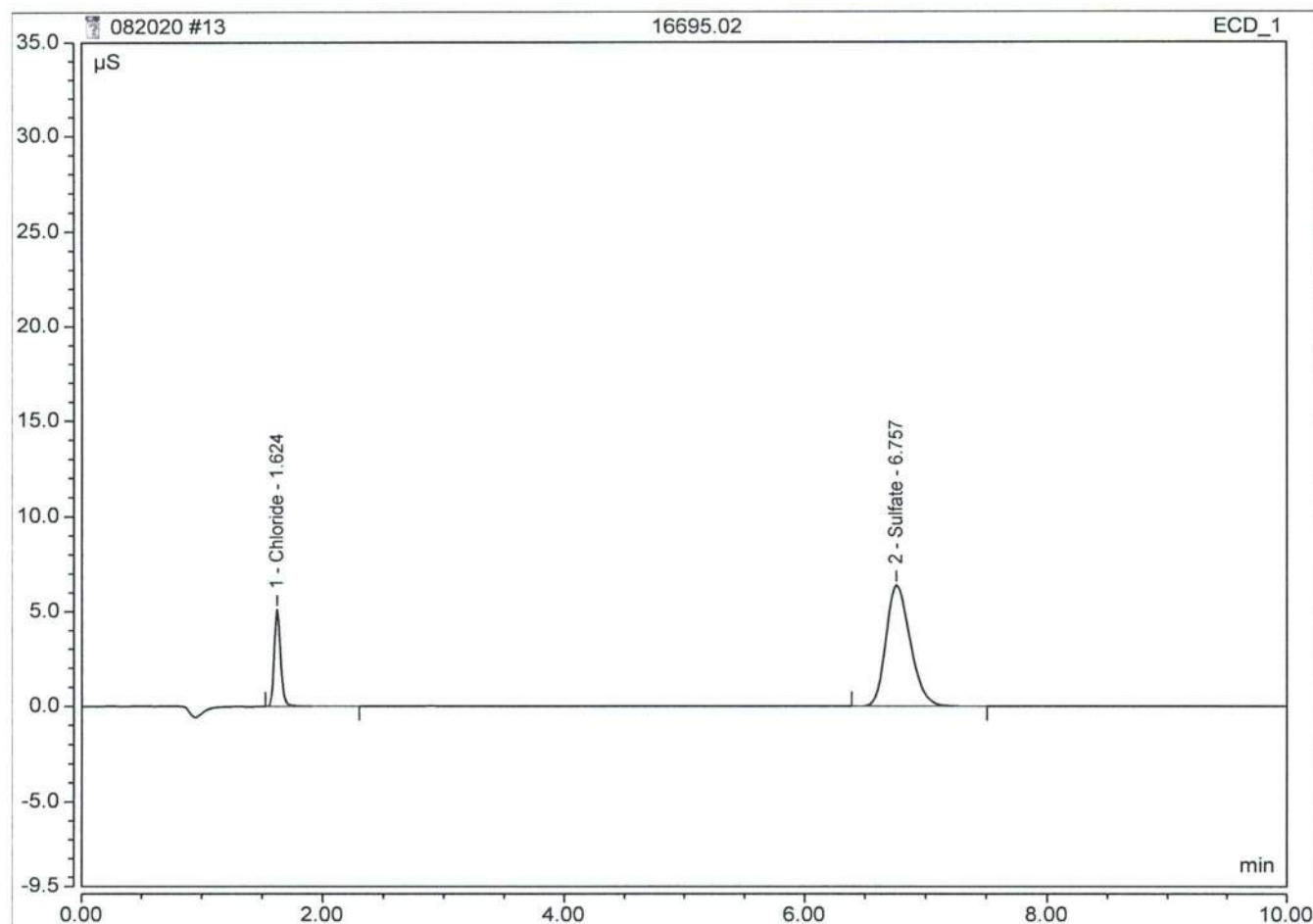
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.66	Chloride	BMB	4.856	71.590	490.2885
2	3.25	Nitrate	BMB	0.145	1.326	6.8203
3	6.79	Sulfate	BMB	0.413	1.783	65.2870
TOTAL:				5.41	74.70	562.40



Peak Integration Report

Sample Name:	16695.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 10:04	Operator:	Jeff Phifer

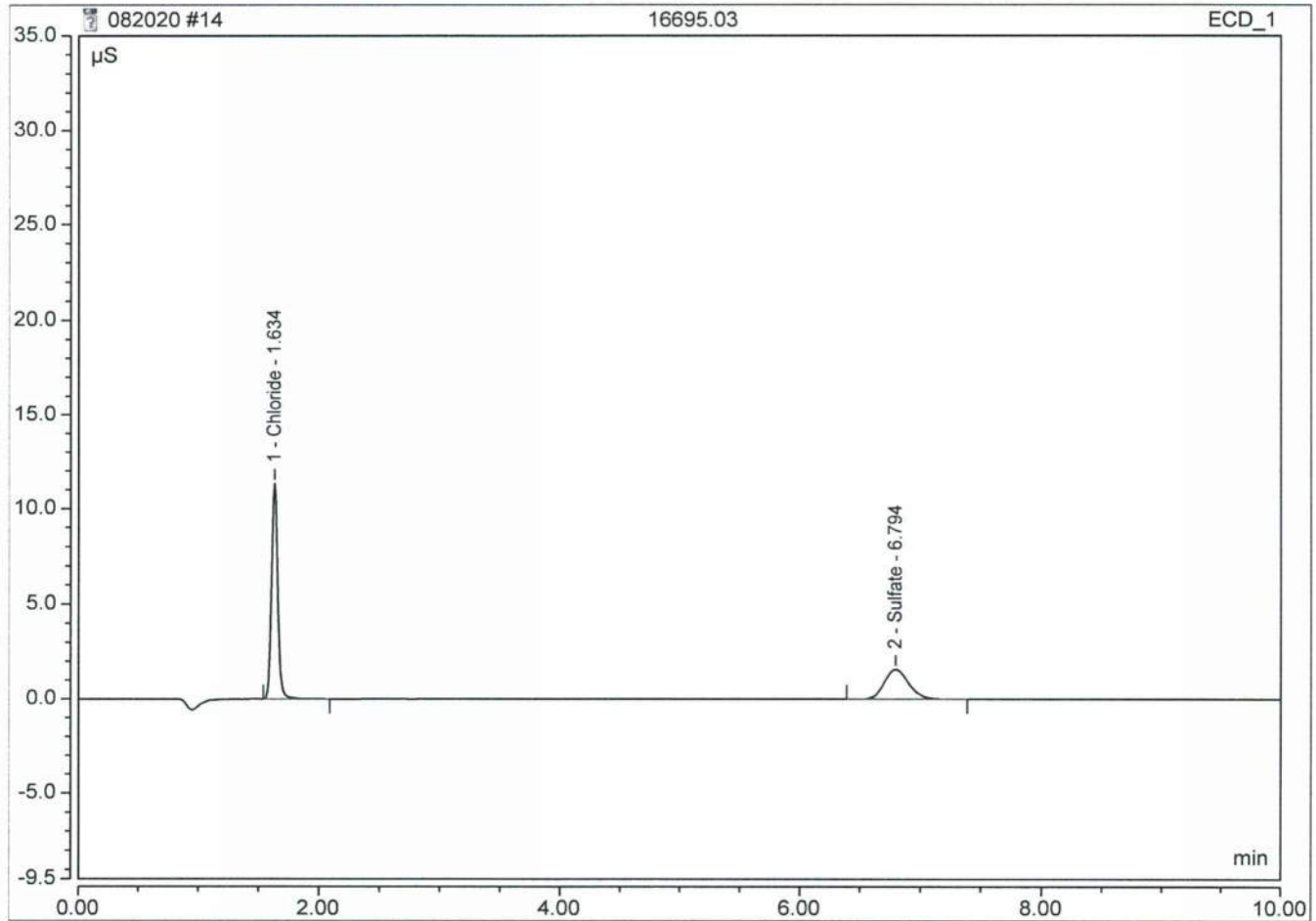
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.62	Chloride	BMB	0.314	5.121	84.6938
2	6.76	Sulfate	BMB	1.477	6.407	580.4633
TOTAL:				1.79	11.53	665.16



Peak Integration Report

Sample Name:	16695.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 10:17	Operator:	Jeff Phifer

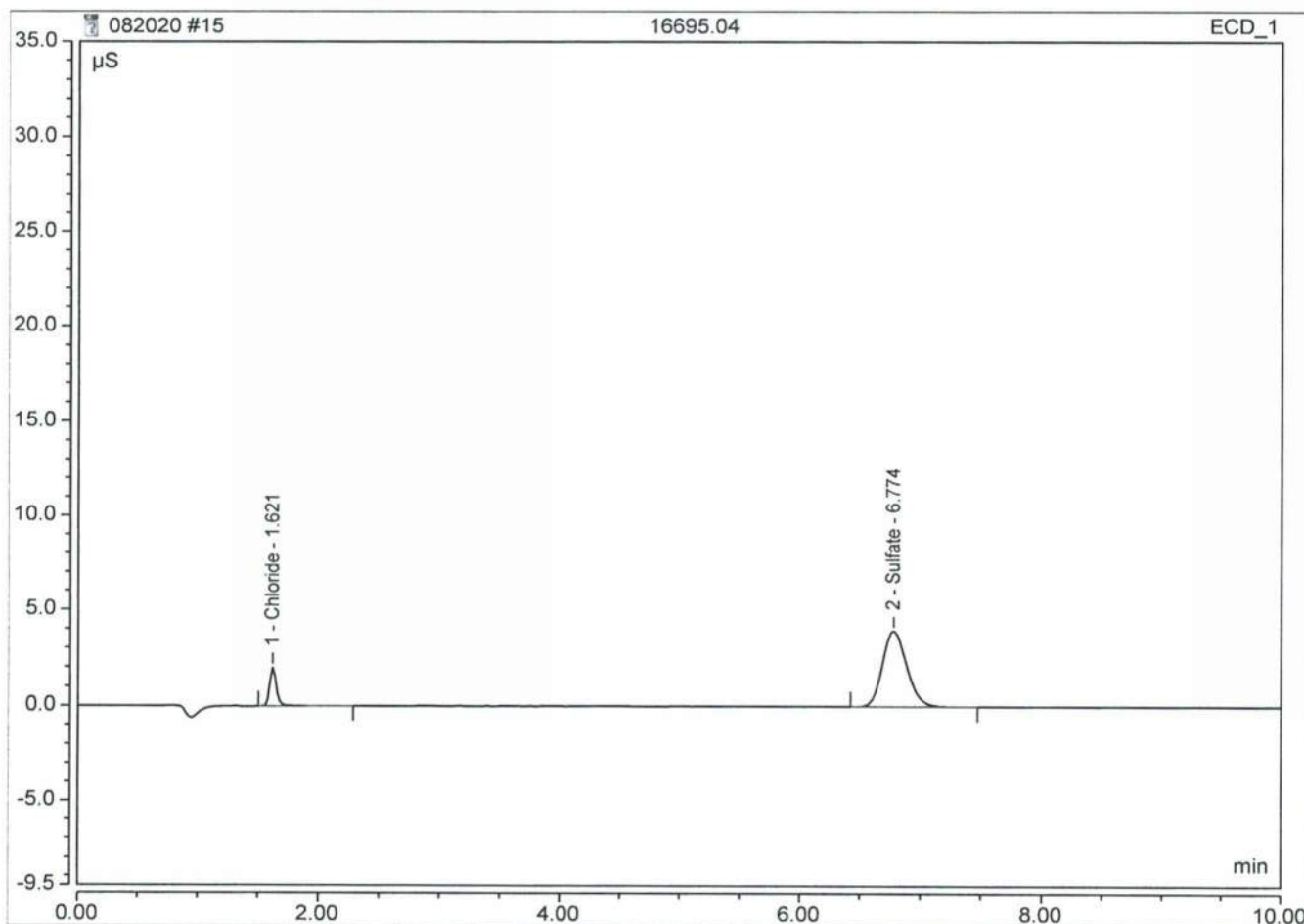
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.675	11.338	70.1809
2	6.79	Sulfate	BMB	0.369	1.590	58.3467
TOTAL:				1.04	12.93	128.53



Peak Integration Report

Sample Name:	16695.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	50.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 10:30	Operator:	Jeff Phifer

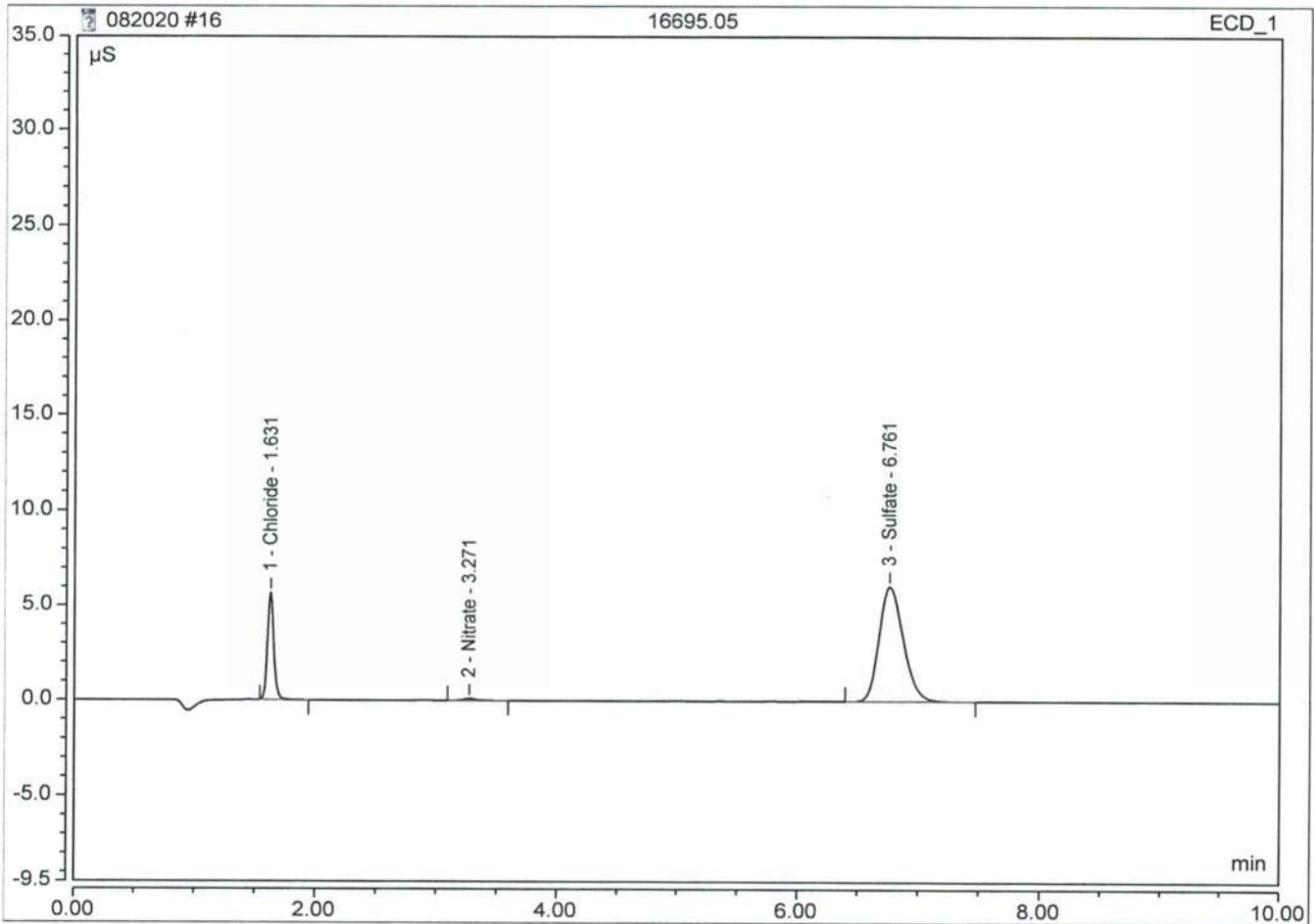
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.62	Chloride	BMB	0.127	1.974	75.5160
2	6.77	Sulfate	BMB	0.907	3.932	714.1055
TOTAL:				1.03	5.91	789.62



Peak Integration Report

Sample Name:	16695.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 10:43	Operator:	Jeff Phifer

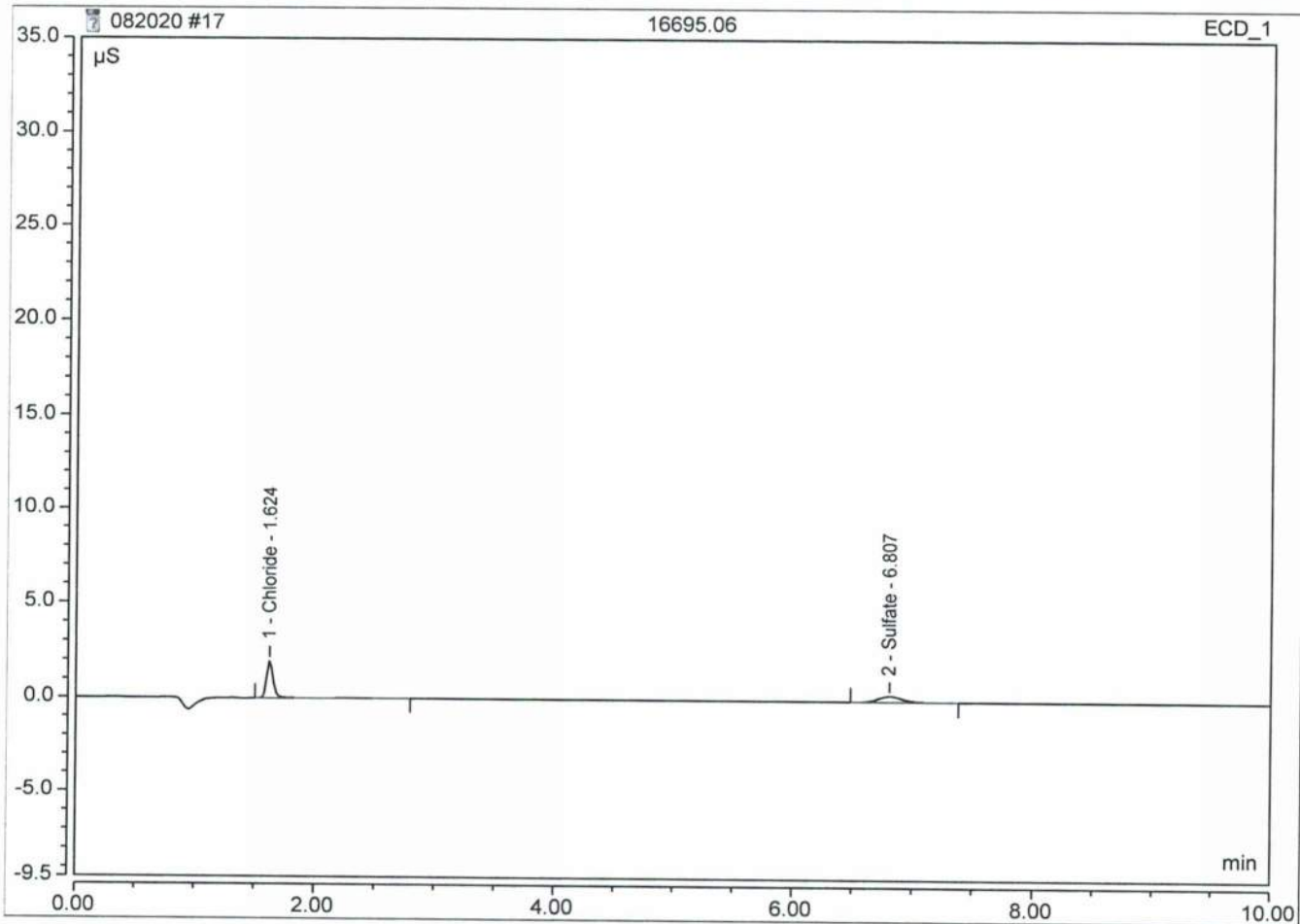
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.343	5.691	36.8736
2	3.27	Nitrate	BMB	0.012	0.103	0.5875
3	6.76	Sulfate	BMB	1.410	6.116	221.6700
TOTAL:				1.76	11.91	259.13



Peak Integration Report

Sample Name:	16695.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	50.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 10:56	Operator:	Jeff Phifer

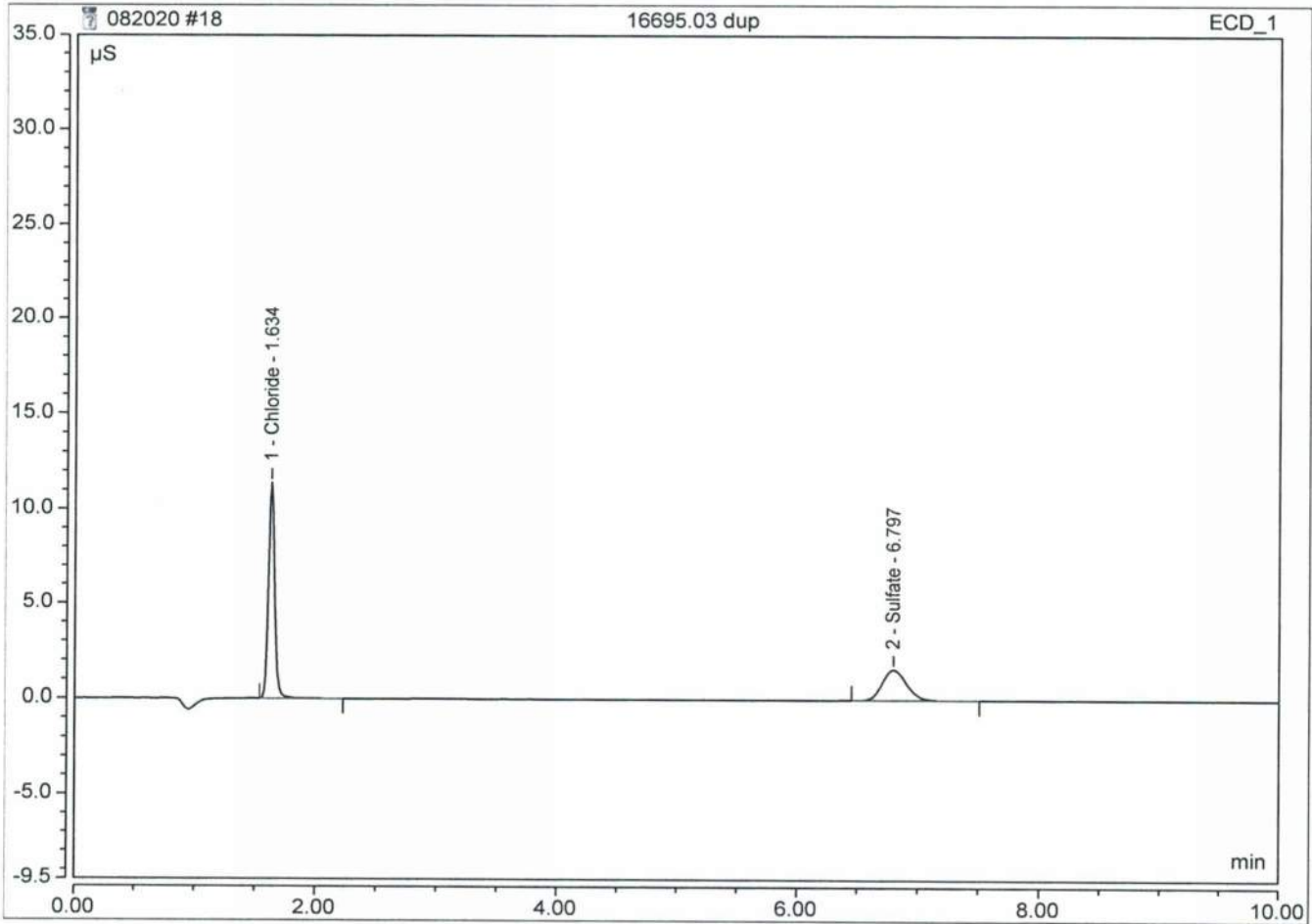
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.62	Chloride	BMB	0.131	1.971	77.5261
2	6.81	Sulfate	BMB	0.074	0.316	60.5340
TOTAL:				0.20	2.29	138.06



Peak Integration Report

Sample Name:	16695.03 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 11:09	Operator:	Jeff Phifer

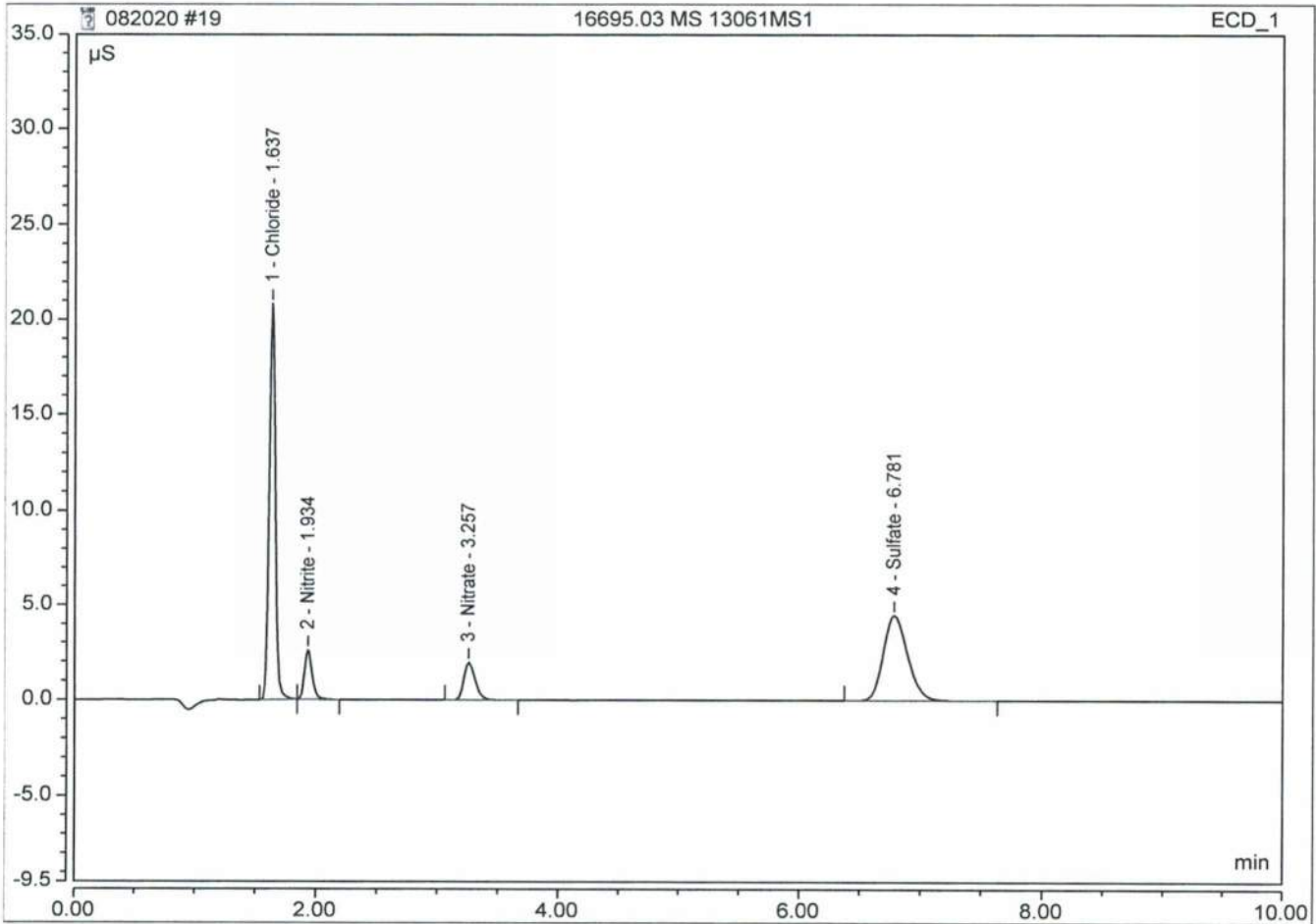
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.677	11.375	70.3924
2	6.80	Sulfate	BMB	0.369	1.594	58.4193
TOTAL:				1.05	12.97	128.81



Peak Integration Report

Sample Name:	16695.03 MS 13061MS1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 11:21	Operator:	Jeff Phifer

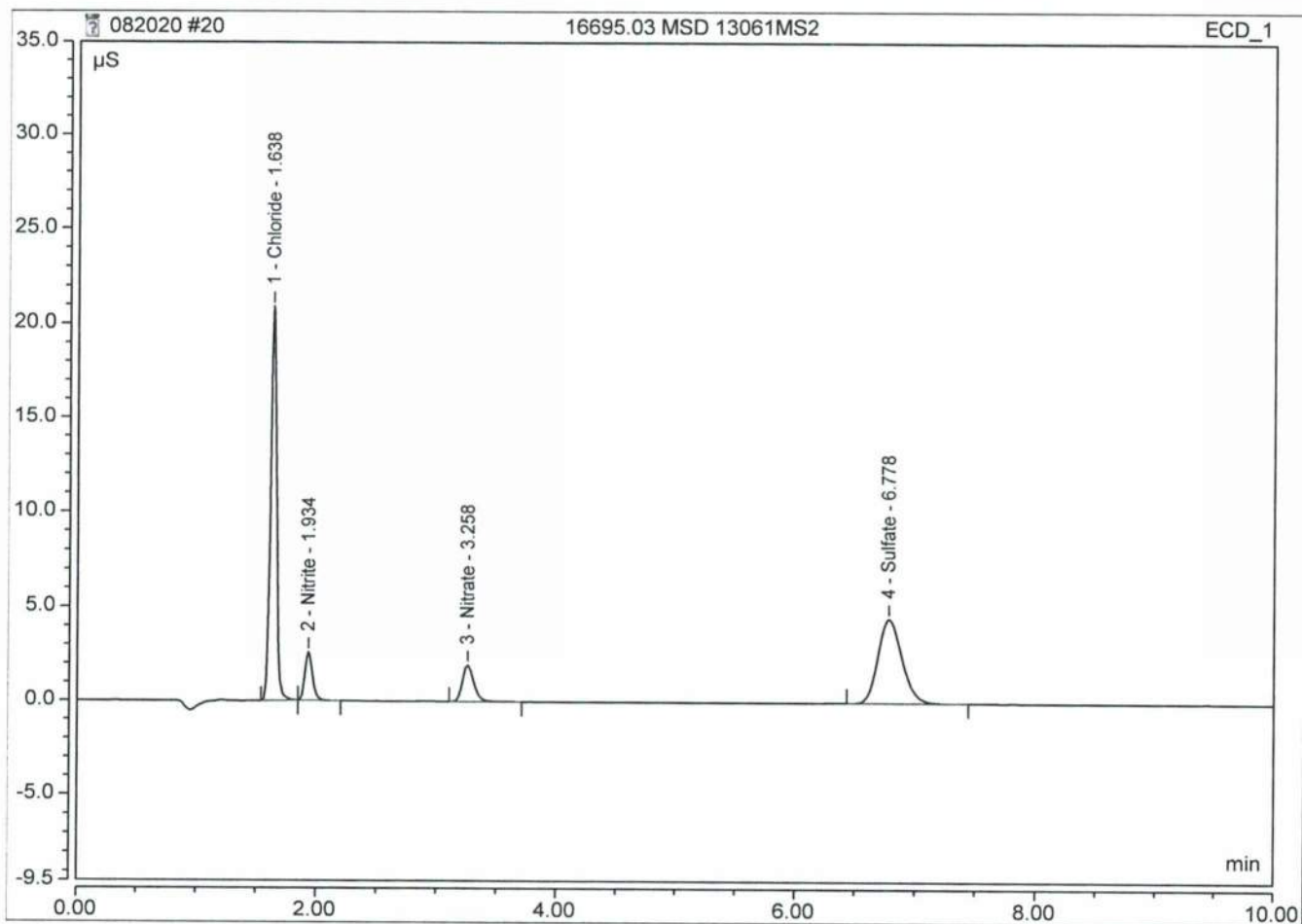
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.64	Chloride	BMB	1.234	20.836	5 12.6359 -7.0 = 112.5
2	1.93	Nitrite	BMB	0.186	2.578	1 0.9852 -no = 98.6
3	3.26	Nitrate	BMB	0.214	1.952	1 1.0072 -no = 101.3
4	6.78	Sulfate	BMB	1.036	4.488	10 16.3068 -5.8 = 105.2
TOTAL:				2.67	29.85	30.94



Peak Integration Report

Sample Name:	16695.03 MSD 13061MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 11:34	Operator:	Jeff Phifer

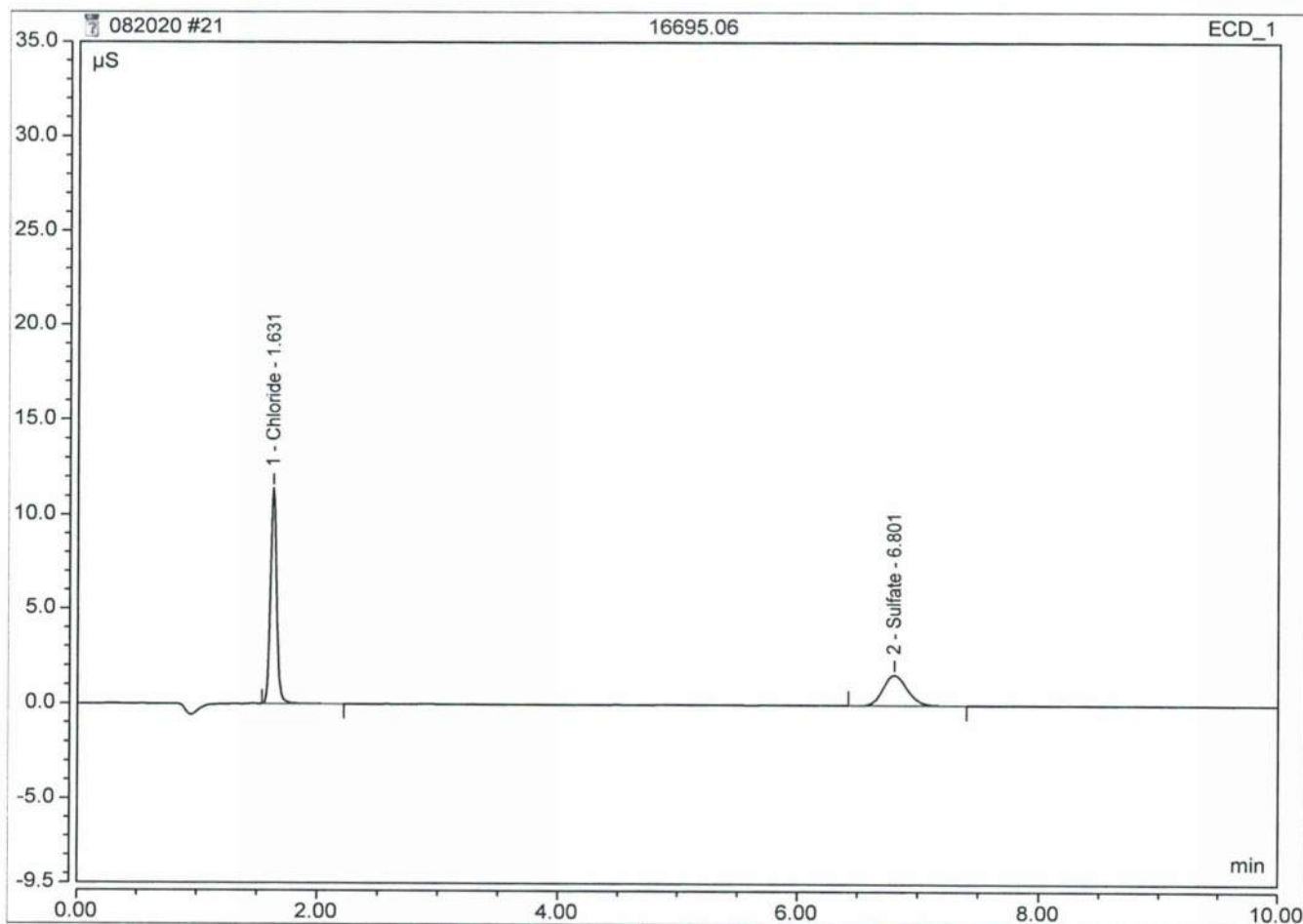
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.64	Chloride	BMB	1.236	20.910	3 12.6548 - 7.0 = 1120
2	1.93	Nitrite	BMB	0.186	2.585	1 0.9868 - NO = 986
3	3.26	Nitrate	BMB	0.215	1.957	1 1.0094 - NO = 1014
4	6.78	Sulfate	BMB	1.037	4.493	10 16.3204 - 5.8 = 1059
TOTAL:				2.67	29.94	30.97



Peak Integration Report

Sample Name:	16695.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 11:47	Operator:	Jeff Phifer

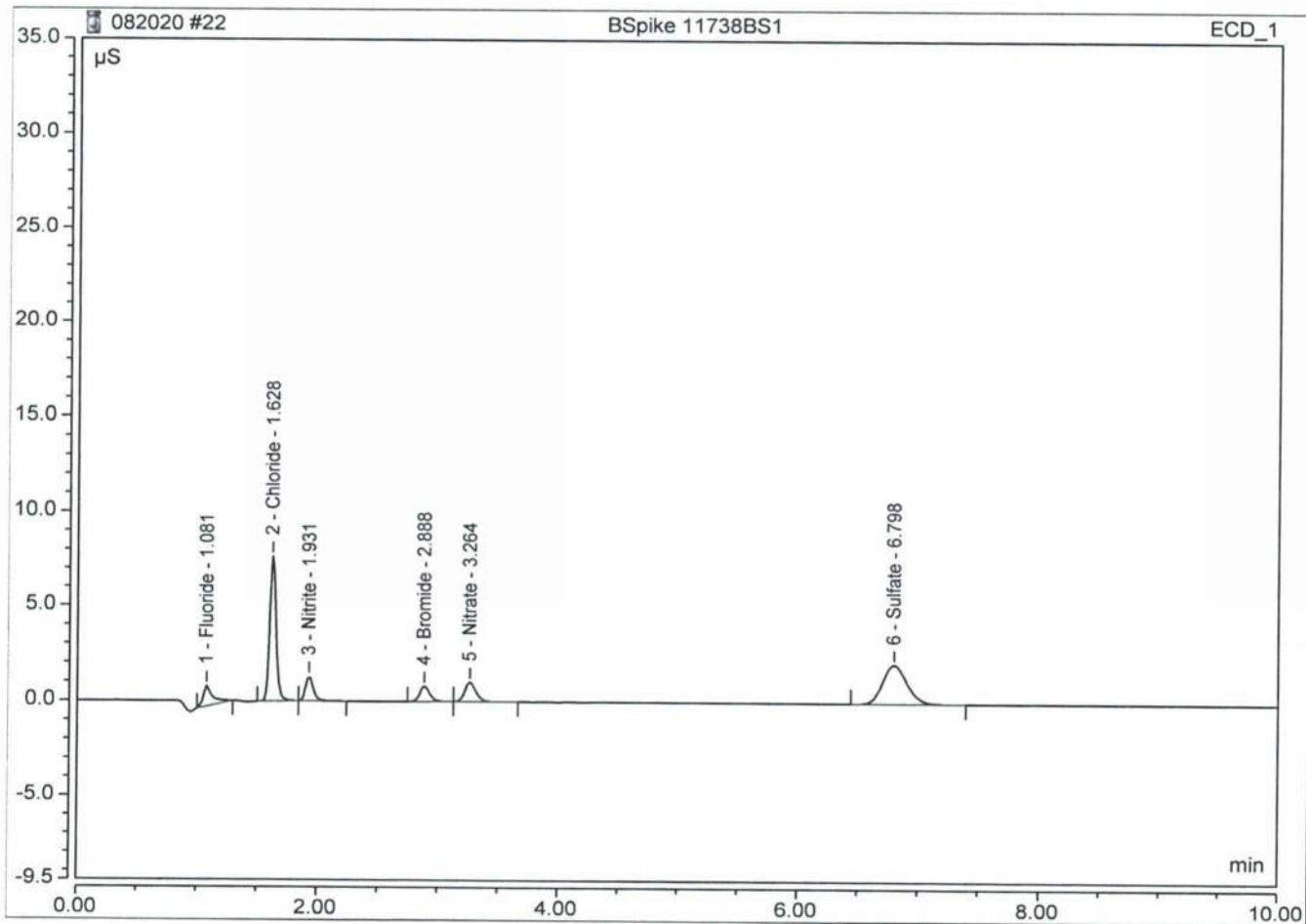
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.680	11.420	70.7172
2	6.80	Sulfate	BMB	0.371	1.599	58.7280
TOTAL:				1.05	13.02	129.45



Peak Integration Report

Sample Name:	BSpoke 11738BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 12:00	Operator:	Jeff Phifer

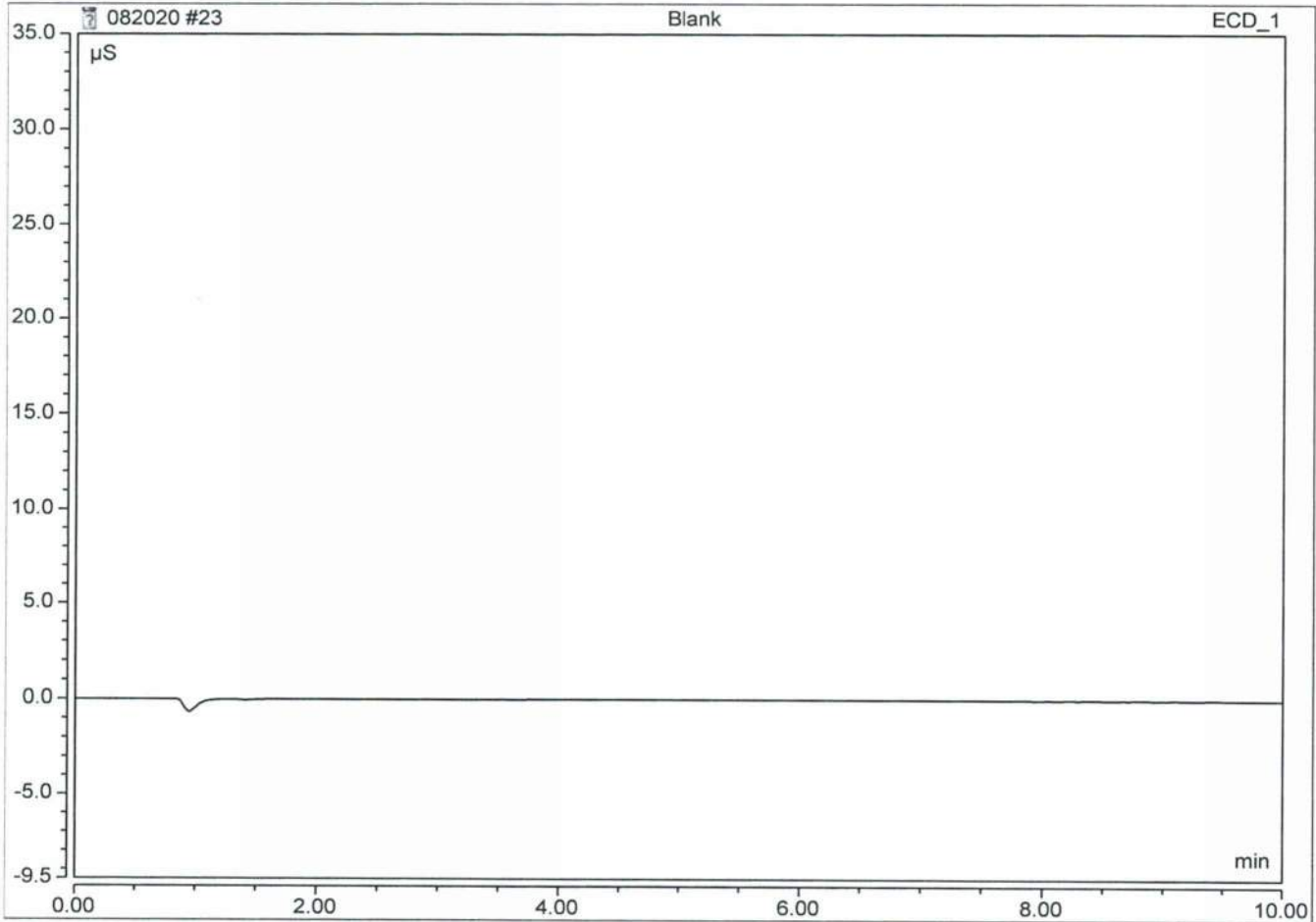
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.094	1.042	0.5766
2	1.63	Chloride	BMB	0.464	7.651	5 4.8972 986
3	1.93	Nitrite	BMB	0.093	1.270	0.5 0.4963 100%
4	2.89	Bromide	BMB	0.075	0.788	2.0754
5	3.26	Nitrate	BMB	0.110	1.006	0.5 0.5178 1044
6	6.80	Sulfate	BMB	0.475	2.048	7.5 7.5000 100%
TOTAL:				1.31	13.81	16.06



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	20-Aug-2020 / 12:13	Operator:	Jeff Phifer













No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



new Cal



ICS-1100 B Dionex IC/Meth 3000

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	 water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 10:40:04 AM -C
	 1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:52:24 AM -C
	 1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 11:05:16 AM -C
	 1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 11:18:08 AM -C
	 1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 11:31:00 AM -C
	 1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 11:43:51 AM -C

CALID# ICSB070720CAL



Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

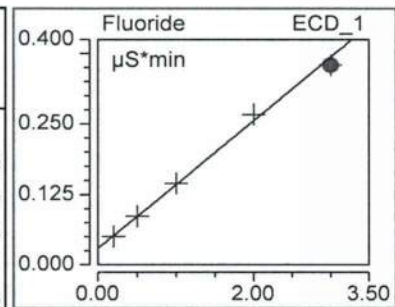
Norm Method	16/06/15 12:18	Jeff Phifer	METHOD 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000	Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000	Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000	Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Calibration Batch Report
CAL ID# ICSB070720CAL

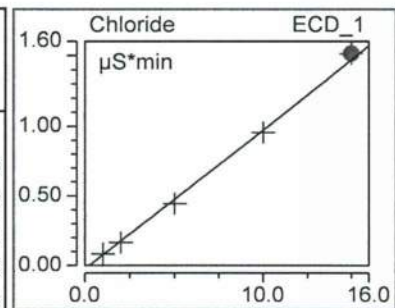
Sequence:	070720	Injection Vol.	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 11:43	Column:	AS4A-SC 040144

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.029	0.113	0.000	0.9985
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.023	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.191	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	0.000	0.036	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.003	0.064	0.000	0.9997
AVERAGE:				-0.0002	0.1196	0.0000	0.9994

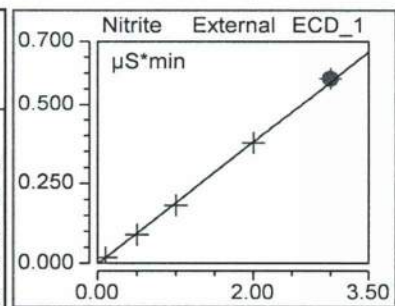
Injection Name	Ret.Time min ECD_1	Area μS*min ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	1.084	0.0508	0.484	0.189
1131Cal2	1.084	0.0870	0.999	0.510
1131Cal3	1.081	0.1450	1.848	1.024
1131Cal4	1.081	0.2666	3.636	2.101
1131Cal5	1.081	0.3541	5.285	2.876
Average	1.082			
Rel. Std. Dev.	0.164 %			



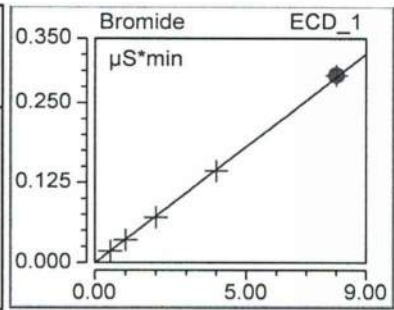
Injection Name	Ret.Time min ECD_1	Area μS*min ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	1.627	0.0849	1.387	1.089
1131Cal2	1.627	0.1668	2.765	1.912
1131Cal3	1.628	0.4444	7.521	4.701
1131Cal4	1.631	0.9564	16.335	9.846
1131Cal5	1.634	1.5142	25.720	15.452
Average	1.629			
Rel. Std. Dev.	0.180 %			



Injection Name	Ret.Time min ECD_1	Area μS*min ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	1.934	0.0181	0.252	0.106
1131Cal2	1.934	0.0900	1.251	0.483
1131Cal3	1.931	0.1818	2.556	0.963
1131Cal4	1.931	0.3773	5.333	1.987
1131Cal5	1.931	0.5827	8.298	3.062
Average	1.932			
Rel. Std. Dev.	0.092 %			

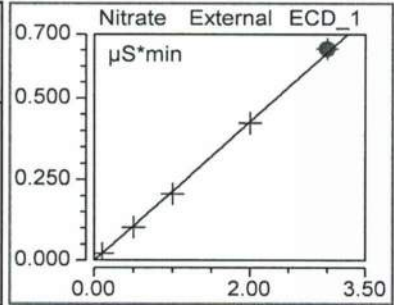


Injection Name	Ret.Time min ECD_1	Area μS*min ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Bromide 2.887	Bromide 0.0182	Bromide 0.193	Bromide 0.515
1131Cal2	2.884	0.0355	0.378	0.993
1131Cal3	2.878	0.0705	0.760	1.960
1131Cal4	2.871	0.1427	1.549	3.949
1131Cal5	2.864	0.2925	3.206	8.083
Average	2.877			
Rel. Std. Dev.	0.332 %			

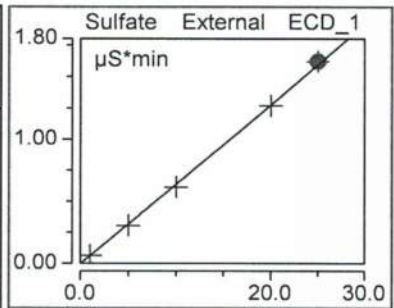


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Injection Name	Ret.Time min ECD_1	Area μS*min ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Nitrate 3.271	Nitrate 0.0215	Nitrate 0.202	Nitrate 0.105
1131Cal2	3.257	0.1026	0.952	0.485
1131Cal3	3.248	0.2057	1.911	0.967
1131Cal4	3.234	0.4230	3.909	1.982
1131Cal5	3.217	0.6540	6.009	3.062
Average	3.245			
Rel. Std. Dev.	0.636 %			



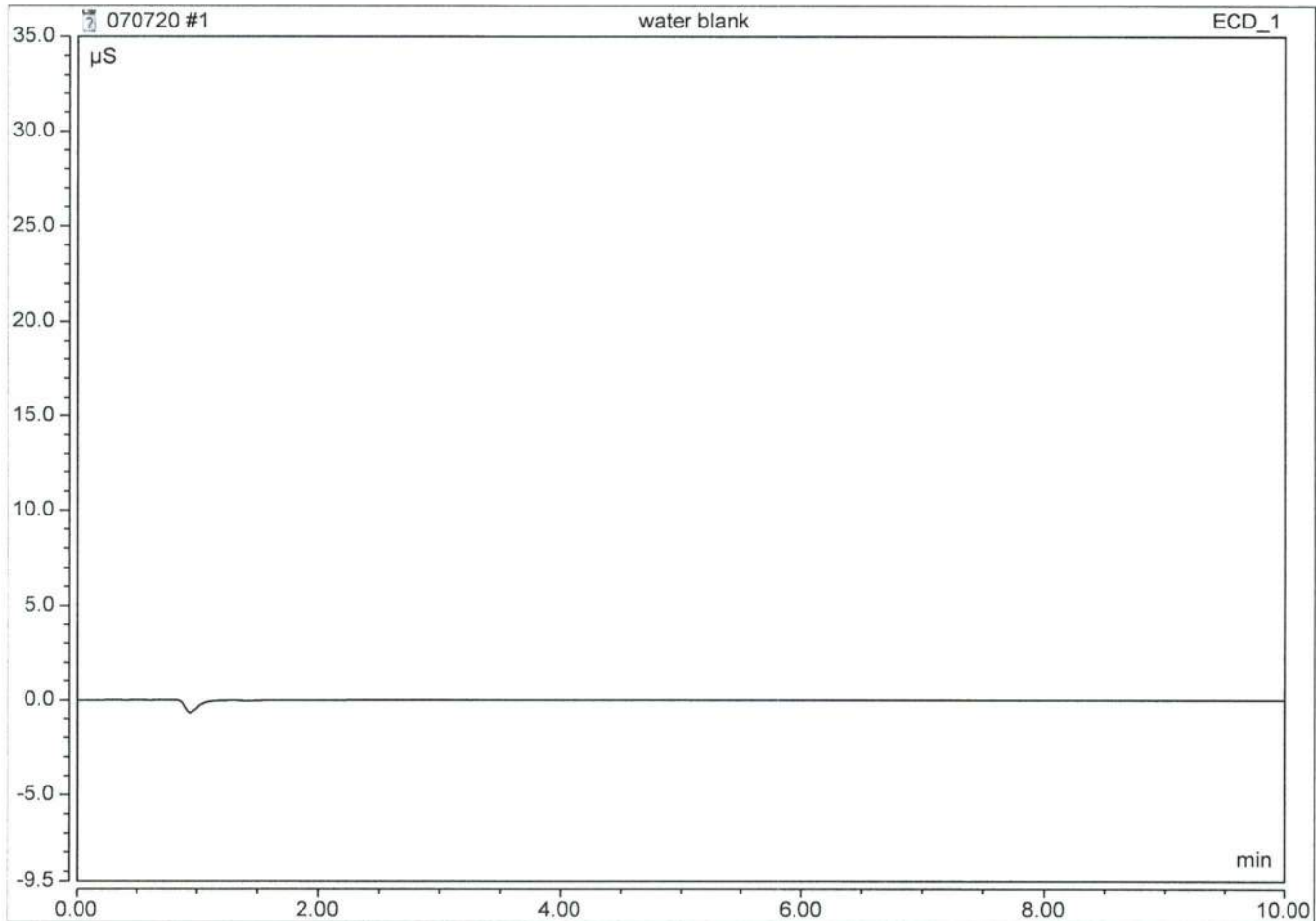
Injection Name	Ret.Time min ECD_1	Area μS*min ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Sulfate 6.867	Sulfate 0.0635	Sulfate 0.271	Sulfate 1.047
1131Cal2	6.867	0.3050	1.300	4.836
1131Cal3	6.854	0.6147	2.631	9.693
1131Cal4	6.837	1.2706	5.439	19.981
1131Cal5	6.824	1.6188	6.926	25.443
Average	6.850			
Rel. Std. Dev.	0.279 %			



Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 10:40	Operator:	Jeff Phifer

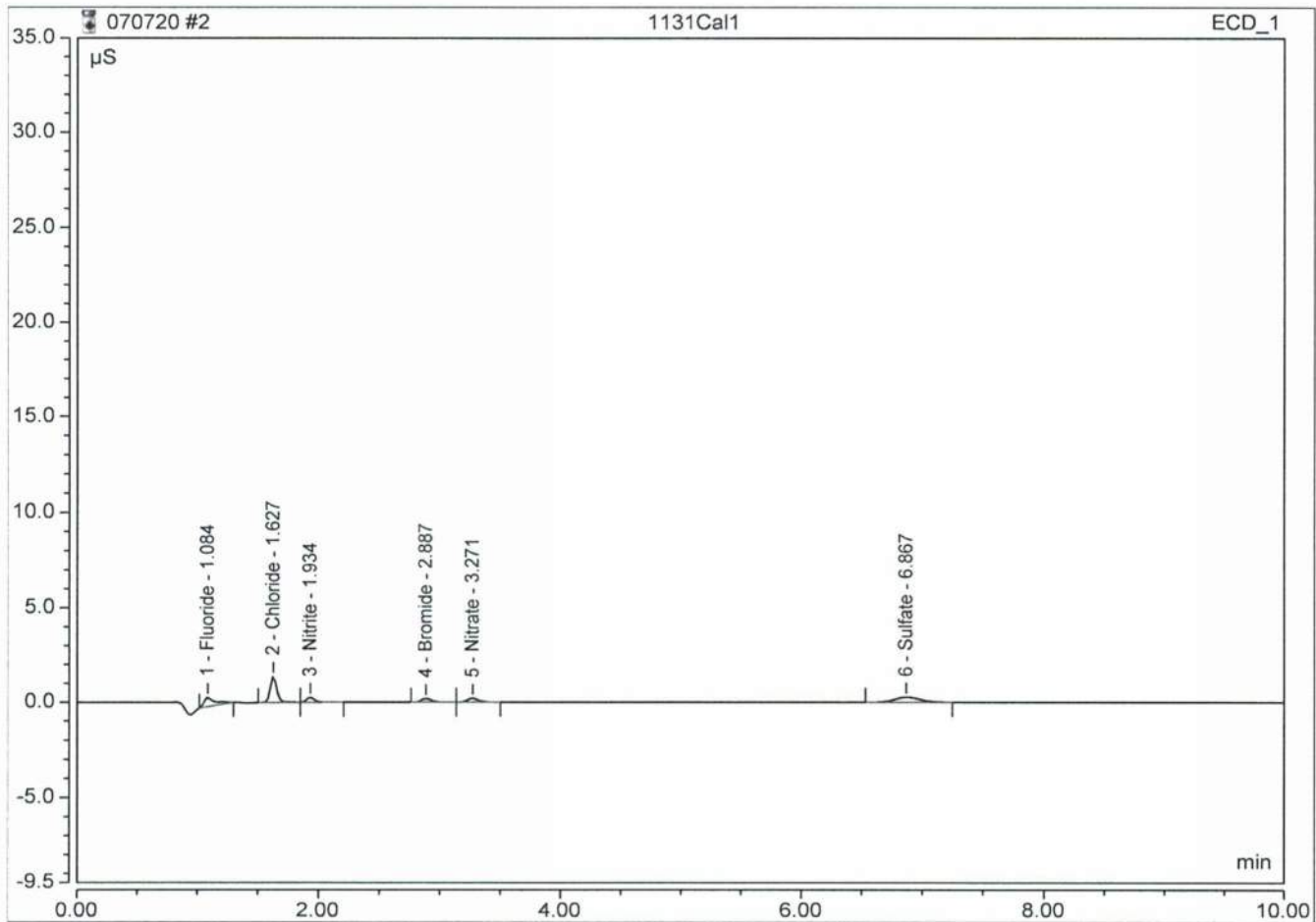
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	1131Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 10:52	Operator:	Jeff Phifer

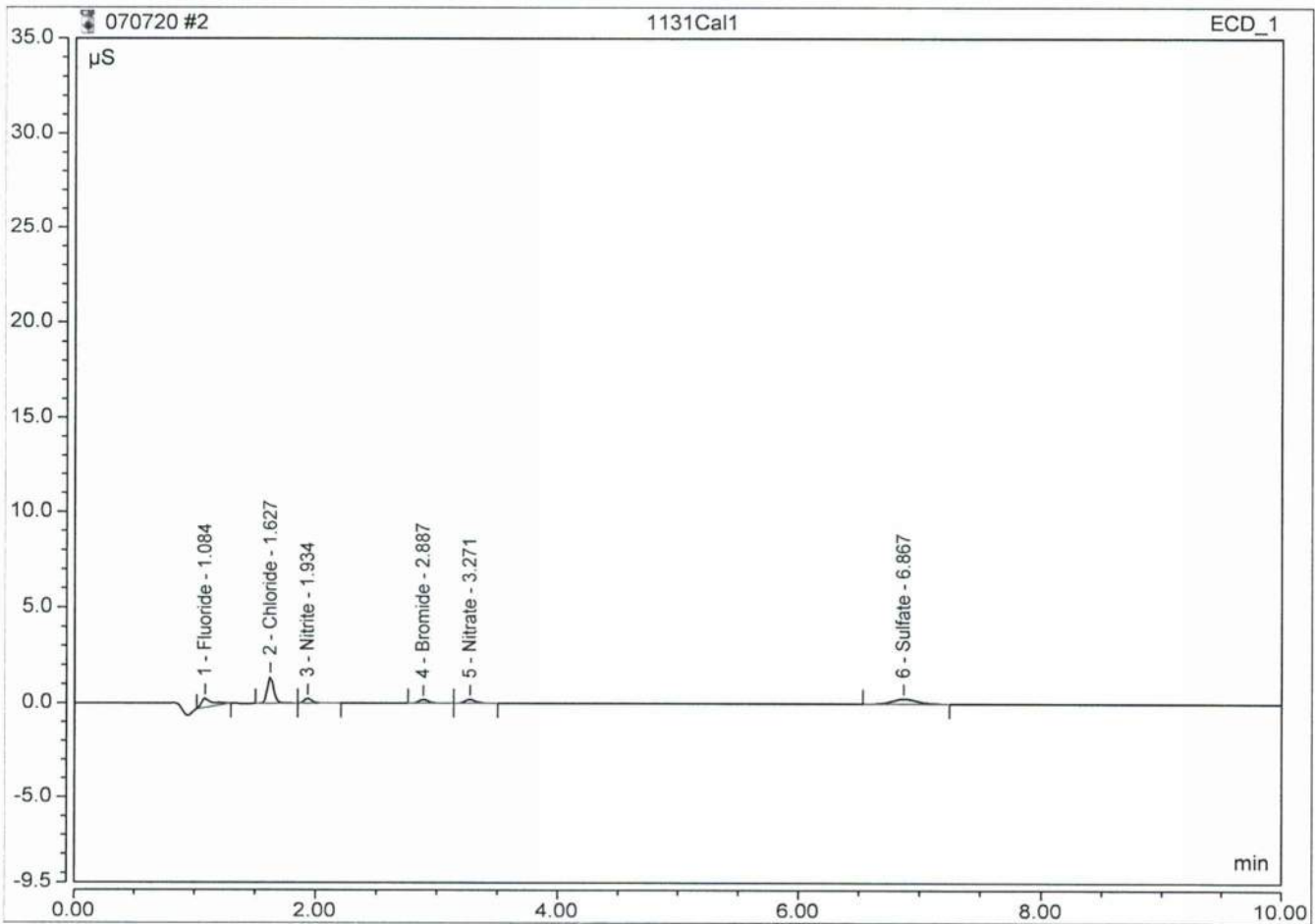
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}^*\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.051	0.484	0.2 0.1893
2	1.63	Chloride	BMB	0.085	1.387	1 1.0891
3	1.93	Nitrite	BMB	0.018	0.252	0.1 0.1058
4	2.89	Bromide	BMB	0.018	0.193	0.5 0.5148
5	3.27	Nitrate	BMB	0.021	0.202	0.1 0.1053
6	6.87	Sulfate	BMB	0.063	0.271	1 1.0467
TOTAL:				0.26	2.79	3.05



Peak Integration Report

Sample Name:	1131Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 10:52	Operator:	Jeff Phifer

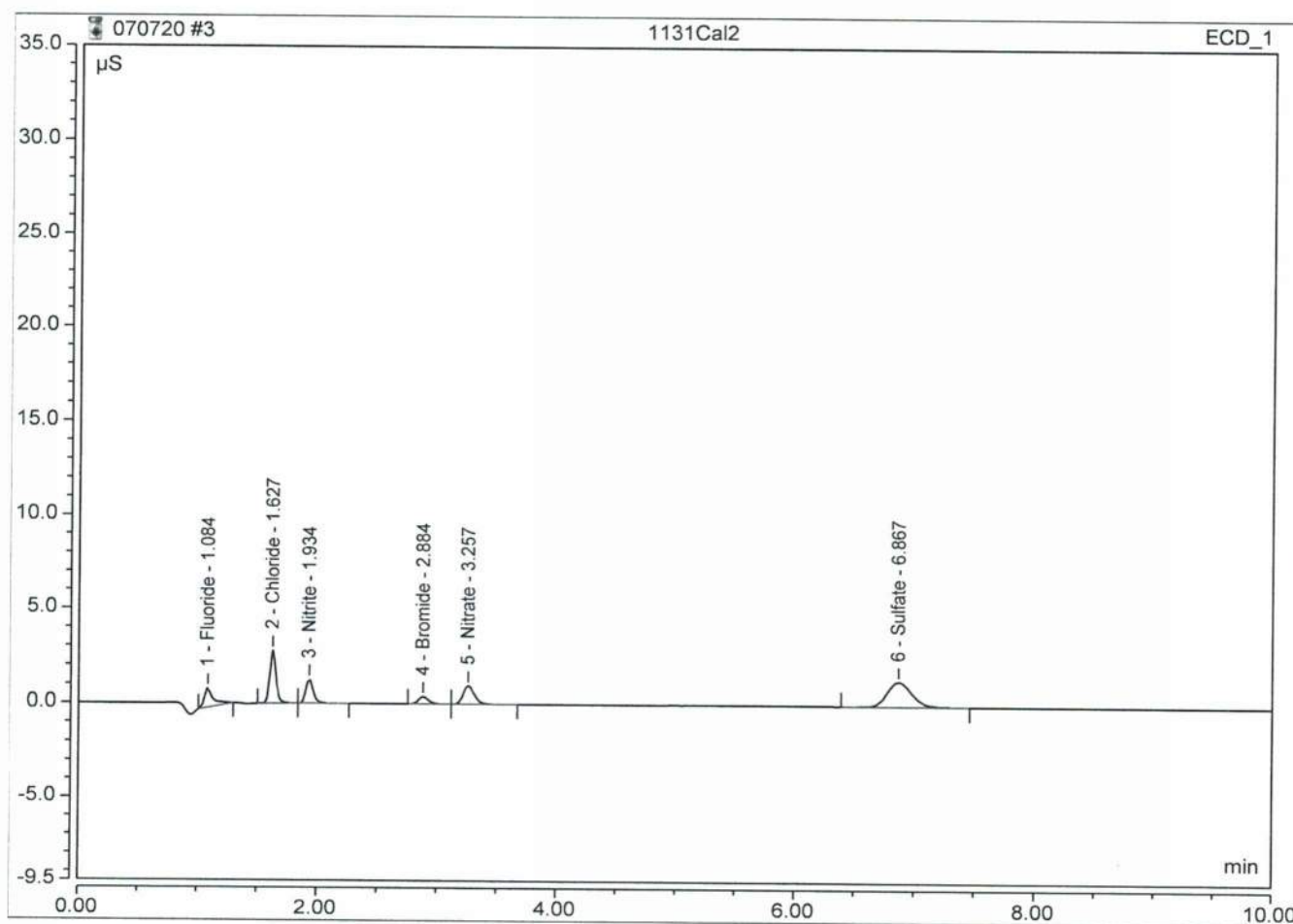
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.051	0.484	n.a.
2	1.63	Chloride	BMB	0.085	1.387	n.a.
3	1.93	Nitrite	BMB	0.018	0.252	n.a.
4	2.89	Bromide	BMB	0.018	0.193	n.a.
5	3.27	Nitrate	BMB	0.021	0.202	n.a.
6	6.87	Sulfate	BMB	0.063	0.271	n.a.
TOTAL:				0.26	2.79	0.00



Peak Integration Report

Sample Name:	1131Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:05	Operator:	Jeff Phifer

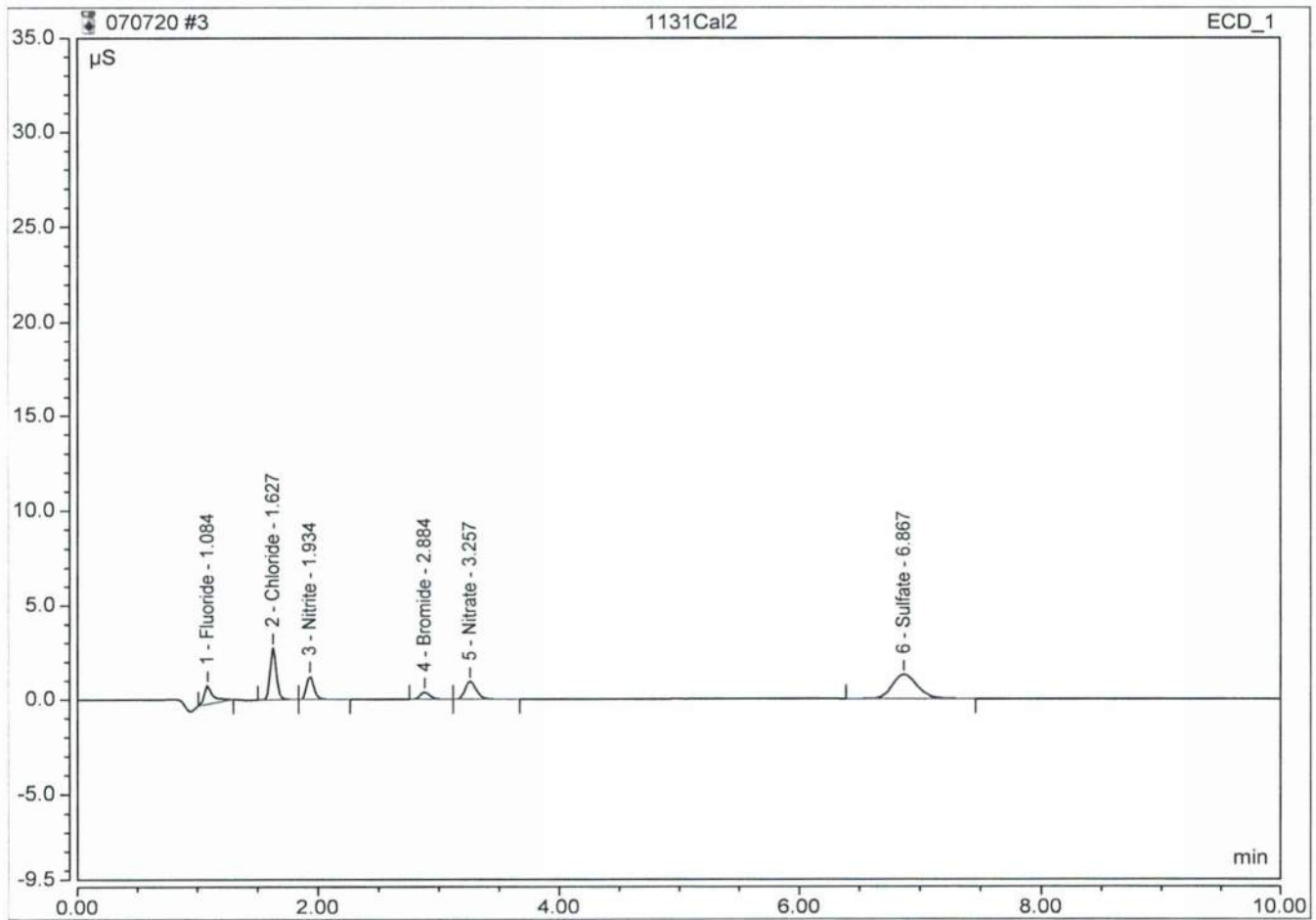
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.087	0.999	0.5103
2	1.63	Chloride	BMB	0.167	2.765	1.9118
3	1.93	Nitrite	BMB	0.090	1.251	0.4826
4	2.88	Bromide	BMB	0.035	0.378	0.9928
5	3.26	Nitrate	BMB	0.103	0.952	0.4846
6	6.87	Sulfate	BMB	0.305	1.300	4.8360
TOTAL:				0.79	7.65	9.22



Peak Integration Report

Sample Name:	1131Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:05	Operator:	Jeff Phifer

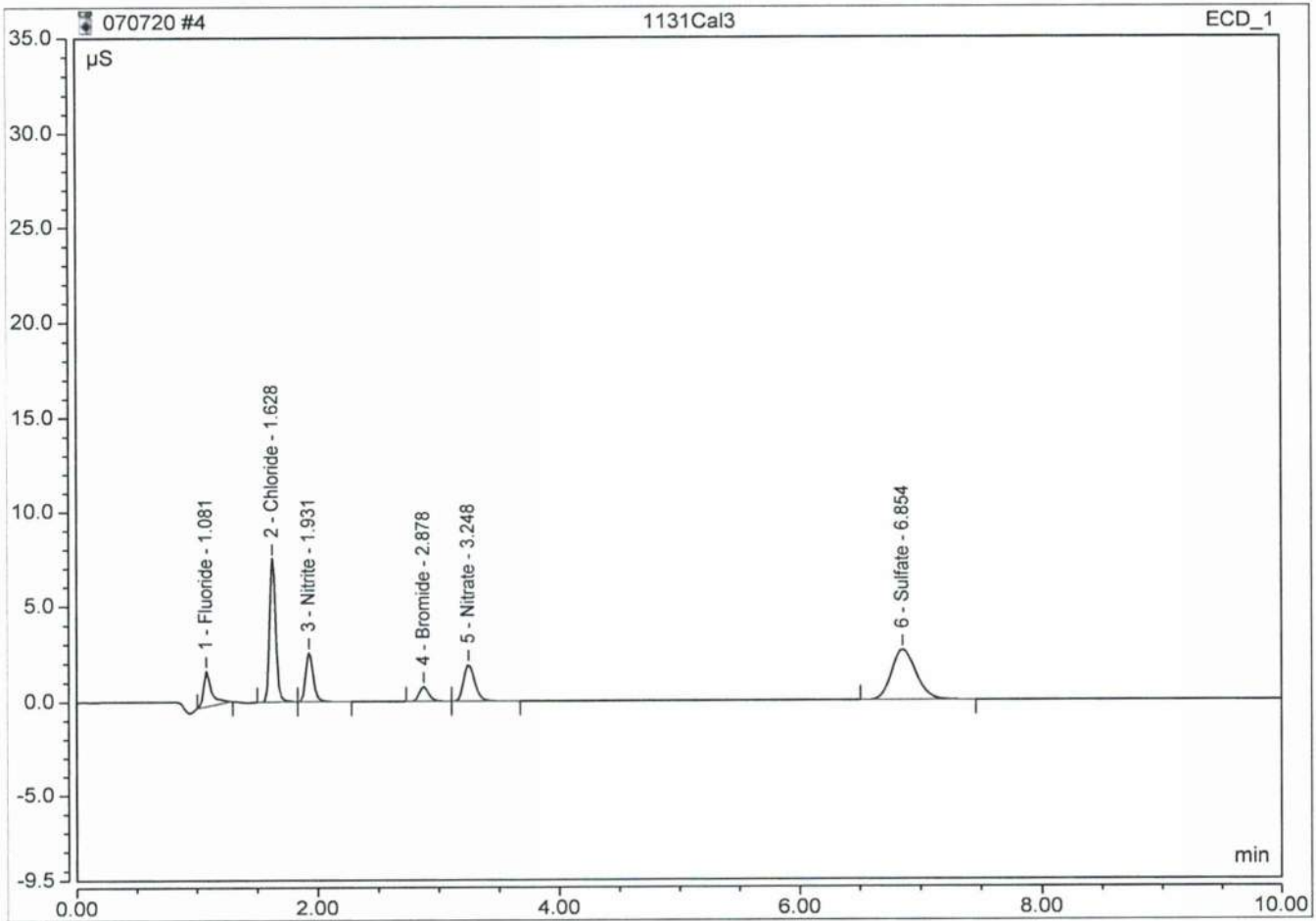
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.087	0.999	0.5000
2	1.63	Chloride	BMB	0.167	2.765	2.0000
3	1.93	Nitrite	BMB	0.090	1.251	0.5000
4	2.88	Bromide	BMB	0.035	0.378	1.0000
5	3.26	Nitrate	BMB	0.103	0.952	0.5000
6	6.87	Sulfate	BMB	0.305	1.300	5.0000
TOTAL:				0.79	7.65	9.50



Peak Integration Report

Sample Name:	1131Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:18	Operator:	Jeff Phifer

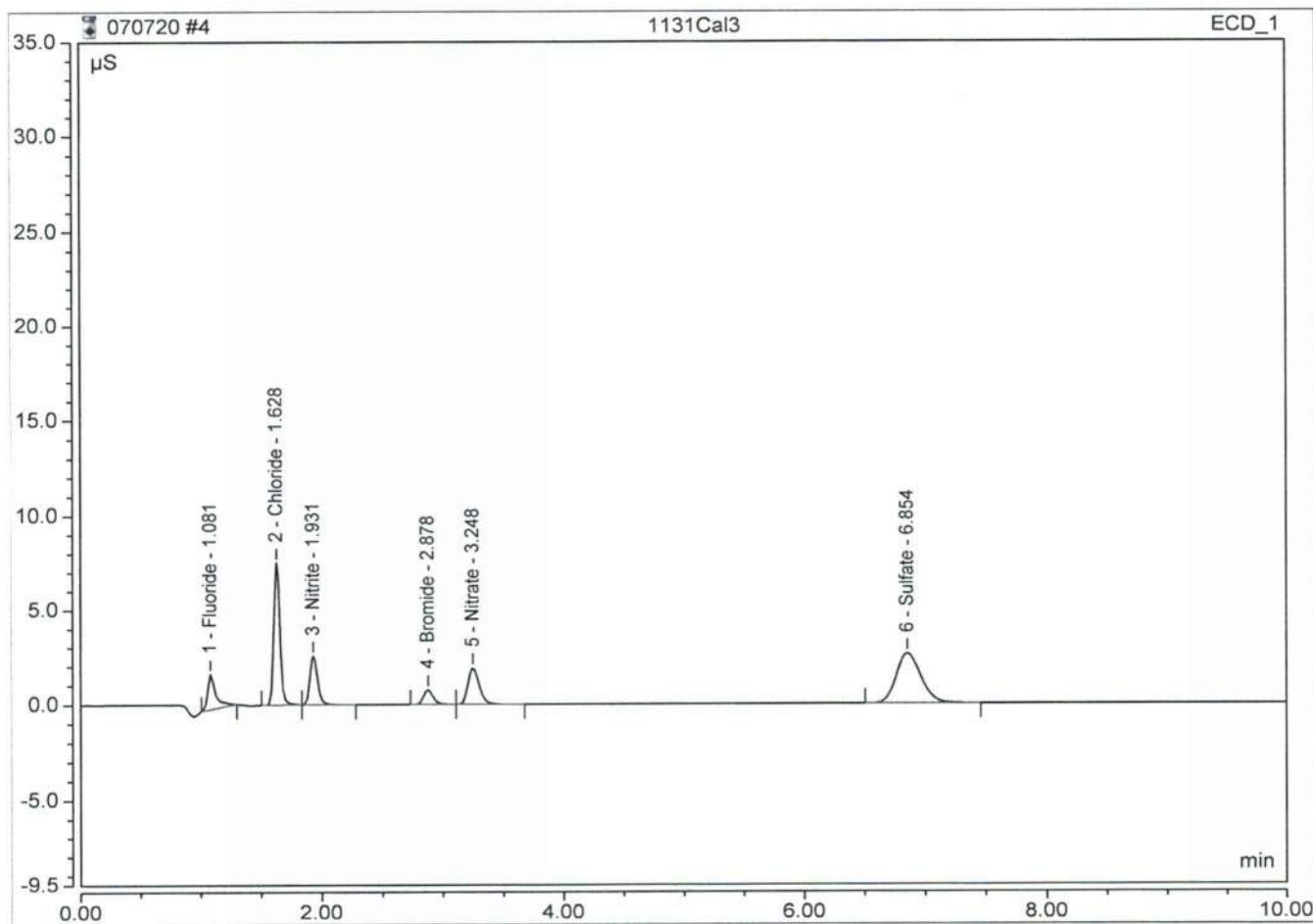
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.145	1.848	1.0239
2	1.63	Chloride	BMB	0.444	7.521	4.7010
3	1.93	Nitrite	BMB	0.182	2.556	0.9630
4	2.88	Bromide	BMB	0.071	0.760	1.9599
5	3.25	Nitrate	BMB	0.206	1.911	0.9666
6	6.85	Sulfate	BMB	0.615	2.631	9.6928
TOTAL:				1.66	17.23	19.31



Peak Integration Report

Sample Name:	1131Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:18	Operator:	Jeff Phifer

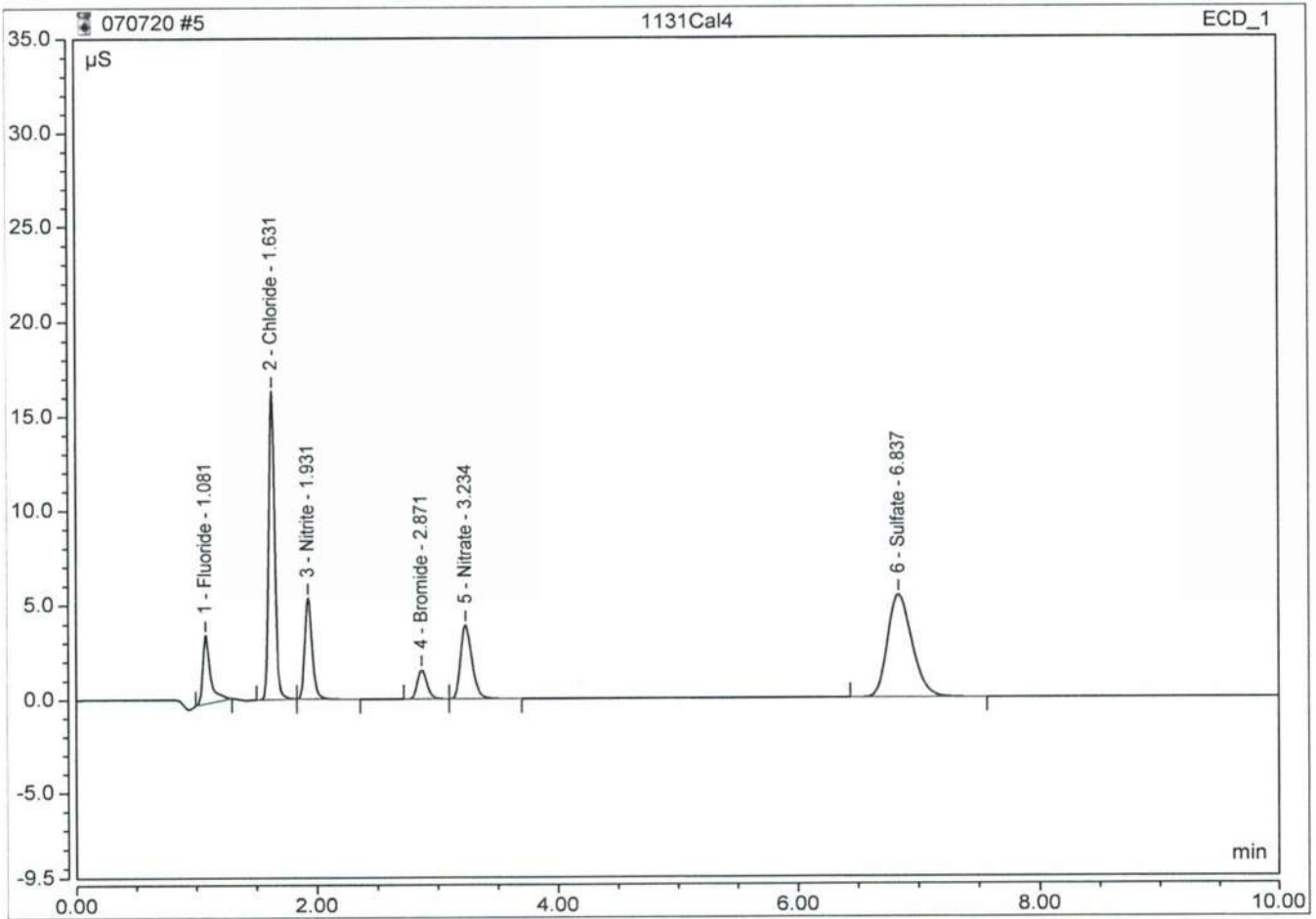
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.145	1.848	0.9960
2	1.63	Chloride	BMB	0.444	7.521	5.0388
3	1.93	Nitrite	BMB	0.182	2.556	1.0027
4	2.88	Bromide	BMB	0.071	0.760	2.0018
5	3.25	Nitrate	BMB	0.206	1.911	1.0022
6	6.85	Sulfate	BMB	0.615	2.631	10.0340
TOTAL:				1.66	17.23	20.08



Peak Integration Report

Sample Name:	1131Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:31	Operator:	Jeff Phifer

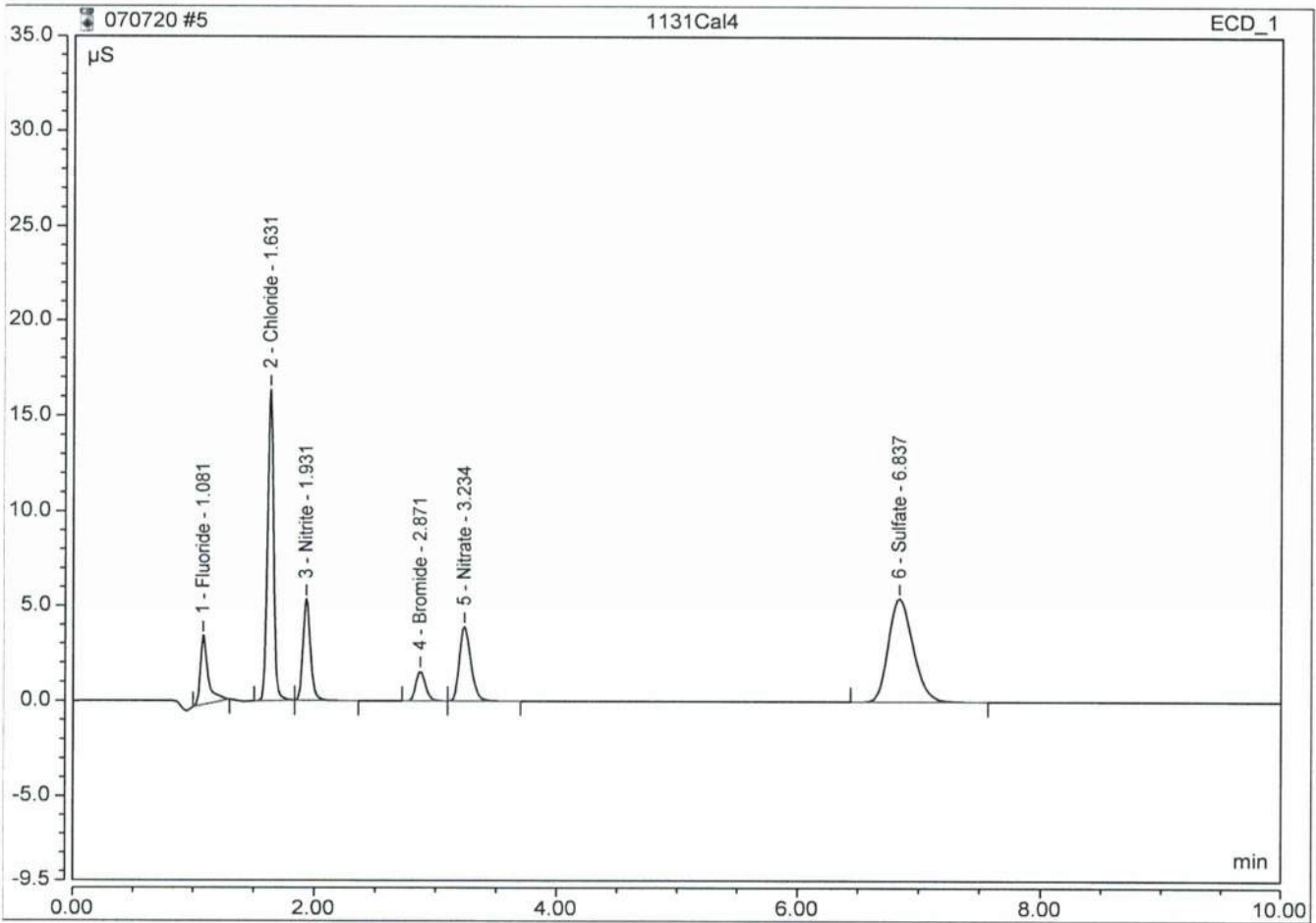
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.267	3.636	2.1005
2	1.63	Chloride	BMB	0.956	16.335	9.8464
3	1.93	Nitrite	BMB	0.377	5.333	1.9867
4	2.87	Bromide	BMB	0.143	1.549	3.9493
5	3.23	Nitrate	BMB	0.423	3.909	1.9820
6	6.84	Sulfate	BMB	1.271	5.439	19.9814
TOTAL:				3.44	36.20	39.85



Peak Integration Report

Sample Name:	1131Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:31	Operator:	Jeff Phifer

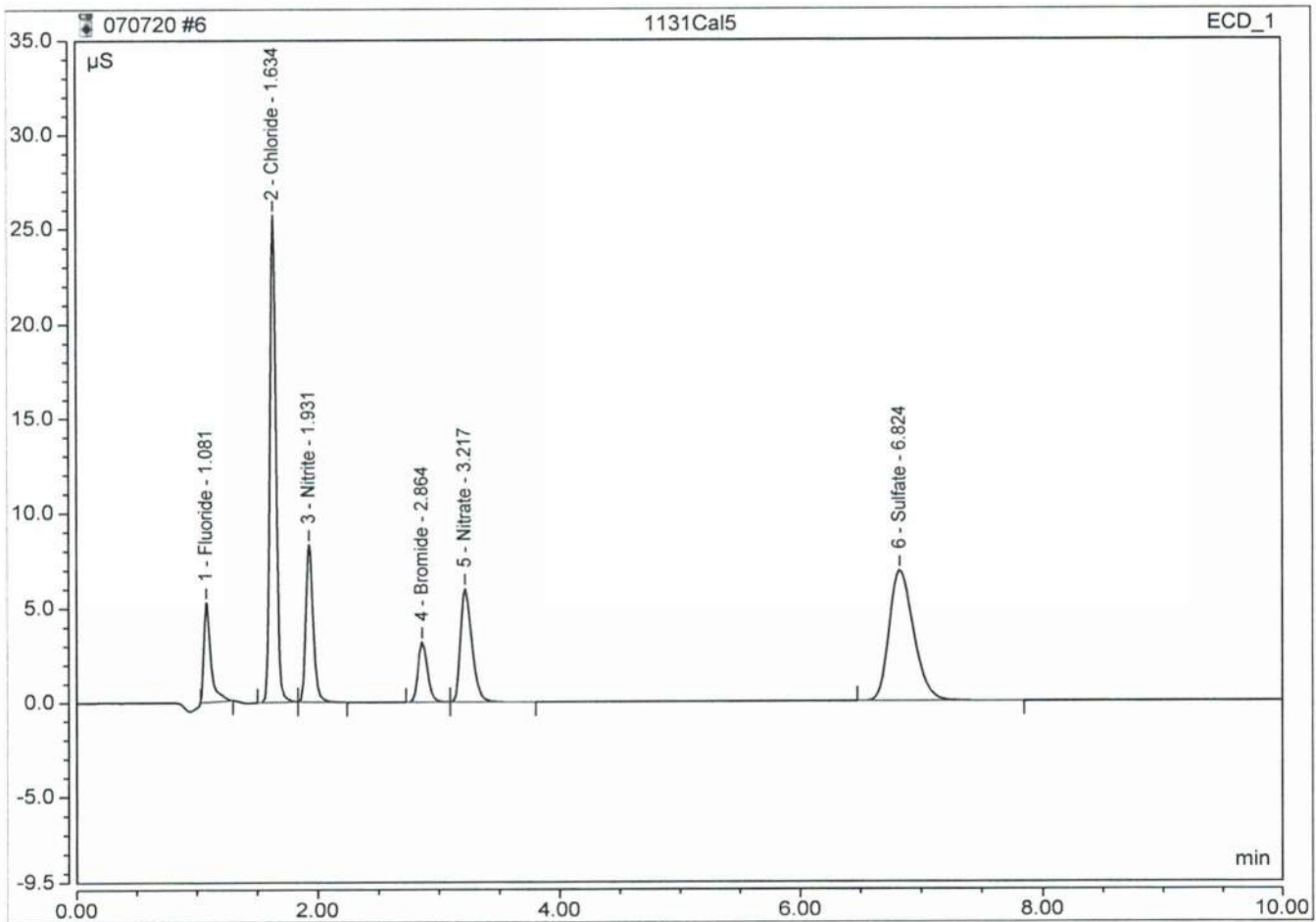
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.267	3.636	2.0072
2	1.63	Chloride	BMB	0.956	16.335	10.2000
3	1.93	Nitrite	BMB	0.377	5.333	2.0283
4	2.87	Bromide	BMB	0.143	1.549	4.0180
5	3.23	Nitrate	BMB	0.423	3.909	2.0231
6	6.84	Sulfate	BMB	1.271	5.439	20.2745
TOTAL:				3.44	36.20	40.55



Peak Integration Report

Sample Name:	1131Cal5	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:43	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.354	5.285	3 2.8759
2	1.63	Chloride	BMB	1.514	25.720	15 15.4517
3	1.93	Nitrite	BMB	0.583	8.298	3 3.0619
4	2.86	Bromide	BMB	0.293	3.206	8 8.0833
5	3.22	Nitrate	BMB	0.654	6.009	3 3.0615
6	6.82	Sulfate	BMB	1.619	6.926	25 25.4431
TOTAL:				5.02	55.44	57.98



B/A

Total Suspended Solids

TSS: VLIMS Code: 4630; EPA Method: 2540D

Date Started: 23 Aug 20
 Time Started: 2145
 Analyst: Agg
 Batch ID: TSS 200823A
 Temperature: 103°C
 Time in Oven: 16:20

Date Finished: 24 AUG 20
 Time Finished: 1405
 Reviewed by: BB
 Review Date: 9/24/2020
 Balance ID: I3
 Oven ID/Thermometer ID: 015/Quincy

Agg
23 Aug 20

Merit #	Tin #	MLs sample	g. Filter	g. dry solids + filter 103°C	g. reweigh 15 min. 103°C	TSS mg/L	DF	TVSS Y/N	TVSS Tin #
Blank	I8DXA	1000	0.1130	0.1130		6.00 ND	6.00	N	
LCS Lot									
8209-09	XB	100	0.1138	0.1221		83	10.0		
16707.01	XD XD	75 mL 75 mL	0.1145	0.1386		321.33 321	13.33		RL=4
Dup 16707.01	XD XD	75 mL 75 mL	0.1160	0.1390		306.67 624	13.33		
16689.01	XE	250	0.1155	0.1311		624 62	4.00		
16695.01	XF	350	0.1152	0.1322		48.57 48	2.857		
.02	XG	1000	0.1148	0.1288		14.0	1.00		
.03	XH	1000	0.1139	0.1156		1.70 ND	1.00		
.04	XI	1000	0.1154	0.1353		19.90 20	1.00		
.05	XJ	1000	0.1158	0.1163		0.50 ND	1.00		
.06	XK	1000	0.1155	0.1171		1.60 ND	1.00		
.07	XL	1000	0.1141	0.1144		6.30 ND	1.00		
16709.01	XM	200	0.1131	0.1194		31.60 32	5.00		

LCS value = 78.7 µg/L
 % Rec = 105.5%
 % RPD = 4.7%

Acceptance Criteria (mg/L): 64.1 - 87.8 µg/L
 Acceptance Criteria (%): 81.4 - 112%
 Acceptance Criteria: ± 5% of average

Total Dissolved Solids

TDS: VLIMS Code: 4615; EPA Method: 2540C

Date Started: 25 Aug 20
 Time Started: 1805
 Analyst: AJ
 Batch ID: TDS 200825A
 Temperature: 181°C
 Time in Oven: 66:40

Date Finished: 28 Aug 20
 Time Finished: 1245
 Reviewed by: BB
 Review Date: 9/24/2020
 Balance ID: I3
 Oven ID/Thermometer ID: OV2/AC10365

Merit #	Tin #	sample (mls)	Tin (grams)	dry solids + tin 180°C (grams)	reweigh 15 min. 180°C (grams)	Cond.	TDS (mg/L)
Blank	10570057	50	3.8269	3.8271			4 ND
LCS Lot							
8209-09	058	25	3.7897	3.8055			632
16695.01	059	50	3.7466	3.7854			776
Dup							
.01	060	50	3.7861	3.8256			790
.02	061	50	3.7530	3.8243			1430* 1426
.03	062	50	3.7583	3.7874			582
.04	063	50	3.7129	3.7887			1520* 1516
.05	064	50	3.7551	3.7961			820
.06	065	50	3.7869	3.8145			552
.07	066	50	3.7701	3.7700			-2/ND
16812.01	067	25	3.7590	3.9497			7630* 7628
.02	068	25	3.7966	4.6035			8280* 8276
.03	069	25	3.8345	3.9627			5130* 5128

LCS value = 632 mg/L
 % Rec = 100.0%
 % RPD = 16.8%

Acceptance Criteria (mg/L): 568-695 mg/L
 Acceptance Criteria (%): 89.9-110%
 Acceptance Criteria: ± 5% of average



2680 East Lansing Dr., East Lansing, MI 48823
 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

REPORT TO **CHAIN OF CUSTODY RECORD** **INVOICE TO**

CONTACT NAME **John Laverty**
 COMPANY **Merit Laboratories**
 ADDRESS **2680 East Lansing Drive**
 CITY **East Lansing** STATE **MI** ZIP CODE **48823**
 PHONE NO. **517-332-0167** FAX NO. **517-332-4034** P.O. NO.
 E-MAIL ADDRESS **results@meritlabs.com** QUOTE NO.

CONTACT NAME **Julie Teague** SAME
 COMPANY **Merit Laboratories**
 ADDRESS **2680 East Lansing Drive**
 CITY **East Lansing** STATE **MI** ZIP CODE **48823**
 PHONE NO. **517-332-0167** E-MAIL ADDRESS **juliet@meritlabs.com**

PROJECT NO./NAME **S16695** SAMPLER(S) - PLEASE PRINT/SIGN NAME
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER

MATRIX GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								Radium 226*	Radium 228**	Certifications	Project Locations	Special Instructions
	DATE	TIME				NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER						
	8/18/20	1324	S16695.01	GW	2			2						✓	✓	* E903.1 Mod.		
	8/18/20	1645	S16695.02	GW	2			2						✓	✓	** E904.0/SW 9320 Mod.		
	8/18/20	1005	S16695.03	GW	2			2						✓	✓			
	8/18/20	1725	S16695.04	GW	2			2						✓	✓	Please use calculation product &		
	8/18/20	1502	S16695.05	GW	2			2						✓	✓	provide Radium 226/228 combined		
	8/18/20	1005	S16695.06	GW	2			2						✓	✓	results on the report		
	8/18/20	0725	S16695.07 (Field Blank)	L	2			2						✓	✓			
																** Subcontracted to		
																GEL Laboratories, Inc.		
																2040 Savage Road		
																Charleston, SC 29407		

RELINQUISHED BY: *[Signature]* Sampler DATE **8/19/20** TIME **1040**
 RECEIVED BY: *[Signature]* DATE **8/19/20** TIME **1040**
 RELINQUISHED BY: DATE TIME
 RECEIVED BY: DATE TIME

RELINQUISHED BY: DATE TIME
 RECEIVED BY: DATE TIME
 SEAL NO. SEAL INTACT YES NO INITIALS
 SEAL NO. SEAL INTACT YES NO INITIALS
 NOTES: TEMP ON ARRIVAL _____

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Merit Laboratories Login Checklist

Lab Set ID:S16695

Client:BWL01 (Board of Water & Light)

Project: Erickson GMP

Submitted:08/19/2020 09:27 Login User: SRS

Attention: Jennifer Caporale

Address: Board of Water & Light

P.O. Box 13007

Lansing, MI 48901

Phone: 517-702-6372

FAX:

Email: Environmental_Laboratory@LBWL.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.3
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to: GEL
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S16695 Submitted: 08/19/2020 09:27

Attention: Jennifer Caporale
Address: Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Client: BWL01 (Board of Water & Light)

Project: Erickson GMP

Initial Preservation Check: 08/19/2020 09:53 SRS

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Preservation Recheck (E200.8): N/A

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S16695.01	125ml Plastic HNO3	<2			
S16695.01	1L Plastic HNO3	<2			
S16695.01	1L Plastic HNO3	<2			
S16695.02	125ml Plastic HNO3	<2			
S16695.02	1L Plastic HNO3	<2			
S16695.02	1L Plastic HNO3	<2			
S16695.03	125ml Plastic HNO3	<2			
S16695.03	1L Plastic HNO3	<2			
S16695.03	1L Plastic HNO3	<2			
S16695.04	125ml Plastic HNO3	<2			
S16695.04	1L Plastic HNO3	<2			
S16695.04	1L Plastic HNO3	<2			
S16695.05	125ml Plastic HNO3	<2			
S16695.05	1L Plastic HNO3	<2			
S16695.05	1L Plastic HNO3	<2			
S16695.06	125ml Plastic HNO3	<2			
S16695.06	1L Plastic HNO3	<2			
S16695.06	1L Plastic HNO3	<2			
S16695.07	125ml Plastic HNO3	<2			
S16695.07	1L Plastic HNO3	<2			
S16695.07	1L Plastic HNO3	<2			

Sample Set Receipt

Report to
 Attention: Jennifer Caporale
 Address: Board of Water & Light
 P.O. Box 13007
 Lansing, MI 48901

Invoice to
 Attention: Kelly Gleason
 Address: Board of Water & Light
 PO Box 13007
 Lansing, MI 48901

Phone: 517-702-6372 FAX:
 Email: Environmental_Laboratory@LBWL.com

Phone: 517-702-6372 FAX: 517-702-6373
 Email: kelly.gleason@lbwl.com

Contacts:

Set ID: S16695 Location: BWL01 (Board of Water & Light) PO #: Login by: SRS
 Project: Erickson GMP Backlog Note:
 Submitted: 08/19/2020 09:27 Due Date: 09/02/2020 Rush: No Collected by: Marc Wahrer QC Level: 3 Custom Limits Present: No
 Approved by: Site: Work Order#: Bill to Acct: Bill to Dept:

Sample ID	Sample Tag	Matrix	Date/Time Collected	COC Ref
S16695.01	MW-1 L008009-01	Groundwater	08/18/2020 13:24	
S16695.02	MW-2 L008009-02	Groundwater	08/18/2020 16:45	
S16695.03	MW-4 L008009-03	Groundwater	08/18/2020 10:05	
S16695.04	MW-5 L008009-04	Groundwater	08/18/2020 17:25	
S16695.05	MW-6 L008009-05	Groundwater	08/18/2020 15:02	
S16695.06	MW-4 Duplicate L008009-06	Groundwater	08/18/2020 10:05	
S16695.07	Field Blank L008009-07	Water	08/18/2020 07:25	

Samples: S16695.01-07

Analysis Code	Analysis Title	Method	Units	Holding Date
2140WMS	Calcium	E200.8	mg/L	02/14/2021
2145WMS	Chromium	E200.8	mg/L	02/14/2021
2130WMS	Boron	E200.8	mg/L	02/14/2021
2115WMS	Arsenic	E200.8	mg/L	02/14/2021
2205WMS	Selenium	E200.8	mg/L	02/14/2021
2190WMS	Molybdenum	E200.8	mg/L	02/14/2021
2135WMS	Cadmium	E200.8	mg/L	02/14/2021
2110WMS	Antimony	E200.8	mg/L	02/14/2021
2120WMS	Barium	E200.8	mg/L	02/14/2021
2225WMS	Thallium	E200.8	mg/L	02/14/2021
2165WMS	Lead	E200.8	mg/L	02/14/2021
2125WMS	Beryllium	E200.8	mg/L	02/14/2021
2150WMS	Cobalt	E200.8	mg/L	02/14/2021
2170WMS	Lithium	E200.8	mg/L	02/14/2021
2185W	Mercury	E245.1	mg/L	09/15/2020
4425W	Chloride	E300.0	mg/L	09/15/2020
4530W	Sulfate	E300.0	mg/L	09/15/2020
4455W	Fluoride (Undistilled)	E300.0	mg/L	09/15/2020
MISCSUB	Misc. Special Project			05/14/2023
1605W	Metal Digestion	SW3015A		02/14/2021
1605HGW	Mercury Digestion	E245.1		09/15/2020
SUBCONT	Subcontracting			05/14/2023
4630	Total Suspended Solids	SM2540D	mg/L	08/25/2020
4615	Total Dissolved Solids	SM2540C	mg/L	08/25/2020



September 15, 2020

John Laverty
Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan 48823

Re: Routine Analysis
Work Order: 519365
SDG: S16695

Dear John Laverty:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on August 21, 2020. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4443.

Sincerely,

Lindsay Fabra
Project Manager

Purchase Order: GELP20-0018
Enclosures

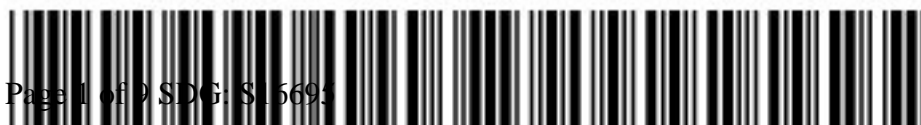


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Case Narrative

**Receipt Narrative
for
Merit Laboratories, Inc.
SDG: S16695
Work Order: 519365**

September 15, 2020

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on August 21, 2020 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

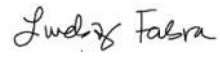
Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
519365001	S16695.01
519365002	S16695.02
519365003	S16695.03
519365004	S16695.04
519365005	S16695.05
519365006	S16695.06
519365007	S16695.07 (Field Blank)

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Radiochemistry.



Lindsay Fabra
Project Manager

Chain of Custody and Supporting Documentation



2680 East Lansing Dr., East Lansing, MI 48823
 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

REPORT TO

CONTACT NAME John Laverty

COMPANY Merit Laboratories

ADDRESS 2680 East Lansing Drive

CITY East Lansing

PHONE NO. 517-332-0167

E-MAIL ADDRESS results@meritlabs.com

STATE MI ZIP CODE 48823

P.O. NO.

QUOTE NO.

CHAIN OF CUSTODY RECORD

CONTACT NAME Julie Teague

COMPANY Merit Laboratories

ADDRESS 2680 East Lansing Drive

CITY East Lansing

PHONE NO. 517-332-0167

E-MAIL ADDRESS juliet@meritlabs.com

STATE MI ZIP CODE 48823

INVOICE TO

COMPANY

ADDRESS

CITY

PHONE NO.

E-MAIL ADDRESS

STATE

ZIP CODE

SAMPLER(S) - PLEASE PRINT/SIGN NAME

PROJECT NO./NAME S16695

TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER

DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WPE A=AIR W=WASTE

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR	DATE	TIME	IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives									
							NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MgOH	OTHER			
	8/18/20	1324		S16695.01	GW	2		2								
	8/18/20	1645		S16695.02	GW	2		2								
	8/18/20	1005		S16695.03	GW	2		2								
	8/18/20	1725		S16695.04	GW	2		2								
	8/18/20	1502		S16695.05	GW	2		2								
	8/18/20	1005		S16695.06	GW	2		2								
	8/18/20	0725		S16695.07 (Field Blank)	L	2		2								

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications	OHIO VAP	Drinking Water
<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES	
Project Locations		
<input type="checkbox"/> Detroit	<input type="checkbox"/> New York	
<input type="checkbox"/> Other		
Special Instructions		
* E903.1 Mod.		
** E904.0/SW 9320 Mod.		
Please use calculation product & provide Radium 226/228 combined results on the report		
** Subcontracted to		
GEL Laboratories, Inc.		
2040 Savage Road		
Charleston, SC 29407		

RELINQUISHED BY: *Sam Smith* DATE: 8/19/20 TIME: 1040

SIGNATURE/Organization: *OPS*

RECEIVED BY: *Julie Teague* DATE: 8/19/20 TIME: 1040

SIGNATURE/Organization: *Julie Teague*

SEAL NO. INITIALS: 175B- INITIALS

SEAL INTACT YES NO SEAL INTACT YES NO

NOTES: TEMP. ON ARRIVAL

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

SAMPLE RECEIPT & REVIEW FORM

Client: **MERI** SDG/AR/COC/Work Order: **519305**
 Received By: **Stacy Boone** Date Received: **August 21, 2020**
 Carrier and Tracking Number: _____
 FedEx Express FedEx Ground UPS Field Services Courier Other
 12 466 477 03 6.330 3694

Suspected Hazard Information: Yes No *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
 A) Shipped as a DOT Hazardous? Yes No Hazard Class Shipped: _____ UN#: _____
 If UN2910, Is the Radioactive Shipment Survey Compliant? Yes ___ No ___
 B) Did the client designate the samples to be received as radioactive? Yes No COC notation or radioactive stickers on containers equal client designation.
 C) Did the RSO classify the samples as radioactive? Yes No Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM / mR/Hr
 Classified as: Rad 1 Rad 2 Rad 3
 D) Did the client designate samples are hazardous? Yes No COC notation or hazard labels on containers equal client designation.
 E) Did the RSO identify possible hazards? Yes No If D or E is yes, select Hazards below:
 PCBs Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice Ice Packs Dry ice None Other: _____ *all temperatures are recorded in Celsius TEMP: <u>21°c</u>
4	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>TR1-20</u> Secondary Temperature Device Serial # (If Applicable): _____
5	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: _____ If Preservation added, Lot#: _____
7	Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes, are Eneores or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes ___ No ___ NA ___ (If unknown, select No) Are liquid VOA vials free of headspace? Yes ___ No ___ NA ___ Sample ID's and containers affected: _____
8	Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and containers affected: _____
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No container count on COC Other (describe)
12	Are sample containers identifiable as GEL provided by use of GEL labels?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):
 SB 6/24
 NE 8/21/20
 NE 8/21/20

PM (or PMA) review: Initials NEC Date 8/24/20 Page 1 of 1

Laboratory Certifications

List of current GEL Certifications as of 15 September 2020

State	Certification
Alabama	42200
Alaska	17-018
Alaska Drinking Water	SC00012
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-165
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-20-17
Utah NELAP	SC000122020-32
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

Radiological Analysis

Case Narrative

**Radiochemistry
Technical Case Narrative
Merit Laboratories, Inc.
SDG #: S16695
Work Order #: 519365**

Product: GFPC Ra228, Liquid

Analytical Method: EPA 904.0/SW846 9320 Modified

Analytical Procedure: GL-RAD-A-009 REV# 17

Analytical Batch: 2032930

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
519365001	S16695.01
519365002	S16695.02
519365003	S16695.03
519365004	S16695.04
519365005	S16695.05
519365006	S16695.06
519365007	S16695.07 (Field Blank)
1204626500	Method Blank (MB)
1204626501	519272004(NonSDG) Sample Duplicate (DUP)
1204626502	519272004(NonSDG) Matrix Spike (MS)
1204626503	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Sample 519365006 (S16695.06) was re-eluted and recounted to verify sample result. The recount is reported.

Miscellaneous Information

Additional Comments

The matrix spike, 1204626502 (Non SDG 519272004MS), aliquot was reduced to conserve sample volume.

Product: Lucas Cell, Ra226, Liquid

Analytical Method: EPA 903.1 Modified

Analytical Procedure: GL-RAD-A-008 REV# 15

Analytical Batch: 2032768

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
519365001	S16695.01
519365002	S16695.02
519365003	S16695.03
519365004	S16695.04
519365005	S16695.05
519365006	S16695.06
519365007	S16695.07 (Field Blank)
1204626095	Method Blank (MB)
1204626096	519365001(S16695.01) Sample Duplicate (DUP)
1204626097	519365001(S16695.01) Matrix Spike (MS)
1204626098	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report for

MERI001 Merit Laboratories, Inc.

Client SDG: S16695 GEL Work Order: 519365

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Kate Gellatly

Date: 17 SEP 2020

Title: Analyst I

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: September 17, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive

 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S16695.01	Project: MERI00120
Sample ID: 519365001	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 18-AUG-20 13:24	
Receive Date: 21-AUG-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	1.47	+/-1.30	2.12	3.00	pCi/L			JXC9	09/04/20	0848	2032930	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.87	+/-1.32			pCi/L		1	AEA	09/15/20	1210	2032950	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.400	+/-0.221	0.260	1.00	pCi/L			MXH8	09/15/20	0816	2032768	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			73.8	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: September 17, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive

 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S16695.02	Project: MERI00120
Sample ID: 519365002	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 18-AUG-20 16:45	
Receive Date: 21-AUG-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.573	+/-1.22	2.17	3.00	pCi/L			JXC9	09/04/20	0849	2032930	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.745	+/-1.24			pCi/L		1	AEA	09/15/20	1210	2032950	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.171	+/-0.230	0.395	1.00	pCi/L			MXH8	09/15/20	0816	2032768	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			69	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: September 17, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S16695.03	Project: MERI00120
Sample ID: 519365003	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 18-AUG-20 10:05	
Receive Date: 21-AUG-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	2.46	+/-1.70	2.70	3.00	pCi/L			JXC9	09/04/20	0849	2032930	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		2.99	+/-1.72			pCi/L		1	AEA	09/15/20	1210	2032950	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.527	+/-0.236	0.192	1.00	pCi/L			MXH8	09/15/20	0816	2032768	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			67.2	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: September 17, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S16695.04	Project: MERI00120
Sample ID: 519365004	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 18-AUG-20 17:25	
Receive Date: 21-AUG-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.253	+/-0.998	1.84	3.00	pCi/L			JXC9	09/04/20	0849	2032930	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.552	+/-1.03			pCi/L		1	AEA	09/15/20	1210	2032950	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.300	+/-0.245	0.365	1.00	pCi/L			MXH8	09/15/20	0816	2032768	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			68.8	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: September 17, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S16695.05 Project: MERI00120
Sample ID: 519365005 Client ID: MERI001
Matrix: Ground Water
Collect Date: 18-AUG-20 15:02
Receive Date: 21-AUG-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	1.06	+/-1.54	2.64	3.00	pCi/L			JXC9	09/04/20	0849	2032930	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.48	+/-1.55			pCi/L		1	AEA	09/15/20	1210	2032950	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.415	+/-0.202	0.177	1.00	pCi/L			MXH8	09/15/20	0816	2032768	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			66.9	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: September 17, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S16695.06	Project: MERI00120
Sample ID: 519365006	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 18-AUG-20 10:05	
Receive Date: 21-AUG-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	1.22	+/-0.990	1.58	3.00	pCi/L			JXC9	09/09/20	1205	2032930	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.56	+/-1.02			pCi/L		1	AEA	09/15/20	1210	2032950	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.340	+/-0.256	0.377	1.00	pCi/L			MXH8	09/15/20	0816	2032768	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			84.2	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: September 17, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S16695.07 (Field Blank)	Project: MERI00120
Sample ID: 519365007	Client ID: MERI001
Matrix: Water	
Collect Date: 18-AUG-20 07:25	
Receive Date: 21-AUG-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.376	+/-1.01	2.00	3.00	pCi/L			JXC9	09/04/20	0849	2032930	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.0483	+/-1.03			pCi/L		1	AEA	09/15/20	1210	2032950	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.0483	+/-0.189	0.370	1.00	pCi/L			MXH8	09/15/20	0816	2032768	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			72	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: September 17, 2020

Page 1 of 2

Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan

Contact: John Laverty

Workorder: 519365

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	2032930										
QC1204626501	519272004	DUP									
Radium-228	U	0.0334	U	1.81	pCi/L	N/A		N/A	JXC9	09/04/20	08:48
	Uncertainty	+/-0.944		+/-1.34							
QC1204626503	LCS										
Radium-228	54.7			48.7	pCi/L		89.1	(75%-125%)		09/04/20	08:50
	Uncertainty			+/-3.84							
QC1204626500	MB										
Radium-228			U	0.744	pCi/L					09/04/20	08:48
	Uncertainty			+/-0.924							
QC1204626502	519272004	MS									
Radium-228	165 U	0.0334		169	pCi/L		102	(75%-125%)		09/04/20	08:51
	Uncertainty	+/-0.944		+/-12.3							
Rad Ra-226											
Batch	2032768										
QC1204626096	519365001	DUP									
Radium-226		0.400	U	0.283	pCi/L	34.2		(0% - 100%)	MXH8	09/15/20	08:57
	Uncertainty	+/-0.221		+/-0.227							
QC1204626098	LCS										
Radium-226	27.1			27.0	pCi/L		99.8	(75%-125%)		09/15/20	08:57
	Uncertainty			+/-1.64							
QC1204626095	MB										
Radium-226			U	0.165	pCi/L					09/15/20	08:16
	Uncertainty			+/-0.194							
QC1204626097	519365001	MS									
Radium-226	27.1	0.400		25.7	pCi/L		93.4	(75%-125%)		09/15/20	08:57
	Uncertainty	+/-0.221		+/-1.61							

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported

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QC Summary

Workorder: 519365

Page 2 of 2

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
BD											
BD											
FA											
H											
J											
J											
K											
L											
M											
M											
N/A											
NI											
ND											
NJ											
Q											
R											
U											
UI											
UJ											
UL											
X											
Y											
^											
h											

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Gas Flow Raw Data

Batch 2032930 Check-list

This check-list was completed on 11-SEP-20 by Kenshalla Oston

This batch was reviewed by Angela Johnson on 11-SEP-20 and Kenshalla Oston on 11-SEP-20.

Batch ID:
2032930

Product:
GFC28RAL

Description: Gas Flow Radium 228
GL-RAD-A-009

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the matrix spike (MS/MSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-228 in Liquid

Batch ID: 2032930

Analyst: Jasmine Conley (JXC9)

Method: EPA 904.0/SW846 9320 Modified

Lab SOP: GL-RAD-A-009 REV# 17

Instrument: GFC-8949708441

Due Dates for Lab: 16-SEP-2020

Package: 19-SEP-2020

SDG: 17-SEP-2020

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1204626503	Radium-228 SPIKE	1919-A	.2	mL
MS	1204626502	Radium-228 SPIKE	1919-A	.2	mL

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	Ac-228 Ingrow (date)	Ac-228 Separation (date)
1	519042001	01-SEP-2020	20	50	09/02/20 12:00	09/04/20 06:43
2	519042002	01-SEP-2020	20	50	09/02/20 12:00	09/04/20 06:43
3	519042003	01-SEP-2020	20	50	09/02/20 12:00	09/04/20 06:43
4	519272001	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
5	519272002	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
6	519272003	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
7	519272004	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
8	519272005	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
9	519272006	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
10	519272007	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
11	519272008	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
12	519272009	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
13	519272010	01-SEP-2020	3	300	09/04/20 06:43	09/09/20 10:11
14	519365001	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
15	519365002	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
16	519365003	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
17	519365004	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
18	519365005	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
19	519365006	01-SEP-2020	3	300	09/04/20 06:43	09/09/20 10:11
20	519365007	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
21	1204626500 MB	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
22	1204626501 DUP (519272004)	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43
23	1204626502 MS (519272004)	01-SEP-2020	3	100	09/02/20 12:00	09/04/20 06:43
24	1204626503 LCS	01-SEP-2020	3	300	09/02/20 12:00	09/04/20 06:43

Reagent/Solvent Lot ID	Description	Amount	Comments:
WORK 0487-G	Barium-133 TRACER	.1 mL	
REGNT 2947553	RGF-Neodymium 500mg/L	.2 mL	
REGNT 3064966	RGF-50% Potassium Carbonate	2 mL	
REGNT 3075531.4	Acetic Acid Glacial ACS Poly Coated Bottle	10 mL	
REGNT 3099514	RGF-Neodymium Substrate	5 mL	
REGNT 3101645.1	RGF-Nitric Acid	5 mL	
REGNT 3109131	7M HNO3	25 mL	
REGNT 3109797.7	RGF-Hydrofluoric Acid	4 mL	
REGNT 3112196	RGF-1M Citric Acid	5 mL	
REGNT 3116629	2M HCL	20 mL	
REGNT 3116748	Lot #DGA0016	2 g	

Prep Logbook

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	Ac-228 Ingrow (date)	Ac-228 Separation (date)
	Reagent/Solvent Lot ID	Description		Amount	Comments:	
	REGNT 3116957	RGF-1.5M Ammonium Sulfate		10 mL		
	REGNT 3116964	Barium Carrier Ra228 REG		1 mL		

Radium-228 Liquid

Filename : RA228.XLS
 File type : Excel
 Version # : 1.4.2

Tracer S/N : 0487-G
 Tracer Exp Date : 2/27/2021
 Tracer Volume Added: 0.10

Batch : 2032930
 Analyst : JAS02031
 Prep Date : 9/1/2020
 Ra-228 Method Uncertainty : 0.1268

Procedure Code : GFC28RAL
 Parmname : Radium-228
 Required MDA : 3 pCi/L
 Ra-228 Abundance : 1.00
 Halflife of Ra-228 : 5.75 years
 Halflife of Ac-228 : 6.15 hours

Geometry: 25mm Filter

Sample Characteristics					Tracer Calculations		Tracer Samp.		Tracer Aliquot	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Tracer Ref. Activity (CPM)	Tracer Count Uncertainty (%)	Tracer Samp. Activity (CPM)	Tracer Count Uncertainty (%)	Tracer Aliquot (mL)	Tracer Aliquot StDev. (mL)
1	519042001.1	0.0500	7.8337E-06	8/12/2020 12:00	342.8	3.12%	210.6	3.98%	0.1	0.000200
2	519042002.1	0.0500	7.8337E-06	8/12/2020 12:00	342.8	3.12%	219.8	3.89%	0.1	0.000200
3	519042003.1	0.0500	7.8337E-06	8/12/2020 12:00	342.8	3.12%	245.5	3.68%	0.1	0.000200
4	519272001.1	0.3000	1.8459E-05	8/11/2020 12:30	342.8	3.12%	252.3	3.63%	0.1	0.000200
5	519272002.1	0.3000	1.8459E-05	8/12/2020 10:25	342.8	3.12%	265.1	3.55%	0.1	0.000200
6	519272003.1	0.3000	1.8459E-05	8/11/2020 12:50	342.8	3.12%	244.6	3.69%	0.1	0.000200
7	519272004.1	0.3000	1.8459E-05	8/11/2020 15:30	342.8	3.12%	242.3	3.71%	0.1	0.000200
8	519272005.1	0.3000	1.8459E-05	8/11/2020 16:55	342.8	3.12%	243.6	3.70%	0.1	0.000200
9	519272006.1	0.3000	1.8459E-05	8/12/2020 10:45	342.8	3.12%	237.8	3.74%	0.1	0.000200
10	519272007.1	0.3000	1.8459E-05	8/12/2020 12:20	342.8	3.12%	258.6	3.59%	0.1	0.000200
11	519272008.1	0.3000	1.8459E-05	8/12/2020 11:40	342.8	3.12%	254.8	3.62%	0.1	0.000200
12	519272009.1	0.3000	1.8459E-05	8/12/2020 11:20	342.8	3.12%	238.0	3.74%	0.1	0.000200
13	519272010.1	0.3000	1.8459E-05	8/12/2020 12:40	279.8	3.45%	243.0	3.70%	0.1	0.000200
14	519365001.1	0.3000	1.8459E-05	8/18/2020 13:24	342.8	3.12%	253.0	3.63%	0.1	0.000200
15	519365002.1	0.3000	1.8459E-05	8/18/2020 16:45	342.8	3.12%	236.6	3.75%	0.1	0.000200
16	519365003.1	0.3000	1.8459E-05	8/18/2020 10:05	342.8	3.12%	230.5	3.80%	0.1	0.000200
17	519365004.1	0.3000	1.8459E-05	8/18/2020 17:25	342.8	3.12%	235.8	3.76%	0.1	0.000200
18	519365005.1	0.3000	1.8459E-05	8/18/2020 15:02	342.8	3.12%	229.5	3.81%	0.1	0.000200
19	519365006.1	0.3000	1.8459E-05	8/18/2020 10:05	279.8	3.45%	235.6	3.76%	0.1	0.000200
20	519365007.1	0.3000	1.8459E-05	8/18/2020 7:25	342.8	3.12%	246.8	3.67%	0.1	0.000200
21	1204626500.1	0.3000	1.8459E-05	9/1/2020 0:00	342.8	3.12%	218.5	3.91%	0.1	0.000200
22	1204626501.1	0.3000	1.8459E-05	8/11/2020 15:30	342.8	3.12%	261.4	3.57%	0.1	0.000200
23	1204626502.1	0.1000	1.1370E-05	8/11/2020 15:30	342.8	3.12%	246.6	3.68%	0.1	0.000200
24	1204626503.1	0.3000	1.8459E-05	9/1/2020 0:00	342.8	3.12%	258.4	3.59%	0.1	0.000200

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-009
 Instrument SOP: GL-RAD-I-016

Count raw Data													Calculated	Sample
Pos.	Detector ID	Counting Time (min.)	Gross Counts		Beta cpm	Count Start Date/Time	Ac-228 Ingrowth Date/Time	Ac-228 Decay Date/Time	Ra-228 Decay	Ac-228 Decay	Ac-228 Ingrowth	Ac-228 Count Correction	Recovery %	Recovery Error %
			Alpha	Beta										
1	1B	60	9	45	0.750	9/4/2020 8:32	9/2/2020 12:00	9/4/2020 6:43	0.992	0.814	0.992	1.057	61.4%	2.54%
2	3D	60	6	40	0.667	9/4/2020 8:32	9/2/2020 12:00	9/4/2020 6:43	0.992	0.814	0.992	1.057	64.1%	2.51%
3	4D	60	9	69	1.150	9/4/2020 8:32	9/2/2020 12:00	9/4/2020 6:43	0.992	0.814	0.992	1.057	71.6%	2.43%
4	5D	60	8	74	1.233	9/4/2020 8:32	9/2/2020 12:00	9/4/2020 6:43	0.992	0.814	0.992	1.057	73.6%	2.41%
5	6A	60	15	124	2.067	9/4/2020 8:47	9/2/2020 12:00	9/4/2020 6:43	0.992	0.791	0.992	1.057	77.3%	2.38%
6	6C	60	8	81	1.350	9/4/2020 8:47	9/2/2020 12:00	9/4/2020 6:43	0.992	0.791	0.992	1.057	71.4%	2.43%
7	7A	60	8	38	0.633	9/4/2020 8:48	9/2/2020 12:00	9/4/2020 6:43	0.992	0.791	0.992	1.057	70.7%	2.44%
8	7C	60	8	33	0.550	9/4/2020 8:48	9/2/2020 12:00	9/4/2020 6:43	0.992	0.791	0.992	1.057	71.1%	2.44%
9	7D	60	18	34	0.567	9/4/2020 8:48	9/2/2020 12:00	9/4/2020 6:43	0.992	0.791	0.992	1.057	69.4%	2.45%
10	9D	60	7	25	0.417	9/4/2020 8:48	9/2/2020 12:00	9/4/2020 6:43	0.992	0.790	0.992	1.057	75.4%	2.39%
11	10A	60	12	29	0.483	9/4/2020 8:48	9/2/2020 12:00	9/4/2020 6:43	0.992	0.790	0.992	1.057	74.3%	2.41%
12	10B	60	4	98	1.633	9/4/2020 8:48	9/2/2020 12:00	9/4/2020 6:43	0.992	0.790	0.992	1.057	69.4%	2.45%
13	8C	60	14	93	1.550	9/9/2020 12:05	9/4/2020 6:43	9/9/2020 10:11	0.991	0.806	1.000	1.057	86.8%	2.55%
14	10D	60	12	80	1.333	9/4/2020 8:48	9/2/2020 12:00	9/4/2020 6:43	0.994	0.790	0.992	1.057	73.8%	2.41%
15	11A	60	5	61	1.017	9/4/2020 8:49	9/2/2020 12:00	9/4/2020 6:43	0.995	0.789	0.992	1.057	69.0%	2.46%
16	11B	60	10	121	2.017	9/4/2020 8:49	9/2/2020 12:00	9/4/2020 6:43	0.994	0.789	0.992	1.057	67.2%	2.47%
17	11C	60	3	43	0.717	9/4/2020 8:49	9/2/2020 12:00	9/4/2020 6:43	0.995	0.789	0.992	1.057	68.8%	2.46%
18	12B	60	5	91	1.517	9/4/2020 8:49	9/2/2020 12:00	9/4/2020 6:43	0.994	0.789	0.992	1.057	66.9%	2.48%
19	8D	60	6	58	0.967	9/9/2020 12:05	9/4/2020 6:43	9/9/2020 10:11	0.993	0.806	1.000	1.057	84.2%	2.57%
20	13D	60	7	46	0.767	9/4/2020 8:49	9/2/2020 12:00	9/4/2020 6:43	0.994	0.789	0.992	1.057	72.0%	2.43%
21	14A	60	8	31	0.517	9/4/2020 8:48	9/2/2020 12:00	9/4/2020 6:43	0.999	0.789	0.992	1.057	63.7%	2.52%
22	14C	60	9	91	1.517	9/4/2020 8:48	9/2/2020 12:00	9/4/2020 6:43	0.992	0.789	0.992	1.057	76.3%	2.39%
23	13B	60	13	837	13.950	9/4/2020 8:51	9/2/2020 12:00	9/4/2020 6:43	0.992	0.786	0.992	1.057	72.0%	2.43%
24	1D	60	29	712	11.867	9/4/2020 8:50	9/2/2020 12:00	9/4/2020 6:43	0.999	0.787	0.992	1.057	75.4%	2.39%

Calibration Data								
Pos.	Counted on	Calibration Date	Calibration Due Date	Detector Efficiency (cpm/dpm)	Detector Efficiency Error (cpm/dpm)	Bkg cpm	Weekly Bkg Count Start Date/Time	Bkg Count Time (min.)
1	PIC	6/1/2020	5/31/2021	0.6327	0.00711	0.829	8/28/2020 16:29	1000
2	PIC	6/1/2020	5/31/2021	0.6234	0.02297	0.525	8/28/2020 16:29	1000
3	PIC	6/1/2020	5/31/2021	0.5764	0.00773	0.954	8/28/2020 16:30	1000
4	PIC	6/1/2020	5/31/2021	0.6511	0.00925	1.154	8/28/2020 16:30	1000
5	PIC	6/1/2020	5/31/2021	0.5743	0.02228	1.743	8/28/2020 16:38	1000
6	PIC	6/1/2020	5/31/2021	0.6036	0.01970	1.267	8/28/2020 16:39	1000
7	PIC	6/1/2020	5/31/2021	0.6340	0.00594	0.626	8/28/2020 16:39	1000
8	PIC	6/1/2020	5/31/2021	0.6361	0.00790	0.528	8/28/2020 16:39	1000
9	PIC	6/1/2020	5/31/2021	0.6337	0.01113	0.529	8/28/2020 16:39	1000
10	PIC	6/1/2020	5/31/2021	0.6435	0.02610	0.445	8/28/2020 17:39	1000
11	PIC	6/1/2020	5/31/2021	0.6416	0.00651	0.404	8/28/2020 16:40	1000
12	PIC	6/1/2020	5/31/2021	0.6420	0.00652	1.630	8/28/2020 16:40	1000
13	PIC	6/1/2020	5/31/2021	0.6437	0.01955	1.364	9/4/2020 16:56	500
14	PIC	6/1/2020	5/31/2021	0.6337	0.00557	0.995	8/28/2020 16:40	1000
15	PIC	6/1/2020	5/31/2021	0.6323	0.01317	0.894	8/28/2020 16:37	1000
16	PIC	6/1/2020	5/31/2021	0.6546	0.00697	1.486	8/28/2020 16:37	1000
17	PIC	6/1/2020	5/31/2021	0.6536	0.01278	0.661	8/28/2020 16:37	1000
18	PIC	6/1/2020	5/31/2021	0.6317	0.01114	1.296	8/28/2020 16:37	1000
19	PIC	6/1/2020	5/31/2021	0.6158	0.00609	0.648	9/4/2020 16:56	500
20	PIC	6/1/2020	5/31/2021	0.6429	0.01144	0.852	8/28/2020 16:38	1000
21	PIC	6/1/2020	5/31/2021	0.6404	0.02119	0.367	8/28/2020 16:38	1000
22	PIC	6/1/2020	5/31/2021	0.6354	0.01828	1.087	8/28/2020 16:38	1000
23	PIC	6/1/2020	5/31/2021	0.6564	0.00967	0.989	8/28/2020 16:38	1000
24	PIC	6/1/2020	5/31/2021	0.6146	0.00692	0.784	8/28/2020 16:29	1000

Notes:

- 1 - Results are decay corrected to Sample Date/Time
- 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
- 3 - Spike Nominals are decay corrected to Sample Date/Time

* - RPD changed to 0% due to sample & dup activity below MDA

Spike S/N : 1919-A
Spike Exp Date : 4/7/2021
Spike Activity (dpm/ml): 182.01
Spike Volume Added: 0.20

LCS S/N : 1919-A
LCS Exp Date : 4/7/2021
LCS Activity (dpm/ml): 182.01
LCS Volume Added: 0.20

Results Pos.	Decision Level pCi/L	Critical Level pCi/L	Required MDA pCi/L	MDA pCi/L	Sample Act. Conc. pCi/L	Sample Act. Error %	Net Count Rate CPM	Net Count Rate Error CPM	2 SIGMA	2 SIGMA	Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery
									Counting Uncertainty pCi/L	Total Prop. Uncertainty pCi/L						
1	8.6200	6.0858	20	13.7000	-2.4150	146.16%	-0.0790	0.1155	6.9175	6.9187		SAMPLE				
2	6.6729	4.7111	20	10.9091	4.2128	76.22%	0.1417	0.1079	6.2873	6.3800		SAMPLE				
3	8.7116	6.1505	20	13.7409	5.6448	72.42%	0.1960	0.1418	8.0069	8.1338		SAMPLE				
4	1.3762	0.9716	3	2.1500	0.3282	185.74%	0.0793	0.1473	1.1946	1.1975		SAMPLE				
5	1.8773	1.3254	3	2.8803	1.4861	58.86%	0.3237	0.1902	1.7119	1.7539		SAMPLE				
6	1.6510	1.1656	3	2.5680	0.3931	185.77%	0.0830	0.1542	1.4311	1.4346		SAMPLE				
7	1.1156	0.7876	3	1.8028	0.0334	1441.95%	0.0073	0.1057	0.9436	0.9438		SAMPLE				
8	1.0156	0.7170	3	1.6597	0.0993	447.56%	0.0220	0.0985	0.8710	0.8713		SAMPLE				
9	1.0455	0.7381	3	1.7083	0.1748	265.15%	0.0377	0.0999	0.9085	0.9096		SAMPLE				
10	0.8685	0.6131	3	1.4365	-0.1191	303.42%	-0.0283	0.0860	0.7083	0.7085		SAMPLE				
11	0.8424	0.5948	3	1.4035	0.3395	115.96%	0.0793	0.0920	0.7715	0.7763		SAMPLE				
12	1.8110	1.2786	3	2.7862	0.0153	5095.78%	0.0033	0.1699	1.5249	1.5250		SAMPLE				
13	1.3226	0.9338	3	2.0454	0.6617	90.92%	0.1860	0.1690	1.1784	1.1905		SAMPLE				
14	1.3461	0.9504	3	2.1186	1.4743	45.10%	0.3383	0.1524	1.3014	1.3539		SAMPLE				
15	1.3684	0.9661	3	2.1658	0.5732	108.92%	0.1227	0.1336	1.2233	1.2320		SAMPLE				
16	1.7498	1.2354	3	2.7025	2.4596	35.40%	0.5307	0.1873	1.7019	1.8126		SAMPLE				
17	1.1424	0.8066	3	1.8400	0.2526	201.71%	0.0557	0.1123	0.9984	1.0005		SAMPLE				
18	1.7011	1.2010	3	2.6433	1.0647	73.92%	0.2207	0.1630	1.5416	1.5652		SAMPLE				
19	0.9810	0.6926	3	1.5765	1.2199	41.49%	0.3187	0.1319	0.9899	1.0372		SAMPLE				
20	1.2605	0.8899	3	2.0003	-0.3763	136.84%	-0.0853	0.1167	1.0090	1.0091		SAMPLE				
21	0.9330	0.6587	3	1.5661	0.7443	63.39%	0.1497	0.0948	0.9236	0.9432		MB				
22	1.3617	0.9614	3	2.1336	1.8120	37.91%	0.4297	0.1624	1.3422	1.4197	519272004.1	DUP	* 0.0%			
23	4.0145	2.8343	3	6.3203	168.9418	4.55%	12.9610	0.4832	12.3449	44.6119	519272004.1	MS			165.0825	102.3%
24	1.2055	0.8511	3	1.9220	48.7209	4.73%	11.0827	0.4456	3.8395	12.9238		LCS			54.6591	89.1%

ASSAY 8-Sep-20 11:38:16

Protocol id 8 Ba-133
Time limit
Count limit
Isotope Ba-133
Protocol date 9/8/2020
Run id. 1844

Samp_ID	POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR	% RECOVERY	COUNT TIME
REF	1	93	1	180	1028.5	342.77	3.12		11:38:16
519042001	2	93	2	180	632	210.62	3.98	61.45	11:41:30
519042002	3	93	3	180	659.5	219.77	3.89	64.12	11:44:45
519042003	4	93	4	180	736.5	245.47	3.68	71.61	11:47:58
519272001	5	93	5	180	757	252.28	3.63	73.60	11:51:12
519272002	1	14	1	180	795.5	265.11	3.55	77.34	11:54:56
519272003	2	14	2	180	734	244.62	3.69	71.37	11:58:10
519272004	3	14	3	180	727	242.28	3.71	70.68	12:01:25
519272005	4	14	4	180	731	243.62	3.7	71.07	12:04:39
519272006	5	14	5	180	713.5	237.78	3.74	69.37	12:07:52
519272007	1	6	1	180	776	258.61	3.59	75.45	12:11:28
519272008	2	6	2	180	764.5	254.8	3.62	74.34	12:14:42
519272009	3	6	3	180	714	237.95	3.74	69.42	12:17:56
519272010	4	6	4	180	752.5	250.76	3.65	73.16	12:21:10 <i>sig 9/10/20</i>
519365001	5	6	5	180	759	252.97	3.63	73.80	12:24:24
519365002	1	18	1	180	710	236.6	3.75	69.03	12:28:08
519365003	2	18	2	180	691.5	230.45	3.8	67.23	12:31:22
519365004	3	18	3	180	707.5	235.79	3.76	68.79	12:34:36
519365005	4	18	4	180	688.5	229.45	3.81	66.94	12:37:50
519365006	5	18	5	180	736	245.28	3.69	71.56	12:41:04 <i>sig 9/10/20</i>
519365007	1	21	1	180	740.5	246.78	3.67	72.00	12:44:48
1204626500	2	21	2	180	655.5	218.47	3.91	63.74	12:48:02
1204626501	3	21	3	180	784.5	261.44	3.57	76.27	12:51:17
1204626502	4	21	4	180	740	246.63	3.68	71.95	12:54:31
1204626503	5	21	5	180	775.5	258.44	3.59	75.40	12:57:44

END OF ASSAY

ASSAY 9-Sep-20 11:48:38

Protocol id 8 Ba-133
Time limit
Count limit
Isotope Ba-133
Protocol date 9/9/2020
Run id. 1853

Samp_ID	POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR	% RECOVERY	COUNT TIME	
REF		1	93	1	180	839.5	279.8	3.45	11:48:38	
519272010		2	93	2	180	729	242.97	3.7	86.84	11:51:52
519365006		3	93	3	180	707	235.62	3.76	84.21	11:55:06

END OF ASSAY

2032930re1.xls

SampleID	Instr	Time (min.)	Alpha Counts	Beta Counts	Count Start Time	Count End Time	Machine	Batch ID
519042001	1B	60	9	45	9/4/2020 8:32	9/4/2020 9:32	PIC	2032930
519042002	3D	60	6	40	9/4/2020 8:32	9/4/2020 9:32	PIC	2032930
519042003	4D	60	9	69	9/4/2020 8:32	9/4/2020 9:32	PIC	2032930
519272001	5D	60	8	74	9/4/2020 8:32	9/4/2020 9:32	PIC	2032930
519272002	6A	60	15	124	9/4/2020 8:47	9/4/2020 9:47	PIC	2032930
519272003	6C	60	8	81	9/4/2020 8:47	9/4/2020 9:47	PIC	2032930
519272004	7A	60	8	38	9/4/2020 8:48	9/4/2020 9:48	PIC	2032930
519272005	7C	60	8	33	9/4/2020 8:48	9/4/2020 9:48	PIC	2032930
519272006	7D	60	18	34	9/4/2020 8:48	9/4/2020 9:48	PIC	2032930
519272007	9D	60	7	25	9/4/2020 8:48	9/4/2020 9:48	PIC	2032930
519272008	10A	60	12	29	9/4/2020 8:48	9/4/2020 9:48	PIC	2032930
519272009	10B	60	4	98	9/4/2020 8:48	9/4/2020 9:48	PIC	2032930
519272010	8C	60	14	93	9/9/2020 12:05	9/9/2020 13:05	PIC	2032930
519365001	10D	60	12	80	9/4/2020 8:48	9/4/2020 9:48	PIC	2032930
519365002	11A	60	5	61	9/4/2020 8:49	9/4/2020 9:49	PIC	2032930
519365003	11B	60	10	121	9/4/2020 8:49	9/4/2020 9:49	PIC	2032930
519365004	11C	60	3	43	9/4/2020 8:49	9/4/2020 9:49	PIC	2032930
519365005	12B	60	5	91	9/4/2020 8:49	9/4/2020 9:49	PIC	2032930
519365006	8D	60	6	58	9/9/2020 12:05	9/9/2020 13:05	PIC	2032930
519365007	13D	60	7	46	9/4/2020 8:49	9/4/2020 9:49	PIC	2032930
1204626500	14A	60	8	31	9/4/2020 8:48	9/4/2020 9:48	PIC	2032930
1204626501	14C	60	9	91	9/4/2020 8:48	9/4/2020 9:48	PIC	2032930
1204626502	13B	60	13	837	9/4/2020 8:51	9/4/2020 9:51	PIC	2032930
1204626503	1D	60	29	712	9/4/2020 8:50	9/4/2020 9:50	PIC	2032930

Continuing Calibration Data

Gas Flow Proportional Counter Checks for 04-Sep-2020

Detectors LB4100 A1 through J4 and PIC 1A through 14D and G5400W 1W through 1Z

Short Name	Status	Parmname	Run Time	Count Time	CPM or dec	Low Limit	High Limit	Stdev
LB4100C1	Above	Beta bkg	04-Sep 03:23	60	10.517	0.534	3.326	+18.45
LB4100C2	Below	Alpha eff	04-Sep 05:07	5	8379	10240	13030	-7.00
LB4100C2	Above	Alpha XTalk	04-Sep 05:07	5	0.349	0.257	0.306	+8.29
LB4100E1	Above	Alpha bkg	04-Sep 03:23	60	0.383	-5.45E-2	0.290	+4.63
LB4100E2	need 2nd	Alpha bkg	04-Sep 03:23	60	0.233	-7.23E-2	0.347	+1.38
LB4100E2	Above	Beta bkg	04-Sep 03:23	60	2.383	0.950	2.756	+1.76
LB4100E3	Above	Alpha bkg	04-Sep 03:23	60	2.050	-4.47E-2	0.174	+54.39
LB4100E3	Above	Beta bkg	04-Sep 03:23	60	2.783	-1.31E+0	6.766	+0.04
LB4100E3	need 2nd	Beta XTalk	04-Sep 04:35	5	4.54E-4	8.54E-5	4.65E-4	+2.84
LB4100E4	Above	Beta bkg	04-Sep 03:23	60	2.017	0.326	2.646	+1.37
LB4100F3	Above	Alpha bkg	04-Sep 06:13	60	0.317	-7.68E-2	0.332	+2.77
LB4100G2	Above	Alpha XTalk	04-Sep 04:35	5	0.382	0.224	0.342	+5.06
LB4100G2	Above	Beta bkg	04-Sep 03:26	60	1262	0.721	1.648	+8,162.61
LB4100G2	need 2nd	Beta eff	04-Sep 04:45	5	16393	15480	16780	+1.21
LB4100G3	Above	Beta bkg	04-Sep 03:26	60	16.900	0.810	1.674	+108.74
LB4100G4	Below	Alpha eff	04-Sep 04:35	5	9256	9501	10450	-4.55
LB4100I1	Below	Alpha eff	04-Sep 04:52	5	6294	9278	11600	-10.71
LB4100I1	Above	Alpha XTalk	04-Sep 04:52	5	0.438	0.155	0.201	+33.67
LB4100I2	Below	Alpha eff	04-Sep 04:52	5	6644	12260	13540	-29.33
LB4100I2	Above	Alpha XTalk	04-Sep 04:52	5	0.499	0.206	0.251	+36.15
LB4100I2	Below	Beta eff	04-Sep 04:58	5	14981	15270	17180	-3.91
LB4100I3	Below	Alpha eff	04-Sep 04:52	5	4689	8847	10310	-20.05
LB4100I3	Above	Alpha XTalk	04-Sep 04:52	5	0.477	0.174	0.229	+30.42
LB4100I4	Below	Alpha eff	04-Sep 04:52	5	5065	9674	12150	-14.17
LB4100I4	Above	Alpha XTalk	04-Sep 04:52	5	0.512	0.179	0.224	+40.89
LB4100I4	Below	Beta eff	04-Sep 04:58	5	15998	16210	20770	-3.28
PIC1C	Above	Beta bkg	04-Sep 05:38	60	2.650	-4.47E-1	2.104	+4.28
PIC2B	Above	Alpha XTalk	04-Sep 05:40	5	0.290	0.245	0.287	+3.50
PIC5A	Above	Alpha bkg	04-Sep 07:02	60	0.317	0.021	0.432	+1.31

PIC6B	Above	Beta bkg	04-Sep 05:00	60	2.317	0.886	2.210	+3.48
PIC11D	Above	Alpha bkg	04-Sep 05:25	60	0.483	0.007	0.361	+5.08
PIC11D	Above	Beta bkg	04-Sep 05:25	60	3.483	0.609	2.096	+8.60
PIC12A	Above	Beta bkg	04-Sep 05:25	60	2.617	1.462	2.978	+1.57
PIC12C	need 2nd	Alpha bkg	04-Sep 06:29	60	0.267	-2.99E-2	0.379	+1.35
PIC12C	Above	Beta bkg	04-Sep 06:29	60	2.333	0.004	2.702	+2.18
PIC12D	Above	Alpha eff	04-Sep 05:16	5	15023	13060	14210	+7.24
PIC12D	Below	Alpha XTalk	04-Sep 05:16	5	0.313	0.323	0.348	-5.38
PIC14D	Above	Alpha bkg	04-Sep 06:29	60	0.333	-1.35E-1	0.344	+2.87
PIC14D	need 2nd	Beta bkg	04-Sep 06:29	60	1.817	-3.77E-1	1.863	+2.88

INSTRUMENTS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

The following detectors may not have properly transferred to the LIMS system

LB4100B1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC3A	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC6D	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC13C	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk

Reviewed by *R. Beth-Harman*

Date 9-4-2020

GEL Laboratories LLC

Gas Flow Proportional Counter Checks for 09-Sep-2020

Detectors LB4100 A1 through J4 and PIC 1A through 14D and G5400W 1W through 1Z

Short Name	Status	Parmname	Run Time	Count Time	CPM or dec	Low Limit	High Limit	Stdev
LB4100C1	Above	Beta eff	09-Sep 04:53	5	19457	15090	16900	+11.48
LB4100C2	Below	Alpha eff	09-Sep 05:02	5	8617	10240	13030	-6.49
LB4100C2	Above	Alpha XTalk	09-Sep 05:02	5	0.345	0.257	0.306	+7.85
LB4100C2	Above	Beta eff	09-Sep 04:53	5	20381	15870	17590	+12.74
LB4100C3	Above	Beta eff	09-Sep 04:53	5	20689	16080	17090	+24.38
LB4100C4	Above	Beta eff	09-Sep 04:53	5	23456	18000	20220	+11.75
LB4100E1	Above	Alpha bkg	09-Sep 03:25	60	0.483	-5.45E-2	0.290	+6.38
LB4100E2	Above	Beta bkg	09-Sep 03:25	60	2.200	0.950	2.756	+1.15
LB4100E3	Above	Alpha bkg	09-Sep 03:25	60	2.400	-4.47E-2	0.174	+63.98
LB4100E3	Above	Beta bkg	09-Sep 03:25	60	2.833	-1.31E+0	6.766	+0.08
LB4100E3	need 2nd	Beta XTalk	09-Sep 04:33	5	4.18E-4	8.54E-5	4.65E-4	+2.26
LB4100E4	Above	Beta bkg	09-Sep 03:25	60	2.067	0.326	2.646	+1.50
LB4100G2	Above	Alpha XTalk	09-Sep 04:33	5	0.550	0.224	0.342	+13.64
LB4100G2	Above	Beta bkg	09-Sep 03:29	60	2786	0.721	1.648	+18,032.47
LB4100G2	Above	Beta eff	09-Sep 04:40	5	18520	15480	16780	+11.03
LB4100G3	Above	Beta bkg	09-Sep 03:29	60	29.450	0.810	1.674	+195.89
LB4100G3	need 2nd	Beta eff	09-Sep 04:40	5	21898	21640	22870	-1.74
LB4100I1	Below	Alpha eff	09-Sep 04:46	5	6025	9278	11600	-11.41
LB4100I1	Above	Alpha XTalk	09-Sep 04:46	5	0.448	0.155	0.201	+34.97
LB4100I2	Below	Alpha eff	09-Sep 04:46	5	6356	12260	13540	-30.68
LB4100I2	Above	Alpha XTalk	09-Sep 04:46	5	0.519	0.206	0.251	+38.86
LB4100I2	Above	Beta bkg	09-Sep 03:25	60	2.283	0.425	2.438	+2.54
LB4100I2	Below	Beta eff	09-Sep 04:59	5	15009	15270	17180	-3.82
LB4100I3	Below	Alpha eff	09-Sep 04:46	5	4887	8847	10310	-19.24
LB4100I3	Above	Alpha XTalk	09-Sep 04:46	5	0.469	0.174	0.229	+29.53
LB4100I4	Below	Alpha eff	09-Sep 04:46	5	5138	9674	12150	-13.99
LB4100I4	Above	Alpha XTalk	09-Sep 04:46	5	0.506	0.179	0.224	+40.10
LB4100I4	Below	Beta eff	09-Sep 04:59	5	15851	16210	20770	-3.47
LB4100I4	need 2nd	Beta XTalk	09-Sep 04:59	5	1.26E-4	7.59E-5	3.86E-4	-2.03
PIC1C	Above	Beta bkg	09-Sep 05:38	60	4.217	-4.47E-1	2.104	+7.97

PIC5A	Above	Alpha bkg	09-Sep 05:59	60	0.317	0.021	0.432	+1.31
PIC7A	Above	Alpha bkg	09-Sep 06:11	60	0.367	-7.46E-2	0.299	+4.09
PIC7A	need 2nd	Beta bkg	09-Sep 06:11	60	1.017	0.110	1.442	+1.08
PIC7D	Above	Alpha bkg	09-Sep 07:41	60	0.317	-7.13E-2	0.432	+1.62
PIC11D	Above	Alpha bkg	09-Sep 05:21	60	0.333	0.007	0.361	+2.53
PIC11D	Above	Beta bkg	09-Sep 05:21	60	3.450	0.609	2.096	+8.46
PIC12A	Above	Beta bkg	09-Sep 05:21	60	2.100	1.462	2.978	-0.47
PIC12D	Above	Alpha eff	09-Sep 05:12	5	15178	13060	14210	+8.05
PIC12D	Below	Alpha XTalk	09-Sep 05:12	5	0.307	0.323	0.348	-6.67
PIC12D	Above	Beta eff	09-Sep 04:59	5	41276	40190	41240	+3.21

INSTRUMENTS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

The following detectors may not have properly transferred to the LIMS system

LB4100B1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC3A	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC6D	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC13C	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk

Reviewed by R. Smith-Henninger

Date 9-9-2020

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: GFPC

Batch ID: 2032930

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
519042001	SAMPLE	JXC9	PIC1B	SEP-04-20 08:32:23	DONE	25mm Filter	01-JUN-20 00:00
519042002	SAMPLE	JXC9	PIC3D	SEP-04-20 08:32:29	DONE	25mm Filter	01-JUN-20 00:00
519042003	SAMPLE	JXC9	PIC4D	SEP-04-20 08:32:33	DONE	25mm Filter	01-JUN-20 00:00
519272001	SAMPLE	JXC9	PIC5D	SEP-04-20 08:32:38	DONE	25mm Filter	01-JUN-20 00:00
519272002	SAMPLE	JXC9	PIC6A	SEP-04-20 08:47:55	DONE	25mm Filter	01-JUN-20 00:00
519272003	SAMPLE	JXC9	PIC6C	SEP-04-20 08:47:57	DONE	25mm Filter	01-JUN-20 00:00
519272004	SAMPLE	JXC9	PIC7A	SEP-04-20 08:48:01	DONE	25mm Filter	01-JUN-20 00:00
519272005	SAMPLE	JXC9	PIC7C	SEP-04-20 08:48:05	DONE	25mm Filter	01-JUN-20 00:00
519272006	SAMPLE	JXC9	PIC7D	SEP-04-20 08:48:09	DONE	25mm Filter	01-JUN-20 00:00
519272007	SAMPLE	JXC9	PIC9D	SEP-04-20 08:48:18	DONE	25mm Filter	01-JUN-20 00:00
519272008	SAMPLE	JXC9	PIC10A	SEP-04-20 08:48:23	DONE	25mm Filter	01-JUN-20 00:00
519272009	SAMPLE	JXC9	PIC10B	SEP-04-20 08:48:25	DONE	25mm Filter	01-JUN-20 00:00
519365001	SAMPLE	JXC9	PIC10D	SEP-04-20 08:48:34	DONE	25mm Filter	01-JUN-20 00:00
1204626500	MB	JXC9	PIC14A	SEP-04-20 08:48:54	DONE	25mm Filter	01-JUN-20 00:00
1204626501	DUP	JXC9	PIC14C	SEP-04-20 08:48:57	DONE	25mm Filter	01-JUN-20 00:00
519365002	SAMPLE	JXC9	PIC11A	SEP-04-20 08:49:02	DONE	25mm Filter	01-JUN-20 00:00
519365003	SAMPLE	JXC9	PIC11B	SEP-04-20 08:49:06	DONE	25mm Filter	01-JUN-20 00:00
519365004	SAMPLE	JXC9	PIC11C	SEP-04-20 08:49:11	DONE	25mm Filter	01-JUN-20 00:00
519365005	SAMPLE	JXC9	PIC12B	SEP-04-20 08:49:14	DONE	25mm Filter	01-JUN-20 00:00
519365007	SAMPLE	JXC9	PIC13D	SEP-04-20 08:49:20	DONE	25mm Filter	01-JUN-20 00:00
1204626503	LCS	JXC9	PIC1D	SEP-04-20 08:50:47	DONE	25mm Filter	01-JUN-20 00:00
1204626502	MS	JXC9	PIC13B	SEP-04-20 08:51:05	DONE	25mm Filter	01-JUN-20 00:00
519272010	SAMPLE	JXC9	PIC8C	SEP-09-20 12:05:56	DONE	25mm Filter	01-JUN-20 00:00
519365006	SAMPLE	JXC9	PIC8D	SEP-09-20 12:05:59	DONE	25mm Filter	01-JUN-20 00:00

Lucas Cell Raw Data

Batch 2032768 Check-list

This check-list was completed on 15-SEP-20 by Lyndsey Pace

This batch was reviewed by Elizabeth Krouse on 15-SEP-20 and Lyndsey Pace on 15-SEP-20.

Batch ID:
2032768

Product:
LUC26RAL

Description: Lucas Cell Radium 226
GL-RAD-A-008

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the matrix spike (MS/MSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-226 in Liquid

Batch ID: 2032768
Analyst: Michael Hance (MXH8)
Method: EPA 903.1 Modified
Lab SOP: GL-RAD-A-008 REV# 15
Instrument: GFC-18150253

Due Dates for Lab: 17-SEP-2020			Package: 19-SEP-2020	SDG: 21-SEP-2020		
Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units	
LCS	1204626098	Radium-226 SPIKE	1715-E	.1	mL	
MS	1204626097	Radium-226 SPIKE	1715-E	.1	mL	

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	End Degas (date)	CELL #	End Transfer (date)	Start Count Time (date)	Background Counts	Total Counts
1	519365001	09-SEP-2020	1	500	09/09/20 11:30	108	09/15/20 05:20	09/15/20 08:16	3	20
2	519365002	09-SEP-2020	1	500	09/09/20 11:30	205	09/15/20 05:20	09/15/20 08:16	8	15
3	519365003	09-SEP-2020	1	500	09/09/20 11:30	303	09/15/20 05:20	09/15/20 08:16	1	22
4	519365004	09-SEP-2020	1	500	09/09/20 11:30	403	09/15/20 05:20	09/15/20 08:16	5	16
5	519365005	09-SEP-2020	1	500	09/09/20 11:30	507	09/15/20 05:20	09/15/20 08:16	1	19
6	519365006	09-SEP-2020	1	500	09/09/20 11:30	602	09/15/20 05:20	09/15/20 08:16	6	19
7	519365007	09-SEP-2020	1	500	09/09/20 11:30	707	09/15/20 05:20	09/15/20 08:16	7	9
8	1204626095 MB	09-SEP-2020	1	500	09/09/20 11:30	807	09/15/20 05:20	09/15/20 08:16	2	7
9	1204626096 DUP (519365001)	09-SEP-2020	1	500	09/09/20 11:30	105	09/15/20 05:55	09/15/20 08:57	6	18
10	1204626097 MS (519365001)	09-SEP-2020	1	500	09/09/20 11:30	201	09/15/20 05:55	09/15/20 08:57	7	1003
11	1204626098 LCS	09-SEP-2020	1	500	09/09/20 11:30	306	09/15/20 05:55	09/15/20 08:57	3	1050

Reagent/Solvent Lot ID	Description	Amount	Comments:
			Spike Pipet ID: RAD-RA226-2766953 Bkg Count Time: 30 Minutes Sample Count Time: 30 Minutes Data Entry Date2: 09-SEP-2020 00:00

Radium-226 Liquid

Filename : RA226.XLS
 File type : Excel
 Version # : 1.3.2

Procedure Code : LUC26RAL
 Parmname : Radium-226
 Required MDA : 1 pCi/L
 Halflife of Ra-226 : 1600 years
 Ra-226 Abundance : 1.00
 Halflife of Rn-222 : 3.8235 days

Batch : 2032768
 Analyst : MIC02086
 Prep Date : 9/9/2020
 Ra-226 Method Uncertainty : 0.073648

Batch counted on : LUCAS CELL DETECTOR
 BKG Count time : 30 min

Sample Characteristics					Count Raw Data						Background	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Cell Number	Counting Time (min.)	Gross Counts	Gross CPM	Background Counts	Background CPM	Count Time (min.)	Cell Efficiency (cpm/dpm)
1	519365001.1	0.5000	2.0256E-05	8/18/2020 13:24	108	30	20	0.667	3	0.100	30	2.0199
2	519365002.1	0.5000	2.0256E-05	8/18/2020 16:45	205	30	15	0.500	8	0.267	30	1.9430
3	519365003.1	0.5000	2.0256E-05	8/18/2020 10:05	303	30	22	0.733	1	0.033	30	1.8940
4	519365004.1	0.5000	2.0256E-05	8/18/2020 17:25	403	30	16	0.533	5	0.167	30	1.7460
5	519365005.1	0.5000	2.0256E-05	8/18/2020 15:02	507	30	19	0.633	1	0.033	30	2.0600
6	519365006.1	0.5000	2.0256E-05	8/18/2020 10:05	602	30	19	0.633	6	0.200	30	1.8180
7	519365007.1	0.5000	2.0256E-05	8/18/2020 7:25	707	30	9	0.300	7	0.233	30	1.9700
8	1204626095.1	0.5000	2.0256E-05	9/9/2020 0:00	807	30	7	0.233	2	0.067	30	1.4400
9	1204626096.1	0.5000	2.0256E-05	8/18/2020 13:24	105	30	18	0.600	6	0.200	30	2.0111
10	1204626097.1	0.5000	2.0256E-05	8/18/2020 13:24	201	30	1003	33.433	7	0.233	30	1.8420
11	1204626098.1	0.5000	2.0256E-05	9/9/2020 0:00	306	30	1050	35.000	3	0.100	30	1.8401

RA2032768.xls

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-008
 Instrument SOP: GL-RAD-I-007

Cell Efficiency Error (%)	Cell Calibration Date	Cell Calibration Due Date	De-Gas Date/Time	Rn-222 Ingrow End Date/Time	Count Start Date/Time	Rn-222 Corrections			Ra-226 Decay
						De-Gas to Ingrowth	Ingrowth to Count	During Count	
6.875%	5/1/2020	4/30/2021	9/9/2020 11:30	9/15/2020 5:20	9/15/2020 8:16	0.647	0.978	1.002	1.000
3.400%	8/1/2020	7/31/2021	9/9/2020 11:30	9/15/2020 5:20	9/15/2020 8:16	0.647	0.978	1.002	1.000
9.523%	1/20/2020	12/31/2020	9/9/2020 11:30	9/15/2020 5:20	9/15/2020 8:16	0.647	0.978	1.002	1.000
5.200%	3/1/2020	1/31/2021	9/9/2020 11:30	9/15/2020 5:20	9/15/2020 8:16	0.647	0.978	1.002	1.000
2.300%	6/2/2020	5/31/2021	9/9/2020 11:30	9/15/2020 5:20	9/15/2020 8:16	0.647	0.978	1.002	1.000
2.600%	7/2/2020	6/30/2021	9/9/2020 11:30	9/15/2020 5:20	9/15/2020 8:16	0.647	0.978	1.002	1.000
2.900%	11/1/2019	10/31/2020	9/9/2020 11:30	9/15/2020 5:20	9/15/2020 8:16	0.647	0.978	1.002	1.000
7.500%	3/31/2020	3/31/2021	9/9/2020 11:30	9/15/2020 5:20	9/15/2020 8:16	0.647	0.978	1.002	1.000
8.623%	5/1/2020	4/30/2021	9/9/2020 11:30	9/15/2020 5:55	9/15/2020 8:57	0.648	0.977	1.002	1.000
5.600%	8/1/2020	7/31/2021	9/9/2020 11:30	9/15/2020 5:55	9/15/2020 8:57	0.648	0.977	1.002	1.000
6.024%	1/20/2020	12/31/2020	9/9/2020 11:30	9/15/2020 5:55	9/15/2020 8:57	0.648	0.977	1.002	1.000

- Notes:
 1 - Results are decay corrected to Sample Date/Time
 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : 1715-E
Spike Exp Date : 5/21/2021
Spike Activity (dpm/ml): 300.26
Spike Volume Added: 0.10

LCS S/N : 1715-E
LCS Exp Date : 5/21/2021
LCS Activity (dpm/ml): 300.26
LCS Volume Added: 0.10

Results																
Pos.	Decision Level pCi/L	Critical Level pCi/L	Required MDA pCi/L	MDA pCi/L	Sample Act. Conc. pCi/L	Sample Act. Error %	Net Count Rate CPM	Net Count Rate Error CPM	2 SIGMA Counting Uncertainty pCi/L	2 SIGMA Total Prop. Uncertainty pCi/L	Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery
1	0.1344	0.0949	1	0.2603	0.4002	29.04%	0.5667	0.1599	0.2213	0.2350		SAMPLE				
2	0.2281	0.1610	1	0.3955	0.1713	68.60%	0.2333	0.1599	0.2300	0.2316		SAMPLE				
3	0.0827	0.0584	1	0.1921	0.5272	24.74%	0.7000	0.1599	0.2360	0.2668		SAMPLE				
4	0.2007	0.1417	1	0.3650	0.2996	41.98%	0.3667	0.1528	0.2446	0.2503		SAMPLE				
5	0.0761	0.0537	1	0.1766	0.4155	24.95%	0.6000	0.1491	0.2023	0.2119		SAMPLE				
6	0.2111	0.1490	1	0.3765	0.3400	38.55%	0.4333	0.1667	0.2563	0.2615		SAMPLE				
7	0.2104	0.1486	1	0.3695	0.0483	200.02%	0.0667	0.1333	0.1892	0.1894		SAMPLE				
8	0.1539	0.1086	1	0.3163	0.1651	60.47%	0.1667	0.1000	0.1942	0.1971		MB				
9	0.1905	0.1345	1	0.3398	0.2833	41.73%	0.4000	0.1633	0.2266	0.2352	519365001.1	DUP	34.2%			
10	0.2247	0.1586	1	0.3946	25.6684	6.45%	33.2000	1.0593	1.6053	4.9237	519365001.1	MS			27.0514	93.4%
11	0.1472	0.1039	1	0.2853	27.0099	6.77%	34.9000	1.0817	1.6408	5.2976		LCS			27.0508	99.8%

Continuing Calibration Data

[IMAGE]

Ludlum Alpha Scintillation Counter Checks for 15-SEP-2020

Short Name	Parmname	Run Time	Count Time	Counts	CPM	Stdev	Status	Comments
LUCAS1	EFF	06:57	1	1.27E+05	126820	0.22		
LUCAS2	EFF	07:12	1	1.36E+05	136248	2.23		
LUCAS3	EFF	06:55	1	1.39E+05	138653	2.1		
LUCAS4	EFF	06:54	1	1.32E+05	132012	2.83		
LUCAS5	EFF	06:53	1	1.34E+05	133708	1.98		
LUCAS6	EFF	06:52	1	1.36E+05	135634	1.33		
LUCAS7	EFF	06:51	1	1.38E+05	137973	1.76		
LUCAS8	EFF	06:50	1	1.34E+05	133725	1.11		

Reviewed by:



Lyndsey Pace

Date: 15-SEP-20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: LUCAS CELL DETECTOR

Batch ID: 2032768

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
519365001	SAMPLE	MXH8	LUCAS1	SEP-15-20 08:16:00	DONE	Lucas Cell	01-MAY-20 00:00
519365002	SAMPLE	MXH8	LUCAS2	SEP-15-20 08:16:00	DONE	Lucas Cell	01-AUG-20 00:00
519365003	SAMPLE	MXH8	LUCAS3	SEP-15-20 08:16:00	DONE	Lucas Cell	20-JAN-20 00:00
519365004	SAMPLE	MXH8	LUCAS4	SEP-15-20 08:16:00	DONE	Lucas Cell	01-MAR-20 00:00
519365005	SAMPLE	MXH8	LUCAS5	SEP-15-20 08:16:00	DONE	Lucas Cell	02-JUN-20 00:00
519365006	SAMPLE	MXH8	LUCAS6	SEP-15-20 08:16:00	DONE	Lucas Cell	02-JUL-20 00:00
519365007	SAMPLE	MXH8	LUCAS7	SEP-15-20 08:16:00	DONE	Lucas Cell	01-NOV-19 00:00
1204626095	MB	MXH8	LUCAS8	SEP-15-20 08:16:00	DONE	Lucas Cell	31-MAR-20 00:00
1204626096	DUP	MXH8	LUCAS1	SEP-15-20 08:57:00	DONE	Lucas Cell	01-MAY-20 00:00
1204626097	MS	MXH8	LUCAS2	SEP-15-20 08:57:00	DONE	Lucas Cell	01-AUG-20 00:00
1204626098	LCS	MXH8	LUCAS3	SEP-15-20 08:57:00	DONE	Lucas Cell	20-JAN-20 00:00



CHAIN OF CUSTODY

Environmental Laboratory
1232 Haco Drive
Lansing
Michigan, 48910

Page 1 of 1
Lab Work Order Number L008009

Phone: (517)702-6372

Client Name BWL - Erickson Station		Project Name Erickson GMP		Requested Turn Around	
Client Contact Cheryl Louden		Project Number [none]		Rush requests subject to additional charge	
Address 3725 S. Canal		Project Description		Rush requests subject to lab approval	
City Lansing		PO Number			
State/Zip MI, 48917		Shipped By			
Phone (517) 702-6396		Tracking Number			
FAX 517-702-6373					
Sampler Marc Wahrer					

Sample Name	Field ID	Sampled Date	Sampled Time	Sample Type	Matrix Code	Container Count	Preservation Code						
							Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Pb, Li, Hg, Mn, Se, Tl	TSS	TDS, Cl, SO4, F	adium 226	adium 228	Sample	Comments
MW-1		8/18/2020	1324	G	GW	1	b	a	a	b	b		
MW-2		8/18/2020	1645	G	GW	1	b	a	a	b	b		
MW-4		8/18/2020	1005	G	GW	1	b	a	a	b	b		
MW-5		8/18/2020	1725	G	GW	1	b	a	a	b	b		
MW-6		8/18/2020	1502	G	GW	1	b	a	a	b	b		
MW-4 Duplicate		8/18/2020	1005	G	GW	1	b	a	a	b	b		
Field Blank		8/18/2020	725	G	DI	1	b	a	a	b	b		

Relinquished By <i>[Signature]</i>	Date/Time 8/19/20	Received By <i>[Signature]</i>	Date/Time 8/19/20	Comments
Relinquished By	Date/Time 0700	Received By	Date/Time 0700	
Relinquished By	Date/Time	Received By	Date/Time	
Cooler Numbers and Temperatures				



Lansing Board of Water and Light
Environmental Services Laboratory
1232 Haco Dr.
Lansing, Michigan 48901

30 October 2020

BWL - Erickson Station
Attn: Cheryl Louden
3725 S. Canal
Lansing, MI 48917

Project: Erickson GMP

Dear Cheryl Louden,

Enclosed is a copy of the laboratory report for the following work order(s) received by Lansing Board of Water and Light Environmental Services Laboratory:

Work Order
L009005

Received
9/16/2020 9:00:00AM

Account Number
30926 10021

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

Sincerely,

A handwritten signature in blue ink that reads "Jennifer Caporale".

Jennifer Caporale, Supervisor



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/30/2020

Sample Name: MW-1

Lab #: L009005-01 Ground Water

Collected: 15-Sep-20 12:39

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	1200	1.0	uS/cm	1		15-Sep-20 12:39	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		15-Sep-20 12:39	maw	FIELD	
Gallons Purged	2.50		Gallons	1		15-Sep-20 12:39	maw	FIELD	
Oxidation Reduction Potential	-109.8	-999.0	mV	1		15-Sep-20 12:39	maw	FIELD	
pH	6.9	7.0	pH Units	1		15-Sep-20 12:39	maw	SM 4500H+B	
Static Head Measurement	14.7		Feet	1		15-Sep-20 12:39	maw	FIELD	
Temperature	16		°C	1		15-Sep-20 12:39	maw	SM 2550B	
Turbidity	16	0.10	NTU	1		15-Sep-20 12:39	maw	SM 2130B	

Sample Name: MW-2

Lab #: L009005-02 Ground Water

Collected: 15-Sep-20 16:00

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	1800	1.0	uS/cm	1		15-Sep-20 16:00	maw	SM 2510B	
Dissolved oxygen	0.120	0.100	mg/L	1		15-Sep-20 16:00	maw	FIELD	
Gallons Purged	2.50		Gallons	1		15-Sep-20 16:00	maw	FIELD	
Oxidation Reduction Potential	-75.80	-999.0	mV	1		15-Sep-20 16:00	maw	FIELD	
pH	6.8	7.0	pH Units	1		15-Sep-20 16:00	maw	SM 4500H+B	
Static Head Measurement	20.3		Feet	1		15-Sep-20 16:00	maw	FIELD	
Temperature	14		°C	1		15-Sep-20 16:00	maw	SM 2550B	
Turbidity	4.2	0.10	NTU	1		15-Sep-20 16:00	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station
 Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/30/2020

Sample Name: MW-4

Lab #: L009005-03 Ground Water

Collected: 15-Sep-20 10:27

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	890	1.0	uS/cm	1		15-Sep-20 10:27	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		15-Sep-20 10:27	maw	FIELD	
Gallons Purged	2.50		Gallons	1		15-Sep-20 10:27	maw	FIELD	
Oxidation Reduction Potential	-153.2	-999.0	mV	1		15-Sep-20 10:27	maw	FIELD	
pH	7.3	7.0	pH Units	1		15-Sep-20 10:27	maw	SM 4500H+B	
Static Head Measurement	17.9		Feet	1		15-Sep-20 10:27	maw	FIELD	
Temperature	14		°C	1		15-Sep-20 10:27	maw	SM 2550B	
Turbidity	1.6	0.10	NTU	1		15-Sep-20 10:27	maw	SM 2130B	

Sample Name: MW-5

Lab #: L009005-04 Ground Water

Collected: 15-Sep-20 16:36

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	1700	1.0	uS/cm	1		15-Sep-20 16:36	maw	SM 2510B	
Dissolved oxygen	2.15	0.100	mg/L	1		15-Sep-20 16:36	maw	FIELD	
Gallons Purged	3.50		Gallons	1		15-Sep-20 16:36	maw	FIELD	
Oxidation Reduction Potential	18.51	-999.0	mV	1		15-Sep-20 16:36	maw	FIELD	
pH	7.2	7.0	pH Units	1		15-Sep-20 16:36	maw	SM 4500H+B	
Static Head Measurement	18.2		Feet	1		15-Sep-20 16:36	maw	FIELD	
Temperature	12		°C	1		15-Sep-20 16:36	maw	SM 2550B	
Turbidity	15	0.10	NTU	1		15-Sep-20 16:36	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/30/2020

Sample Name: MW-6

Lab #: L009005-05 Ground Water

Collected: 15-Sep-20 14:18

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory	Analysis	By	Method	Notes
	Result	Limit	Units		Limit	Date/Time			
Conductivity	1300	1.0	uS/cm	1		15-Sep-20 14:18	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		15-Sep-20 14:18	maw	FIELD	
Gallons Purged	2.50		Gallons	1		15-Sep-20 14:18	maw	FIELD	
Oxidation Reduction Potential	66.50	-999.0	mV	1		15-Sep-20 14:18	maw	FIELD	
pH	6.8	7.0	pH Units	1		15-Sep-20 14:18	maw	SM 4500H+B	
Static Head Measurement	20.1		Feet	1		15-Sep-20 14:18	maw	FIELD	
Temperature	14		°C	1		15-Sep-20 14:18	maw	SM 2550B	
Turbidity	7.0	0.10	NTU	1		15-Sep-20 14:18	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station

Client Project Manager: Cheryl Louden

Report Date: 10/30/2020

Address: 3725 S. Canal

Lansing MI, 48917

Approved By: _____

Jennifer Caporale

Notes and Definitions

- AL Action Level (Action Level = Regulatory Limit)
- MCL Maximum Contaminant Level
- PEL Permissible Exposure Limit (Permissible Exposure Limit = Regulatory Limit)
- RPD Relative Percent Difference
- OT Odor Threshold
- ND Non Detect

All drinking water regulatory limits are MCL's with the exception of Lead and Copper unless otherwise noted.



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ERICKSON GMP

SDG Batch:

17448

Pages 1 - 257



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BOARD OF WATER & LIGHT

PROJECT: ERICKSON GMP

SDG Batch:
17448.01

Prepared by:
Merit Laboratories, Inc.

October 20, 2020

Inorganics Inventory Sheet - SDG: S17448

Laboratory Name: Merit Laboratories, Inc.
City / State: East Lansing, MI
Sample Delivery Group: S17448.01 - .07

Deliverable	References		Pages		Checklist	
	Form	CLP	From	To	Lab	Audit
1. Inventory Sheet (not numbered)	This	DC-2			<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. SDG Case Narrative			1	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Analytical Summary Report			3	34	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. ICP/MS Metals Data			35	137		
Sequence / Injection Log		F.0			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Sheet		F. I			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initial Calibration and Calibration Verification		F. IIA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRDL Standards		F. IIB			<input type="checkbox"/>	<input type="checkbox"/>
Blanks		F. III			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Interference Check Sample		F. IVB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		F. VA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Digest Spike Sample Recovery		F. VB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duplicates		F. VI			<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		F. VII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Serial Dilutions		F. VIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		F. XIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP/MS Tune		F. XIV			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Internal Standard Relative Intensity Summary		F. XV			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument Detection Limits (IDL) & MDLs		F. IX			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Linear Ranges		F. XI			<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP/MS Raw Data					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation / Digestion Log		F. XII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Mercury Data			138	156		
Sequence / Injection Log		F.0			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Sheet		F. I			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initial Calibration and Calibration Verification		F. IIA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRDL Standards		F. IIB			<input type="checkbox"/>	<input type="checkbox"/>
Blanks		F. III			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		F. VA			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Digest Spike Sample Recovery		F. VB			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duplicates		F. VI			<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		F. VII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		F. XIII			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Mercury Cold Vapor Raw Data					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation / Digestion Log					<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Ion Chromatography Data			157	249		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Calibration Curve - data and evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Total Suspended Solids Data			250	251		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>

Inorganics Inventory Sheet - SDG: S17448

Deliverable	References		Pages		Checklist	
	Form	CLP	From	To	Lab	Audit
8. Total Dissolved Solids Data			252	252		
Bench Sheet - sample and QC sample evaluation					<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Shipping / Receiving Documents			253	257		
Chain-of-Custody					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample log-in sheet					<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample Receipt					<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Subcontracted Analysis Report						
GEL Laboratories – Radiological Analysis (Total Pages 50)					<input checked="" type="checkbox"/>	<input type="checkbox"/>



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CASE NARRATIVE
CLIENT: BOARD OF WATER & LIGHT
PROJECT: ERICKSON GMP
Merit IDs: S17448.01-S17448.07

- Field Sampling:** Marc Wahrer performed the fieldwork.
- Analytical Bottles:** All bottles were sent with the appropriate preservation in it. Please see the bottle list attached.
- Sample Receiving:** All samples were received by the laboratory (09/16/2020). Dates and signatures can be found on the Chain of Custody Records. The sample receipts specify the actual tags and bottles received and logged into the laboratory “vlims” system.

ANALYSES

Metals: All metal analyses were performed according to Method 200.8. The metal digestion was performed according to Method 3015A. The QC requirements were followed for this specific project and method-specified criteria were met. *Outliers:* None

Notes: Dilution test not applicable if measured concentration is less than 100 times MDL.

Mercury: All mercury QC requirements were met according to the specifications in Method 245.1. *Outliers:* None

Fluoride: All fluoride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Chloride: All chloride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Sulfate: All Sulfate QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Total Suspended Solids: All total suspended solids QC requirements were met according to the specifications in Method 2540 D. *Outliers:* None

Total Dissolved Solids: All total suspended solids QC requirements were met according to the specifications in Method 2540 C. *Outliers:* None



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Radium 226 & 228: All radiological analysis were subcontracted out to GEL Laboratories. GEL Laboratories analytical report is included.

Data Reporting: The analytical reports are reflective of what is on a given Chain-of-Custody record (COC). Merit's IDs were assigned to the samples as they were delivered and accepted by our log-in staff.

"I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness, for other than the condition detailed above. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature."

Barb Ball
QA Officer

10/20/2020
Date



Analytical Laboratory Report

Report ID: S17448.01(01)
Generated on 10/15/2020

Report to
Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary
Lab Sample ID(s): S17448.01-S17448.07
Project: Erickson GMP
Collected Date(s): 09/15/2020
Submitted Date/Time: 09/16/2020 11:45
Sampled by: Marc Wahrer
P.O. #:

Table of Contents
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Sample Summary (Page 5)

Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

All Metal Results Are Reported As Total



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
E300.0	EPA Method 300.0 Revision 2.1
SM2540C	Standard Method 2540 C 2011
SM2540D	Standard Method 2540 D 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S17448.01	MW-1 L009005-01	Groundwater	09/15/20 12:39
S17448.02	MW-2 L009005-02	Groundwater	09/15/20 16:00
S17448.03	MW-4 L009005-03	Groundwater	09/15/20 10:27
S17448.04	MW-5 L009005-04	Groundwater	09/15/20 16:36
S17448.05	MW-6 L009005-05	Groundwater	09/15/20 14:18
S17448.06	MW-4 Duplicate L009005-06	Groundwater	09/15/20 10:27
S17448.07	Field Blank L009005-07	Water	09/15/20 07:50



Analytical Laboratory Report

Lab Sample ID: S17448.01

Sample Tag: MW-1 L009005-01

Collected Date/Time: 09/15/2020 12:39

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	5.5	IR
2	1L Plastic	None	Yes	5.5	IR
1	125ml Plastic	HNO3	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/24/20 11:15	JRH	
Metal Digestion	Completed	SW3015A	09/25/20 09:30	JRH	

Inorganics

Method: E300.0, Run Date: 09/17/20 08:14, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 09/17/20 08:18, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	59	10	0.16	mg/L	10	16887-00-6	
Sulfate	77	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 09/19/20 16:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	768	20	1	mg/L	2		

Method: SM2540D, Run Date: 09/17/20 18:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	55	3	1	mg/L	3.33		

Metals

Method: E200.8, Run Date: 09/25/20 14:15, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	170	2.5	0.22	mg/L	25	7440-70-2	

Method: E200.8, Run Date: 09/25/20 12:01, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.006	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.148	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	0.44	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.039	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S17448.01 (continued)

Sample Tag: MW-1 L009005-01

Method: E200.8, Run Date: 09/25/20 12:01, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 09/24/20 13:59, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/15/20 13:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S17448.02

Sample Tag: MW-2 L009005-02

Collected Date/Time: 09/15/2020 16:00

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	5.5	IR
2	1L Plastic	None	Yes	5.5	IR
1	125ml Plastic	HNO3	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/24/20 11:15	JRH	
Metal Digestion	Completed	SW3015A	09/25/20 09:30	JRH	

Inorganics

Method: E300.0, Run Date: 09/17/20 08:27, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 09/17/20 08:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	88	50	0.80	mg/L	50	16887-00-6	
Sulfate	560	50	3.0	mg/L	50	14808-79-8	

Method: SM2540C, Run Date: 09/19/20 16:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,390	20	1	mg/L	2		

Method: SM2540D, Run Date: 09/17/20 18:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 09/25/20 14:18, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	270	2.5	0.22	mg/L	25	7440-70-2	

Method: E200.8, Run Date: 09/25/20 12:05, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.039	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	5.97	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.066	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.011	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S17448.02 (continued)

Sample Tag: MW-2 L009005-02

Method: E200.8, Run Date: 09/25/20 12:05, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 09/24/20 14:01, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/15/20 13:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S17448.03

Sample Tag: MW-4 L009005-03

Collected Date/Time: 09/15/2020 10:27

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	5.5	IR
2	1L Plastic	None	Yes	5.5	IR
1	125ml Plastic	HNO3	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/24/20 11:15	JRH	
Metal Digestion	Completed	SW3015A	09/25/20 09:30	JRH	

Inorganics

Method: E300.0, Run Date: 09/17/20 08:40, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 09/17/20 08:43, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	68	10	0.16	mg/L	10	16887-00-6	
Sulfate	58	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 09/19/20 16:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	572	20	1	mg/L	2		

Method: SM2540D, Run Date: 09/17/20 18:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 09/25/20 14:20, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	108	2.5	0.22	mg/L	25	7440-70-2	

Method: E200.8, Run Date: 09/25/20 12:08, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.009	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.163	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	0.07	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.010	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.005	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S17448.03 (continued)

Sample Tag: MW-4 L009005-03

Method: E200.8, Run Date: 09/25/20 12:08, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 09/24/20 14:03, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/15/20 13:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S17448.04

Sample Tag: MW-5 L009005-04

Collected Date/Time: 09/15/2020 16:36

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	5.5	IR
2	1L Plastic	None	Yes	5.5	IR
1	125ml Plastic	HNO3	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/24/20 11:15	JRH	
Metal Digestion	Completed	SW3015A	09/25/20 09:30	JRH	

Inorganics

Method: E300.0, Run Date: 09/17/20 08:53, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 09/17/20 08:56, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	77	50	0.80	mg/L	50	16887-00-6	
Sulfate	791	50	3.0	mg/L	50	14808-79-8	

Method: SM2540C, Run Date: 09/19/20 16:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,540	20	1	mg/L	2		

Method: SM2540D, Run Date: 09/17/20 18:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	61	3	1	mg/L	2.00		

Metals

Method: E200.8, Run Date: 09/25/20 14:22, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	266	2.5	0.22	mg/L	25	7440-70-2	

Method: E200.8, Run Date: 09/25/20 12:12, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.043	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	5.00	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.091	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.053	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S17448.04 (continued)

Sample Tag: MW-5 L009005-04

Method: E200.8, Run Date: 09/25/20 12:12, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 09/24/20 14:05, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/15/20 13:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S17448.05

Sample Tag: MW-6 L009005-05

Collected Date/Time: 09/15/2020 14:18

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	5.5	IR
2	1L Plastic	None	Yes	5.5	IR
1	125ml Plastic	HNO3	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/24/20 11:15	JRH	
Metal Digestion	Completed	SW3015A	09/25/20 09:30	JRH	

Inorganics

Method: E300.0, Run Date: 09/17/20 09:09, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	43	10	0.16	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 09/17/20 09:06, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 09/17/20 12:22, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	264	25	1.5	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 09/19/20 16:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	880	20	1	mg/L	2		

Method: SM2540D, Run Date: 09/18/20 17:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 09/25/20 14:24, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	192	2.5	0.22	mg/L	25	7440-70-2	

Method: E200.8, Run Date: 09/25/20 12:16, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.054	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	1.05	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	



Analytical Laboratory Report

Lab Sample ID: S17448.05 (continued)

Sample Tag: MW-6 L009005-05

Method: E200.8, Run Date: 09/25/20 12:16, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.055	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.031	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 09/24/20 14:07, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/15/20 13:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S17448.06

Sample Tag: MW-4 Duplicate L009005-06

Collected Date/Time: 09/15/2020 10:27

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	5.5	IR
2	1L Plastic	None	Yes	5.5	IR
1	125ml Plastic	HNO3	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/24/20 11:15	JRH	
Metal Digestion	Completed	SW3015A	09/25/20 09:30	JRH	

Inorganics

Method: E300.0, Run Date: 09/17/20 09:18, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 09/17/20 09:22, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	70	10	0.16	mg/L	10	16887-00-6	
Sulfate	58	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 09/19/20 16:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	542	20	1	mg/L	2		

Method: SM2540D, Run Date: 09/18/20 17:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 09/25/20 14:27, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	110	2.5	0.22	mg/L	25	7440-70-2	

Method: E200.8, Run Date: 09/25/20 12:19, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.007	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.163	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Boron	0.07	0.04	0.0018	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.010	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S17448.06 (continued)

Sample Tag: MW-4 Duplicate L009005-06

Method: E200.8, Run Date: 09/25/20 12:19, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 09/24/20 14:08, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/15/20 13:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S17448.07

Sample Tag: Field Blank L009005-07

Collected Date/Time: 09/15/2020 07:50

Matrix: Water

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	5.5	IR
2	1L Plastic	None	Yes	5.5	IR
1	125ml Plastic	HNO3	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/24/20 11:15	JRH	
Metal Digestion	Completed	SW3015A	09/25/20 09:30	JRH	

Inorganics

Method: E300.0, Run Date: 09/17/20 10:35, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	0.5	0.04	mg/L	2.5	16984-48-8	

Method: E300.0, Run Date: 09/17/20 09:35, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	2.5	0.04	mg/L	2.5	16887-00-6	
Sulfate	Not detected	2.5	0.15	mg/L	2.5	14808-79-8	

Method: SM2540C, Run Date: 09/19/20 16:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	Not detected	20	1	mg/L	2		

Method: SM2540D, Run Date: 09/18/20 17:40, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 09/25/20 14:11, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	Not detected	0.5	0.017	mg/L	2	7440-70-2	

Method: E200.8, Run Date: 09/25/20 11:56, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0010	mg/L	2	7440-36-0	
Arsenic	Not detected	0.002	0.00010	mg/L	2	7440-38-2	
Barium	Not detected	0.005	0.000065	mg/L	2	7440-39-3	
Beryllium	Not detected	0.001	0.000086	mg/L	2	7440-41-7	
Boron	Not detected	0.04	0.00070	mg/L	2	7440-42-8	
Cadmium	Not detected	0.0005	0.000076	mg/L	2	7440-43-9	
Chromium	Not detected	0.005	0.000039	mg/L	2	7440-47-3	
Cobalt	Not detected	0.005	0.000043	mg/L	2	7440-48-4	
Lead	Not detected	0.003	0.000076	mg/L	2	7439-92-1	
Lithium*	Not detected	0.005	0.00065	mg/L	2	7439-93-2	
Molybdenum	Not detected	0.005	0.000087	mg/L	2	7439-98-7	
Selenium	Not detected	0.005	0.00084	mg/L	2	7782-49-2	



Analytical Laboratory Report

Lab Sample ID: S17448.07 (continued)

Sample Tag: Field Blank L009005-07

Method: E200.8, Run Date: 09/25/20 11:56, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000034	mg/L	2	7440-28-0	

Method: E245.1, Run Date: 09/24/20 14:10, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/15/20 13:30, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Quality Control Cover Page

Report ID: S17448.01(01)
Report Date: 10/15/2020
Project: Erickson GMP
Lab Sample ID(s): S17448.01-S17448.07

Report to:

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Sample ID	Sample Tag	Collected	Matrix	Analysis Departments
S17448.01	MW-1 L009005-01	09/15/2020 12:39	Groundwater	Inorganics, Metals
S17448.02	MW-2 L009005-02	09/15/2020 16:00	Groundwater	Inorganics, Metals
S17448.03	MW-4 L009005-03	09/15/2020 10:27	Groundwater	Inorganics, Metals
S17448.04	MW-5 L009005-04	09/15/2020 16:36	Groundwater	Inorganics, Metals
S17448.05	MW-6 L009005-05	09/15/2020 14:18	Groundwater	Inorganics, Metals
S17448.06	MW-4 Duplicate L009005-06	09/15/2020 10:27	Groundwater	Inorganics, Metals
S17448.07	Field Blank L009005-07	09/15/2020 07:50	Water	Inorganics, Metals

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager



Quality Control Report

Report ID: QC-S17448-01
Generated on 10/20/2020

Report to
Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: 517-702-6372 FAX:

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S17448.01-S17448.07
Project: Erickson GMP
Submitted Date/Time: 09/16/2020 11:45
Sampled by: Marc Wahrer
P.O. #:

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-8)
Prep Batch Summary (Pages 9-12)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S17448.01

Sample Tag: MW-1 L009005-01

Collected Date/Time: 09/15/2020 12:39

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	09/17/20 08:18	CL200917-W1-B	CL200917-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	09/17/20 08:14	FL200917-W1-A	FL200917-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	09/17/20 08:18	SFT200917-W1-B	SFT200917-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A	TDS200919A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	09/17/20 18:30	TSS200917	TSS200917	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Barium	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Boron	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	09/25/20 14:15	MT5-20-0925B	MTD-092520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	09/24/20 13:59	HG2-HG3-20-0924AHGD-092420-2		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	09/25/20 12:01	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S17448.02

Sample Tag: MW-2 L009005-02

Collected Date/Time: 09/15/2020 16:00

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	09/17/20 08:30	CL200917-W1-B	CL200917-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	09/17/20 08:27	FL200917-W1-A	FL200917-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	09/17/20 08:30	SFT200917-W1-B	SFT200917-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A	TDS200919A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	09/17/20 18:30	TSS200917	TSS200917	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Barium	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Boron	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	09/25/20 14:18	MT5-20-0925B	MTD-092520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	09/24/20 14:01	HG2-HG3-20-0924AHGD-092420-2		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	09/25/20 12:05	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S17448.03

Sample Tag: MW-4 L009005-03

Collected Date/Time: 09/15/2020 10:27

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	09/17/20 08:43	CL200917-W1-B	CL200917-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	09/17/20 08:40	FL200917-W1-A	FL200917-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	09/17/20 08:43	SFT200917-W1-B	SFT200917-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A	TDS200919A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	09/17/20 18:30	TSS200917	TSS200917	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Barium	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Boron	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	09/25/20 14:20	MT5-20-0925B	MTD-092520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	09/24/20 14:03	HG2-HG3-20-0924AHGD-092420-2		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	09/25/20 12:08	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S17448.04

Sample Tag: MW-5 L009005-04

Collected Date/Time: 09/15/2020 16:36

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	09/17/20 08:56	CL200917-W1-B	CL200917-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	09/17/20 08:53	FL200917-W1-A	FL200917-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	09/17/20 08:56	SFT200917-W1-B	SFT200917-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A	TDS200919A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	09/17/20 18:30	TSS200917	TSS200917	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Barium	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Boron	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	09/25/20 14:22	MT5-20-0925B	MTD-092520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	09/24/20 14:05	HG2-HG3-20-0924AHGD-092420-2		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	09/25/20 12:12	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S17448.05

Sample Tag: MW-6 L009005-05

Collected Date/Time: 09/15/2020 14:18

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	09/17/20 09:09	CL200917-W1-B	CL200917-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	09/17/20 09:06	FL200917-W1-A	FL200917-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	09/17/20 12:22	SFT200917-W1-B	SFT200917-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A	TDS200919A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	09/18/20 17:40	TSS200918	TSS200918	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Barium	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Boron	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	09/25/20 14:24	MT5-20-0925B	MTD-092520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	09/24/20 14:07	HG2-HG3-20-0924AHGD-092420-2		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	09/25/20 12:16	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S17448.06

Sample Tag: MW-4 Duplicate L009005-06

Collected Date/Time: 09/15/2020 10:27

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chloride	E300.0	09/17/20 09:22	CL200917-W1-B	CL200917-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	09/17/20 09:18	FL200917-W1-A	FL200917-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	09/17/20 09:22	SFT200917-W1-B	SFT200917-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A	TDS200919A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	09/18/20 17:40	TSS200918	TSS200918	No	BLK/LCS/DUP
<i>Metals</i>						
Antimony	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Barium	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Boron	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	09/25/20 14:27	MT5-20-0925B	MTD-092520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	09/24/20 14:08	HG2-HG3-20-0924AHGD-092420-2		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	09/25/20 12:19	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S17448.07

Sample Tag: Field Blank L009005-07

Collected Date/Time: 09/15/2020 07:50

Matrix: Water

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	09/17/20 09:35	CL200917-W1-B	CL200917-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	09/17/20 10:35	FL200917-W1-A	FL200917-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	09/17/20 09:35	SFT200917-W1-B	SFT200917-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A	TDS200919A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	09/18/20 17:40	TSS200918	TSS200918	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Barium	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Boron	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	09/25/20 14:11	MT5-20-0925B	MTD-092520-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	09/24/20 14:10	HG2-HG3-20-0924AHGD-092420-2		No	BLK/LCS/MS/MSD
Molybdenum	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	09/25/20 11:56	MT5-20-0925A	MTD-092520-1	No	BLK/LCS/MS/MSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: CL200917-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17448.01	Chloride	E300.0	09/17/20 08:18	CL200917-W1-B
S17448.02	Chloride	E300.0	09/17/20 08:30	CL200917-W1-B
S17448.03	Chloride	E300.0	09/17/20 08:43	CL200917-W1-B
S17448.04	Chloride	E300.0	09/17/20 08:56	CL200917-W1-B
S17448.05	Chloride	E300.0	09/17/20 09:09	CL200917-W1-B
S17448.06	Chloride	E300.0	09/17/20 09:22	CL200917-W1-B
S17448.07	Chloride	E300.0	09/17/20 09:35	CL200917-W1-B

Inorganics, Prep Batch ID: FL200917-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17448.01	Fluoride (Undistilled)	E300.0	09/17/20 08:14	FL200917-W1-A
S17448.02	Fluoride (Undistilled)	E300.0	09/17/20 08:27	FL200917-W1-A
S17448.03	Fluoride (Undistilled)	E300.0	09/17/20 08:40	FL200917-W1-A
S17448.04	Fluoride (Undistilled)	E300.0	09/17/20 08:53	FL200917-W1-A
S17448.05	Fluoride (Undistilled)	E300.0	09/17/20 09:06	FL200917-W1-A
S17448.06	Fluoride (Undistilled)	E300.0	09/17/20 09:18	FL200917-W1-A
S17448.07	Fluoride (Undistilled)	E300.0	09/17/20 10:35	FL200917-W1-A

Inorganics, Prep Batch ID: SFT200917-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17448.01	Sulfate	E300.0	09/17/20 08:18	SFT200917-W1-B
S17448.02	Sulfate	E300.0	09/17/20 08:30	SFT200917-W1-B
S17448.03	Sulfate	E300.0	09/17/20 08:43	SFT200917-W1-B
S17448.04	Sulfate	E300.0	09/17/20 08:56	SFT200917-W1-B
S17448.05	Sulfate	E300.0	09/17/20 12:22	SFT200917-W1-B
S17448.06	Sulfate	E300.0	09/17/20 09:22	SFT200917-W1-B
S17448.07	Sulfate	E300.0	09/17/20 09:35	SFT200917-W1-B

Inorganics, Prep Batch ID: TDS200919A

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17448.01	Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A
S17448.02	Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A
S17448.03	Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A
S17448.04	Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A
S17448.05	Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A
S17448.06	Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A
S17448.07	Total Dissolved Solids	SM2540C	09/19/20 16:40	TDS200919A

Inorganics, Prep Batch ID: TSS200917

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17448.01	Total Suspended Solids	SM2540D	09/17/20 18:30	TSS200917
S17448.02	Total Suspended Solids	SM2540D	09/17/20 18:30	TSS200917
S17448.03	Total Suspended Solids	SM2540D	09/17/20 18:30	TSS200917
S17448.04	Total Suspended Solids	SM2540D	09/17/20 18:30	TSS200917

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TSS200918

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17448.05	Total Suspended Solids	SM2540D	09/18/20 17:40	TSS200918
S17448.06	Total Suspended Solids	SM2540D	09/18/20 17:40	TSS200918
S17448.07	Total Suspended Solids	SM2540D	09/18/20 17:40	TSS200918

Metals, Prep Batch ID: HGD-092420-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17448.01	Mercury	E245.1	09/24/20 13:59	HG2-HG3-20-0924A
S17448.02	Mercury	E245.1	09/24/20 14:01	HG2-HG3-20-0924A
S17448.03	Mercury	E245.1	09/24/20 14:03	HG2-HG3-20-0924A
S17448.04	Mercury	E245.1	09/24/20 14:05	HG2-HG3-20-0924A
S17448.05	Mercury	E245.1	09/24/20 14:07	HG2-HG3-20-0924A
S17448.06	Mercury	E245.1	09/24/20 14:08	HG2-HG3-20-0924A
S17448.07	Mercury	E245.1	09/24/20 14:10	HG2-HG3-20-0924A

Metals, Prep Batch ID: MTD-092520-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17448.01	Antimony	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.01	Arsenic	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.01	Barium	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.01	Beryllium	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.01	Boron	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.01	Cadmium	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.01	Calcium	E200.8	09/25/20 14:15	MT5-20-0925B
S17448.01	Chromium	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.01	Cobalt	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.01	Lead	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.01	Lithium	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.01	Molybdenum	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.01	Selenium	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.01	Thallium	E200.8	09/25/20 12:01	MT5-20-0925A
S17448.02	Antimony	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.02	Arsenic	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.02	Barium	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.02	Beryllium	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.02	Boron	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.02	Cadmium	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.02	Calcium	E200.8	09/25/20 14:18	MT5-20-0925B
S17448.02	Chromium	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.02	Cobalt	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.02	Lead	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.02	Lithium	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.02	Molybdenum	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.02	Selenium	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.02	Thallium	E200.8	09/25/20 12:05	MT5-20-0925A
S17448.03	Antimony	E200.8	09/25/20 12:08	MT5-20-0925A
S17448.03	Arsenic	E200.8	09/25/20 12:08	MT5-20-0925A
S17448.03	Barium	E200.8	09/25/20 12:08	MT5-20-0925A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-092520-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17448.03	Beryllium	E200.8	09/25/20 12:08	MT5-20-0925A
S17448.03	Boron	E200.8	09/25/20 12:08	MT5-20-0925A
S17448.03	Cadmium	E200.8	09/25/20 12:08	MT5-20-0925A
S17448.03	Calcium	E200.8	09/25/20 14:20	MT5-20-0925B
S17448.03	Chromium	E200.8	09/25/20 12:08	MT5-20-0925A
S17448.03	Cobalt	E200.8	09/25/20 12:08	MT5-20-0925A
S17448.03	Lead	E200.8	09/25/20 12:08	MT5-20-0925A
S17448.03	Lithium	E200.8	09/25/20 12:08	MT5-20-0925A
S17448.03	Molybdenum	E200.8	09/25/20 12:08	MT5-20-0925A
S17448.03	Selenium	E200.8	09/25/20 12:08	MT5-20-0925A
S17448.03	Thallium	E200.8	09/25/20 12:08	MT5-20-0925A
S17448.04	Antimony	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.04	Arsenic	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.04	Barium	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.04	Beryllium	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.04	Boron	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.04	Cadmium	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.04	Calcium	E200.8	09/25/20 14:22	MT5-20-0925B
S17448.04	Chromium	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.04	Cobalt	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.04	Lead	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.04	Lithium	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.04	Molybdenum	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.04	Selenium	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.04	Thallium	E200.8	09/25/20 12:12	MT5-20-0925A
S17448.05	Antimony	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.05	Arsenic	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.05	Barium	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.05	Beryllium	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.05	Boron	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.05	Cadmium	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.05	Calcium	E200.8	09/25/20 14:24	MT5-20-0925B
S17448.05	Chromium	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.05	Cobalt	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.05	Lead	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.05	Lithium	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.05	Molybdenum	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.05	Selenium	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.05	Thallium	E200.8	09/25/20 12:16	MT5-20-0925A
S17448.06	Antimony	E200.8	09/25/20 12:19	MT5-20-0925A
S17448.06	Arsenic	E200.8	09/25/20 12:19	MT5-20-0925A
S17448.06	Barium	E200.8	09/25/20 12:19	MT5-20-0925A
S17448.06	Beryllium	E200.8	09/25/20 12:19	MT5-20-0925A
S17448.06	Boron	E200.8	09/25/20 12:19	MT5-20-0925A
S17448.06	Cadmium	E200.8	09/25/20 12:19	MT5-20-0925A
S17448.06	Calcium	E200.8	09/25/20 14:27	MT5-20-0925B
S17448.06	Chromium	E200.8	09/25/20 12:19	MT5-20-0925A
S17448.06	Cobalt	E200.8	09/25/20 12:19	MT5-20-0925A
S17448.06	Lead	E200.8	09/25/20 12:19	MT5-20-0925A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-092520-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17448.06	Lithium	E200.8	09/25/20 12:19	MT5-20-0925A
S17448.06	Molybdenum	E200.8	09/25/20 12:19	MT5-20-0925A
S17448.06	Selenium	E200.8	09/25/20 12:19	MT5-20-0925A
S17448.06	Thallium	E200.8	09/25/20 12:19	MT5-20-0925A
S17448.07	Antimony	E200.8	09/25/20 11:56	MT5-20-0925A
S17448.07	Arsenic	E200.8	09/25/20 11:56	MT5-20-0925A
S17448.07	Barium	E200.8	09/25/20 11:56	MT5-20-0925A
S17448.07	Beryllium	E200.8	09/25/20 11:56	MT5-20-0925A
S17448.07	Boron	E200.8	09/25/20 11:56	MT5-20-0925A
S17448.07	Cadmium	E200.8	09/25/20 11:56	MT5-20-0925A
S17448.07	Calcium	E200.8	09/25/20 14:11	MT5-20-0925B
S17448.07	Chromium	E200.8	09/25/20 11:56	MT5-20-0925A
S17448.07	Cobalt	E200.8	09/25/20 11:56	MT5-20-0925A
S17448.07	Lead	E200.8	09/25/20 11:56	MT5-20-0925A
S17448.07	Lithium	E200.8	09/25/20 11:56	MT5-20-0925A
S17448.07	Molybdenum	E200.8	09/25/20 11:56	MT5-20-0925A
S17448.07	Selenium	E200.8	09/25/20 11:56	MT5-20-0925A
S17448.07	Thallium	E200.8	09/25/20 11:56	MT5-20-0925A

Form 0: Sequence Log

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	10:24:41 Fri 25-Sep-20	Blank	Liquid	
002	10:26:30 Fri 25-Sep-20	Std-0.0001	Liquid	
003	10:28:20 Fri 25-Sep-20	Std-0.0005	Liquid	
004	10:30:09 Fri 25-Sep-20	Std-0.001	Liquid	
005	10:31:58 Fri 25-Sep-20	Std-0.005	Liquid	
006	10:33:48 Fri 25-Sep-20	Std-0.02	Liquid	
007	10:35:38 Fri 25-Sep-20	Std-0.05	Liquid	
008	10:37:27 Fri 25-Sep-20	Std-0.2	Liquid	
009	10:39:16 Fri 25-Sep-20	rinse	Liquid	
010	10:49:49 Fri 25-Sep-20	ICV-0.1	Liquid	ICV
011	10:51:45 Fri 25-Sep-20	CCV-0.1	Liquid	CCV
012	10:53:34 Fri 25-Sep-20	rinse	Liquid	
013	10:59:13 Fri 25-Sep-20	ICB	Liquid	ICB
014	11:01:02 Fri 25-Sep-20	CCB	Liquid	CCB
015	11:02:52 Fri 25-Sep-20	BS-0.0001	Liquid	BS
016	11:14:23 Fri 25-Sep-20	BS-0.0005	Liquid	BS
017	11:17:37 Fri 25-Sep-20	BS-0.001	Liquid	BS
018	11:23:25 Fri 25-Sep-20	BS-0.005	Liquid	BS
019	11:31:25 Fri 25-Sep-20	BS-0.0025	Liquid	BS
020	11:33:15 Fri 25-Sep-20	Solu-AB	Liquid	AB
021	11:35:04 Fri 25-Sep-20	Solu-AA	Liquid	AA
022	11:37:41 Fri 25-Sep-20	092520_1 LCS-0.05	Liquid	LCS
023	11:39:30 Fri 25-Sep-20	Rinse	Liquid	
024	11:45:10 Fri 25-Sep-20	092520_1 LRB	Liquid	LRB
025	11:56:56 Fri 25-Sep-20	17448.07s	Liquid	S
026	11:59:50 Fri 25-Sep-20	17448.01 dil	Liquid	DIL
027	12:01:38 Fri 25-Sep-20	17448.01s	Liquid	S
028	12:03:27 Fri 25-Sep-20	Rinse	Liquid	
029	12:05:15 Fri 25-Sep-20	17448.02s	Liquid	S
030	12:07:05 Fri 25-Sep-20	Rinse	Liquid	
031	12:08:53 Fri 25-Sep-20	17448.03s	Liquid	S
032	12:10:42 Fri 25-Sep-20	Rinse	Liquid	
033	12:12:31 Fri 25-Sep-20	17448.04s	Liquid	S
034	12:14:20 Fri 25-Sep-20	Rinse	Liquid	
035	12:16:09 Fri 25-Sep-20	17448.05s	Liquid	S
036	12:17:58 Fri 25-Sep-20	Rinse	Liquid	
037	12:19:47 Fri 25-Sep-20	17448.06s	Liquid	S
038	12:21:36 Fri 25-Sep-20	Rinse	Liquid	
039	12:30:33 Fri 25-Sep-20	17502.19s diss	Liquid	S
040	12:32:22 Fri 25-Sep-20	Rinse	Liquid	
041	12:34:11 Fri 25-Sep-20	17612.01s	Liquid	S
042	12:36:00 Fri 25-Sep-20	Rinse	Liquid	
043	12:39:05 Fri 25-Sep-20	17448.06 MS-0.05	Liquid	MS
044	12:40:54 Fri 25-Sep-20	17448.06 MSD	Liquid	MSD
045	12:42:43 Fri 25-Sep-20	CCV2-0.1	Liquid	CCV
046	12:44:32 Fri 25-Sep-20	Rinse	Liquid	
047	12:48:20 Fri 25-Sep-20	CCB2	Liquid	CCB

Form 0: Sequence Log

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
001	13:38:06 Fri 25-Sep-20	Blank	Liquid	
002	13:39:15 Fri 25-Sep-20	Std-0.20	Liquid	
003	13:40:24 Fri 25-Sep-20	Std-0.50	Liquid	
004	13:41:34 Fri 25-Sep-20	Std-1.0	Liquid	
005	13:42:43 Fri 25-Sep-20	Std-2.0	Liquid	
006	13:43:53 Fri 25-Sep-20	Std-5.0	Liquid	
007	13:45:02 Fri 25-Sep-20	ICV-2.0	Liquid	ICV
008	13:46:12 Fri 25-Sep-20	CCV-2.0	Liquid	CCV
009	13:47:21 Fri 25-Sep-20	ICB	Liquid	ICB
010	13:48:31 Fri 25-Sep-20	CCB	Liquid	CCB
011	14:03:55 Fri 25-Sep-20	BS-0.05	Liquid	BS
012	14:08:00 Fri 25-Sep-20	092520_1 LCS-1.0	Liquid	LCS
013	14:37:31 Fri 25-Sep-20	092520_1 LRB	Liquid	LRB
014	14:11:58 Fri 25-Sep-20	17448.07s	Liquid	S
015	14:14:12 Fri 25-Sep-20	17448.01 dil	Liquid	DIL
016	14:15:20 Fri 25-Sep-20	17448.01s	Liquid	S
017	14:16:58 Fri 25-Sep-20	rinse	Liquid	
018	14:18:06 Fri 25-Sep-20	17448.02s	Liquid	S
019	14:19:15 Fri 25-Sep-20	rinse	Liquid	
020	14:20:23 Fri 25-Sep-20	17448.03s	Liquid	S
021	14:21:33 Fri 25-Sep-20	rinse	Liquid	
022	14:22:41 Fri 25-Sep-20	17448.04s	Liquid	S
023	14:23:50 Fri 25-Sep-20	rinse	Liquid	
024	14:24:59 Fri 25-Sep-20	17448.05s	Liquid	S
025	14:26:08 Fri 25-Sep-20	rinse	Liquid	
026	14:27:17 Fri 25-Sep-20	17448.06s	Liquid	S
027	14:28:26 Fri 25-Sep-20	rinse	Liquid	
028	14:31:26 Fri 25-Sep-20	17448.03 MS-2.0	Liquid	MS
029	14:32:34 Fri 25-Sep-20	17448.03 MSD	Liquid	MSD
030	14:34:02 Fri 25-Sep-20	CCV2-2.0	Liquid	CCV
031	14:35:11 Fri 25-Sep-20	CCB2	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.01

Sample Tag: MW-1 L009005-01

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	09/25/2020	
7440-42-8	Boron	0.44	0.04	0.0018	mg/L	5	09/25/2020	
7440-38-2	Arsenic	0.006	0.002	0.00026	mg/L	5	09/25/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	09/25/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.00022	mg/L	5	09/25/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	09/25/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	09/25/2020	
7440-39-3	Barium	0.148	0.005	0.00016	mg/L	5	09/25/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	09/25/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	09/25/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	09/25/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	09/25/2020	
7439-93-2	Lithium	0.039	0.005	0.0016	mg/L	5	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.01

Sample Tag: MW-1 L009005-01

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	170	2.5	0.22	mg/L	25	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.02

Sample Tag: MW-2 L009005-02

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	09/25/2020	
7440-42-8	Boron	5.97	0.04	0.0018	mg/L	5	09/25/2020	
7440-38-2	Arsenic	Not detected	0.002	0.00026	mg/L	5	09/25/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	09/25/2020	
7439-98-7	Molybdenum	0.011	0.005	0.00022	mg/L	5	09/25/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	09/25/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	09/25/2020	
7440-39-3	Barium	0.039	0.005	0.00016	mg/L	5	09/25/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	09/25/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	09/25/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	09/25/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	09/25/2020	
7439-93-2	Lithium	0.066	0.005	0.0016	mg/L	5	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.02

Sample Tag: MW-2 L009005-02

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	270	2.5	0.22	mg/L	25	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.03

Sample Tag: MW-4 L009005-03

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	09/25/2020	
7440-42-8	Boron	0.07	0.04	0.0018	mg/L	5	09/25/2020	
7440-38-2	Arsenic	0.009	0.002	0.00026	mg/L	5	09/25/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	09/25/2020	
7439-98-7	Molybdenum	0.005	0.005	0.00022	mg/L	5	09/25/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	09/25/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	09/25/2020	
7440-39-3	Barium	0.163	0.005	0.00016	mg/L	5	09/25/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	09/25/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	09/25/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	09/25/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	09/25/2020	
7439-93-2	Lithium	0.010	0.005	0.0016	mg/L	5	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.03

Sample Tag: MW-4 L009005-03

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	108	2.5	0.22	mg/L	25	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.04

Sample Tag: MW-5 L009005-04

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	09/25/2020	
7440-42-8	Boron	5.00	0.04	0.0018	mg/L	5	09/25/2020	
7440-38-2	Arsenic	Not detected	0.002	0.00026	mg/L	5	09/25/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	09/25/2020	
7439-98-7	Molybdenum	0.053	0.005	0.00022	mg/L	5	09/25/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	09/25/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	09/25/2020	
7440-39-3	Barium	0.043	0.005	0.00016	mg/L	5	09/25/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	09/25/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	09/25/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	09/25/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	09/25/2020	
7439-93-2	Lithium	0.091	0.005	0.0016	mg/L	5	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.04

Sample Tag: MW-5 L009005-04

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	266	2.5	0.22	mg/L	25	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.05

Sample Tag: MW-6 L009005-05

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	09/25/2020	
7440-42-8	Boron	1.05	0.04	0.0018	mg/L	5	09/25/2020	
7440-38-2	Arsenic	Not detected	0.002	0.00026	mg/L	5	09/25/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	09/25/2020	
7439-98-7	Molybdenum	0.031	0.005	0.00022	mg/L	5	09/25/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	09/25/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	09/25/2020	
7440-39-3	Barium	0.054	0.005	0.00016	mg/L	5	09/25/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	09/25/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	09/25/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	09/25/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	09/25/2020	
7439-93-2	Lithium	0.055	0.005	0.0016	mg/L	5	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.05

Sample Tag: MW-6 L009005-05

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	192	2.5	0.22	mg/L	25	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.06

Sample Tag: MW-4 Duplicate L009005-06

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000097	mg/L	5	09/25/2020	
7440-42-8	Boron	0.07	0.04	0.0018	mg/L	5	09/25/2020	
7440-38-2	Arsenic	0.007	0.002	0.00026	mg/L	5	09/25/2020	
7782-49-2	Selenium	Not detected	0.005	0.0021	mg/L	5	09/25/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.00022	mg/L	5	09/25/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.00019	mg/L	5	09/25/2020	
7440-36-0	Antimony	Not detected	0.005	0.0026	mg/L	5	09/25/2020	
7440-39-3	Barium	0.163	0.005	0.00016	mg/L	5	09/25/2020	
7440-28-0	Thallium	Not detected	0.002	0.000086	mg/L	5	09/25/2020	
7439-92-1	Lead	Not detected	0.003	0.00019	mg/L	5	09/25/2020	
7440-41-7	Beryllium	Not detected	0.001	0.00022	mg/L	5	09/25/2020	
7440-48-4	Cobalt	Not detected	0.005	0.00011	mg/L	5	09/25/2020	
7439-93-2	Lithium	0.010	0.005	0.0016	mg/L	5	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.06

Sample Tag: MW-4 Duplicate L009005-06

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	110	2.5	0.22	mg/L	25	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.07

Sample Tag: Field Blank L009005-07

Date Collected: 09/15/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-47-3	Chromium	Not detected	0.005	0.000039	mg/L	2	09/25/2020	
7440-42-8	Boron	Not detected	0.04	0.00070	mg/L	2	09/25/2020	
7440-38-2	Arsenic	Not detected	0.002	0.00010	mg/L	2	09/25/2020	
7782-49-2	Selenium	Not detected	0.005	0.00084	mg/L	2	09/25/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000087	mg/L	2	09/25/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000076	mg/L	2	09/25/2020	
7440-36-0	Antimony	Not detected	0.005	0.0010	mg/L	2	09/25/2020	
7440-39-3	Barium	Not detected	0.005	0.000065	mg/L	2	09/25/2020	
7440-28-0	Thallium	Not detected	0.002	0.000034	mg/L	2	09/25/2020	
7439-92-1	Lead	Not detected	0.003	0.000076	mg/L	2	09/25/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000086	mg/L	2	09/25/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000043	mg/L	2	09/25/2020	
7439-93-2	Lithium	Not detected	0.005	0.00065	mg/L	2	09/25/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Lab Sample ID: S17448.07

Sample Tag: Field Blank L009005-07

Date Collected: 09/15/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7440-70-2	Calcium	Not detected	0.5	0.017	mg/L	2	09/25/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Note/Qualifier Key

b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
010 ICV-0.1	ICV	1	Cr	0.0986	0.1	99	90/110	mg/L	Liquid
			Co	0.0987	0.1	99	90/110		
			As	0.0971	0.1	97	90/110		
			Mo	0.0965	0.1	97	90/110		
			Cd	0.0983	0.1	98	90/110		
			Sb	0.0940	0.1	94	90/110		
			Ba	0.0994	0.1	99	90/110		
			Tl	0.0986	0.1	99	90/110		
			Pb	0.0970	0.1	97	90/110		
			Li	0.103	0.1	103	90/110		
			Be	0.106	0.1	106	90/110		
			B	0.106	0.1	106	90/110		
			Se	0.0983	0.1	98	90/110		
011 CCV-0.1	CCV	1	Cr	0.100	0.1	100	90/110	mg/L	Liquid
			Co	0.0993	0.1	99	90/110		
			As	0.103	0.1	103	90/110		
			Mo	0.0999	0.1	100	90/110		
			Cd	0.102	0.1	102	90/110		
			Sb	0.100	0.1	100	90/110		
			Ba	0.100	0.1	100	90/110		
			Tl	0.0992	0.1	99	90/110		
			Pb	0.0990	0.1	99	90/110		
			Li	0.103	0.1	103	90/110		
			Be	0.107	0.1	107	90/110		
			B	0.104	0.1	104	90/110		
			Se	0.0988	0.1	99	90/110		
045 CCV2-0.1	CCV	1	Cr	0.100	0.1	100	90/110	mg/L	Liquid
			Co	0.0999	0.1	100	90/110		
			As	0.100	0.1	100	90/110		
			Mo	0.0972	0.1	97	90/110		
			Cd	0.101	0.1	101	90/110		
			Sb	0.0999	0.1	100	90/110		
			Ba	0.101	0.1	101	90/110		
			Tl	0.0975	0.1	98	90/110		
			Pb	0.0962	0.1	96	90/110		
			Li	0.103	0.1	103	90/110		
			Be	0.105	0.1	105	90/110		
			B	0.107	0.1	107	90/110		
			Se	0.0993	0.1	99	90/110		

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
007 ICV-2.0	ICV	1	Ca	2.11	2.0	106	90/110	mg/L	Liquid
008 CCV-2.0	CCV	1	Ca	2.10	2.0	105	90/110	mg/L	Liquid
030 CCV2-2.0	CCV	1	Ca	2.14	2.0	107	90/110	mg/L	Liquid

Form 3: Blanks

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
013 ICB	ICB	1	Cr	<0.001	-0.000008	mg/L	Liquid
			Co	<0.001	0.000011		
			As	<0.0004	0.000168		
			Mo	<0.001	0.000504		
			Cd	<0.0001	-0.000013		
			Sb	<0.001	0.000403		
			Ba	<0.001	0.000000		
			Tl	<0.0004	0.000012		
			Pb	<0.0004	0.000012		
			Li	<0.001	0.000020		
			Be	<0.0002	0.000000		
			B	<0.008	0.000380		
			Se	<0.001	-0.000127		
014 CCB	CCB	1	Cr	<0.001	-0.000009	mg/L	Liquid
			Co	<0.001	0.000004		
			As	<0.0004	0.000046		
			Mo	<0.001	0.000399		
			Cd	<0.0001	-0.000033		
			Sb	<0.001	0.000334		
			Ba	<0.001	0.000005		
			Tl	<0.0004	0.000007		
			Pb	<0.0004	0.000010		
			Li	<0.001	-0.000010		
			Be	<0.0002	0.000000		
			B	<0.008	0.000267		
			Se	<0.001	-0.000113		
024 092520_1 LRB	LRB	1	Cr	<0.001	0.000002	mg/L	Liquid
			Co	<0.001	0.000000		
			As	<0.0004	0.000035		
			Mo	<0.001	0.000647		
			Cd	<0.0001	-0.000019		
			Sb	<0.001	0.000094		
			Ba	<0.001	0.000003		
			Tl	<0.0004	0.000001		
			Pb	<0.0004	0.000003		
			Li	<0.001	0.000018		
			Be	<0.0002	0.000002		
			B	<0.008	0.002624		
			Se	<0.001	-0.000025		
047 CCB2	CCB	1	Cr	<0.001	-0.000004	mg/L	Liquid
			Co	<0.001	0.000005		
			As	<0.0004	0.000019		
			Mo	<0.001	0.000676		
			Cd	<0.0001	-0.000003		
			Sb	<0.001	0.000364		
			Ba	<0.001	0.000003		
			Tl	<0.0004	0.000010		
			Pb	<0.0004	0.000014		
			Li	<0.001	-0.000004		
			Be	<0.0002	0.000002		
			B	<0.008	0.000193		
			Se	<0.001	0.000319		

Form 3: Blanks

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
009 ICB	ICB	1	Ca	<0.01	-0.005792	mg/L	Liquid
010 CCB	CCB	1	Ca	<0.01	-0.010357	mg/L	Liquid
013 092520_1 LRB	LRB	1	Ca	<0.01	-0.011592	mg/L	Liquid
031 CCB2	CCB	1	Ca	<0.01	-0.010721	mg/L	Liquid

Form 4B: ICP Interference Check Sample

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
020 Solu-AB	AB	1	Cr	0.0225	0.02	113	65/135	mg/L	Liquid
			Co	0.0223	0.02	112	65/135		
			As	0.0225	0.02	113	65/135		
			Mo	0.234	0.20	117	65/135		
			Cd	0.0226	0.02	113	65/135		
021 Solu-AA	AA	1	Cr	<0.005	0.0	N/A	N/A	mg/L	Liquid
			Co	<0.005	0.0	N/A	N/A		
			As	<0.002	0.0	N/A	N/A		
			Cd	<0.0005	0.0	N/A	N/A		
			Sb	<0.005	0.0	N/A	N/A		
			Ba	<0.005	0.0	N/A	N/A		
			Tl	<0.002	0.0	N/A	N/A		
			Pb	<0.003	0.0	N/A	N/A		
			Li	<0.010	0.0	N/A	N/A		
			Be	<0.001	0.0	N/A	N/A		
			B	<0.04	0.0	N/A	N/A		
			Se	<0.005	0.0	N/A	N/A		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
015 BS-0.0001		1	Cr	0.00010	ND	0.0001	100	70/130	mg/L	Liquid
			Co	0.00012	ND	0.0001	120	70/130		
			Cd	0.00008	ND	0.0001	80	70/130		
			Ba	0.00010	ND	0.0001	100	70/130		
			Tl	0.00010	ND	0.0001	100	70/130		
			Pb	0.000106	ND	0.0001	106	70/130		
			Be	0.00013	ND	0.0001	130	70/130		
016 BS-0.0005		1	Cr	0.00052	ND	0.0005	104	70/130	mg/L	Liquid
			Co	0.00053	ND	0.0005	106	70/130		
			As	0.00043	ND	0.0005	86	70/130		
			Mo	0.00058	ND	0.0005	116	70/130		
			Cd	0.00049	ND	0.0005	98	70/130		
			Ba	0.00049	ND	0.0005	98	70/130		
			Tl	0.00051	ND	0.0005	102	70/130		
			Pb	0.000495	ND	0.0005	99	70/130		
			Li	0.00051	ND	0.0005	102	70/130		
			Be	0.00063	ND	0.0005	126	70/130		
			Se	0.00057	ND	0.0005	114	70/130		
017 BS-0.001		1	Cr	0.00102	ND	0.001	102	70/130	mg/L	Liquid
			Co	0.00103	ND	0.001	103	70/130		
			As	0.00124	ND	0.001	124	70/130		
			Mo	0.00107	ND	0.001	107	70/130		
			Cd	0.00108	ND	0.001	108	70/130		
			Sb	0.00118	ND	0.001	118	70/130		
			Ba	0.00106	ND	0.001	106	70/130		
			Tl	0.00102	ND	0.001	102	70/130		
			Pb	0.00101	ND	0.001	101	70/130		
			Li	0.00109	ND	0.001	109	70/130		
			Be	0.00122	ND	0.001	122	70/130		
			Se	0.00088	ND	0.001	88	70/130		
			018 BS-0.005		1	Cr	0.00492	ND			0.005	98	70/130	mg/L	Liquid
Co	0.00524	ND				0.005	105	70/130		
As	0.00562	ND				0.005	112	70/130		
Mo	0.00478	ND				0.005	96	70/130		
Cd	0.00510	ND				0.005	102	70/130		
Sb	0.00577	ND				0.005	115	70/130		
Ba	0.00526	ND				0.005	105	70/130		
Tl	0.00522	ND				0.005	104	70/130		
Pb	0.00506	ND				0.005	101	70/130		
Li	0.00555	ND				0.005	111	70/130		
Be	0.00583	ND				0.005	117	70/130		
B	0.00601	ND				0.005	120	70/130		
Se	0.00492	ND				0.005	98	70/130		
019 BS-0.0025		1	Cr	0.00271	ND	0.0025	108	70/130	mg/L	Liquid
			Co	0.00269	ND	0.0025	108	70/130		
			As	0.00282	ND	0.0025	113	70/130		
			Mo	0.00314	ND	0.0025	126	70/130		
			Cd	0.00264	ND	0.0025	106	70/130		
			Sb	0.00291	ND	0.0025	116	70/130		
			Ba	0.00271	ND	0.0025	108	70/130		
			Tl	0.00256	ND	0.0025	102	70/130		
			Pb	0.00256	ND	0.0025	102	70/130		
			Li	0.00303	ND	0.0025	121	70/130		
			Be	0.00291	ND	0.0025	116	70/130		
			B	0.00315	ND	0.0025	126	70/130		
			Se	0.002855	ND	0.0025	114	70/130		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
043 17448.06	037 17448.06s	5	Cr	0.251	<0.005	0.25	100	75/125	mg/L	Liquid
			Co	0.247	<0.005	0.25	99	75/125		
			As	0.264	0.007	0.25	103	75/125		
			Mo	0.235	0.005	0.25	92	75/125		
			Cd	0.248	<0.0005	0.25	99	75/125		
			Sb	0.239	<0.005	0.25	96	75/125		
			Ba	0.407	0.163	0.25	98	75/125		
			Tl	0.233	<0.002	0.25	93	75/125		
			Pb	0.229	<0.003	0.25	92	75/125		
			Li	0.269	0.010	0.25	104	75/125		
			Be	0.264	<0.001	0.25	106	75/125		
			B	0.319	0.07	0.25	100	75/125		
			Se	0.246	<0.005	0.25	98	75/125		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
011 BS-0.05		1	Ca	0.043	ND	0.05	86	70/130	mg/L	Liquid
028 17448.03 MS-2.0	020 17448.03s	5	Ca	119	108	10.0	110	75/125	mg/L	Liquid

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
044 17448.06 MSD	043 17448.06 MS-0.05	5	Cr	0.246	0.251	2	0/20	mg/L	Liquid
			Co	0.247	0.247	0	0/20		
			As	0.256	0.264	3	0/20		
			Mo	0.247	0.235	5	0/20		
			Cd	0.246	0.248	1	0/20		
			Sb	0.239	0.239	0	0/20		
			Ba	0.415	0.407	2	0/20		
			Tl	0.231	0.233	1	0/20		
			Pb	0.228	0.229	0	0/20		
			Li	0.267	0.269	1	0/20		
			Be	0.267	0.264	1	0/20		
			B	0.325	0.319	2	0/20		
			Se	0.251	0.246	2	0/20		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
029 17448.03 MSD	028 17448.03 MS-2.0	5	Ca	117	119	2	0/20	mg/L	Liquid

Form 7: Laboratory Control Sample

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
022 092520_1 LCS-0.05	1	Cr	0.0493	0.05	99	85/115	mg/L	Liquid
		Co	0.0494	0.05	99	85/115		
		As	0.0492	0.05	98	85/115		
		Mo	0.0513	0.05	103	85/115		
		Cd	0.0494	0.05	99	85/115		
		Sb	0.0470	0.05	94	85/115		
		Ba	0.0482	0.05	96	85/115		
		Tl	0.0490	0.05	98	85/115		
		Pb	0.0487	0.05	97	85/115		
		Li	0.0534	0.05	107	85/115		
		Be	0.0547	0.05	109	85/115		
		B	0.0554	0.05	111	85/115		
		Se	0.0491	0.05	98	85/115		

Form 7: Laboratory Control Sample

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
012 092520_1 LCS-1.0	1	Ca	1.03	1.0	103	85/115	mg/L	Liquid

Form 8: Serial Dilutions

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%D</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
026 17448.01 dil	027 17448.01s	5	Cr	<0.005	<0.005	NC	0/10	mg/L	Liquid
			Co	<0.005	<0.005	NC	0/10		
			As	0.005	0.006	17*	0/10		
			Mo	0.006	<0.005	NC	0/10		
			Cd	<0.0005	<0.0005	NC	0/10		
			Sb	<0.005	<0.005	NC	0/10		
			Ba	0.144	0.148	3	0/10		
			Tl	<0.002	<0.002	NC	0/10		
			Pb	<0.003	<0.003	NC	0/10		
			Li	0.040	0.039	3	0/10		
			Be	<0.001	<0.001	NC	0/10		
			B	0.43	0.44	2	0/10		
			Se	<0.005	<0.005	NC	0/10		

Form 8: Serial Dilutions

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%D</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
015 17448.01 dil	016 17448.01s	5	Ca	168	170	1	0/10	mg/L	Liquid

Form 13: Analysis Run Log

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Blank	10:24:41 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
002 Std-0.0001	10:26:30 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
003 Std-0.0005	10:28:20 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
004 Std-0.001	10:30:09 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
005 Std-0.005	10:31:58 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
006 Std-0.02	10:33:48 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
007 Std-0.05	10:35:38 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
008 Std-0.2	10:37:27 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
009 rinse	10:39:16 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
010 ICV-0.1	10:49:49 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
011 CCV-0.1	10:51:45 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
012 rinse	10:53:34 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
013 ICB	10:59:13 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
014 CCB	11:01:02 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
015 BS-0.0001	11:02:52 Fri	Liquid	Ba, Be, Cd, Co, Cr, Pb, Tl
016 BS-0.0005	11:14:23 Fri	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Se, Tl
017 BS-0.001	11:17:37 Fri	Liquid	As, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
018 BS-0.005	11:23:25 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
019 BS-0.0025	11:31:25 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
020 Solu-AB	11:33:15 Fri	Liquid	As, Cd, Co, Cr, Mo
021 Solu-AA	11:35:04 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Pb, Sb, Se, Tl
022 092520_1 LCS-0.05	11:37:41 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
023 Rinse	11:39:30 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
024 092520_1 LRB	11:45:10 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
025 17448.07s	11:56:56 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
026 17448.01 dil	11:59:50 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
027 17448.01s	12:01:38 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
028 Rinse	12:03:27 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
029 17448.02s	12:05:15 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
030 Rinse	12:07:05 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
031 17448.03s	12:08:53 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
032 Rinse	12:10:42 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
033 17448.04s	12:12:31 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
034 Rinse	12:14:20 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
035 17448.05s	12:16:09 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
036 Rinse	12:17:58 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
037 17448.06s	12:19:47 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
038 Rinse	12:21:36 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
039 17502.19s diss	12:30:33 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
040 Rinse	12:32:22 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
041 17612.01s	12:34:11 Fri	Liquid	B
042 Rinse	12:36:00 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
043 17448.06 MS-0.05	12:39:05 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
044 17448.06 MSD	12:40:54 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
045 CCV2-0.1	12:42:43 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
046 Rinse	12:44:32 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl
047 CCB2	12:48:20 Fri	Liquid	As, B, Ba, Be, Cd, Co, Cr, Li, Mo, Pb, Sb, Se, Tl

Form 13: Analysis Run Log

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Blank	13:38:06 Fri	Liquid	Ca
002 Std-0.20	13:39:15 Fri	Liquid	Ca
003 Std-0.50	13:40:24 Fri	Liquid	Ca
004 Std-1.0	13:41:34 Fri	Liquid	Ca
005 Std-2.0	13:42:43 Fri	Liquid	Ca
006 Std-5.0	13:43:53 Fri	Liquid	Ca
007 ICV-2.0	13:45:02 Fri	Liquid	Ca
008 CCV-2.0	13:46:12 Fri	Liquid	Ca
009 ICB	13:47:21 Fri	Liquid	Ca
010 CCB	13:48:31 Fri	Liquid	Ca
011 BS-0.05	14:03:55 Fri	Liquid	Ca
012 092520_1 LCS-1.0	14:08:00 Fri	Liquid	Ca
013 092520_1 LRB	14:37:31 Fri	Liquid	Ca
014 17448.07s	14:11:58 Fri	Liquid	Ca
015 17448.01 dil	14:14:12 Fri	Liquid	Ca
016 17448.01s	14:15:20 Fri	Liquid	Ca
017 rinse	14:16:58 Fri	Liquid	Ca
018 17448.02s	14:18:06 Fri	Liquid	Ca
019 rinse	14:19:15 Fri	Liquid	Ca
020 17448.03s	14:20:23 Fri	Liquid	Ca
021 rinse	14:21:33 Fri	Liquid	Ca
022 17448.04s	14:22:41 Fri	Liquid	Ca
023 rinse	14:23:50 Fri	Liquid	Ca
024 17448.05s	14:24:59 Fri	Liquid	Ca
025 rinse	14:26:08 Fri	Liquid	Ca
026 17448.06s	14:27:17 Fri	Liquid	Ca
027 rinse	14:28:26 Fri	Liquid	Ca
028 17448.03 MS-2.0	14:31:26 Fri	Liquid	Ca
029 17448.03 MSD	14:32:34 Fri	Liquid	Ca
030 CCV2-2.0	14:34:02 Fri	Liquid	Ca
031 CCB2	14:35:11 Fri	Liquid	Ca

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\wizard\SmartTune\Tune 2018\daily Optimiz

Start Time: 9/25/2020 9:30:39 AM

End Time: 9/25/2020 9:39:59 AM

Torch Alignment - [Passed]

Vertical: 0.26 mm
Horizontal: 0.33 mm
Intensity: 64652.97

[STD/KED] Nebulizer Gas Flow - [Passed] Optimum value(s): 1

Obtained Intensity (In 115): 69210.25

Obtained Formula (CeO 156 / Ce 140): 0.0140 (=783.02 / 55908.19)

Mass Calibration and Resolution - [Passed] Optimum value(s): N/A

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.713)

Target/Obtained mass (23.985/24.025), Target/Obtained resolution (0.7/0.692)

Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.700)

Target/Obtained mass (207.977/207.975), Target/Obtained resolution (0.7/0.692)

Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.708)

[KED] QID - Optimum value(s): Correlation Coefficient = 0.968; Intercept = -14.28

[STD/DRC] QID - Optimum value(s): Correlation Coefficient = 0.985; Intercept = -13.91

[STD] Performance Check - [Passed] Optimum value(s): N/A

Obtained Intensity (Be 9): 5560.82

Obtained Intensity (In 115): 67967.10

Obtained Intensity (U 238): 72620.59

Obtained Intensity (Bkgd 220): 0.03

Obtained Formula (Ce++ 70 / Ce 140): 0.009 (=520.48 / 59456.00)

Obtained Formula (CeO 156 / Ce 140): 0.012 (=720.88 / 59456.00)

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\Tune 2018\daily Optimiz

Optimization Status

Start Time: 9/25/2020 9:30:39 AM

Torch Alignment

Optimization Settings:

Method: Torch Alignment.mth.
Intensity Criterion: In 115 Maximum

Optimization Results:

[Passed]

Vertical: 0.26 mm
Horizontal: 0.33 mm
Intensity: 64652.97

[STD/KED] Nebulizer Gas Flow

Optimization Settings:

Method: Optimize.mth.
Initial Try - Start/End/Step: 0.9/1.2/0.02.
Intensity Criterion: In 115 Maximum
Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (In 115): 69210.25
Obtained Formula (CeO 156 / Ce 140): 0.0140 (=783.02 / 55908.19)

[Passed] Optimum value(s): 1

Mass Calibration and Resolution

Optimization Settings:

Method: Tuning.mth.
MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\defaultNEW.tun
Iterations: 6
Target accuracy (+/- amu): 0.05 for Mass Cal. and 0.03 for Resolution
Peak height (%) for Res. Opt.: 10

Optimization Results:

Initial Try

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.713)
Target/Obtained mass (23.985/24.025), Target/Obtained resolution (0.7/0.692)
Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.700)
Target/Obtained mass (207.977/207.975), Target/Obtained resolution (0.7/0.692)
Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.708)

[Passed] Optimum value(s): N/A

[KED] QID

Optimization Settings:

Method: QID Calibration.mth.
Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.968; Intercept = -14.28

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-14	20827.2
Mg	24	41	-14.5	38925
In	115	41	-12.5	71430.1
Ce	140	41	-12	45287.7
Pb	208	41	-7	24849.6
U	238	41	-10.5	59748.7

[STD/DRC] QID

Optimization Settings:
Method: QID Calibration.mth.
Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:
Initial Try

Optimum value(s): Correlation Coefficient = 0.985; Intercept = -13.91

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-14	30151.8
Mg	24	41	-13.5	41355.8
In	115	41	-11	73524.7
Ce	140	41	-9	60017.8
Pb	208	41	-8	37806
U	238	41	-8	80204.5

[STD] Performance Check

Optimization Settings:
Method: STD Performance Check.mth.
Intensity Criterion: Be 9 > 4000
Intensity Criterion: In 115 > 40000
Intensity Criterion: U 238 > 35000
Intensity Criterion: Bkgd 220 <= 1
Formula Criterion: Ce++ 70 / Ce 140 <= 0.05
Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:
Initial Try
Obtained Intensity (Be 9): 5560.82
Obtained Intensity (In 115): 67967.10
Obtained Intensity (U 238): 72620.59
Obtained Intensity (Bkgd 220): 0.03
Obtained Formula (Ce++ 70 / Ce 140): 0.009 (=520.48 / 59456.00)
Obtained Formula (CeO 156 / Ce 140): 0.012 (=720.88 / 59456.00)

[Passed] Optimum value(s): N/A

End Time: 9/25/2020 9:39:59 AM

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Li	6097	70-125	4268-7621	80-120	4878-7316	0
Rh	123024	70-125	86117-153780	80-120	98419-147629	0
Re	178287	70-125	124801-222859	80-120	142630-213944	0
Rh-1	336001	70-125	235201-420001	80-120	268801-403201	0

Seq ID	QC Type	Li	Rh	Re	Rh-1
001		100	100	100	100
002		98	100	98	100
003		99	100	98	99
004		99	100	97	100
005		100	101	98	99
006		97	100	98	96
007		101	99	97	98
008		96	97	95	99
009		100	100	96	99
010	ICV	98	97	94	98
011	CCV	98	98	94	98
012		97	97	96	97
013	ICB	95	99	96	98
014	CCB	99	99	95	98
015	BS	99	98	97	99
016	BS	99	98	96	96
017	BS	100	98	96	98
018	BS	99	99	96	99
019	BS	101	100	96	101
020	AB	101	100	93	97
021	AA	104	100	92	101
022	LCS	105	102	94	103
023		104	103	95	103
024	LRB	104	102	97	104
025	S	103	101	98	101
026	DIL	102	101	96	100
027	S	99	98	96	97
028		104	101	97	101
029	S	101	97	93	95
030		104	102	97	101
031	S	103	97	95	98
032		108	103	97	101
033	S	99	98	95	96
034		107	103	97	103
035	S	102	97	95	98
036		110	101	97	101
037	S	103	97	95	95
038		102	101	96	98
039	S	103	98	97	97
040		Page 71 of 265	100	97	98

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0925A

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Li	6097	70-125	4268-7621	80-120	4878-7316	0
Rh	123024	70-125	86117-153780	80-120	98419-147629	0
Re	178287	70-125	124801-222859	80-120	142630-213944	0
Rh-1	336001	70-125	235201-420001	80-120	268801-403201	0

Seq ID	QC Type	Li	Rh	Re	Rh-1
041	S	107	99	97	97
042		104	99	97	99
043	MS	103	96	95	95
044	MSD	109	97	97	93
045	CCV	104	100	97	97
046		107	101	99	99
047	CCB	105	100	97	98

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT5-20-0925B

Instrument ID: PE NEXION 2

Analysis Date: 09/25/20

Analyst: JRH

Element	Count	non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		Flags
		LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	
Rh	12002	70-125	8401-15003	80-120	9602-14402	0

Seq ID	QC Type	Rh
001		100
002		101
003		100
004		99
005		99
006		100
007	ICV	101
008	CCV	103
009	ICB	102
010	CCB	103
011	BS	102
012	LCS	105
013	LRB	103
014	S	107
015	DIL	107
016	S	103
017		106
018	S	106
019		103
020	S	102
021		105
022	S	104
023		103
024	S	104
025		105
026	S	102
027		103
028	MS	103
029	MSD	105
030	CCV	103
031	CCB	104

Form 9

Analysis Date varies
 Analytical Method 6020A/6020/200.8
 Digestion Date varies
 Spiked Value varies (ug/L)
 Estimated Limit varies (ug/L)

Element/Mass	Date	Spike (ug/l)	MDL (ug/l)	Prep Batch
Al-27	4/9/2012	0.50	0.189	MTD-040212-1
Sb-121	3/20/2012	1.00	0.105	MTD-032012-3
As-75	3/20/2012	0.05	0.032	MTD-032012-2
Ba-137	3/20/2012	0.50	0.202	MTD-032012-2
Be-9	4/10/2012	0.10	0.079	MTD-041012-1
B-10	3/20/2012	1.00	0.589	MTD-032012-3
B-11	3/20/2012	1.00	0.277	MTD-032012-3
Cd-111	3/20/2012	0.05	0.038	MTD-032012-2
Cd-114	3/20/2012	0.10	0.030	MTD-032012-2
Cr-52	3/20/2012	0.10	0.023	MTD-032012-2
Cr-53	3/20/2012	0.10	0.054	MTD-032012-2
Co-59	3/20/2012	0.10	0.035	MTD-032012-2
Cu-65	3/20/2012	0.50	0.068	MTD-032012-2
Fe-56	4/9/2012	2.00	0.470	MTD-040912-1
Fe-57	4/9/2012	2.00	0.824	MTD-040912-1
Pb-208	3/20/2012	0.10	0.052	MTD-032012-2
Li-7	3/20/2012	1.00	0.166	MTD-032012-3
Mn-55	3/20/2012	0.10	0.187	MTD-032012-2
Mo-95	4/9/2012	0.50	0.442	MTD-040212-1
Ni-60	4/13/2012	0.10	0.035	MTD-041012-1
Se-78	3/20/2012	0.10	0.058	MTD-032012-2
Se-82	3/20/2012	0.50	0.475	MTD-032012-2
Ag-107	3/20/2012	0.10	0.025	MTD-032012-2
Sr-88	3/20/2012	0.10	0.016	MTD-032012-2
Tl-205	4/9/2012	0.50	0.089	MTD-040212-1
Sn-118	3/20/2012	0.10	0.079	MTD-032012-2
Ti-47	3/20/2012	0.50	0.124	MTD-032012-2
V-51	3/20/2012	0.05	0.018	MTD-032012-2
Zn-66	4/9/2012	2.00	0.366	MTD-040912-1

Element/Mass	Date	Spike (mg/l)	MDL (mg/l)	Prep Batch
Ca-43	4/16/2012	0.01	0.0101	MTD-041012-4
Ca-44	4/16/2012	0.01	0.0041	MTD-041012-4
Mg-24	4/16/2012	0.01	0.0006	MTD-041012-4
K-39	4/16/2012	0.01	0.0030	MTD-041012-4
Na-23	4/16/2012	0.10	0.0101	MTD-041012-4

Linear Range June 2012

		Prep Batch	Run Batch
Aluminum	5.0ppm	MTD-061912-5	MT3-12-0619C
Antimony	5.0ppm	MTD-061912-5	MT3-12-0619C
Arsenic	1.0ppm	MTD-061912-5	MT3-12-0619C
Barium	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-10	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-11	5.0ppm	MTD-061912-5	MT3-12-0619C
Beryllium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-111	5.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-114	5.0ppm	MTD-061912-5	MT3-12-0619C
Chromium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cobalt	2.0ppm	MTD-061912-5	MT3-12-0619C
Copper	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-56	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-57	2.0ppm	MTD-061912-5	MT3-12-0619C
Lead	5.0ppm	MTD-061912-5	MT3-12-0619C
Lithium	2.0ppm	MTD-061912-5	MT3-12-0619C
Manganese	1.0ppm	MTD-061912-5	MT3-12-0619C
Molybdenum	1.0ppm	MTD-061912-5	MT3-12-0619C
Nickel	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-78	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-82	5.0ppm	MTD-061912-5	MT3-12-0619C
Silver	1.0ppm	MTD-061912-5	MT3-12-0619C
Strontium-86	5.0ppm	MTD-061912-5	MT3-12-0619C
Thallium	5.0ppm	MTD-061912-5	MT3-12-0619C
Tin	1.0ppm	MTD-061912-5	MT3-12-0619C
Titanium	1.0ppm	MTD-061912-5	MT3-12-0619C
Vanadium	1.0ppm	MTD-061912-5	MT3-12-0619C
Zinc	2.0ppm	MTD-061912-5	MT3-12-0619C

Sodium-23	50ppm	MTD-061912-5	MT3-12-0619B
Magnesium-24	50ppm	MTD-061912-5	MT3-12-0619B
Potassium-39	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-43	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-44	50ppm	MTD-061912-5	MT3-12-0619B

Maximum spiking levels are instated to ensure the safety and longevity of the instrument. Any sample results above this level result in extended wash runs and sample dilution.

Metals Quantitation Summary Report

Sequence #: 001

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 10:24:41 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: Blank

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	161.668	0	mg/L	3
Co	59	13.333	0	mg/L	3
As	75	11.667	0	mg/L	3
Mo	95	63.333	0	mg/L	3
Cd	114	8.841	0	mg/L	3
Sb	121	50.000	0	mg/L	3
Ba	137	11.667	0	mg/L	3
Tl	205	40.000	0	mg/L	3
Pb	208	263.667	0	mg/L	3
Li	7	2048.480	0	mg/L	3
Be	9	1.667	0	mg/L	3
B	11	951.698	0	mg/L	3
Se	82	18.007	0	mg/L	3

Metals Quantitation Summary Report

Sequence #: 002

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 10:26:30 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: Std-0.0001

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	320.004	0.000074	mg/L	3
Co	59	483.342	0.000115	mg/L	3
As	75	26.667	0.000082	mg/L	3
Mo	95	156.668	0.000078	mg/L	3
Cd	114	178.920	0.000099	mg/L	3
Sb	121	278.336	0.000134	mg/L	3
Ba	137	121.667	0.000109	mg/L	3
Tl	205	1611.758	0.000098	mg/L	3
Pb	208	1988.731	0.000101	mg/L	3
Li	7	2395.201	0.000165	mg/L	3
Be	9	65.000	0.000100	mg/L	3
B	11	1176.715	0.000503	mg/L	3
Se	82	24.491	0.000062	mg/L	3

Metals Quantitation Summary Report

Sequence #: 003

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 10:28:20 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: Std-0.0005

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	1193.384	0.000480	mg/L	3
Co	59	2125.158	0.000516	mg/L	3
As	75	103.334	0.000503	mg/L	3
Mo	95	575.012	0.000427	mg/L	3
Cd	114	956.510	0.000552	mg/L	3
Sb	121	1056.706	0.000592	mg/L	3
Ba	137	568.345	0.000552	mg/L	3
Tl	205	8017.249	0.000495	mg/L	3
Pb	208	8930.191	0.000502	mg/L	3
Li	7	3318.720	0.000518	mg/L	3
Be	9	361.671	0.000556	mg/L	3
B	11	1496.745	0.001085	mg/L	3
Se	82	71.080	0.000509	mg/L	3

Metals Quantitation Summary Report

Sequence #: 004

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 10:30:09 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: Std-0.001

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	2336.859	0.001017	mg/L		3
Co	59	4425.686	0.001083	mg/L		3
As	75	161.668	0.000828	mg/L		3
Mo	95	1135.045	0.000899	mg/L		3
Cd	114	1822.324	0.001061	mg/L		3
Sb	121	2018.476	0.001163	mg/L		3
Ba	137	1046.705	0.001031	mg/L		3
Tl	205	16658.041	0.001041	mg/L		3
Pb	208	17481.269	0.001006	mg/L		3
Li	7	4844.156	0.001174	mg/L		3
Be	9	735.019	0.001156	mg/L		3
B	11	1726.771	0.001608	mg/L		3
Se	82	125.781	0.001019	mg/L		3

Metals Quantitation Summary Report

Sequence #: 005

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 10:31:58 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: Std-0.005

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	11075.959	0.005028	mg/L		3
Co	59	21457.771	0.005190	mg/L		3
As	75	991.701	0.005330	mg/L		3
Mo	95	5661.122	0.004629	mg/L		3
Cd	114	9219.654	0.005310	mg/L		3
Sb	121	9591.553	0.005552	mg/L		3
Ba	137	5382.681	0.005271	mg/L		3
Tl	205	82318.174	0.005115	mg/L		3
Pb	208	88447.666	0.005113	mg/L		3
Li	7	15950.571	0.005559	mg/L		3
Be	9	3693.811	0.005647	mg/L		3
B	11	3875.526	0.005705	mg/L		3
Se	82	504.086	0.004615	mg/L		3

Metals Quantitation Summary Report

Sequence #: 006
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 10:33:48 Fri 25-Sep-20
Sample Name: Std-0.02
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	42912.694	0.019824	mg/L	3
Co	59	80759.324	0.019677	mg/L	3
As	75	3673.806	0.020044	mg/L	3
Mo	95	20921.978	0.017369	mg/L	3
Cd	114	34239.961	0.019876	mg/L	3
Sb	121	33469.162	0.019583	mg/L	3
Ba	137	20414.578	0.020160	mg/L	3
Tl	205	313493.271	0.019518	mg/L	3
Pb	208	333081.171	0.019325	mg/L	3
Li	7	53873.073	0.021700	mg/L	3
Be	9	13910.105	0.022262	mg/L	3
B	11	11889.947	0.022409	mg/L	3
Se	82	2119.248	0.020566	mg/L	3

Metals Quantitation Summary Report

Sequence #: 007
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 10:35:38 Fri 25-Sep-20
Sample Name: Std-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	103127.808	0.048458	mg/L	3
Co	59	199028.527	0.049215	mg/L	3
As	75	9269.677	0.051431	mg/L	3
Mo	95	54346.518	0.045877	mg/L	3
Cd	114	85209.315	0.050211	mg/L	3
Sb	121	82403.673	0.048977	mg/L	3
Ba	137	49918.753	0.050055	mg/L	3
Tl	205	776630.362	0.048771	mg/L	3
Pb	208	823401.945	0.048210	mg/L	3
Li	7	134979.782	0.052738	mg/L	3
Be	9	35395.462	0.053761	mg/L	3
B	11	27960.673	0.052307	mg/L	3
Se	82	5184.933	0.049606	mg/L	3

Metals Quantitation Summary Report

Sequence #: 008

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 10:37:27 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: Std-0.2

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	419888.420	0.200402	mg/L	3
Co	59	798152.690	0.200223	mg/L	3
As	75	35442.253	0.199630	mg/L	3
Mo	95	234886.970	0.201304	mg/L	3
Cd	114	334462.632	0.199952	mg/L	3
Sb	121	332038.379	0.200283	mg/L	3
Ba	137	196596.870	0.199963	mg/L	3
Tl	205	3145334.849	0.200353	mg/L	3
Pb	208	3375886.616	0.200512	mg/L	3
Li	7	520501.456	0.199131	mg/L	3
Be	9	135274.229	0.198817	mg/L	3
B	11	107220.943	0.199162	mg/L	3
Se	82	21021.488	0.200051	mg/L	3

Metals Quantitation Summary Report

Sequence #: 009
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 10:39:16 Fri 25-Sep-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 09/16/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	213.335	0.000025	mg/L	3
Co	59	140.001	0.000031	mg/L	3
As	75	108.334	0.000533	mg/L	3
Mo	95	5075.902	0.004204	mg/L	3
Cd	114	-100.707	-0.000064	mg/L	3
Sb	121	2285.183	0.001319	mg/L	3
Ba	137	60.000	0.000048	mg/L	3
Tl	205	1015.036	0.000062	mg/L	3
Pb	208	1627.041	0.000081	mg/L	3
Li	7	2123.492	0.000058	mg/L	3
Be	9	23.333	0.000035	mg/L	3
B	11	1513.414	0.001198	mg/L	3
Se	82	292.360	0.002622	mg/L	3

Metals Quantitation Summary Report

Sequence #: 010

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 10:49:49 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: ICV-0.1

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments: Spex-std made 09/16/

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	205858.090	0.098673	mg/L	3
Co	59	391731.386	0.098708	mg/L	3
As	75	17170.313	0.097139	mg/L	3
Mo	95	112121.793	0.096500	mg/L	3
Cd	114	163763.585	0.098365	mg/L	3
Sb	121	155196.928	0.094046	mg/L	3
Ba	137	97283.526	0.099419	mg/L	3
Tl	205	1534141.565	0.098686	mg/L	3
Pb	208	1618064.417	0.097053	mg/L	3
Li	7	262116.603	0.103619	mg/L	3
Be	9	70116.671	0.106968	mg/L	3
B	11	55808.844	0.106711	mg/L	3
Se	82	10272.947	0.098359	mg/L	3

Metals Quantitation Summary Report

Sequence #: 011

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 10:51:45 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: CCV-0.1

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments: IV-std made 09/16/20

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	210140.980	0.100106	mg/L	3
Co	59	396730.502	0.099363	mg/L	3
As	75	18351.782	0.103183	mg/L	3
Mo	95	116819.087	0.099952	mg/L	3
Cd	114	171259.519	0.102230	mg/L	3
Sb	121	166730.744	0.100416	mg/L	3
Ba	137	98939.801	0.100478	mg/L	3
Tl	205	1543823.929	0.099278	mg/L	3
Pb	208	1652122.371	0.099054	mg/L	3
Li	7	260258.001	0.103879	mg/L	3
Be	9	69523.777	0.107056	mg/L	3
B	11	54083.861	0.104365	mg/L	3
Se	82	10265.838	0.098840	mg/L	3

Metals Quantitation Summary Report

Sequence #: 012
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 10:53:34 Fri 25-Sep-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	198.335	0.000020	mg/L	3
Co	59	136.667	0.000031	mg/L	3
As	75	106.667	0.000538	mg/L	3
Mo	95	3790.503	0.003203	mg/L	3
Cd	114	-92.909	-0.000061	mg/L	3
Sb	121	2005.141	0.001183	mg/L	3
Ba	137	40.000	0.000029	mg/L	3
Tl	205	835.024	0.000051	mg/L	3
Pb	208	1442.030	0.000070	mg/L	3
Li	7	2076.818	0.000057	mg/L	3
Be	9	23.333	0.000035	mg/L	3
B	11	1450.074	0.001136	mg/L	3
Se	82	172.591	0.001499	mg/L	3

Metals Quantitation Summary Report

Sequence #: 013
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 10:59:13 Fri 25-Sep-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	141.667	-0.000008	mg/L		3
Co	59	56.667	0.000011	mg/L		3
As	75	41.667	0.000168	mg/L		3
Mo	95	656.682	0.000504	mg/L		3
Cd	114	-12.873	-0.000013	mg/L		3
Sb	121	725.018	0.000403	mg/L		3
Ba	137	11.667	0.000000	mg/L		3
Tl	205	220.002	0.000012	mg/L		3
Pb	208	450.335	0.000012	mg/L		3
Li	7	2113.490	0.000020	mg/L		3
Be	9	1.667	0.000000	mg/L		3
B	11	1153.380	0.000380	mg/L		3
Se	82	4.086	-0.000127	mg/L		3

Metals Quantitation Summary Report

Sequence #: 014

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 11:01:02 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: CCB

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	140.001	-0.000009	mg/L	3
Co	59	30.000	0.000004	mg/L	3
As	75	20.000	0.000046	mg/L	3
Mo	95	535.010	0.000399	mg/L	3
Cd	114	-47.938	-0.000033	mg/L	3
Sb	121	613.347	0.000334	mg/L	3
Ba	137	16.667	0.000005	mg/L	3
Tl	205	145.001	0.000007	mg/L	3
Pb	208	422.001	0.000010	mg/L	3
Li	7	1940.132	-0.000010	mg/L	3
Be	9	1.667	0.000000	mg/L	3
B	11	1043.372	0.000267	mg/L	3
Se	82	5.805	-0.000113	mg/L	3

Metals Quantitation Summary Report

Sequence #: 015

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 11:02:52 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: BS-0.0001

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	361.671	0.000096	mg/L		3
Co	59	498.342	0.000121	mg/L		3
Cd	114	144.984	0.000081	mg/L		3
Ba	137	115.000	0.000104	mg/L		3
Tl	205	1681.766	0.000103	mg/L		3
Pb	208	2068.736	0.000106	mg/L		3
Be	9	81.667	0.000129	mg/L		3

Metals Quantitation Summary Report

Sequence #: 016

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 11:14:23 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: BS-0.0005

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	1243.388	0.000515	mg/L	3
Co	59	2156.830	0.000534	mg/L	3
As	75	88.334	0.000430	mg/L	3
Mo	95	746.686	0.000582	mg/L	3
Cd	114	825.601	0.000485	mg/L	3
Ba	137	493.342	0.000486	mg/L	3
Tl	205	8165.668	0.000512	mg/L	3
Pb	208	8685.104	0.000495	mg/L	3
Li	7	3268.708	0.000506	mg/L	3
Be	9	406.672	0.000630	mg/L	3
Se	82	75.975	0.000570	mg/L	3

Metals Quantitation Summary Report

Sequence #: 017
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 11:17:37 Fri 25-Sep-20
Sample Name: BS-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	2303.519	0.001023	mg/L	3
Co	59	4147.270	0.001036	mg/L	3
As	75	233.335	0.001248	mg/L	3
Mo	95	1316.728	0.001074	mg/L	3
Cd	114	1832.136	0.001089	mg/L	3
Sb	121	2020.143	0.001188	mg/L	3
Ba	137	1063.373	0.001068	mg/L	3
Tl	205	16167.479	0.001025	mg/L	3
Pb	208	17304.520	0.001010	mg/L	3
Li	7	4752.458	0.001092	mg/L	3
Be	9	795.022	0.001222	mg/L	3
Se	82	109.192	0.000880	mg/L	3

Metals Quantitation Summary Report

Sequence #: 018
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 11:23:25 Fri 25-Sep-20
Sample Name: BS-0.005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	10673.988	0.004922	mg/L	3
Co	59	21347.612	0.005246	mg/L	3
As	75	1030.037	0.005626	mg/L	3
Mo	95	5754.493	0.004783	mg/L	3
Cd	114	8709.711	0.005100	mg/L	3
Sb	121	9813.370	0.005776	mg/L	3
Ba	137	5287.645	0.005264	mg/L	3
Tl	205	82591.500	0.005220	mg/L	3
Pb	208	86195.777	0.005067	mg/L	3
Li	7	15868.814	0.005551	mg/L	3
Be	9	3798.840	0.005836	mg/L	3
B	11	4018.900	0.006013	mg/L	3
Se	82	539.114	0.004928	mg/L	3

Metals Quantitation Summary Report

Sequence #: 019

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 11:31:25 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: BS-0.0025

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	6014.600	0.002713	mg/L	3
Co	59	11072.627	0.002695	mg/L	3
As	75	528.343	0.002828	mg/L	3
Mo	95	3840.517	0.003144	mg/L	3
Cd	114	4568.889	0.002648	mg/L	3
Sb	121	5029.219	0.002917	mg/L	3
Ba	137	2763.601	0.002719	mg/L	3
Tl	205	40478.938	0.002562	mg/L	3
Pb	208	43652.833	0.002564	mg/L	3
Li	7	9708.300	0.003036	mg/L	3
Be	9	1918.462	0.002918	mg/L	3
B	11	2585.234	0.003155	mg/L	3
Se	78	2301.125	0.002855	mg/L	3

Metals Quantitation Summary Report

Sequence #: 020

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 11:33:15 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: Solu-AB

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	48691.217	0.022565	mg/L	3
Co	59	91361.225	0.022318	mg/L	3
As	75	4118.928	0.022541	mg/L	3
Mo	95	280617.955	0.234240	mg/L	3
Cd	114	38949.399	0.022674	mg/L	3

Metals Quantitation Summary Report

Sequence #: 021

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 11:35:04 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: Solu-AA

Cal Type: External Calibration

Sample Type: Sample

Last Calib:

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	240.002	0.000037	mg/L		3
Co	59	161.668	0.000036	mg/L		3
As	75	30.000	0.000101	mg/L		3
Cd	114	191.840	0.000107	mg/L		3
Sb	121	155.001	0.000062	mg/L		3
Ba	137	76.667	0.000065	mg/L		3
Tl	205	128.334	0.000006	mg/L		3
Pb	208	485.335	0.000015	mg/L		3
Li	7	2101.822	0.000009	mg/L		3
Be	9	1.667	-0.000000	mg/L		3
B	11	1011.703	0.000089	mg/L		3
Se	82	10.688	-0.000071	mg/L		3

Metals Quantitation Summary Report

Sequence #: 022

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 11:37:41 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: 092520_1 LCS-0.05

Cal Type: External Calibration

Sample Type: Sample

Last Calib: MTD-092520-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	108903.582	0.049395	mg/L	3
Co	59	207416.630	0.049496	mg/L	3
As	75	9192.959	0.049216	mg/L	3
Mo	95	63027.068	0.051351	mg/L	3
Cd	114	87001.166	0.049481	mg/L	3
Sb	121	81956.173	0.047013	mg/L	3
Ba	137	49833.435	0.048214	mg/L	3
Tl	205	758832.230	0.049030	mg/L	3
Pb	208	808849.490	0.048719	mg/L	3
Li	7	139842.896	0.053412	mg/L	3
Be	9	36897.630	0.054778	mg/L	3
B	11	30278.735	0.055474	mg/L	3
Se	82	5421.938	0.049195	mg/L	3

Metals Quantitation Summary Report

Sequence #: 023
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 11:39:30 Fri 25-Sep-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	203.335	0.000017	mg/L		3
Co	59	46.667	0.000008	mg/L		3
As	75	43.333	0.000168	mg/L		3
Mo	95	3108.672	0.002473	mg/L		3
Cd	114	-6.287	-0.000009	mg/L		3
Sb	121	485.008	0.000248	mg/L		3
Ba	137	33.333	0.000021	mg/L		3
Tl	205	350.004	0.000020	mg/L		3
Pb	208	818.674	0.000034	mg/L		3
Li	7	2045.146	-0.000012	mg/L		3
Be	9	10.000	0.000013	mg/L		3
B	11	1388.401	0.000822	mg/L		3
Se	82	77.433	0.000536	mg/L		3

Metals Quantitation Summary Report

Sequence #: 024

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 11:45:10 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: 092520_1 LRB

Cal Type: External Calibration

Sample Type: Sample

Last Calib: MTD-092520-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	168.334	0.000002	mg/L		3
Co	59	15.000	0.000000	mg/L		3
As	75	18.333	0.000035	mg/L		3
Mo	95	856.692	0.000647	mg/L		3
Cd	114	-25.046	-0.000019	mg/L		3
Sb	121	215.002	0.000094	mg/L		3
Ba	137	15.000	0.000003	mg/L		3
Tl	205	53.333	0.000001	mg/L		3
Pb	208	302.000	0.000003	mg/L		3
Li	7	2168.498	0.000018	mg/L		3
Be	9	3.333	0.000002	mg/L		3
B	11	2371.865	0.002624	mg/L		3
Se	82	16.014	-0.000025	mg/L		3

Metals Quantitation Summary Report

Sequence #: 025
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 11:56:56 Fri 25-Sep-20
Sample Name: 17448.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 2

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	200.001	0.000034	mg/L	3
Co	59	21.667	0.000004	mg/L	3
As	75	13.333	0.000017	mg/L	3
Mo	95	355.004	0.000481	mg/L	3
Cd	114	-4.378	-0.000015	mg/L	3
Sb	121	135.001	0.000098	mg/L	3
Ba	137	38.333	0.000052	mg/L	3
Tl	205	41.667	0.000000	mg/L	3
Pb	208	333.667	0.000009	mg/L	3
Li	7	2211.838	0.000085	mg/L	3
Be	9	0.000	-0.000005	mg/L	3
B	11	1618.425	0.002452	mg/L	3
Se	82	25.897	0.000147	mg/L	3

Metals Quantitation Summary Report

Sequence #: 026
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 11:59:50 Fri 25-Sep-20
Sample Name: 17448.01 dil
Sample Type: Sample
Matrix: Liquid
Comments: 5/1 auto dil test
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	451.674	0.003337	mg/L	3
Co	59	415.006	0.002447	mg/L	3
As	75	51.667	0.005448	mg/L	3
Mo	95	341.671	0.005800	mg/L	3
Cd	114	-3.606	-0.000182	mg/L	3
Sb	121	93.334	0.000628	mg/L	3
Ba	137	5876.209	0.144599	mg/L	3
Tl	205	86.667	0.000076	mg/L	3
Pb	208	1002.013	0.001101	mg/L	3
Li	7	6104.642	0.040002	mg/L	3
Be	9	0.000	-0.000064	mg/L	3
B	11	9895.096	0.432644	mg/L	3
Se	82	15.818	-0.000576	mg/L	3

Metals Quantitation Summary Report

Sequence #: 027

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 12:01:38 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: 17448.01s

Cal Type: External Calibration

Sample Type: Sample

Last Calib: MTD-092520-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 5

Blank File: Blank.015

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	1316.727	0.002753	mg/L		3
Co	59	1943.466	0.002410	mg/L		3
As	75	235.002	0.006297	mg/L		3
Mo	95	861.693	0.003411	mg/L		3
Cd	114	2.047	-0.000020	mg/L		3
Sb	121	121.667	0.000218	mg/L		3
Ba	137	29254.940	0.148016	mg/L		3
Tl	205	148.334	0.000035	mg/L		3
Pb	208	3955.608	0.001096	mg/L		3
Li	7	21275.833	0.039108	mg/L		3
Be	9	8.333	0.000053	mg/L		3
B	11	44903.825	0.436090	mg/L		3
Se	82	27.524	0.000457	mg/L		3

Metals Quantitation Summary Report

Sequence #: 029
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 12:05:15 Fri 25-Sep-20
Sample Name: 17448.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	305.003	0.000353	mg/L	3
Co	59	3453.751	0.004321	mg/L	3
As	75	48.333	0.001041	mg/L	3
Mo	95	2668.583	0.011188	mg/L	3
Cd	114	10.403	0.000006	mg/L	3
Sb	121	108.334	0.000180	mg/L	3
Ba	137	7600.361	0.038634	mg/L	3
Tl	205	226.668	0.000062	mg/L	3
Pb	208	872.009	0.000190	mg/L	3
Li	7	34215.930	0.065509	mg/L	3
Be	9	3.333	0.000013	mg/L	3
B	11	602275.310	5.973650	mg/L	3
Se	82	82.577	0.003208	mg/L	3

Metals Quantitation Summary Report

Sequence #: 031
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 12:08:53 Fri 25-Sep-20
Sample Name: 17448.03s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	138.334	-0.000044	mg/L	3
Co	59	178.334	0.000208	mg/L	3
As	75	321.670	0.008797	mg/L	3
Mo	95	1161.714	0.004737	mg/L	3
Cd	114	-11.295	-0.000059	mg/L	3
Sb	121	88.334	0.000122	mg/L	3
Ba	137	31887.223	0.163032	mg/L	3
Tl	205	78.334	0.000013	mg/L	3
Pb	208	337.000	0.000026	mg/L	3
Li	7	7268.517	0.010362	mg/L	3
Be	9	1.667	0.000000	mg/L	3
B	11	8085.623	0.069305	mg/L	3
Se	82	-16.005	-0.001622	mg/L	3

Metals Quantitation Summary Report

Sequence #: 033
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 12:12:31 Fri 25-Sep-20
Sample Name: 17448.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	333.337	0.000417	mg/L	3
Co	59	555.011	0.000678	mg/L	3
As	75	18.333	0.000198	mg/L	3
Mo	95	12393.707	0.052635	mg/L	3
Cd	114	14.128	0.000017	mg/L	3
Sb	121	158.334	0.000328	mg/L	3
Ba	137	8425.818	0.042626	mg/L	3
Tl	205	403.339	0.000116	mg/L	3
Pb	208	1243.688	0.000295	mg/L	3
Li	7	47938.638	0.091163	mg/L	3
Be	9	1.667	-0.000000	mg/L	3
B	11	516947.027	5.007221	mg/L	3
Se	82	27.341	0.000499	mg/L	3

Metals Quantitation Summary Report

Sequence #: 035
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 12:16:09 Fri 25-Sep-20
Sample Name: 17448.05s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	188.335	0.000075	mg/L	3
Co	59	551.677	0.000677	mg/L	3
As	75	16.667	0.000151	mg/L	3
Mo	95	7333.549	0.031248	mg/L	3
Cd	114	46.127	0.000112	mg/L	3
Sb	121	80.000	0.000095	mg/L	3
Ba	137	10677.324	0.054379	mg/L	3
Tl	205	166.668	0.000041	mg/L	3
Pb	208	493.668	0.000072	mg/L	3
Li	7	30719.661	0.055177	mg/L	3
Be	9	0.000	-0.000013	mg/L	3
B	11	112748.344	1.052609	mg/L	3
Se	82	-2.607	-0.000969	mg/L	3

Metals Quantitation Summary Report

Sequence #: 037
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 12:19:47 Fri 25-Sep-20
Sample Name: 17448.06s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	160.001	0.000008	mg/L	3
Co	59	163.334	0.000190	mg/L	3
As	75	261.669	0.007077	mg/L	3
Mo	95	1133.378	0.004614	mg/L	3
Cd	114	-30.401	-0.000116	mg/L	3
Sb	121	56.667	0.000025	mg/L	3
Ba	137	32079.314	0.163827	mg/L	3
Tl	205	78.334	0.000013	mg/L	3
Pb	208	343.667	0.000028	mg/L	3
Li	7	7061.746	0.010088	mg/L	3
Be	9	1.667	0.000000	mg/L	3
B	11	7905.523	0.068292	mg/L	3
Se	82	4.034	-0.000657	mg/L	3

Metals Quantitation Summary Report

Sequence #: 043

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 12:39:05 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: 17448.06 MS-0.05

Cal Type: External Calibration

Sample Type: Sample

Last Calib: MTD-092520-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 5

Blank File: Blank.015

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	104222.243	0.251750	mg/L		3
Co	59	194839.865	0.247607	mg/L		3
As	75	9278.012	0.264573	mg/L		3
Mo	95	54393.370	0.235988	mg/L		3
Cd	114	82146.172	0.248764	mg/L		3
Sb	121	78325.805	0.239318	mg/L		3
Ba	137	79106.760	0.407731	mg/L		3
Tl	205	735636.230	0.233980	mg/L		3
Pb	208	775396.376	0.229978	mg/L		3
Li	7	139666.092	0.269202	mg/L		3
Be	9	35370.402	0.264950	mg/L		3
B	11	34374.645	0.319162	mg/L		3
Se	82	5009.968	0.246676	mg/L		3

Metals Quantitation Summary Report

Sequence #: 044

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 12:40:54 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: 17448.06 MSD

Cal Type: External Calibration

Sample Type: Sample

Last Calib: MTD-092520-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 5

Blank File: Blank.015

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	102981.523	0.246882	mg/L		3
Co	59	196565.025	0.247880	mg/L		3
As	75	9074.548	0.256803	mg/L		3
Mo	95	57425.204	0.247242	mg/L		3
Cd	114	81927.227	0.246315	mg/L		3
Sb	121	79100.123	0.239811	mg/L		3
Ba	137	81292.311	0.415750	mg/L		3
Tl	205	740035.465	0.231702	mg/L		3
Pb	208	782783.638	0.228485	mg/L		3
Li	7	135279.308	0.267262	mg/L		3
Be	9	34845.790	0.267553	mg/L		3
B	11	34247.688	0.325927	mg/L		3
Se	82	4996.780	0.251249	mg/L		3

Metals Quantitation Summary Report

Sequence #: 045
Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P
Acq Time: 12:42:43 Fri 25-Sep-20
Sample Name: CCV2-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 09/16/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925A.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.015

Element	Mass	Concentration	Units	RSD %	Rep
Cr	52	216518.484	0.100924	mg/L	3
Co	59	407812.634	0.099929	mg/L	3
As	75	18270.010	0.100501	mg/L	3
Mo	95	116229.326	0.097281	mg/L	3
Cd	114	174190.718	0.101743	mg/L	3
Sb	121	169643.218	0.099950	mg/L	3
Ba	137	102103.615	0.101466	mg/L	3
Tl	205	1551714.518	0.097531	mg/L	3
Pb	208	1642664.587	0.096266	mg/L	3
Li	7	272668.481	0.103635	mg/L	3
Be	9	72264.047	0.105966	mg/L	3
B	11	58243.520	0.107067	mg/L	3
Se	82	10301.183	0.099390	mg/L	3

Metals Quantitation Summary Report

Sequence #: 047

Operator:

Method: 13-As-B-Ba-Be-Cd-Co-Cr-Li-Mo-P

Acq Mode: Data Acquisition

Acq Time: 12:48:20 Fri 25-Sep-20

Cal Title: 20-0925A.cal

Sample Name: CCB2

Cal Type: External Calibration

Sample Type: Sample

Last Calib: MTD-092520-1

Matrix: Liquid

Bkg File:

Comments:

Int Correct:

Dilution: 1

Blank File: Blank.015

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	153.334	-0.000004	mg/L		3
Co	59	31.667	0.000005	mg/L		3
As	75	15.000	0.000019	mg/L		3
Mo	95	870.027	0.000676	mg/L		3
Cd	114	4.399	-0.000003	mg/L		3
Sb	121	668.349	0.000364	mg/L		3
Ba	137	15.000	0.000003	mg/L		3
Tl	205	205.001	0.000010	mg/L		3
Pb	208	492.002	0.000014	mg/L		3
Li	7	2146.828	-0.000004	mg/L		3
Be	9	3.333	0.000002	mg/L		3
B	11	1105.043	0.000193	mg/L		3
Se	82	50.858	0.000319	mg/L		3

Metals Quantitation Summary Report

Sequence #: 001
Method: 01-Ca.mth
Acq Time: 13:38:06 Fri 25-Sep-20
Sample Name: Blank
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	5340.000	0	mg/L	3

Metals Quantitation Summary Report

Sequence #: 002
Method: 01-Ca.mth
Acq Time: 13:39:15 Fri 25-Sep-20
Sample Name: Std-0.20
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass		Concentration	Units	RSD %	Rep
Ca	44	11953.333	0.206608	mg/L		3

Metals Quantitation Summary Report

Sequence #: 003
Method: 01-Ca.mth
Acq Time: 13:40:24 Fri 25-Sep-20
Sample Name: Std-0.50
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass		Concentration	Units	RSD %	Rep
Ca	44	20761.667	0.485138	mg/L		3

Metals Quantitation Summary Report

Sequence #: 004
Method: 01-Ca.mth
Acq Time: 13:41:34 Fri 25-Sep-20
Sample Name: Std-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass		Concentration	Units	RSD %	Rep
Ca	44	38923.333	1.070141	mg/L		3

Metals Quantitation Summary Report

Sequence #: 005
Method: 01-Ca.mth
Acq Time: 13:42:43 Fri 25-Sep-20
Sample Name: Std-2.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass		Concentration	Units	RSD %	Rep
Ca	44	71131.667	2.091487	mg/L		3

Metals Quantitation Summary Report

Sequence #: 006
Method: 01-Ca.mth
Acq Time: 13:43:53 Fri 25-Sep-20
Sample Name: Std-5.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	161808.333	4.950599	mg/L	3

Metals Quantitation Summary Report

Sequence #: 007
Method: 01-Ca.mth
Acq Time: 13:45:02 Fri 25-Sep-20
Sample Name: ICV-2.0
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 09/16/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	72725.000	2.114423	mg/L	3

Metals Quantitation Summary Report

Sequence #: 008
Method: 01-Ca.mth
Acq Time: 13:46:12 Fri 25-Sep-20
Sample Name: CCV-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 09/16/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass		Concentration	Units	RSD %	Rep
Ca	44	74133.333	2.105649	mg/L		3

Metals Quantitation Summary Report

Sequence #: 009
Method: 01-Ca.mth
Acq Time: 13:47:21 Fri 25-Sep-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass		Concentration	Units	RSD %	Rep
Ca	44	5273.333	-0.005792	mg/L		3

Metals Quantitation Summary Report

Sequence #: 010
Method: 01-Ca.mth
Acq Time: 13:48:31 Fri 25-Sep-20
Sample Name: CCB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	5151.667	-0.010357	mg/L	3

Metals Quantitation Summary Report

Sequence #: 011
Method: 01-Ca.mth
Acq Time: 14:03:55 Fri 25-Sep-20
Sample Name: BS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib:
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	6813.333	0.043141	mg/L	3

Metals Quantitation Summary Report

Sequence #: 012
Method: 01-Ca.mth
Acq Time: 14:08:00 Fri 25-Sep-20
Sample Name: 092520_1 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	40145.000	1.034692	mg/L	3

Metals Quantitation Summary Report

Sequence #: 013
Method: 01-Ca.mth
Acq Time: 14:37:31 Fri 25-Sep-20
Sample Name: 092520_1 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	5126.667	-0.011592	mg/L	3

Metals Quantitation Summary Report

Sequence #: 014
Method: 01-Ca.mth
Acq Time: 14:11:58 Fri 25-Sep-20
Sample Name: 17448.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 2

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	8310.000	0.153942	mg/L	3

Metals Quantitation Summary Report

Sequence #: 015
Method: 01-Ca.mth
Acq Time: 14:14:12 Fri 25-Sep-20
Sample Name: 17448.01 dil
Sample Type: Sample
Matrix: Liquid
Comments: 5/1 dil
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass		Concentration	Units	RSD %	Rep
Ca	44	234718.333	168.798396	mg/L		3

Metals Quantitation Summary Report

Sequence #: 016
Method: 01-Ca.mth
Acq Time: 14:15:20 Fri 25-Sep-20
Sample Name: 17448.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	1114731.667	170.575331	mg/L	3

Metals Quantitation Summary Report

Sequence #: 018
Method: 01-Ca.mth
Acq Time: 14:18:06 Fri 25-Sep-20
Sample Name: 17448.02s
Sample Type: Sample
Matrix: Liquid
Comments: 5/1=25
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass		Concentration	Units	RSD %	Rep
Ca	44	367246.667	270.237585	mg/L		3

Metals Quantitation Summary Report

Sequence #: 020
Method: 01-Ca.mth
Acq Time: 14:20:23 Fri 25-Sep-20
Sample Name: 17448.03s
Sample Type: Sample
Matrix: Liquid
Comments: 5/1=25
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass		Concentration	Units	RSD %	Rep
Ca	44	144998.333	108.156730	mg/L		3

Metals Quantitation Summary Report

Sequence #: 022
Method: 01-Ca.mth
Acq Time: 14:22:41 Fri 25-Sep-20
Sample Name: 17448.04s
Sample Type: Sample
Matrix: Liquid
Comments: 5/1=25
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	356803.333	266.156647	mg/L	3

Metals Quantitation Summary Report

Sequence #: 024
Method: 01-Ca.mth
Acq Time: 14:24:59 Fri 25-Sep-20
Sample Name: 17448.05s
Sample Type: Sample
Matrix: Liquid
Comments: 5/1=25
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	258346.667	192.489346	mg/L	3

Metals Quantitation Summary Report

Sequence #: 026
Method: 01-Ca.mth
Acq Time: 14:27:17 Fri 25-Sep-20
Sample Name: 17448.06s
Sample Type: Sample
Matrix: Liquid
Comments: 5/1=25
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	148955.000	110.960795	mg/L	3

Metals Quantitation Summary Report

Sequence #: 028
Method: 01-Ca.mth
Acq Time: 14:31:26 Fri 25-Sep-20
Sample Name: 17448.03 MS-2.0
Sample Type: Sample
Matrix: Liquid
Comments: 5/1=25
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	161356.667	119.689316	mg/L	3

Metals Quantitation Summary Report

Sequence #: 029
Method: 01-Ca.mth
Acq Time: 14:32:34 Fri 25-Sep-20
Sample Name: 17448.03 MSD
Sample Type: Sample
Matrix: Liquid
Comments: 5/1=25
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	161071.667	117.568251	mg/L	3

Metals Quantitation Summary Report

Sequence #: 030
Method: 01-Ca.mth
Acq Time: 14:34:02 Fri 25-Sep-20
Sample Name: CCV2-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 09/16/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	75225.000	2.146244	mg/L	3

Metals Quantitation Summary Report

Sequence #: 031
Method: 01-Ca.mth
Acq Time: 14:35:11 Fri 25-Sep-20
Sample Name: CCB2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0925B.cal
Cal Type: External Calibration
Last Calib: MTD-092520-1
Bkg File:
Int Correct:
Blank File: Blank.002

Element	Mass	Concentration	Units	RSD %	Rep
Ca	44	5188.333	-0.010721	mg/L	3

Metals Digestion 3015A \ 3050B

DATE 9/25/20

PREP BATCH MTD- 092520-1

TIME START 9:30

TIME FINISH 10:00

ANALYST RLY

Pipet Calibration:

Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria	Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria
2	1	1.000	1.002	Bias: Mean \pm 2% of nominal value Precision: RSD \leq 1% of nominal value	3	1	0.500	0.499	Bias: Mean \pm 2% of nominal value Precision: RSD \leq 1% of nominal value
	2		1.003			2		0.500	
	3		1.000			3		0.500	

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	FINAL VOLUME (ml)	REMARKS	% TOTAL SOLIDS	DILUTION FACTOR
LCS -	----	50	50		—	1
LRB-	----	50	50		—	1
17448.01		10				5
02						
03						
04						
05						
06						
07		25				2
06MS		10				5
06MSD		10				5
03MS		10		Ca spk		5
03MSD		10		Ca spk		5
17502.19		10		dissolved		5
17612.01		10				5

NOTES: 1) Spike values (unless otherwise stated):
 LCS = 0.05 ppm = 50 mls · 0.50 mls of 5ppm Spiking Solution
 Samples: Water = 0.05 ppm = 50 mls · 0.50 mls of 5ppm Spiking Solution
 Soil = 0.10 ppm = 50 mls · 1.0 mls of 5ppm Spiking Solution
 Spiking Solution - Date Prepared: 9/16/20

2) Spike values for minerals (Ca-Mg-K-Na)
 LCS = 1.0 ppm = 50 mls · 0.50 mls HM Stock Solution
 Samples (Water or Soil) = 2.0 ppm = 50 mls · 1.0 mls HM Stock Solution
 High Purity Stock Solution (HM)- Lot # 1927522-500

3) HNO₃ Lot # 248841

4) Centrifuge Tube Lot # 191202-060

5) Balance ID: MI

Reviewed by CCM On 9-25-20

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

Filename	Run Time	Sample ID	Matrix	QC Type
001	9/24/2020 12:25:28 PM	Calibration Blank	Liquid	
002	9/24/2020 12:27:19 PM	Standard #1	Liquid	
003	9/24/2020 12:29:11 PM	Standard #2	Liquid	
004	9/24/2020 12:31:03 PM	Standard #3	Liquid	
005	9/24/2020 12:32:54 PM	Standard #4	Liquid	
006	9/24/2020 12:34:46 PM	Standard #5	Liquid	
007	9/24/2020 12:36:37 PM	Standard #6	Liquid	
008	9/24/2020 12:38:29 PM	Standard #7	Liquid	
009	9/24/2020 12:41:45 PM	Standard #8	Liquid	
010	9/24/2020 12:45:05 PM	ICV-5.0 ppb	Liquid	ICV
011	9/24/2020 12:46:57 PM	ICB	Liquid	ICB
012	9/24/2020 12:48:48 PM	CCV1-2.0 ppb	Liquid	CCV
013	9/24/2020 12:50:40 PM	CCB1	Liquid	CCB
014	9/24/2020 12:52:32 PM	BS-0.10	Liquid	BS
015	9/24/2020 12:57:05 PM	092420_1 LCS-2.0	Liquid	LCS
016	9/24/2020 12:58:56 PM	092420_1 LRB	Liquid	LRB
017	9/24/2020 1:00:42 PM	17653.04s	Soil	S
018	9/24/2020 1:02:29 PM	17653.06s	Soil	S
019	9/24/2020 1:05:55 PM	17653.08s	Soil	S
020	9/24/2020 1:07:43 PM	17675.01s	Soil	S
021	9/24/2020 1:09:32 PM	17675.03s	Soil	S
022	9/24/2020 1:11:20 PM	17675.05s	Soil	S
023	9/24/2020 1:13:10 PM	17675.07s	Soil	S
024	9/24/2020 1:14:57 PM	17675.10s	Soil	S
025	9/24/2020 1:16:46 PM	17696.01s	Soil	S
026	9/24/2020 1:18:32 PM	17675.09s	Soil	S
027	9/24/2020 1:21:29 PM	17675.09 MS-2.0	Soil	MS
028	9/24/2020 1:23:30 PM	17675.09 MSD	Soil	MSD
029	9/24/2020 1:44:52 PM	17675.09 MS-2.0 k.a	Soil	MS
030	9/24/2020 1:46:53 PM	CCV2-2.0 ppb	Liquid	CCV
031	9/24/2020 1:48:45 PM	CCB2	Liquid	CCB
032	9/24/2020 1:54:26 PM	092420_2 LCS-2.0	Liquid	LCS
033	9/24/2020 1:56:16 PM	092420_2 LRB	Liquid	LRB
034	9/24/2020 1:58:05 PM	17627.01s tclp	Liquid	S
035	9/24/2020 1:59:54 PM	17448.01s	Liquid	S
036	9/24/2020 2:01:43 PM	17448.02s	Liquid	S
037	9/24/2020 2:03:30 PM	17448.03s	Liquid	S
038	9/24/2020 2:05:17 PM	17448.04s	Liquid	S
039	9/24/2020 2:07:05 PM	17448.05s	Liquid	S
040	9/24/2020 2:08:52 PM	17448.06s	Liquid	S
041	9/24/2020 2:10:41 PM	17448.07s	Liquid	S
042	9/24/2020 2:12:30 PM	17448.07 MS-2.0	Liquid	MS
043	9/24/2020 2:14:19 PM	17448.07 MSD	Liquid	MSD
044	9/24/2020 2:16:07 PM	17506.01s tclp	Liquid	S
045	9/24/2020 2:17:54 PM	17528.01s tclp	Liquid	S
046	9/24/2020 2:19:46 PM	CCV3-2.0 ppb	Liquid	CCV
047	9/24/2020 2:21:37 PM	CCB3	Liquid	CCB
048	9/24/2020 2:27:03 PM	17529.01s tclp	Liquid	S
049	9/24/2020 2:28:51 PM	17529.02s tclp	Liquid	S
050	9/24/2020 2:30:39 PM	17534.01s tclp	Liquid	S
051	9/24/2020 2:32:28 PM	17534.02s tclp	Liquid	S
052	9/24/2020 2:34:18 PM	17534.03s tclp	Liquid	S
053	9/24/2020 2:36:06 PM	17534.04s tclp	Liquid	S
054	9/24/2020 2:37:54 PM	17555.02s	Liquid	S
055	9/24/2020 2:39:42 PM	17555.02 MS-2.0	Liquid	MS
056	9/24/2020 2:41:30 PM	17555.02 MSD	Liquid	MSD

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Sample ID</i>	<i>Matrix</i>	<i>QC Type</i>
057	9/24/2020 2:43:18 PM	17556.02s	Liquid	S
058	9/24/2020 2:45:07 PM	17580.02s	Liquid	S
059	9/24/2020 2:46:57 PM	17589.01s	Liquid	S
060	9/24/2020 2:48:48 PM	CCV4-2.0 ppb	Liquid	CCV
061	9/24/2020 2:50:40 PM	CCB4	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

Lab Sample ID: S17448.01

Sample Tag: MW-1 L009005-01

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	09/24/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

Lab Sample ID: S17448.02

Sample Tag: MW-2 L009005-02

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	09/24/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

Lab Sample ID: S17448.03

Sample Tag: MW-4 L009005-03

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	09/24/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

Lab Sample ID: S17448.04

Sample Tag: MW-5 L009005-04

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	09/24/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

Lab Sample ID: S17448.05

Sample Tag: MW-6 L009005-05

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	09/24/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

Lab Sample ID: S17448.06

Sample Tag: MW-4 Duplicate L009005-06

Date Collected: 09/15/2020

Matrix: Groundwater

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	09/24/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

Lab Sample ID: S17448.07

Sample Tag: Field Blank L009005-07

Date Collected: 09/15/2020

Matrix: Water

<i>CAS #</i>	<i>Analyte</i>	<i>Result</i>	<i>RL</i>	<i>MDL</i>	<i>Units</i>	<i>Dilute</i>	<i>Run Date</i>	<i>Notes</i>
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	09/24/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

Note/Qualifier Key

b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
010 ICV-5.0 ppb	ICV	1.0	Hg	5.021	5.0	100	90/110	ug/L	Liquid
012 CCV1-2.0 ppb	CCV	1.0	Hg	2.009	2.0	101	90/110	ug/L	Liquid
030 CCV2-2.0 ppb	CCV	1.0	Hg	1.985	2.0	99	90/110	ug/L	Liquid
046 CCV3-2.0 ppb	CCV	1.0	Hg	2.048	2.0	102	90/110	ug/L	Liquid
060 CCV4-2.0 ppb	CCV	1.0	Hg	2.032	2.0	102	90/110	ug/L	Liquid

Form 3: Blanks

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

<i>Sample Name</i>	<i>QC Type</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Raw Conc</i>	<i>Units</i>	<i>Matrix</i>
011 ICB	ICB	1.0	Hg	<0.05	0.0079	ug/L	Liquid
013 CCB1	CCB	1.0	Hg	<0.05	0.0134	ug/L	Liquid
016 092420_1 LRB	LRB	1.0	Hg	<0.05	-0.0073	ug/L	Liquid
031 CCB2	CCB	1.0	Hg	<0.05	0.0132	ug/L	Liquid
033 092420_2 LRB	LRB	1.0	Hg	<0.05	-0.0143	ug/L	Liquid
047 CCB3	CCB	1.0	Hg	<0.05	-0.0211	ug/L	Liquid
061 CCB4	CCB	1.0	Hg	<0.05	-0.0029	ug/L	Liquid

Form 5A: Matrix Spike Sample Recovery

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

<i>Spike Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Spike Conc</i>	<i>Sample Conc</i>	<i>Spike Amount</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
014 BS-0.10		1.0	Hg	0.082	ND	0.10	82	70/130	ug/L	Liquid
027 17675.09 MS-2.0	026 17675.09s	62.7	Hg	513.0	463.8	125.4	39*	80/120	ug/kg	Soil
029 17675.09 MS-2.0	026 17675.09s	62.8	Hg	544.3	463.8	125.6	64*	80/120	ug/kg	Soil
042 17448.07 MS-2.0	041 17448.07s	1.0	Hg	2.256	<0.2	2.0	113	80/120	ug/L	Liquid
055 17555.02 MS-2.0	054 17555.02s	1.0	Hg	2.4	<0.2	2.0	120	80/120	ug/L	Liquid

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

<i>Duplicate Name</i>	<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Dup Conc</i>	<i>Samp Conc</i>	<i>%RPD</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
028 17675.09 MSD	027 17675.09 MS-2.0	62.8	Hg	518.9	513.0	1	0/20	ug/kg	Soil
043 17448.07 MSD	042 17448.07 MS-2.0	1.0	Hg	2.299	2.256	2	0/20	ug/L	Liquid
056 17555.02 MSD	055 17555.02 MS-2.0	1.0	Hg	2.340	2.4	3	0/20	ug/L	Liquid

Form 7: Laboratory Control Sample

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

<i>Sample Name</i>	<i>Dilute</i>	<i>Element</i>	<i>Sample Conc</i>	<i>Actual Conc</i>	<i>%Rec</i>	<i>LCL/UCL</i>	<i>Units</i>	<i>Matrix</i>
015 092420_1 LCS-2.0	1.0	Hg	2.208	2.0	110	85/115	ug/L	Liquid
032 092420_2 LCS-2.0	1.0	Hg	2.126	2.0	106	85/115	ug/L	Liquid

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
001 Calibration Blank	9/24/2020 12:25:28	PM Liquid	Hg
002 Standard #1	9/24/2020 12:27:19	PM Liquid	Hg
003 Standard #2	9/24/2020 12:29:11	PM Liquid	Hg
004 Standard #3	9/24/2020 12:31:03	PM Liquid	Hg
005 Standard #4	9/24/2020 12:32:54	PM Liquid	Hg
006 Standard #5	9/24/2020 12:34:46	PM Liquid	Hg
007 Standard #6	9/24/2020 12:36:37	PM Liquid	Hg
008 Standard #7	9/24/2020 12:38:29	PM Liquid	Hg
009 Standard #8	9/24/2020 12:41:45	PM Liquid	Hg
010 ICV-5.0 ppb	9/24/2020 12:45:05	PM Liquid	Hg
011 ICB	9/24/2020 12:46:57	PM Liquid	Hg
012 CCV1-2.0 ppb	9/24/2020 12:48:48	PM Liquid	Hg
013 CCB1	9/24/2020 12:50:40	PM Liquid	Hg
014 BS-0.10	9/24/2020 12:52:32	PM Liquid	Hg
015 092420_1 LCS-2.0	9/24/2020 12:57:05	PM Liquid	Hg
016 092420_1 LRB	9/24/2020 12:58:56	PM Liquid	Hg
017 17653.04s	9/24/2020 1:00:42	PM Soil	Hg
018 17653.06s	9/24/2020 1:02:29	PM Soil	Hg
019 17653.08s	9/24/2020 1:05:55	PM Soil	Hg
020 17675.01s	9/24/2020 1:07:43	PM Soil	Hg
021 17675.03s	9/24/2020 1:09:32	PM Soil	Hg
022 17675.05s	9/24/2020 1:11:20	PM Soil	Hg
023 17675.07s	9/24/2020 1:13:10	PM Soil	Hg
024 17675.10s	9/24/2020 1:14:57	PM Soil	Hg
025 17696.01s	9/24/2020 1:16:46	PM Soil	Hg
026 17675.09s	9/24/2020 1:18:32	PM Soil	Hg
027 17675.09 MS-2.0	9/24/2020 1:21:29	PM Soil	Hg
028 17675.09 MSD	9/24/2020 1:23:30	PM Soil	Hg
029 17675.09 MS-2.0 k.a	9/24/2020 1:44:52	PM Soil	Hg
030 CCV2-2.0 ppb	9/24/2020 1:46:53	PM Liquid	Hg
031 CCB2	9/24/2020 1:48:45	PM Liquid	Hg
032 092420_2 LCS-2.0	9/24/2020 1:54:26	PM Liquid	Hg
033 092420_2 LRB	9/24/2020 1:56:16	PM Liquid	Hg
034 17627.01s tclp	9/24/2020 1:58:05	PM Liquid	Hg
035 17448.01s	9/24/2020 1:59:54	PM Liquid	Hg
036 17448.02s	9/24/2020 2:01:43	PM Liquid	Hg
037 17448.03s	9/24/2020 2:03:30	PM Liquid	Hg
038 17448.04s	9/24/2020 2:05:17	PM Liquid	Hg
039 17448.05s	9/24/2020 2:07:05	PM Liquid	Hg
040 17448.06s	9/24/2020 2:08:52	PM Liquid	Hg
041 17448.07s	9/24/2020 2:10:41	PM Liquid	Hg
042 17448.07 MS-2.0	9/24/2020 2:12:30	PM Liquid	Hg
043 17448.07 MSD	9/24/2020 2:14:19	PM Liquid	Hg
044 17506.01s tclp	9/24/2020 2:16:07	PM Liquid	Hg
045 17528.01s tclp	9/24/2020 2:17:54	PM Liquid	Hg
046 CCV3-2.0 ppb	9/24/2020 2:19:46	PM Liquid	Hg
047 CCB3	9/24/2020 2:21:37	PM Liquid	Hg
048 17529.01s tclp	9/24/2020 2:27:03	PM Liquid	Hg
049 17529.02s tclp	9/24/2020 2:28:51	PM Liquid	Hg
050 17534.01s tclp	9/24/2020 2:30:39	PM Liquid	Hg
051 17534.02s tclp	9/24/2020 2:32:28	PM Liquid	Hg
052 17534.03s tclp	9/24/2020 2:34:18	PM Liquid	Hg
053 17534.04s tclp	9/24/2020 2:36:06	PM Liquid	Hg
054 17555.02s	9/24/2020 2:37:54	PM Liquid	Hg
055 17555.02 MS-2.0	9/24/2020 2:39:42	PM Liquid	Hg
056 17555.03	9/24/2020 2:41:30	PM Liquid	Hg

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0924A

Instrument ID: HG QuickTrace

Analysis Date: 09/24/20

Analyst: JRH

<i>Filename</i>	<i>Run Time</i>	<i>Matrix</i>	<i>Analytes</i>
057 17556.02s	9/24/2020 2:43:18 PM	Liquid	Hg
058 17580.02s	9/24/2020 2:45:07 PM	Liquid	Hg
059 17589.01s	9/24/2020 2:46:57 PM	Liquid	Hg
060 CCV4-2.0 ppb	9/24/2020 2:48:48 PM	Liquid	Hg
061 CCB4	9/24/2020 2:50:40 PM	Liquid	Hg

Mercury Summary Report

Element	Seq #	Acquisition Time	Sample Name	Peak	Concentration	Units	Matrix	Dilution	Sample Wt.	Sample Vol.
Hg	001	9/24/2020 12:25:28 PM	Calibration Blank	426.1000	0.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	002	9/24/2020 12:27:19 PM	Standard #1	924.0000	0.1000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	003	9/24/2020 12:29:11 PM	Standard #2	1637.0000	0.2000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	004	9/24/2020 12:31:03 PM	Standard #3	4031.0000	0.5000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	005	9/24/2020 12:32:54 PM	Standard #4	8091.0000	1.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	006	9/24/2020 12:34:46 PM	Standard #5	16260.0000	2.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	007	9/24/2020 12:36:37 PM	Standard #6	47760.0000	6.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	008	9/24/2020 12:38:29 PM	Standard #7	62610.0000	8.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	009	9/24/2020 12:41:45 PM	Standard #8	78380.0000	10.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	010	9/24/2020 12:45:05 PM	ICV-5.0 ppb	39570.0000	5.0210	ug/L	Liquid	1.0	1.0000	1.0000
Hg	011	9/24/2020 12:46:57 PM	ICB	352.9000	0.0079	ug/L	Liquid	1.0	1.0000	1.0000
Hg	012	9/24/2020 12:48:48 PM	CCV1-2.0 ppb	16010.0000	2.0090	ug/L	Liquid	1.0	1.0000	1.0000
Hg	013	9/24/2020 12:50:40 PM	CCB1	396.7000	0.0134	ug/L	Liquid	1.0	1.0000	1.0000
Hg	014	9/24/2020 12:52:32 PM	BS-0.10	933.3000	0.0820	ug/L	Liquid	1.0	1.0000	1.0000
Hg	015	9/24/2020 12:57:05 PM	092420_1 LCS-2.0	17560.0000	2.2080	ug/L	Liquid	1.0	1.0000	1.0000
Hg	016	9/24/2020 12:58:56 PM	092420_1 LRB	234.4000	-0.0073	ug/L	Liquid	1.0	1.0000	1.0000
Hg	030	9/24/2020 1:46:53 PM	CCV2-2.0 ppb	15820.0000	1.9850	ug/L	Liquid	1.0	1.0000	1.0000
Hg	031	9/24/2020 1:48:45 PM	CCB2	394.9000	0.0132	ug/L	Liquid	1.0	1.0000	1.0000
Hg	032	9/24/2020 1:54:26 PM	092420_2 LCS-2.0	16920.0000	2.1260	ug/L	Liquid	1.0	1.0000	1.0000
Hg	033	9/24/2020 1:56:16 PM	092420_2 LRB	179.4000	-0.0143	ug/L	Liquid	1.0	1.0000	1.0000
Hg	035	9/24/2020 1:59:54 PM	17448.01s	206.8000	-0.0108	ug/L	Liquid	1.0	1.0000	1.0000
Hg	036	9/24/2020 2:01:43 PM	17448.02s	153.2000	-0.0177	ug/L	Liquid	1.0	1.0000	1.0000
Hg	037	9/24/2020 2:03:30 PM	17448.03s	150.9000	-0.0180	ug/L	Liquid	1.0	1.0000	1.0000
Hg	038	9/24/2020 2:05:17 PM	17448.04s	152.0000	-0.0178	ug/L	Liquid	1.0	1.0000	1.0000
Hg	039	9/24/2020 2:07:05 PM	17448.05s	169.4000	-0.0156	ug/L	Liquid	1.0	1.0000	1.0000
Hg	040	9/24/2020 2:08:52 PM	17448.06s	186.2000	-0.0134	ug/L	Liquid	1.0	1.0000	1.0000
Hg	041	9/24/2020 2:10:41 PM	17448.07s	203.8000	-0.0112	ug/L	Liquid	1.0	1.0000	1.0000
Hg	042	9/24/2020 2:12:30 PM	17448.07 MS-2.0	17940.0000	2.2560	ug/L	Liquid	1.0	1.0000	1.0000
Hg	043	9/24/2020 2:14:19 PM	17448.07 MSD	18280.0000	2.2990	ug/L	Liquid	1.0	1.0000	1.0000
Hg	046	9/24/2020 2:19:46 PM	CCV3-2.0 ppb	16310.0000	2.0480	ug/L	Liquid	1.0	1.0000	1.0000
Hg	047	9/24/2020 2:21:37 PM	CCB3	126.5000	-0.0211	ug/L	Liquid	1.0	1.0000	1.0000
Hg	060	9/24/2020 2:48:48 PM	CCV4-2.0 ppb	16190.0000	2.0320	ug/L	Liquid	1.0	1.0000	1.0000
Hg	061	9/24/2020 2:50:40 PM	CCB4	269.0000	-0.0029	ug/L	Liquid	1.0	1.0000	1.0000

Mercury Digestion
Method # 245.1, 7471B, 7470A (OHIO VAP)

TIME START: 11:15
 TIME FINISH: 13:15
 PREP BATCH: HGD-092420-2
 BALANCE ID: M4

Beginning End
 block #1 95 °C block #1 95 °C ID # #B155005
 block #2 _____ °C block #2 _____ °C ID # _____
 block #3 _____ °C block #3 _____ °C ID # _____

DATE 9/24/20
 ANALYST CCM
 REVIEWED BY CCM
 REVIEW DATE 9-24-20

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	%TOT. SOLIDS	DRY SAMPLE WT.	DILUTION FACTOR	FINAL VOLUME	REMARKS
LCS <u>092420-2</u>	-----	<u>25</u>	-----	-----		25g	
LRB <u>092420-2</u>	-----		-----	-----		25g	
<u>17448.01</u>							
<u>02</u>							
<u>03</u>							
<u>04</u>							
<u>05</u>							
<u>06</u>							
<u>07</u>							
<u>07MS</u>							
<u>07MSD</u>							
<u>17506.01</u>		<u>5.0</u>					<u>tcp</u>
<u>17528.01</u>							
<u>17529.01</u>							
<u>02</u>							
<u>17534.01</u>							
<u>02</u>							
<u>03</u>							
<u>04</u>							
<u>17555.02</u>		<u>25</u>					
<u>02MS</u>							
<u>02MSD</u>							
<u>17556.02</u>							
<u>17580.02</u>		<u>12.5</u>					
<u>17589.01</u>		<u>25</u>					
<u>17627.01</u>		<u>12.5.0</u>					<u>tcp</u>
		<u>24/9/20</u>					

NOTES: 1) Spike values (unless otherwise stated):
 2.0 ppb for LCS: 0.50 ml of HPS solution, 2.0 ppb for liquid samples: 0.50 ml of HPS solution & 0.002 ppm for solid samples: 0.50 ml of HPS solution (Date Prepared: 9/16/20 Exp 9/30/20)
 Centrifuge Tube Lot # 191202-060
 HNO₃ Lot # 248841
 H₂SO₄ Lot # 231834

Pipet Calibration:

Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Notes
1			
2			
3			

TCS-1100 A Diomexic/Meth 300.0

091720

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 9:56:15 AM -...	1.0000
2		1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:08:32 AM...	1.0000
3		1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 10:21:21 AM...	1.0000
4		1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 10:34:09 AM...	1.0000
5		1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 10:46:58 AM...	1.0000
6		1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 10:59:49 AM...	1.0000
7		Blank	Unknown		1	Norm Method	Anion	Finished	9/17/2020 7:36:54 AM...	1.0000
8		BSpike 11746BS1	Check Standard		2	Norm Method	Anion	Finished	9/17/2020 7:49:10 AM...	1.0000
9		LCS 11746LCS1	Check Standard		3	Norm Method	Anion	Finished	9/17/2020 8:01:58 AM...	1.0000
10		17448.01	Unknown		4	Norm Method	Anion	Finished	9/17/2020 8:14:46 AM...	1.0000
11		17448.02	Unknown		5	Norm Method	Anion	Finished	9/17/2020 8:27:34 AM...	1.0000
12		17448.03	Unknown		6	Norm Method	Anion	Finished	9/17/2020 8:40:23 AM...	1.0000
13		17448.04	Unknown		7	Norm Method	Anion	Finished	9/17/2020 8:53:12 AM...	1.0000
14		17448.05	Unknown		8	Norm Method	Anion	Finished	9/17/2020 9:06:00 AM...	1.0000
15		17448.06	Unknown		9	Norm Method	Anion	Finished	9/17/2020 9:18:49 AM...	1.0000
16		17484.01	Unknown		10	Norm Method	Anion	Finished	9/17/2020 9:31:38 AM...	1.0000
17		17484.01	Unknown		11	Norm Method	Anion	Finished	9/17/2020 9:44:26 AM...	1.0000
18		17484.02	Unknown		12	Norm Method	Anion	Finished	9/17/2020 9:57:15 AM...	1.0000
19		17484.03	Unknown		13	Norm Method	Anion	Finished	9/17/2020 10:10:03 A...	1.0000
20		17448.01 dup	Unknown		14	Norm Method	Anion	Finished	9/17/2020 10:22:52 A...	1.0000
21		17448.07	Unknown		15	Norm Method	Anion	Finished	9/17/2020 10:35:41 A...	1.0000
22		17448.01 MS 13078...	Unknown		16	Norm Method	Anion	Finished	9/17/2020 10:48:30 A...	1.0000
23		17448.01 MSD 1307...	Unknown		17	Norm Method	Anion	Finished	9/17/2020 11:01:19 A...	1.0000
24		BSpike 11746BS1	Check Standard		18	Norm Method	Anion	Finished	9/17/2020 11:14:09 A...	1.0000

CAI TML TCSA0701901A

SPT200917-W1-A

NTWA200917-W1-A

091720

JN

#	ECD_1	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
7		1.0000	1.0000		Jeff Phifer	
8		1.0000	1.0000		Jeff Phifer	
9		1.0000	1.0000		Jeff Phifer	
10		5.0000	1.0000		Jeff Phifer	
11		5.0000	1.0000		Jeff Phifer	
12		5.0000	1.0000		Jeff Phifer	
13		5.0000	1.0000		Jeff Phifer	
14		5.0000	1.0000		Jeff Phifer	
15		5.0000	1.0000		Jeff Phifer	
16		2.5000	1.0000		Jeff Phifer	
17		5.0000	1.0000		Jeff Phifer	
18		5.0000	1.0000		Jeff Phifer	
19		5.0000	1.0000		Jeff Phifer	
20		5.0000	1.0000		Jeff Phifer	
21		2.5000	1.0000		Jeff Phifer	
22		1.0000	1.0000		Jeff Phifer	
23		1.0000	1.0000		Jeff Phifer	
24		1.0000	1.0000		Jeff Phifer	

091720

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
25		17484.04	Unknown		19	Norm Method	Anion	Finished	9/17/2020 11:26:57 A...	1.0000
26		17484.05	Unknown		20	Norm Method	Anion	Finished	9/17/2020 11:39:46 A...	1.0000
27		17484.06	Unknown		21	Norm Method	Anion	Finished	9/17/2020 11:52:34 A...	1.0000
28		BSpoke 11746BS1	Check Standard		22	Norm Method	Anion	Finished	9/17/2020 12:05:23 P...	1.0000
29		Blank	Unknown		23	Norm Method	Anion	Finished	9/17/2020 12:18:12 P...	1.0000

[Click here to add a new injection](#)

091720

#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
25		5.0000	1.0000		Jeff Phifer	
26		5.0000	1.0000		Jeff Phifer	
27		5.0000	1.0000		Jeff Phifer	
28		1.0000	1.0000		Jeff Phifer	
29		1.0000	1.0000		Jeff Phifer	
Click here to add a new injection						

Norm Method	03/08/11 13:39	Jeff Phifer	Method 300.0	
Stage	Time	Command	Value	Comment
Instrument Setup	min			
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

JP 9.17.20

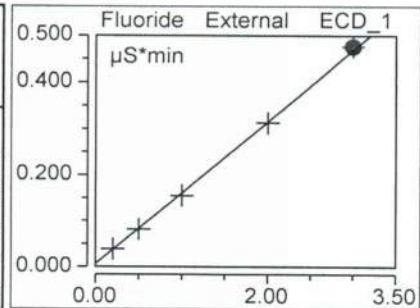
Calibration Batch Report
CAL ID# ICSA070720CAL

Sequence:	091720	Injection Volu. 2,500.00
Instrument Method:	Norm Method	Operator: Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 10:59	Column: AS4A-SC 038777

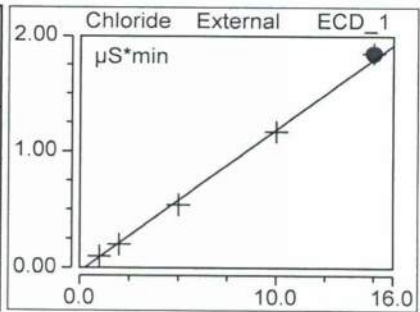
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.01	0.006	0.154	0.000	0.9996
Chloride	Area	Lin, WithOffset, 1/A	0.02	-0.031	0.122	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.03	-0.003	0.227	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.05	-0.001	0.044	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.07	-0.001	0.263	0.000	0.9996
Sulfate	Area	Lin, WithOffset, 1/A	0.33	-0.002	0.080	0.000	0.9996
AVERAGE:				-0.0052	0.1482	0.0000	0.9995

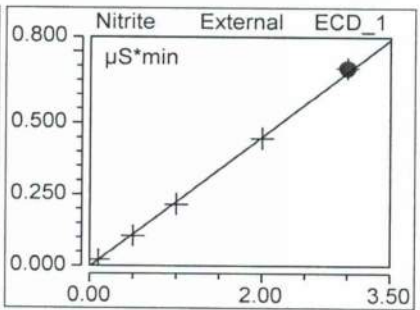
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
1131Cal1	ECD_1 1.114	ECD_1 0.0387	ECD_1 0.521	ECD_1 0.210
1131Cal2	1.114	0.0816	1.223	0.488
1131Cal3	1.114	0.1551	2.427	0.966
1131Cal4	1.114	0.3125	5.047	1.987
1131Cal5	1.114	0.4761	7.811	3.049
Average	1.114			
Rel. Std. Dev.	0.013 %			



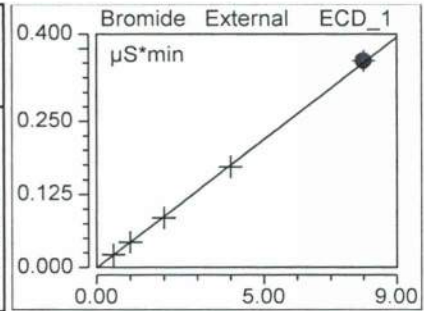
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Chloride	Chloride	Chloride	Chloride	Chloride
1131Cal1	ECD_1 1.637	ECD_1 0.1013	ECD_1 1.651	ECD_1 1.089
1131Cal2	1.638	0.2015	3.302	1.912
1131Cal3	1.641	0.5404	9.060	4.694
1131Cal4	1.644	1.1707	19.722	9.867
1131Cal5	1.647	1.8494	30.847	15.438
Average	1.641			
Rel. Std. Dev.	0.262 %			



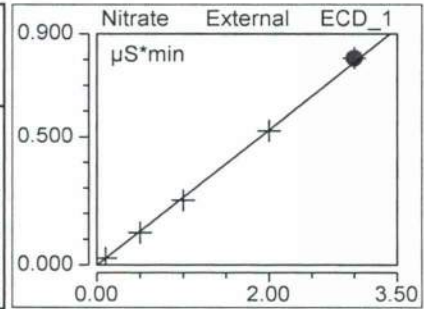
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Nitrite	Nitrite	Nitrite	Nitrite	Nitrite
1131Cal1	ECD_1 1.927	ECD_1 0.0213	ECD_1 0.296	ECD_1 0.106
1131Cal2	1.924	0.1057	1.494	0.479
1131Cal3	1.924	0.2162	3.083	0.966
1131Cal4	1.924	0.4469	6.494	1.984
1131Cal5	1.924	0.6920	10.161	3.065
Average	1.925			
Rel. Std. Dev.	0.075 %			



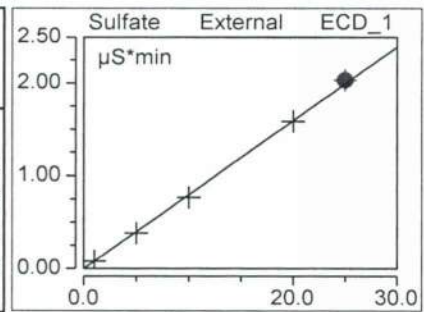
Injection Name	Ret. Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Bromide	Bromide	Bromide	Bromide	Bromide
1131Cal1	2.827	0.0217	0.250	0.511
1131Cal2	2.821	0.0433	0.489	1.003
1131Cal3	2.818	0.0852	0.977	1.960
1131Cal4	2.807	0.1717	1.992	3.934
1131Cal5	2.801	0.3540	4.145	8.093
Average	2.815			
Rel. Std. Dev.	0.380 %			



Injection Name	Ret. Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Nitrate	Nitrate	Nitrate	Nitrate	Nitrate
1131Cal1	3.191	0.0271	0.268	0.106
1131Cal2	3.181	0.1260	1.252	0.482
1131Cal3	3.168	0.2515	2.511	0.959
1131Cal4	3.151	0.5229	5.181	1.990
1131Cal5	3.134	0.8054	7.979	3.063
Average	3.165			
Rel. Std. Dev.	0.721 %			



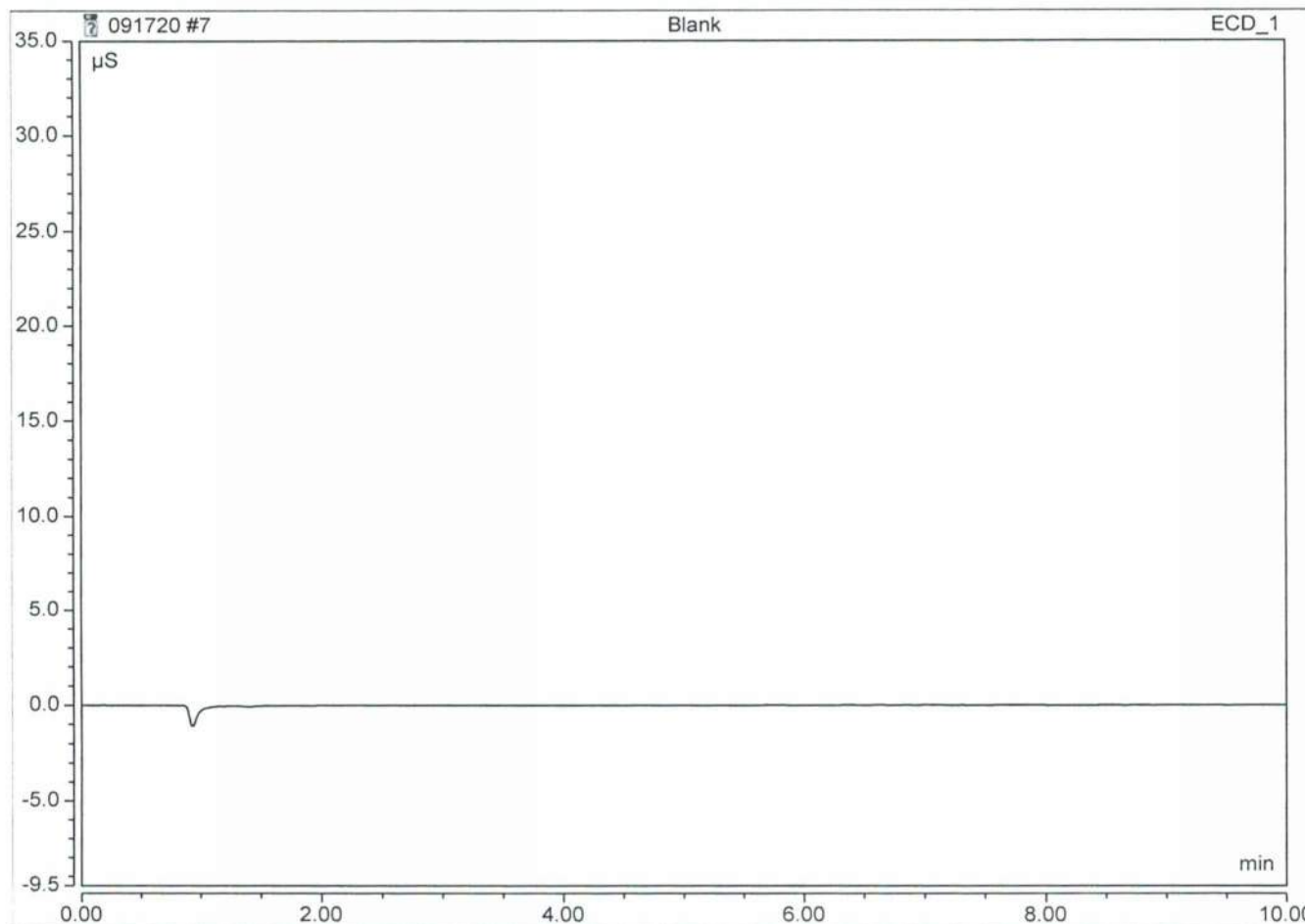
Injection Name	Ret. Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
1131Cal1	6.617	0.0815	0.364	1.050
1131Cal2	6.608	0.3828	1.734	4.832
1131Cal3	6.594	0.7678	3.517	9.664
1131Cal4	6.571	1.5858	7.313	19.933
1131Cal5	6.557	2.0310	9.317	25.521
Average	6.589			
Rel. Std. Dev.	0.380 %			



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 07:36	Operator:	Jeff Phifer

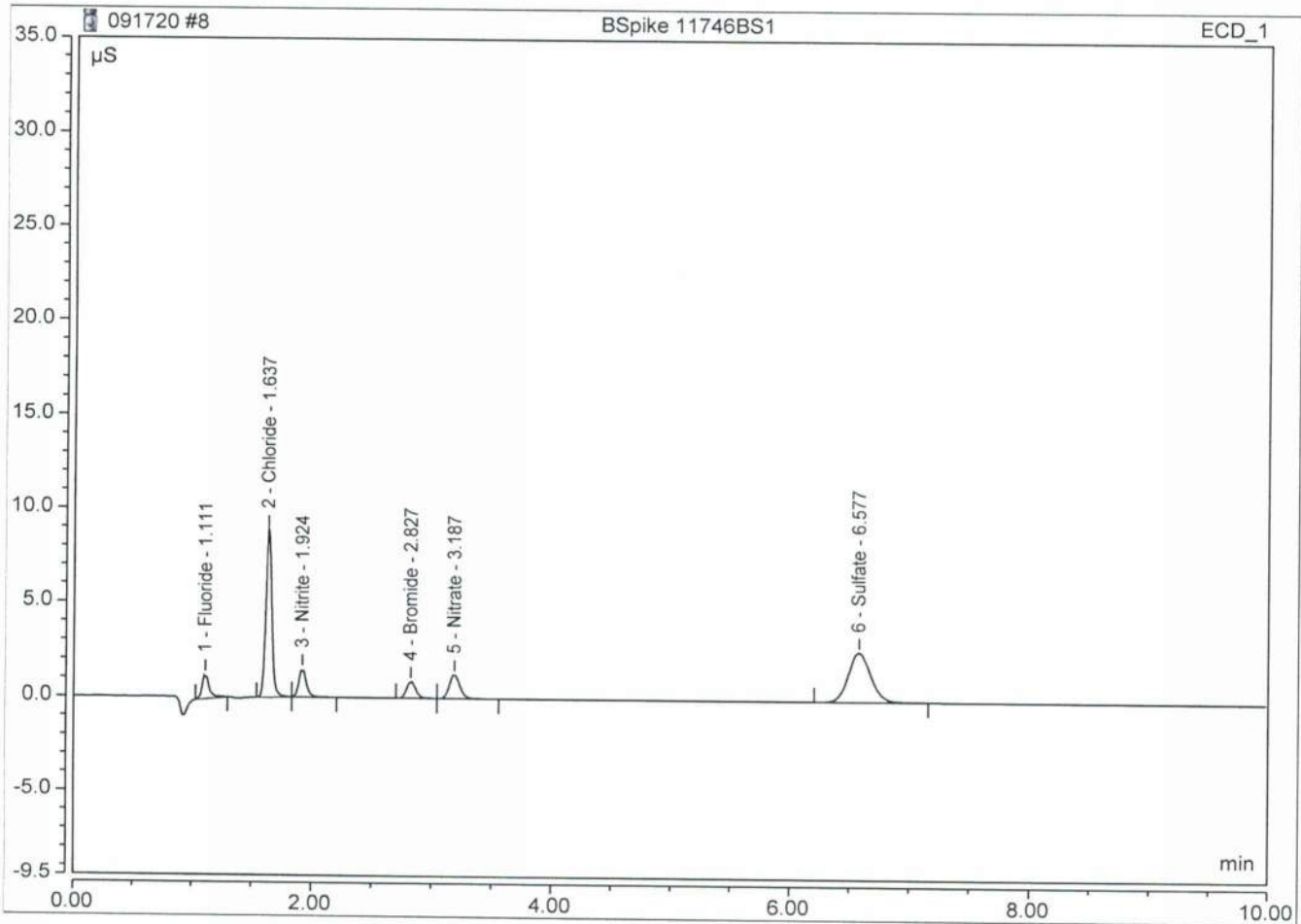
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	BSpoke 11746BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 07:49	Operator:	Jeff Phifer

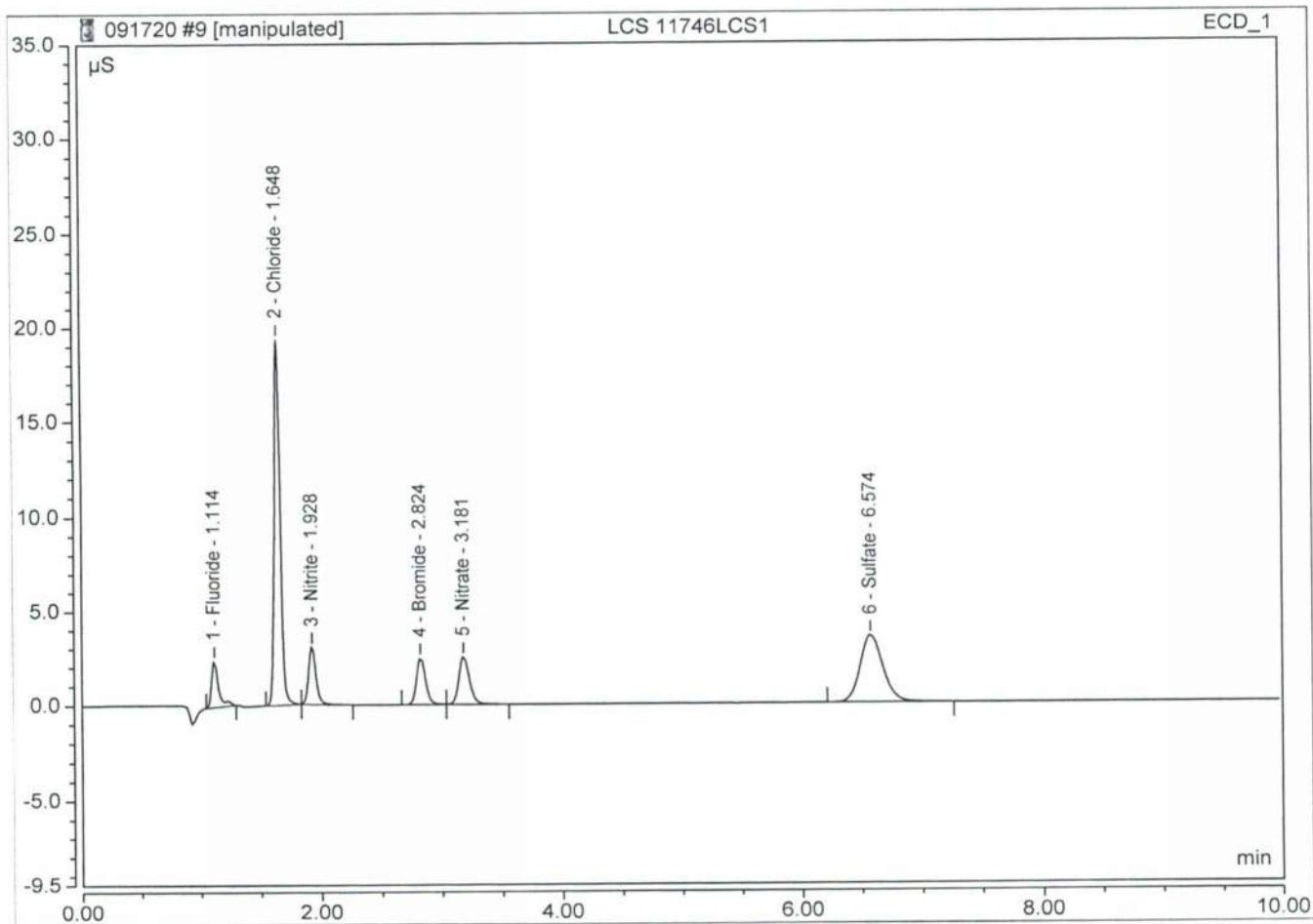
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.086	1.278	0.5142
2	1.64	Chloride	BMB	0.537	8.872	4.6684
3	1.92	Nitrite	BMB	0.104	1.472	0.4733
4	2.83	Bromide	BMB	0.077	0.869	1.7760
5	3.19	Nitrate	BMB	0.127	1.251	0.4839
6	6.58	Sulfate	BMB	0.567	2.603	7.1408
TOTAL:				1.50	16.35	15.06



Peak Integration Report

Sample Name:	LCS 11746LCS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 08:01	Operator:	Jeff Phifer

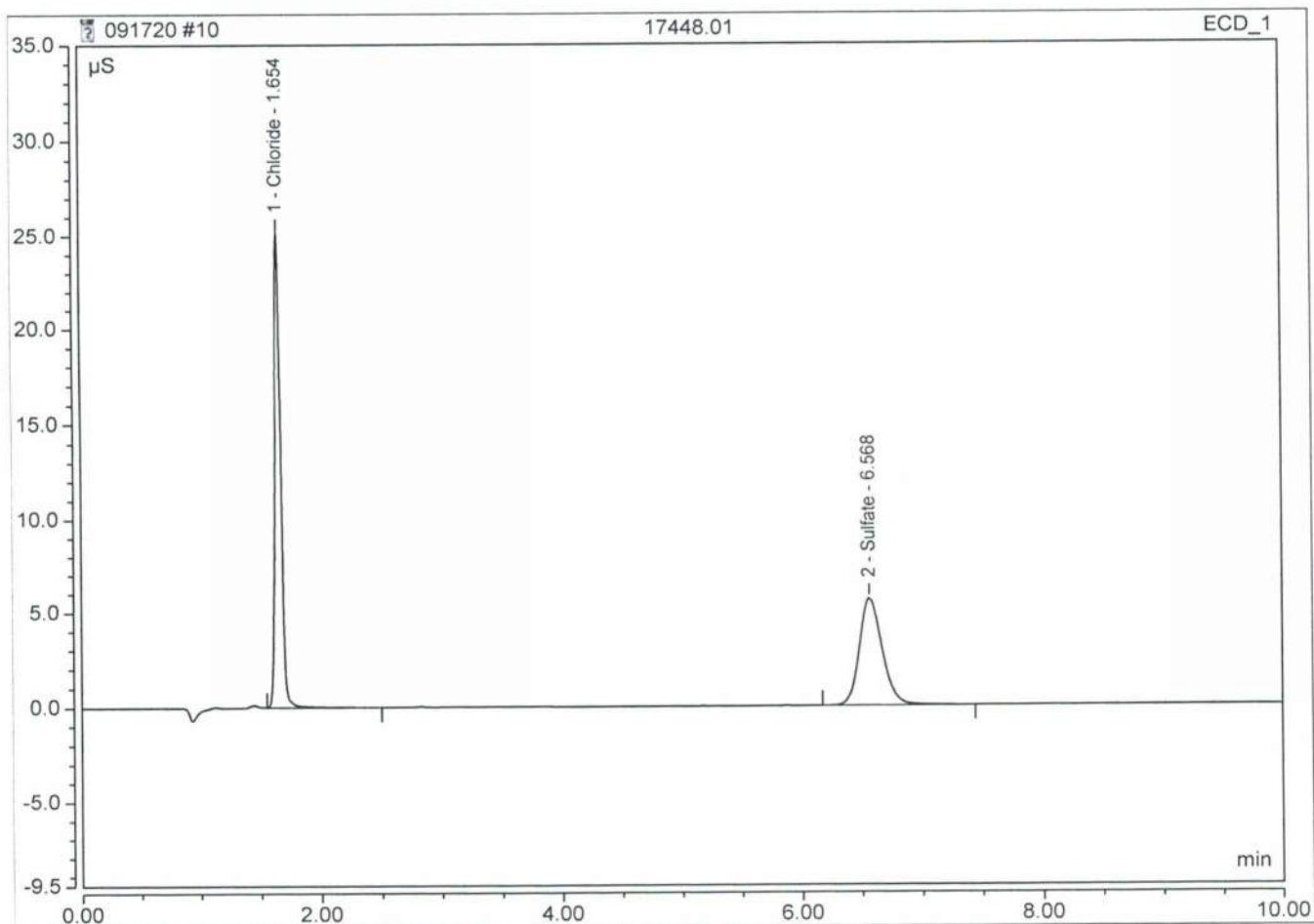
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB*	0.163	2.433	1.0190 <i>102%</i>
2	1.65	Chloride	BMB	1.163	19.366	9.8029 <i>98%</i>
3	1.93	Nitrite	BMB	0.213	3.033	0.9505
4	2.82	Bromide	BMB	0.217	2.470	4.9655
5	3.18	Nitrate	BMB	0.252	2.497	0.9604 <i>96%</i>
6	6.57	Sulfate	BMB	0.772	3.542	9.7203 <i>97%</i>
TOTAL:				2.78	33.34	27.42



Peak Integration Report

Sample Name:	17448.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 08:14	Operator:	Jeff Phifer

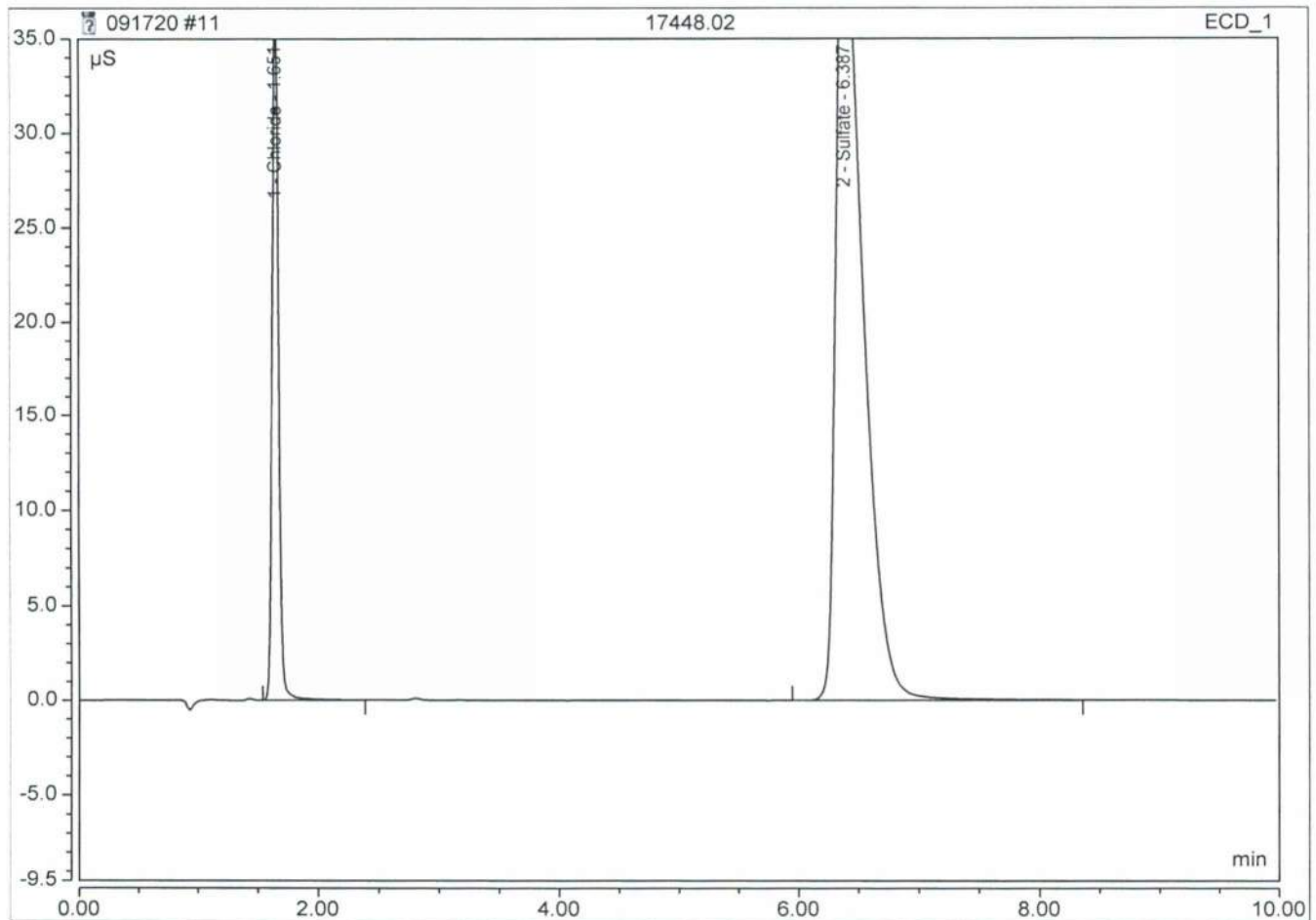
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	1.508	25.097	63.1846
2	6.57	Sulfate	BMB	1.222	5.620	76.8025
TOTAL:				2.73	30.72	139.99



Peak Integration Report

Sample Name:	17448.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 08:27	Operator:	Jeff Phifer

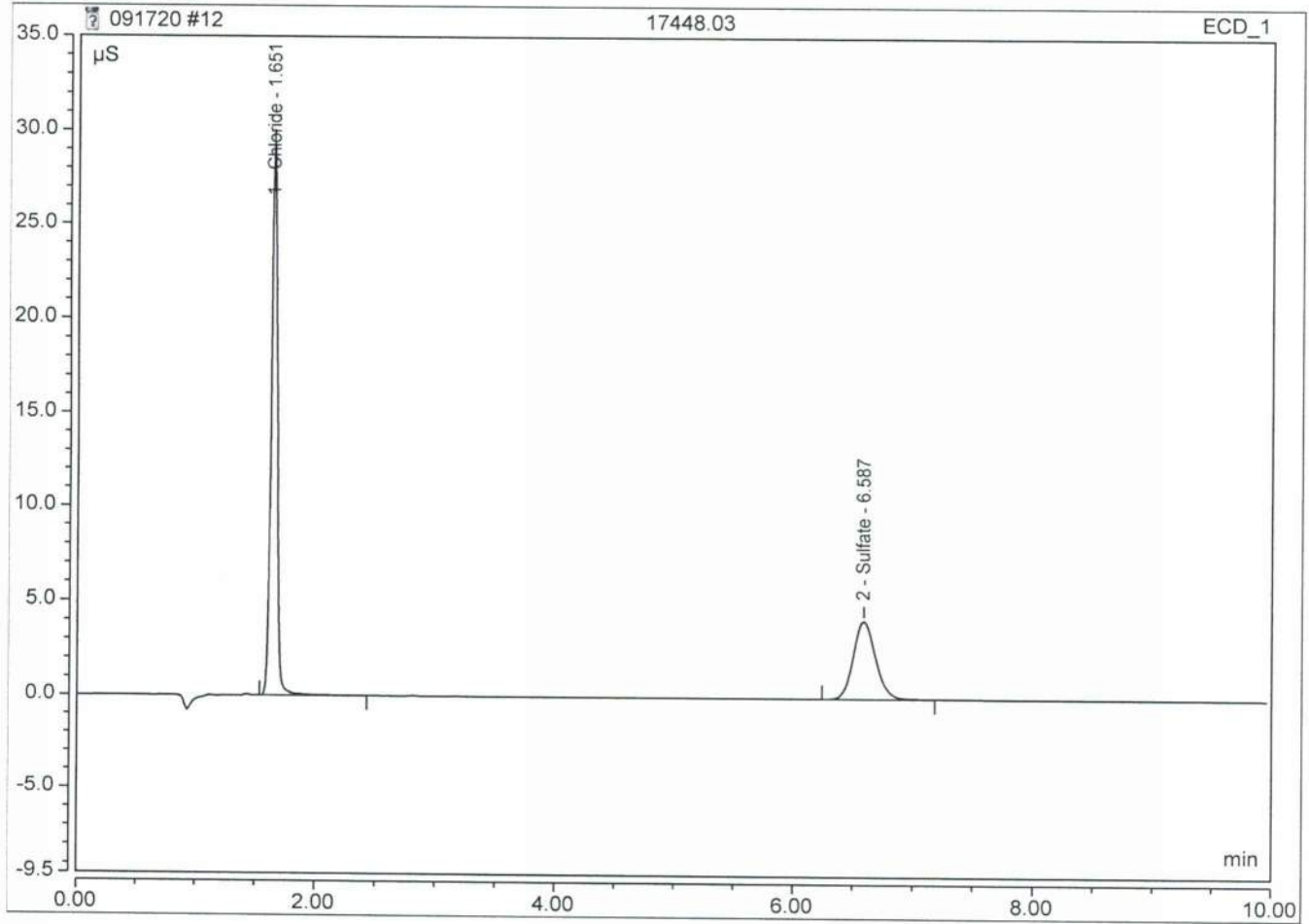
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	2.311	37.211	96.1401
2	6.39	Sulfate	BMB	11.035	43.985	692.7315
TOTAL:				13.35	81.20	788.87



Peak Integration Report

Sample Name:	17448.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 08:40	Operator:	Jeff Phifer

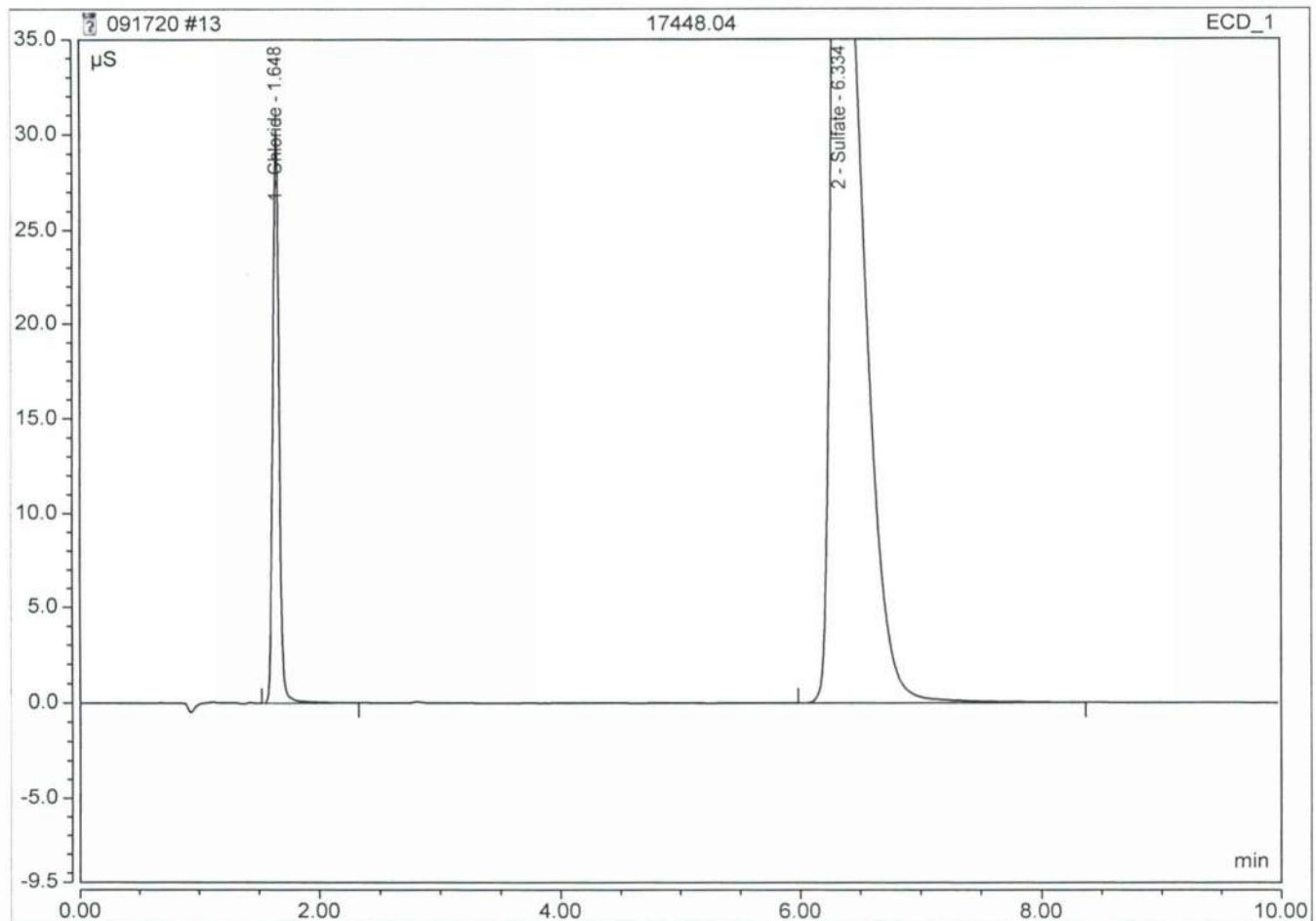
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	1.775	29.280	74.1259
2	6.59	Sulfate	BMB	0.895	4.143	56.3067
TOTAL:				2.67	33.42	130.43



Peak Integration Report

Sample Name:	17448.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 08:53	Operator:	Jeff Phifer

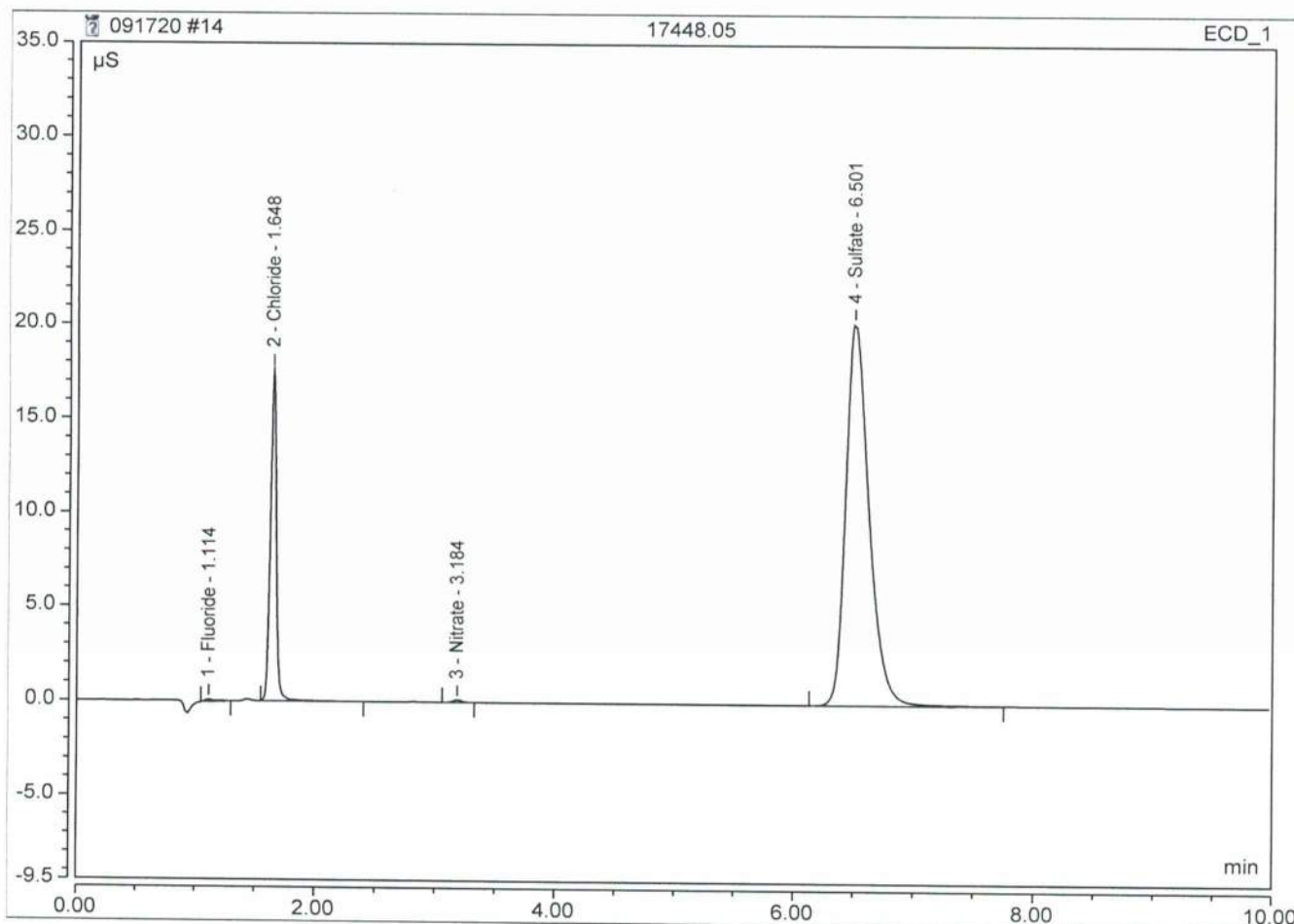
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	1.868	30.250	77.9559
2	6.33	Sulfate	BMB	15.658	57.942	982.9125
TOTAL:				17.53	88.19	1060.87



Peak Integration Report

Sample Name:	17448.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 09:06	Operator:	Jeff Phifer

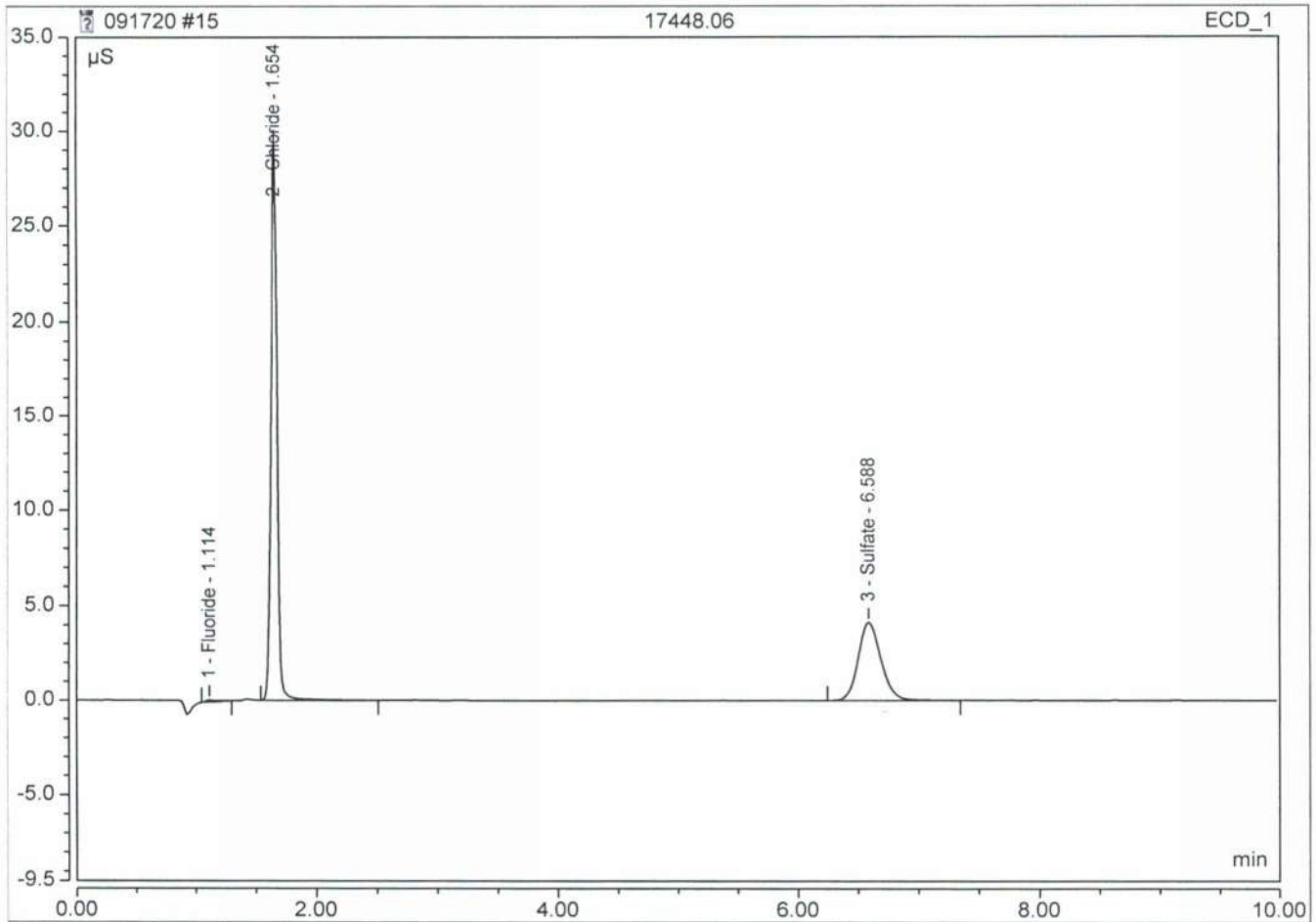
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.011	0.124	0.1463
2	1.65	Chloride	BMB	1.062	17.638	44.8715
3	3.18	Nitrate	BMB	0.013	0.137	0.2723
4	6.50	Sulfate	BMB	4.547	20.263	285.5112
TOTAL:				5.63	38.16	330.80



Peak Integration Report

Sample Name:	17448.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 09:18	Operator:	Jeff Phifer

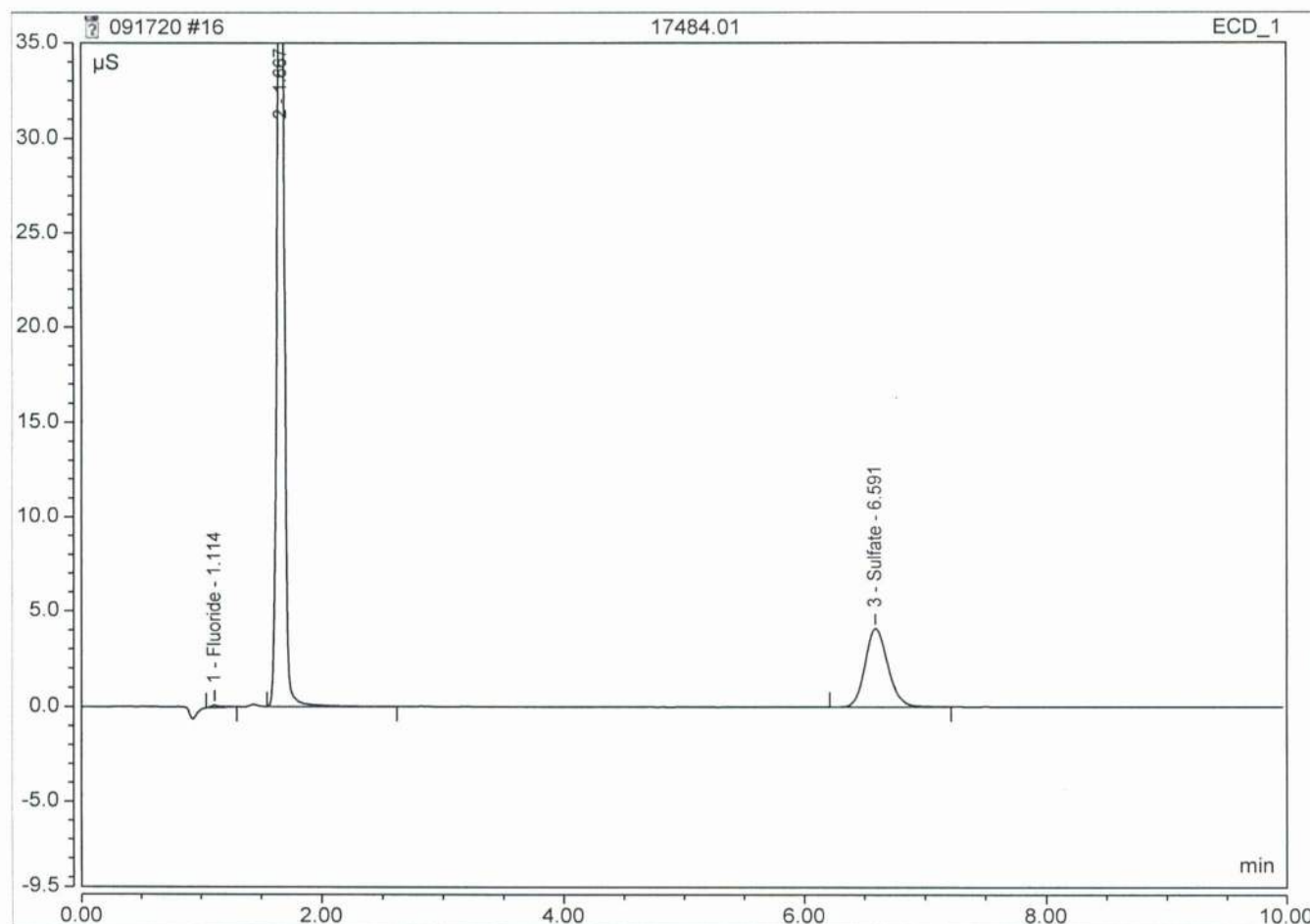
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.010	0.107	0.1237
2	1.65	Chloride	BMB	1.782	29.332	74.4422
3	6.59	Sulfate	BMB	0.902	4.145	56.7759
TOTAL:				2.70	33.58	131.34



Peak Integration Report

Sample Name:	17484.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	2.5000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 09:31	Operator:	Jeff Phifer

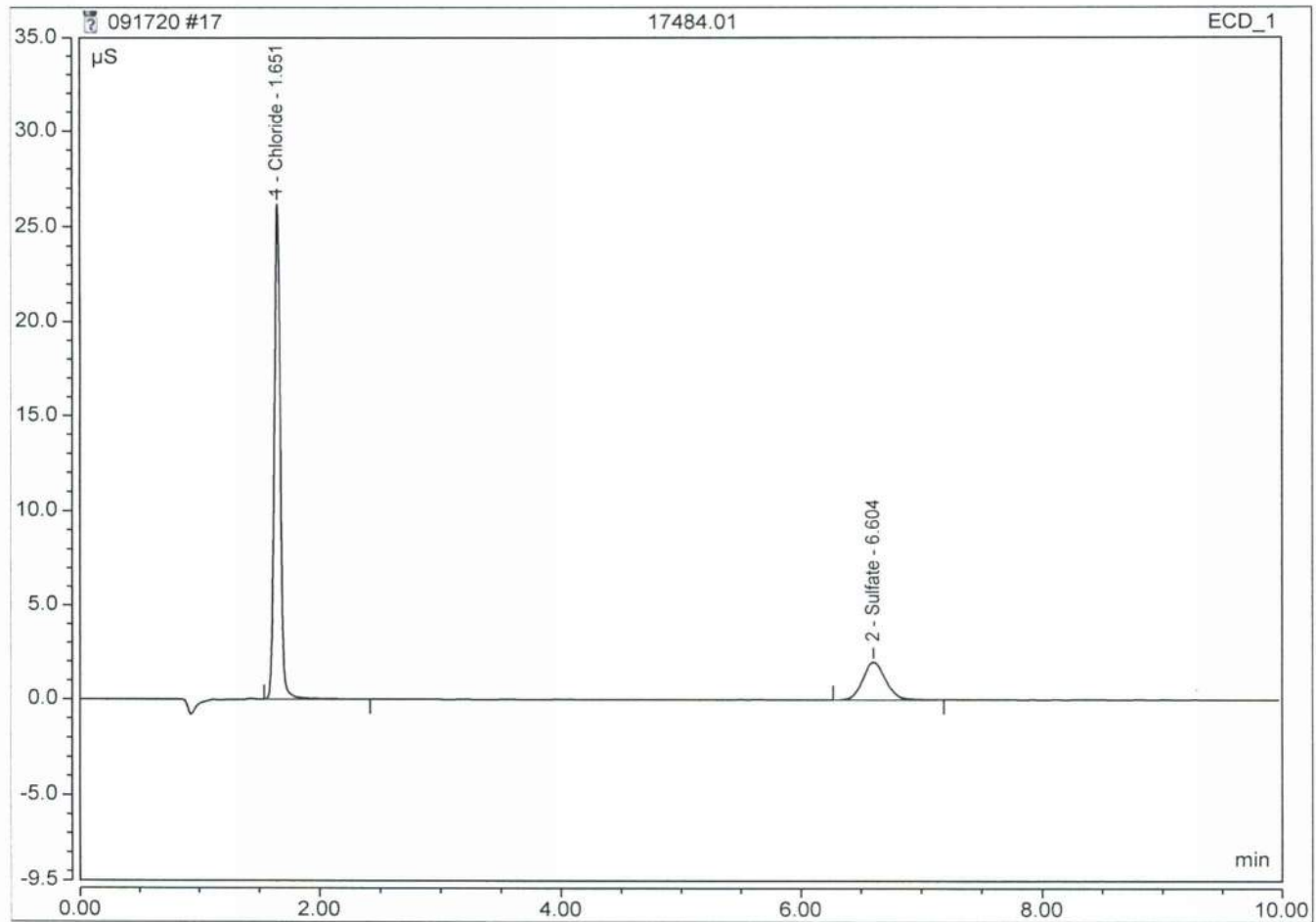
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.011	0.125	0.0771
3	6.59	Sulfate	BMB	0.888	4.089	27.9405
TOTAL:				0.90	4.21	28.02



Peak Integration Report

Sample Name:	17484.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 09:44	Operator:	Jeff Phifer

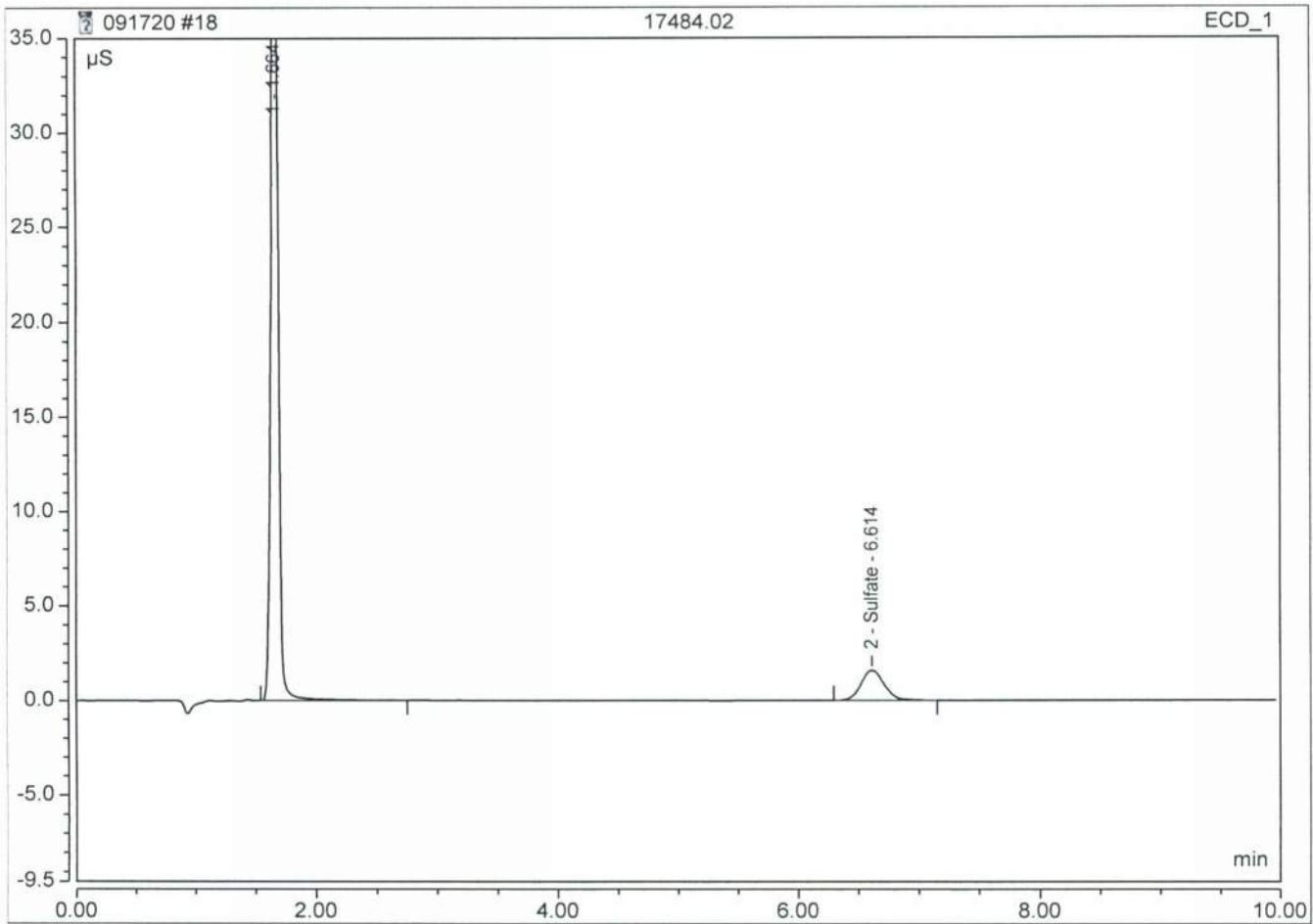
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	1.589	26.221	66.5090
2	6.60	Sulfate	BMB	0.433	1.983	27.3146
TOTAL:				2.02	28.20	93.82



Peak Integration Report

Sample Name:	17484.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 09:57	Operator:	Jeff Phifer

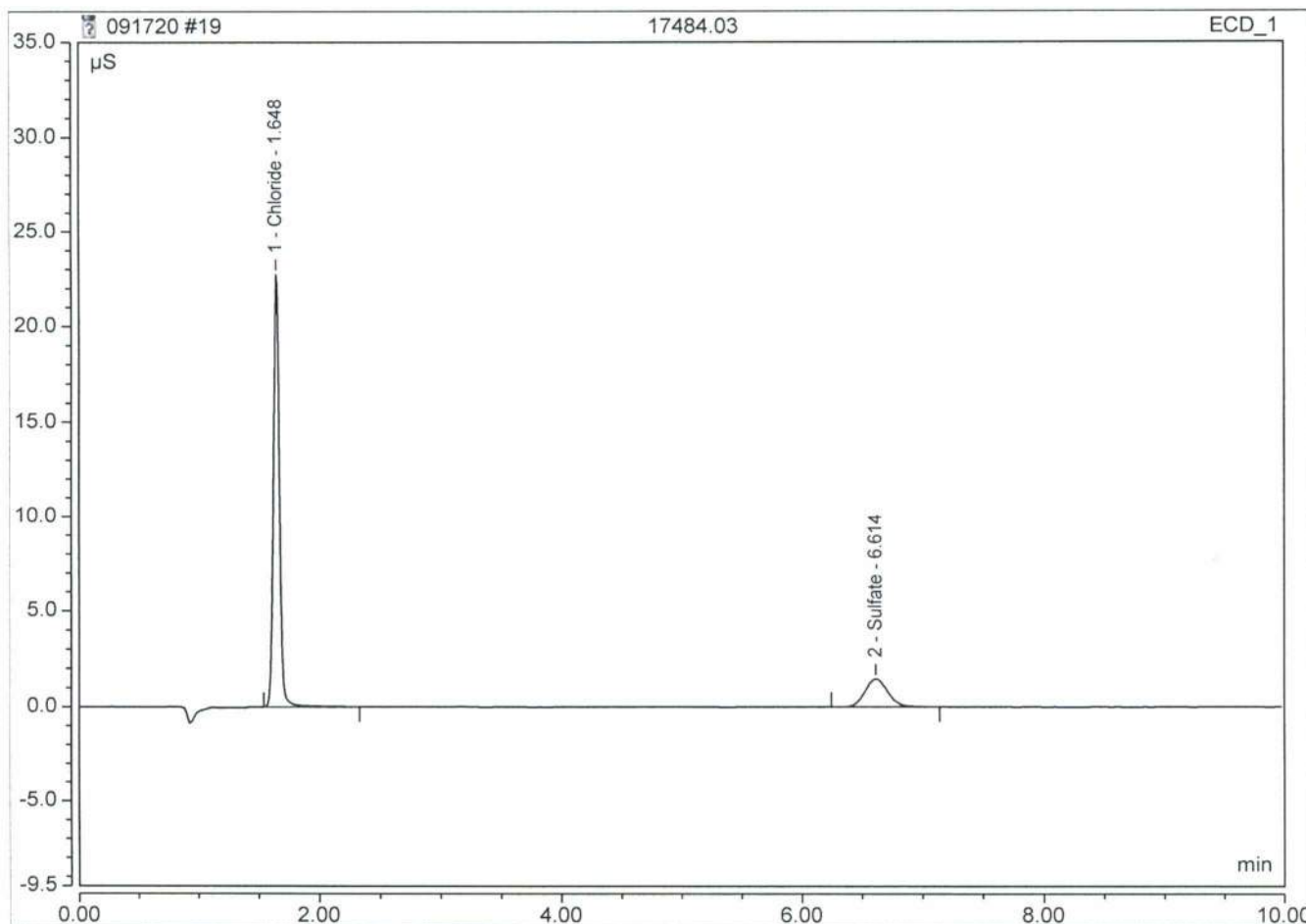
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
2	6.61	Sulfate	BMB	0.349	1.595	22.0095
TOTAL:				0.35	1.60	22.01



Peak Integration Report

Sample Name:	17484.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 10:10	Operator:	Jeff Phifer

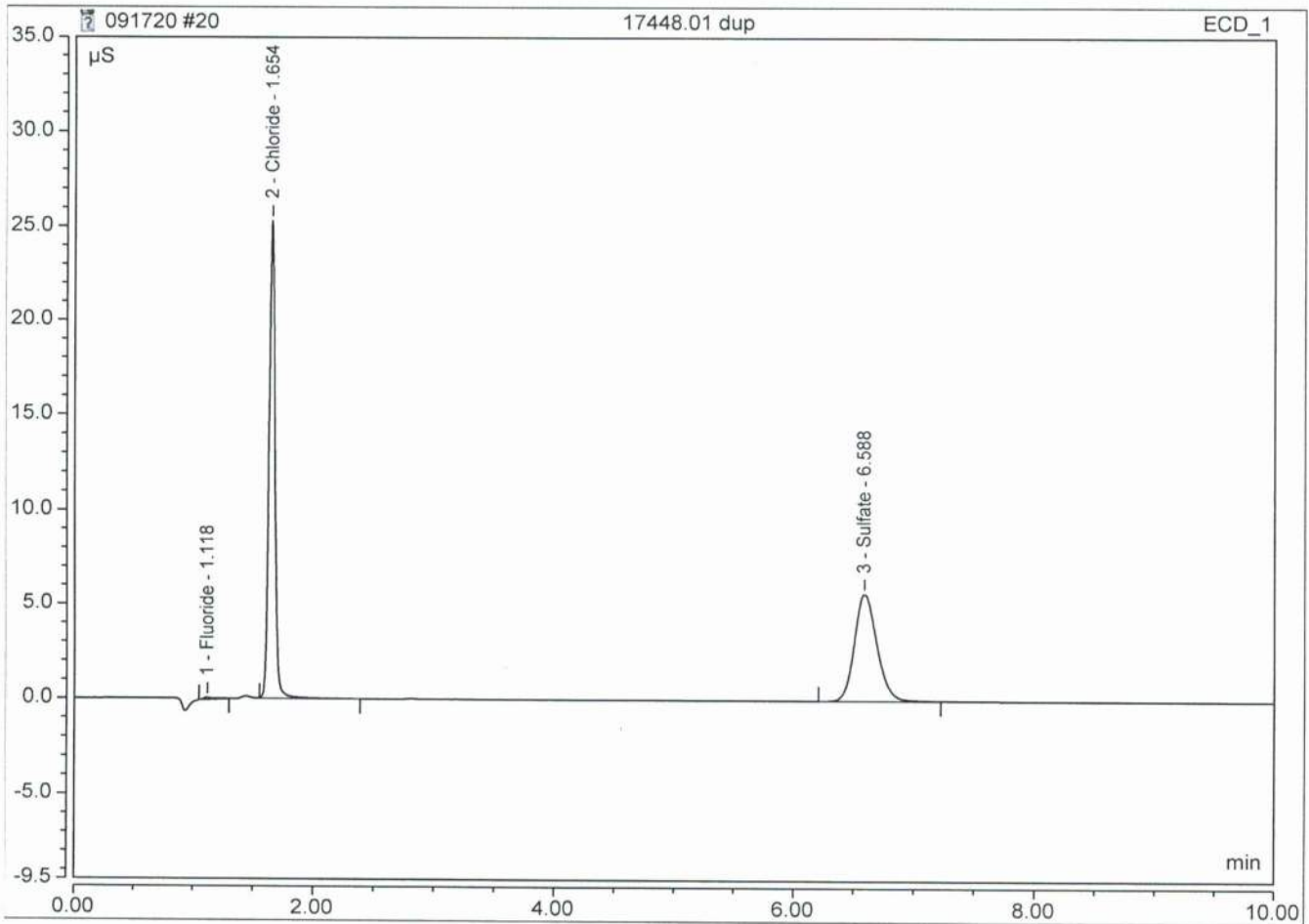
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	1.381	22.784	57.9801
2	6.61	Sulfate	BMB	0.320	1.473	20.2280
TOTAL:				1.70	24.26	78.21



Peak Integration Report

Sample Name:	17448.01 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 10:22	Operator:	Jeff Phifer

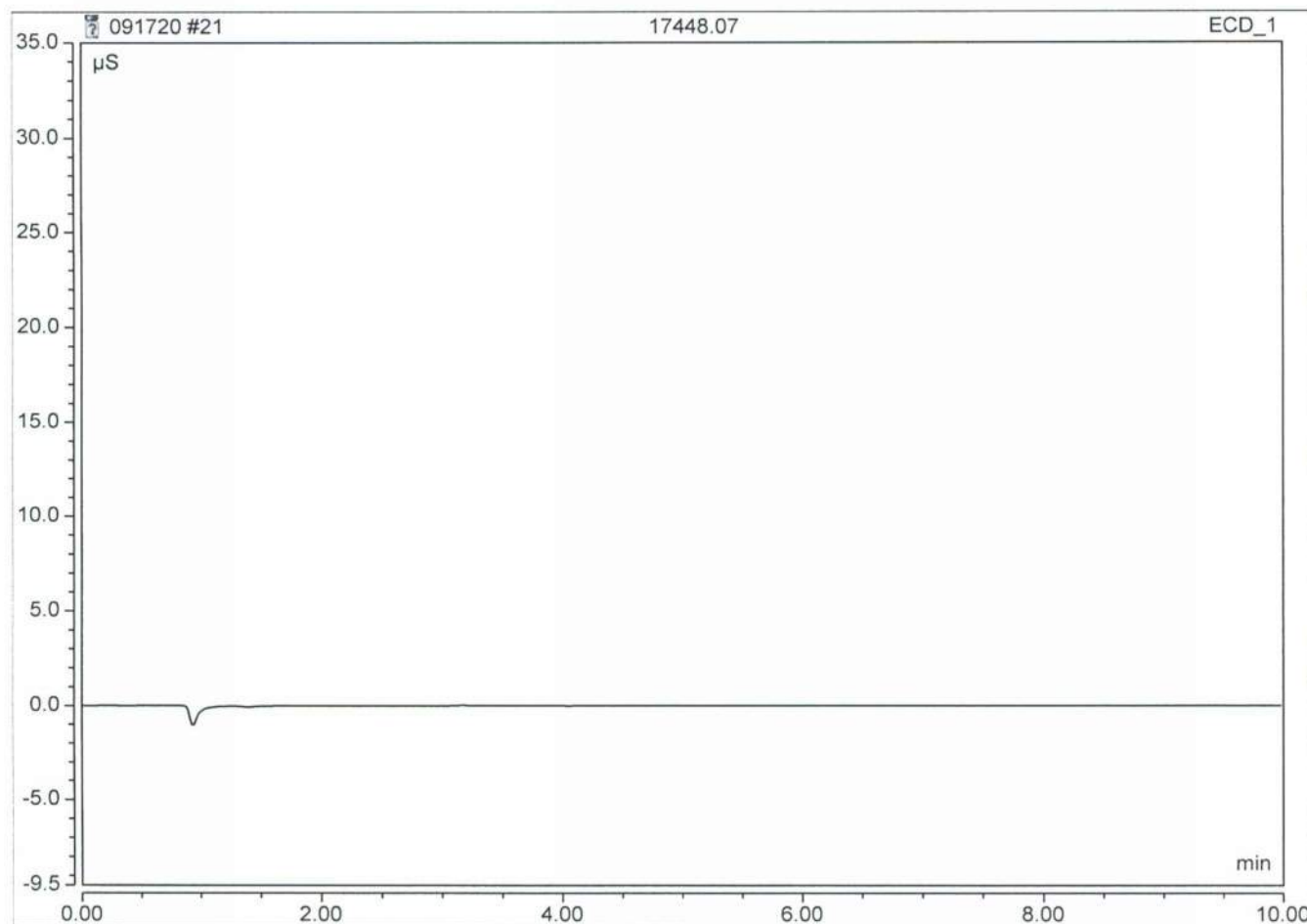
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.12	Fluoride	BMB	0.011	0.104	0.1439
2	1.65	Chloride	BMB	1.522	25.327	63.7608
3	6.59	Sulfate	BMB	1.223	5.659	76.8959
TOTAL:				2.76	31.09	140.80



Peak Integration Report

Sample Name:	17448.07	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	2.5000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 10:35	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00

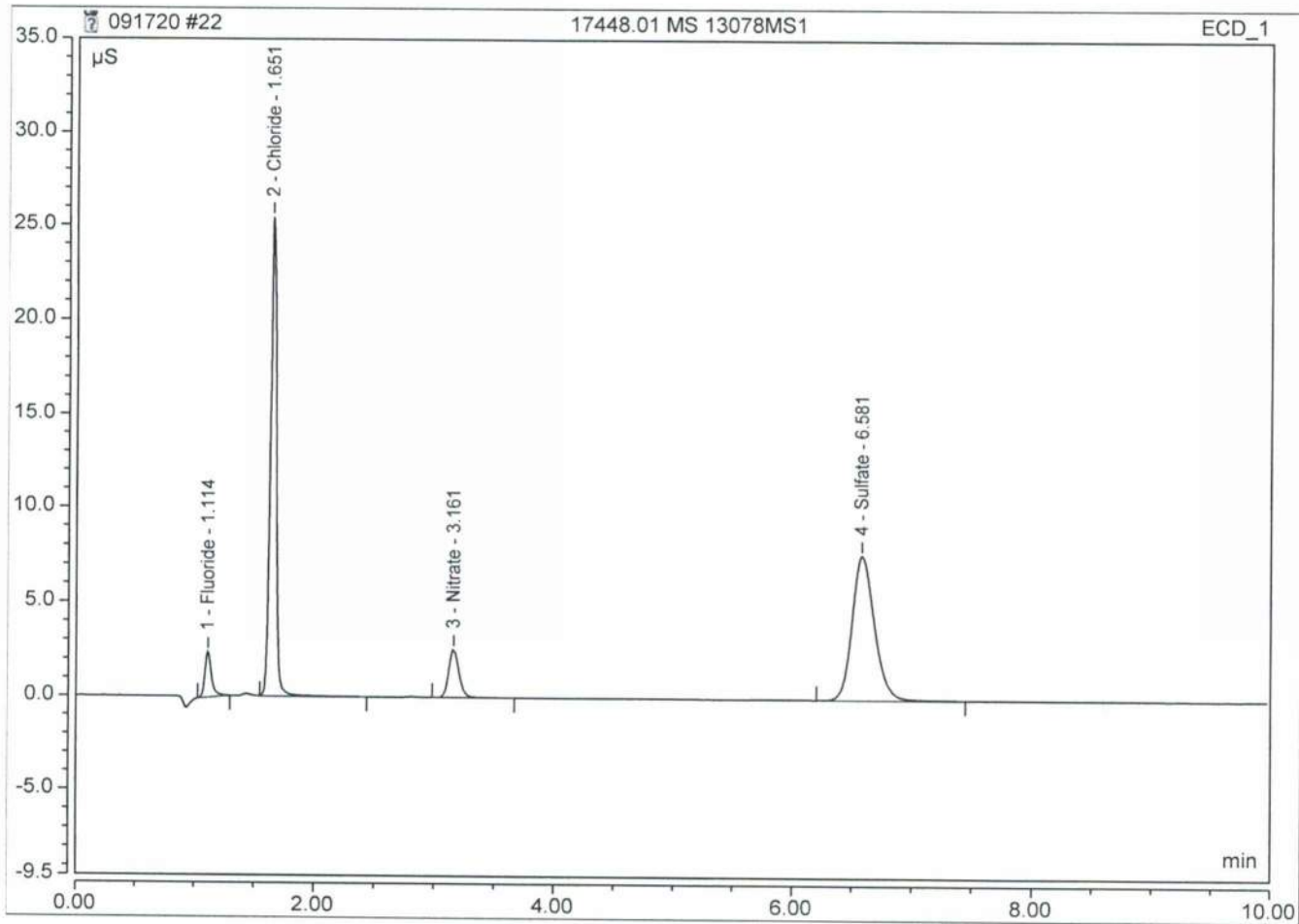


Peak Integration Report

Sample Name:	17448.01 MS 13078MS1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 10:48	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.156	2.409	0.9686
2	1.65	Chloride	BMB	1.528	25.425	12.7981
3	3.16	Nitrate	BMB	0.258	2.560	0.9818
4	6.58	Sulfate	BMB	1.656	7.608	20.8129
TOTAL:				3.60	38.00	35.56

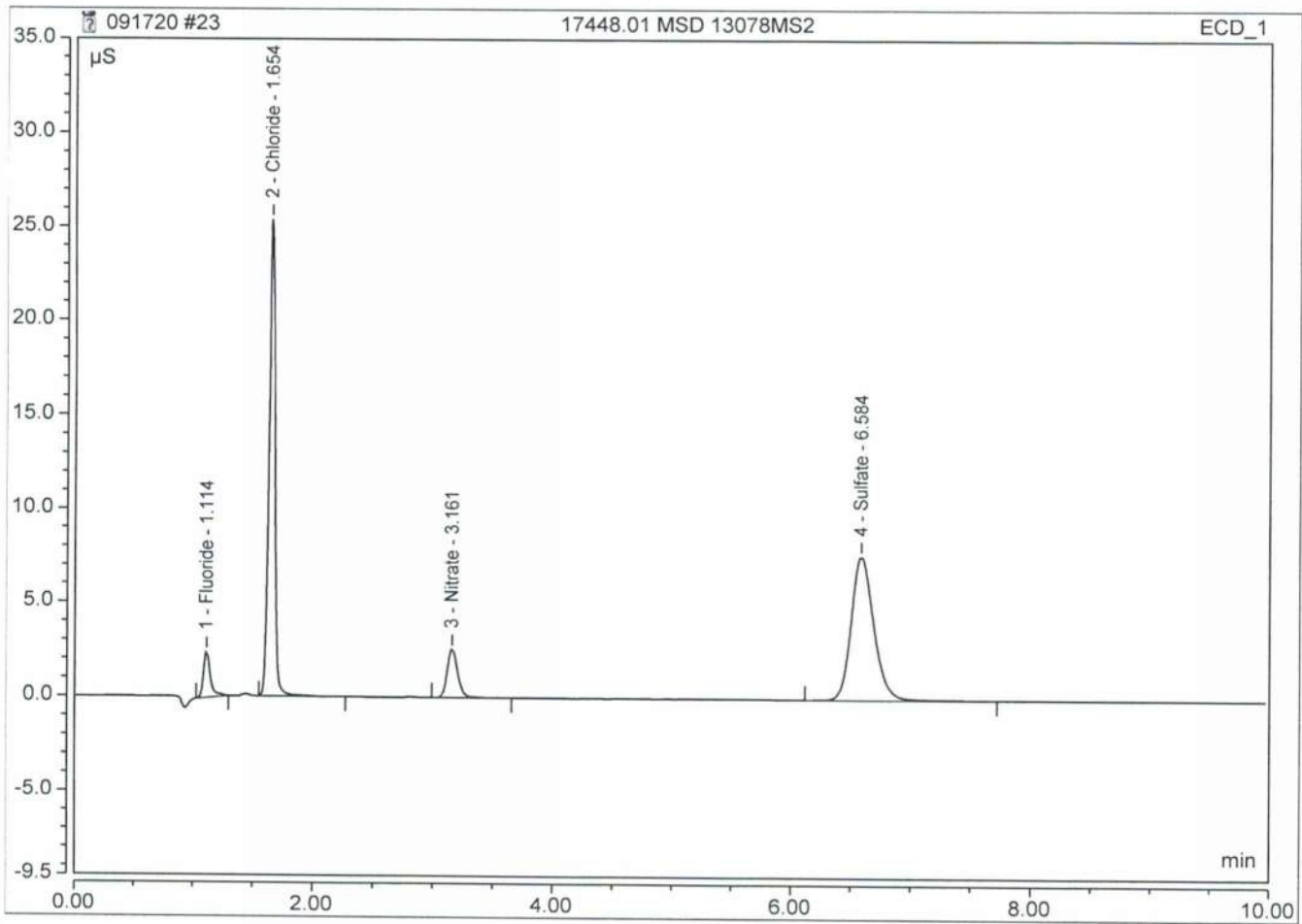
97%
 88%
 108%



Peak Integration Report

Sample Name:	17448.01 MSD 13078MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 11:01	Operator:	Jeff Phifer

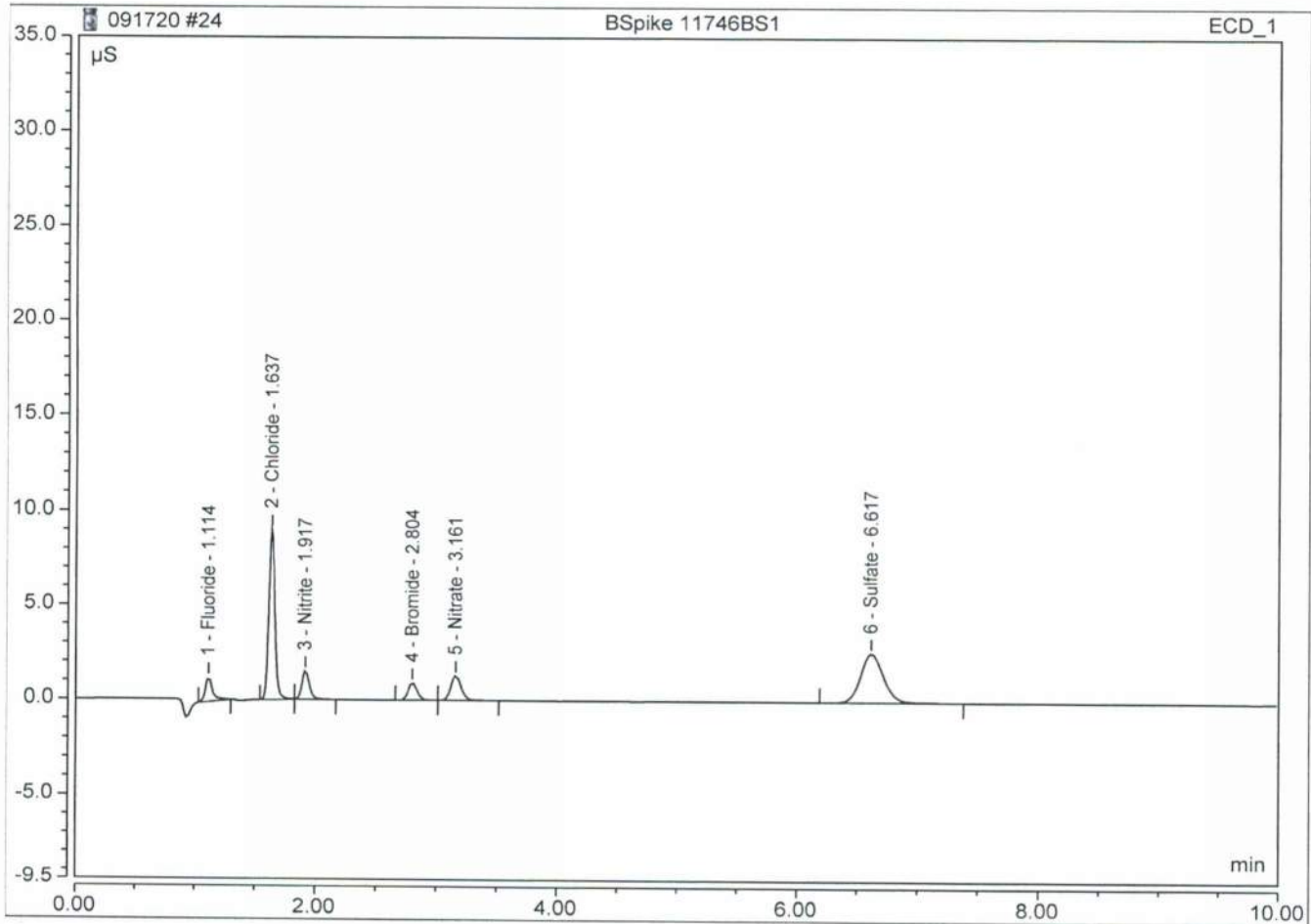
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.158	2.430	0.9862 - NO = 995
2	1.65	Chloride	BMB	1.527	25.409	12.7899
3	3.16	Nitrate	BMB	0.259	2.569	0.9875 - NO = 995
4	6.58	Sulfate	BMB	1.663	7.616	20.9005 - 15.4 = 1102
TOTAL:				3.61	38.02	35.66



Peak Integration Report

Sample Name:	BSpoke 11746BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 11:14	Operator:	Jeff Phifer

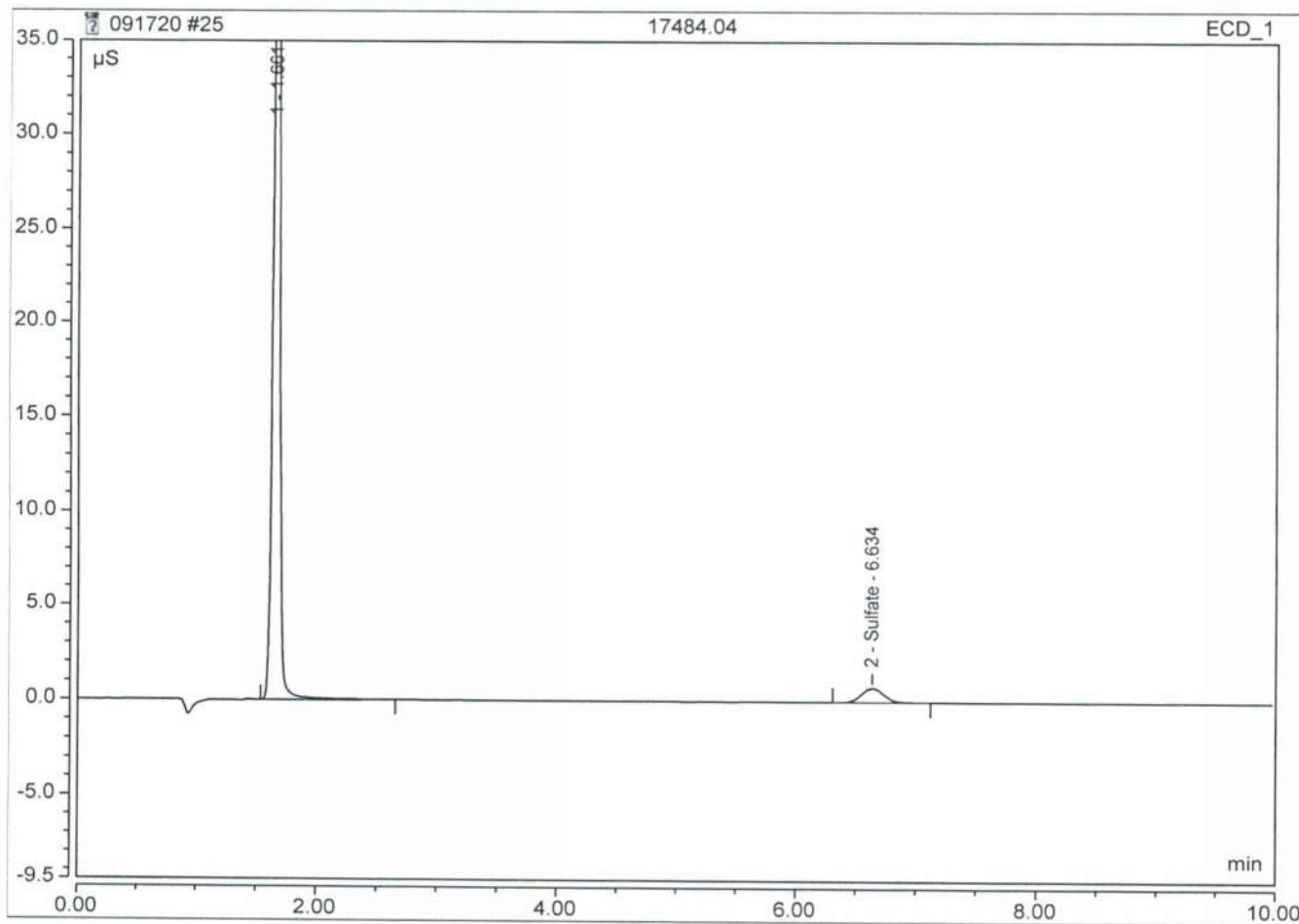
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.085	1.254	0.5 0.5099 1022
2	1.64	Chloride	BMB	0.544	9.012	4.7247
3	1.92	Nitrite	BMB	0.104	1.474	0.4733
4	2.80	Bromide	BMB	0.078	0.888	1.7912
5	3.16	Nitrate	BMB	0.127	1.275	0.5 0.4850 965
6	6.62	Sulfate	BMB	0.568	2.587	7.5 7.1538 962
TOTAL:				1.51	16.49	15.14



Peak Integration Report

Sample Name:	17484.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 11:26	Operator:	Jeff Phifer

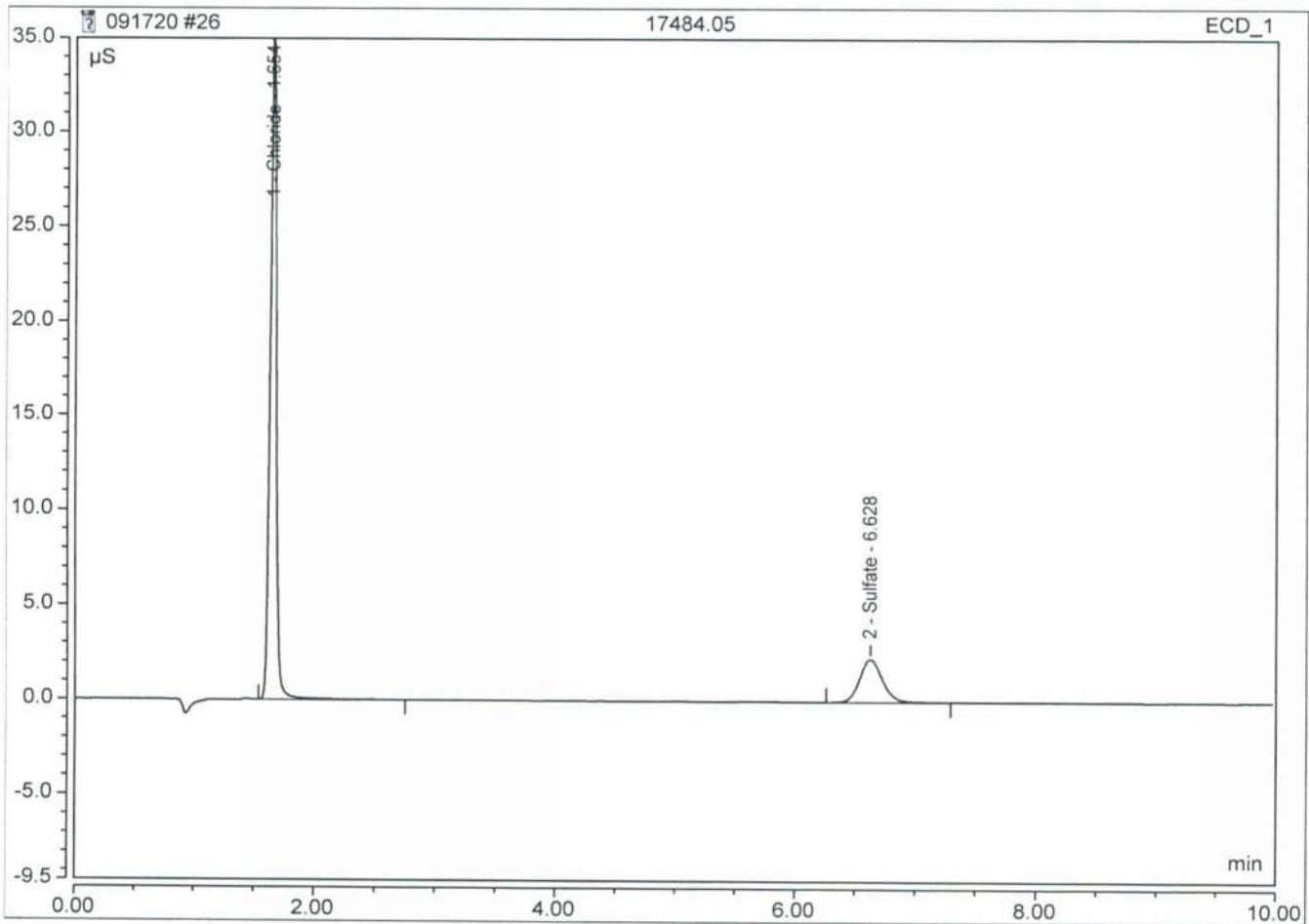
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
2	6.63	Sulfate	BMB	0.167	0.760	10.5887
TOTAL:				0.17	0.76	10.59



Peak Integration Report

Sample Name:	17484.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 11:39	Operator:	Jeff Phifer

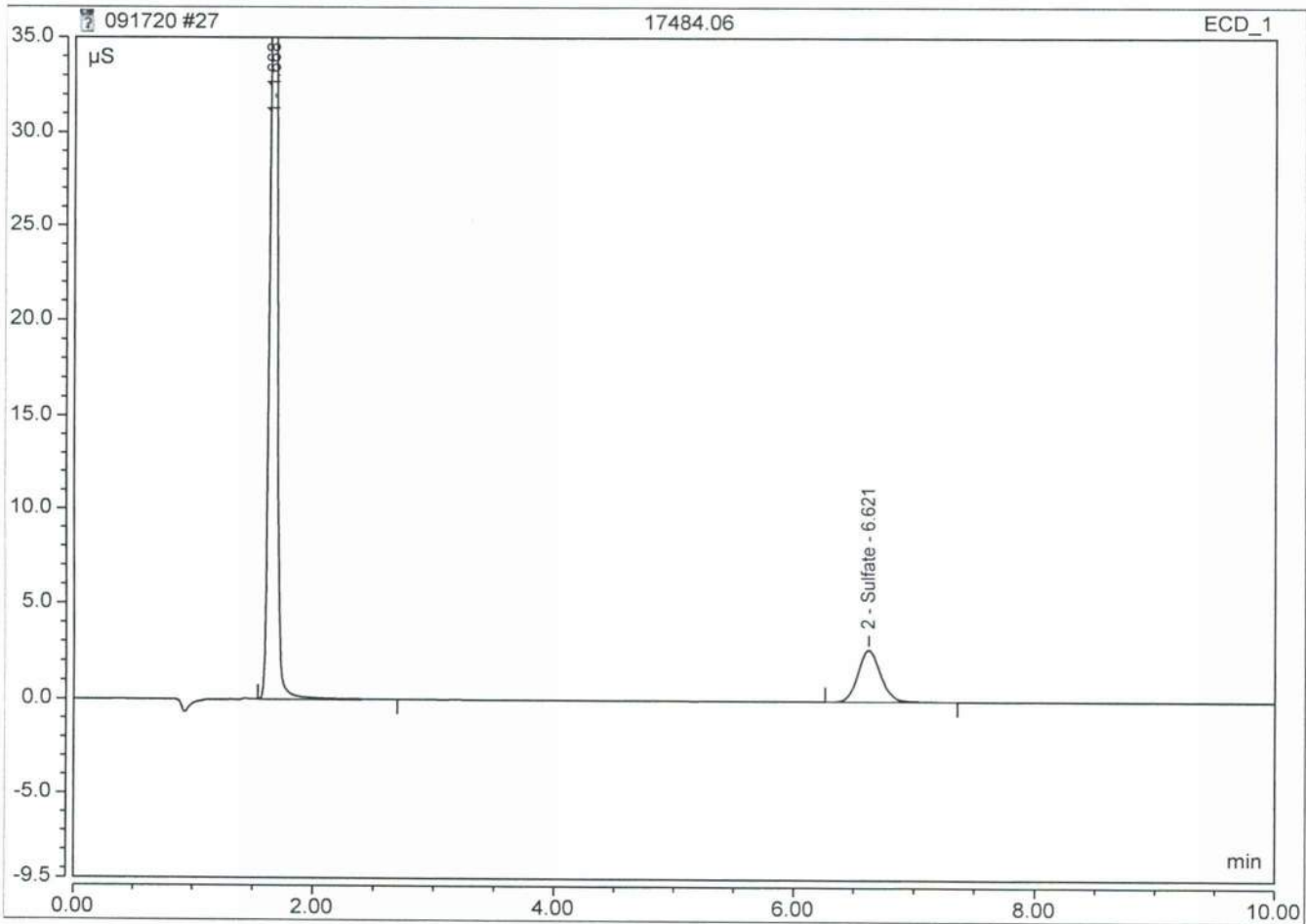
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.65	Chloride	BMB	2.188	35.524	91.0871
2	6.63	Sulfate	BMB	0.495	2.259	31.1855
TOTAL:				2.68	37.78	122.27



Peak Integration Report

Sample Name:	17484.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 11:52	Operator:	Jeff Phifer

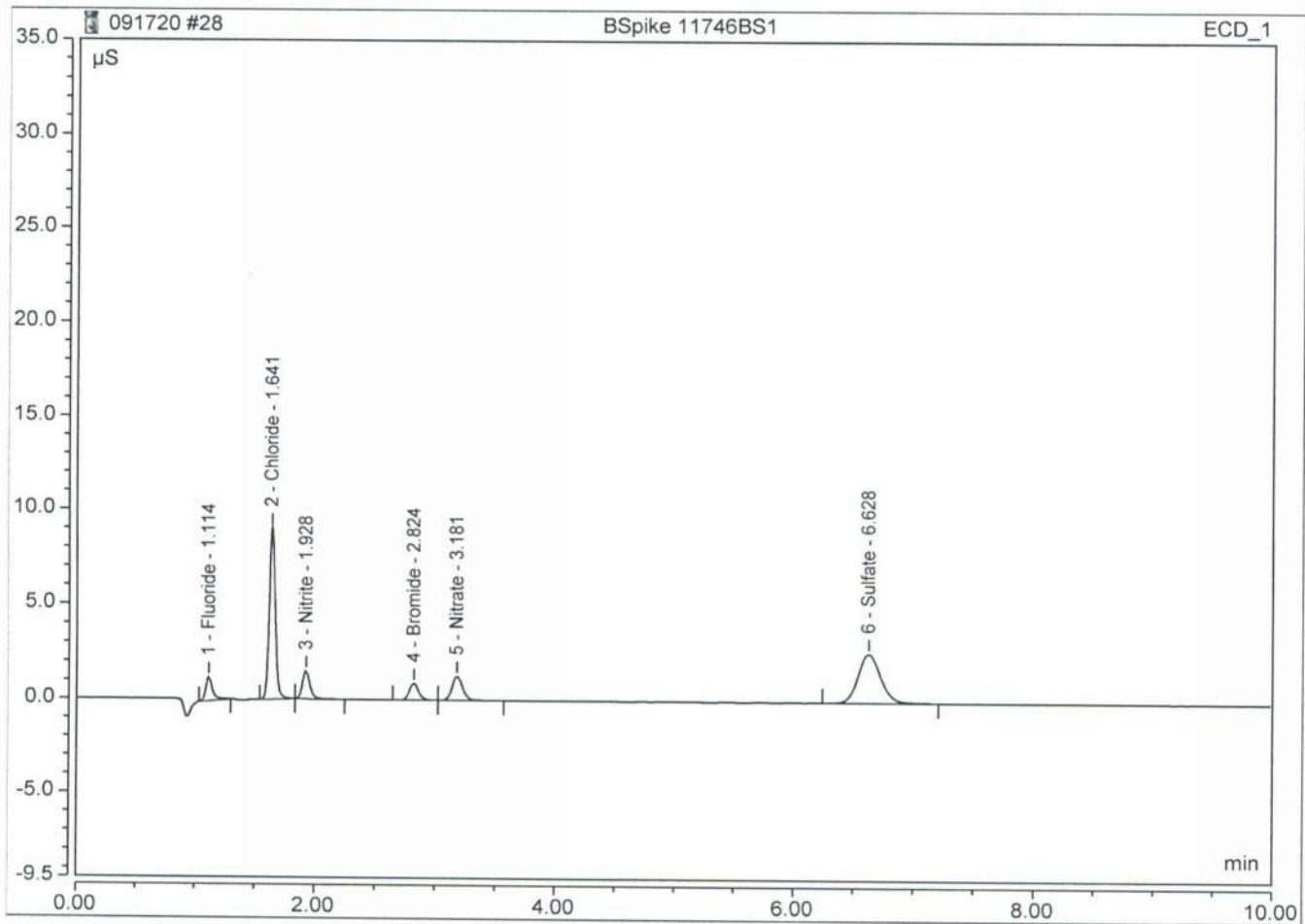
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
2	6.62	Sulfate	BMB	0.589	2.687	37.1317
TOTAL:				0.59	2.69	37.13



Peak Integration Report

Sample Name:	BSpoke 11746BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 12:05	Operator:	Jeff Phifer

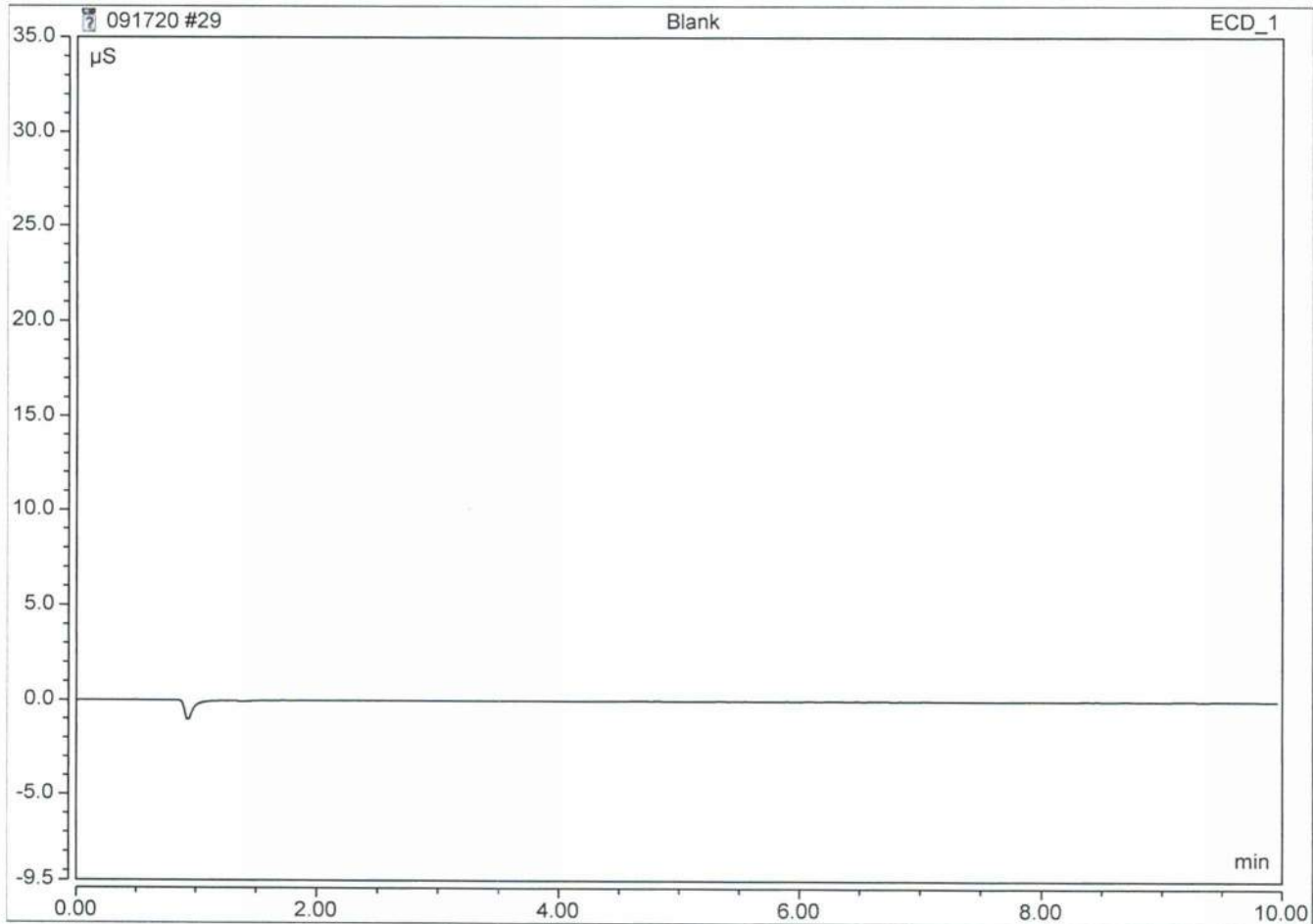
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.083	1.248	0.4959
2	1.64	Chloride	BMB	0.545	9.000	4.7299
3	1.93	Nitrite	BMB	0.105	1.472	0.4774
4	2.82	Bromide	BMB	0.078	0.880	1.7852
5	3.18	Nitrate	BMB	0.128	1.268	0.4913
6	6.63	Sulfate	BMB	0.563	2.574	7.0986
TOTAL:				1.50	16.44	15.08



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	17-Sep-2020 / 12:18	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



ICS-1100 A Dionex IC/Meth 300.0

070720

new CAL







#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 9:56:15 AM -...	1.0000
2		1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:08:32 AM...	1.0000
3		1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 10:21:21 AM...	1.0000
4		1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 10:34:09 AM...	1.0000
5		1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 10:46:58 AM...	1.0000
6		1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 10:59:49 AM...	1.0000

[Click here to add a new injection](#)

CAL I# ICSA070720CAL

070720



#	ECD_1 ▶	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
Click here to add a new injection						

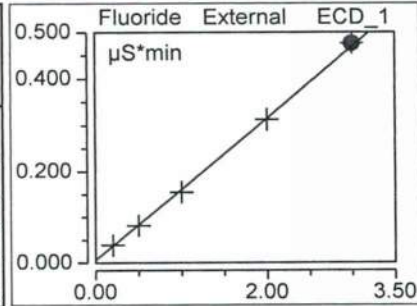
Norm Method	03/08/11 13:39	Jeff Phifer	Method 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Calibration Batch Report
CAL ID# ICSA070720CAL

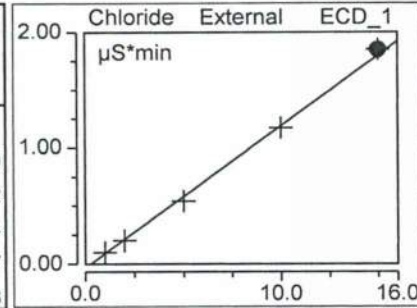
Sequence:	070720	Injection Volu. 2,500.00
Instrument Method:	Norm Method	Operator: Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 10:59	Column: AS4A-SC 038777

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.01	0.006	0.154	0.000	0.9996
Chloride	Area	Lin, WithOffset, 1/A	0.02	-0.031	0.122	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.03	-0.003	0.227	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.05	-0.001	0.044	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.07	-0.001	0.263	0.000	0.9996
Sulfate	Area	Lin, WithOffset, 1/A	0.33	-0.002	0.080	0.000	0.9996
AVERAGE:				-0.0052	0.1482	0.0000	0.9995

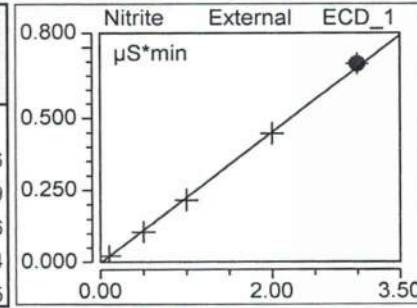
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
1131Cal1	ECD_1 1.114	ECD_1 0.0387	ECD_1 0.521	ECD_1 0.210
1131Cal2	1.114	0.0816	1.223	0.488
1131Cal3	1.114	0.1551	2.427	0.966
1131Cal4	1.114	0.3125	5.047	1.987
1131Cal5	1.114	0.4761	7.811	3.049
Average	1.114			
Rel. Std. Dev.	0.013 %			



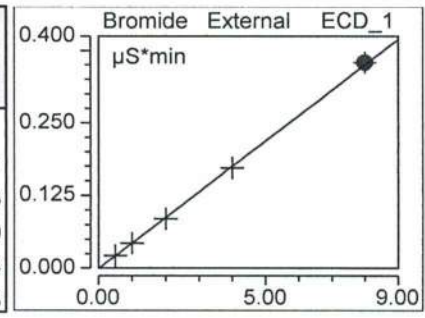
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Chloride	Chloride	Chloride	Chloride	Chloride
1131Cal1	ECD_1 1.637	ECD_1 0.1013	ECD_1 1.651	ECD_1 1.089
1131Cal2	1.638	0.2015	3.302	1.912
1131Cal3	1.641	0.5404	9.060	4.694
1131Cal4	1.644	1.1707	19.722	9.867
1131Cal5	1.647	1.8494	30.847	15.438
Average	1.641			
Rel. Std. Dev.	0.262 %			



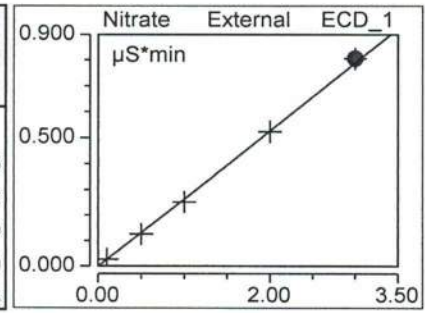
Injection Name	Ret.Time min	Area μS*min	Height μS	Amount
Nitrite	Nitrite	Nitrite	Nitrite	Nitrite
1131Cal1	ECD_1 1.927	ECD_1 0.0213	ECD_1 0.296	ECD_1 0.106
1131Cal2	1.924	0.1057	1.494	0.479
1131Cal3	1.924	0.2162	3.083	0.966
1131Cal4	1.924	0.4469	6.494	1.984
1131Cal5	1.924	0.6920	10.161	3.065
Average	1.925			
Rel. Std. Dev.	0.075 %			



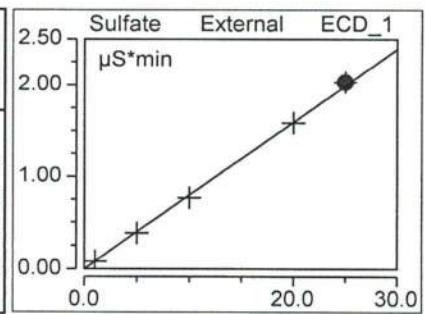
Injection Name	Ret.Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Bromide	Bromide	Bromide	Bromide	Bromide
1131Cal1	ECD_1 2.827	ECD_1 0.0217	ECD_1 0.250	ECD_1 0.511
1131Cal2	2.821	0.0433	0.489	1.003
1131Cal3	2.818	0.0852	0.977	1.960
1131Cal4	2.807	0.1717	1.992	3.934
1131Cal5	2.801	0.3540	4.145	8.093
Average	2.815			
Rel. Std. Dev.	0.380 %			



Injection Name	Ret.Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Nitrate	Nitrate	Nitrate	Nitrate	Nitrate
1131Cal1	ECD_1 3.191	ECD_1 0.0271	ECD_1 0.268	ECD_1 0.106
1131Cal2	3.181	0.1260	1.252	0.482
1131Cal3	3.168	0.2515	2.511	0.959
1131Cal4	3.151	0.5229	5.181	1.990
1131Cal5	3.134	0.8054	7.979	3.063
Average	3.165			
Rel. Std. Dev.	0.721 %			



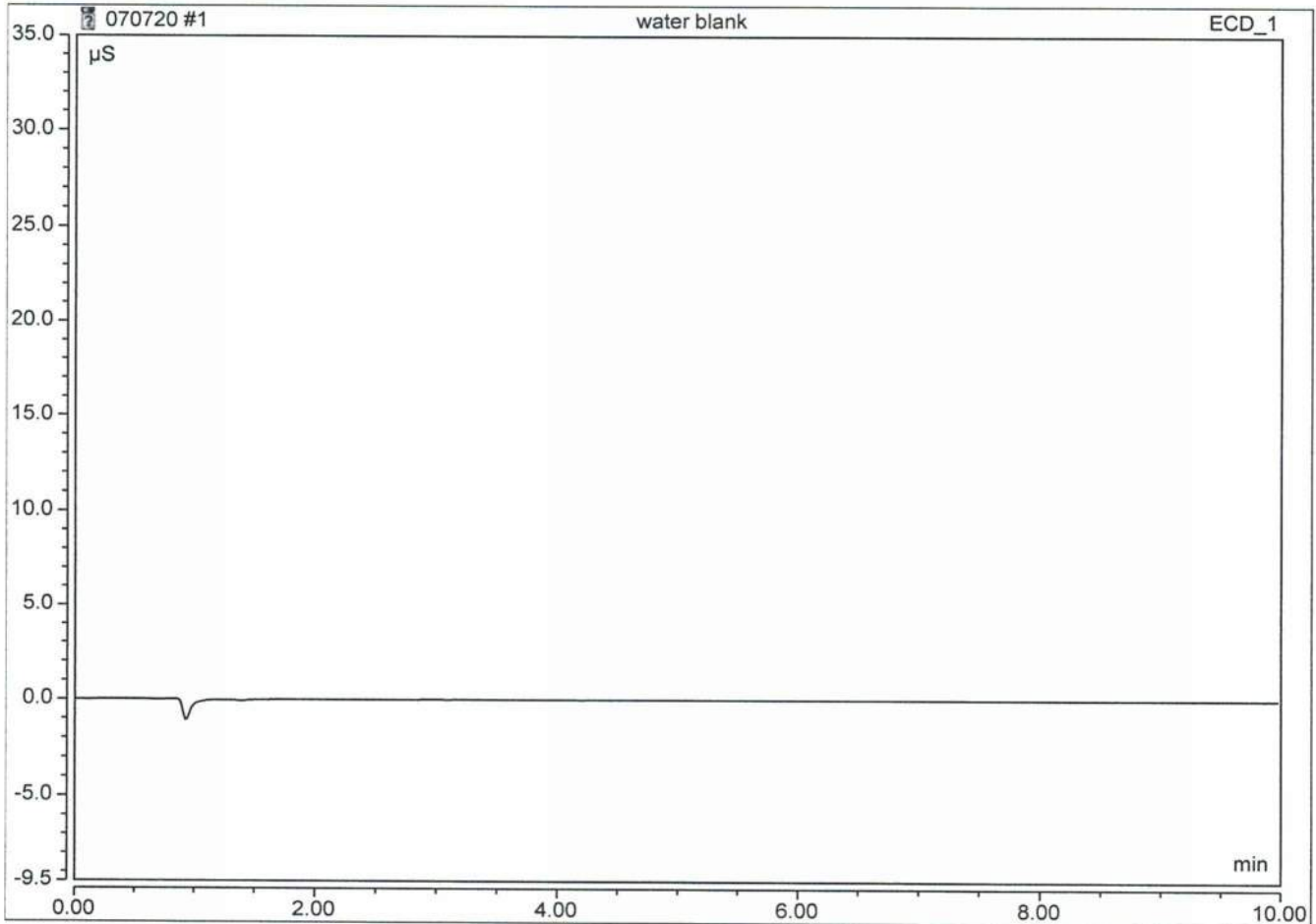
Injection Name	Ret.Time min	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
1131Cal1	ECD_1 6.617	ECD_1 0.0815	ECD_1 0.364	ECD_1 1.050
1131Cal2	6.608	0.3828	1.734	4.832
1131Cal3	6.594	0.7678	3.517	9.664
1131Cal4	6.571	1.5858	7.313	19.933
1131Cal5	6.557	2.0310	9.317	25.521
Average	6.589			
Rel. Std. Dev.	0.380 %			



Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 09:56	Operator:	Jeff Phifer

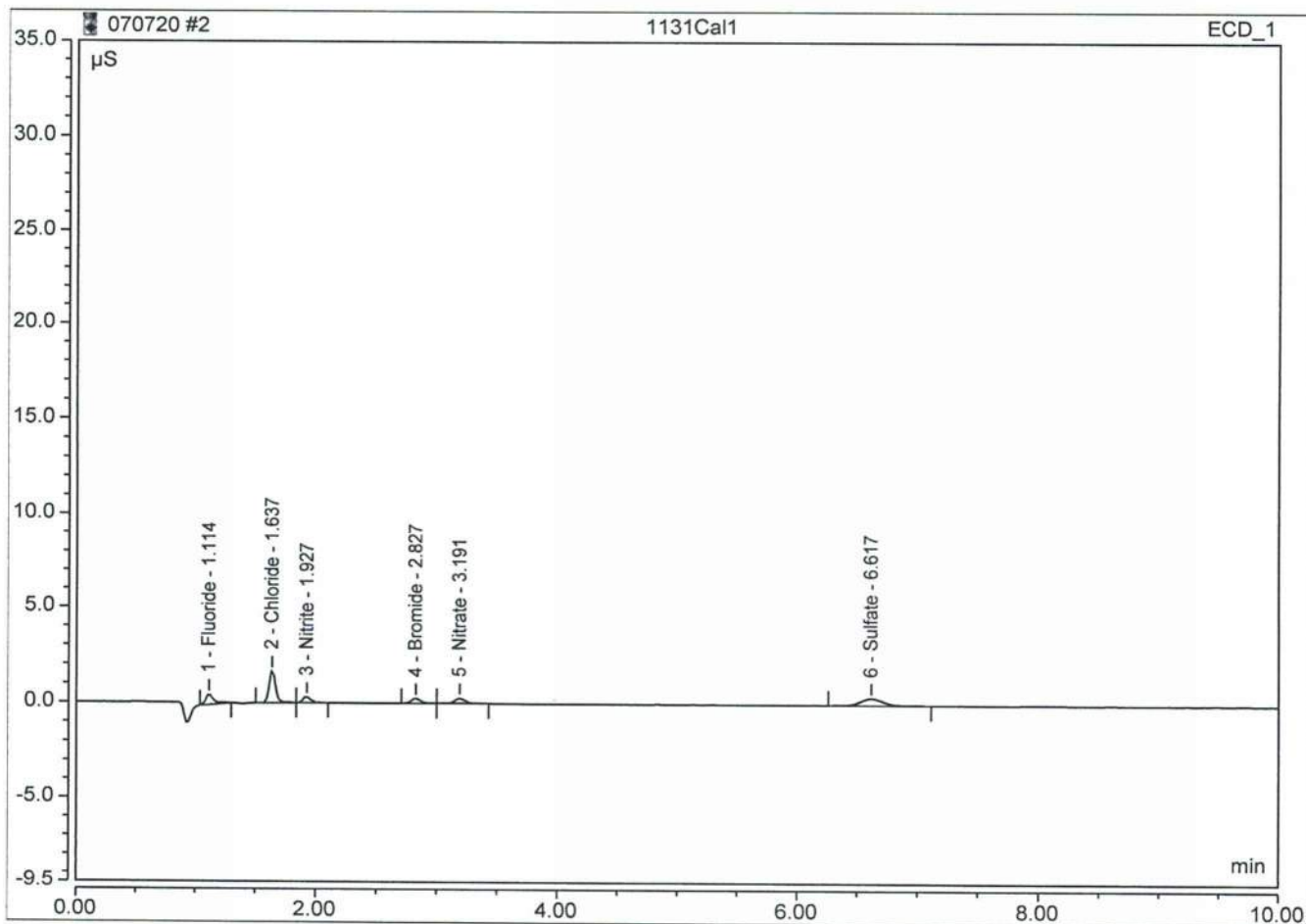
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	1131Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:08	Operator:	Jeff Phifer

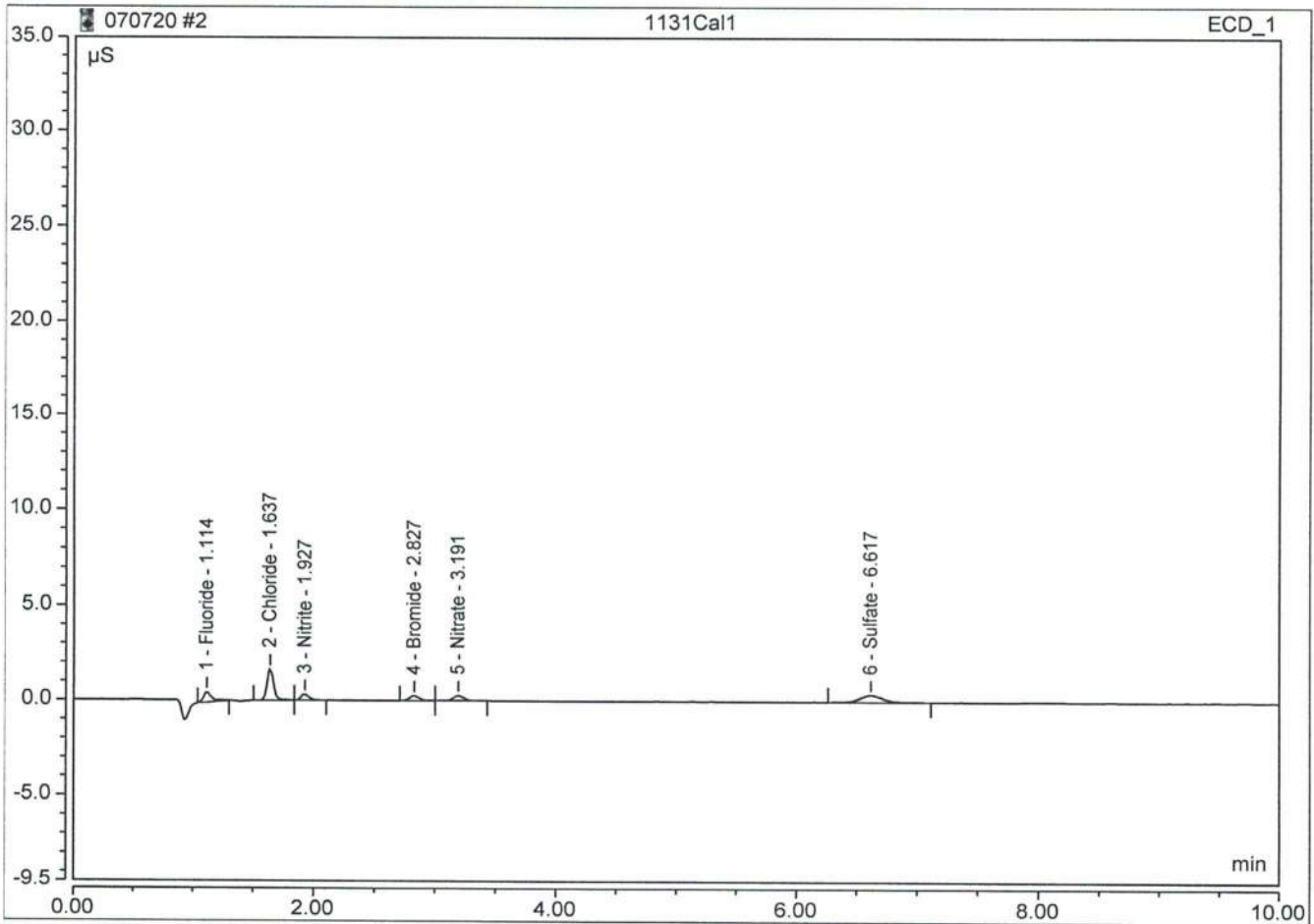
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.039	0.521	0.2 0.2096
2	1.64	Chloride	BMB	0.101	1.651	1 1.0894
3	1.93	Nitrite	BMB	0.021	0.296	0.1 0.1063
4	2.83	Bromide	BMB	0.022	0.250	0.5 0.5113
5	3.19	Nitrate	BMB	0.027	0.268	0.1 0.1061
6	6.62	Sulfate	BMB	0.082	0.364	1 1.0497
TOTAL:				0.29	3.35	3.07



Peak Integration Report

Sample Name:	1131Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:08	Operator:	Jeff Phifer

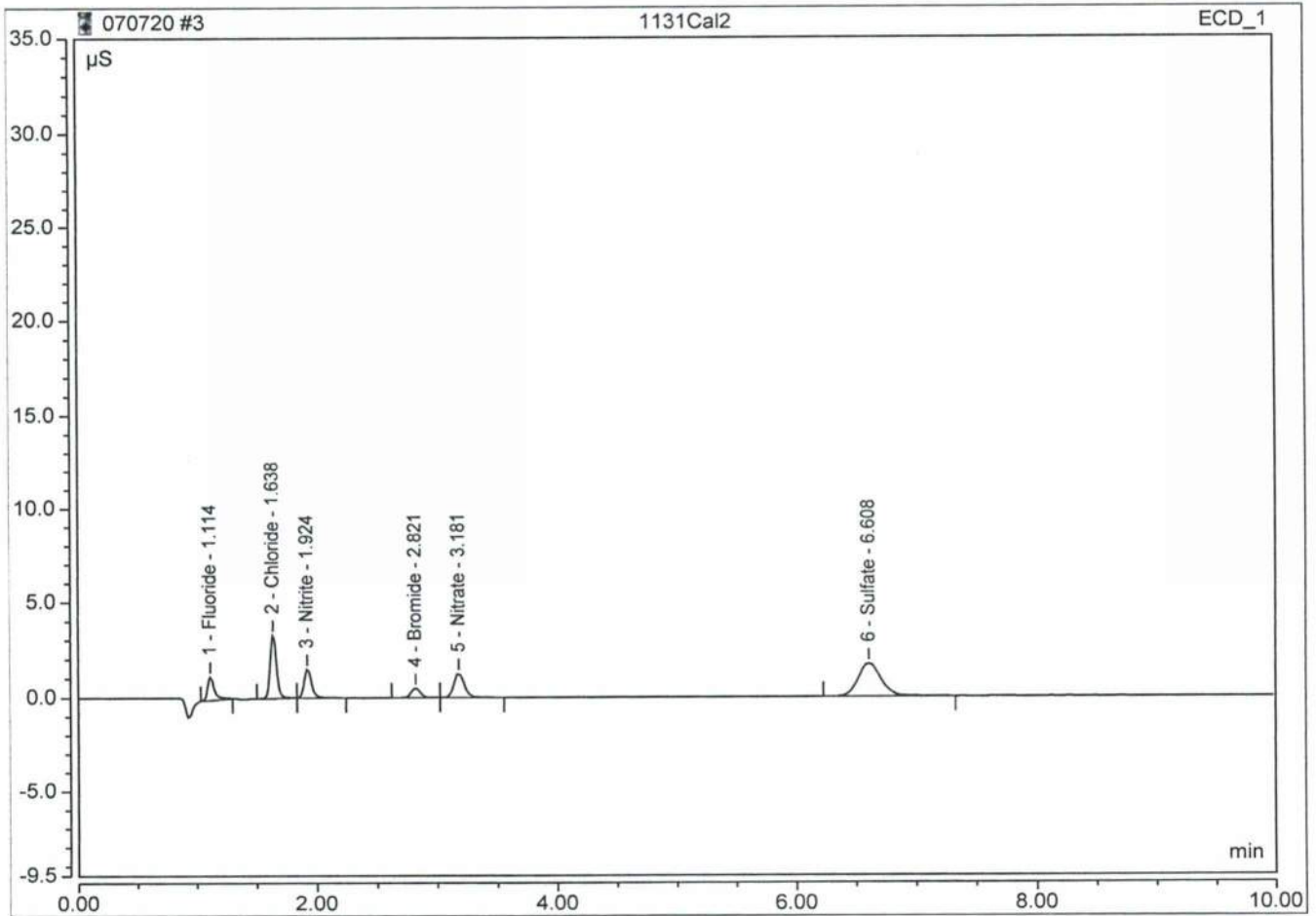
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.039	0.521	n.a.
2	1.64	Chloride	BMB	0.101	1.651	n.a.
3	1.93	Nitrite	BMB	0.021	0.296	n.a.
4	2.83	Bromide	BMB	0.022	0.250	n.a.
5	3.19	Nitrate	BMB	0.027	0.268	n.a.
6	6.62	Sulfate	BMB	0.082	0.364	n.a.
TOTAL:				0.29	3.35	0.00



Peak Integration Report

Sample Name:	1131Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:21	Operator:	Jeff Phifer

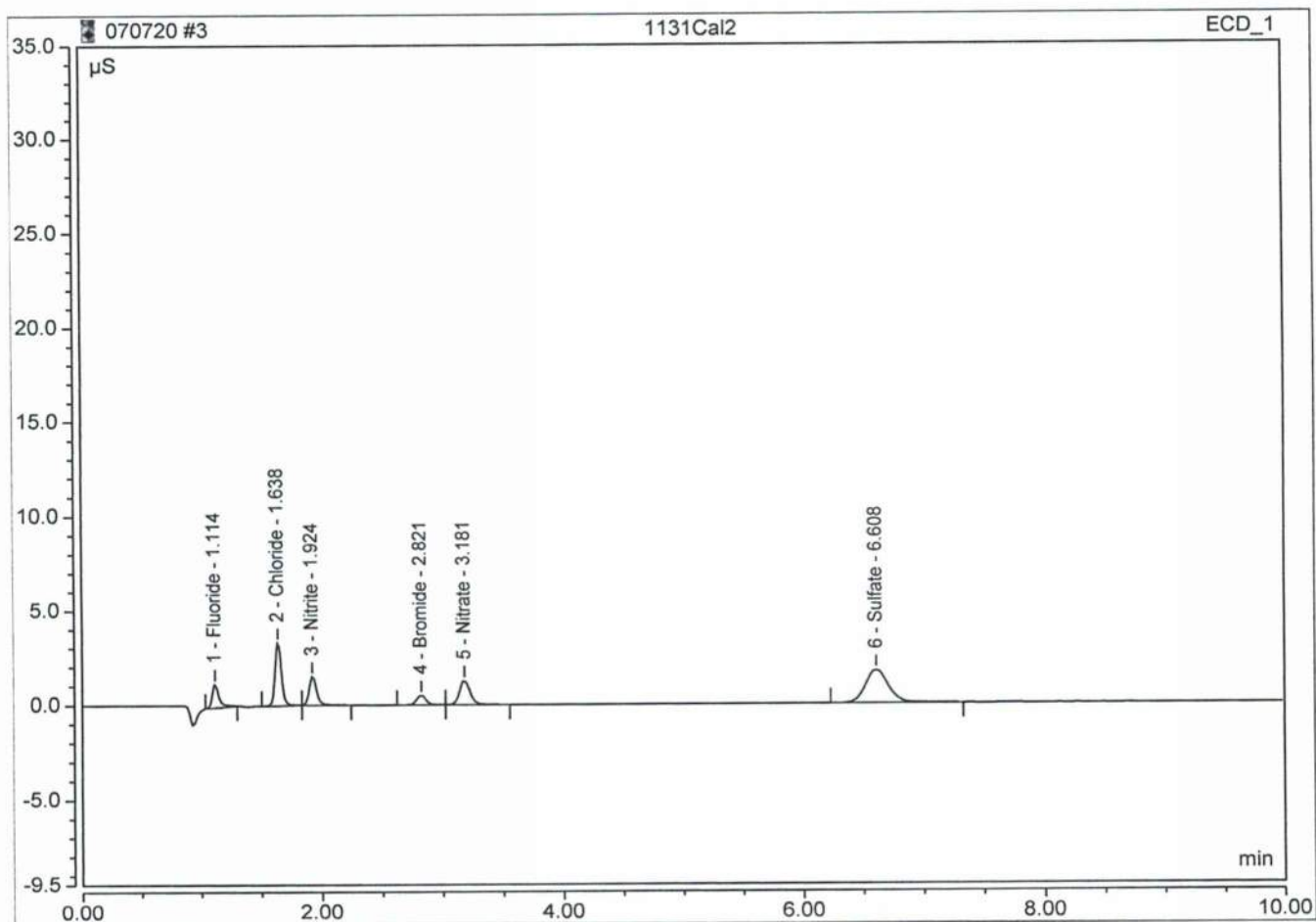
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.082	1.223	0.5 0.4881
2	1.64	Chloride	BMB	0.202	3.302	2 1.9118
3	1.92	Nitrite	BMB	0.106	1.494	0.5 0.4786
4	2.82	Bromide	BMB	0.043	0.489	1 1.0026
5	3.18	Nitrate	BMB	0.126	1.252	0.5 0.4819
6	6.61	Sulfate	BMB	0.383	1.734	3 4.8320
TOTAL:				0.94	9.49	9.19



Peak Integration Report

Sample Name:	1131Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:21	Operator:	Jeff Phifer

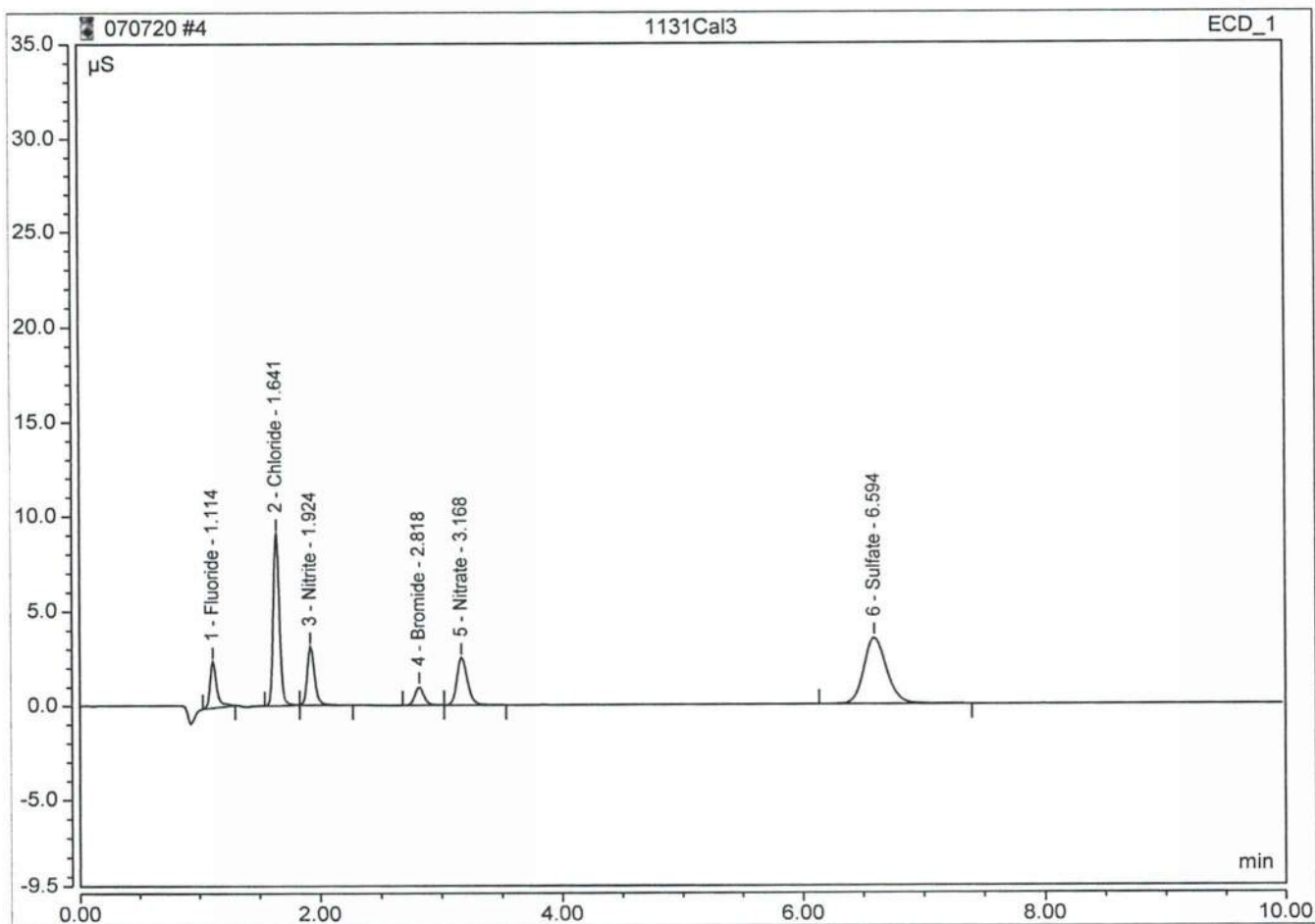
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.082	1.223	0.5000
2	1.64	Chloride	BMB	0.202	3.302	2.0000
3	1.92	Nitrite	BMB	0.106	1.494	0.5000
4	2.82	Bromide	BMB	0.043	0.489	1.0000
5	3.18	Nitrate	BMB	0.126	1.252	0.5000
6	6.61	Sulfate	BMB	0.383	1.734	5.0000
TOTAL:				0.94	9.49	9.50



Peak Integration Report

Sample Name:	1131Ca13	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:34	Operator:	Jeff Phifer

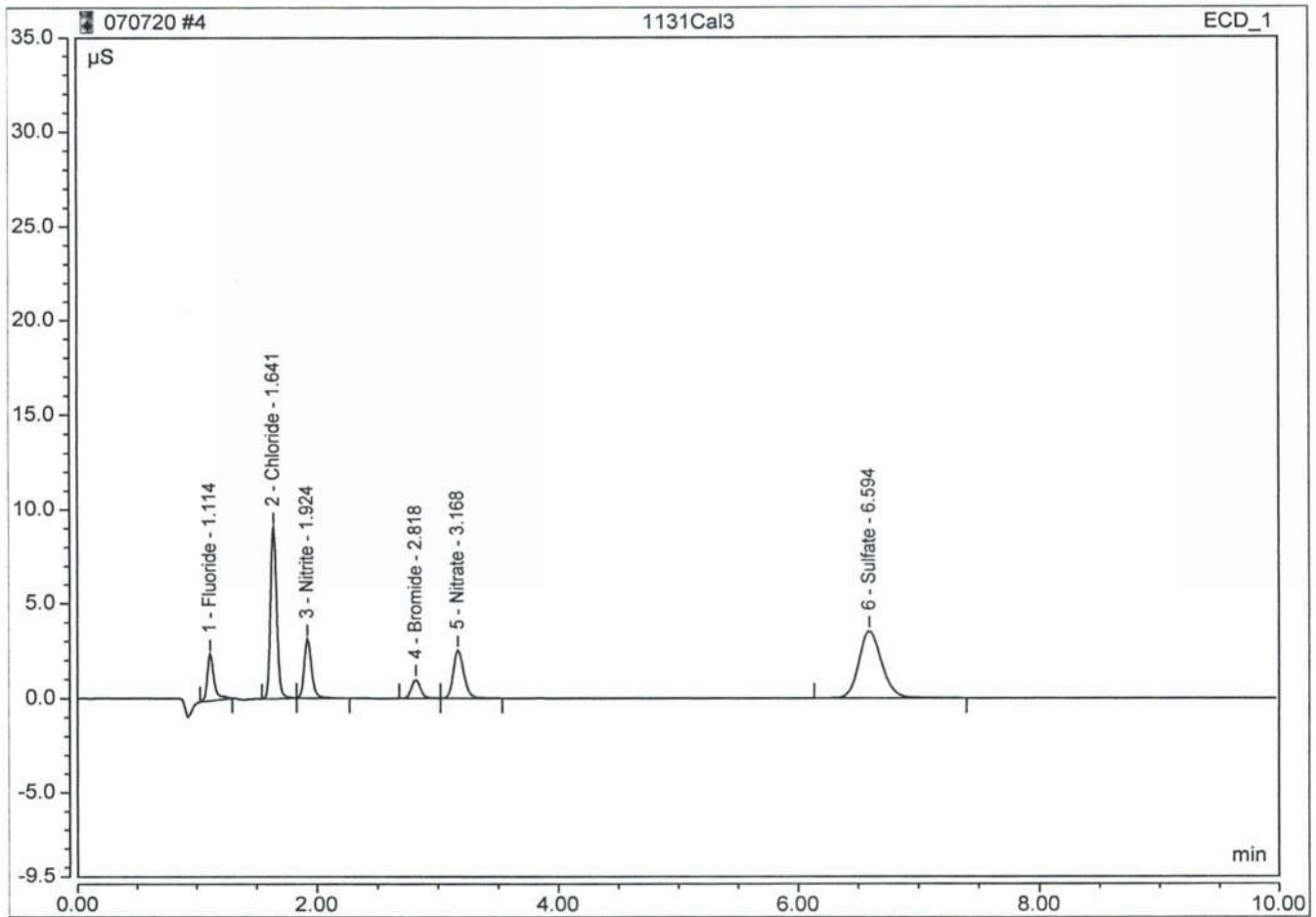
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.155	2.427	0.9656
2	1.64	Chloride	BMB	0.540	9.060	4.6937
3	1.92	Nitrite	BMB	0.216	3.083	0.9661
4	2.82	Bromide	BMB	0.085	0.977	1.9598
5	3.17	Nitrate	BMB	0.251	2.511	0.9588
6	6.59	Sulfate	BMB	0.768	3.517	9.6641
TOTAL:				2.02	21.57	19.21



Peak Integration Report

Sample Name:	1131Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:34	Operator:	Jeff Phifer

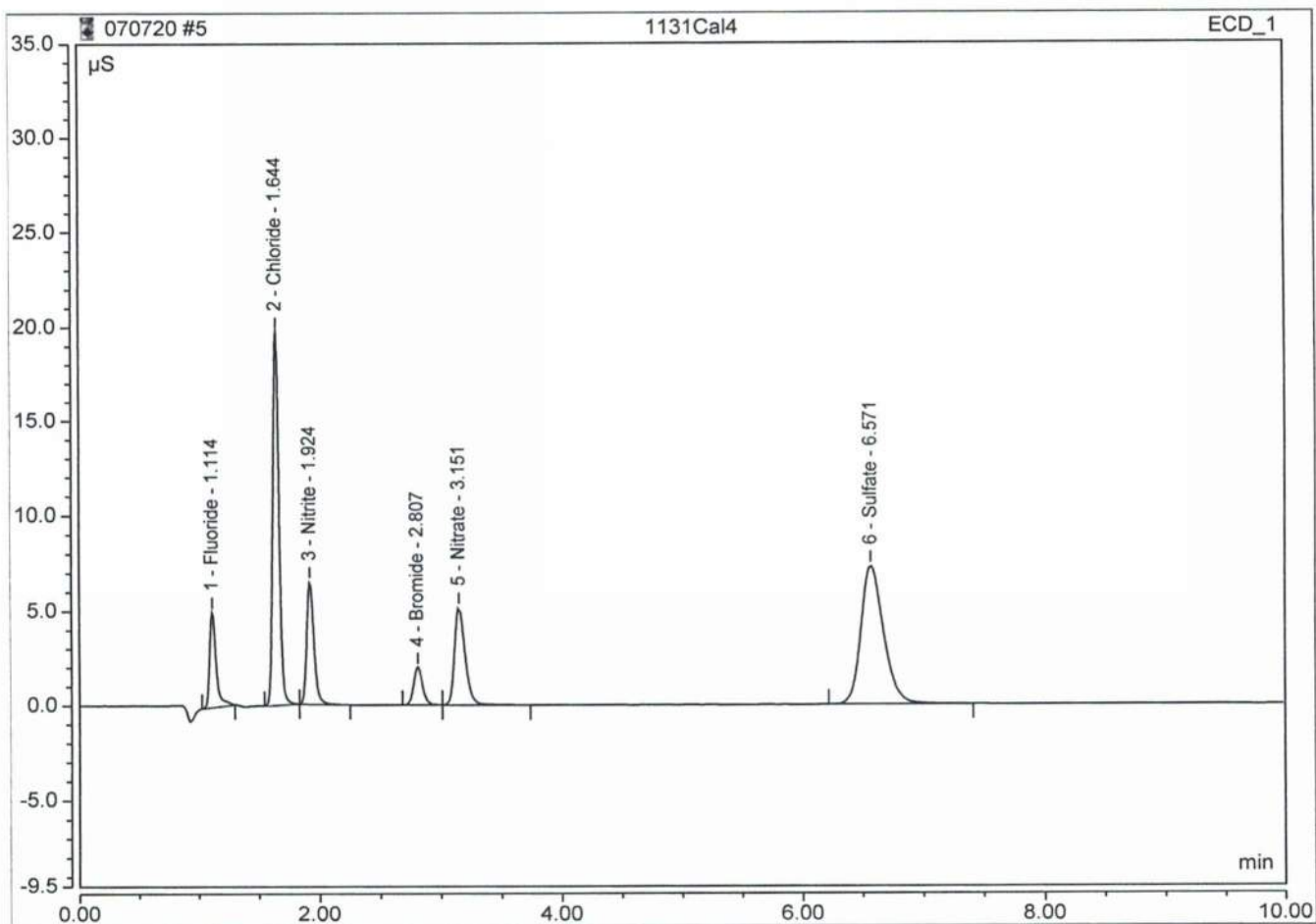
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.155	2.427	1.0028
2	1.64	Chloride	BMB	0.540	9.060	5.0381
3	1.92	Nitrite	BMB	0.216	3.083	1.0063
4	2.82	Bromide	BMB	0.085	0.977	1.9960
5	3.17	Nitrate	BMB	0.251	2.511	1.0021
6	6.59	Sulfate	BMB	0.768	3.517	10.0296
TOTAL:				2.02	21.57	20.07



Peak Integration Report

Sample Name:	1131Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:46	Operator:	Jeff Phifer

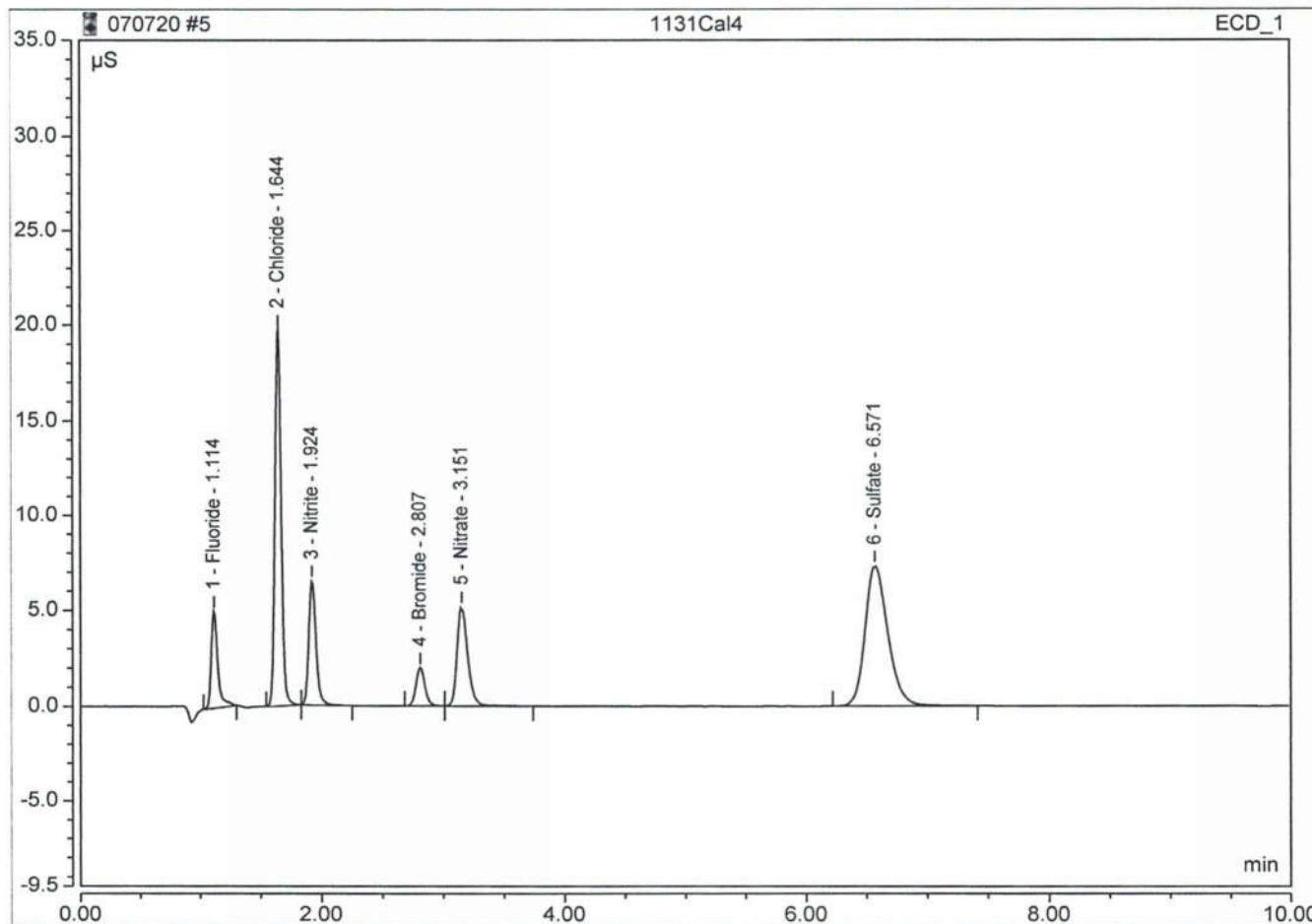
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.313	5.047	2 1.9874
2	1.64	Chloride	BMB	1.171	19.722	10 9.8670
3	1.92	Nitrite	BMB	0.447	6.494	2 1.9838
4	2.81	Bromide	BMB	0.172	1.992	4 3.9335
5	3.15	Nitrate	BMB	0.523	5.181	2 1.9899
6	6.57	Sulfate	BMB	1.586	7.313	20 19.9329
TOTAL:				4.21	45.75	39.69



Peak Integration Report

Sample Name:	1131Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:46	Operator:	Jeff Phifer

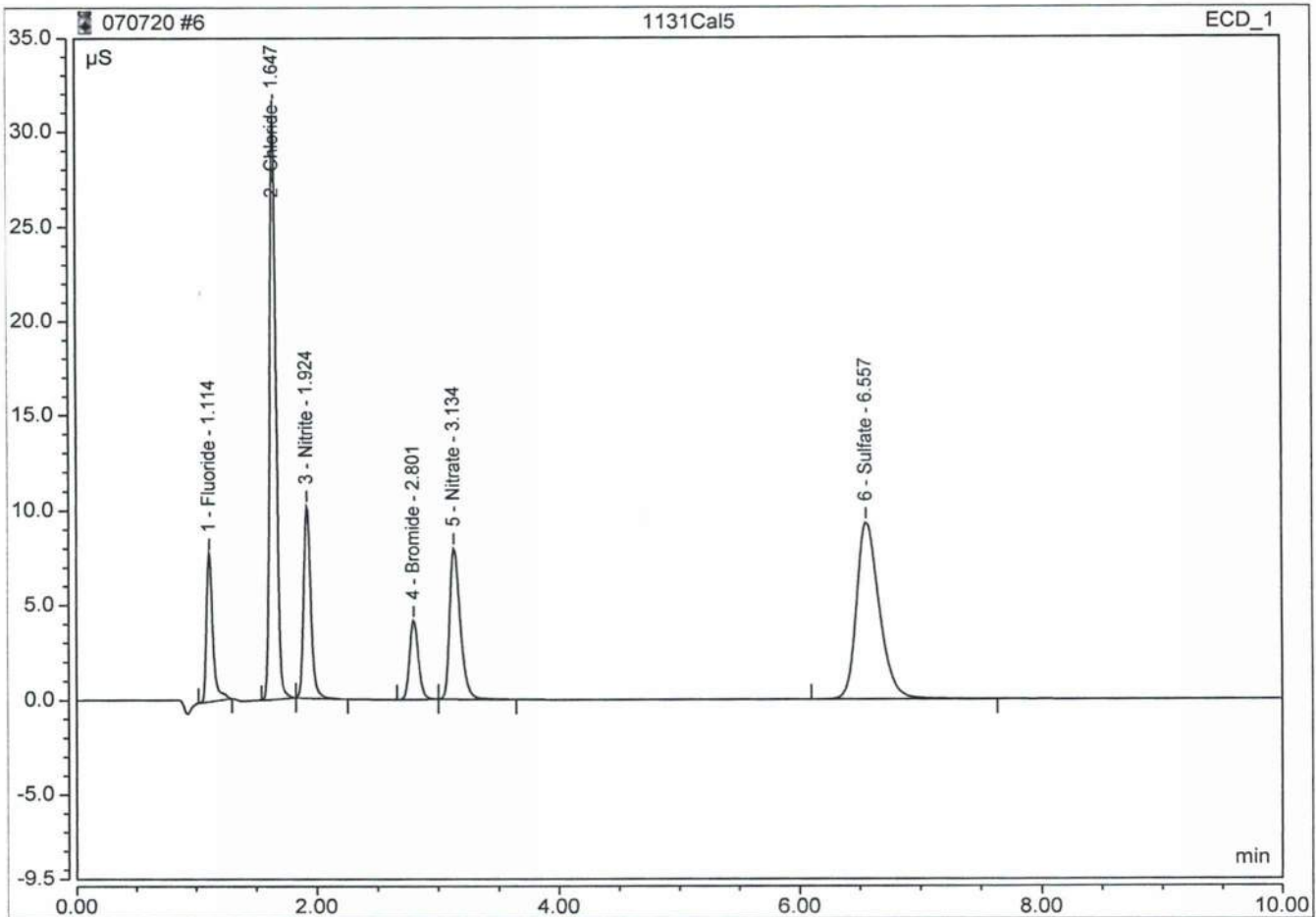
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.313	5.047	2.0249
2	1.64	Chloride	BMB	1.171	19.722	10.2103
3	1.92	Nitrite	BMB	0.447	6.494	2.0275
4	2.81	Bromide	BMB	0.172	1.992	4.0098
5	3.15	Nitrate	BMB	0.523	5.181	2.0325
6	6.57	Sulfate	BMB	1.586	7.313	20.2778
TOTAL:				4.21	45.75	40.58



Peak Integration Report

Sample Name:	1131Cal5	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 038777
Inj. Date / Time:	07-Jul-2020 / 10:59	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount mg/L
1	1.11	Fluoride	BMB	0.476	7.811	3 3.0493
2	1.65	Chloride	BMB	1.849	30.847	15 15.4380
3	1.92	Nitrite	BMB	0.692	10.161	3 3.0652
4	2.80	Bromide	BMB	0.354	4.145	8 8.0928
5	3.13	Nitrate	BMB	0.805	7.979	3 3.0633
6	6.56	Sulfate	BMB	2.031	9.317	25 25.5213
TOTAL:				6.21	70.26	58.23






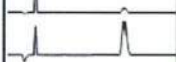




Ics-1100 B Dioxin IC Meth 300.0

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 10:40:04 AM -C
	1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:52:24 AM -C
	1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 11:05:16 AM -C
	1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 11:18:08 AM -C
	1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 11:31:00 AM -C
	1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 11:43:51 AM -C
	Blank	Unknown		1	Norm Method	Anion	Finished	9/17/2020 7:40:01 AM -C
	BSpoke 11746BS1	Check Standard		2	Norm Method	Anion	Finished	9/17/2020 7:52:20 AM -C
	LCS 11746LCS1	Check Standard		3	Norm Method	Anion	Finished	9/17/2020 8:05:11 AM -C
	17448.01	Unknown		4	Norm Method	Anion	Finished	9/17/2020 8:18:03 AM -C
	17448.02	Unknown		5	Norm Method	Anion	Finished	9/17/2020 8:30:55 AM -C
	17448.03	Unknown		6	Norm Method	Anion	Finished	9/17/2020 8:43:47 AM -C
	17448.04	Unknown		7	Norm Method	Anion	Finished	9/17/2020 8:56:39 AM -C
	17448.05	Unknown		8	Norm Method	Anion	Finished	9/17/2020 9:09:32 AM -C
	17448.06	Unknown		9	Norm Method	Anion	Finished	9/17/2020 9:22:24 AM -C
	17448.07	Unknown		10	Norm Method	Anion	Finished	9/17/2020 9:35:16 AM -C
	17467.01	Unknown		11	Norm Method	Anion	Finished	9/17/2020 9:48:08 AM -C
	17468.01	Unknown		12	Norm Method	Anion	Finished	9/17/2020 10:01:00 AM -C
	17480.01	Unknown		13	Norm Method	Anion	Finished	9/17/2020 10:13:52 AM -C
	17480.01	Unknown		14	Norm Method	Anion	Finished	9/17/2020 10:26:44 AM -C
	17448.01 dup	Unknown		15	Norm Method	Anion	Finished	9/17/2020 10:39:36 AM -C
	17448.01 MS 13077MS	Unknown		16	Norm Method	Anion	Finished	9/17/2020 10:52:27 AM -C
	17448.01 MSD 13077M	Unknown		17	Norm Method	Anion	Finished	9/17/2020 11:05:18 AM -C
	BSpoke 11746BS1	Check Standard		18	Norm Method	Anion	Finished	9/17/2020 11:18:11 AM -C

CAL ID# Ics B 010120CAL

CL200917-W1-B NTRI200917-W1-B
STR200917-W1-B
NTNA200917-W1-B

Sequence: 091720
Last Update Operator: pcuser

	17424.01	Unknown		19	Norm Method	Anion	Finished	9/17/2020 11:31:02 AM
	17485.02	Unknown		20	Norm Method	Anion	Finished	9/17/2020 11:43:53 AM
	17487.01	Unknown		21	Norm Method	Anion	Finished	9/17/2020 11:56:44 AM
	17485.01	Unknown		22	Norm Method	Anion	Finished	9/17/2020 12:09:35 PM
	17448.05	Unknown		23	Norm Method	Anion	Finished	9/17/2020 12:22:27 PM
	17424.01	Unknown		24	Norm Method	Anion	Finished	9/17/2020 12:35:18 PM
	BSpoke 11746BS1	Check Standard		25	Norm Method	Anion	Finished	9/17/2020 12:48:10 PM
	Blank	Unknown		26	Norm Method	Anion	Finished	9/17/2020 1:01:02 PM



Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	50.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	50.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	2.5000	1.0000		Jeff Phifer	
1.0000	25.0000	1.0000		Jeff Phifer	
1.0000	50.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	50.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

Sequence: 091720
Last Update Operator: pcuser

1.0000	5.0000	1.0000	Jeff Phifer
1.0000	5.0000	1.0000	Jeff Phifer
1.0000	10.0000	1.0000	Jeff Phifer
1.0000	5.0000	1.0000	Jeff Phifer
1.0000	25.0000	1.0000	Jeff Phifer
1.0000	10.0000	1.0000	Jeff Phifer
1.0000	1.0000	1.0000	Jeff Phifer
1.0000	1.0000	1.0000	Jeff Phifer



Norm Method		16/06/15 12:18	Jeff Phifer	METHOD 300.0	
Stage	Time	Command	Value	Comment	
Instrument Setup	min				
	initial				
		Sampler.HomeNeedle			
		Sampler.ResetVials	1, 50		
		Pump_ECD.Pressure.UpperLimit	4500 [psi]		
		Sampler.DelayVolume	125 [µl]		
		Pump_ECD.%A.Equate	"Carb - BiCarb"		
		Pump_ECD.Pressure.LowerLimit	100 [psi]		
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]		
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]		
		Pump_ECD.Suppressor_Type	ASRS_4mm		
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]		
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]		
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]		
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]		
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]		
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]		
		Pump_ECD.Suppressor_Current	27 [mA]		
		Sampler.FlushFactor	10		
		Sampler.DeliverSpeed	4.0 [ml/min]		
		Pump_ECD.Flow	2.00		
		Sampler.LoadPosition			
		Sampler.DeliverSample	Full		
		Sampler.EndSamplePrep			
Inject	0.000				
		Wait			
		Sampler.Inject			Sampler.CycleTimeState, Hold,
Start Run	0.000				
		Pump_ECD.Channel_Pressure.AcqOn			
		Pump_ECD.Autozero			
		Pump_ECD.ECD_1.AcqOn			
		Pump_ECD.ECD_Total.AcqOn			
Run	0.000				
	0.500				Duration = 10.000 [min]
		Sampler.BeginOverlap			
Stop Run	10.000				
		Pump_ECD.Channel_Pressure.AcqOff			
		Pump_ECD.ECD_1.AcqOff			
		Pump_ECD.ECD_Total.AcqOff			
End					

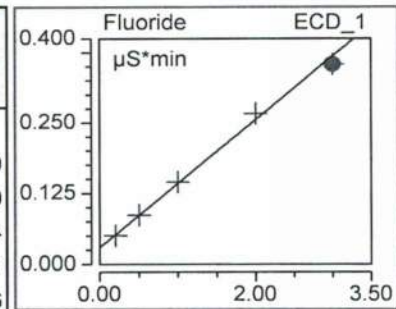
Calibration Batch Report
CAL ID# ICSB070720CAL



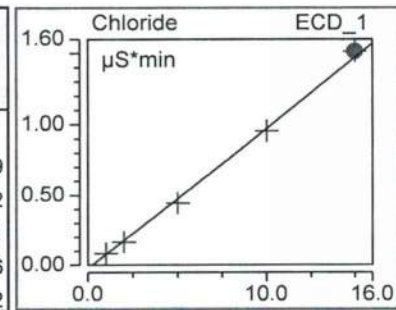
Sequence:	091720	Injection Vol:	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 11:43	Column:	AS4A-SC 040144

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.029	0.113	0.000	0.9985
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.023	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.191	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	0.000	0.036	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.003	0.064	0.000	0.9997
AVERAGE:				-0.0002	0.1196	0.0000	0.9994

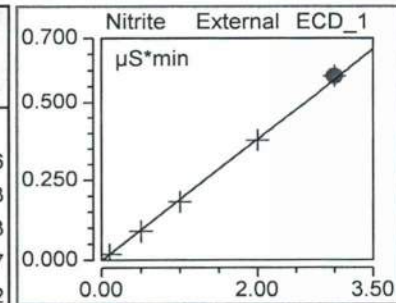
Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1131Cal1	Fluoride 1.084	Fluoride 0.0508	Fluoride 0.484	Fluoride 0.189
1131Cal2	1.084	0.0870	0.999	0.510
1131Cal3	1.081	0.1450	1.848	1.024
1131Cal4	1.081	0.2666	3.636	2.101
1131Cal5	1.081	0.3541	5.285	2.876
Average	1.082			
Rel. Std. Dev.	0.164 %			



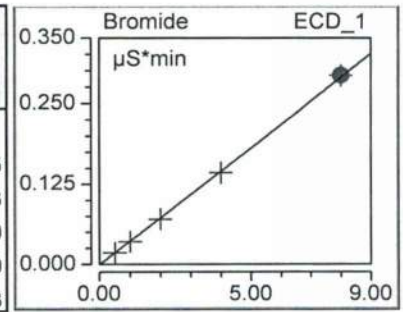
Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1131Cal1	Chloride 1.627	Chloride 0.0849	Chloride 1.387	Chloride 1.089
1131Cal2	1.627	0.1668	2.765	1.912
1131Cal3	1.628	0.4444	7.521	4.701
1131Cal4	1.631	0.9564	16.335	9.846
1131Cal5	1.634	1.5142	25.720	15.452
Average	1.629			
Rel. Std. Dev.	0.180 %			



Injection Name	Ret.Time min ECD 1	Area μS*min ECD 1	Height μS ECD 1	Amount ECD 1
1131Cal1	Nitrite 1.934	Nitrite 0.0181	Nitrite 0.252	Nitrite 0.106
1131Cal2	1.934	0.0900	1.251	0.483
1131Cal3	1.931	0.1818	2.556	0.963
1131Cal4	1.931	0.3773	5.333	1.987
1131Cal5	1.931	0.5827	8.298	3.062
Average	1.932			
Rel. Std. Dev.	0.092 %			

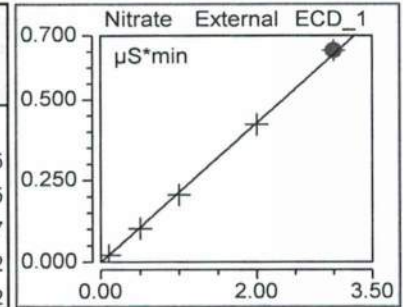


Injection Name	Ret. Time min ECD_1	Area $\mu\text{S}\cdot\text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Bromide 2.887	Bromide 0.0182	Bromide 0.193	Bromide 0.515
1131Cal2	2.884	0.0355	0.378	0.993
1131Cal3	2.878	0.0705	0.760	1.960
1131Cal4	2.871	0.1427	1.549	3.949
1131Cal5	2.864	0.2925	3.206	8.083
Average	2.877			
Rel. Std. Dev.	0.332 %			

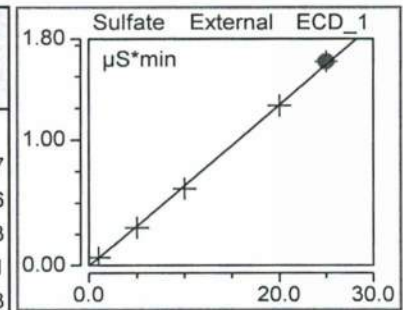


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Injection Name	Ret. Time min ECD_1	Area $\mu\text{S}\cdot\text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Nitrate 3.271	Nitrate 0.0215	Nitrate 0.202	Nitrate 0.105
1131Cal2	3.257	0.1026	0.952	0.485
1131Cal3	3.248	0.2057	1.911	0.967
1131Cal4	3.234	0.4230	3.909	1.982
1131Cal5	3.217	0.6540	6.009	3.062
Average	3.245			
Rel. Std. Dev.	0.636 %			



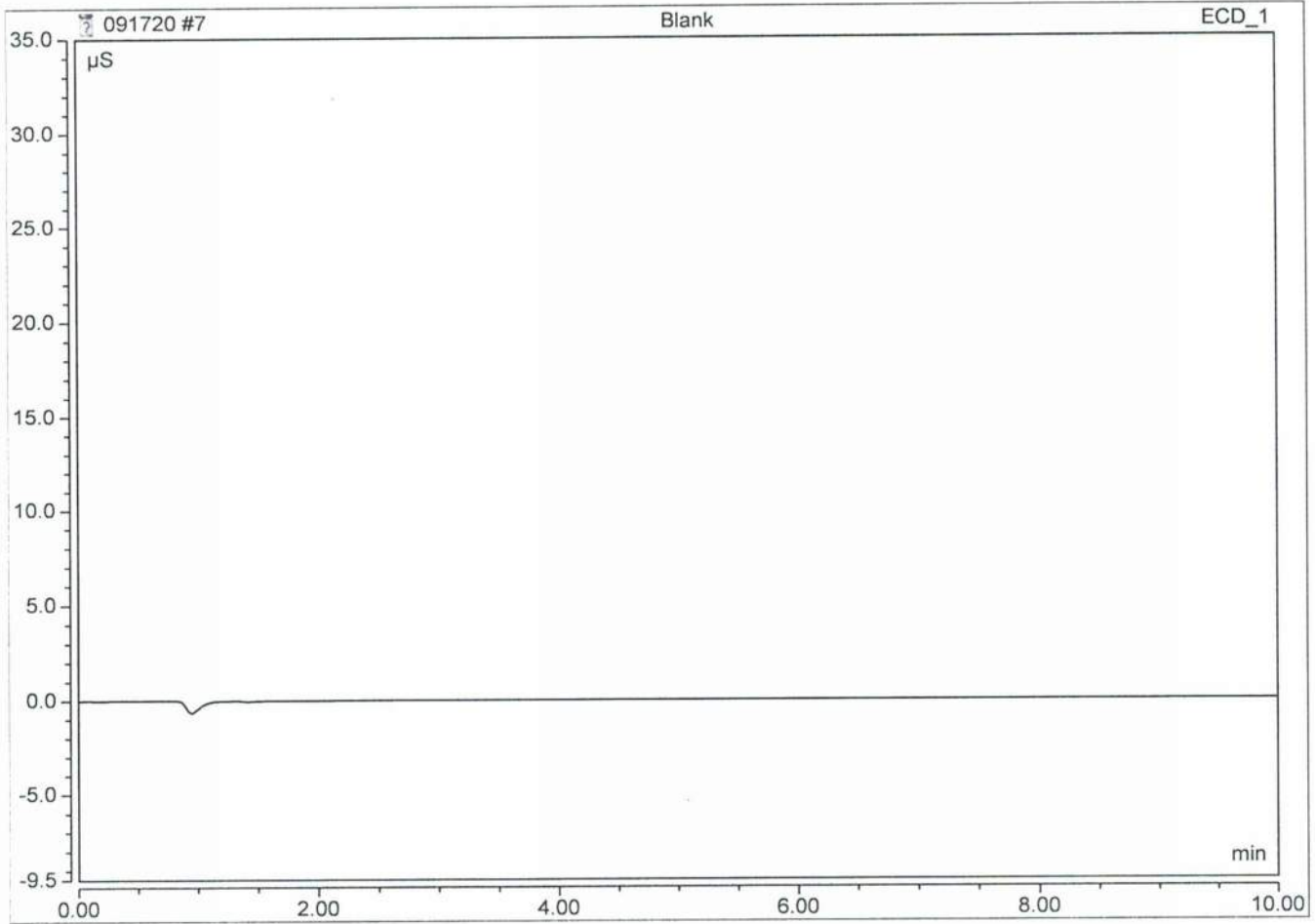
Injection Name	Ret. Time min ECD_1	Area $\mu\text{S}\cdot\text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Sulfate 6.867	Sulfate 0.0635	Sulfate 0.271	Sulfate 1.047
1131Cal2	6.867	0.3050	1.300	4.836
1131Cal3	6.854	0.6147	2.631	9.693
1131Cal4	6.837	1.2706	5.439	19.981
1131Cal5	6.824	1.6188	6.926	25.443
Average	6.850			
Rel. Std. Dev.	0.279 %			



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 07:40	Operator:	Jeff Phifer

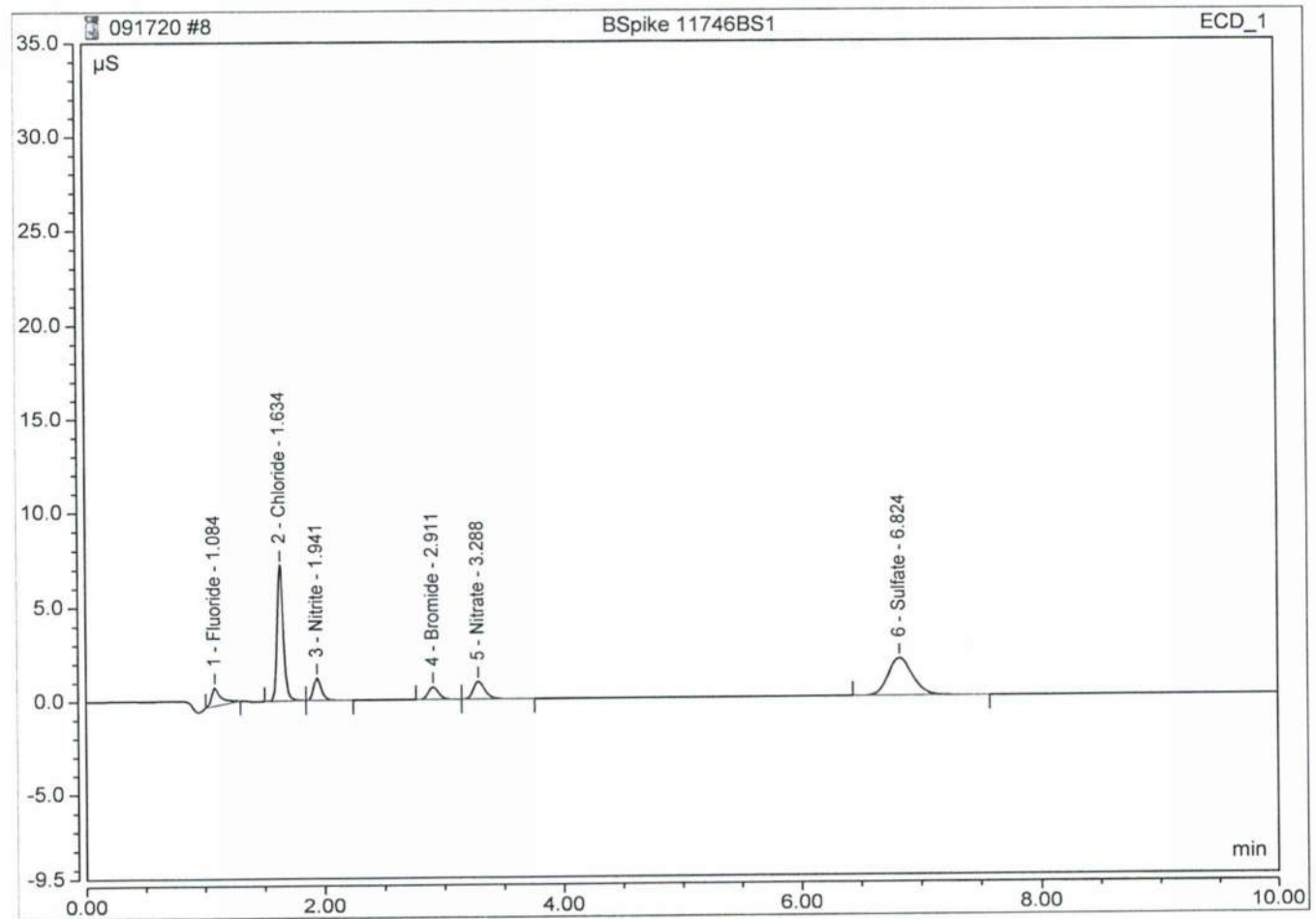
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	BSpike 11746BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 07:52	Operator:	Jeff Phifer

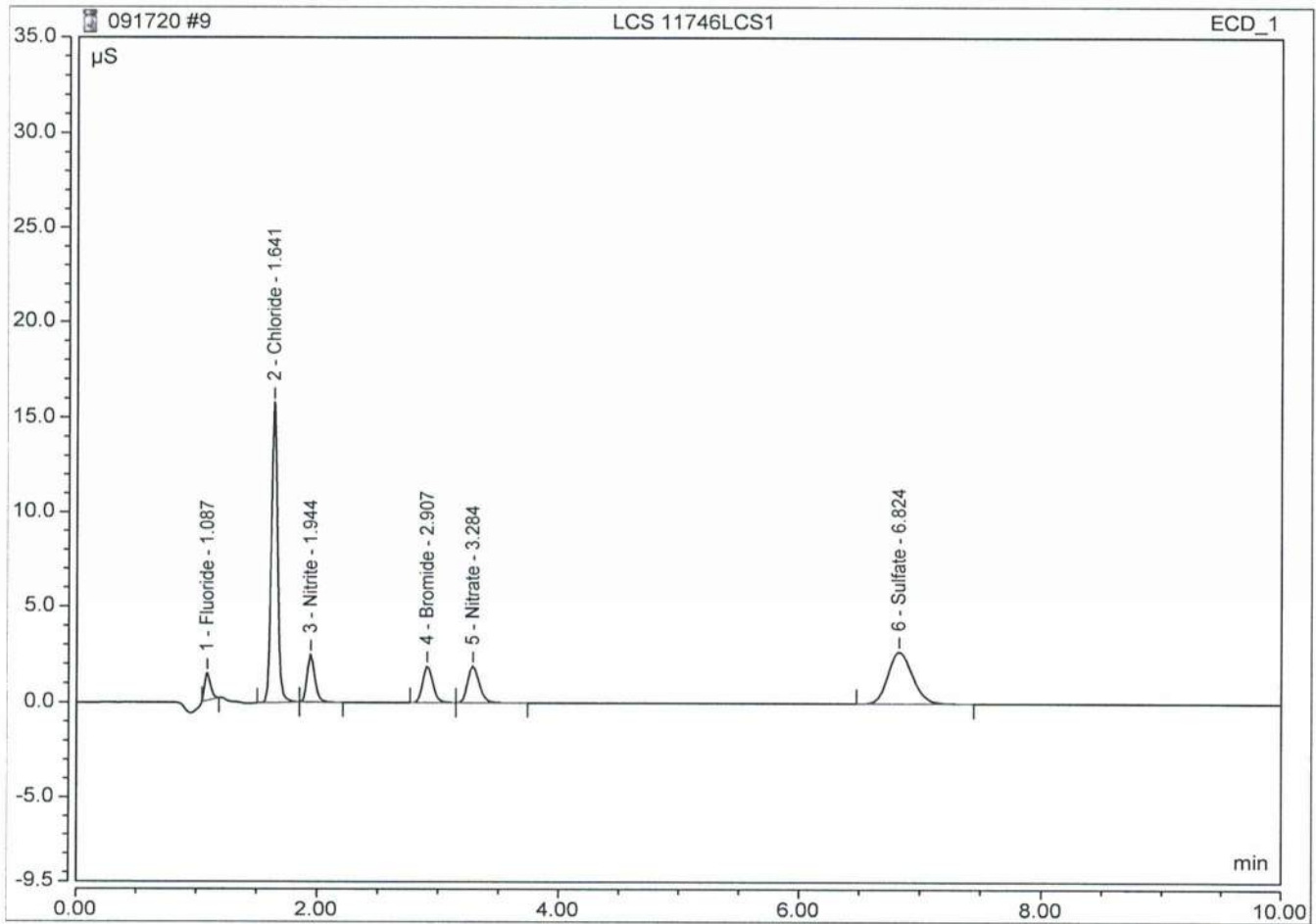
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.091	0.992	0.5440
2	1.63	Chloride	BMB	0.447	7.226	4.7257
3	1.94	Nitrite	BMB	0.090	1.208	0.4809
4	2.91	Bromide	BMB	0.065	0.671	1.8000
5	3.29	Nitrate	BMB	0.106	0.950	0.4985
6	6.82	Sulfate	BMB	0.468	2.000	7.3914
TOTAL:				1.27	13.05	15.44



Peak Integration Report

Sample Name:	LCS 11746LCS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 08:05	Operator:	Jeff Phifer

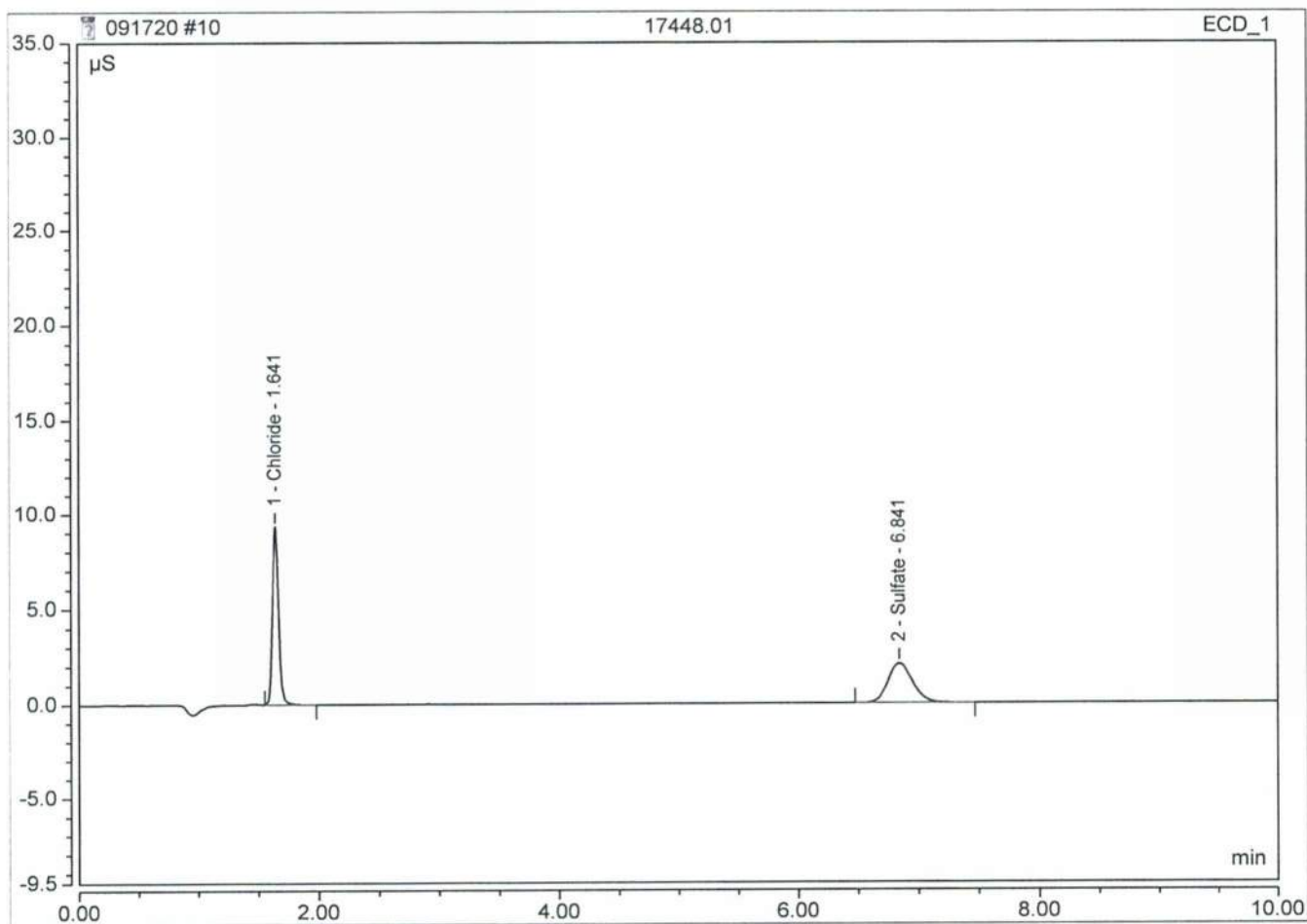
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.081	1.409	0.4593
2	1.64	Chloride	BMB	0.960	15.788	9.8844
3	1.94	Nitrite	BMB	0.183	2.477	0.9675
4	2.91	Bromide	BMB	0.182	1.900	5.0392
5	3.28	Nitrate	BMB	0.210	1.892	0.9871
6	6.82	Sulfate	BMB	0.629	2.694	9.9199
TOTAL:				2.25	26.16	27.26



Peak Integration Report

Sample Name:	17448.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 08:18	Operator:	Jeff Phifer

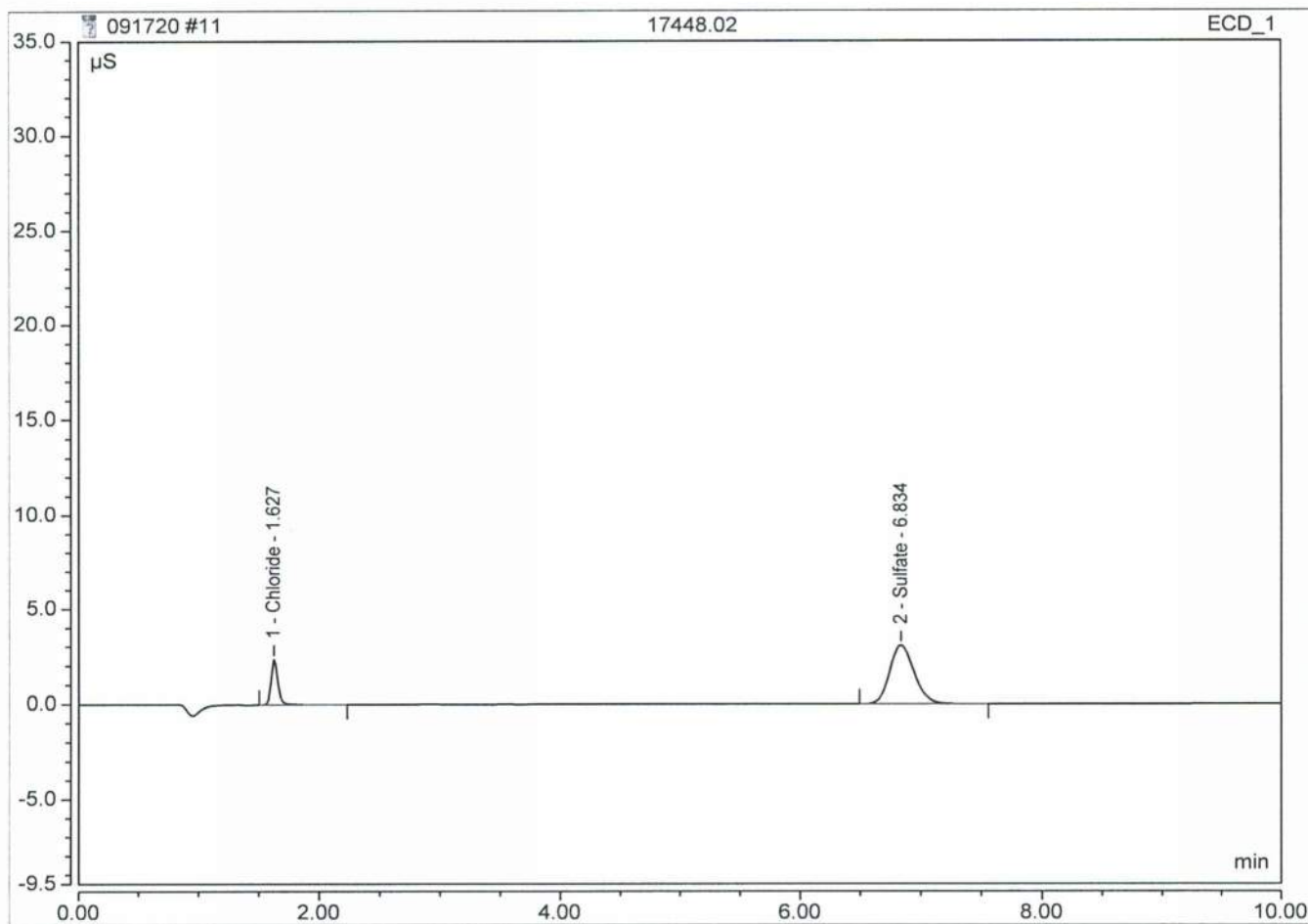
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.64	Chloride	BMB	0.562	9.323	58.8428
2	6.84	Sulfate	BMB	0.490	2.097	77.4303
TOTAL:				1.05	11.42	136.27



Peak Integration Report

Sample Name:	17448.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	50.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 08:30	Operator:	Jeff Phifer

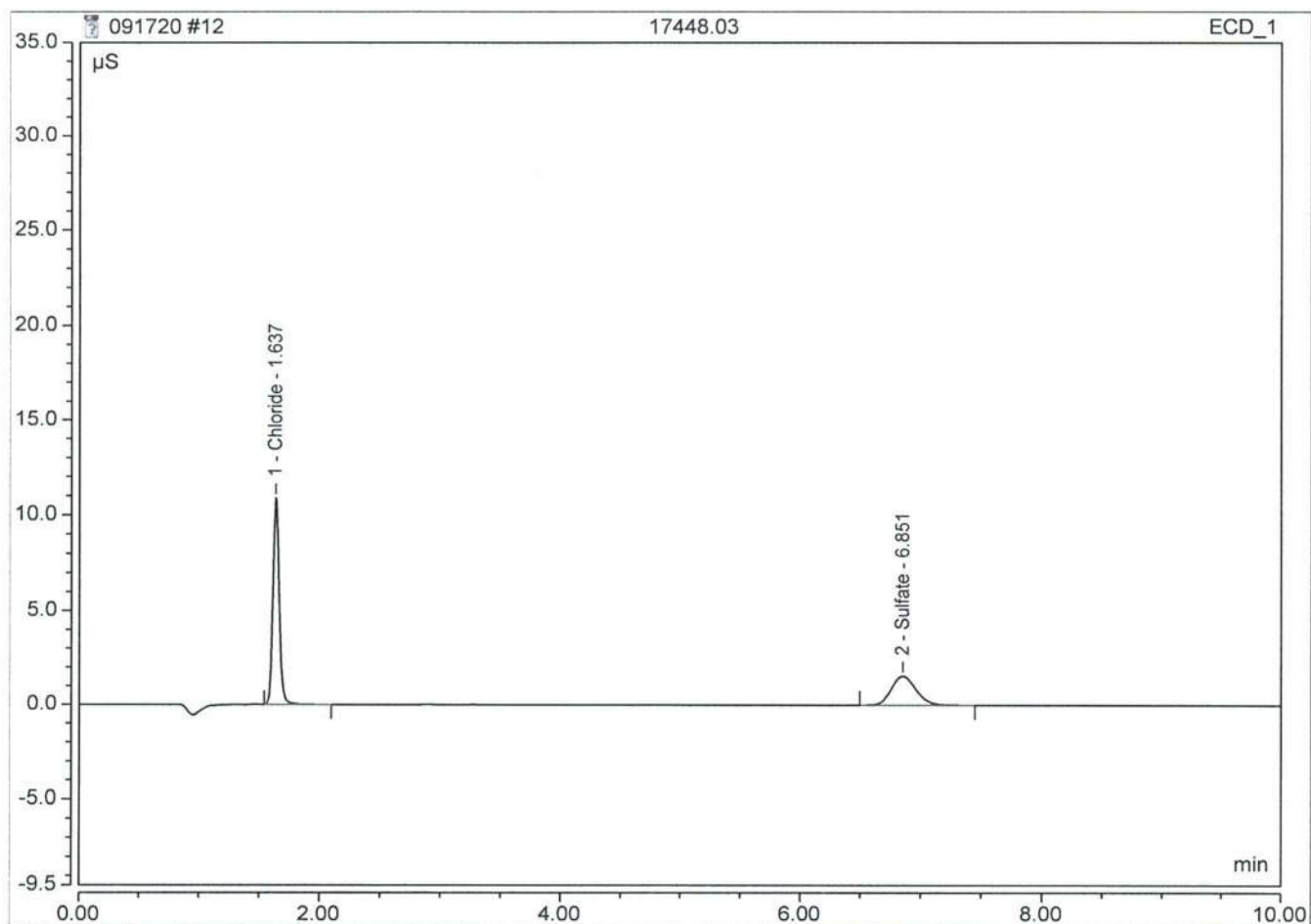
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.151	2.354	87.8838
2	6.83	Sulfate	BMB	0.711	3.056	560.4364
TOTAL:				0.86	5.41	648.32



Peak Integration Report

Sample Name:	17448.03	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 08:43	Operator:	Jeff Phifer

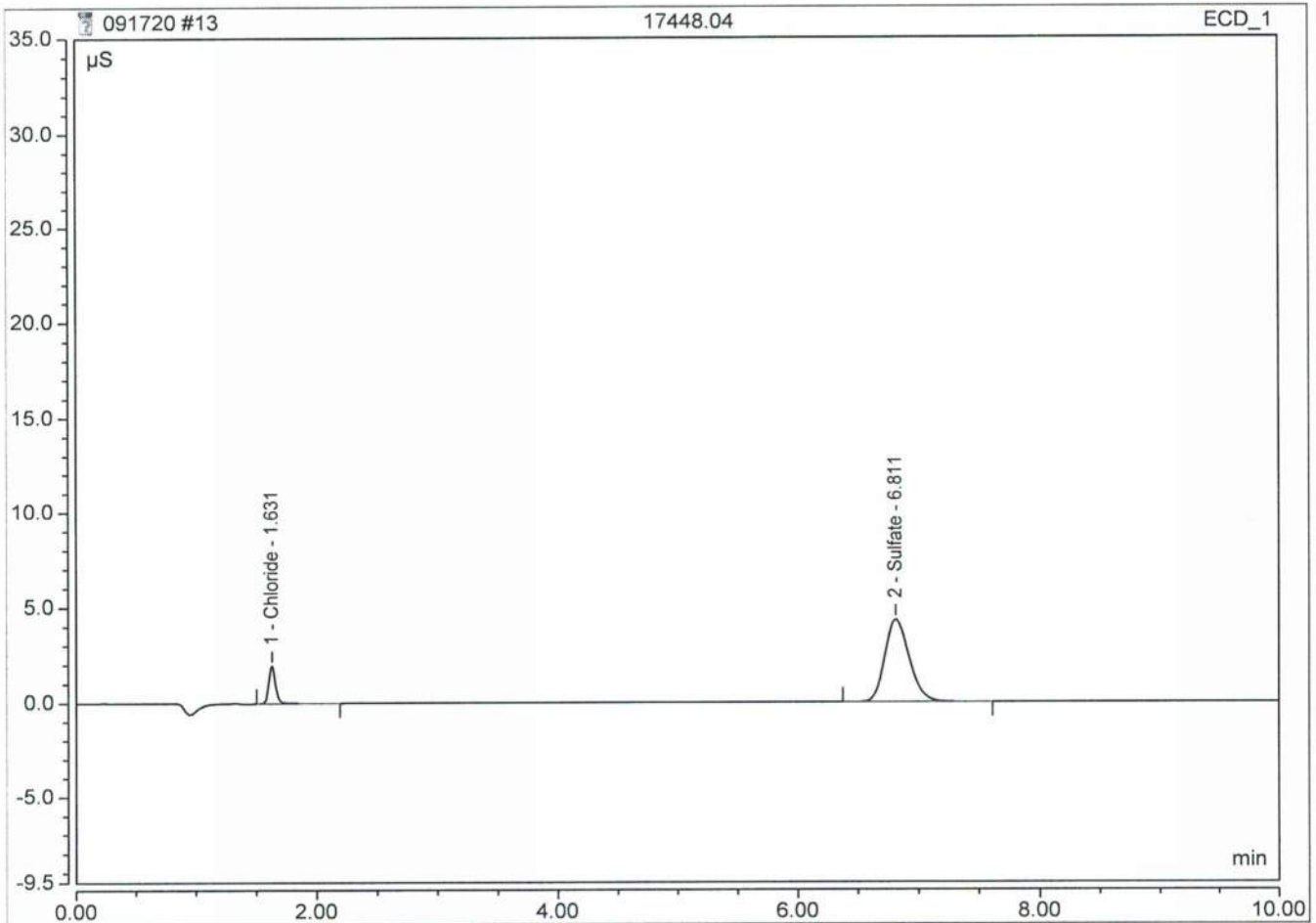
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.64	Chloride	BMB	0.659	10.892	68.5991
2	6.85	Sulfate	BMB	0.364	1.559	57.5545
TOTAL:				1.02	12.45	126.15



Peak Integration Report

Sample Name:	17448.04	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	50.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 08:56	Operator:	Jeff Phifer

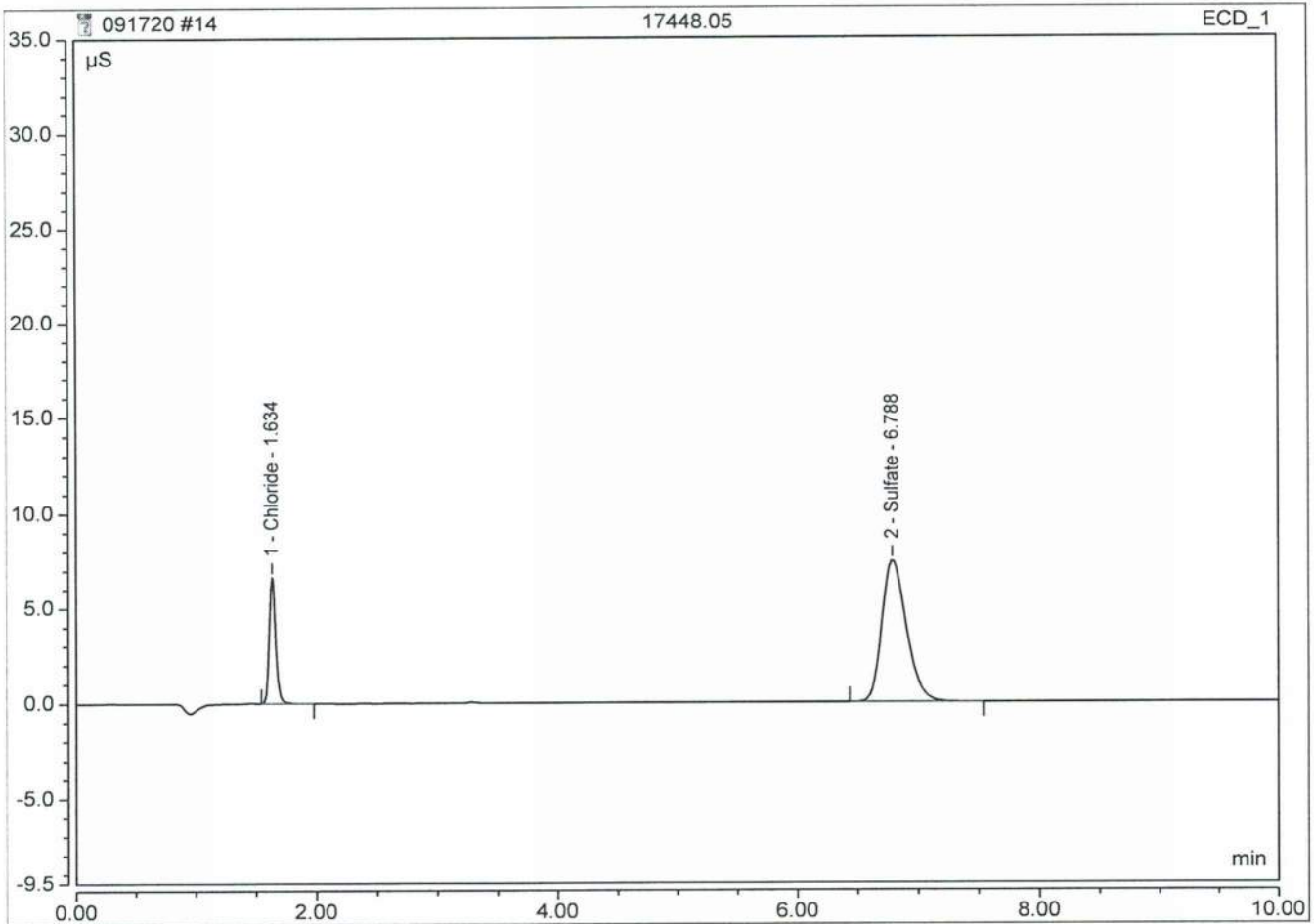
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.129	1.976	76.7189
2	6.81	Sulfate	BMB	1.005	4.318	790.9470
TOTAL:				1.13	6.29	867.67



Peak Integration Report

Sample Name:	17448.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 09:09	Operator:	Jeff Phifer

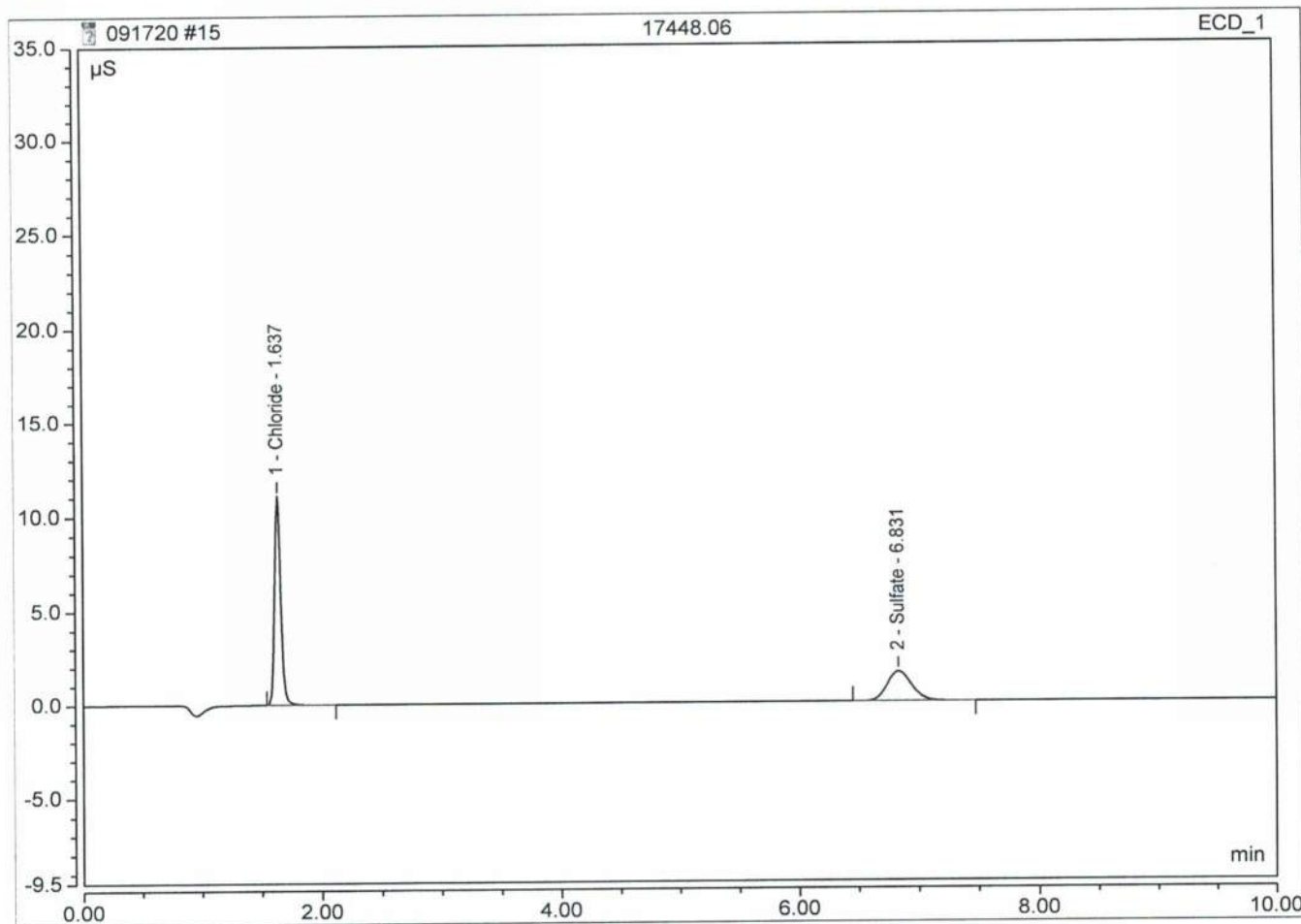
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.405	6.649	43.0169
2	6.79	Sulfate	BMB	1.738	7.460	273.1379
TOTAL:				2.14	14.11	316.15



Peak Integration Report

Sample Name:	17448.06	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 09:22	Operator:	Jeff Phifer

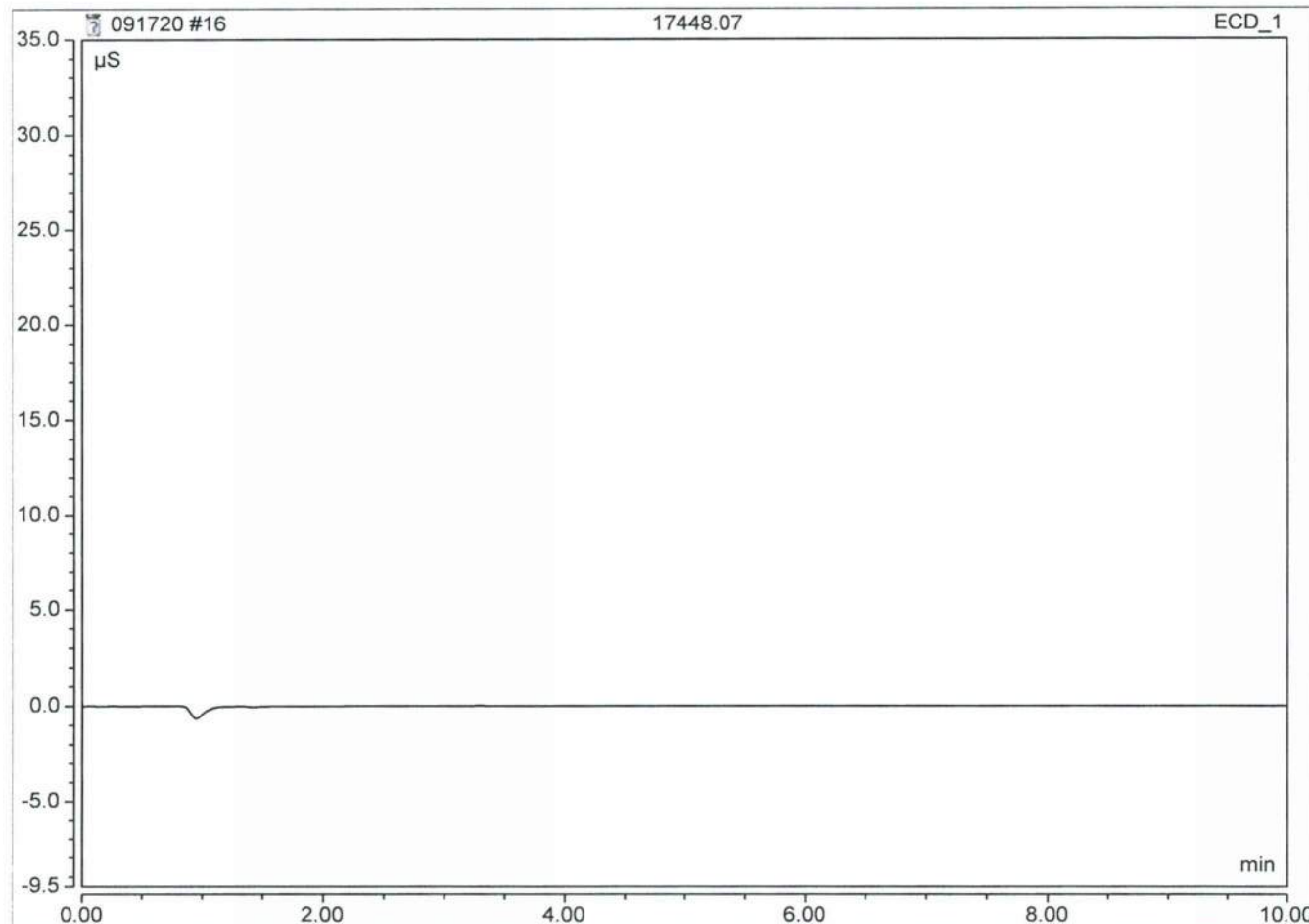
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.64	Chloride	BMB	0.669	11.077	69.5955
2	6.83	Sulfate	BMB	0.369	1.581	58.4654
TOTAL:				1.04	12.66	128.06



Peak Integration Report

Sample Name:	17448.07	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	2.5000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 09:35	Operator:	Jeff Phifer

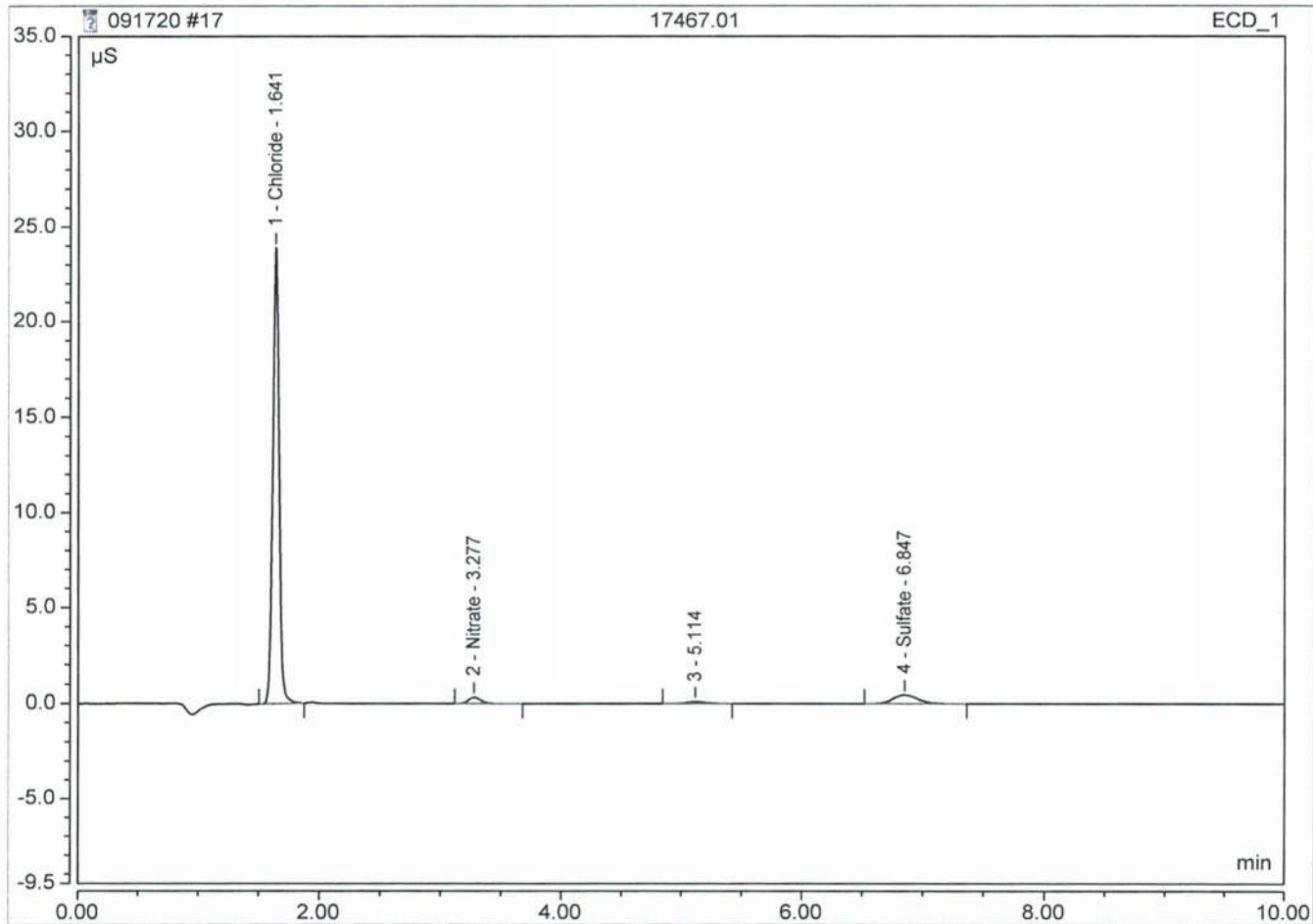
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	17467.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 09:48	Operator:	Jeff Phifer

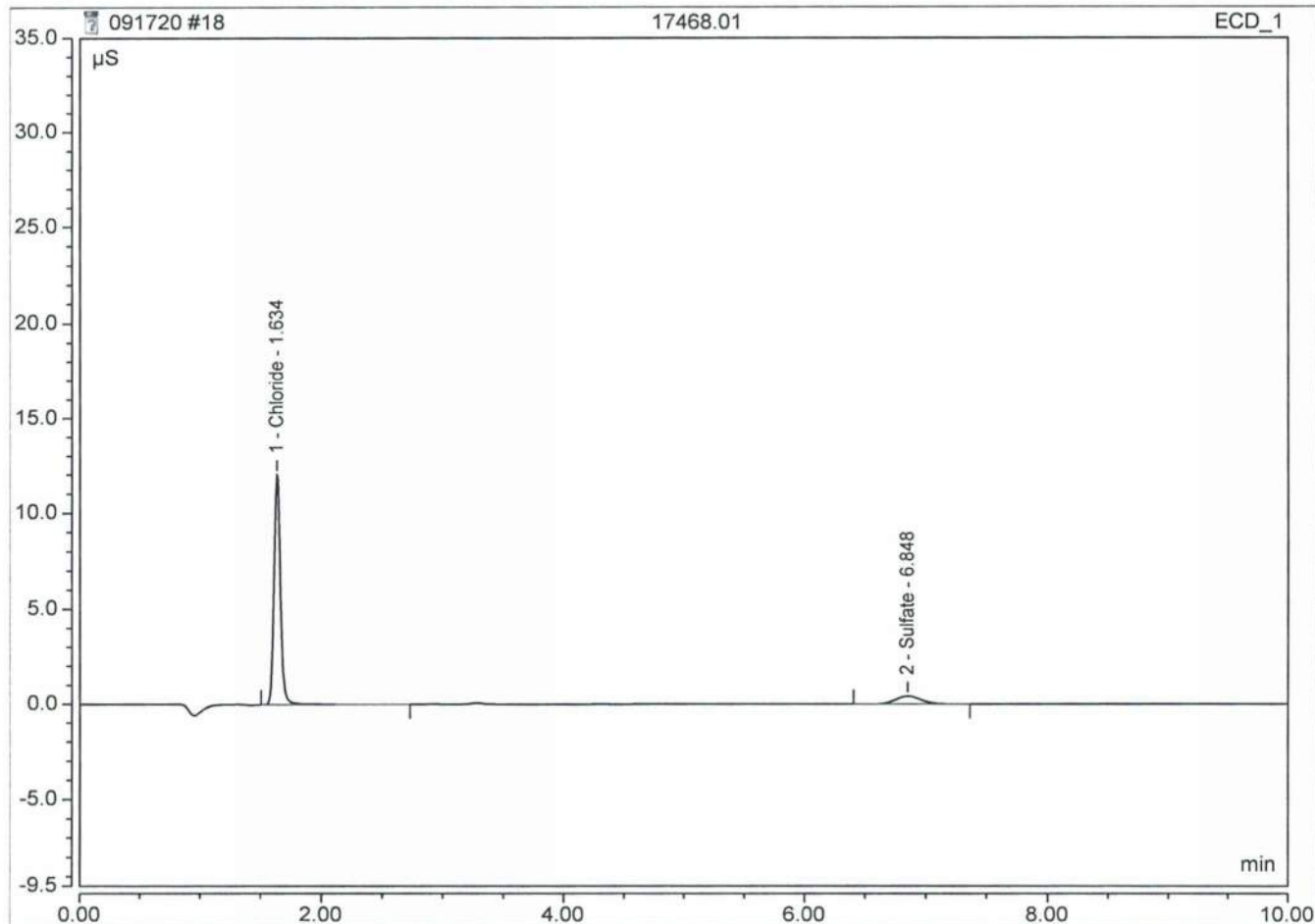
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.64	Chloride	BMB	1.441	23.935	367.9539
2	3.28	Nitrate	BMB	0.036	0.326	4.3393
4	6.85	Sulfate	BMB	0.107	0.456	43.0543
TOTAL:				1.58	24.72	415.35



Peak Integration Report

Sample Name:	17468.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	50.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 10:01	Operator:	Jeff Phifer

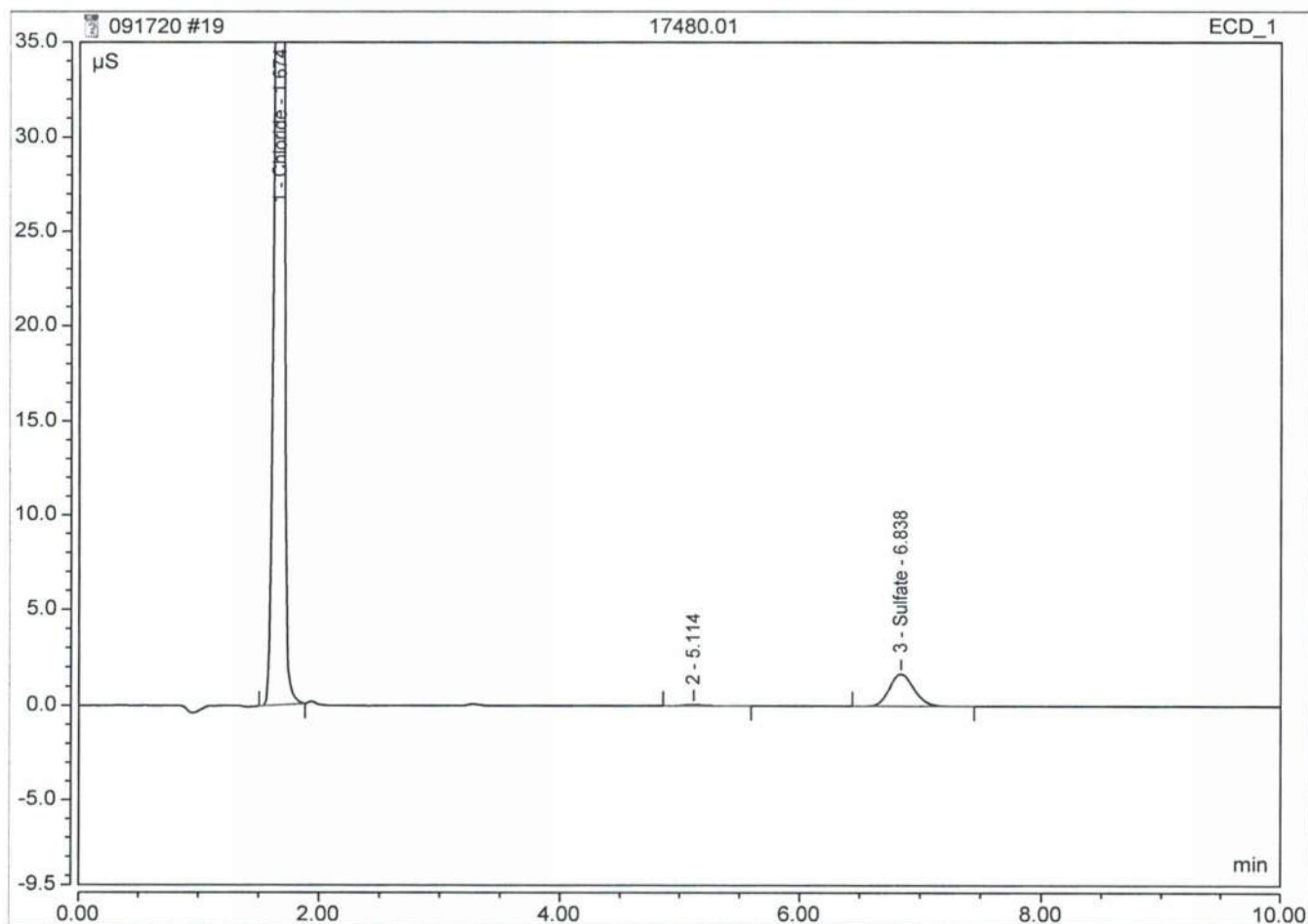
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.745	12.057	386.1597
2	6.85	Sulfate	BMB	0.098	0.418	79.6992
TOTAL:				0.84	12.48	465.86



Peak Integration Report

Sample Name:	17480.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 10:13	Operator:	Jeff Phifer

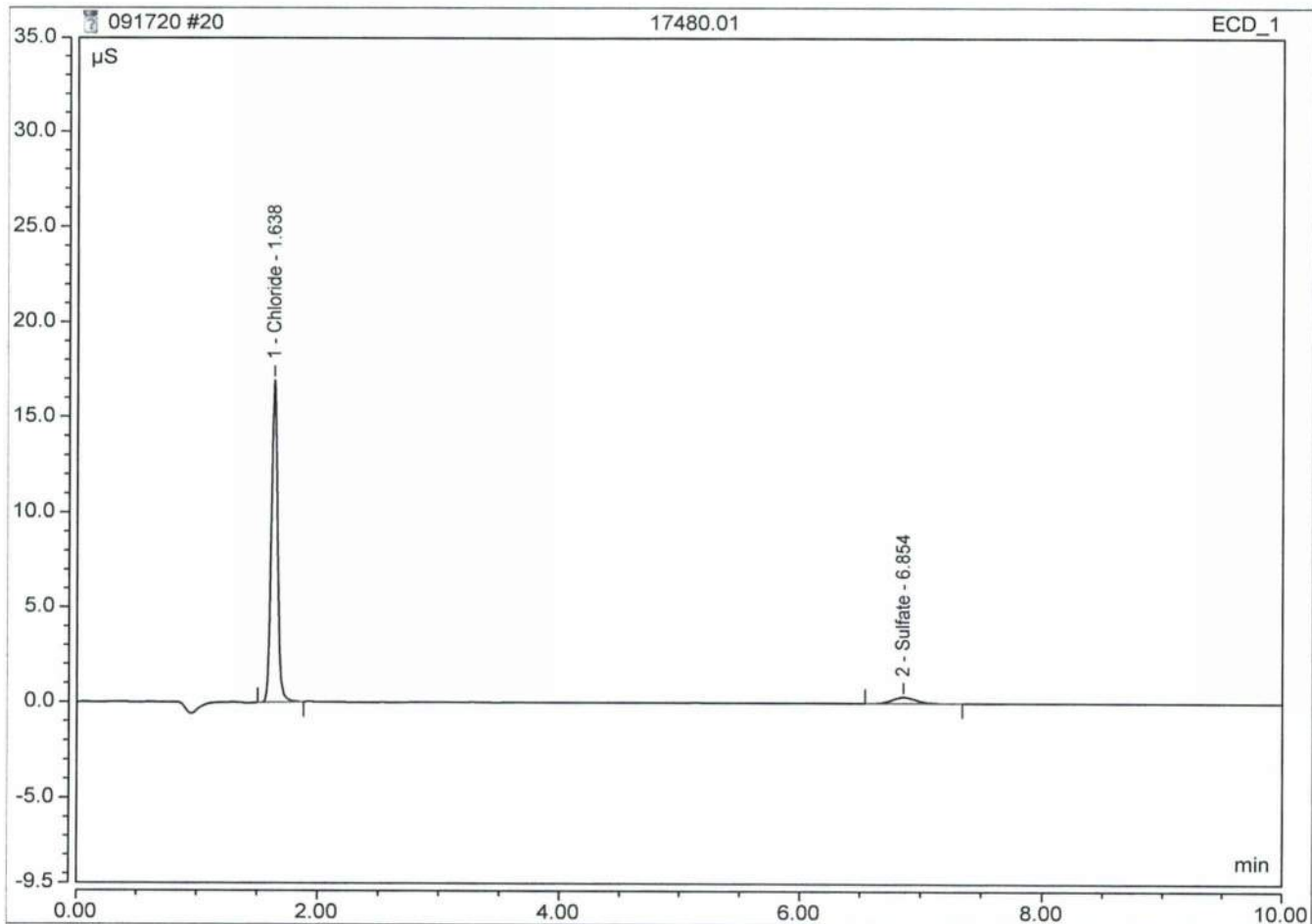
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.67	Chloride	BMB	6.216	85.752	627.0086
3	6.84	Sulfate	BMB	0.390	1.673	61.6606
TOTAL:				6.61	87.43	688.67



Peak Integration Report

Sample Name:	17480.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	50.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 10:26	Operator:	Jeff Phifer

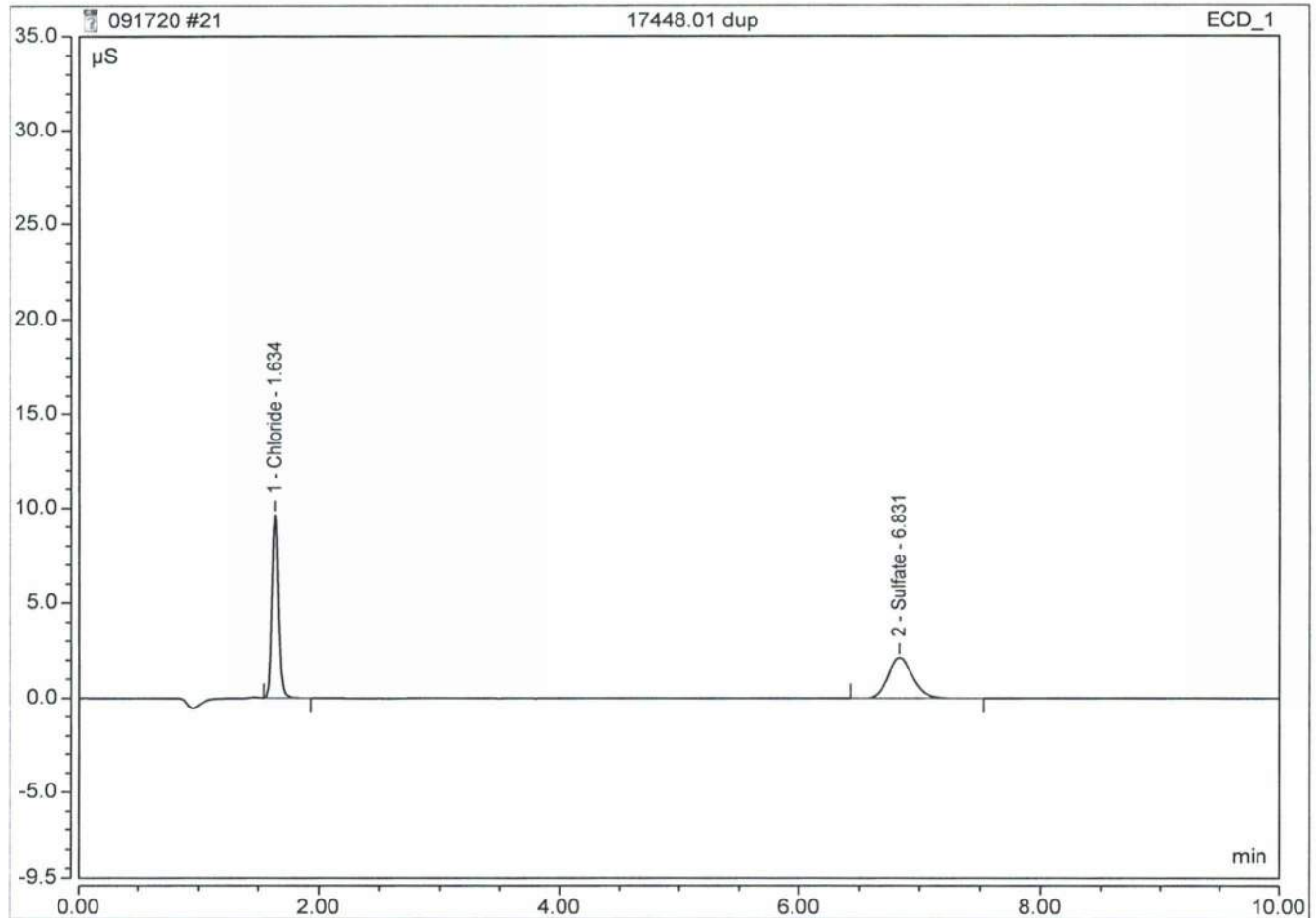
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.64	Chloride	BMB	1.021	16.941	524.6462
2	6.85	Sulfate	BMB	0.077	0.329	63.0804
TOTAL:				1.10	17.27	587.73



Peak Integration Report

Sample Name:	17448.01 dup	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 10:39	Operator:	Jeff Phifer

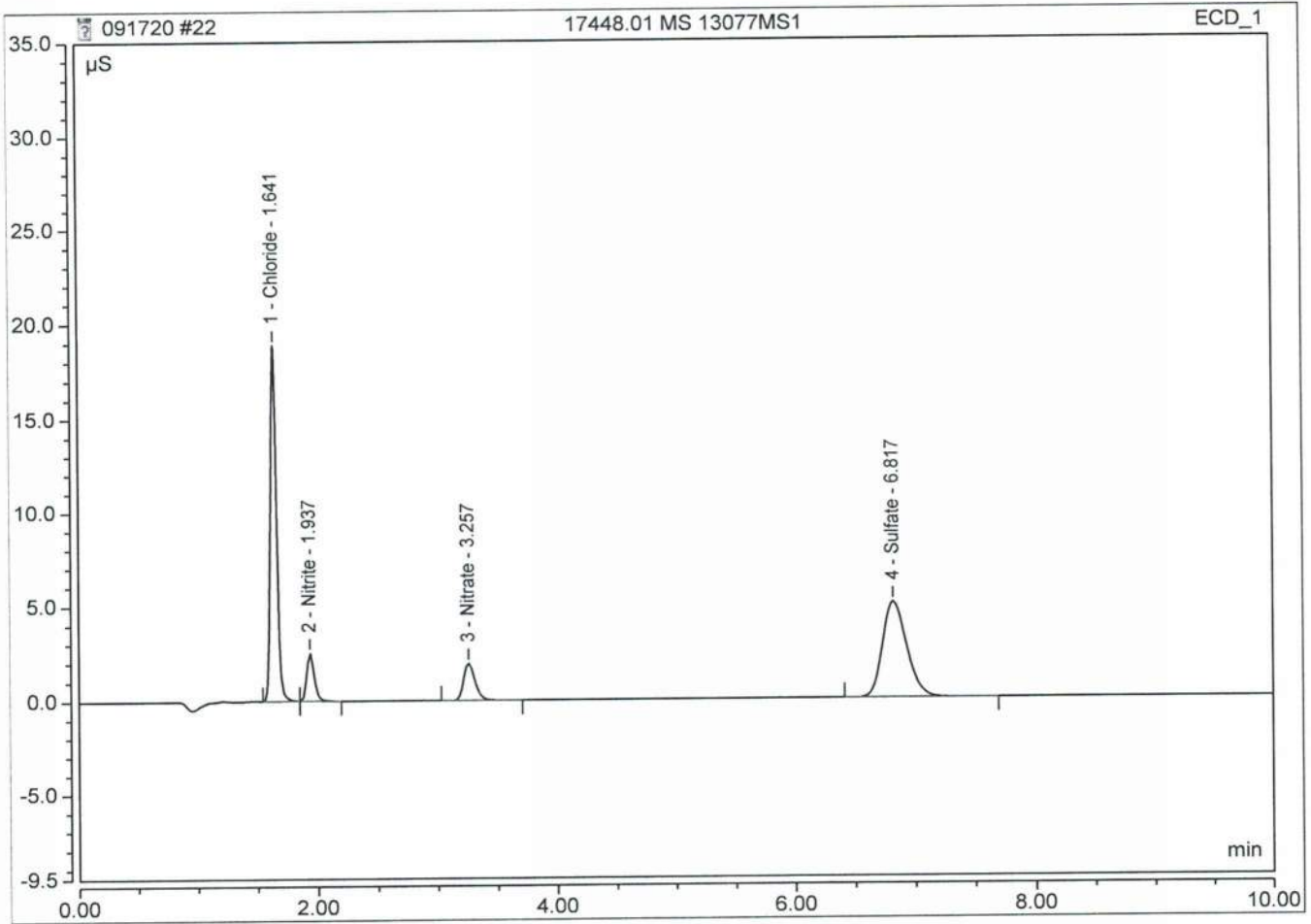
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.576	9.638	60.2604
2	6.83	Sulfate	BMB	0.501	2.149	79.1558
TOTAL:				1.08	11.79	139.42



Peak Integration Report

Sample Name:	17448.01 MS 13077MS1	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 10:52	Operator:	Jeff Phifer

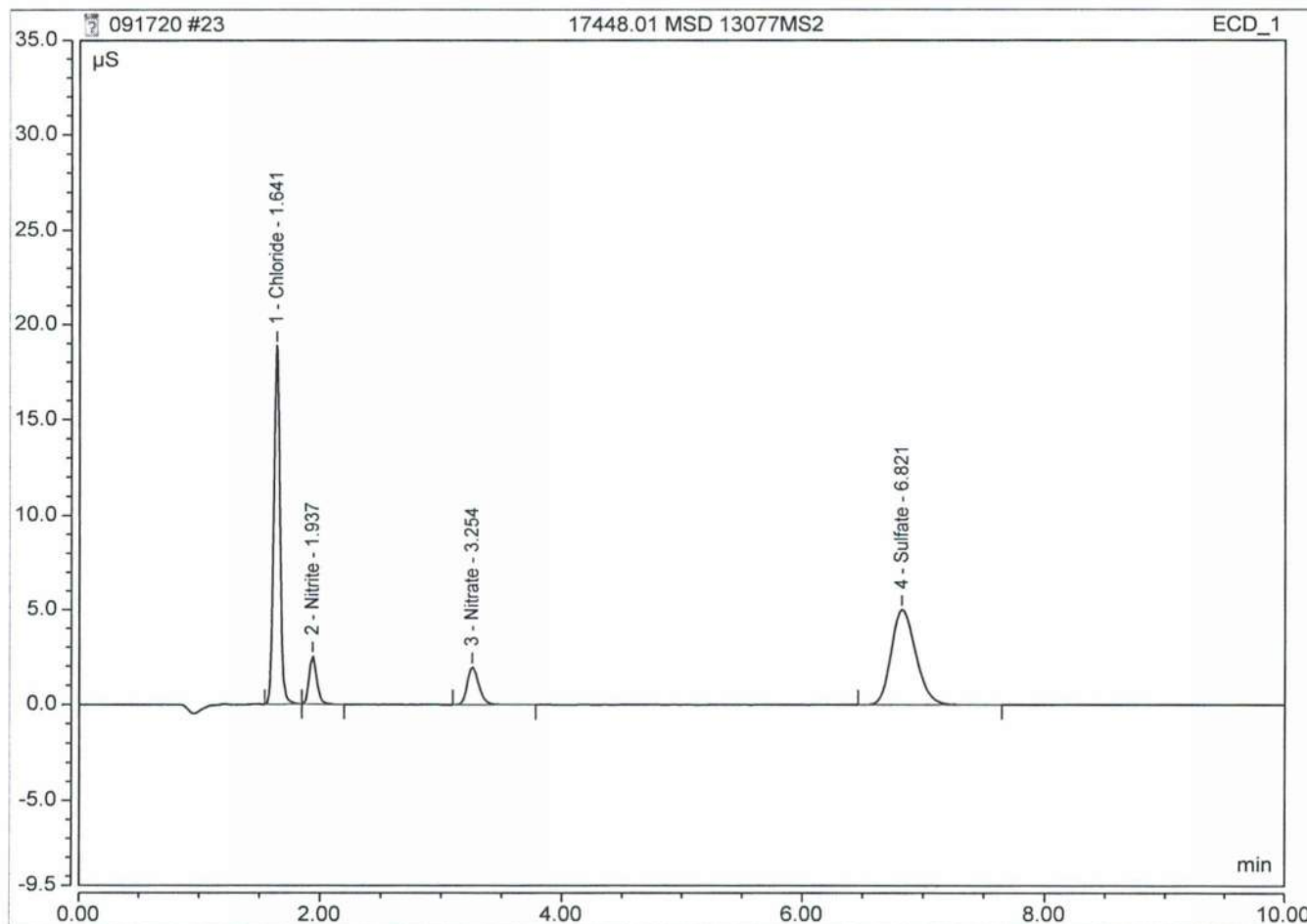
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.64	Chloride	BMB	1.124	18.872	5 11.5290 -5.9 = 112.5
2	1.94	Nitrite	BMB	0.184	2.526	1 0.9750 -ND = 98.5
3	3.26	Nitrate	BMB	0.216	1.960	1 1.0143 -ND = 106
4	6.82	Sulfate	BMB	1.173	5.044	10 18.4585 -7.7 = 107.5
TOTAL:				2.70	28.40	31.98



Peak Integration Report

Sample Name:	17448.01 MSD 13077MS2	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 11:05	Operator:	Jeff Phifer

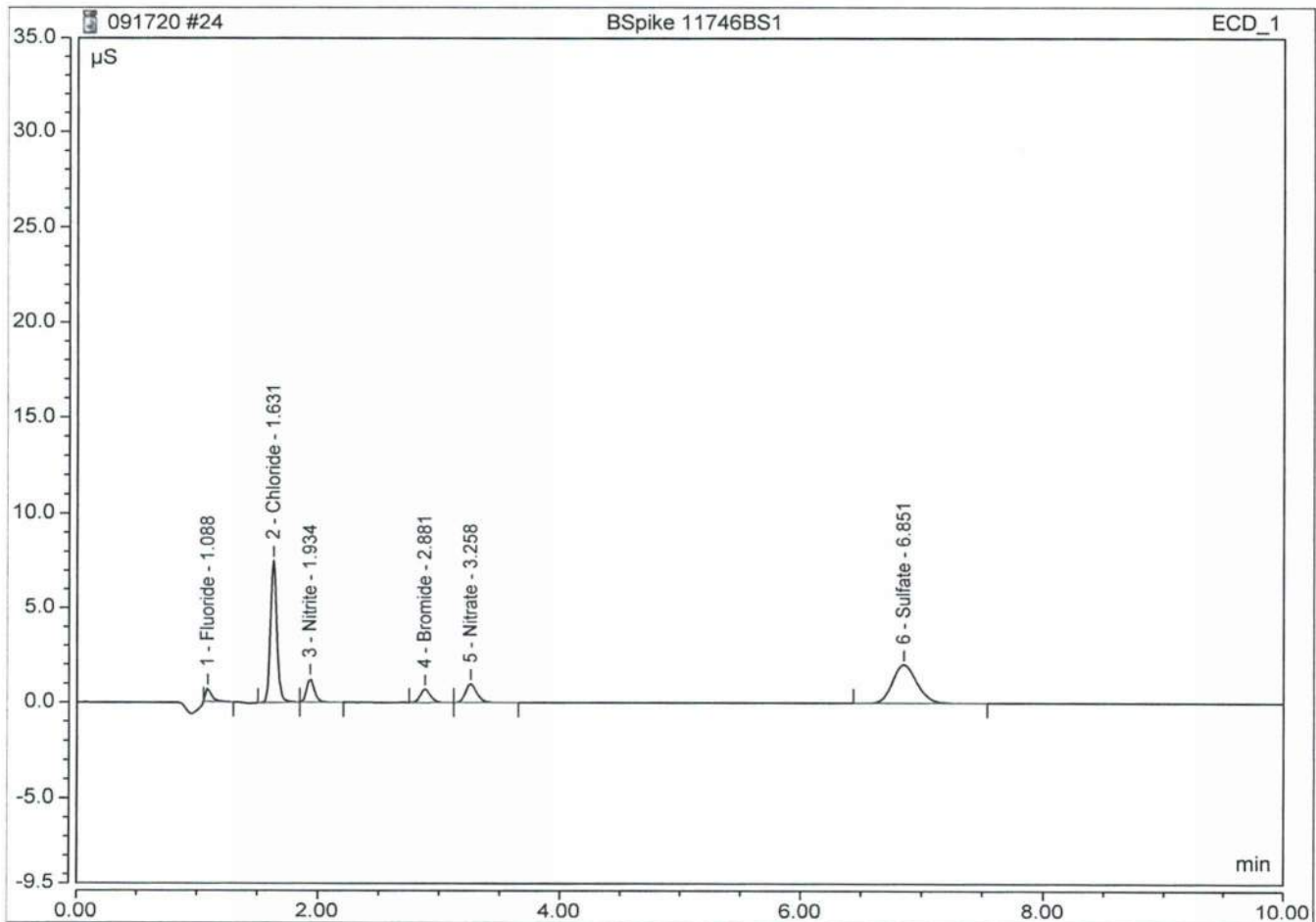
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.64	Chloride	BMB	1.125	18.885	5 11.5414 - 5.9 = 112?
2	1.94	Nitrite	BMB	0.184	2.528	1 0.9745 - No = 976
3	3.25	Nitrate	BMB	0.217	1.963	1 1.0170 - No = 1020
4	6.82	Sulfate	BMB	1.175	5.049	10 18.4800 - 7.7 = 108?
TOTAL:				2.70	28.42	32.01



Peak Integration Report

Sample Name:	BSpike 11746BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 11:18	Operator:	Jeff Phifer

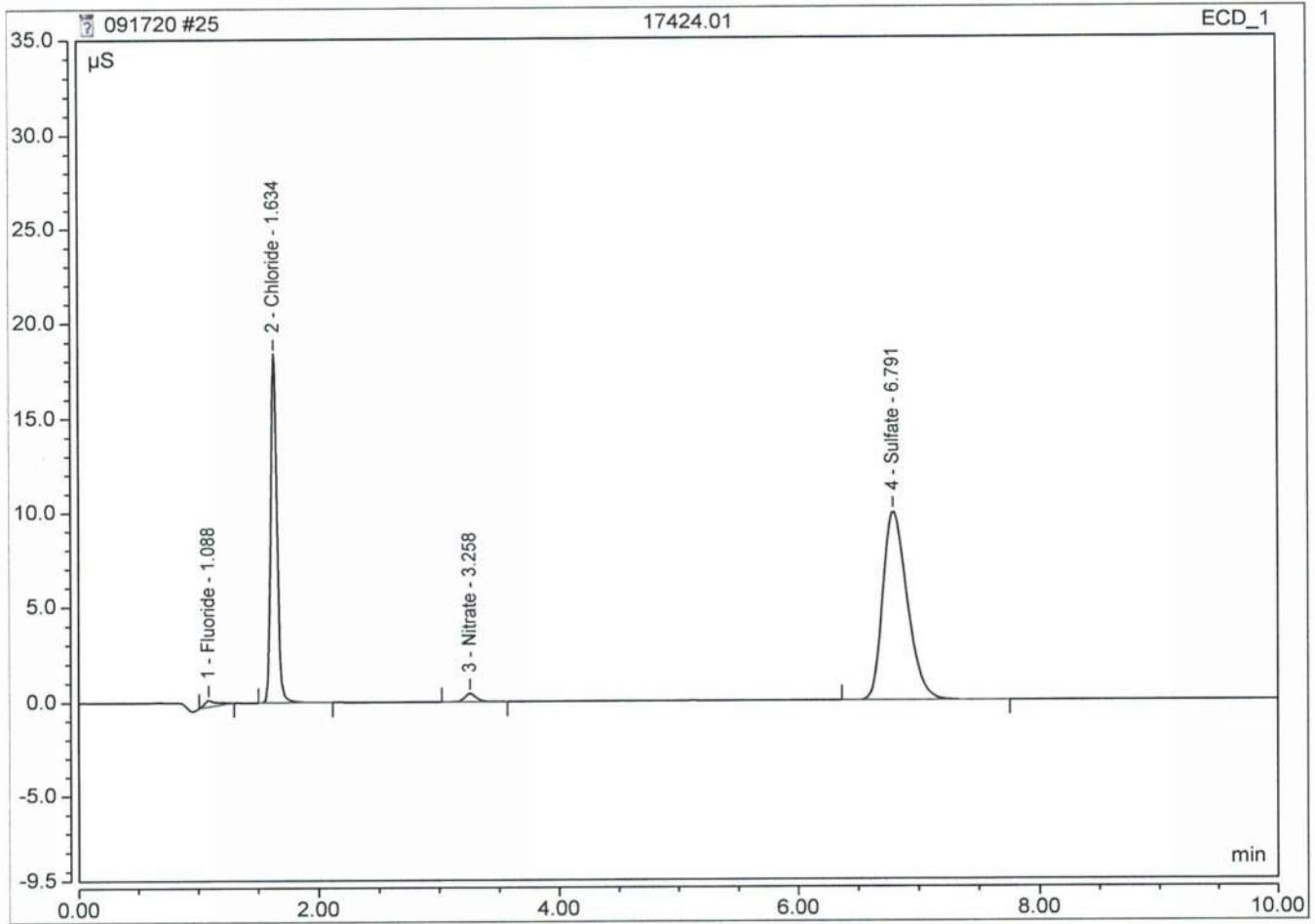
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.043	0.702	0.1183
2	1.63	Chloride	BMB	0.463	7.536	5 4.8879 98%
3	1.93	Nitrite	BMB	0.092	1.249	0.5 0.4933 98%
4	2.88	Bromide	BMB	0.067	0.700	1.8505
5	3.26	Nitrate	BMB	0.109	0.993	0.5 0.5122 102%
6	6.85	Sulfate	BMB	0.475	2.035	7.5 7.5095 100%
TOTAL:				1.25	13.22	15.37



Peak Integration Report

Sample Name:	17424.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 11:31	Operator:	Jeff Phifer

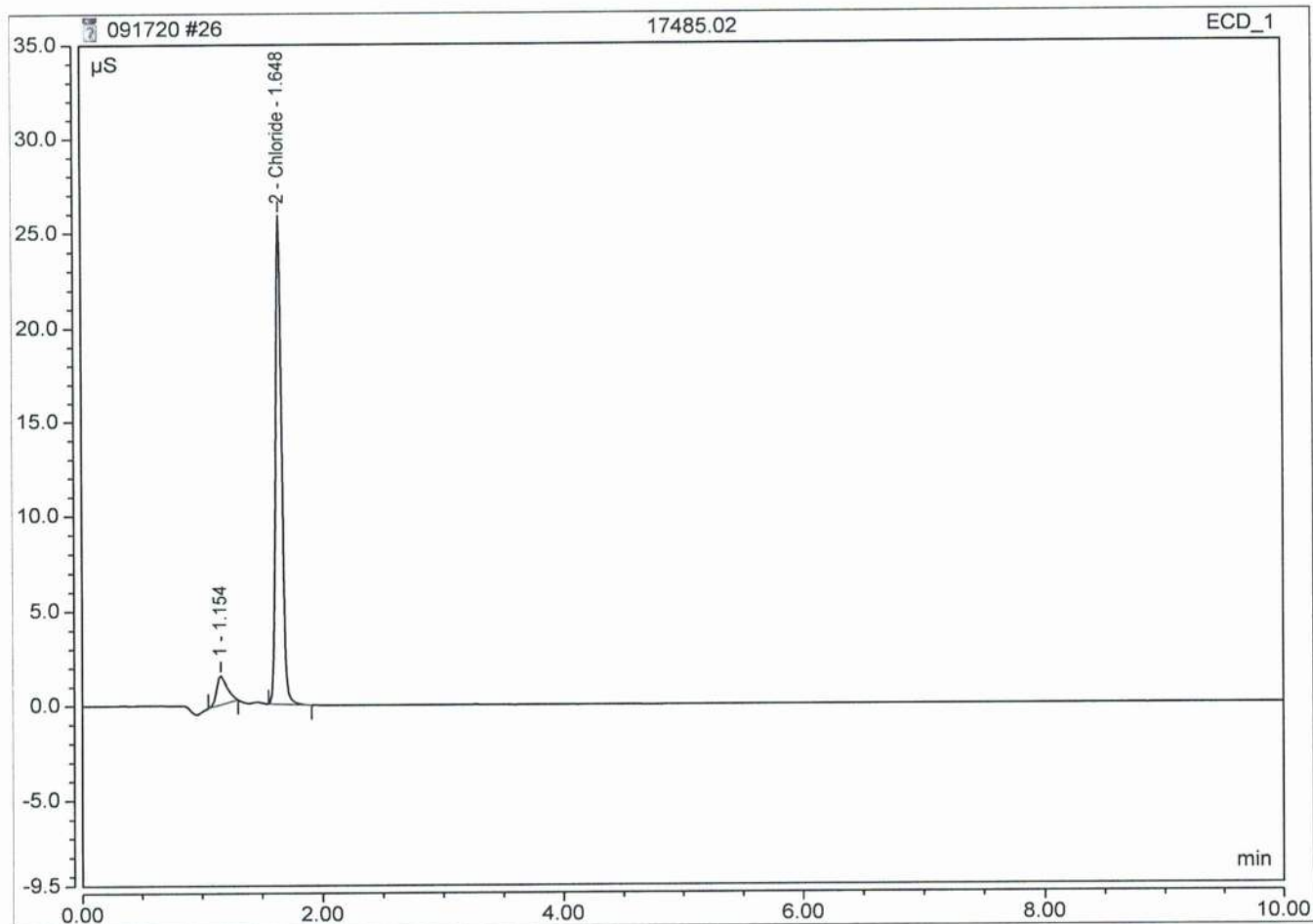
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.042	0.355	0.5538
2	1.63	Chloride	BMB	1.110	18.384	56.9708
3	3.26	Nitrate	BMB	0.048	0.437	1.1480
4	6.79	Sulfate	BMB	2.327	9.956	182.7333
TOTAL:				3.53	29.13	241.41



Peak Integration Report

Sample Name:	17485.02	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 11:43	Operator:	Jeff Phifer

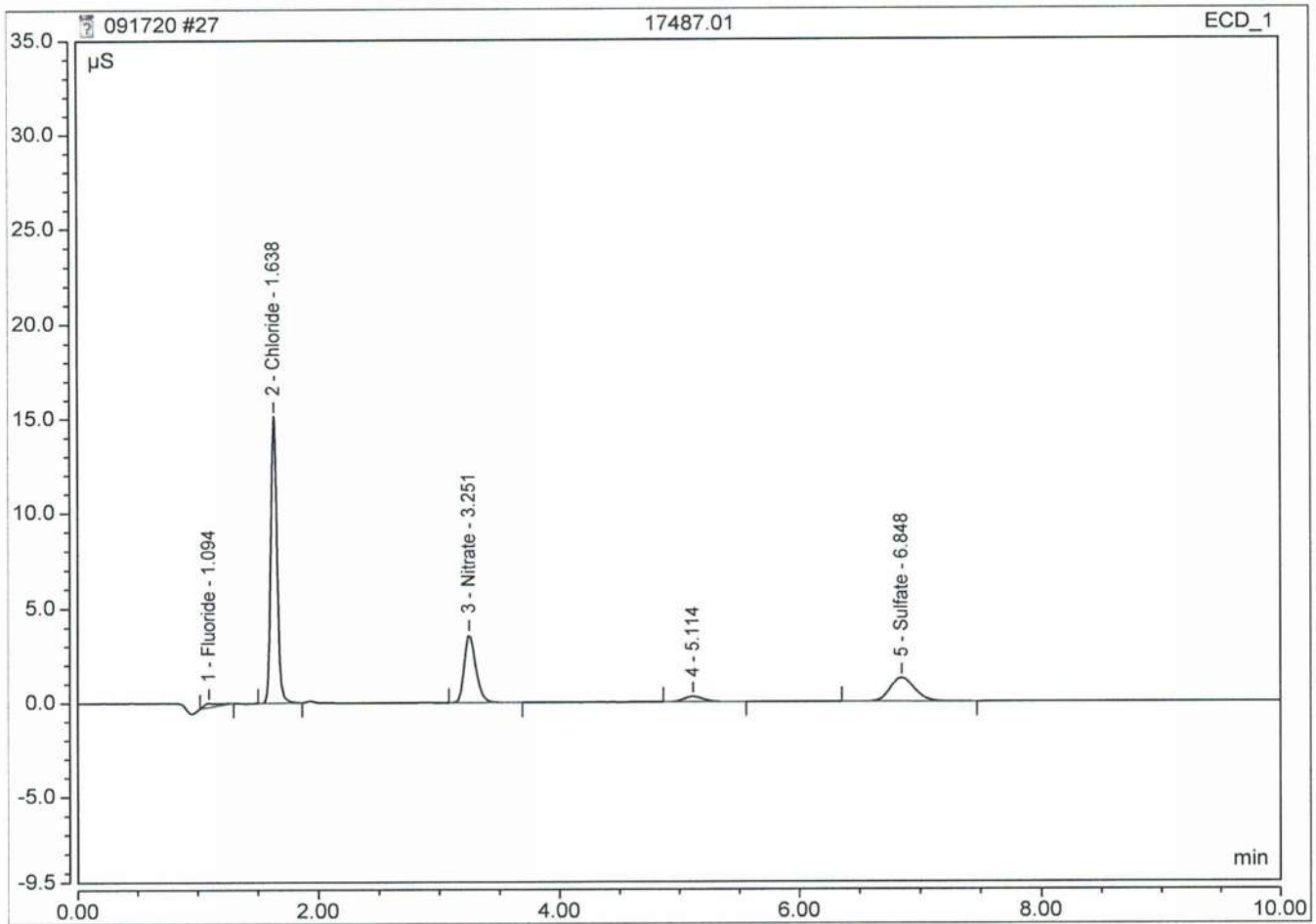
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
2	1.65	Chloride	BMB	1.512	25.840	77.1711
TOTAL:				1.51	25.84	77.17



Peak Integration Report

Sample Name:	17487.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 11:56	Operator:	Jeff Phifer

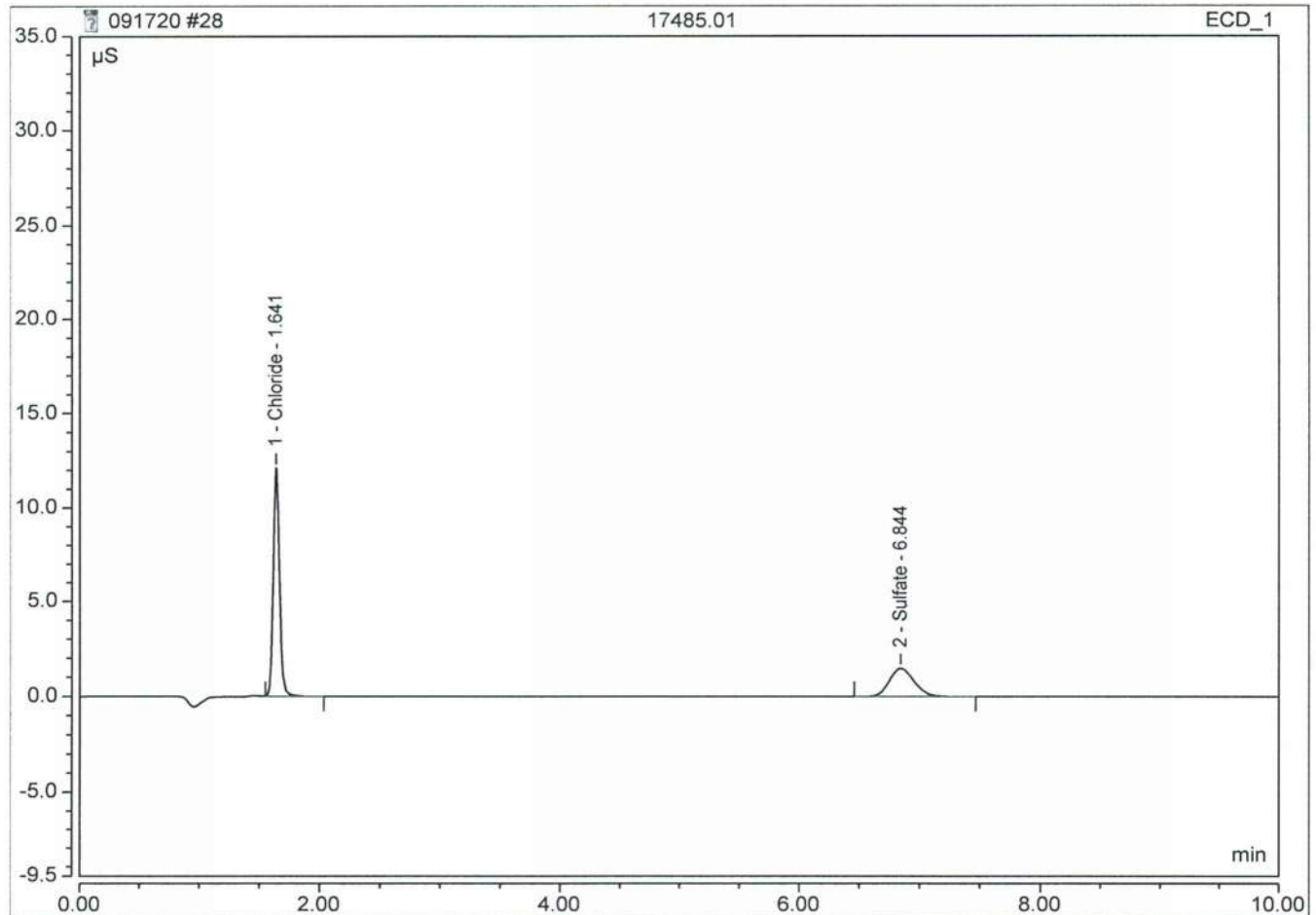
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.031	0.225	0.1265
2	1.64	Chloride	BMB	0.909	15.132	93.6630
3	3.25	Nitrate	BMB	0.401	3.623	18.7866
5	6.85	Sulfate	BMB	0.294	1.256	46.6216
TOTAL:				1.63	20.23	159.20



Peak Integration Report

Sample Name:	17485.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 12:09	Operator:	Jeff Phifer

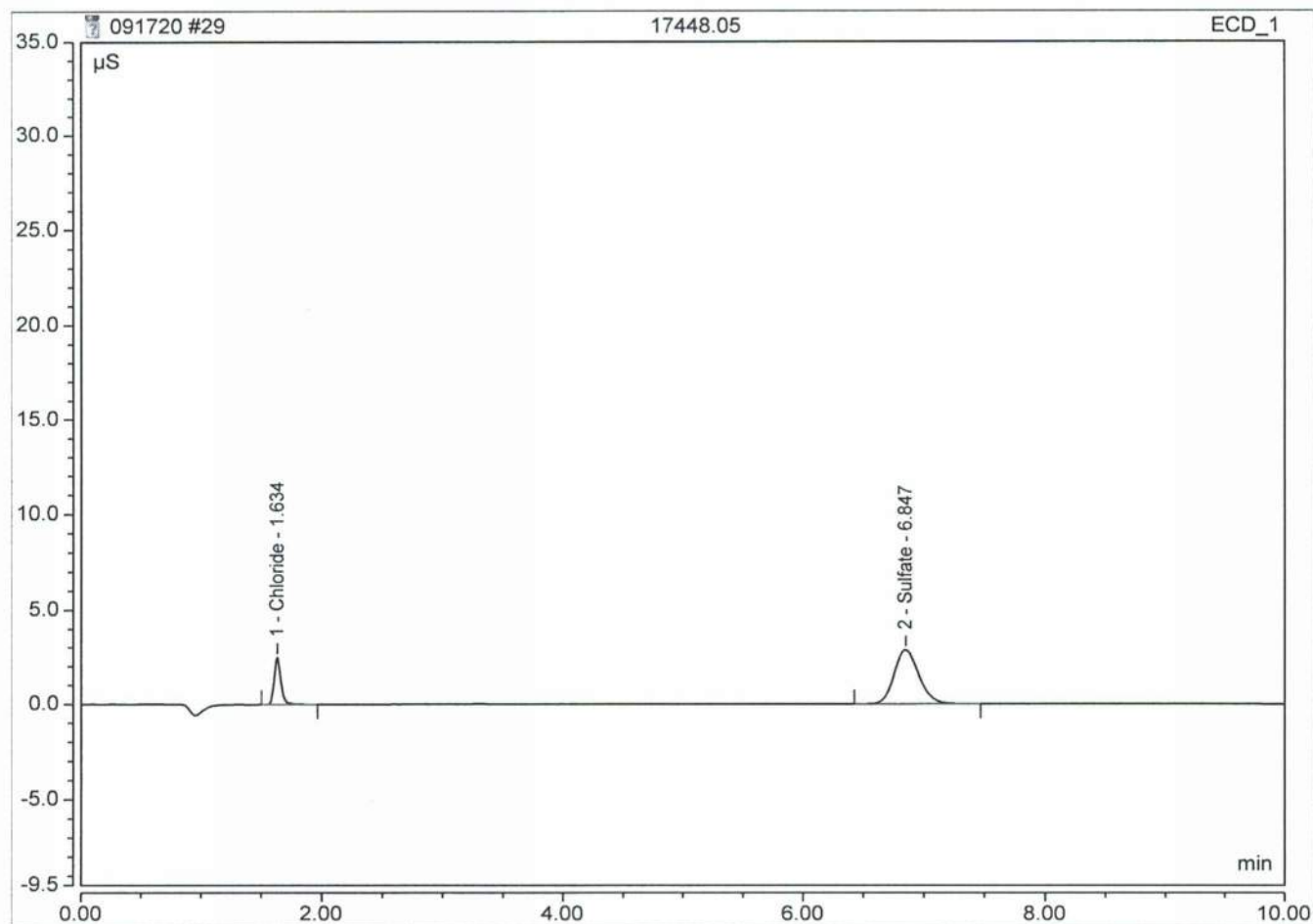
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.64	Chloride	BMB	0.724	12.117	37.5562
2	6.84	Sulfate	BMB	0.344	1.464	27.1977
TOTAL:				1.07	13.58	64.75



Peak Integration Report

Sample Name:	17448.05	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	25.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 12:22	Operator:	Jeff Phifer

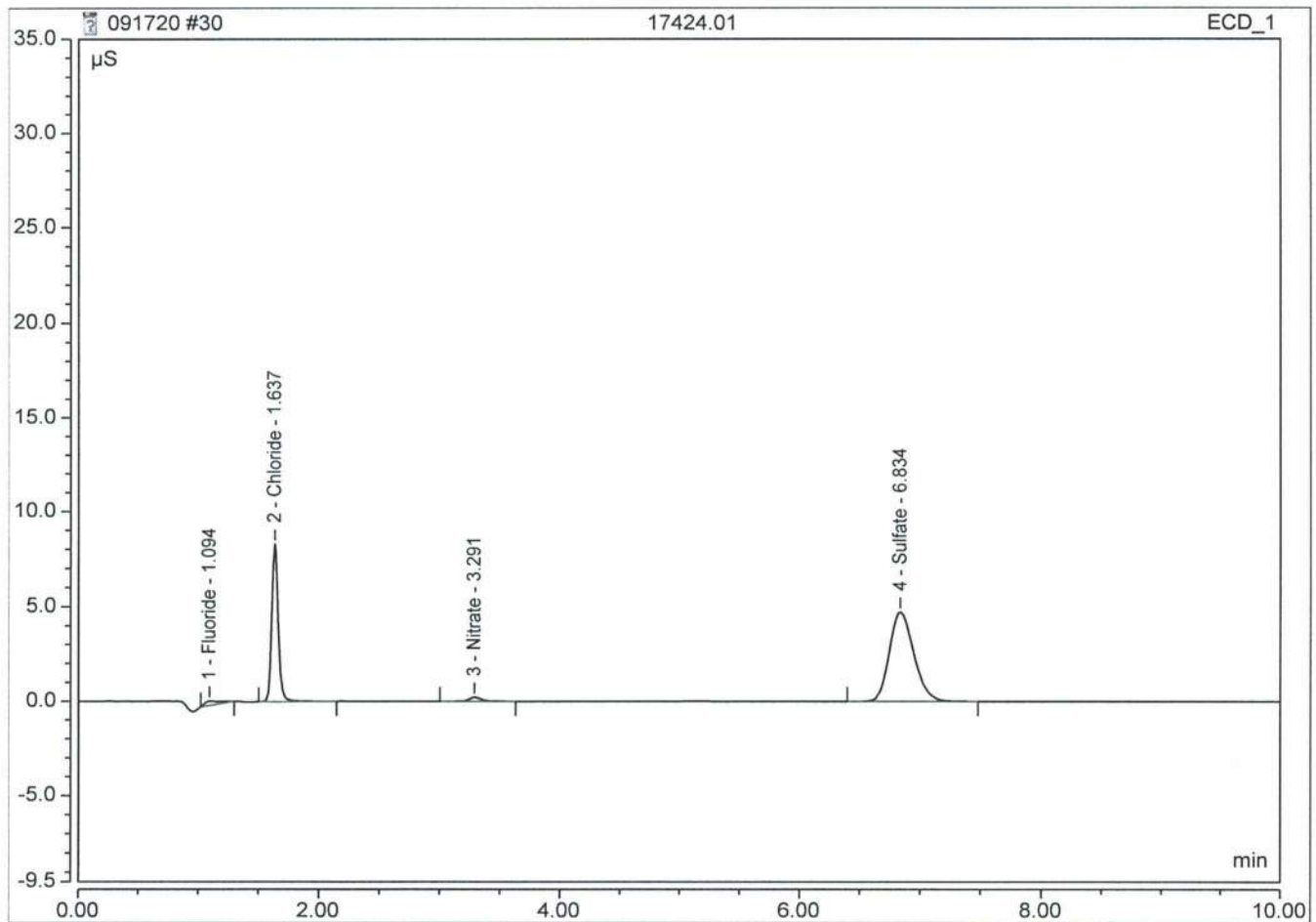
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.63	Chloride	BMB	0.156	2.483	45.2093
2	6.85	Sulfate	BMB	0.671	2.861	264.5670
TOTAL:				0.83	5.34	309.78



Peak Integration Report

Sample Name:	17424.01	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	10.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 12:35	Operator:	Jeff Phifer

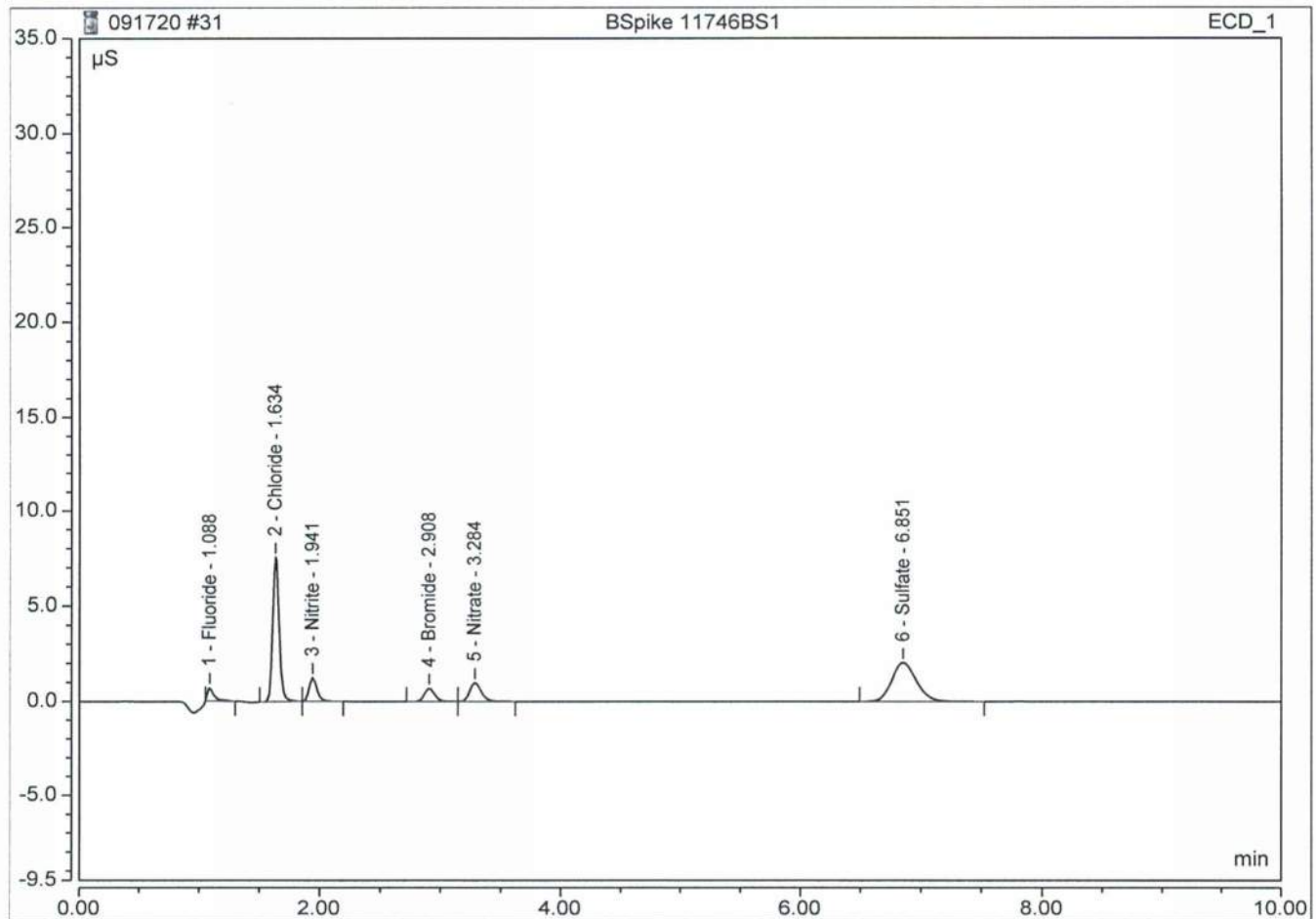
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.032	0.237	0.2421
2	1.64	Chloride	BMB	0.515	8.306	54.0899
3	3.29	Nitrate	BMB	0.024	0.216	1.1874
4	6.83	Sulfate	BMB	1.107	4.749	174.1894
TOTAL:				1.68	13.51	229.71



Peak Integration Report

Sample Name:	BSpoke 11746BS1	Inj. Vol.:	2500.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 12:48	Operator:	Jeff Phifer

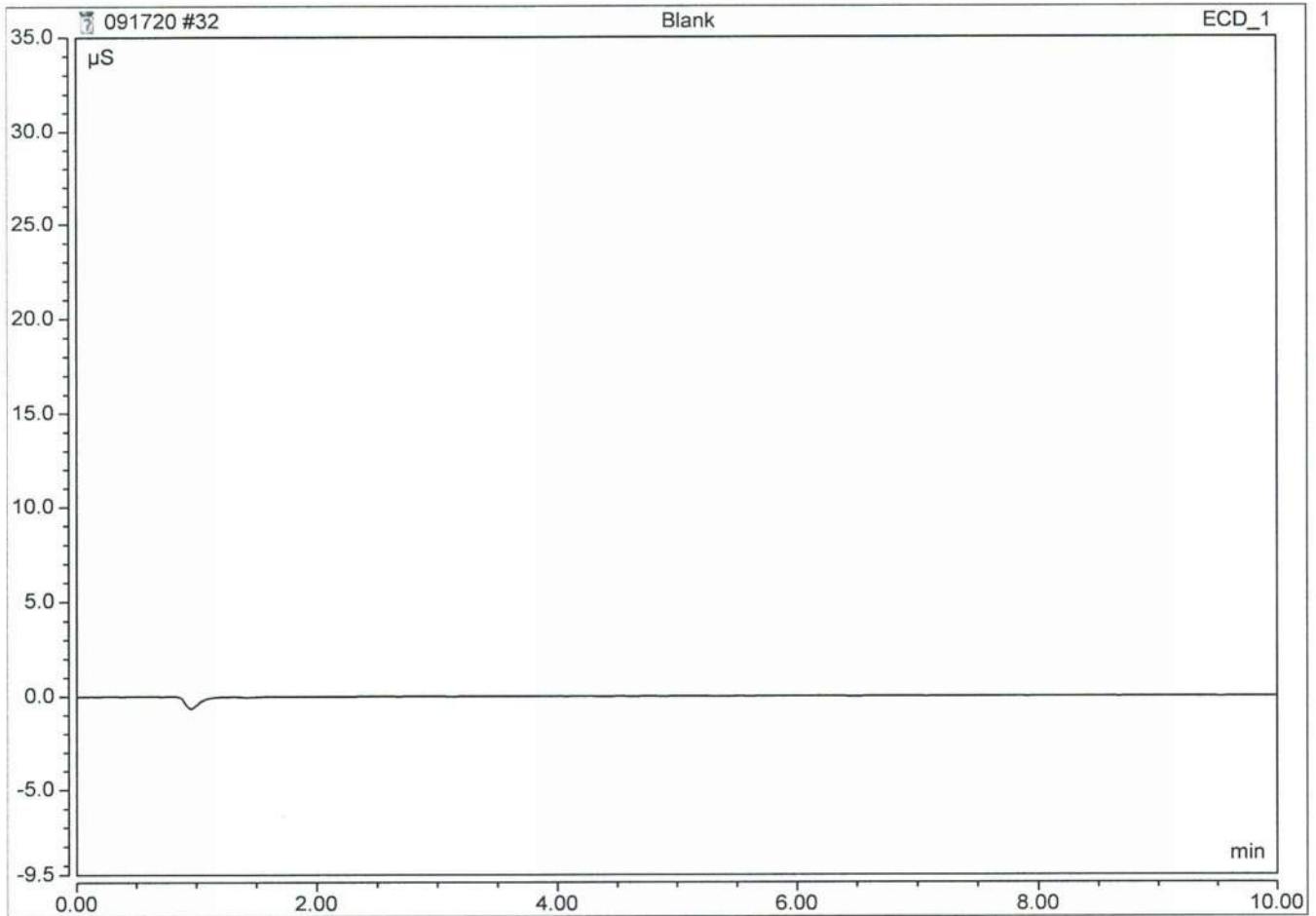
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.09	Fluoride	BMB	0.045	0.705	0.1363
2	1.63	Chloride	BMB	0.466	7.554	5 4.9215 98%
3	1.94	Nitrite	BMB	0.093	1.249	0.5 0.4960 100%
4	2.91	Bromide	BMB	0.068	0.700	1.8782
5	3.28	Nitrate	BMB	0.110	0.992	0.5 0.5173 104%
6	6.85	Sulfate	BMB	0.479	2.044	7.5 7.5625 101%
TOTAL:				1.26	13.24	15.51



Peak Integration Report

Sample Name:	Blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	17-Sep-2020 / 13:01	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



new Cal

ICS-1100 B Dionex IC/Meth 3000

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	? water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 10:40:04 AM -C
	1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:52:24 AM -C
	1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 11:05:16 AM -C
	1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 11:18:08 AM -C
	1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 11:31:00 AM -C
	1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 11:43:51 AM -C

CALID# ICSB070720CAL



Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

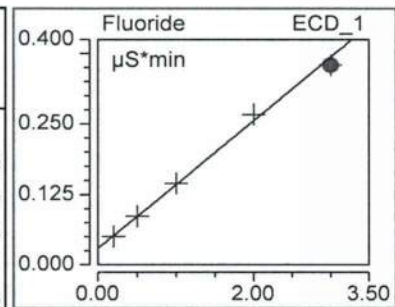
Norm Method	16/06/15 12:18	Jeff Phifer	METHOD 300.0	
Stage	Time min	Command	Value	Comment
Instrument Setup	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject	0.000	Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run	0.000	Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run	0.000		Duration = 10.000 [min]	
	0.500			
		Sampler.BeginOverlap		
Stop Run	10.000	Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

Calibration Batch Report
CAL ID# ICSB070720CAL

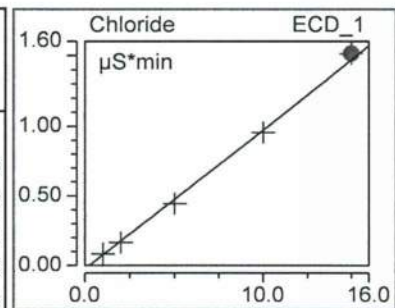
Sequence:	070720	Injection Vol.	2,500.00
Instrument Method:	Norm Method	Operator:	Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 11:43	Column:	AS4A-SC 040144

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.029	0.113	0.000	0.9985
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.023	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.191	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	0.000	0.036	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.003	0.064	0.000	0.9997
AVERAGE:				-0.0002	0.1196	0.0000	0.9994

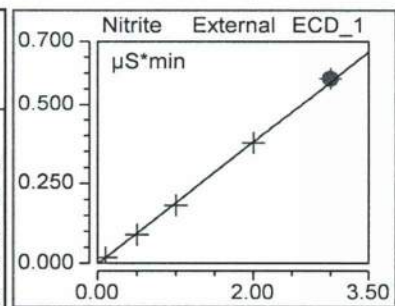
Injection Name	Ret.Time min ECD_1	Area μS*min ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	1.084	0.0508	0.484	0.189
1131Cal2	1.084	0.0870	0.999	0.510
1131Cal3	1.081	0.1450	1.848	1.024
1131Cal4	1.081	0.2666	3.636	2.101
1131Cal5	1.081	0.3541	5.285	2.876
Average	1.082			
Rel. Std. Dev.	0.164 %			



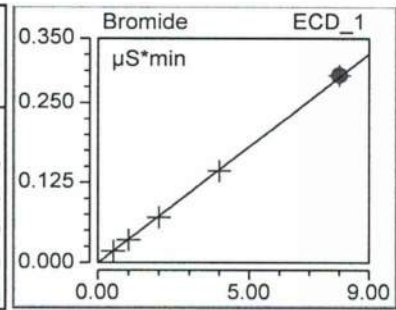
Injection Name	Ret.Time min ECD_1	Area μS*min ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	1.627	0.0849	1.387	1.089
1131Cal2	1.627	0.1668	2.765	1.912
1131Cal3	1.628	0.4444	7.521	4.701
1131Cal4	1.631	0.9564	16.335	9.846
1131Cal5	1.634	1.5142	25.720	15.452
Average	1.629			
Rel. Std. Dev.	0.180 %			



Injection Name	Ret.Time min ECD_1	Area μS*min ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	1.934	0.0181	0.252	0.106
1131Cal2	1.934	0.0900	1.251	0.483
1131Cal3	1.931	0.1818	2.556	0.963
1131Cal4	1.931	0.3773	5.333	1.987
1131Cal5	1.931	0.5827	8.298	3.062
Average	1.932			
Rel. Std. Dev.	0.092 %			

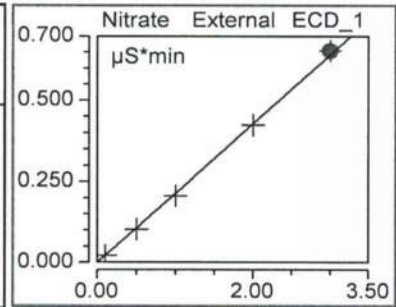


Injection Name	Ret.Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Bromide 2.887	Bromide 0.0182	Bromide 0.193	Bromide 0.515
1131Cal2	2.884	0.0355	0.378	0.993
1131Cal3	2.878	0.0705	0.760	1.960
1131Cal4	2.871	0.1427	1.549	3.949
1131Cal5	2.864	0.2925	3.206	8.083
Average	2.877			
Rel. Std. Dev.	0.332 %			

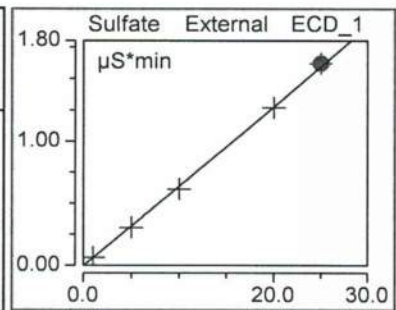


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Injection Name	Ret.Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Nitrate 3.271	Nitrate 0.0215	Nitrate 0.202	Nitrate 0.105
1131Cal2	3.257	0.1026	0.952	0.485
1131Cal3	3.248	0.2057	1.911	0.967
1131Cal4	3.234	0.4230	3.909	1.982
1131Cal5	3.217	0.6540	6.009	3.062
Average	3.245			
Rel. Std. Dev.	0.636 %			



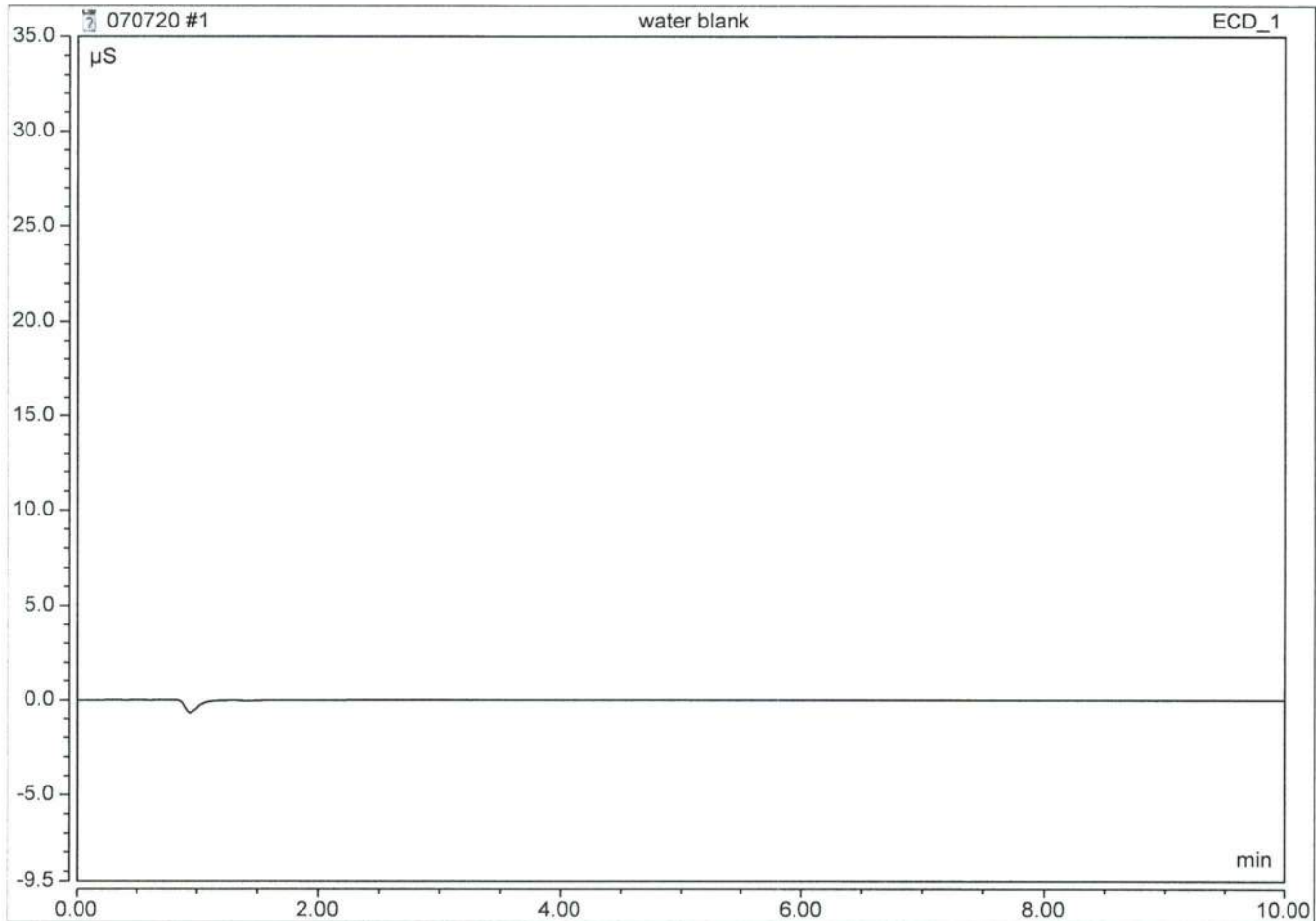
Injection Name	Ret.Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height μS ECD_1	Amount ECD_1
1131Cal1	Sulfate 6.867	Sulfate 0.0635	Sulfate 0.271	Sulfate 1.047
1131Cal2	6.867	0.3050	1.300	4.836
1131Cal3	6.854	0.6147	2.631	9.693
1131Cal4	6.837	1.2706	5.439	19.981
1131Cal5	6.824	1.6188	6.926	25.443
Average	6.850			
Rel. Std. Dev.	0.279 %			



Peak Integration Report

Sample Name:	water blank	Inj. Vol.:	2500.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 10:40	Operator:	Jeff Phifer

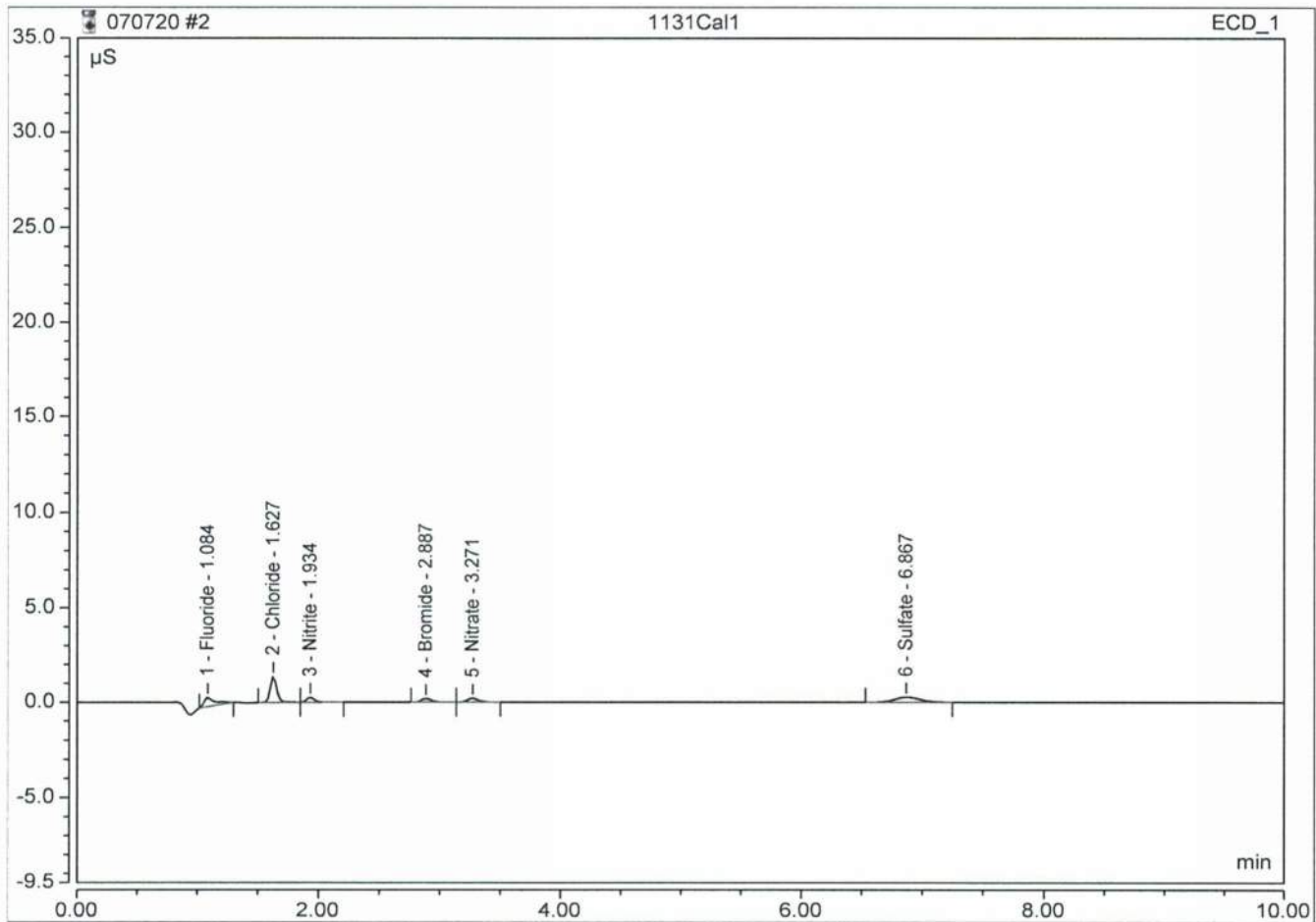
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	1131Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 10:52	Operator:	Jeff Phifer

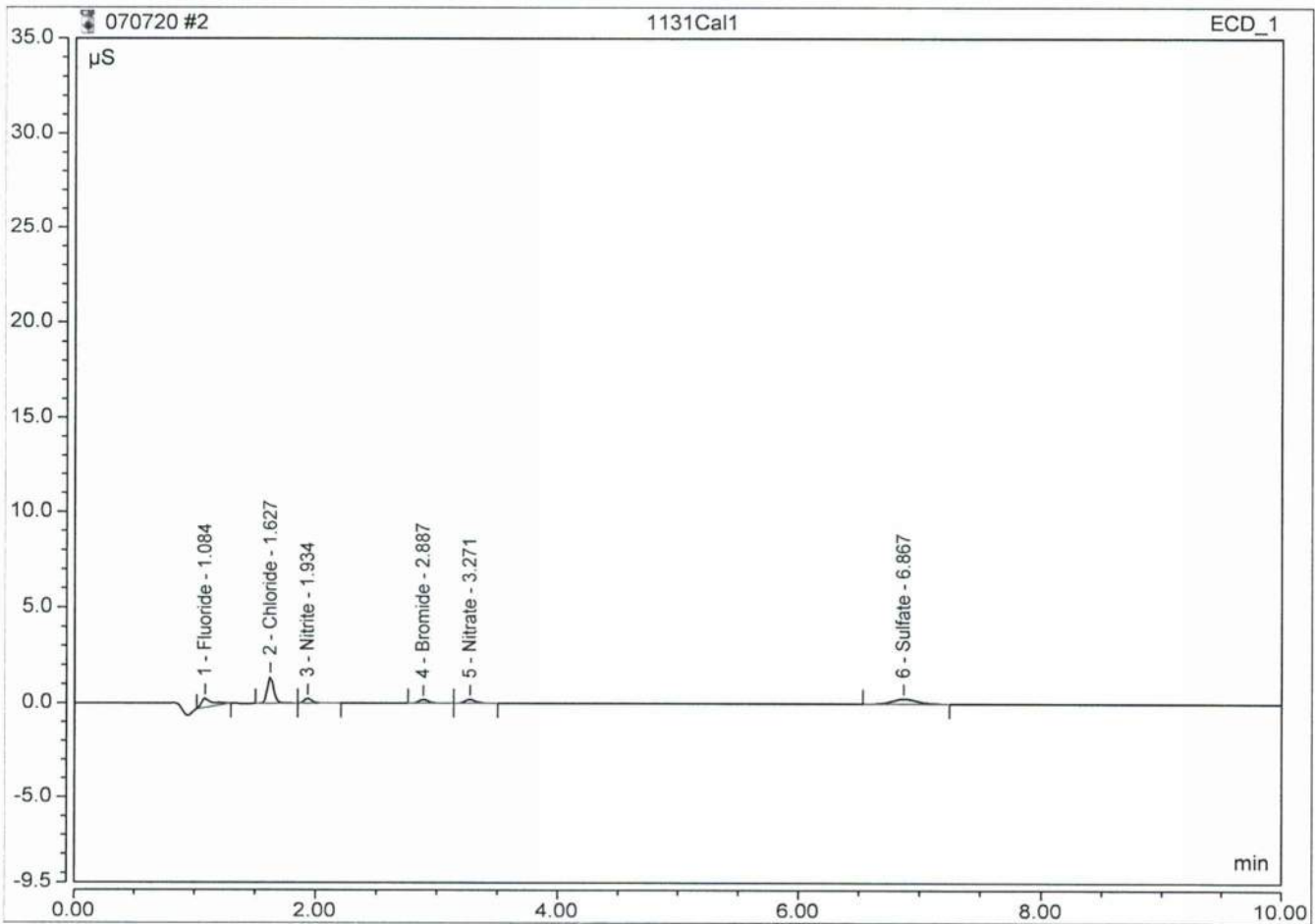
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}^*\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.051	0.484	0.2 0.1893
2	1.63	Chloride	BMB	0.085	1.387	1 1.0891
3	1.93	Nitrite	BMB	0.018	0.252	0.1 0.1058
4	2.89	Bromide	BMB	0.018	0.193	0.5 0.5148
5	3.27	Nitrate	BMB	0.021	0.202	0.1 0.1053
6	6.87	Sulfate	BMB	0.063	0.271	1 1.0467
TOTAL:				0.26	2.79	3.05



Peak Integration Report

Sample Name:	1131Cal1	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 10:52	Operator:	Jeff Phifer

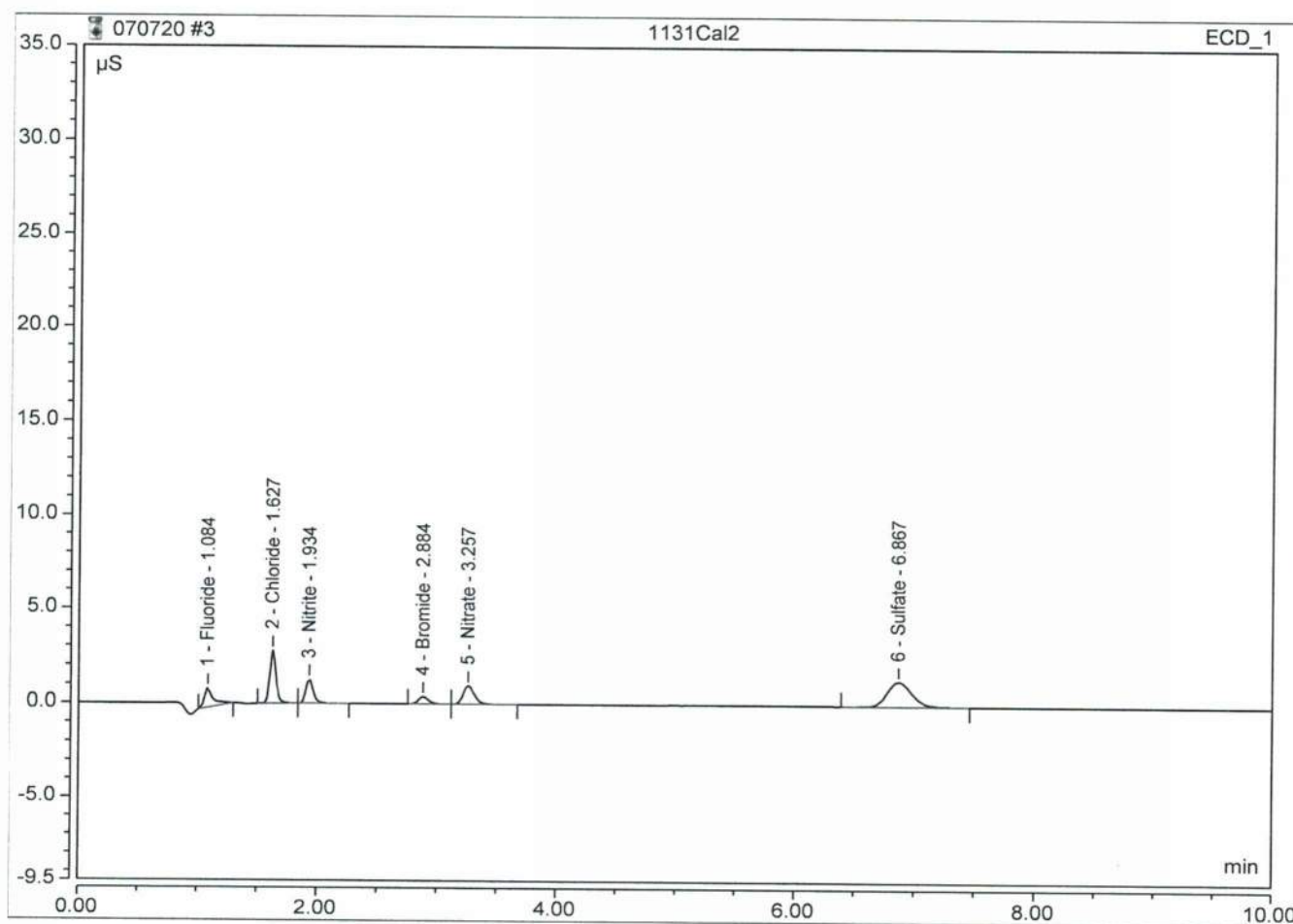
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}^*\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.051	0.484	n.a.
2	1.63	Chloride	BMB	0.085	1.387	n.a.
3	1.93	Nitrite	BMB	0.018	0.252	n.a.
4	2.89	Bromide	BMB	0.018	0.193	n.a.
5	3.27	Nitrate	BMB	0.021	0.202	n.a.
6	6.87	Sulfate	BMB	0.063	0.271	n.a.
TOTAL:				0.26	2.79	0.00



Peak Integration Report

Sample Name:	1131Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:05	Operator:	Jeff Phifer

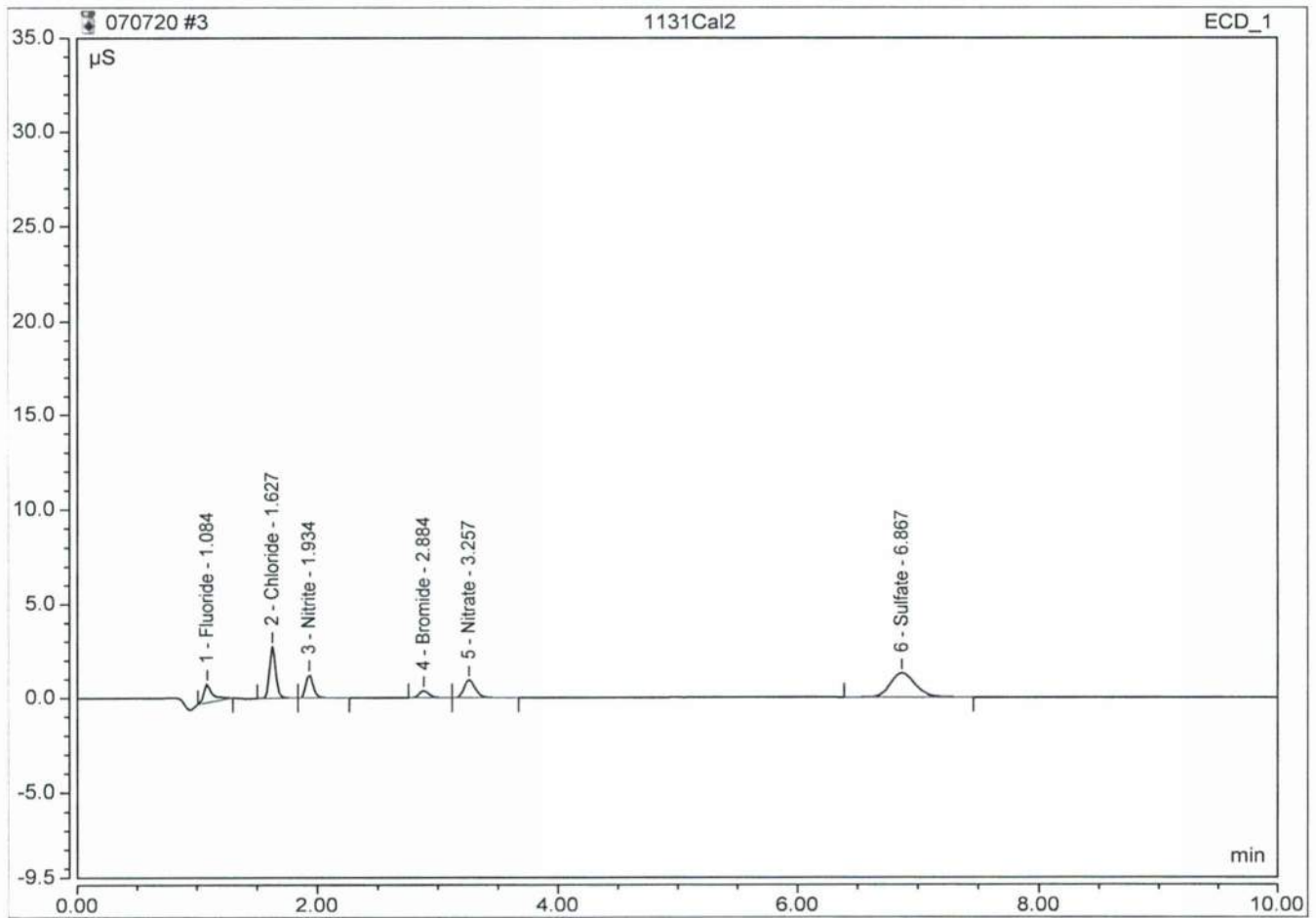
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.087	0.999	0.5103
2	1.63	Chloride	BMB	0.167	2.765	1.9118
3	1.93	Nitrite	BMB	0.090	1.251	0.4826
4	2.88	Bromide	BMB	0.035	0.378	0.9928
5	3.26	Nitrate	BMB	0.103	0.952	0.4846
6	6.87	Sulfate	BMB	0.305	1.300	4.8360
TOTAL:				0.79	7.65	9.22



Peak Integration Report

Sample Name:	1131Cal2	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:05	Operator:	Jeff Phifer

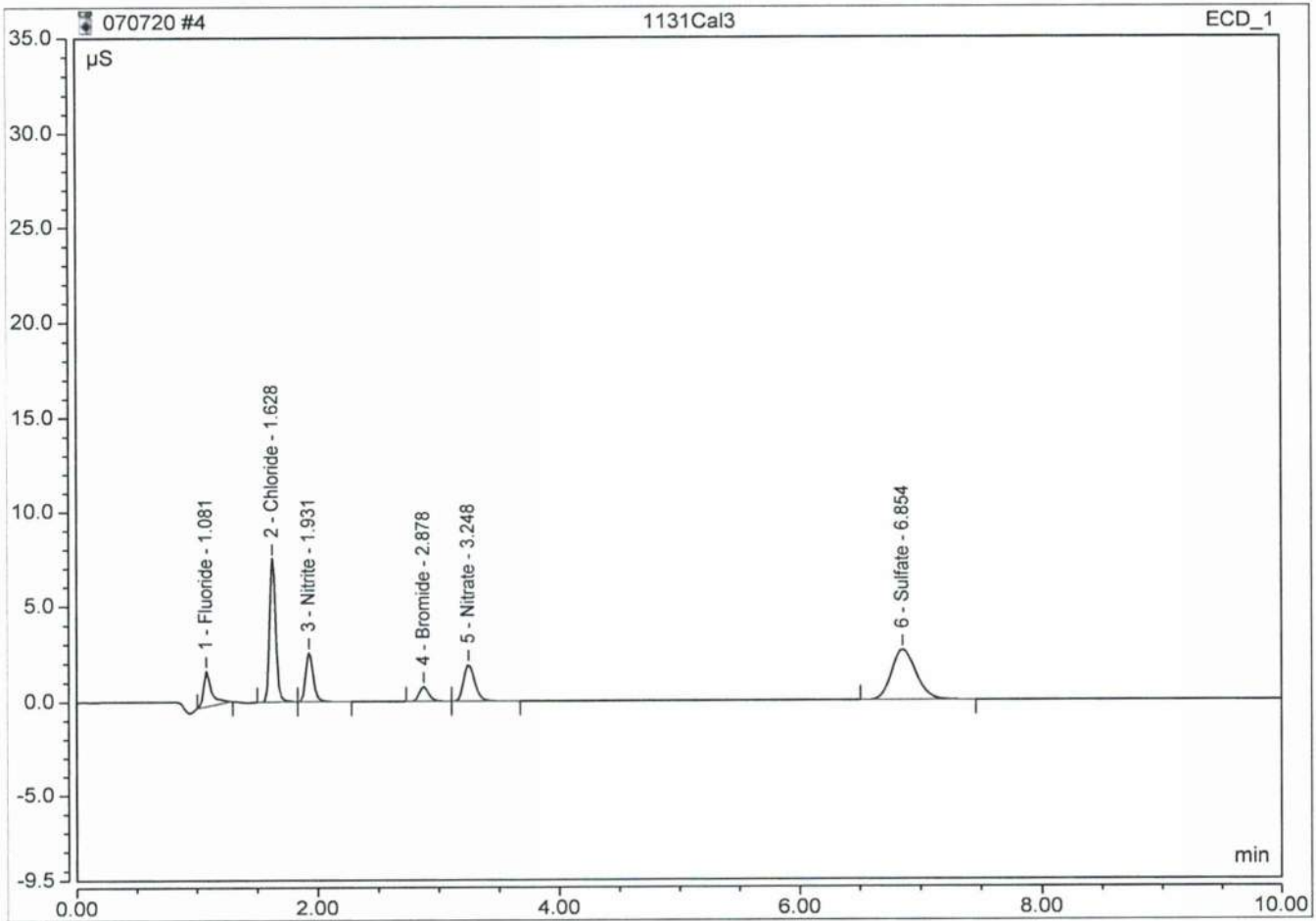
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.087	0.999	0.5000
2	1.63	Chloride	BMB	0.167	2.765	2.0000
3	1.93	Nitrite	BMB	0.090	1.251	0.5000
4	2.88	Bromide	BMB	0.035	0.378	1.0000
5	3.26	Nitrate	BMB	0.103	0.952	0.5000
6	6.87	Sulfate	BMB	0.305	1.300	5.0000
TOTAL:				0.79	7.65	9.50



Peak Integration Report

Sample Name:	1131Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:18	Operator:	Jeff Phifer

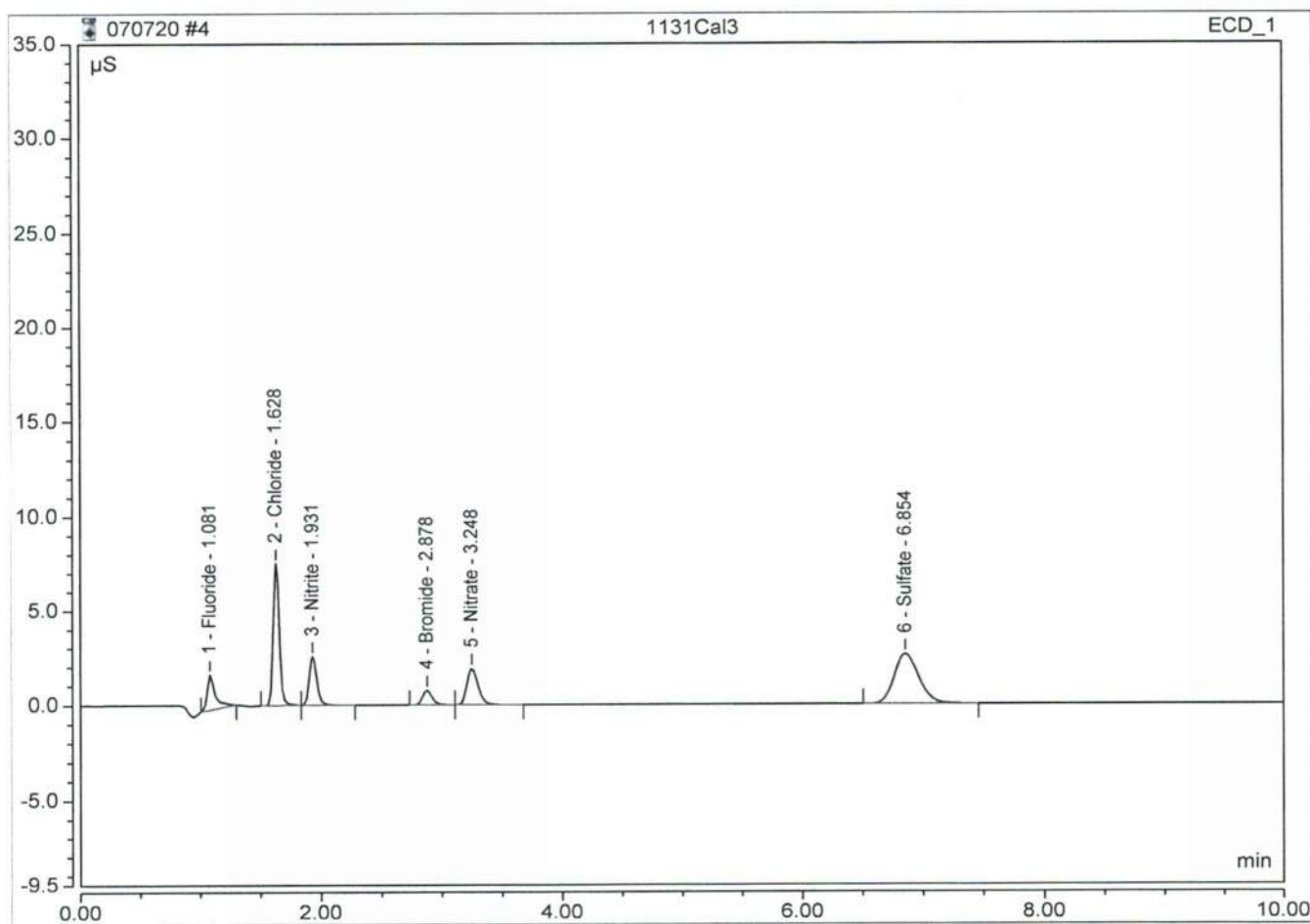
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.145	1.848	1.0239
2	1.63	Chloride	BMB	0.444	7.521	4.7010
3	1.93	Nitrite	BMB	0.182	2.556	0.9630
4	2.88	Bromide	BMB	0.071	0.760	1.9599
5	3.25	Nitrate	BMB	0.206	1.911	0.9666
6	6.85	Sulfate	BMB	0.615	2.631	9.6928
TOTAL:				1.66	17.23	19.31



Peak Integration Report

Sample Name:	1131Cal3	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:18	Operator:	Jeff Phifer

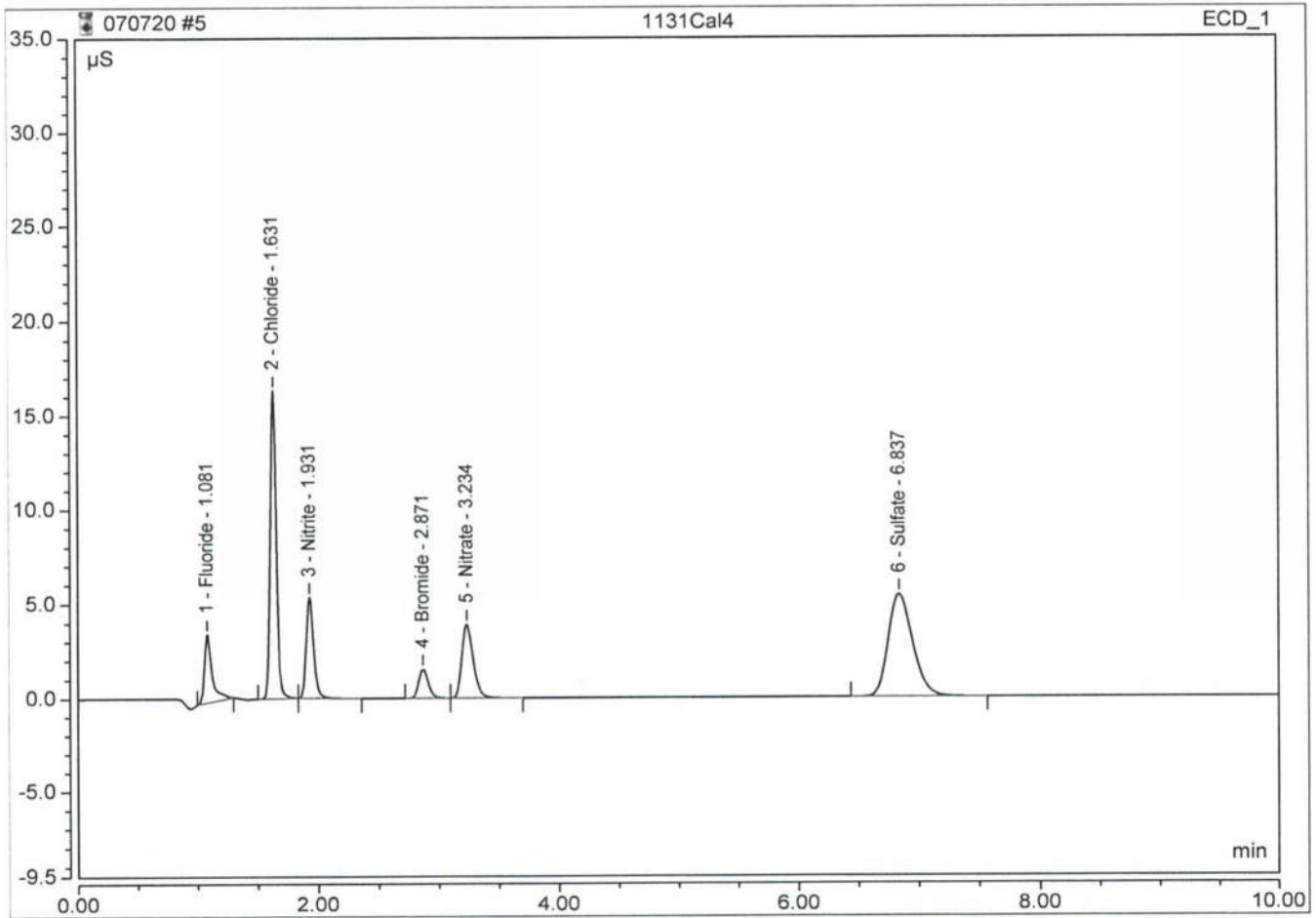
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.145	1.848	0.9960
2	1.63	Chloride	BMB	0.444	7.521	5.0388
3	1.93	Nitrite	BMB	0.182	2.556	1.0027
4	2.88	Bromide	BMB	0.071	0.760	2.0018
5	3.25	Nitrate	BMB	0.206	1.911	1.0022
6	6.85	Sulfate	BMB	0.615	2.631	10.0340
TOTAL:				1.66	17.23	20.08



Peak Integration Report

Sample Name:	1131Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:31	Operator:	Jeff Phifer

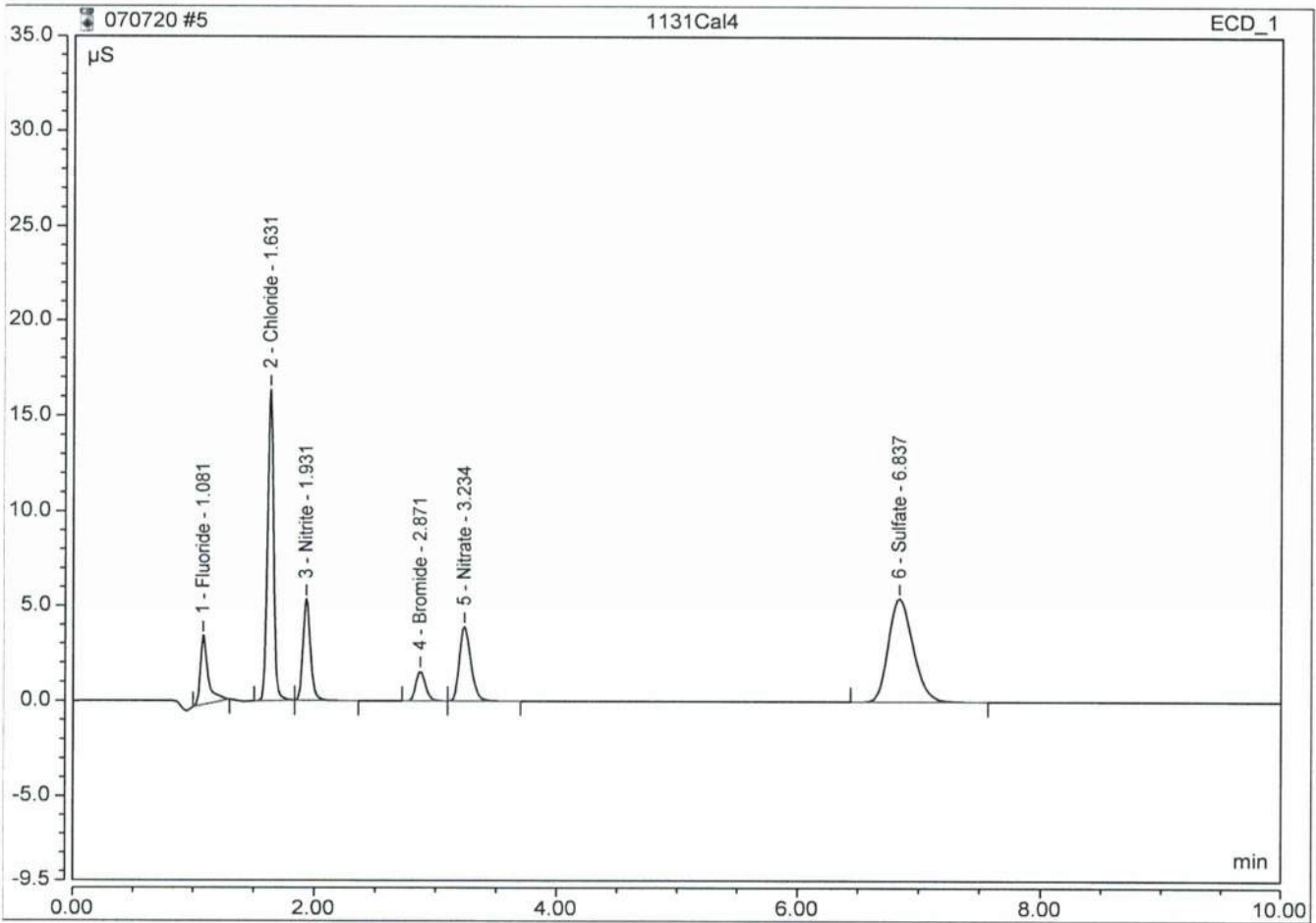
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.267	3.636	2.1005
2	1.63	Chloride	BMB	0.956	16.335	9.8464
3	1.93	Nitrite	BMB	0.377	5.333	1.9867
4	2.87	Bromide	BMB	0.143	1.549	3.9493
5	3.23	Nitrate	BMB	0.423	3.909	1.9820
6	6.84	Sulfate	BMB	1.271	5.439	19.9814
TOTAL:				3.44	36.20	39.85



Peak Integration Report

Sample Name:	1131Cal4	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:31	Operator:	Jeff Phifer

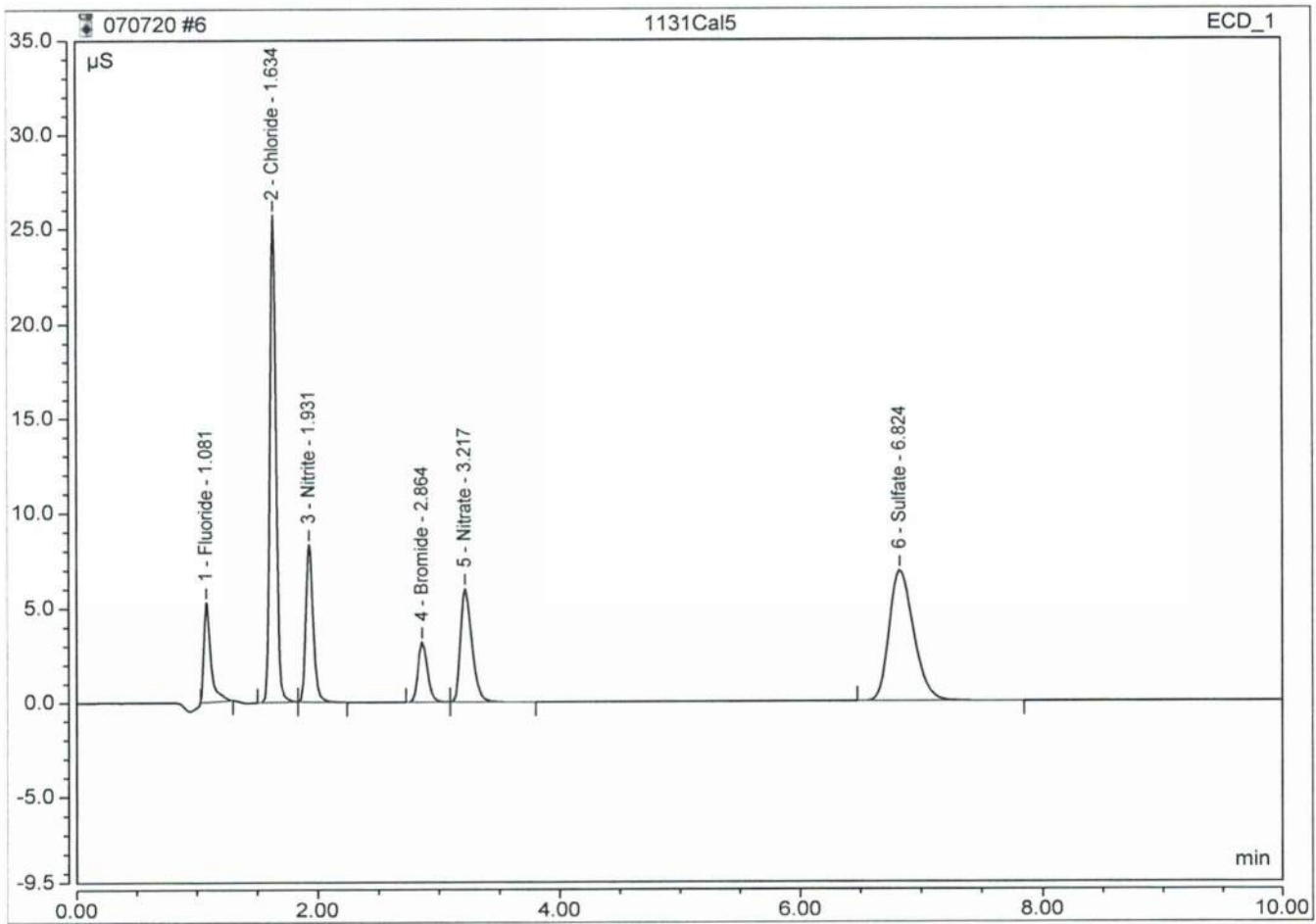
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.267	3.636	2.0072
2	1.63	Chloride	BMB	0.956	16.335	10.2000
3	1.93	Nitrite	BMB	0.377	5.333	2.0283
4	2.87	Bromide	BMB	0.143	1.549	4.0180
5	3.23	Nitrate	BMB	0.423	3.909	2.0231
6	6.84	Sulfate	BMB	1.271	5.439	20.2745
TOTAL:				3.44	36.20	40.55



Peak Integration Report

Sample Name:	1131Cal5	Inj. Vol.:	2500.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Norm Method	Column:	AS4A-SC 040144
Inj. Date / Time:	07-Jul-2020 / 11:43	Operator:	Jeff Phifer

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height μS	Amount
1	1.08	Fluoride	BMB	0.354	5.285	3 2.8759
2	1.63	Chloride	BMB	1.514	25.720	15 15.4517
3	1.93	Nitrite	BMB	0.583	8.298	3 3.0619
4	2.86	Bromide	BMB	0.293	3.206	8 8.0833
5	3.22	Nitrate	BMB	0.654	6.009	3 3.0615
6	6.82	Sulfate	BMB	1.619	6.926	25 25.4431
TOTAL:				5.02	55.44	57.98



Total Suspended Solids

TSS: VLIMS Code: 4630; EPA Method: 2540D

Date Started: 17 SEP 20
 Time Started: 1830
 Analyst: AK
 Batch ID: TSS200914
 Temperature: 104°C
 Time in Oven: 15:30

Date Finished: 18 SEP 20
 Time Finished: 1000
 Reviewed by: BB
 Review Date: 10/1/2020
 Balance ID: I3
 Oven ID/Thermometer ID: OVS/Quincy

Merit #	Tin #	MLs sample	g. Filter	g. dry solids + filter 103°C	g. reweigh 15 min. 103°C	TSS mg/L	DF	TVSS Y/N	TVSS Tin #
Blank	IM8WK	1000	0.1162	0.1161		0.10 ND	1.00	N	
LCS Lot									
8209-09	WL	100	0.1181	0.1257		76	10.0		
17436.01	WM	400	0.1155	0.1350		49* 48.75	2.50		
Dup									
17436.01	WN	400	0.1155	0.1347		48.00	2.50		
17438.01	WP	1000	0.1162	0.1202		4.00	1.00		
17448.01	WQ	300	0.1182	0.1347		55.00	3.33		
.02	WR	1000	0.1158	0.1176		1.80 ND	1.00		
.03	WS	1000	0.1163	0.1176		1.30 ND	1.00		
.04	WT	500	0.1192	0.1498		61.20 61	2.00		
17477.01	WU	1000	0.1164	0.1192		2.80 ND	1.00		
<i>AK 17 SEP 20</i> .02	WV	500 1000	0.1173	0.1196		2.30 ND	1.00		
17478.01	WW	1000	0.1162	0.1197		3.50 H	1.00		
.02	WX	1000	0.1180	0.1207		2.70 ND	1.00		

LCS value = 78.7 mg/L
 % Rec = 96.6%
 % RPD = 1.6%

Acceptance Criteria (mg/L): 64.1 - 87.8 mg/L
 Acceptance Criteria (%): 81.4 - 112%
 Acceptance Criteria: ± 5% of average

B

Total Suspended Solids

TSS: VLIMS Code: 4630; EPA Method: 2540D

Date Started: 18 SEP 20
 Time Started: 1740
 Analyst: AB
 Batch ID: 755200918
 Temperature: 104°C
 Time in Oven: 50:30

Date Finished: 20 SEP 20
 Time Finished: 2010
 Reviewed by: BB
 Review Date: 10/1/2020
 Balance ID: I3
 Oven ID/Thermometer ID: OVS/Quincy

18 SEP 20

18 SEP 20

Merit #	Tin #	MLs sample	g. Filter	g. dry solids + filter 103°C	g. reweigh 15 min. 103°C	TSS mg/L	DF	TVSS Y/N	TVSS Tin #
Blank	IM 8WY	1000	0.1171	0.1172		0.10 / ND	1.00	N	
LCS Lot									
8209-09	8WZ	100	0.1179	0.1259		80.0	10.0		
17473.02	IM 712	870 300	0.1168	0.1321		51	3.33		
Dup									
.02	IM 8X1	300	0.1186	0.1342		52	3.33		
17448.05	X2	1000	0.1166	0.1166		0.00 / ND	1.00		
.06	X3	1000	0.1156	0.1165		0.90 / ND	1.00		
.07	X4	1000	0.1172	0.1172		0.00 / ND	1.00		
17452.01	X5	750	0.1185	0.1215		4	7.33		
17453.01	IM 716	1000	0.1183	0.1204		2.10 / ND	1.00		
17548.01	17	1000	0.1155	0.1171		1.60 / ND	1.00		
.04	IC 18	100	0.1172	0.1220		48	10.0		
17582.01	18	250 1000	0.1170	0.1178		0.80 / ND	1.00		
.02	1A	1000	0.1151	0.1159		0.80 / ND	1.00		

LCS value = 78.7 mg/L

% Rec = 101.6%

% RPD = 1.9%

Acceptance Criteria (mg/L): 69.1 - 87.8 mg/L

Acceptance Criteria (%): 81.4 - 112%

Acceptance Criteria: ± 5% of average

Total Dissolved Solids

TDS: VLIMS Code: 4615; EPA Method: 2540C

Date Started: 19 SEP 20
 Time Started: 1640
 Analyst: ADD
 Batch ID: TDS200919A
 Temperature: 180°C
 Time in Oven: 70:00

Date Finished: 22 SEP 20
 Time Finished: 1440
 Reviewed by: BB
 Review Date: 10/1/2020
 Balance ID: I3
 Oven ID/Thermometer ID: 012/AC10365

Merit #	Tin #	sample (mls)	Tin (grams)	dry solids + tin 180°C (grams)	reweigh 15 min. 180°C (grams)	Cond.	TDS (mg/L)
Blank	A0694298	50	3.6149	3.6140			-18 ND
LCS Lot							
8209-09	299	25	3.6894	3.7055			644
17448.01	274	50	3.5622	3.6006			768
Dup							
.01	273	50	3.6686	3.7067			762
.02	272	50	3.5800	3.6493			1390* 1386
.03	271	50	3.6622	3.6908			572
.04	270	50	3.5628	3.6400			1540* 1544
.05	269	50	3.6152	3.6592			880
.06	268	50	3.5808	3.6079			542
.07	267	50	3.5727	3.5709			-36 ND
17541.01	266	50	3.5731	3.5798			134
.02	265	50	3.5300	3.5373			146
.03	264	50	3.5245	3.5305			120

LCS value = 6.32 mg/L
 % Rec = 101.9%
 % RPD = 0.8%

Acceptance Criteria (mg/L): 568-695 mg/L
 Acceptance Criteria (%): 89.9-110%
 Acceptance Criteria: ± 5% of average



2680 East Lansing Dr., East Lansing, MI 48823
 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME **Jennifer Caporale**
 COMPANY **Lansing Board of Water and Light**
 ADDRESS **PO Box 13007 48901-3007**
 CITY **Lansing** STATE **Mi** ZIP CODE **48901**
 PHONE NO. **517-702-6372** FAX NO. P.O. NO.
 E-MAIL ADDRESS **Environmental_Laboratory@lbwl.com** QUOTE NO.

CONTACT NAME **Kelly Gleason** SAME
 COMPANY
 ADDRESS
 CITY STATE ZIP CODE
 PHONE NO. E-MAIL ADDRESS **Kelly.Gleason@lbwl.com**

PROJECT NO./NAME **Erickson GMP** SAMPLER(S) - PLEASE PRINT/SIGN NAME **Marc Wahrer**
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Total Metals	TSS	TDS, Cl ⁻ , SO ₄ ⁻² , F	Radium 226	Radium 228	Certifications		Project Locations		Special Instructions
	DATE	TIME																<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DoD	<input checked="" type="checkbox"/> NPDES		☐ Detroit	☐ New York	☐ Other
17448.01	9/15/20	1239	MW-1 L009005-01	GW	5	2		3					✓	✓	✓	✓	✓		<input type="checkbox"/>	<input type="checkbox"/>	Metals to analyse:	
.02		1600	MW-2 -02	GW	5	2		3					✓	✓	✓	✓	✓		<input type="checkbox"/>	<input type="checkbox"/>	Sb, As, Ba, Be, B, Cd, Ca, Cr,	
.03		1027	MW-4 -03	GW	5	2		3					✓	✓	✓	✓	✓		<input type="checkbox"/>	<input type="checkbox"/>	Co, Pb, Li, Hg, Mo, Se, Tl	
.04		1636	MW-5 -04	GW	5	2		3					✓	✓	✓	✓	✓		<input type="checkbox"/>	<input type="checkbox"/>		
.05		1418	MW-6 -05	GW	5	2		3					✓	✓	✓	✓	✓		<input type="checkbox"/>	<input type="checkbox"/>	Please send a preliminary report	
.06		1027	MW-4 Duplicate -06	GW	5	2		3					✓	✓	✓	✓	✓		<input type="checkbox"/>	<input type="checkbox"/>		
.07		750	Field Blank -07	DI	5	2		3					✓	✓	✓	✓	✓		<input type="checkbox"/>	<input type="checkbox"/>		

RELINQUISHED BY: *[Signature]* DATE **9-16-20** TIME **1145**
 RECEIVED BY: *M Chilcote* DATE **9/16/2020** TIME **1145**

RELINQUISHED BY: DATE TIME
 RECEIVED BY: DATE TIME
 SEAL NO. SEAL INTACT YES NO INITIALS
 SEAL NO. SEAL INTACT YES NO INITIALS
 NOTES: TEMP. ON ARRIVAL **5.5**

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



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C.O.C. PAGE # 1 OF 1

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME **John Laverty**
 COMPANY **Merit Laboratories**
 ADDRESS **2680 East Lansing Drive**
 CITY **East Lansing** STATE **MI** ZIP CODE **48823**
 PHONE NO. **517-332-0167** FAX NO. _____ P.O. NO. _____
 E-MAIL ADDRESS **results@meritlabs.com** QUOTE NO. _____

CONTACT NAME **Julie Teague** SAME
 COMPANY **Merit Laboratories**
 ADDRESS **2680 East Lansing Drive**
 CITY **East Lansing** STATE **MI** ZIP CODE **48823**
 PHONE NO. **517-332-0167** E-MAIL ADDRESS **juliet@meritlabs.com**

PROJECT NO./NAME **S17448** SAMPLER(S) - PLEASE PRINT/SIGN NAME _____
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER _____
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

	Radium 226*	Radium 228**																		
	✓	✓																		
	✓	✓																		
	✓	✓																		
	✓	✓																		
	✓	✓																		
	✓	✓																		
	✓	✓																		

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NH ₄ OH	MAOH	OTHER	# Containers & Preservatives
	DATE	TIME											
	9/15/2020	1239	S17448.01	GW	2			2					
	9/15/2020	1600	S17448.02	GW	2			2					
	9/15/2020	1027	S17448.03	GW	2			2					
	9/15/2020	1636	S17448.04	GW	2			2					
	9/15/2020	1418	S17448.05	GW	2			2					
	9/15/2020	1027	S17448.06	GW	2			2					
	9/15/2020	0750	S17448.07 (Field Blank)	L	2			2					

Certifications
 OHIO VAP Drinking Water
 DoD NPDES
 Project Locations
 Detroit New York
 Other _____
 Special Instructions

* E903.1 Mod.
 ** E904.0/SW 9320 Mod.
 Please use calculation product & provide Radium 226/228 combined results on the report
 (No Ice needed)
 ** Subcontracted to
 GEL Laboratories, Inc.
 2040 Savage Road
 Charleston, SC 29407

RELINQUISHED BY: *M Chilcote* Sampler DATE **9/16/2020** TIME **1700**
 SIGNATURE/ORGANIZATION _____
 RECEIVED BY: *WPS* DATE **9/16/2020** TIME **1700**
 SIGNATURE/ORGANIZATION _____

RELINQUISHED BY: _____ DATE _____ TIME _____
 SIGNATURE/ORGANIZATION _____
 RECEIVED BY: _____ DATE _____ TIME _____
 SIGNATURE/ORGANIZATION _____

SEAL NO. _____ SEAL INTACT YES NO INITIALS _____
 SEAL NO. _____ SEAL INTACT YES NO INITIALS _____

NOTES: _____ TEMP. ON ARRIVAL _____

Merit Laboratories Login Checklist

Lab Set ID:S17448

Client:BWL01 (Board of Water & Light)

Project: Erickson GMP

Submitted:09/16/2020 11:45 Login User: MMC

Attention: Jennifer Caporale

Address: Board of Water & Light

P.O. Box 13007

Lansing, MI 48901

Phone: 517-702-6372

FAX:

Email: Environmental_Laboratory@LBWL.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.3
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to: GEL
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S17448 Submitted: 09/16/2020 11:45

Attention: Jennifer Caporale
 Address: Board of Water & Light
 P.O. Box 13007
 Lansing, MI 48901

Client: BWL01 (Board of Water & Light)

Project: Erickson GMP

Initial Preservation Check: 09/16/2020 12:03 MMC

Phone: 517-702-6372 FAX:
 Email: Environmental_Laboratory@LBWL.com

Preservation Recheck (E200.8): N/A

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S17448.01	125ml Plastic HNO3	<2			
S17448.01	1L Plastic HNO3	<2			
S17448.01	1L Plastic HNO3	<2			
S17448.02	125ml Plastic HNO3	<2			
S17448.02	1L Plastic HNO3	<2			
S17448.02	1L Plastic HNO3	<2			
S17448.03	125ml Plastic HNO3	<2			
S17448.03	1L Plastic HNO3	<2			
S17448.03	1L Plastic HNO3	<2			
S17448.04	125ml Plastic HNO3	<2			
S17448.04	1L Plastic HNO3	<2			
S17448.04	1L Plastic HNO3	<2			
S17448.05	125ml Plastic HNO3	<2			
S17448.05	1L Plastic HNO3	<2			
S17448.05	1L Plastic HNO3	<2			
S17448.06	125ml Plastic HNO3	<2			
S17448.06	1L Plastic HNO3	<2			
S17448.06	1L Plastic HNO3	<2			
S17448.07	125ml Plastic HNO3	<2			
S17448.07	1L Plastic HNO3	<2			
S17448.07	1L Plastic HNO3	<2			

Sample Set Receipt

Report to
 Attention: Jennifer Caporale
 Address: Board of Water & Light
 P.O. Box 13007
 Lansing, MI 48901

Invoice to
 Attention: Kelly Gleason
 Address: Board of Water & Light
 PO Box 13007
 Lansing, MI 48901

Phone: 517-702-6372 FAX:
 Email: Environmental_Laboratory@LBWL.com

Phone: 517-702-6372 FAX: 517-702-6373
 Email: kelly.gleason@lbwl.com

Contacts:

Set ID: S17448 Location: BWL01 (Board of Water & Light) PO #: Login by: MMC
 Project: Erickson GMP Backlog Note:
 Submitted: 09/16/2020 11:45 Due Date: 09/30/2020 Rush: No Collected by: Marc Wahrer QC Level: 3 Custom Limits Present: No
 Approved by: Site: Work Order#: Bill to Acct: Bill to Dept:

Sample ID	Sample Tag	Matrix	Date/Time Collected	COC Ref
S17448.01	MW-1 L009005-01	Groundwater	09/15/2020 12:39	
S17448.02	MW-2 L009005-02	Groundwater	09/15/2020 16:00	
S17448.03	MW-4 L009005-03	Groundwater	09/15/2020 10:27	
S17448.04	MW-5 L009005-04	Groundwater	09/15/2020 16:36	
S17448.05	MW-6 L009005-05	Groundwater	09/15/2020 14:18	
S17448.06	MW-4 Duplicate L009005-06	Groundwater	09/15/2020 10:27	
S17448.07	Field Blank L009005-07	Water	09/15/2020 07:50	

Samples: S17448.01-07

Analysis Code	Analysis Title	Method	Units	Holding Date
2140WMS	Calcium	E200.8	mg/L	03/14/2021
2145WMS	Chromium	E200.8	mg/L	03/14/2021
2130WMS	Boron	E200.8	mg/L	03/14/2021
2115WMS	Arsenic	E200.8	mg/L	03/14/2021
2205WMS	Selenium	E200.8	mg/L	03/14/2021
2190WMS	Molybdenum	E200.8	mg/L	03/14/2021
2135WMS	Cadmium	E200.8	mg/L	03/14/2021
2110WMS	Antimony	E200.8	mg/L	03/14/2021
2120WMS	Barium	E200.8	mg/L	03/14/2021
2225WMS	Thallium	E200.8	mg/L	03/14/2021
2165WMS	Lead	E200.8	mg/L	03/14/2021
2125WMS	Beryllium	E200.8	mg/L	03/14/2021
2150WMS	Cobalt	E200.8	mg/L	03/14/2021
2170WMS	Lithium	E200.8	mg/L	03/14/2021
2185W	Mercury	E245.1	mg/L	10/13/2020
4425W	Chloride	E300.0	mg/L	10/13/2020
4530W	Sulfate	E300.0	mg/L	10/13/2020
4455W	Fluoride (Undistilled)	E300.0	mg/L	10/13/2020
MISCSUB	Misc. Special Project			06/11/2023
4630	Total Suspended Solids	SM2540D	mg/L	09/22/2020
4615	Total Dissolved Solids	SM2540C	mg/L	09/22/2020
1605W	Metal Digestion	SW3015A		03/14/2021
1605HGW	Mercury Digestion	E245.1		10/13/2020
SUBCONT	Subcontracting			06/11/2023



October 12, 2020

John Laverty
Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan 48823

Re: Routine Analysis
Work Order: 521691
SDG: S17448

Dear John Laverty:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on September 18, 2020. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4443.

Sincerely,

Lindsay Fabra
Project Manager

Purchase Order: GELP20-0018
Enclosures

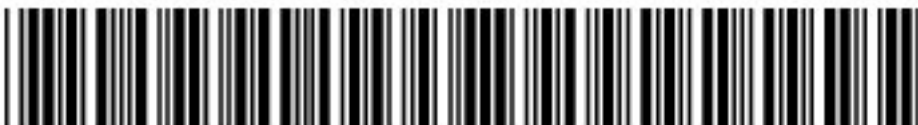


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Case Narrative

**Receipt Narrative
for
Merit Laboratories, Inc.
SDG: S17448
Work Order: 521691**

October 12, 2020

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on September 18, 2020 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

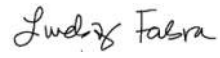
Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
521691001	S17448.01
521691002	S17448.02
521691003	S17448.03
521691004	S17448.04
521691005	S17448.05
521691006	S17448.06
521691007	S17448.07 (Field Blank)

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Radiochemistry.

A handwritten signature in cursive script that reads "Lindsay Fabra".

Lindsay Fabra
Project Manager

Chain of Custody and Supporting Documentation

SAMPLE RECEIPT & REVIEW FORM

Client: MEPI SDG/AR/COC/Work Order: 521697
 Received By: Tye Date Received: 9/18/20
 Carrier and Tracking Number: 12 4060 477 03 10357 5023
 FedEx Express FedEx Ground UPS Field Services Courier Other

Suspected Hazard Information: Yes No
 *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
 A) Shipped as a DOT Hazardous? Hazard Class Shipped: _____ UN#: _____
 If UN2910, Is the Radioactive Shipment Survey Compliant? Yes ___ No ___
 B) Did the client designate the samples are to be received as radioactive? COC notation or radioactive stickers on containers equal client designation.
 C) Did the RSO classify the samples as radioactive? Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM / mR/hr
 Classified as: Rad 1 Rad 2 Rad 3
 D) Did the client designate samples are hazardous? COC notation or hazard labels on containers equal client designation.
 E) Did the RSO identify possible hazards? If D or E is yes, select Hazards below.
 PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice <input type="checkbox"/> Ice Packs <input type="checkbox"/> Dry Ice <input checked="" type="checkbox"/> None <input type="checkbox"/> Other: _____ *all temperatures are recorded in Celsius
4	Daily check performed and passed on IR (temperature gun)?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>IR3-19</u> TEMP: <u>110C</u> Secondary Temperature Device Serial # (If Applicable): _____
5	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: _____ If Preservation added, Lot#: _____
7	Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes, are Encores or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes ___ No ___ NA ___ (If unknown, select No) Are liquid VOA vials five of headspace? Yes ___ No ___ NA ___ Sample ID's and containers affected: _____
8	Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and containers affected: _____
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No container count on COC Other (describe)
12	Are sample containers identifiable as GEL provided by use of GEL labels?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed): _____
 PM (or PMA) review: Initials NREG Date 9/18/20 Page 1 of 1

Laboratory Certifications

List of current GEL Certifications as of 12 October 2020

State	Certification
Alabama	42200
Alaska	17-018
Alaska Drinking Water	SC00012
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-165
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-20-17
Utah NELAP	SC000122020-32
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

Radiological Analysis

Case Narrative

**Radiochemistry
Technical Case Narrative
Merit Laboratories, Inc.
SDG #: S17448
Work Order #: 521691**

Product: GFPC Ra228, Liquid

Analytical Method: EPA 904.0/SW846 9320 Modified

Analytical Procedure: GL-RAD-A-009 REV# 17

Analytical Batch: 2042439

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
521691001	S17448.01
521691002	S17448.02
521691003	S17448.03
521691004	S17448.04
521691005	S17448.05
521691006	S17448.06
521691007	S17448.07 (Field Blank)
1204647571	Method Blank (MB)
1204647572	521691004(S17448.04) Sample Duplicate (DUP)
1204647573	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: Lucas Cell, Ra226, Liquid

Analytical Method: EPA 903.1 Modified

Analytical Procedure: GL-RAD-A-008 REV# 15

Analytical Batch: 2042415

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
521691001	S17448.01
521691002	S17448.02
521691003	S17448.03
521691004	S17448.04
521691005	S17448.05
521691006	S17448.06
521691007	S17448.07 (Field Blank)
1204647500	Method Blank (MB)

1204647501	521691001(S17448.01) Sample Duplicate (DUP)
1204647502	521691001(S17448.01) Matrix Spike (MS)
1204647503	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

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Qualifier Definition Report for

MERI001 Merit Laboratories, Inc.

Client SDG: S17448 GEL Work Order: 521691

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:



Name: Theresa Austin

Date: 15 OCT 2020

Title: Group Leader

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 15, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S17448.01	Project: MERI00120
Sample ID: 521691001	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 15-SEP-20 12:39	
Receive Date: 18-SEP-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.271	+/-0.690	1.26	3.00	pCi/L			KSD1	09/30/20	1104	2042439	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.889	+/-0.770			pCi/L		1	AEA	10/13/20	1208	2042520	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.618	+/-0.343	0.423	1.00	pCi/L			MXH8	10/13/20	0932	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			88.1	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 15, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S17448.02	Project: MERI00120
Sample ID: 521691002	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 15-SEP-20 16:00	
Receive Date: 18-SEP-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.0154	+/-1.00	1.88	3.00	pCi/L			KSD1	09/30/20	1104	2042439	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.183	+/-1.05			pCi/L		1	AEA	10/13/20	1208	2042520	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.183	+/-0.296	0.528	1.00	pCi/L			MXH8	10/13/20	0932	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			85.6	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 15, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S17448.03	Project: MERI00120
Sample ID: 521691003	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 15-SEP-20 10:27	
Receive Date: 18-SEP-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.113	+/-0.661	1.24	3.00	pCi/L			KSD1	09/30/20	1105	2042439	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.696	+/-0.736			pCi/L		1	AEA	10/13/20	1208	2042520	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.583	+/-0.324	0.411	1.00	pCi/L			MXH8	10/13/20	1003	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			88.3	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: October 15, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S17448.04 Project: MERI00120
 Sample ID: 521691004 Client ID: MERI001
 Matrix: Ground Water
 Collect Date: 15-SEP-20 16:36
 Receive Date: 18-SEP-20
 Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.641	+/-0.667	1.46	3.00	pCi/L			KSD1	09/30/20	1105	2042439	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.773	+/-0.755			pCi/L		1	AEA	10/13/20	1208	2042520	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.773	+/-0.355	0.372	1.00	pCi/L			MXH8	10/13/20	1003	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			83.5	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 15, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S17448.05	Project: MERI00120
Sample ID: 521691005	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 15-SEP-20 14:18	
Receive Date: 18-SEP-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.00462	+/-0.634	1.24	3.00	pCi/L			KSD1	09/30/20	1105	2042439	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.458	+/-0.695			pCi/L		1	AEA	10/13/20	1208	2042520	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.458	+/-0.287	0.362	1.00	pCi/L			MXH8	10/13/20	1003	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			85.1	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: October 15, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S17448.06	Project: MERI00120
Sample ID: 521691006	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 15-SEP-20 10:27	
Receive Date: 18-SEP-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.641	+/-1.10	1.91	3.00	pCi/L			KSD1	09/30/20	1105	2042439	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.65	+/-1.18			pCi/L		1	AEA	10/13/20	1208	2042520	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		1.01	+/-0.431	0.336	1.00	pCi/L			MXH8	10/13/20	1003	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			84.1	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 15, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S17448.07 (Field Blank) Project: MERI00120
Sample ID: 521691007 Client ID: MERI001
Matrix: Water
Collect Date: 15-SEP-20 07:50
Receive Date: 18-SEP-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-1.47	+/-1.17	2.41	3.00	pCi/L			KSD1	09/30/20	1118	2042439	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.212	+/-1.18			pCi/L		1	AEA	10/13/20	1208	2042520	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.212	+/-0.196	0.270	1.00	pCi/L			MXH8	10/13/20	1003	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			82.4	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: October 15, 2020

Page 1 of 2

Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan

Contact: John Laverty

Workorder: 521691

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	2042439										
QC1204647572	521691004		DUP								
Radium-228	U	-0.641	U	-0.0205	pCi/L	N/A		N/A	KSD1	09/30/20	11:18
	Uncertainty	+/-0.667		+/-0.666							
QC1204647573	LCS										
Radium-228	19.2			17.2	pCi/L		89.9	(75%-125%)		09/30/20	11:18
	Uncertainty			+/-1.16							
QC1204647571	MB										
Radium-228			U	0.00251	pCi/L					09/30/20	11:18
	Uncertainty			+/-0.301							
Rad Ra-226											
Batch	2042415										
QC1204647501	521691001		DUP								
Radium-226		0.618	U	0.485	pCi/L	24.2		(0% - 100%)	MXH8	10/13/20	10:35
	Uncertainty	+/-0.343		+/-0.393							
QC1204647503	LCS										
Radium-226	27.0			30.0	pCi/L		111	(75%-125%)		10/13/20	11:07
	Uncertainty			+/-2.00							
QC1204647500	MB										
Radium-226			U	0.0897	pCi/L					10/13/20	10:35
	Uncertainty			+/-0.131							
QC1204647502	521691001		MS								
Radium-226	27.1	0.618		28.9	pCi/L		104	(75%-125%)		10/13/20	11:07
	Uncertainty	+/-0.343		+/-1.98							

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded

GEL LABORATORIES LLC

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QC Summary

Workorder: 521691

Page 2 of 2

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J											
J											
K											
L											
M											
M											
N/A											
N1											
ND											
NJ											
Q											
R											
U											
UI											
UJ											
UL											
X											
Y											
^											
h											

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Gas Flow Raw Data

Batch 2042439 Check-list

This check-list was completed on 30-SEP-20 by Nat Long

This batch was reviewed by Kenshalla Oston on 30-SEP-20 and Nat Long on 30-SEP-20.

Batch ID:
2042439

Product:
GFC28RAL

Description: Gas Flow Radium 228
GL-RAD-A-009

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
11	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
12	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-228 in Liquid

Batch ID: 2042439

Analyst: Kelli Dorrell (KSD1)

Method: EPA 904.0/SW846 9320 Modified

Lab SOP: GL-RAD-A-009 REV# 17

Instrument: GFC-8949708441

Due Dates for Lab: 07-OCT-2020

Package: 14-OCT-2020

SDG: 09-OCT-2020

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1204647573	Radium-228 SPIKE	1965-B	.1	mL

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	Ac-228 Ingrow (date)	Ac-228 Separation (date)
1	521153001	25-SEP-2020	1	900	09/28/20 13:58	09/30/20 09:36
2	521691001	25-SEP-2020	3	300	09/28/20 13:58	09/30/20 09:36
3	521691002	25-SEP-2020	3	300	09/28/20 13:58	09/30/20 09:36
4	521691003	25-SEP-2020	3	300	09/28/20 13:58	09/30/20 09:36
5	521691004	25-SEP-2020	3	300	09/28/20 13:58	09/30/20 09:36
6	521691005	25-SEP-2020	3	300	09/28/20 13:58	09/30/20 09:36
7	521691006	25-SEP-2020	3	300	09/28/20 13:58	09/30/20 09:36
8	521691007	25-SEP-2020	3	300	09/28/20 13:58	09/30/20 09:36
9	1204647571 MB	25-SEP-2020	1	900	09/28/20 13:58	09/30/20 09:36
10	1204647572 DUP (521691004)	25-SEP-2020	3	300	09/28/20 13:58	09/30/20 09:36
11	1204647573 LCS	25-SEP-2020	1	900	09/28/20 13:58	09/30/20 09:36

Reagent/Solvent Lot ID	Description	Amount	Comments:
WORK 0487-G	Barium-133 TRACER	.1 mL	
REGNT 2947553	RGF-Neodymium 500mg/L	.2 mL	Pipet Id: RAD-GFC-1795419
REGNT 3112196	RGF-1M Citric Acid	5 mL	Data Entry Date2: 25-SEP-2020 00:00
REGNT 3114548	Glacial Acetic Acid	10 mL	
REGNT 3116748	Lot #DGA0016	2 g	
REGNT 3116819.2	Concentrated HNO3 (16M)	5 mL	
REGNT 3116964	Barium Carrier Ra228 REG	1 mL	
REGNT 3117853	RGF-50% Potassium Carbonate	2 mL	
REGNT 3118984	228 Neodymium substrate	5 mL	
REGNT 3118995	7M HNO3	25 mL	
REGNT 3122151.4	RGF-Hydrofluoric Acid	4 mL	
REGNT 3122322	2M HCL	20 mL	
REGNT 3124810	RGF-1.5M Ammonium Sulfate	10 mL	

Radium-228 Liquid

Filename : RA228.XLS
 File type : Excel
 Version # : 1.4.2

Tracer S/N : 0487-G
 Tracer Exp Date : 2/27/2021
 Tracer Volume Added: 0.10

Batch : 2042439
 Analyst : KEL01237
 Prep Date : 9/25/2020
 Ra-228 Method Uncertainty : 0.1268

Procedure Code : GFC28RAL
 Parmname : Radium-228
 Required MDA : 1 pCi/L
 Ra-228 Abundance : 1.00
 Halflife of Ra-228 : 5.75 years
 Halflife of Ac-228 : 6.15 hours

Geometry: 25mm Filter

Sample Characteristics					Tracer Calculations		Tracer Samp.		Tracer	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Tracer Ref. Activity (CPM)	Tracer Ref. Count Uncertainty (%)	Tracer Samp. Activity (CPM)	Tracer Samp. Count Uncertainty (%)	Tracer Aliquot (mL)	Tracer Aliquot StDev. (mL)
1	521153001.1	0.9000	2.0768E-05	9/9/2020 12:45	277.8	3.46%	226.3	3.84%	0.1	0.000200
2	521691001.1	0.3000	1.8459E-05	9/15/2020 12:39	277.8	3.46%	244.6	3.69%	0.1	0.000200
3	521691002.1	0.3000	1.8459E-05	9/15/2020 16:00	277.8	3.46%	237.8	3.74%	0.1	0.000200
4	521691003.1	0.3000	1.8459E-05	9/15/2020 10:27	277.8	3.46%	245.3	3.69%	0.1	0.000200
5	521691004.1	0.3000	1.8459E-05	9/15/2020 16:36	277.8	3.46%	232.0	3.79%	0.1	0.000200
6	521691005.1	0.3000	1.8459E-05	9/15/2020 14:18	277.8	3.46%	236.3	3.76%	0.1	0.000200
7	521691006.1	0.3000	1.8459E-05	9/15/2020 10:27	277.8	3.46%	233.6	3.78%	0.1	0.000200
8	521691007.1	0.3000	1.8459E-05	9/15/2020 7:50	277.8	3.46%	229.0	3.82%	0.1	0.000200
9	1204647571.1	0.9000	2.0768E-05	9/25/2020 0:00	277.8	3.46%	226.0	3.84%	0.1	0.000200
10	1204647572.1	0.3000	1.8459E-05	9/15/2020 16:36	277.8	3.46%	221.1	3.88%	0.1	0.000200
11	1204647573.1	0.9000	2.0768E-05	9/25/2020 0:00	277.8	3.46%	243.0	3.70%	0.1	0.000200

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-009
 Instrument SOP: GL-RAD-I-016

Count raw Data													Calculated Sample Recovery %	Sample Recovery Error %
Pos.	Detector ID	Counting Time (min.)	Gross Counts Alpha Beta		Beta cpm	Count Start Date/Time	Ac-228 Ingrowth Date/Time	Ac-228 Decay Date/Time	Ra-228 Decay	Ac-228 Decay	Ac-228 Ingrowth	Ac-228 Count Correction		
1	4B	60	4	102	1.700	9/30/2020 11:04	9/28/2020 13:58	9/30/2020 9:36	0.993	0.846	0.993	1.057	81.5%	2.60%
2	4C	60	14	34	0.567	9/30/2020 11:04	9/28/2020 13:58	9/30/2020 9:36	0.995	0.846	0.993	1.057	88.1%	2.54%
3	4D	60	12	57	0.950	9/30/2020 11:04	9/28/2020 13:58	9/30/2020 9:36	0.995	0.846	0.993	1.057	85.6%	2.56%
4	5A	60	19	33	0.550	9/30/2020 11:05	9/28/2020 13:58	9/30/2020 9:36	0.995	0.846	0.993	1.057	88.3%	2.54%
5	5B	60	10	29	0.483	9/30/2020 11:05	9/28/2020 13:58	9/30/2020 9:36	0.995	0.846	0.993	1.057	83.5%	2.58%
6	5C	60	6	28	0.467	9/30/2020 11:05	9/28/2020 13:58	9/30/2020 9:36	0.995	0.846	0.993	1.057	85.1%	2.57%
7	5D	60	4	85	1.417	9/30/2020 11:05	9/28/2020 13:58	9/30/2020 9:36	0.995	0.846	0.993	1.057	84.1%	2.58%
8	6C	60	6	72	1.200	9/30/2020 11:18	9/28/2020 13:58	9/30/2020 9:36	0.995	0.824	0.993	1.057	82.4%	2.59%
9	7A	60	5	48	0.800	9/30/2020 11:18	9/28/2020 13:58	9/30/2020 9:36	0.998	0.825	0.993	1.057	81.3%	2.60%
10	7B	60	4	25	0.417	9/30/2020 11:18	9/28/2020 13:58	9/30/2020 9:36	0.995	0.825	0.993	1.057	79.6%	2.61%
11	7C	60	14	928	15.467	9/30/2020 11:18	9/28/2020 13:58	9/30/2020 9:36	0.998	0.825	0.993	1.057	87.5%	2.55%

Calibration Data								
Pos.	Counted on	Calibration Date	Calibration Due Date	Detector Efficiency (cpm/dpm)	Detector Efficiency Error (cpm/dpm)	Bkg cpm	Weekly Bkg Count Start Date/Time	Bkg Count Time (min.)
1	PIC	6/1/2020	5/31/2021	0.6255	0.01519	0.748	9/25/2020 17:33	500
2	PIC	6/1/2020	5/31/2021	0.6256	0.00889	0.488	9/25/2020 17:33	500
3	PIC	6/1/2020	5/31/2021	0.5764	0.00773	0.954	9/25/2020 17:33	500
4	PIC	6/1/2020	5/31/2021	0.6448	0.00851	0.516	9/25/2020 17:33	500
5	PIC	6/1/2020	5/31/2021	0.6479	0.00426	0.666	9/25/2020 17:33	500
6	PIC	6/1/2020	5/31/2021	0.6451	0.00657	0.468	9/25/2020 17:33	500
7	PIC	6/1/2020	5/31/2021	0.6511	0.00925	1.232	9/25/2020 17:33	500
8	PIC	6/1/2020	5/31/2021	0.6036	0.01970	1.574	9/25/2020 17:43	500
9	PIC	6/1/2020	5/31/2021	0.6340	0.00594	0.798	9/25/2020 17:43	500
10	PIC	6/1/2020	5/31/2021	0.6359	0.00627	0.422	9/25/2020 17:43	500
11	PIC	6/1/2020	5/31/2021	0.6361	0.00790	0.670	9/25/2020 17:43	500

Notes:

- 1 - Results are decay corrected to Sample Date/Time
- 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
- 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : N/A
 Spike Exp Date : N/A
 Spike Activity (dpm/ml): N/A
 Spike Volume Added: N/A

* - RPD changed to 0% due to sample & dup activity below MDA

LCS S/N : 1965-B
 LCS Exp Date : 9/24/2021
 LCS Activity (dpm/ml): 382.98
 LCS Volume Added: 0.10

Results Pos.	Decision	Critical	Required	Sample Act.		Sample Act.	Net Count	Net Count	2 SIGMA	2 SIGMA	Sample	Sample	RPD	RER	Nominal	Recovery
	Level	Level	MDA	MDA	Conc.	Error	Rate	Rate Error	Counting	Total Prop.						
	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	%	CPM	CPM	Uncertainty	Uncertainty	QC	Type			pCi/L	
1	0.3427	0.2420	1	0.5462	1.1850	18.39%	0.9520	0.1727	0.4214	0.5188		SAMPLE				
2	0.7667	0.5413	3	1.2550	0.2712	129.79%	0.0787	0.1021	0.6898	0.6933		SAMPLE				
3	1.1970	0.8451	3	1.8826	-0.0154	3329.92%	-0.0040	0.1332	1.0050	1.0051		SAMPLE				
4	0.7631	0.5388	3	1.2444	0.1135	297.04%	0.0340	0.1010	0.6605	0.6612		SAMPLE				
5	0.9123	0.6441	3	1.4638	-0.6415	53.11%	-0.1827	0.0969	0.6669	0.6671		SAMPLE				
6	0.7542	0.5325	3	1.2381	-4.618E-03	7001.07%	-0.0013	0.0933	0.6336	0.6338		SAMPLE				
7	1.2263	0.8658	3	1.9051	0.6409	87.49%	0.1847	0.1615	1.0985	1.1105		SAMPLE				
8	1.5652	1.1050	3	2.4060	-1.4657	40.81%	-0.3740	0.1521	1.1686	1.1688		SAMPLE				
9	0.3571	0.2521	1	0.5670	2.512E-03	6109.28%	0.0020	0.1222	0.3007	0.3008		MB				
10	0.7962	0.5621	3	1.3168	-0.0205	1654.73%	-0.0053	0.0883	0.6660	0.6662	521691004.1	DUP	* 0.0%			
11	0.3034	0.2142	1	0.4866	17.2267	4.35%	14.7967	0.5090	1.1616	4.5267		LCS			19.1683	89.9%

SampleID	Instr	Time (min.)	Alpha Counts	Beta Counts	Count Start Time	Count End Time	Machine	Batch ID
521153001	4B	60	4	102	9/30/2020 11:04	9/30/2020 12:04	PIC	2042439
521691001	4C	60	14	34	9/30/2020 11:04	9/30/2020 12:04	PIC	2042439
521691002	4D	60	12	57	9/30/2020 11:04	9/30/2020 12:04	PIC	2042439
521691003	5A	60	19	33	9/30/2020 11:05	9/30/2020 12:05	PIC	2042439
521691004	5B	60	10	29	9/30/2020 11:05	9/30/2020 12:05	PIC	2042439
521691005	5C	60	6	28	9/30/2020 11:05	9/30/2020 12:05	PIC	2042439
521691006	5D	60	4	85	9/30/2020 11:05	9/30/2020 12:05	PIC	2042439
521691007	6C	60	6	72	9/30/2020 11:18	9/30/2020 12:18	PIC	2042439
1204647571	7A	60	5	48	9/30/2020 11:18	9/30/2020 12:18	PIC	2042439
1204647572	7B	60	4	25	9/30/2020 11:18	9/30/2020 12:18	PIC	2042439
1204647573	7C	60	14	928	9/30/2020 11:18	9/30/2020 12:18	PIC	2042439

ASSAY 30-Sep-20 10:41:39

Protocol id 8 Ba-133
Time limit
Count limit
Isotope Ba-133
Protocol date 9/30/2020
Run id. 1988

Samp_ID	POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR	% RECOVERY	COUNT TIME
REF		1	93	1	180	833.5	277.77	3.46	10:41:39
521153001		2	93	2	180	679	226.28	3.84	81.46 10:44:53
521691001		3	93	3	180	734	244.62	3.69	88.07 10:48:07
521691002		4	93	4	180	713.5	237.79	3.74	85.61 10:51:21
521691003		5	93	5	180	736	245.26	3.69	88.30 10:54:35
521691004		1	19	1	180	696	231.95	3.79	83.50 10:58:21
521691005		2	19	2	180	709	236.28	3.76	85.06 11:01:35
521691006		3	19	3	180	701	233.62	3.78	84.11 11:04:49
521691007		4	19	4	180	687	228.95	3.82	82.42 11:08:03
1204647571		5	19	5	180	678	225.95	3.84	81.34 11:11:16
1204647572		1	2	1	180	663.5	221.12	3.88	79.61 11:15:03
1204647573		2	2	2	180	729	242.95	3.7	87.46 11:18:16

END OF ASSAY

Continuing Calibration Data

Gas Flow Proportional Counter Checks for 30-Sep-2020

Detectors LB4100 A1 through I4 and PIC 1A through 14D and G5400W 1W through 1Z

Short Name	Status	Parmname	Run Time	Count Time	CPM or dec	Low Limit	High Limit	Stdev
LB4100E1	Above	Alpha bkg	30-Sep 03:31	60	0.333	-5.45E-2	0.290	+3.76
LB4100E2	Above	Beta bkg	30-Sep 03:31	60	2.533	0.950	2.756	+2.26
LB4100E3	Above	Alpha bkg	30-Sep 03:31	60	2.217	-4.47E-2	0.174	+58.96
LB4100E3	Above	Beta bkg	30-Sep 03:31	60	2.717	-1.31E+0	6.766	-0.01
LB4100E3	need 2nd	Beta XTalk	30-Sep 04:33	5	4.03E-4	8.54E-5	4.65E-4	+2.02
LB4100F3	Above	Alpha bkg	30-Sep 03:31	60	0.333	-7.68E-2	0.332	+3.02
LB4100G2	Above	Beta bkg	30-Sep 03:31	60	147	0.721	1.648	+941.50
LB4100G3	Above	Beta bkg	30-Sep 03:31	60	6.950	0.810	1.674	+39.64
LB4100I1	Below	Alpha eff	30-Sep 04:50	5	6411	9278	11600	-10.41
LB4100I1	Above	Alpha XTalk	30-Sep 04:50	5	0.430	0.155	0.201	+32.62
LB4100I2	Below	Alpha eff	30-Sep 04:50	5	6830	12260	13540	-28.45
LB4100I2	Above	Alpha XTalk	30-Sep 04:50	5	0.485	0.206	0.251	+34.36
LB4100I2	Above	Beta bkg	30-Sep 03:30	60	3.483	0.425	2.438	+6.12
LB4100I2	Below	Beta eff	30-Sep 05:01	5	15029	15270	17180	-3.76
LB4100I3	Below	Alpha eff	30-Sep 04:50	5	5288	8847	10310	-17.60
LB4100I3	Above	Alpha XTalk	30-Sep 04:50	5	0.443	0.174	0.229	+26.66
LB4100I4	Below	Alpha eff	30-Sep 04:50	5	5455	9674	12150	-13.22
LB4100I4	Above	Alpha XTalk	30-Sep 04:50	5	0.474	0.179	0.224	+35.91
PIC6A	Above	Beta bkg	30-Sep 04:57	60	2.500	1.000	2.646	+2.47
PIC6B	Above	Alpha bkg	30-Sep 04:57	60	0.467	0.030	0.341	+5.44
PIC6B	Below	Alpha eff	30-Sep 04:41	5	7475	8118	8796	-8.69
PIC6B	Above	Alpha XTalk	30-Sep 04:41	5	0.452	0.277	0.330	+16.99
PIC6B	Above	Beta bkg	30-Sep 04:57	60	2.467	0.886	2.210	+4.16
PIC6B	Below	Beta eff	30-Sep 04:49	5	14232	18120	20890	-11.42
PIC10B	Above	Beta bkg	30-Sep 05:10	60	2.533	-6.98E-1	2.876	+2.42
PIC11D	Above	Alpha bkg	30-Sep 05:17	60	0.317	-4.81E-2	0.434	+1.54
PIC11D	Below	Alpha eff	30-Sep 05:08	5	10333	10430	11130	-3.83
PIC12A	Above	Beta bkg	30-Sep 05:17	60	2.383	1.462	2.978	+0.65
PIC12C	Above	Beta bkg	30-Sep 06:19	60	2.383	0.004	2.702	+2.29

PIC12D	Above	Alpha eff	30-Sep 05:08	5	15163	13060	14210	+7.97
PIC12D	Below	Alpha XTalk	30-Sep 05:08	5	0.304	0.323	0.348	-7.59
PIC14C	Above	Alpha bkg	30-Sep 06:20	60	0.317	-2.79E-2	0.348	+2.50
PIC14D	need 2nd	Alpha bkg	30-Sep 06:20	60	0.267	-1.35E-1	0.344	+2.03
PIC14D	Above	Beta bkg	30-Sep 06:20	60	1.900	-3.77E-1	1.863	+3.10

INSTRUMENTS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

The following detectors may not have properly transferred to the LIMS system

- PIC3A Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
- PIC6D Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
- PIC13C Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk

Reviewed by *R. Scott Harmon*

Date 9-30-2020

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: GFPC

Batch ID: 2042439

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
521153001	SAMPLE	KSD1	PIC4B	SEP-30-20 11:04:49	DONE	25mm Filter	01-JUN-20 00:00
521691001	SAMPLE	KSD1	PIC4C	SEP-30-20 11:04:53	DONE	25mm Filter	01-JUN-20 00:00
521691002	SAMPLE	KSD1	PIC4D	SEP-30-20 11:04:57	DONE	25mm Filter	01-JUN-20 00:00
521691003	SAMPLE	KSD1	PIC5A	SEP-30-20 11:05:01	DONE	25mm Filter	01-JUN-20 00:00
521691004	SAMPLE	KSD1	PIC5B	SEP-30-20 11:05:07	DONE	25mm Filter	01-JUN-20 00:00
521691005	SAMPLE	KSD1	PIC5C	SEP-30-20 11:05:10	DONE	25mm Filter	01-JUN-20 00:00
521691006	SAMPLE	KSD1	PIC5D	SEP-30-20 11:05:12	DONE	25mm Filter	01-JUN-20 00:00
1204647571	MB	KSD1	PIC7A	SEP-30-20 11:18:37	DONE	25mm Filter	01-JUN-20 00:00
1204647572	DUP	KSD1	PIC7B	SEP-30-20 11:18:39	DONE	25mm Filter	01-JUN-20 00:00
1204647573	LCS	KSD1	PIC7C	SEP-30-20 11:18:43	DONE	25mm Filter	01-JUN-20 00:00
521691007	SAMPLE	KSD1	PIC6C	SEP-30-20 11:18:46	DONE	25mm Filter	01-JUN-20 00:00

Lucas Cell Raw Data

Batch 2042415 Check-list

This check-list was completed on 13-OCT-20 by Lyndsey Pace

This batch was reviewed by Elizabeth Krouse on 13-OCT-20 and Lyndsey Pace on 13-OCT-20.

Batch ID:
2042415

Product:
LUC26RAL

Description: Lucas Cell Radium 226
GL-RAD-A-008

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the matrix spike (MS/MSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-226 in Liquid

Batch ID: 2042415
Analyst: Michael Hance (MXH8)
Method: EPA 903.1 Modified
Lab SOP: GL-RAD-A-008 REV# 15
Instrument: GFC-18150253

Due Dates for Lab: 12-OCT-2020			Package: 14-OCT-2020	SDG: 16-OCT-2020		
Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units	
LCS	1204647503	Radium-226 SPIKE	1715-E	.1	mL	
MS	1204647502	Radium-226 SPIKE	1715-E	.1	mL	

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	End Degas (date)	CELL #	End Transfer (date)	Start Count Time (date)	Background Counts	Total Counts
1	521691001	09-OCT-2020	1	500	10/09/20 12:15	704	10/13/20 06:30	10/13/20 09:32	4	22
2	521691002	09-OCT-2020	1	500	10/09/20 12:15	801	10/13/20 06:30	10/13/20 09:32	6	11
3	521691003	09-OCT-2020	1	500	10/09/20 12:15	108	10/13/20 07:07	10/13/20 10:03	5	24
4	521691004	09-OCT-2020	1	500	10/09/20 12:15	201	10/13/20 07:07	10/13/20 10:03	3	26
5	521691005	09-OCT-2020	1	500	10/09/20 12:15	303	10/13/20 07:07	10/13/20 10:03	3	17
6	521691006	09-OCT-2020	1	500	10/09/20 12:15	404	10/13/20 07:07	10/13/20 10:03	1	24
7	521691007	09-OCT-2020	1	500	10/09/20 12:15	505	10/13/20 07:07	10/13/20 10:03	1	7
8	522937001	09-OCT-2020	1	500	10/09/20 12:15	607	10/13/20 07:07	10/13/20 10:03	8	6
9	522937002	09-OCT-2020	1	500	10/09/20 12:15	808	10/13/20 07:07	10/13/20 10:03	1	7
10	522937003	09-OCT-2020	1	500	10/09/20 12:15	107	10/13/20 07:49	10/13/20 10:35	5	25
11	522937004	09-OCT-2020	1	500	10/09/20 12:15	204	10/13/20 07:49	10/13/20 10:35	2	25
12	522937005	09-OCT-2020	1	500	10/09/20 12:15	302	10/13/20 07:49	10/13/20 10:35	1	16
13	522937006	09-OCT-2020	1	500	10/09/20 12:15	407	10/13/20 07:49	10/13/20 10:35	5	10
14	522937007	09-OCT-2020	1	500	10/09/20 12:15	502	10/13/20 07:49	10/13/20 10:35	1	2
15	1204647500 MB	09-OCT-2020	1	500	10/09/20 12:15	608	10/13/20 07:49	10/13/20 10:35	1	4
16	1204647501 DUP (521691001)	09-OCT-2020	1	500	10/09/20 12:15	802	10/13/20 07:49	10/13/20 10:35	8	21
17	1204647502 MS (521691001)	09-OCT-2020	1	500	10/09/20 12:15	103	10/13/20 08:25	10/13/20 11:07	1	820
18	1204647503 LCS	09-OCT-2020	1	500	10/09/20 12:15	208	10/13/20 08:25	10/13/20 11:07	8	887

Reagent/Solvent Lot ID	Description	Amount	Comments:
			Spike Pipet ID: RAD-RA226-2766953 Bkg Count Time: 30 Minutes Sample Count Time: 30 Minutes Data Entry Date2: 09-OCT-2020 00:00

Radium-226 Liquid

Filename : RA226.XLS
 File type : Excel
 Version # : 1.3.2

Procedure Code : LUC26RAL
 Parmname : Radium-226
 Required MDA : 1 pCi/L
 Halflife of Ra-226 : 1600 years
 Ra-226 Abundance : 1.00
 Halflife of Rn-222 : 3.8235 days

Batch : 2042415
 Analyst : MIC02086
 Prep Date : 10/9/2020
 Ra-226 Method Uncertainty : 0.073648

Batch counted on : LUCAS CELL DETECTOR
 BKG Count time : 30 min

Sample Characteristics					Count Raw Data						Background	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Cell Number	Counting Time (min.)	Gross Counts	Gross CPM	Background Counts	Background CPM	Count Time (min.)	Cell Efficiency (cpm/dpm)
1	521691001.1	0.5000	2.0256E-05	9/15/2020 12:39	704	30	22	0.733	4	0.133	30	1.8140
2	521691002.1	0.5000	2.0256E-05	9/15/2020 16:00	801	30	11	0.367	6	0.200	30	1.6990
3	521691003.1	0.5000	2.0256E-05	9/15/2020 10:27	108	30	24	0.800	5	0.167	30	2.0199
4	521691004.1	0.5000	2.0256E-05	9/15/2020 16:36	201	30	26	0.867	3	0.100	30	1.8420
5	521691005.1	0.5000	2.0256E-05	9/15/2020 14:18	303	30	17	0.567	3	0.100	30	1.8940
6	521691006.1	0.5000	2.0256E-05	9/15/2020 10:27	404	30	24	0.800	1	0.033	30	1.4090
7	521691007.1	0.5000	2.0256E-05	9/15/2020 7:50	505	30	7	0.233	1	0.033	30	1.7560
8	522937001.1	0.5000	2.0256E-05	9/28/2020 13:24	607	30	6	0.200	8	0.267	30	1.9750
9	522937002.1	0.5000	2.0256E-05	9/28/2020 16:51	808	30	7	0.233	1	0.033	30	1.4130
10	522937003.1	0.5000	2.0256E-05	9/28/2020 10:36	107	30	25	0.833	5	0.167	30	1.5441
11	522937004.1	0.5000	2.0256E-05	9/28/2020 17:30	204	30	25	0.833	2	0.067	30	1.8640
12	522937005.1	0.5000	2.0256E-05	9/28/2020 15:21	302	30	16	0.533	1	0.033	30	1.7307
13	522937006.1	0.5000	2.0256E-05	9/28/2020 10:36	407	30	10	0.333	5	0.167	30	1.7620
14	522937007.1	0.5000	2.0256E-05	9/28/2020 8:00	502	30	2	0.067	1	0.033	30	1.9430
15	1204647500.1	0.5000	2.0256E-05	10/9/2020 0:00	608	30	4	0.133	1	0.033	30	2.0570
16	1204647501.1	0.5000	2.0256E-05	9/15/2020 12:39	802	30	21	0.700	8	0.267	30	1.6510
17	1204647502.1	0.5000	2.0256E-05	9/15/2020 12:39	103	30	820	27.333	1	0.033	30	1.7371
18	1204647503.1	0.5000	2.0256E-05	10/9/2020 0:00	208	30	887	29.567	8	0.267	30	1.7960

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-008
 Instrument SOP: GL-RAD-I-007

Cell Efficiency Error (%)	Cell Calibration Date	Cell Calibration Due Date	De-Gas Date/Time	Rn-222 Ingrow End Date/Time	Count Start Date/Time	Rn-222 Corrections			Ra-226 Decay
						De-Gas to Ingrowth	Ingrowth to Count	During Count	
2.000%	11/1/2019	10/31/2020	10/9/2020 12:15	10/13/2020 6:30	10/13/2020 9:32	0.494	0.977	1.002	1.000
8.700%	3/31/2020	3/31/2021	10/9/2020 12:15	10/13/2020 6:30	10/13/2020 9:32	0.494	0.977	1.002	1.000
6.875%	5/1/2020	4/30/2021	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
5.600%	8/1/2020	7/31/2021	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
9.523%	1/20/2020	12/31/2020	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
2.400%	3/1/2020	1/31/2021	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
1.900%	6/2/2020	5/31/2021	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
2.400%	7/2/2020	6/30/2021	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
2.200%	3/31/2020	3/31/2021	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
2.523%	5/1/2020	4/30/2021	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
3.900%	8/1/2020	7/31/2021	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
8.545%	1/20/2020	12/31/2020	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
5.000%	3/1/2020	1/31/2021	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
4.700%	6/2/2020	5/31/2021	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
1.800%	7/2/2020	6/30/2021	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
8.500%	3/31/2020	3/31/2021	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
6.833%	5/1/2020	4/30/2021	10/9/2020 12:15	10/13/2020 8:25	10/13/2020 11:07	0.502	0.980	1.002	1.000
6.200%	8/1/2020	7/31/2021	10/9/2020 12:15	10/13/2020 8:25	10/13/2020 11:07	0.502	0.980	1.002	1.000

- Notes:
 1 - Results are decay corrected to Sample Date/Time
 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : 1715-E
Spike Exp Date : 5/21/2021
Spike Activity (dpm/ml): 300.25
Spike Volume Added: 0.10

LCS S/N : 1715-E
LCS Exp Date : 5/21/2021
LCS Activity (dpm/ml): 300.25
LCS Volume Added: 0.10

Results																
Pos.	Decision Level pCi/L	Critical Level pCi/L	Required MDA pCi/L	MDA pCi/L	Sample Act. Conc. pCi/L	Sample Act. Error %	Net Count Rate CPM	Net Count Rate Error CPM	2 SIGMA Counting Uncertainty pCi/L	2 SIGMA Total Prop. Uncertainty pCi/L	Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery
1	0.2263	0.1598	1	0.4225	0.6181	28.40%	0.6000	0.1700	0.3432	0.3554		SAMPLE				
2	0.2959	0.2089	1	0.5278	0.1833	82.92%	0.1667	0.1374	0.2963	0.2991		SAMPLE				
3	0.2260	0.1595	1	0.4111	0.5827	29.16%	0.6333	0.1795	0.3237	0.3435		SAMPLE				
4	0.1919	0.1355	1	0.3719	0.7735	24.07%	0.7667	0.1795	0.3550	0.3817		SAMPLE				
5	0.1867	0.1318	1	0.3617	0.4579	33.33%	0.4667	0.1491	0.2867	0.3064		SAMPLE				
6	0.1449	0.1023	1	0.3364	1.0112	21.87%	0.7667	0.1667	0.4308	0.4574		SAMPLE				
7	0.1162	0.0821	1	0.2700	0.2117	47.18%	0.2000	0.0943	0.1956	0.1981		SAMPLE				
8	0.2923	0.2064	1	0.5068	-0.0627	187.10%	-0.0667	0.1247	0.2300	0.2301		SAMPLE				
9	0.1445	0.1020	1	0.3355	0.2630	47.19%	0.2000	0.0943	0.2430	0.2462		SAMPLE				
10	0.2936	0.2073	1	0.5342	0.7971	27.50%	0.6667	0.1826	0.4278	0.4448		SAMPLE				
11	0.1538	0.1086	1	0.3163	0.7593	22.93%	0.7667	0.1732	0.3362	0.3584		SAMPLE				
12	0.1172	0.0827	1	0.2721	0.5334	28.78%	0.5000	0.1374	0.2873	0.3106		SAMPLE				
13	0.2573	0.1817	1	0.4681	0.1746	77.62%	0.1667	0.1291	0.2651	0.2669		SAMPLE				
14	0.1044	0.0737	1	0.2424	0.0317	173.27%	0.0333	0.0577	0.1075	0.1077		SAMPLE				
15	0.0986	0.0696	1	0.2289	0.0897	74.56%	0.1000	0.0745	0.1311	0.1318		MB				
16	0.3474	0.2453	1	0.6023	0.4845	42.29%	0.4333	0.1795	0.3934	0.4077	521691001.1	DUP	24.2%			
17	0.1161	0.0820	1	0.2697	28.8673	7.68%	27.3000	0.9551	1.9795	6.0190	521691001.1	MS			27.0505	104.4%
18	0.3177	0.2243	1	0.5509	29.9660	7.07%	29.3000	0.9972	1.9990	5.9972		LCS			27.0498	110.8%

Continuing Calibration Data

[IMAGE]

Ludlum Alpha Scintillation Counter Checks for 13-OCT-2020

Short Name	Parmname	Run Time	Count Time	Counts	CPM	Stdev	Status	Comments
LUCAS1	EFF	07:35	1	1.25E+05	124966	-1.58		
LUCAS2	EFF	07:24	1	1.31E+05	130892	-1.21		
LUCAS3	EFF	07:22	1	1.32E+05	132414	-1.34		
LUCAS4	EFF	07:20	1	1.27E+05	127188	-2.77		
LUCAS5	EFF	07:33	1	1.29E+05	128590	-2.26		
LUCAS6	EFF	07:14	1	1.32E+05	132120	-2.71		
LUCAS7	EFF	07:13	1	1.31E+05	131433	-1.4		
LUCAS8	EFF	07:12	1	1.20E+05	119787	-1.59		

Reviewed by:



Lyndsey Pace

Date: 13-OCT-20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: LUCAS CELL DETECTOR

Batch ID: 2042415

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
521691001	SAMPLE	MXH8	LUCAS7	OCT-13-20 09:32:00	DONE	Lucas Cell	01-NOV-19 00:00
521691002	SAMPLE	MXH8	LUCAS8	OCT-13-20 09:32:00	DONE	Lucas Cell	31-MAR-20 00:00
521691003	SAMPLE	MXH8	LUCAS1	OCT-13-20 10:03:00	DONE	Lucas Cell	01-MAY-20 00:00
521691004	SAMPLE	MXH8	LUCAS2	OCT-13-20 10:03:00	DONE	Lucas Cell	01-AUG-20 00:00
521691005	SAMPLE	MXH8	LUCAS3	OCT-13-20 10:03:00	DONE	Lucas Cell	20-JAN-20 00:00
521691006	SAMPLE	MXH8	LUCAS4	OCT-13-20 10:03:00	DONE	Lucas Cell	01-MAR-20 00:00
521691007	SAMPLE	MXH8	LUCAS5	OCT-13-20 10:03:00	DONE	Lucas Cell	02-JUN-20 00:00
522937001	SAMPLE	MXH8	LUCAS6	OCT-13-20 10:03:00	DONE	Lucas Cell	02-JUL-20 00:00
522937002	SAMPLE	MXH8	LUCAS8	OCT-13-20 10:03:00	DONE	Lucas Cell	31-MAR-20 00:00
522937003	SAMPLE	MXH8	LUCAS1	OCT-13-20 10:35:00	DONE	Lucas Cell	01-MAY-20 00:00
522937004	SAMPLE	MXH8	LUCAS2	OCT-13-20 10:35:00	DONE	Lucas Cell	01-AUG-20 00:00
522937005	SAMPLE	MXH8	LUCAS3	OCT-13-20 10:35:00	DONE	Lucas Cell	20-JAN-20 00:00
522937006	SAMPLE	MXH8	LUCAS4	OCT-13-20 10:35:00	DONE	Lucas Cell	01-MAR-20 00:00
522937007	SAMPLE	MXH8	LUCAS5	OCT-13-20 10:35:00	DONE	Lucas Cell	02-JUN-20 00:00
1204647500	MB	MXH8	LUCAS6	OCT-13-20 10:35:00	DONE	Lucas Cell	02-JUL-20 00:00
1204647501	DUP	MXH8	LUCAS8	OCT-13-20 10:35:00	DONE	Lucas Cell	31-MAR-20 00:00
1204647502	MS	MXH8	LUCAS1	OCT-13-20 11:07:00	DONE	Lucas Cell	01-MAY-20 00:00
1204647503	LCS	MXH8	LUCAS2	OCT-13-20 11:07:00	DONE	Lucas Cell	01-AUG-20 00:00



Environmental Laboratory
1232 Haco Drive
Lansing
Michigan, 48910

CHAIN OF CUSTODY

Phone: (517)702-6372

Lab Work Order Number L0091005

Client Name BWL - Erickson Station		Project Name Erickson GMP		Requested Turn Around	
Client Contact Cheryl Loudon		Project Number [none]		Rush requests subject to additional charge	
Address 3725 S. Canal		Project Description		Rush requests subject to lab approval	
City Lansing		PO Number		Radium 226	
State/Zip MI, 48917		Shipped By		Radium 228	
Phone (517) 702-6396		Tracking Number		TDS, Cl, SO4, F	
Fax 517-702-6373				Hg, Mo, Se, Tl	
Sampler Marc Wahrer				Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Pb, Li	

Sample Name or Field ID	Sampled Date	Sampled Time	Sample Type (Grab/Composite)	Matrix Code	Container Count	Preservation Code						Sample	Comments
						b	a	a	b	b	b		
MW-1	9/15/20	1239	G	GW	1	1	1	1	1	1	1		
MW-2		1600	G	GW	1	1	1	1	1	1	1		
MW-4		1027	G	GW	1	1	1	1	1	1	1		
MW-5		1636	G	GW	1	1	1	1	1	1	1		
MW-6		1418	G	GW	1	1	1	1	1	1	1		
MW-4 Duplicate		1027	G	GW	1	1	1	1	1	1	1		
Field Blank		750	G	DI	1	1	1	1	1	1	1		

Relinquished By 	Date/Time 9-16-20 0900	Received By <i>Hellman</i>	Date/Time 9/16/20 0900	Comments
Relinquished By	Date/Time	Received By	Date/Time	Comments
Relinquished By	Date/Time	Received By	Date/Time	Comments



Lansing Board of Water and Light
Environmental Services Laboratory
1232 Haco Dr.
Lansing, Michigan 48901

29 October 2020

BWL - Erickson Station
Attn: Cheryl Louden
3725 S. Canal
Lansing, MI 48917

Project: Erickson GMP

Dear Cheryl Louden,

Enclosed is a copy of the laboratory report for the following work order(s) received by Lansing Board of Water and Light Environmental Services Laboratory:

Work Order
L009093

Received
9/29/2020 8:38:00AM

Account Number
30926 10021

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

Sincerely,

A handwritten signature in blue ink that reads "Jennifer Caporale".

Jennifer Caporale, Supervisor



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/29/2020

Sample Name: MW-1

Lab #: L009093-01 Ground Water

Collected: 28-Sep-20 13:24

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	1200	1.0	uS/cm	1		28-Sep-20 13:24	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		28-Sep-20 13:24	maw	FIELD	
Gallons Purged	3.00		Gallons	1		28-Sep-20 13:24	maw	FIELD	
Oxidation Reduction Potential	-62.70	-999.0	mV	1		28-Sep-20 13:24	maw	FIELD	
pH	6.8	7.0	pH Units	1		28-Sep-20 13:24	maw	SM 4500H+B	
Static Head Measurement	15.6		Feet	1		28-Sep-20 13:24	maw	FIELD	
Temperature	14		°C	1		28-Sep-20 13:24	maw	SM 2550B	
Turbidity	7.3	0.10	NTU	1		28-Sep-20 13:24	maw	SM 2130B	

Sample Name: MW-2

Lab #: L009093-02 Ground Water

Collected: 28-Sep-20 16:51

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	1800	1.0	uS/cm	1		28-Sep-20 16:51	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		28-Sep-20 16:51	maw	FIELD	
Gallons Purged	2.50		Gallons	1		28-Sep-20 16:51	maw	FIELD	
Oxidation Reduction Potential	56.10	-999.0	mV	1		28-Sep-20 16:51	maw	FIELD	
pH	6.7	7.0	pH Units	1		28-Sep-20 16:51	maw	SM 4500H+B	
Static Head Measurement	20.8		Feet	1		28-Sep-20 16:51	maw	FIELD	
Temperature	13		°C	1		28-Sep-20 16:51	maw	SM 2550B	
Turbidity	7.1	0.10	NTU	1		28-Sep-20 16:51	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station
 Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/29/2020

Sample Name: MW-4

Lab #: L009093-03 Ground Water

Collected: 28-Sep-20 10:36

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	860	1.0	uS/cm	1		28-Sep-20 10:36	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		28-Sep-20 10:36	maw	FIELD	
Gallons Purged	2.50		Gallons	1		28-Sep-20 10:36	maw	FIELD	
Oxidation Reduction Potential	-77.30	-999.0	mV	1		28-Sep-20 10:36	maw	FIELD	
pH	7.1	7.0	pH Units	1		28-Sep-20 10:36	maw	SM 4500H+B	
Static Head Measurement	18.4		Feet	1		28-Sep-20 10:36	maw	FIELD	
Temperature	13		°C	1		28-Sep-20 10:36	maw	SM 2550B	
Turbidity	1.1	0.10	NTU	1		28-Sep-20 10:36	maw	SM 2130B	

Sample Name: MW-5

Lab #: L009093-04 Ground Water

Collected: 28-Sep-20 17:30

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	1800	1.0	uS/cm	1		28-Sep-20 17:30	maw	SM 2510B	
Dissolved oxygen	2.50	0.100	mg/L	1		28-Sep-20 17:30	maw	FIELD	
Gallons Purged	3.50		Gallons	1		28-Sep-20 17:30	maw	FIELD	
Oxidation Reduction Potential	155.3	-999.0	mV	1		28-Sep-20 17:30	maw	FIELD	
pH	7.2	7.0	pH Units	1		28-Sep-20 17:30	maw	SM 4500H+B	
Static Head Measurement	18.6		Feet	1		28-Sep-20 17:30	maw	FIELD	
Temperature	13		°C	1		28-Sep-20 17:30	maw	SM 2550B	
Turbidity	25	0.10	NTU	1		28-Sep-20 17:30	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
 Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/29/2020

Sample Name: MW-6

Lab #: L009093-05 Ground Water

Collected: 28-Sep-20 15:21

By: Marc Wahrer

Analyte	Reporting			Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
	Result	Limit	Units						
Conductivity	1100	1.0	uS/cm	1		28-Sep-20 15:21	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		28-Sep-20 15:21	maw	FIELD	
Gallons Purged	2.50		Gallons	1		28-Sep-20 15:21	maw	FIELD	
Oxidation Reduction Potential	59.50	-999.0	mV	1		28-Sep-20 15:21	maw	FIELD	
pH	6.7	7.0	pH Units	1		28-Sep-20 15:21	maw	SM 4500H+B	
Static Head Measurement	20.5		Feet	1		28-Sep-20 15:21	maw	FIELD	
Temperature	13		°C	1		28-Sep-20 15:21	maw	SM 2550B	
Turbidity	5.4	0.10	NTU	1		28-Sep-20 15:21	maw	SM 2130B	



Analytical Report

Client: BWL - Erickson Station

Client Project Manager: Cheryl Loudon

Report Date: 10/29/2020

Address: 3725 S. Canal

Lansing MI, 48917

Approved By:

Jennifer Caporale

Notes and Definitions

AL Action Level (Action Level = Regulatory Limit)
MCL Maximum Contaminant Level
PEL Permissible Exposure Limit (Permissible Exposure Limit = Regulatory Limit)
RPD Relative Percent Difference
OT Odor Threshold
ND Non Detect

All drinking water regulatory limits are MCL's with the exception of Lead and Copper unless otherwise noted.



Analytical Laboratory Report

Final Report

Report ID: S17839.01(02)
Generated on 10/29/2020
Replaces report S17839.01(01) generated on 10/01/2020

Report to
Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary
Lab Sample ID(s): S17839.01-S17839.07
Project: Erickson GMP
Collected Date(s): 09/28/2020
Submitted Date/Time: 09/29/2020 11:10
Sampled by: Marc Wahrer
P.O. #:

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Method Summary (Page 4)
Sample Summary (Page 5)

Maya Murshak
Technical Director



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

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Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

All Metal Results Are Reported As Total



Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
E300.0	EPA Method 300.0 Revision 2.1
SM2540C	Standard Method 2540 C 2011
SM2540D	Standard Method 2540 D 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007



Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S17839.01	MW-1 L009093-01	Groundwater	09/28/20 13:24
S17839.02	MW-2 L009093-02	Groundwater	09/28/20 16:51
S17839.03	MW-4 L009093-03	Groundwater	09/28/20 10:36
S17839.04	MW-5 L009093-04	Groundwater	09/28/20 17:30
S17839.05	MW-6 L009093-05	Groundwater	09/28/20 15:21
S17839.06	MW-4 Duplicate L009093-06	Groundwater	09/28/20 10:36
S17839.07	Field Blank L009093-07	Water	09/28/20 08:00



Analytical Laboratory Report

Lab Sample ID: S17839.01

Sample Tag: MW-1 L009093-01

Collected Date/Time: 09/28/2020 13:24

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	3.3	IR
2	1L Plastic	None	Yes	3.3	IR
1	125ml Plastic	HNO3	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/30/20 11:40	JRH	
Metal Digestion	Completed	SW3015A	09/30/20 08:15	JRH	

Inorganics

Method: E300.0, Run Date: 09/30/20 09:01, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 09/29/20 14:38, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	61	10	0.16	mg/L	10	16887-00-6	
Sulfate	80	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 09/29/20 15:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	796	20	2	mg/L	2		

Method: SM2540D, Run Date: 09/30/20 19:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	19	3	1	mg/L	2.50		

Metals

Method: E200.8, Run Date: 10/01/20 12:47, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	153	2.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 09/30/20 14:09, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.006	0.002	0.00026	mg/L	5	7440-38-2	
Boron	0.45	0.04	0.0018	mg/L	5	7440-42-8	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.041	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Final Report

Lab Sample ID: S17839.01 (continued)

Sample Tag: MW-1 L009093-01

Method: E200.8, Run Date: 10/01/20 11:50, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Barium	0.145	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 09/30/20 14:21, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/29/20 12:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Final Report

Lab Sample ID: S17839.02

Sample Tag: MW-2 L009093-02

Collected Date/Time: 09/28/2020 16:51

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	3.3	IR
2	1L Plastic	None	Yes	3.3	IR
1	125ml Plastic	HNO3	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/30/20 11:40	JRH	
Metal Digestion	Completed	SW3015A	09/30/20 08:15	JRH	

Inorganics

Method: E300.0, Run Date: 09/30/20 09:14, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 09/29/20 14:51, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	84	25	0.40	mg/L	25	16887-00-6	
Sulfate	586	25	1.5	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 09/29/20 15:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,420	20	2	mg/L	2		

Method: SM2540D, Run Date: 09/30/20 19:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	2	3	1	mg/L	1.00		b

Metals

Method: E200.8, Run Date: 10/01/20 12:48, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	265	2.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 09/30/20 14:11, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Boron	5.94	0.04	0.0018	mg/L	5	7440-42-8	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.066	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.012	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Final Report

Lab Sample ID: S17839.02 (continued)

Sample Tag: MW-2 L009093-02

Method: E200.8, Run Date: 10/01/20 11:51, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Barium	0.041	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 09/30/20 14:23, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/29/20 12:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Final Report

Lab Sample ID: S17839.03

Sample Tag: MW-4 L009093-03

Collected Date/Time: 09/28/2020 10:36

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	3.3	IR
2	1L Plastic	None	Yes	3.3	IR
1	125ml Plastic	HNO3	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/30/20 11:40	JRH	
Metal Digestion	Completed	SW3015A	09/30/20 08:15	JRH	

Inorganics

Method: E300.0, Run Date: 09/30/20 09:27, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 09/29/20 15:04, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	69	10	0.16	mg/L	10	16887-00-6	
Sulfate	58	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 09/29/20 15:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	538	20	2	mg/L	2		

Method: SM2540D, Run Date: 09/30/20 19:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	2	3	1	mg/L	1.00		b

Metals

Method: E200.8, Run Date: 10/01/20 12:49, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	102	2.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 09/30/20 14:13, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.008	0.002	0.00026	mg/L	5	7440-38-2	
Boron	0.07	0.04	0.0018	mg/L	5	7440-42-8	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.010	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Final Report

Lab Sample ID: S17839.03 (continued)

Sample Tag: MW-4 L009093-03

Method: E200.8, Run Date: 10/01/20 11:53, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Barium	0.163	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 09/30/20 14:25, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/29/20 12:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S17839.04

Sample Tag: MW-5 L009093-04

Collected Date/Time: 09/28/2020 17:30

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	3.3	IR
2	1L Plastic	None	Yes	3.3	IR
1	125ml Plastic	HNO3	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/30/20 11:40	JRH	
Metal Digestion	Completed	SW3015A	09/30/20 08:15	JRH	

Inorganics

Method: E300.0, Run Date: 09/30/20 09:40, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 09/29/20 15:17, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	78	50	0.80	mg/L	50	16887-00-6	
Sulfate	873	50	3.0	mg/L	50	14808-79-8	

Method: SM2540C, Run Date: 09/29/20 15:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,660	20	2	mg/L	2		

Method: SM2540D, Run Date: 09/30/20 19:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	6	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 10/01/20 12:50, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	283	2.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 09/30/20 14:15, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Boron	5.09	0.04	0.0018	mg/L	5	7440-42-8	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.070	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.044	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Final Report

Lab Sample ID: S17839.04 (continued)

Sample Tag: MW-5 L009093-04

Method: E200.8, Run Date: 10/01/20 11:54, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Barium	0.043	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 09/30/20 14:27, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/29/20 12:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Lab Sample ID: S17839.05

Sample Tag: MW-6 L009093-05

Collected Date/Time: 09/28/2020 15:21

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	3.3	IR
2	1L Plastic	None	Yes	3.3	IR
1	125ml Plastic	HNO3	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/30/20 11:40	JRH	
Metal Digestion	Completed	SW3015A	09/30/20 08:15	JRH	

Inorganics

Method: E300.0, Run Date: 09/30/20 09:53, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 09/29/20 15:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	39	25	0.40	mg/L	25	16887-00-6	
Sulfate	214	25	1.5	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 09/29/20 15:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	822	20	2	mg/L	2		

Method: SM2540D, Run Date: 09/30/20 19:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 10/01/20 12:51, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	175	2.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 09/30/20 14:17, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Boron	0.97	0.04	0.0018	mg/L	5	7440-42-8	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.053	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.028	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	



Analytical Laboratory Report

Final Report

Lab Sample ID: S17839.05 (continued)

Sample Tag: MW-6 L009093-05

Method: E200.8, Run Date: 10/01/20 11:56, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Barium	0.055	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 09/30/20 14:29, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/29/20 12:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Final Report

Lab Sample ID: S17839.06

Sample Tag: MW-4 Duplicate L009093-06

Collected Date/Time: 09/28/2020 10:36

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	3.3	IR
2	1L Plastic	None	Yes	3.3	IR
1	125ml Plastic	HNO3	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/30/20 11:40	JRH	
Metal Digestion	Completed	SW3015A	09/30/20 08:15	JRH	

Inorganics

Method: E300.0, Run Date: 09/30/20 10:05, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 09/29/20 15:42, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	70	10	0.16	mg/L	10	16887-00-6	
Sulfate	58	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 09/29/20 15:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	544	20	2	mg/L	2		

Method: SM2540D, Run Date: 09/30/20 19:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	2	3	1	mg/L	1.00		b

Metals

Method: E200.8, Run Date: 10/01/20 12:54, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	105	2.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 09/30/20 14:19, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.009	0.002	0.00026	mg/L	5	7440-38-2	
Boron	0.07	0.04	0.0018	mg/L	5	7440-42-8	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.011	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.005	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Final Report

Lab Sample ID: S17839.06 (continued)

Sample Tag: MW-4 Duplicate L009093-06

Method: E200.8, Run Date: 10/01/20 11:57, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Barium	0.168	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 09/30/20 14:34, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0005	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/29/20 12:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Final Report

Lab Sample ID: S17839.07

Sample Tag: Field Blank L009093-07

Collected Date/Time: 09/28/2020 08:00

Matrix: Water

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	3.3	IR
2	1L Plastic	None	Yes	3.3	IR
1	125ml Plastic	HNO3	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/30/20 11:40	JRH	
Metal Digestion	Completed	SW3015A	09/30/20 08:15	JRH	

Inorganics

Method: E300.0, Run Date: 09/30/20 10:18, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	0.5	0.04	mg/L	2.5	16984-48-8	

Method: E300.0, Run Date: 09/29/20 15:55, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	2.5	0.04	mg/L	2.5	16887-00-6	
Sulfate	Not detected	2.5	0.15	mg/L	2.5	14808-79-8	

Method: SM2540C, Run Date: 09/29/20 15:25, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	22	20	2	mg/L	2		

Method: SM2540D, Run Date: 09/30/20 19:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 10/01/20 12:43, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	Not detected	0.50	0.017	mg/L	2	7440-70-2	

Method: E200.8, Run Date: 09/30/20 14:05, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0010	mg/L	2	7440-36-0	
Arsenic	Not detected	0.002	0.00010	mg/L	2	7440-38-2	
Boron	Not detected	0.04	0.00070	mg/L	2	7440-42-8	
Chromium	Not detected	0.005	0.000039	mg/L	2	7440-47-3	
Lead	Not detected	0.003	0.000076	mg/L	2	7439-92-1	
Lithium*	Not detected	0.005	0.00065	mg/L	2	7439-93-2	
Molybdenum	Not detected	0.005	0.000087	mg/L	2	7439-98-7	
Selenium	Not detected	0.005	0.00084	mg/L	2	7782-49-2	



Analytical Laboratory Report

Final Report

Lab Sample ID: S17839.07 (continued)

Sample Tag: Field Blank L009093-07

Method: E200.8, Run Date: 10/01/20 11:46, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Barium	Not detected	0.005	0.000065	mg/L	2	7440-39-3	
Beryllium	Not detected	0.001	0.000086	mg/L	2	7440-41-7	
Cadmium	Not detected	0.0005	0.000076	mg/L	2	7440-43-9	
Cobalt	Not detected	0.005	0.000043	mg/L	2	7440-48-4	
Thallium	Not detected	0.002	0.000034	mg/L	2	7440-28-0	

Method: E245.1, Run Date: 09/30/20 14:36, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0005	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 10/29/20 12:45, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.

Merit Laboratories Login Checklist

Lab Set ID:S17839

Client:BWL01 (Board of Water & Light)

Project: Erickson GMP

Submitted:09/29/2020 11:10 Login User: SRS

Attention: Jennifer Caporale

Address: Board of Water & Light

P.O. Box 13007

Lansing, MI 48901

Phone: 517-702-6372

FAX:

Email: Environmental_Laboratory@LBWL.com

Selection	Description	Note
-----------	-------------	------

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 3.3 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

Chain of Custody

- | | | |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC |
| 09. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: GEL |

Preservation

- | | | |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation |
| 11. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? |

Bottle Conditions

- | | | |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S17839 Submitted: 09/29/2020 11:10

Attention: Jennifer Caporale
Address: Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Client: BWL01 (Board of Water & Light)

Project: Erickson GMP

Initial Preservation Check: 09/29/2020 11:28 SRS

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Preservation Recheck (E200.8): N/A

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S17839.01	125ml Plastic HNO3	<2			
S17839.01	1L Plastic HNO3	<2			
S17839.01	1L Plastic HNO3	<2			
S17839.02	125ml Plastic HNO3	<2			
S17839.02	1L Plastic HNO3	<2			
S17839.02	1L Plastic HNO3	<2			
S17839.03	125ml Plastic HNO3	<2			
S17839.03	1L Plastic HNO3	<2			
S17839.03	1L Plastic HNO3	<2			
S17839.04	125ml Plastic HNO3	<2			
S17839.04	1L Plastic HNO3	<2			
S17839.04	1L Plastic HNO3	<2			
S17839.05	125ml Plastic HNO3	<2			
S17839.05	1L Plastic HNO3	<2			
S17839.05	1L Plastic HNO3	<2			
S17839.06	125ml Plastic HNO3	<2			
S17839.06	1L Plastic HNO3	<2			
S17839.06	1L Plastic HNO3	<2			
S17839.07	125ml Plastic HNO3	<2			
S17839.07	1L Plastic HNO3	<2			
S17839.07	1L Plastic HNO3	<2			



2680 East Lansing Dr., East Lansing, MI 48823
 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Jennifer Caporale
 COMPANY Lansing Board of Water and Light
 ADDRESS PO Box 13007 48901-3007
 CITY Lansing STATE Mi ZIP CODE 48901
 PHONE NO. 517-702-6372 FAX NO. P.O. NO.
 E-MAIL ADDRESS Environmental_Laboratory@lbwl.com QUOTE NO.

CONTACT NAME Kelly Gleason SAME
 COMPANY
 ADDRESS
 CITY STATE ZIP CODE
 PHONE NO. E-MAIL ADDRESS Kelly.Gleason@lbwl.com

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME Erickson GMP SAMPLER(S) - PLEASE PRINT/SIGN NAME Marc Wahrer
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

Containers & Preservatives
 Total Metals TSS TDS, Cl-, SO4-, F Radium 226 Radium 228
 Certifications
 OHIO VAP Drinking Water
 DoD NPDES
 Project Locations
 Detroit New York
 Other
 Special Instructions

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION		MATRIX	# OF BOTTLES	# Containers & Preservatives							Total Metals	TSS	TDS, Cl-, SO4-, F	Radium 226	Radium 228				
	DATE	TIME					NONE	HCl	HNO3	H2SO4	NaOH	MnOH	OTHER									
17839.01	9/29/20	1324	MW-1	L009093-01	GW	5	2	3					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					Metals to analyse:
.02		1651	MW-2	02	GW	5	2	3					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					Sb, As, Ba, Be, B, Cd, Ca, Cr,
.03		1036	MW-4	03	GW	5	2	3					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					Co, Pb, Li, Hg, Mo, Se, Tl
.04		1730	MW-5	04	GW	5	2	3					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
.05		1521	MW-6	05	GW	5	2	3					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					Please send a preliminary report
.06		1036	MW-4 Duplicate	06	GW	5	2	3					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
.07	✓	800	Field Blank	07	DI	5	2	3					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

RELINQUISHED BY: *[Signature]* DATE 9-29-20 TIME 1110
 SIGNATURE/ORGANIZATION *[Signature]*
 RECEIVED BY: *[Signature]* DATE 9/29/20 TIME 1100
 SIGNATURE/ORGANIZATION *[Signature]*

RELINQUISHED BY: DATE TIME
 SIGNATURE/ORGANIZATION
 RECEIVED BY: DATE TIME
 SIGNATURE/ORGANIZATION

SEAL NO. SEAL INTACT YES NO INITIALS
 SEAL NO. SEAL INTACT YES NO INITIALS

NOTES TEMP. ON ARRIVAL **3.3**



October 26, 2020

John Laverty
Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan 48823

Re: Routine Analysis
Work Order: 522937
SDG: S17839

Dear John Laverty:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on October 01, 2020. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4443.

Sincerely,

Lindsay Fabra
Project Manager

Purchase Order: GELP20-0018
Enclosures

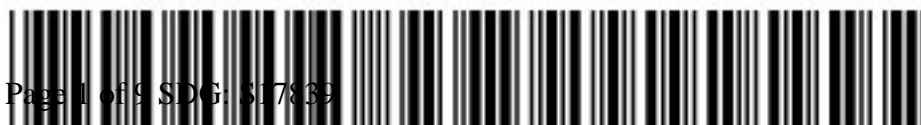


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Case Narrative

**Receipt Narrative
for
Merit Laboratories, Inc.
SDG: S17839
Work Order: 522937**

October 26, 2020

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on October 01, 2020 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

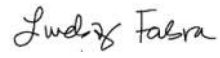
Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
522937001	S17839.01
522937002	S17839.02
522937003	S17839.03
522937004	S17839.04
522937005	S17839.05
522937006	S17839.06
522937007	S17839.07 (Field Blank)

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Radiochemistry.



Lindsay Fabra
Project Manager

Chain of Custody and Supporting Documentation



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 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

REPORT TO

CONTACT NAME John Lavery
 COMPANY Merit Laboratories
 ADDRESS 2680 East Lansing Drive
 CITY East Lansing
 PHONE NO. 517-332-0167 FAX NO.
 E-MAIL ADDRESS results@meritlabs.com

CHAIN OF CUSTODY RECORD

CONTACT NAME Julie Teague
 COMPANY Merit Laboratories
 ADDRESS 2680 East Lansing Drive
 CITY East Lansing
 PHONE NO. 517-332-0167 E-MAIL ADDRESS juliet@meritlabs.com

INVOICE TO

STATE MI ZIP CODE 48823

PROJECT NO./NAME S17839 ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

MERT LAB NO. FOR LAB USE ONLY	YEAR	DATE	TIME	IDENTIFICATION-DESCRIPTION	SAMPLER(S) - PLEASE PRINT/SIGN NAME		# OF BOTTLES	MATRIX	# Containers & Preservatives	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Seal Intact		Initials		RELINQUISHED BY: SIGNATURE/ORGANIZATION	RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME	SEAL NO.	SEAL INTRCT YES <input type="checkbox"/> NO <input type="checkbox"/>	INITIALS	NOTES:	
					DATE	TIME										DATE	TIME											
	9/28/20	1324		S17839.01			2	GW	Radium 226*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
	9/28/20	1651		S17839.02			2	GW	Radium 228*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
	9/28/20	1036		S17839.03			2	GW		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
	9/28/20	1730		S17839.04			2	GW		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
	9/28/20	1521		S17839.05			2	GW		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
	9/28/20	1036		S17839.06			2	GW		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
	9/28/20	0800		S17839.07 (Field Blank)			2	L		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										

TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER

DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER

MATRIX: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WPE A=AIR W=WASTE

RELINQUISHED BY: Sam Smith DATE 9/29/20 TIME 1040
 RECEIVED BY: OPS DATE 9/29/20 TIME 1040

RELINQUISHED BY: Julie Teague DATE 9/29/20 TIME 1010
 RECEIVED BY: Julie Teague DATE 9/29/20 TIME 1010

TEMP. ON ARRIVAL 37

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

522937

LF **SAMPLE RECEIPT & REVIEW FORM**

Client: <u>MERI</u>	SDG/AR/COC/Work Order#
Received By: <u>AJA</u>	Date Received: <u>10/1/20</u>
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground <u>UPS</u> Field Services Courier Other <u>1Z 466 477 03 6139 6740</u>

Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A) Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____ If UN2910, Is the Radioactive Shipment Survey Compliant? Yes ___ No ___
B) Did the client designate the samples are to be received as radioactive?	<input checked="" type="checkbox"/>	COC notation or radioactive stickers on containers equal client designation.
C) Did the RSO classify the samples as radioactive?	<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3
D) Did the client designate samples are hazardous?	<input checked="" type="checkbox"/>	COC notation or hazard labels on containers equal client designation.
E) Did the RSO identify possible hazards?	<input checked="" type="checkbox"/>	If D or E is yes, select Hazards below. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Client contacted and provided COC COC created upon receipt
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice Ice Packs Dry ice <u>None</u> Other: _____ *all temperatures are recorded in Celsius TEMP: <u>21°</u>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>IR4-16</u> Secondary Temperature Device Serial # (If Applicable): _____
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#: _____
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes, are Encores or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, take to VOA Freezer)
				Do liquid VOA vials contain acid preservation? Yes ___ No ___ NA ___ (If unknown, select No)
				Are liquid VOA vials free of headspace? Yes ___ No ___ NA ___ Sample ID's and containers affected: _____
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and containers affected: _____
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No container count on COC Other (describe)
12 Are sample containers identifiable as GEL provided by use of GEL labels?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials SH Date 10/2/20 Page 1 of 1

Laboratory Certifications

List of current GEL Certifications as of 26 October 2020

State	Certification
Alabama	42200
Alaska	17-018
Alaska Drinking Water	SC00012
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-165
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-20-17
Utah NELAP	SC000122020-33
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

Radiological Analysis

Case Narrative

**Radiochemistry
Technical Case Narrative
Merit Laboratories, Inc.
SDG #: S17839
Work Order #: 522937**

Product: GFPC Ra228, Liquid

Analytical Method: EPA 904.0/SW846 9320 Modified

Analytical Procedure: GL-RAD-A-009 REV# 17

Analytical Batch: 2046958

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
522937001	S17839.01
522937002	S17839.02
522937003	S17839.03
522937004	S17839.04
522937005	S17839.05
522937006	S17839.06
522937007	S17839.07 (Field Blank)
1204657735	Method Blank (MB)
1204657736	522937004(S17839.04) Sample Duplicate (DUP)
1204657737	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Samples 1204657736 (S17839.04DUP) and 522937004 (S17839.04) were recounted due to high relative percent difference/relative error ratio. The recounts are reported.

Product: Lucas Cell, Ra226, Liquid

Analytical Method: EPA 903.1 Modified

Analytical Procedure: GL-RAD-A-008 REV# 15

Analytical Batch: 2042415

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
522937001	S17839.01
522937002	S17839.02

522937003	S17839.03
522937004	S17839.04
522937005	S17839.05
522937006	S17839.06
522937007	S17839.07 (Field Blank)
1204647500	Method Blank (MB)
1204647501	521691001(S17448.01) Sample Duplicate (DUP)
1204647502	521691001(S17448.01) Matrix Spike (MS)
1204647503	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

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Qualifier Definition Report for

MERI001 Merit Laboratories, Inc.

Client SDG: S17839 GEL Work Order: 522937

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Kate Gellatly

Date: 28 OCT 2020

Title: Analyst I

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: October 28, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S17839.01 Project: MERI00120
Sample ID: 522937001 Client ID: MERI001
Matrix: Ground Water
Collect Date: 28-SEP-20 13:24
Receive Date: 01-OCT-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.778	+/-1.05	2.08	3.00	pCi/L			KSD1	10/08/20	1018	2046958	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.000	+/-1.08			pCi/L		1	AEA	10/14/20	1150	2047739	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	-0.0627	+/-0.230	0.507	1.00	pCi/L			MXH8	10/13/20	1003	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			94.2	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 28, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Lavery
Project: Routine Analysis

Client Sample ID: S17839.02 Project: MERI00120
Sample ID: 522937002 Client ID: MERI001
Matrix: Ground Water
Collect Date: 28-SEP-20 16:51
Receive Date: 01-OCT-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.0604	+/-0.735	1.38	3.00	pCi/L			KSD1	10/08/20	1018	2046958	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.323	+/-0.774			pCi/L		1	AEA	10/14/20	1150	2047739	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.263	+/-0.243	0.335	1.00	pCi/L			MXH8	10/13/20	1003	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			96.4	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: October 28, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive
East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S17839.03 Project: MERI00120
Sample ID: 522937003 Client ID: MERI001
Matrix: Ground Water
Collect Date: 28-SEP-20 10:36
Receive Date: 01-OCT-20
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.839	+/-0.804	1.31	3.00	pCi/L			KSD1	10/08/20	1018	2046958	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.64	+/-0.911			pCi/L		1	AEA	10/14/20	1150	2047739	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.797	+/-0.428	0.534	1.00	pCi/L			MXH8	10/13/20	1035	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			92	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: October 28, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S17839.04	Project: MERI00120
Sample ID: 522937004	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 28-SEP-20 17:30	
Receive Date: 01-OCT-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	1.47	+/-0.999	1.50	3.00	pCi/L			KSD1	10/08/20	1202	2046958	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		2.23	+/-1.05			pCi/L		1	AEA	10/14/20	1150	2047739	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.759	+/-0.336	0.316	1.00	pCi/L			MXH8	10/13/20	1035	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			85.8	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: October 28, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S17839.05	Project: MERI00120
Sample ID: 522937005	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 28-SEP-20 15:21	
Receive Date: 01-OCT-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.225	+/-0.983	1.79	3.00	pCi/L			KSD1	10/08/20	1018	2046958	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.758	+/-1.02			pCi/L		1	AEA	10/14/20	1150	2047739	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.533	+/-0.287	0.272	1.00	pCi/L			MXH8	10/13/20	1035	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			86.1	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: October 28, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S17839.06	Project: MERI00120
Sample ID: 522937006	Client ID: MERI001
Matrix: Ground Water	
Collect Date: 28-SEP-20 10:36	
Receive Date: 01-OCT-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.270	+/-0.743	1.35	3.00	pCi/L			KSD1	10/08/20	1018	2046958	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.445	+/-0.789			pCi/L		1	AEA	10/14/20	1150	2047739	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.175	+/-0.265	0.468	1.00	pCi/L			MXH8	10/13/20	1035	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			96.8	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 28, 2020

Company : Merit Laboratories Inc.
 Address : 2680 East Lansing Drive
 East Lansing, Michigan 48823
 Contact: John Laverty
 Project: Routine Analysis

Client Sample ID: S17839.07 (Field Blank)	Project: MERI00120
Sample ID: 522937007	Client ID: MERI001
Matrix: Water	
Collect Date: 28-SEP-20 08:00	
Receive Date: 01-OCT-20	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.686	+/-0.818	1.38	3.00	pCi/L			KSD1	10/08/20	1018	2046958	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.718	+/-0.825			pCi/L		1	AEA	10/14/20	1150	2047739	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.0317	+/-0.108	0.242	1.00	pCi/L			MXH8	10/13/20	1035	2042415	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			85.8	(15%-125%)

Notes:
 Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: October 28, 2020

Page 1 of 2

Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan

Contact: John Laverty

Workorder: 522937

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	2046958										
QC1204657736	522937004	DUP									
Radium-228	U	1.47		1.79	pCi/L	19.6		(0% - 100%)	KSD1	10/08/20	12:02
	Uncertainty	+/-0.999		+/-1.19							
QC1204657737	LCS										
Radium-228	57.3			56.2	pCi/L		98	(75%-125%)		10/08/20	10:04
	Uncertainty			+/-3.47							
QC1204657735	MB										
Radium-228			U	-0.00227	pCi/L					10/08/20	10:17
	Uncertainty			+/-0.584							
Rad Ra-226											
Batch	2042415										
QC1204647501	521691001	DUP									
Radium-226		0.618	U	0.485	pCi/L	24.2		(0% - 100%)	MXH8	10/13/20	10:35
	Uncertainty	+/-0.343		+/-0.393							
QC1204647503	LCS										
Radium-226	27.0			30.0	pCi/L		111	(75%-125%)		10/13/20	11:07
	Uncertainty			+/-2.00							
QC1204647500	MB										
Radium-226			U	0.0897	pCi/L					10/13/20	10:35
	Uncertainty			+/-0.131							
QC1204647502	521691001	MS									
Radium-226	27.1	0.618		28.9	pCi/L		104	(75%-125%)		10/13/20	11:07
	Uncertainty	+/-0.343		+/-1.98							

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded

GEL LABORATORIES LLC

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QC Summary

Workorder: 522937

Page 2 of 2

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J											
J											
K											
L											
M											
M											
N/A											
N1											
ND											
NJ											
Q											
R											
U											
UI											
UJ											
UL											
X											
Y											
^											
h											

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Gas Flow Raw Data

Batch 2046958 Check-list

This check-list was completed on 08-OCT-20 by Nat Long

This batch was reviewed by Kenshalla Oston on 08-OCT-20 and Nat Long on 08-OCT-20.

Batch ID:
2046958

Product:
GFC28RAL

Description: Gas Flow Radium 228
GL-RAD-A-009

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
11	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
12	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-228 in Liquid

Batch ID: 2046958

Analyst: Kelli Dorrell (KSD1)

Method: EPA 904.0/SW846 9320 Modified

Lab SOP: GL-RAD-A-009 REV# 17

Instrument: GFC-8949708441

Due Dates for Lab: 25-OCT-2020

Package: 27-OCT-2020

SDG: 29-OCT-2020

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1204657737	Radium-228 SPIKE	1965-B	.1	mL

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	Ac-228 Ingrow (date)	Ac-228 Separation (date)
1	522937001	05-OCT-2020	3	300	10/06/20 12:49	10/08/20 08:17
2	522937002	05-OCT-2020	3	300	10/06/20 12:49	10/08/20 08:17
3	522937003	05-OCT-2020	3	300	10/06/20 12:49	10/08/20 08:17
4	522937004	05-OCT-2020	3	300	10/06/20 12:49	10/08/20 08:17
5	522937005	05-OCT-2020	3	300	10/06/20 12:49	10/08/20 08:17
6	522937006	05-OCT-2020	3	300	10/06/20 12:49	10/08/20 08:17
7	522937007	05-OCT-2020	3	300	10/06/20 12:49	10/08/20 08:17
8	1204657735 MB	05-OCT-2020	3	300	10/06/20 12:49	10/08/20 08:17
9	1204657736 DUP (522937004)	05-OCT-2020	3	300	10/06/20 12:49	10/08/20 08:17
10	1204657737 LCS	05-OCT-2020	3	300	10/06/20 12:49	10/08/20 08:17

Reagent/Solvent Lot ID	Description	Amount	Comments:
WORK 0487-G	Barium-133 TRACER	.1 mL	
REGNT 2947553	RGF-Neodymium 500mg/L	.2 mL	Pipet Id: RAD-GFC-1795419
REGNT 3112196	RGF-1M Citric Acid	5 mL	Data Entry Date2: 05-OCT-2020 00:00
REGNT 3114552.2	Glacial Acetic Acid	10 mL	
REGNT 3116819.2	Concentrated HNO3 (16M)	5 mL	
REGNT 3116964	Barium Carrier Ra228 REG	1 mL	
REGNT 3117853	RGF-50% Potassium Carbonate	2 mL	
REGNT 3118984	228 Neodymium substrate	5 mL	
REGNT 3122151.4	RGF-Hydrofluoric Acid	4 mL	
REGNT 3124810	RGF-1.5M Ammonium Sulfate	10 mL	
REGNT 3128067	7M HNO3	25 mL	
REGNT 3128072	2M HCL	20 mL	

Radium-228 Liquid

Filename : RA228.XLS
 File type : Excel
 Version # : 1.4.2

Tracer S/N : 0487-G
 Tracer Exp Date : 2/27/2021
 Tracer Volume Added: 0.10

Batch : 2046958
 Analyst : KEL01237
 Prep Date : 10/5/2020
 Ra-228 Method Uncertainty : 0.1268

Procedure Code : GFC28RAL
 Parmname : Radium-228
 Required MDA : 3 pCi/L
 Ra-228 Abundance : 1.00
 Halflife of Ra-228 : 5.75 years
 Halflife of Ac-228 : 6.15 hours

Geometry: 25mm Filter

Sample Characteristics					Tracer Calculations		Tracer Samp.		Tracer	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Tracer Ref. Activity (CPM)	Tracer Ref. Count Uncertainty (%)	Tracer Samp. Activity (CPM)	Tracer Samp. Count Uncertainty (%)	Tracer Aliquot (mL)	Tracer Aliquot StDev. (mL)
1	522937001.1	0.3000	1.8459E-05	9/28/2020 13:24	263.1	3.56%	248.0	3.67%	0.1	0.000200
2	522937002.1	0.3000	1.8459E-05	9/28/2020 16:51	263.1	3.56%	253.8	3.62%	0.1	0.000200
3	522937003.1	0.3000	1.8459E-05	9/28/2020 10:36	263.1	3.56%	242.0	3.71%	0.1	0.000200
4	522937004.1	0.3000	1.8459E-05	9/28/2020 17:30	263.1	3.56%	225.6	3.84%	0.1	0.000200
5	522937005.1	0.3000	1.8459E-05	9/28/2020 15:21	263.1	3.56%	226.5	3.84%	0.1	0.000200
6	522937006.1	0.3000	1.8459E-05	9/28/2020 10:36	263.1	3.56%	254.8	3.62%	0.1	0.000200
7	522937007.1	0.3000	1.8459E-05	9/28/2020 8:00	263.1	3.56%	225.8	3.84%	0.1	0.000200
8	1204657735.1	0.3000	1.8459E-05	10/5/2020 0:00	263.1	3.56%	242.1	3.71%	0.1	0.000200
9	1204657736.1	0.3000	1.8459E-05	9/28/2020 17:30	263.1	3.56%	202.0	4.06%	0.1	0.000200
10	1204657737.1	0.3000	1.8459E-05	10/5/2020 0:00	263.1	3.56%	246.1	3.68%	0.1	0.000200

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-009
 Instrument SOP: GL-RAD-I-016

Count raw Data													Calculated Sample Recovery %	Sample Recovery Error %
Pos.	Detector ID	Counting Time (min.)	Gross Counts		Beta cpm	Count Start Date/Time	Ac-228 Ingrowth Date/Time	Ac-228 Decay Date/Time	Ra-228 Decay	Ac-228 Decay	Ac-228 Ingrowth	Ac-228 Count Correction		
1	6C	60	6	77	1.283	10/8/2020 10:18	10/6/2020 12:49	10/8/2020 8:17	0.997	0.797	0.993	1.057	94.2%	2.57%
2	7A	60	8	44	0.733	10/8/2020 10:18	10/6/2020 12:49	10/8/2020 8:17	0.997	0.797	0.993	1.057	96.4%	2.55%
3	7C	60	10	49	0.817	10/8/2020 10:18	10/6/2020 12:49	10/8/2020 8:17	0.997	0.796	0.993	1.057	92.0%	2.59%
4	5A	60	15	46	0.767	10/8/2020 12:02	10/6/2020 12:49	10/8/2020 8:17	0.997	0.655	0.993	1.057	85.8%	2.63%
5	8B	60	7	63	1.050	10/8/2020 10:18	10/6/2020 12:49	10/8/2020 8:17	0.997	0.796	0.993	1.057	86.1%	2.63%
6	9B	60	6	46	0.767	10/8/2020 10:18	10/6/2020 12:49	10/8/2020 8:17	0.997	0.796	0.993	1.057	96.8%	2.55%
7	9D	60	6	45	0.750	10/8/2020 10:18	10/6/2020 12:49	10/8/2020 8:17	0.997	0.796	0.993	1.057	85.8%	2.63%
8	10A	60	3	26	0.433	10/8/2020 10:17	10/6/2020 12:49	10/8/2020 8:17	0.999	0.797	0.993	1.057	92.0%	2.59%
9	5C	60	7	52	0.867	10/8/2020 12:02	10/6/2020 12:49	10/8/2020 8:17	0.997	0.655	0.993	1.057	76.8%	2.71%
10	5B	60	37	1081	18.017	10/8/2020 10:04	10/6/2020 12:49	10/8/2020 8:17	0.999	0.818	0.993	1.057	93.6%	2.58%

Calibration Data								
Pos.	Counted on	Calibration Date	Calibration Due Date	Detector Efficiency (cpm/dpm)	Detector Efficiency Error (cpm/dpm)	Bkg cpm	Weekly Bkg Count Start Date/Time	Bkg Count Time (min.)
1	PIC	6/1/2020	5/31/2021	0.6036	0.01970	1.503	10/2/2020 18:00	1000
2	PIC	6/1/2020	5/31/2021	0.6340	0.00594	0.715	10/2/2020 18:00	1000
3	PIC	6/1/2020	5/31/2021	0.6361	0.00790	0.573	10/2/2020 18:00	1000
4	PIC	6/1/2020	5/31/2021	0.6448	0.00851	0.434	10/2/2020 17:49	1000
5	PIC	6/1/2020	5/31/2021	0.6352	0.02148	0.989	10/2/2020 18:00	1000
6	PIC	6/1/2020	5/31/2021	0.6367	0.00754	0.684	10/2/2020 18:01	1000
7	PIC	6/1/2020	5/31/2021	0.6435	0.02610	0.562	10/2/2020 18:01	1000
8	PIC	6/1/2020	5/31/2021	0.6416	0.00651	0.434	10/2/2020 18:01	1000
9	PIC	6/1/2020	5/31/2021	0.6451	0.00657	0.504	10/2/2020 17:53	1000
10	PIC	6/1/2020	5/31/2021	0.6479	0.00426	0.626	10/2/2020 17:49	1000

Notes:

- 1 - Results are decay corrected to Sample Date/Time
- 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
- 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : N/A
Spike Exp Date : N/A
Spike Activity (dpm/ml): N/A
Spike Volume Added: N/A

LCS S/N : 1965-B
LCS Exp Date : 9/24/2021
LCS Activity (dpm/ml): 381.72
LCS Volume Added: 0.10

Results																
Pos.	Decision Level pCi/L	Critical Level pCi/L	Required MDA pCi/L	MDA pCi/L	Sample Act. Conc. pCi/L	Sample Act. Error %	Net Count Rate CPM	Net Count Rate Error CPM	2 SIGMA Counting Uncertainty pCi/L	2 SIGMA Total Prop. Uncertainty pCi/L	Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery
1	1.3446	0.9493	3	2.0756	-0.7779	68.95%	-0.2197	0.1513	1.0502	1.0503		SAMPLE				
2	0.8628	0.6091	3	1.3830	0.0604	620.42%	0.0183	0.1137	0.7345	0.7347		SAMPLE				
3	0.8075	0.5701	3	1.3124	0.8393	48.95%	0.2437	0.1191	0.8040	0.8318		SAMPLE				
4	0.9043	0.6384	3	1.4985	1.4744	34.66%	0.3327	0.1149	0.9985	1.0666		SAMPLE				
5	1.1354	0.8016	3	1.7875	0.2249	222.93%	0.0610	0.1360	0.9825	0.9842		SAMPLE				
6	0.8374	0.5912	3	1.3459	0.2703	140.38%	0.0827	0.1160	0.7435	0.7466		SAMPLE				
7	0.8477	0.5985	3	1.3795	0.6864	60.91%	0.1880	0.1143	0.8179	0.8370		SAMPLE				
8	0.6945	0.4903	3	1.1509	-2.269E-03	13124.98%	-0.0007	0.0875	0.5838	0.5840		MB				
9	1.0879	0.7681	3	1.7836	1.7945	33.83%	0.3627	0.1223	1.1858	1.2707	522937004.1	DUP	19.6%			
10	0.7916	0.5589	3	1.2793	56.1813	4.09%	17.3907	0.5485	3.4733	14.6725		LCS			57.3155	98.0%

SampleID	Instr	Time (min.)	Alpha Counts	Beta Counts	Count Start Time	Count End Time	Machine	Batch ID
522937001	6C	60	6	77	10/8/2020 10:18	10/8/2020 11:18	PIC	2046958
522937002	7A	60	8	44	10/8/2020 10:18	10/8/2020 11:18	PIC	2046958
522937003	7C	60	10	49	10/8/2020 10:18	10/8/2020 11:18	PIC	2046958
522937004	5A	60	15	46	10/8/2020 12:02	10/8/2020 13:02	PIC	2046958
522937005	8B	60	7	63	10/8/2020 10:18	10/8/2020 11:18	PIC	2046958
522937006	9B	60	6	46	10/8/2020 10:18	10/8/2020 11:18	PIC	2046958
522937007	9D	60	6	45	10/8/2020 10:18	10/8/2020 11:18	PIC	2046958
1204657735	10A	60	3	26	10/8/2020 10:17	10/8/2020 11:17	PIC	2046958
1204657736	5C	60	7	52	10/8/2020 12:02	10/8/2020 13:02	PIC	2046958
1204657737	5B	60	37	1081	10/8/2020 10:04	10/8/2020 11:04	PIC	2046958

ASSAY 8-Oct-20 9:21:55

Protocol id 8 Ba-133
Time limit
Count limit
Isotope Ba-133
Protocol date 10/8/2020
Run id. 2062

Samp_ID	POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR	% RECOVERY	COUNT TIME
REF	1	93	1	180	789.5	263.11	3.56		09:21:55
522937001	2	93	2	180	744	247.95	3.67	94.24	09:25:09
522937002	3	93	3	180	761.5	253.76	3.62	96.45	09:28:23
522937003	4	93	4	180	726	241.97	3.71	91.97	09:31:37
522937004	5	93	5	180	677	225.62	3.84	85.75	09:34:50
522937005	1	2	1	180	679.5	226.45	3.84	86.07	09:38:51
522937006	2	2	2	180	764.5	254.78	3.62	96.83	09:42:05
522937007	3	2	3	180	677.5	225.8	3.84	85.82	09:45:19
1204657735	4	2	4	180	726.5	242.11	3.71	92.02	09:48:33
1204657736	5	2	5	180	606	201.96	4.06	76.76	09:51:47
1204657737	1	6	1	180	738.5	246.14	3.68	93.55	09:55:36

END OF ASSAY

Continuing Calibration Data

Gas Flow Proportional Counter Checks for 08-Oct-2020

Detectors LB4100 A1 through I4 and PIC 1A through 14D and G5400W 1W through 1Z

Short Name	Status	Parmname	Run Time	Count Time	CPM or dec	Low Limit	High Limit	Stdev
G5400W1W	Above	Beta XTalk	08-Oct 06:42	5	0.002	1.79E-4	0.002	+4.96
G5400W1Y	Above	Beta XTalk	08-Oct 06:42	5	0.001	8.82E-5	0.001	+5.06
G5400W1Z	Above	Beta XTalk	08-Oct 06:42	5	0.002	1.07E-4	0.001	+5.43
LB4100A1	Above	Beta bkg	08-Oct 06:18	60	5.133	0.628	1.888	+18.45
LB4100A2	Above	Beta bkg	08-Oct 06:18	60	6.750	0.562	1.785	+27.36
LB4100A3	Above	Beta bkg	08-Oct 06:18	60	5.217	0.832	1.776	+24.87
LB4100C1	Below	Alpha XTalk	08-Oct 04:53	5	0.164	0.169	0.204	-3.88
LB4100C1	Above	Beta bkg	08-Oct 03:28	60	2.100	0.534	3.326	+0.37
LB4100C1	Below	Beta eff	08-Oct 05:16	5	14806	15090	16900	-3.94
LB4100C1	need 2nd	Beta XTalk	08-Oct 05:16	5	5.94E-4	2.65E-4	7.34E-4	+1.21
LB4100C2	Above	Alpha eff	08-Oct 04:53	5	9905	7704	9500	+4.35
LB4100C2	Below	Alpha XTalk	08-Oct 04:53	5	0.294	0.313	0.375	-4.86
LB4100C3	Below	Beta eff	08-Oct 05:16	5	15943	16080	17090	-3.81
LB4100E1	Above	Alpha bkg	08-Oct 03:28	60	0.467	-5.45E-2	0.290	+6.09
LB4100E1	Below	Alpha XTalk	08-Oct 04:40	5	0.183	0.186	0.223	-3.63
LB4100E1	need 2nd	Beta eff	08-Oct 04:34	5	14779	14740	17130	-2.90
LB4100E1	need 2nd	Beta XTalk	08-Oct 04:34	5	5.01E-4	2.29E-4	7.39E-4	+0.20
LB4100E2	Above	Alpha bkg	08-Oct 03:28	60	0.450	-7.23E-2	0.347	+4.48
LB4100E2	Above	Beta bkg	08-Oct 03:28	60	2.833	0.950	2.756	+3.26
LB4100E2	need 2nd	Beta eff	08-Oct 04:34	5	15379	15220	16690	-2.35
LB4100E3	Above	Alpha bkg	08-Oct 03:28	60	2.400	-4.47E-2	0.174	+63.98
LB4100E3	Above	Beta bkg	08-Oct 03:28	60	2.483	-1.31E+0	6.766	-0.18
LB4100E3	need 2nd	Beta XTalk	08-Oct 04:34	5	3.52E-4	8.54E-5	4.65E-4	+1.22
LB4100E4	need 2nd	Alpha bkg	08-Oct 03:28	60	0.050	-1.15E-1	0.271	-0.43
LB4100E4	Below	Alpha XTalk	08-Oct 04:40	5	0.225	0.227	0.265	-3.44
LB4100E4	Above	Beta bkg	08-Oct 03:28	60	3.283	0.326	2.646	+4.65
LB4100F1	Below	Alpha XTalk	08-Oct 04:40	5	0.249	0.249	0.283	-3.01
LB4100F1	Above	Beta bkg	08-Oct 04:56	60	2.767	0.531	1.960	+6.39
LB4100F3	Above	Alpha bkg	08-Oct 04:56	60	0.333	-7.68E-2	0.332	+3.02
LB4100G1	need 2nd	Alpha eff	08-Oct 04:33	5	11119	7467	11340	+2.66
LB4100G1	Below	Alpha XTalk	08-Oct 04:33	5	0.220	0.224	0.315	-3.24

LB4100G1	need 2nd	Beta bkg	08-Oct 03:28	60	1.100	0.375	1.637	+0.45
LB4100G1	Above	Beta XTalk	08-Oct 04:40	5	6.77E-4	1.64E-4	6.43E-4	+3.43
LB4100G2	Above	Beta bkg	08-Oct 03:28	60	241	0.721	1.648	+1,551.63
LB4100G3	Above	Alpha eff	08-Oct 04:33	5	7852	6620	7779	+3.38
LB4100G3	need 2nd	Alpha XTalk	08-Oct 04:33	5	0.310	0.309	0.375	-2.83
LB4100G3	Above	Beta bkg	08-Oct 03:28	60	20.683	0.810	1.674	+135.01
LB4100I1	Below	Alpha eff	08-Oct 05:00	5	8304	9278	11600	-5.52
LB4100I1	Above	Alpha XTalk	08-Oct 05:00	5	0.313	0.155	0.201	+17.45
LB4100I2	Below	Alpha eff	08-Oct 05:00	5	9207	12260	13540	-17.31
LB4100I2	Above	Alpha XTalk	08-Oct 05:00	5	0.358	0.206	0.251	+17.37
LB4100I2	need 2nd	Beta bkg	08-Oct 03:27	60	1.117	0.425	2.438	-0.94
LB4100I3	Below	Alpha eff	08-Oct 05:00	5	7403	8847	10310	-8.92
LB4100I3	Above	Alpha XTalk	08-Oct 05:00	5	0.322	0.174	0.229	+13.31
LB4100I4	Below	Alpha eff	08-Oct 05:00	5	7650	9674	12150	-7.91
LB4100I4	Above	Alpha XTalk	08-Oct 05:00	5	0.344	0.179	0.224	+18.78
LB4100I4	need 2nd	Beta bkg	08-Oct 03:27	60	1.383	-1.74E-2	2.470	+0.38
LB4100I4	need 2nd	Beta eff	08-Oct 04:53	5	17169	16210	20770	-1.74
PIC6A	need 2nd	Alpha bkg	08-Oct 05:02	60	0.217	0.009	0.389	+0.27
PIC6A	Above	Beta bkg	08-Oct 05:02	60	2.083	1.000	2.646	+0.95
PIC6B	Below	Alpha eff	08-Oct 04:48	5	7555	8118	8796	-7.98
PIC6B	Above	Alpha XTalk	08-Oct 04:48	5	0.444	0.277	0.330	+15.97
PIC6B	Below	Beta eff	08-Oct 04:55	5	14564	18120	20890	-10.70
PIC9C	Above	Beta XTalk	08-Oct 14:39	5	0.006	3.79E-4	0.004	+5.37
PIC10B	Above	Beta bkg	08-Oct 13:07	60	2.333	-6.98E-1	2.876	+2.09
PIC10B	Above	Beta XTalk	08-Oct 05:08	5	0.001	2.11E-4	9.75E-4	+4.22
PIC11D	Below	Alpha eff	08-Oct 14:38	5	10279	10310	11210	-3.21
PIC12A	Above	Beta bkg	08-Oct 05:24	60	2.533	1.462	2.978	+1.24
PIC12C	Above	Beta XTalk	08-Oct 14:39	5	0.001	1.32E-4	6.43E-4	+7.90
PIC12D	Above	Alpha eff	08-Oct 05:13	5	15735	14970	15380	+8.20
PIC12D	Below	Alpha XTalk	08-Oct 05:13	5	0.292	0.298	0.314	-5.11

INSTRUMENTS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

The following detectors may not have properly transferred to the LIMS system

PIC3A Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC6D Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk

PIC13C

Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk

Reviewed by Alfa J. J. J.

Date 10/9/2020

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: GFPC

Batch ID: 2046958

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
1204657737	LCS	KSD1	PIC5B	OCT-08-20 10:04:04	DONE	25mm Filter	01-JUN-20 00:00
1204657735	MB	KSD1	PIC10A	OCT-08-20 10:17:54	DONE	25mm Filter	01-JUN-20 00:00
522937001	SAMPLE	KSD1	PIC6C	OCT-08-20 10:18:00	DONE	25mm Filter	01-JUN-20 00:00
522937002	SAMPLE	KSD1	PIC7A	OCT-08-20 10:18:06	DONE	25mm Filter	01-JUN-20 00:00
522937003	SAMPLE	KSD1	PIC7C	OCT-08-20 10:18:09	DONE	25mm Filter	01-JUN-20 00:00
522937005	SAMPLE	KSD1	PIC8B	OCT-08-20 10:18:18	DONE	25mm Filter	01-JUN-20 00:00
522937006	SAMPLE	KSD1	PIC9B	OCT-08-20 10:18:21	DONE	25mm Filter	01-JUN-20 00:00
522937007	SAMPLE	KSD1	PIC9D	OCT-08-20 10:18:26	DONE	25mm Filter	01-JUN-20 00:00
1204657736	DUP	KSD1	PIC5C	OCT-08-20 12:02:16	DONE	25mm Filter	01-JUN-20 00:00
522937004	SAMPLE	KSD1	PIC5A	OCT-08-20 12:02:23	DONE	25mm Filter	01-JUN-20 00:00

Lucas Cell Raw Data

Batch 2042415 Check-list

This check-list was completed on 13-OCT-20 by Lyndsey Pace

This batch was reviewed by Elizabeth Krouse on 13-OCT-20 and Lyndsey Pace on 13-OCT-20.

Batch ID:
2042415

Product:
LUC26RAL

Description: Lucas Cell Radium 226
GL-RAD-A-008

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the matrix spike (MS/MSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium-226 in Liquid

Batch ID: 2042415
Analyst: Michael Hance (MXH8)
Method: EPA 903.1 Modified
Lab SOP: GL-RAD-A-008 REV# 15
Instrument: GFC-18150253

Due Dates for Lab: 12-OCT-2020			Package: 14-OCT-2020		SDG: 16-OCT-2020	
Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units	
LCS	1204647503	Radium-226 SPIKE	1715-E	.1	mL	
MS	1204647502	Radium-226 SPIKE	1715-E	.1	mL	

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	End Degas (date)	CELL #	End Transfer (date)	Start Count Time (date)	Background Counts	Total Counts
1	521691001	09-OCT-2020	1	500	10/09/20 12:15	704	10/13/20 06:30	10/13/20 09:32	4	22
2	521691002	09-OCT-2020	1	500	10/09/20 12:15	801	10/13/20 06:30	10/13/20 09:32	6	11
3	521691003	09-OCT-2020	1	500	10/09/20 12:15	108	10/13/20 07:07	10/13/20 10:03	5	24
4	521691004	09-OCT-2020	1	500	10/09/20 12:15	201	10/13/20 07:07	10/13/20 10:03	3	26
5	521691005	09-OCT-2020	1	500	10/09/20 12:15	303	10/13/20 07:07	10/13/20 10:03	3	17
6	521691006	09-OCT-2020	1	500	10/09/20 12:15	404	10/13/20 07:07	10/13/20 10:03	1	24
7	521691007	09-OCT-2020	1	500	10/09/20 12:15	505	10/13/20 07:07	10/13/20 10:03	1	7
8	522937001	09-OCT-2020	1	500	10/09/20 12:15	607	10/13/20 07:07	10/13/20 10:03	8	6
9	522937002	09-OCT-2020	1	500	10/09/20 12:15	808	10/13/20 07:07	10/13/20 10:03	1	7
10	522937003	09-OCT-2020	1	500	10/09/20 12:15	107	10/13/20 07:49	10/13/20 10:35	5	25
11	522937004	09-OCT-2020	1	500	10/09/20 12:15	204	10/13/20 07:49	10/13/20 10:35	2	25
12	522937005	09-OCT-2020	1	500	10/09/20 12:15	302	10/13/20 07:49	10/13/20 10:35	1	16
13	522937006	09-OCT-2020	1	500	10/09/20 12:15	407	10/13/20 07:49	10/13/20 10:35	5	10
14	522937007	09-OCT-2020	1	500	10/09/20 12:15	502	10/13/20 07:49	10/13/20 10:35	1	2
15	1204647500 MB	09-OCT-2020	1	500	10/09/20 12:15	608	10/13/20 07:49	10/13/20 10:35	1	4
16	1204647501 DUP (521691001)	09-OCT-2020	1	500	10/09/20 12:15	802	10/13/20 07:49	10/13/20 10:35	8	21
17	1204647502 MS (521691001)	09-OCT-2020	1	500	10/09/20 12:15	103	10/13/20 08:25	10/13/20 11:07	1	820
18	1204647503 LCS	09-OCT-2020	1	500	10/09/20 12:15	208	10/13/20 08:25	10/13/20 11:07	8	887

Reagent/Solvent Lot ID	Description	Amount	Comments:
			Spike Pipet ID: RAD-RA226-2766953 Bkg Count Time: 30 Minutes Sample Count Time: 30 Minutes Data Entry Date2: 09-OCT-2020 00:00

Radium-226 Liquid

Filename : RA226.XLS
 File type : Excel
 Version # : 1.3.2

Batch : 2042415
 Analyst : MIC02086
 Prep Date : 10/9/2020
 Ra-226 Method Uncertainty : 0.073648

Procedure Code : LUC26RAL
 Parmname : Radium-226
 Required MDA : 1 pCi/L
 Halflife of Ra-226 : 1600 years
 Ra-226 Abundance : 1.00
 Halflife of Rn-222 : 3.8235 days

Batch counted on : LUCAS CELL DETECTOR
 BKG Count time : 30 min

Sample Characteristics					Count Raw Data						Background	
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Counting		Gross Counts	Gross CPM	Background Counts	Background CPM	Background Count Time (min.)	Cell Efficiency (cpm/dpm)
					Cell Number	Time (min.)						
1	521691001.1	0.5000	2.0256E-05	9/15/2020 12:39	704	30	22	0.733	4	0.133	30	1.8140
2	521691002.1	0.5000	2.0256E-05	9/15/2020 16:00	801	30	11	0.367	6	0.200	30	1.6990
3	521691003.1	0.5000	2.0256E-05	9/15/2020 10:27	108	30	24	0.800	5	0.167	30	2.0199
4	521691004.1	0.5000	2.0256E-05	9/15/2020 16:36	201	30	26	0.867	3	0.100	30	1.8420
5	521691005.1	0.5000	2.0256E-05	9/15/2020 14:18	303	30	17	0.567	3	0.100	30	1.8940
6	521691006.1	0.5000	2.0256E-05	9/15/2020 10:27	404	30	24	0.800	1	0.033	30	1.4090
7	521691007.1	0.5000	2.0256E-05	9/15/2020 7:50	505	30	7	0.233	1	0.033	30	1.7560
8	522937001.1	0.5000	2.0256E-05	9/28/2020 13:24	607	30	6	0.200	8	0.267	30	1.9750
9	522937002.1	0.5000	2.0256E-05	9/28/2020 16:51	808	30	7	0.233	1	0.033	30	1.4130
10	522937003.1	0.5000	2.0256E-05	9/28/2020 10:36	107	30	25	0.833	5	0.167	30	1.5441
11	522937004.1	0.5000	2.0256E-05	9/28/2020 17:30	204	30	25	0.833	2	0.067	30	1.8640
12	522937005.1	0.5000	2.0256E-05	9/28/2020 15:21	302	30	16	0.533	1	0.033	30	1.7307
13	522937006.1	0.5000	2.0256E-05	9/28/2020 10:36	407	30	10	0.333	5	0.167	30	1.7620
14	522937007.1	0.5000	2.0256E-05	9/28/2020 8:00	502	30	2	0.067	1	0.033	30	1.9430
15	1204647500.1	0.5000	2.0256E-05	10/9/2020 0:00	608	30	4	0.133	1	0.033	30	2.0570
16	1204647501.1	0.5000	2.0256E-05	9/15/2020 12:39	802	30	21	0.700	8	0.267	30	1.6510
17	1204647502.1	0.5000	2.0256E-05	9/15/2020 12:39	103	30	820	27.333	1	0.033	30	1.7371
18	1204647503.1	0.5000	2.0256E-05	10/9/2020 0:00	208	30	887	29.567	8	0.267	30	1.7960

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-008
 Instrument SOP: GL-RAD-I-007

Cell Efficiency Error (%)	Cell Calibration Date	Cell Calibration Due Date	De-Gas Date/Time	Rn-222 Ingrow End Date/Time	Count Start Date/Time	Rn-222 Corrections			Ra-226 Decay
						De-Gas to Ingrowth	Ingrowth to Count	During Count	
2.000%	11/1/2019	10/31/2020	10/9/2020 12:15	10/13/2020 6:30	10/13/2020 9:32	0.494	0.977	1.002	1.000
8.700%	3/31/2020	3/31/2021	10/9/2020 12:15	10/13/2020 6:30	10/13/2020 9:32	0.494	0.977	1.002	1.000
6.875%	5/1/2020	4/30/2021	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
5.600%	8/1/2020	7/31/2021	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
9.523%	1/20/2020	12/31/2020	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
2.400%	3/1/2020	1/31/2021	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
1.900%	6/2/2020	5/31/2021	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
2.400%	7/2/2020	6/30/2021	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
2.200%	3/31/2020	3/31/2021	10/9/2020 12:15	10/13/2020 7:07	10/13/2020 10:03	0.497	0.978	1.002	1.000
2.523%	5/1/2020	4/30/2021	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
3.900%	8/1/2020	7/31/2021	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
8.545%	1/20/2020	12/31/2020	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
5.000%	3/1/2020	1/31/2021	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
4.700%	6/2/2020	5/31/2021	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
1.800%	7/2/2020	6/30/2021	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
8.500%	3/31/2020	3/31/2021	10/9/2020 12:15	10/13/2020 7:49	10/13/2020 10:35	0.499	0.979	1.002	1.000
6.833%	5/1/2020	4/30/2021	10/9/2020 12:15	10/13/2020 8:25	10/13/2020 11:07	0.502	0.980	1.002	1.000
6.200%	8/1/2020	7/31/2021	10/9/2020 12:15	10/13/2020 8:25	10/13/2020 11:07	0.502	0.980	1.002	1.000

- Notes:
 1 - Results are decay corrected to Sample Date/Time
 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
 3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : 1715-E
Spike Exp Date : 5/21/2021
Spike Activity (dpm/ml): 300.25
Spike Volume Added: 0.10

LCS S/N : 1715-E
LCS Exp Date : 5/21/2021
LCS Activity (dpm/ml): 300.25
LCS Volume Added: 0.10

Results																
Pos.	Decision Level pCi/L	Critical Level pCi/L	Required MDA pCi/L	MDA pCi/L	Sample Act. Conc. pCi/L	Sample Act. Error %	Net Count Rate CPM	Net Count Rate Error CPM	2 SIGMA Counting Uncertainty pCi/L	2 SIGMA Total Prop. Uncertainty pCi/L	Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery
1	0.2263	0.1598	1	0.4225	0.6181	28.40%	0.6000	0.1700	0.3432	0.3554		SAMPLE				
2	0.2959	0.2089	1	0.5278	0.1833	82.92%	0.1667	0.1374	0.2963	0.2991		SAMPLE				
3	0.2260	0.1595	1	0.4111	0.5827	29.16%	0.6333	0.1795	0.3237	0.3435		SAMPLE				
4	0.1919	0.1355	1	0.3719	0.7735	24.07%	0.7667	0.1795	0.3550	0.3817		SAMPLE				
5	0.1867	0.1318	1	0.3617	0.4579	33.33%	0.4667	0.1491	0.2867	0.3064		SAMPLE				
6	0.1449	0.1023	1	0.3364	1.0112	21.87%	0.7667	0.1667	0.4308	0.4574		SAMPLE				
7	0.1162	0.0821	1	0.2700	0.2117	47.18%	0.2000	0.0943	0.1956	0.1981		SAMPLE				
8	0.2923	0.2064	1	0.5068	-0.0627	187.10%	-0.0667	0.1247	0.2300	0.2301		SAMPLE				
9	0.1445	0.1020	1	0.3355	0.2630	47.19%	0.2000	0.0943	0.2430	0.2462		SAMPLE				
10	0.2936	0.2073	1	0.5342	0.7971	27.50%	0.6667	0.1826	0.4278	0.4448		SAMPLE				
11	0.1538	0.1086	1	0.3163	0.7593	22.93%	0.7667	0.1732	0.3362	0.3584		SAMPLE				
12	0.1172	0.0827	1	0.2721	0.5334	28.78%	0.5000	0.1374	0.2873	0.3106		SAMPLE				
13	0.2573	0.1817	1	0.4681	0.1746	77.62%	0.1667	0.1291	0.2651	0.2669		SAMPLE				
14	0.1044	0.0737	1	0.2424	0.0317	173.27%	0.0333	0.0577	0.1075	0.1077		SAMPLE				
15	0.0986	0.0696	1	0.2289	0.0897	74.56%	0.1000	0.0745	0.1311	0.1318		MB				
16	0.3474	0.2453	1	0.6023	0.4845	42.29%	0.4333	0.1795	0.3934	0.4077	521691001.1	DUP	24.2%			
17	0.1161	0.0820	1	0.2697	28.8673	7.68%	27.3000	0.9551	1.9795	6.0190	521691001.1	MS			27.0505	104.4%
18	0.3177	0.2243	1	0.5509	29.9660	7.07%	29.3000	0.9972	1.9990	5.9972		LCS			27.0498	110.8%

Continuing Calibration Data

[IMAGE]

Ludlum Alpha Scintillation Counter Checks for 13-OCT-2020

Short Name	Parmname	Run Time	Count Time	Counts	CPM	Stdev	Status	Comments
LUCAS1	EFF	07:35	1	1.25E+05	124966	-1.58		
LUCAS2	EFF	07:24	1	1.31E+05	130892	-1.21		
LUCAS3	EFF	07:22	1	1.32E+05	132414	-1.34		
LUCAS4	EFF	07:20	1	1.27E+05	127188	-2.77		
LUCAS5	EFF	07:33	1	1.29E+05	128590	-2.26		
LUCAS6	EFF	07:14	1	1.32E+05	132120	-2.71		
LUCAS7	EFF	07:13	1	1.31E+05	131433	-1.4		
LUCAS8	EFF	07:12	1	1.20E+05	119787	-1.59		

Reviewed by:



Lyndsey Pace

Date: 13-OCT-20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: LUCAS CELL DETECTOR

Batch ID: 2042415

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
521691001	SAMPLE	MXH8	LUCAS7	OCT-13-20 09:32:00	DONE	Lucas Cell	01-NOV-19 00:00
521691002	SAMPLE	MXH8	LUCAS8	OCT-13-20 09:32:00	DONE	Lucas Cell	31-MAR-20 00:00
521691003	SAMPLE	MXH8	LUCAS1	OCT-13-20 10:03:00	DONE	Lucas Cell	01-MAY-20 00:00
521691004	SAMPLE	MXH8	LUCAS2	OCT-13-20 10:03:00	DONE	Lucas Cell	01-AUG-20 00:00
521691005	SAMPLE	MXH8	LUCAS3	OCT-13-20 10:03:00	DONE	Lucas Cell	20-JAN-20 00:00
521691006	SAMPLE	MXH8	LUCAS4	OCT-13-20 10:03:00	DONE	Lucas Cell	01-MAR-20 00:00
521691007	SAMPLE	MXH8	LUCAS5	OCT-13-20 10:03:00	DONE	Lucas Cell	02-JUN-20 00:00
522937001	SAMPLE	MXH8	LUCAS6	OCT-13-20 10:03:00	DONE	Lucas Cell	02-JUL-20 00:00
522937002	SAMPLE	MXH8	LUCAS8	OCT-13-20 10:03:00	DONE	Lucas Cell	31-MAR-20 00:00
522937003	SAMPLE	MXH8	LUCAS1	OCT-13-20 10:35:00	DONE	Lucas Cell	01-MAY-20 00:00
522937004	SAMPLE	MXH8	LUCAS2	OCT-13-20 10:35:00	DONE	Lucas Cell	01-AUG-20 00:00
522937005	SAMPLE	MXH8	LUCAS3	OCT-13-20 10:35:00	DONE	Lucas Cell	20-JAN-20 00:00
522937006	SAMPLE	MXH8	LUCAS4	OCT-13-20 10:35:00	DONE	Lucas Cell	01-MAR-20 00:00
522937007	SAMPLE	MXH8	LUCAS5	OCT-13-20 10:35:00	DONE	Lucas Cell	02-JUN-20 00:00
1204647500	MB	MXH8	LUCAS6	OCT-13-20 10:35:00	DONE	Lucas Cell	02-JUL-20 00:00
1204647501	DUP	MXH8	LUCAS8	OCT-13-20 10:35:00	DONE	Lucas Cell	31-MAR-20 00:00
1204647502	MS	MXH8	LUCAS1	OCT-13-20 11:07:00	DONE	Lucas Cell	01-MAY-20 00:00
1204647503	LCS	MXH8	LUCAS2	OCT-13-20 11:07:00	DONE	Lucas Cell	01-AUG-20 00:00

CHAIN OF CUSTODY

Environmental Laboratory
1232 Haco Drive
Lansing
Michigan, 48910

Phone: (517)702-6372

Lab Work Order Number L009093



Hometown People. Hometown Power.

Client Name BWL - Erickson Station		Project Name Erickson GMP	
Client Contact Cheryl Louden		Project Number [None]	
Address 3725 S. Canal		Project Description TSS	
City Lansing		Requested Analysis Radium 226	
State/Zip MI, 48917		Radium 228	
Phone (517) 702-6396		Requested Turn Around Rush requests subject to additional charge Rush requests subject to lab approval	
Fax (517) 702-6373			
Sampler Marc Wahrer			
PO Number 30926 10021			
Shipped By			
Tracking Number			
As: Ba: Be: B: Ca: Cd: Co: Cr: Cu: Li: Mo: Pb: Sb: Se: Tl			
CH-C: SO4: TDS: F			

Sample Name or Field ID	Sampled Date	Sampled Time	Sample Type	Matrix Code	Container Count	Preservation Code		Sample	Comments
						a	b		
MW-1	09/28/2020	1324	G	GW	5	1	1		
MW-2	09/28/2020	1651	G	GW	5	1	1		
MW-4	09/28/2020	1036	G	GW	5	1	1		
MW-5	09/28/2020	1730	G	GW	5	1	1		
MW-6	09/28/2020	1521	G	GW	5	1	1		
MW-4 Duplicate	09/28/2020	1036	G	GW	5	1	1		
Field Blank	09/28/2020	800	G	GW	5	1	1		

Relinquished By	Date/Time	Received By	Date/Time	Comments
	9/29/20 0838	Kelly Gleason	9/29/20 0838	
Relinquished By	Date/Time	Received By	Date/Time	Comments
Relinquished By	Date/Time	Received By	Date/Time	Comments
Cooler Numbers and Temperatures				

Matrix Codes: GW=Ground Water
Preserv. Codes: a=None,b=0.5% HNO3



Report ID: S18247.01(01)
Generated on 10/15/2020

Report to

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S18247.01-S18247.07
Project: Erickson GMP
Collected Date(s): 10/12/2020
Submitted Date/Time: 10/13/2020 09:58
Sampled by: Marc Wahrer
P.O. #:

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Maya Murshak
Technical Director



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

All Metal Results Are Reported As Total

Subcontracting results unavailable at this time



Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
E300.0	EPA Method 300.0 Revision 2.1
SM2540C	Standard Method 2540 C 2011
SM2540D	Standard Method 2540 D 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007



Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S18247.01	MW-1 L010036-01	Groundwater	10/12/20 12:39
S18247.02	MW-2 L010036-02	Groundwater	10/12/20 15:45
S18247.03	MW-4 L010036-03	Groundwater	10/12/20 10:15
S18247.04	MW-5 L010036-04	Groundwater	10/12/20 16:26
S18247.05	MW-6 L010036-05	Groundwater	10/12/20 14:16
S18247.06	MW-4 Duplicate L010036-06	Groundwater	10/12/20 10:15
S18247.07	Field Blank L010036-07	Water	10/12/20 08:25



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.01

Sample Tag: MW-1 L010036-01

Collected Date/Time: 10/12/2020 12:39

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.9	IR
2	1L Plastic	None	Yes	4.9	IR
1	125ml Plastic	HNO3	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/14/20 10:50	JRH	
Metal Digestion	Completed	SW3015A	10/14/20 15:10	CCM	

Inorganics

Method: E300.0, Run Date: 10/14/20 08:20, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 10/14/20 09:25, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	59	10	0.16	mg/L	10	16887-00-6	
Sulfate	81	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 10/13/20 20:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	774	20	2	mg/L	2		

Method: SM2540D, Run Date: 10/14/20 21:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	20	3	1	mg/L	2.50		

Metals

Method: E200.8, Run Date: 10/14/20 17:16, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	167	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 10/15/20 11:06, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.006	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.129	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	0.37	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	0.037	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.01 (continued)

Sample Tag: MW-1 L010036-01

Method: E200.8, Run Date: 10/15/20 11:06, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 10/14/20 14:23, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.02

Sample Tag: MW-2 L010036-02

Collected Date/Time: 10/12/2020 15:45

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.9	IR
2	1L Plastic	None	Yes	4.9	IR
1	125ml Plastic	HNO3	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/14/20 10:50	JRH	
Metal Digestion	Completed	SW3015A	10/14/20 15:10	CCM	

Inorganics

Method: E300.0, Run Date: 10/14/20 09:38, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	91	10	0.16	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 10/14/20 08:46, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 10/14/20 11:47, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	583	50	3.0	mg/L	50	14808-79-8	

Method: SM2540C, Run Date: 10/13/20 20:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,430	20	2	mg/L	2		

Method: SM2540D, Run Date: 10/14/20 21:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	6	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 10/14/20 17:18, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	285	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 10/15/20 11:11, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.002	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.041	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	5.75	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.02 (continued)

Sample Tag: MW-2 L010036-02

Method: E200.8, Run Date: 10/15/20 11:11, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.065	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	0.012	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 10/14/20 14:25, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.03

Sample Tag: MW-4 L010036-03

Collected Date/Time: 10/12/2020 10:15

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.9	IR
2	1L Plastic	None	Yes	4.9	IR
1	125ml Plastic	HNO3	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/14/20 10:50	JRH	
Metal Digestion	Completed	SW3015A	10/14/20 15:10	CCM	

Inorganics

Method: E300.0, Run Date: 10/14/20 08:59, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 10/14/20 09:51, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	71	10	0.16	mg/L	10	16887-00-6	
Sulfate	60	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 10/13/20 20:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	538	20	2	mg/L	2		

Method: SM2540D, Run Date: 10/14/20 21:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 10/14/20 17:21, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	111	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 10/15/20 11:17, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.009	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.151	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	0.06	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	0.010	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.03 (continued)

Sample Tag: MW-4 L010036-03

Method: E200.8, Run Date: 10/15/20 11:17, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 10/14/20 14:27, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.04

Sample Tag: MW-5 L010036-04

Collected Date/Time: 10/12/2020 16:26

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.9	IR
2	1L Plastic	None	Yes	4.9	IR
1	125ml Plastic	HNO3	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/14/20 10:50	JRH	
Metal Digestion	Completed	SW3015A	10/14/20 15:10	CCM	

Inorganics

Method: E300.0, Run Date: 10/14/20 10:04, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	81	10	0.16	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 10/14/20 09:12, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 10/14/20 11:59, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	1,080	50	3.0	mg/L	50	14808-79-8	

Method: SM2540C, Run Date: 10/13/20 20:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,960	20	2	mg/L	2		

Method: SM2540D, Run Date: 10/14/20 21:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	14	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 10/14/20 17:23, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	372	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 10/15/20 11:21, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.048	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	5.00	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.04 (continued)

Sample Tag: MW-5 L010036-04

Method: E200.8, Run Date: 10/15/20 11:21, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.054	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	0.038	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 10/14/20 14:29, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.05

Sample Tag: MW-6 L010036-05

Collected Date/Time: 10/12/2020 14:16

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.9	IR
2	1L Plastic	None	Yes	4.9	IR
1	125ml Plastic	HNO3	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/14/20 10:50	JRH	
Metal Digestion	Completed	SW3015A	10/14/20 15:10	CCM	

Inorganics

Method: E300.0, Run Date: 10/14/20 10:16, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	41	10	0.16	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 10/14/20 09:25, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 10/14/20 12:12, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	242	25	1.5	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 10/13/20 20:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	868	20	2	mg/L	2		

Method: SM2540D, Run Date: 10/14/20 21:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 10/14/20 17:26, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	189	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 10/15/20 11:26, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.054	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	0.99	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.05 (continued)

Sample Tag: MW-6 L010036-05

Method: E200.8, Run Date: 10/15/20 11:26, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.052	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	0.029	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 10/14/20 14:30, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.06

Sample Tag: MW-4 Duplicate L010036-06

Collected Date/Time: 10/12/2020 10:15

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.9	IR
2	1L Plastic	None	Yes	4.9	IR
1	125ml Plastic	HNO3	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/14/20 10:50	JRH	
Metal Digestion	Completed	SW3015A	10/14/20 15:10	CCM	

Inorganics

Method: E300.0, Run Date: 10/14/20 09:54, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 10/14/20 10:29, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	71	10	0.16	mg/L	10	16887-00-6	
Sulfate	59	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 10/13/20 20:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	534	20	2	mg/L	2		

Method: SM2540D, Run Date: 10/14/20 21:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	1	3	1	mg/L	1.00		b

Metals

Method: E200.8, Run Date: 10/14/20 17:28, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	110	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 10/15/20 11:31, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.009	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.155	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	0.05	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	Not detected	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000217	mg/L	5	7439-98-7	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.06 (continued)

Sample Tag: MW-4 Duplicate L010036-06

Method: E200.8, Run Date: 10/15/20 11:31, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 10/14/20 14:34, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.07

Sample Tag: Field Blank L010036-07

Collected Date/Time: 10/12/2020 08:25

Matrix: Water

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	4.9	IR
2	1L Plastic	None	Yes	4.9	IR
1	125ml Plastic	HNO3	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/14/20 10:50	JRH	
Metal Digestion	Completed	SW3015A	10/14/20 15:10	CCM	

Inorganics

Method: E300.0, Run Date: 10/14/20 10:07, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	0.5	0.04	mg/L	2.5	16984-48-8	

Method: E300.0, Run Date: 10/14/20 10:42, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	2.5	0.04	mg/L	2.5	16887-00-6	
Sulfate	Not detected	2.5	0.15	mg/L	2.5	14808-79-8	

Method: SM2540C, Run Date: 10/13/20 20:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	Not detected	20	2	mg/L	2		

Method: SM2540D, Run Date: 10/14/20 21:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 10/14/20 17:14, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	Not detected	0.50	0.0174	mg/L	2	7440-70-2	

Method: E200.8, Run Date: 10/15/20 11:01, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00102	mg/L	2	7440-36-0	
Arsenic	Not detected	0.002	0.000102	mg/L	2	7440-38-2	
Barium	Not detected	0.005	0.0000648	mg/L	2	7440-39-3	
Beryllium	Not detected	0.001	0.0000862	mg/L	2	7440-41-7	
Boron	Not detected	0.04	0.000702	mg/L	2	7440-42-8	
Cadmium	Not detected	0.0005	0.0000760	mg/L	2	7440-43-9	
Chromium	Not detected	0.005	0.0000386	mg/L	2	7440-47-3	
Cobalt	Not detected	0.005	0.0000434	mg/L	2	7440-48-4	
Lead	Not detected	0.003	0.0000760	mg/L	2	7439-92-1	
Lithium*	Not detected	0.010	0.000654	mg/L	2	7439-93-2	
Molybdenum	Not detected	0.005	0.0000868	mg/L	2	7439-98-7	
Selenium	Not detected	0.005	0.000838	mg/L	2	7782-49-2	



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18247.07 (continued)

Sample Tag: Field Blank L010036-07

Method: E200.8, Run Date: 10/15/20 11:01, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000342	mg/L	2	7440-28-0	

Method: E245.1, Run Date: 10/14/20 14:32, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						

Merit Laboratories Login Checklist

Lab Set ID:S18247

Client:BWL01 (Board of Water & Light)

Project: Erickson GMP

Submitted: 10/13/2020 09:58 Login User: MMC

Attention: Jennifer Caporale

Address: Board of Water & Light

P.O. Box 13007

Lansing, MI 48901

Phone: 517-702-6372

FAX:

Email: Environmental_Laboratory@LBWL.com

Selection	Description	Note
-----------	-------------	------

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 4.9 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

Chain of Custody

- | | | |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC |
| 09. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: GEL |

Preservation

- | | | |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation |
| 11. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? |

Bottle Conditions

- | | | |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S18247 Submitted: 10/13/2020 09:58

Client: BWL01 (Board of Water & Light)

Project: Erickson GMP

Attention: Jennifer Caporale
Address: Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Initial Preservation Check: 10/13/2020 10:25 MMC

Preservation Recheck (E200.8): N/A

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S18247.01	125ml Plastic HNO3	<2			
S18247.01	1L Plastic HNO3	<2			
S18247.01	1L Plastic HNO3	<2			
S18247.02	125ml Plastic HNO3	<2			
S18247.02	1L Plastic HNO3	<2			
S18247.02	1L Plastic HNO3	<2			
S18247.03	125ml Plastic HNO3	<2			
S18247.03	1L Plastic HNO3	<2			
S18247.03	1L Plastic HNO3	<2			
S18247.04	125ml Plastic HNO3	<2			
S18247.04	1L Plastic HNO3	<2			
S18247.04	1L Plastic HNO3	<2			
S18247.05	125ml Plastic HNO3	<2			
S18247.05	1L Plastic HNO3	<2			
S18247.05	1L Plastic HNO3	<2			
S18247.06	125ml Plastic HNO3	<2			
S18247.06	1L Plastic HNO3	<2			
S18247.06	1L Plastic HNO3	<2			
S18247.07	125ml Plastic HNO3	<2			
S18247.07	1L Plastic HNO3	<2			
S18247.07	1L Plastic HNO3	<2			



2680 East Lansing Dr., East Lansing, MI 48823
 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Jennifer Caporale
 COMPANY Lansing Board of Water and Light
 ADDRESS PO Box 13007 48901-3007
 CITY Lansing STATE Mi ZIP CODE 48901
 PHONE NO. 517-702-6372 FAX NO. _____ P.O. NO. _____
 E-MAIL ADDRESS Environmental_Laboratory@lbwl.com QUOTE NO. _____

CONTACT NAME Kelly Gleason SAME
 COMPANY _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP CODE _____
 PHONE NO. _____ E-MAIL ADDRESS Kelly.Gleason@lbwl.com

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME Erickson GMP SAMPLER(S) - PLEASE PRINT/SIGN NAME Marc Wahrer

TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER ASAP

DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Total Metals	TSS	TDS, Cl ⁻ , SO ₄ ⁻² , F	Radium 226	Radium 228	Certifications		Project Locations		Special Instructions
	DATE	TIME																<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DoD	<input checked="" type="checkbox"/> NPDES		☐ Detroit	☐ New York	☐ Other _____
<u>18247.01</u>	<u>10/12/20</u>	<u>1239</u>	<u>MW-1 L010036-01</u>	<u>GW</u>	<u>5</u>	<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		Metals to analyse:
<u>.02</u>		<u>1545</u>	<u>MW-2 02</u>	<u>GW</u>	<u>5</u>	<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		Sb, As, Ba, Be, B, Cd, Ca, Cr,
<u>.03</u>		<u>1015</u>	<u>MW-4 03</u>	<u>GW</u>	<u>5</u>	<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		Co, Pb, Li, Hg, Mo, Se, Tl
<u>.04</u>		<u>1626</u>	<u>MW-5 04</u>	<u>GW</u>	<u>5</u>	<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		
<u>.05</u>		<u>1416</u>	<u>MW-6 05</u>	<u>GW</u>	<u>5</u>	<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		Please send a preliminary report
<u>.06</u>		<u>1015</u>	<u>MW-4 Duplicate 06</u>	<u>GW</u>	<u>5</u>	<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		
<u>.07</u>	<u>↓</u>	<u>825</u>	<u>Field Blank ↓ 07</u>	<u>DI</u>	<u>5</u>	<u>2</u>	<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		

RELINQUISHED BY: [Signature] DATE 10-13-20 TIME 0958
 RECEIVED BY: [Signature] DATE 10/13/2020 TIME 0958

RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____

SEAL NO. _____ SEAL INTACT YES NO INITIALS _____ NOTES: _____ TEMP. ON ARRIVAL 4.9

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Report ID: S18465.01(01)
Generated on 10/22/2020

Report to

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S18465.01-S18465.07
Project: Erickson GMP
Collected Date(s): 10/19/2020
Submitted Date/Time: 10/20/2020 09:25
Sampled by: Marc Wahrer
P.O. #:

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- Glossary of Abbreviations (Page 3)
- Method Summary (Page 4)
- Sample Summary (Page 5)

Maya Murshak
Technical Director



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

All Metal Results Are Reported As Total



Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
E300.0	EPA Method 300.0 Revision 2.1
SM2540C	Standard Method 2540 C 2011
SM2540D	Standard Method 2540 D 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007



Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S18465.01	MW-1 L010076-01	Groundwater	10/19/20 13:34
S18465.02	MW-2 L010076-02	Groundwater	10/19/20 17:06
S18465.03	MW-4 L010076-03	Groundwater	10/19/20 11:56
S18465.04	MW-5 L010076-04	Groundwater	10/19/20 17:45
S18465.05	MW-6 L010076-05	Groundwater	10/19/20 15:41
S18465.06	MW-1 Duplicate L010076-06	Groundwater	10/19/20 13:34
S18465.07	Field Blank L010076-07	Water	10/19/20 08:15



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.01

Sample Tag: MW-1 L010076-01

Collected Date/Time: 10/19/2020 13:34

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/21/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	10/20/20 13:30	JRH	

Inorganics

Method: E300.0, Run Date: 10/21/20 09:44, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 10/21/20 10:59, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	52	10	0.16	mg/L	10	16887-00-6	
Sulfate	84	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 10/20/20 22:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	806	20	10	mg/L	2		

Method: SM2540D, Run Date: 10/21/20 11:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	31	3	1	mg/L	2.50		

Metals

Method: E200.8, Run Date: 10/21/20 10:45, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	0.41	0.04	0.0018	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 10/22/20 10:18, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	156	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 10/20/20 14:25, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.005	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.136	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.01 (continued)

Sample Tag: MW-1 L010076-01

Method: E200.8, Run Date: 10/20/20 14:25, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.036	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 10/21/20 14:07, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.02

Sample Tag: MW-2 L010076-02

Collected Date/Time: 10/19/2020 17:06

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/21/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	10/20/20 13:30	JRH	

Inorganics

Method: E300.0, Run Date: 10/21/20 11:12, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	88	10	0.16	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 10/21/20 09:57, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 10/21/20 14:12, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	580	50	3.0	mg/L	50	14808-79-8	

Method: SM2540C, Run Date: 10/20/20 22:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,420	20	10	mg/L	2		

Method: SM2540D, Run Date: 10/21/20 11:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	3	3	1	mg/L	1.00		b

Metals

Method: E200.8, Run Date: 10/21/20 10:46, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	6.43	0.04	0.0018	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 10/22/20 10:20, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	255	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 10/20/20 14:27, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.041	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.02 (continued)

Sample Tag: MW-2 L010076-02

Method: E200.8, Run Date: 10/20/20 14:27, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.070	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.012	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 10/21/20 14:19, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.03

Sample Tag: MW-4 L010076-03

Collected Date/Time: 10/19/2020 11:56

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/21/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	10/20/20 13:30	JRH	

Inorganics

Method: E300.0, Run Date: 10/21/20 10:10, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 10/21/20 11:25, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	68	10	0.16	mg/L	10	16887-00-6	
Sulfate	57	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 10/20/20 22:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	554	20	10	mg/L	2		

Method: SM2540D, Run Date: 10/21/20 11:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	3	3	1	mg/L	1.00		b

Metals

Method: E200.8, Run Date: 10/21/20 10:48, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	0.06	0.04	0.0018	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 10/22/20 10:21, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	99.7	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 10/20/20 14:29, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.009	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.160	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.03 (continued)

Sample Tag: MW-4 L010076-03

Method: E200.8, Run Date: 10/20/20 14:29, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.010	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 10/21/20 14:21, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.04

Sample Tag: MW-5 L010076-04

Collected Date/Time: 10/19/2020 17:45

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/21/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	10/20/20 13:30	JRH	

Inorganics

Method: E300.0, Run Date: 10/21/20 11:38, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	83	10	0.16	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 10/21/20 10:22, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 10/21/20 14:25, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	1,170	50	3.0	mg/L	50	14808-79-8	

Method: SM2540C, Run Date: 10/20/20 22:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	2,020	20	10	mg/L	2		

Method: SM2540D, Run Date: 10/21/20 11:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	7	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 10/21/20 10:49, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	5.75	0.04	0.0018	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 10/22/20 10:22, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	319	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 10/20/20 14:31, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.042	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.04 (continued)

Sample Tag: MW-5 L010076-04

Method: E200.8, Run Date: 10/20/20 14:31, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.046	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.035	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 10/21/20 14:23, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.05

Sample Tag: MW-6 L010076-05

Collected Date/Time: 10/19/2020 15:41

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/21/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	10/20/20 13:30	JRH	

Inorganics

Method: E300.0, Run Date: 10/21/20 11:51, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	42	10	0.16	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 10/21/20 10:35, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 10/21/20 14:38, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	263	25	1.5	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 10/20/20 22:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	898	20	10	mg/L	2		

Method: SM2540D, Run Date: 10/21/20 11:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	1	3	1	mg/L	1.00		b

Metals

Method: E200.8, Run Date: 10/21/20 10:50, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	1.09	0.04	0.0018	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 10/22/20 10:23, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	173	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 10/20/20 14:33, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.057	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.05 (continued)

Sample Tag: MW-6 L010076-05

Method: E200.8, Run Date: 10/20/20 14:33, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	
Lithium*	0.059	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	0.034	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 10/21/20 14:25, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.06

Sample Tag: MW-1 Duplicate L010076-06

Collected Date/Time: 10/19/2020 13:34

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/21/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	10/20/20 13:30	JRH	

Inorganics

Method: E300.0, Run Date: 10/21/20 10:48, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 10/21/20 12:03, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	53	10	0.16	mg/L	10	16887-00-6	
Sulfate	85	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 10/20/20 22:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	784	20	10	mg/L	2		

Method: SM2540D, Run Date: 10/21/20 11:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	32	3	1	mg/L	2.86		

Metals

Method: E200.8, Run Date: 10/21/20 11:00, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	0.39	0.04	0.0018	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 10/22/20 10:24, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	150	0.5	0.044	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 10/20/20 14:35, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0026	mg/L	5	7440-36-0	
Arsenic	0.006	0.002	0.00026	mg/L	5	7440-38-2	
Barium	0.135	0.005	0.00016	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.00022	mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005	0.00019	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000097	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.00011	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.00019	mg/L	5	7439-92-1	



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.06 (continued)

Sample Tag: MW-1 Duplicate L010076-06

Method: E200.8, Run Date: 10/20/20 14:35, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.036	0.005	0.0016	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.00022	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.0021	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000086	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 10/21/20 14:27, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.07

Sample Tag: Field Blank L010076-07

Collected Date/Time: 10/19/2020 08:15

Matrix: Water

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	10/21/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	10/20/20 13:30	JRH	

Inorganics

Method: E300.0, Run Date: 10/21/20 11:01, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	0.5	0.04	mg/L	2.5	16984-48-8	

Method: E300.0, Run Date: 10/21/20 12:16, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	2.5	0.04	mg/L	2.5	16887-00-6	
Sulfate	Not detected	2.5	0.15	mg/L	2.5	14808-79-8	

Method: SM2540C, Run Date: 10/20/20 22:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	16	20	10	mg/L	2		b

Method: SM2540D, Run Date: 10/21/20 11:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 10/21/20 10:43, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Boron	Not detected	0.04	0.0018	mg/L	5	7440-42-8	

Method: E200.8, Run Date: 10/22/20 10:14, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	Not detected	0.50	0.017	mg/L	2	7440-70-2	

Method: E200.8, Run Date: 10/20/20 14:14, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.0010	mg/L	2	7440-36-0	
Arsenic	Not detected	0.002	0.00010	mg/L	2	7440-38-2	
Barium	Not detected	0.005	0.000065	mg/L	2	7440-39-3	
Beryllium	Not detected	0.001	0.000086	mg/L	2	7440-41-7	
Cadmium	Not detected	0.0005	0.000076	mg/L	2	7440-43-9	
Chromium	Not detected	0.005	0.000039	mg/L	2	7440-47-3	
Cobalt	Not detected	0.005	0.000043	mg/L	2	7440-48-4	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Preliminary Report

Lab Sample ID: S18465.07 (continued)

Sample Tag: Field Blank L010076-07

Method: E200.8, Run Date: 10/20/20 14:14, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lead	Not detected	0.003	0.000076	mg/L	2	7439-92-1	
Lithium*	Not detected	0.005	0.00065	mg/L	2	7439-93-2	
Molybdenum	Not detected	0.005	0.000087	mg/L	2	7439-98-7	
Selenium	Not detected	0.005	0.00084	mg/L	2	7782-49-2	
Thallium	Not detected	0.002	0.000034	mg/L	2	7440-28-0	

Method: E245.1, Run Date: 10/21/20 14:28, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: / /, Analyst:

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Incomplete						

Merit Laboratories Login Checklist

Lab Set ID:S18465

Client:BWL01 (Board of Water & Light)

Project: Erickson GMP

Submitted: 10/20/2020 09:25 Login User: SRS

Attention: Jennifer Caporale

Address: Board of Water & Light

P.O. Box 13007

Lansing, MI 48901

Phone: 517-702-6372

FAX:

Email: Environmental_Laboratory@LBWL.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.2
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to: GEL
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S18465 Submitted: 10/20/2020 09:25

Client: BWL01 (Board of Water & Light)

Project: Erickson GMP

Attention: Jennifer Caporale
Address: Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Initial Preservation Check: 10/20/2020 10:06 SRS

Preservation Recheck (E200.8): N/A

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S18465.01	125ml Plastic HNO3	<2			
S18465.01	1L Plastic HNO3	<2			
S18465.01	1L Plastic HNO3	<2			
S18465.02	125ml Plastic HNO3	<2			
S18465.02	1L Plastic HNO3	<2			
S18465.02	1L Plastic HNO3	<2			
S18465.03	125ml Plastic HNO3	<2			
S18465.03	1L Plastic HNO3	<2			
S18465.03	1L Plastic HNO3	<2			
S18465.04	125ml Plastic HNO3	<2			
S18465.04	1L Plastic HNO3	<2			
S18465.04	1L Plastic HNO3	<2			
S18465.05	125ml Plastic HNO3	<2			
S18465.05	1L Plastic HNO3	<2			
S18465.05	1L Plastic HNO3	<2			
S18465.06	125ml Plastic HNO3	<2			
S18465.06	1L Plastic HNO3	<2			
S18465.06	1L Plastic HNO3	<2			
S18465.07	125ml Plastic HNO3	<2			
S18465.07	1L Plastic HNO3	<2			
S18465.07	1L Plastic HNO3	<2			



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 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME **Jennifer Caporale**
 COMPANY **Lansing Board of Water and Light**
 ADDRESS **PO Box 13007 48901-3007**
 CITY **Lansing** STATE **Mi** ZIP CODE **48901**
 PHONE NO. **517-702-6372** FAX NO. P.O. NO.
 E-MAIL ADDRESS **Environmental_Laboratory@lbwl.com** QUOTE NO.

CONTACT NAME **Kelly Gleason** SAME
 COMPANY
 ADDRESS
 CITY STATE ZIP CODE
 PHONE NO. E-MAIL ADDRESS **Kelly.Gleason@lbwl.com**

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME **Erickson GMP** SAMPLER(S) - PLEASE PRINT/SIGN NAME **Marc Wahrer**
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER **ASAP**
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

MERCIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives							Total Metals	TSS	TDS, Cl-, SO4-, F	Radium 226	Radium 228	
	DATE	TIME				NONE	HCl	HNO3	H2SO4	NaOH	MeOH	OTHER						
18405.01	10/19/20	1334	MW-1 L010076-01	GW	5	2	3											
.02	10/19/20	1706	MW-2 L010076-02	GW	5	2	3											
.03	10/19/20	1156	MW-4 L010076-03	GW	5	2	3											
.04	10/19/20	1745	MW-5 L010076-04	GW	5	2	3											
.05	10/19/20	1541	MW-6 L010076-05	GW	5	2	3											
.06	10/19/20	1334	MW-1 Duplicate L010076-06	GW	5	2	3											
.07	10/19/20	815	Field Blank L010076-07	DI	5	2	3											

Certifications
 OHIO VAP Drinking Water
 DoD NPDES
 Project Locations
 Detroit New York
 Other
 Special Instructions

Metals to analyse:
 Sb, As, Ba, Be, B, Cd, Ca, Cr,
 Co, Pb, Li, Hg, Mo, Se, Tl
 Please send a preliminary report

RELINQUISHED BY: *[Signature]* DATE **10-20-20** TIME **0925**
 RECEIVED BY: *[Signature]* DATE **10/20/20** TIME **0925**

RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
 RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME
 SEAL NO. SEAL INTACT YES NO INITIALS
 SEAL NO. SEAL INTACT YES NO INITIALS
 NOTES: TEMP. ON ARRIVAL **2.2**

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE