4TH QUARTER 2021 GROUNDWATER ASSESSMENT MONITORING REPORT
NOVEMBER 2021 MONITORING EVENT

FORMER ENVIRONMENTAL WASTE SOLUTIONS (EWS)
CAMDEN CLASS II LANDFILL

TDSWM PERMIT NUMBER IDL 03-0212 (TERMINATED)
200 OMAR CIRCLE
CAMDEN, TN 38320

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THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

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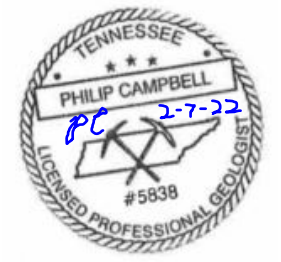

CEC PROJECT 181-364

JANUARY 2022

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EXECUTIVE SUMMARY

This report documents the 4th quarter 2021 assessment-monitoring event, which was performed at the former Environmental Waste Solutions, LLC (EWS) Camden Class II Landfill on November 18, 2021.

The former EWS Camden Class II Landfill is located in Benton County at 200 Omar Circle, Camden, Tennessee (latitude 36°03'16" N; longitude -88°05'16" W), and was formerly registered with the Tennessee Division of Solid Waste Management (DSWM) with permit number IDL 03-0212 and previously received secondary aluminum smelter waste for disposal including aluminum dross, salt cakes, and other industrial wastes. The IDL 03-0212 permit was terminated in July 2017.

Beginning in 2008, the site entered into the Groundwater Detection-Monitoring Program, and groundwater samples were collected from site monitoring wells on a semi-annual basis. EWS entered the Assessment Monitoring Program because of chloride concentrations reported above the 250 mg/l EPA secondary drinking water standard (2DWS) at monitoring well MW-3 during the November 2015 semi-annual detection-monitoring event. As a result, additional groundwater quality assessment activities were completed which included the installation of a new permanent groundwater monitoring well (MW-5), the installation of three (3) temporary monitoring wells (TMW-1, TMW-2, TMW-3), and completion of a private water-use survey. In addition, the semi-annual detection monitoring frequency was increased from semi-annual to quarterly assessment monitoring. The observed chloride concentration at MW-3 during this November 2021 event (14.1 mg/l) was well below the 2DWS.

Quarterly assessment-monitoring activities have been performed since the November 2015 monitoring event in general accordance with the site's Groundwater Quality Assessment Plan (GWQAP) dated March 14, 2016. During the second quarter 2017 assessment-monitoring event, total cadmium was detected above the maximum contaminant level (MCL) at MW-3, which was the first MCL exceedance for total cadmium concentrations at any well location on site. As a result, enhancements have been made to the sampling and analytical program for the site.

The 4th quarter 2021 sampling event at the facility included the following sampling activities:

Groundwater samples were collected by CEC on November 18, 2021 from MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3. A leachate sample was collected from the "Industrial Waste Cell (IWC) on November 19, 2021;" however, no leachate samples were collected from the "Aluminum Processing Waste Cell (APWC)" during this sampling event since leachate was not currently being generated from the APWC. The amount of leachate produced from the IWC and APWC has been minimal since the landfill was capped, and the leachate flows being pumped from the IWC cell have been intermittent.

Pace Analytical (Pace) is the laboratory sub-contracted to perform the chemical analyses. Laboratory reports for the 3rd quarter 2021 groundwater analyses were prepared by Pace and reported to CEC on January 6, 2022 for the groundwater samples and December 30, 2021 for the IWC leachate samples. It is worth noting that the standard laboratory turnaround time for Pace to report results is within 10 working days. However, CEC observed that Pace initially reported the results as "preliminary" after approximately 20 working days from the sampling event, and, therefore, CEC asked Pace to evaluate and finalize the reported results. The final analytical reports for this sampling event were reported to CEC over six weeks (approximately 34 working days) after the samples were submitted to Pace. Therefore, CEC did not have access to the final analytical results from Pace until recently (January 6, 2022).

The reported concentrations of chemicals detected in the groundwater monitoring wells and temporary monitoring wells were reviewed and compared against their respective U.S. EPA Maximum Contaminant Levels (MCLs) and U.S. National Secondary Drinking Water Standards (2DWS). Where primary or secondary standards were not available (i.e., cobalt), concentrations were reviewed and compared against their EPA Regional Screening Levels (RSLs). Statistical analysis methods were used to identify whether there were any statistically significant increases (SSIs) in any site monitoring wells over background concentrations for the analyzed water quality parameters. The results of the analyses during this assessment-monitoring event are summarized in the following paragraphs.

Total cadmium was detected at MW-3 (0.00188 mg/l) and the duplicate sample collected from MW-3 (0.0019 mg/l) during this November 2021 sampling event, which were less than the respective EPA maximum contamination limit (MCL) of 0.005 mg/l. The cadmium detections at MW-3 during this event were the only cadmium detections above the Practical Quantification Limit (PQL) at any of the groundwater monitoring locations. Based on the Mann-Kendall trend test, a downward trend was identified for total cadmium concentrations at MW-3, when considering data from the past 23 sampling events at MW-3 since November 2016. Total cadmium was first detected above the PQL during the November 10, 2016 event (0.00177 mg/l) and was first detected above the MCL at MW-3 during the June 8, 2017 event (total cadmium at MW-3 = 0.0286 mg/l). Since the fall of 2018, the total cadmium concentrations observed in MW-3 have shown an overall decrease in concentration. In addition, there have been no cadmium detections from groundwater samples obtained from temporary monitoring wells TMW-2 and TMW-3 that are immediately down-gradient of MW-3.

Eight SSIs were identified over background during this event. SSIs included chloride (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), total cadmium (MW-3), and sulfate (MW-3). The chloride, total cadmium, and sulfate detections observed in the site monitoring wells were all below their associated MCLs or 2DWS.

Glossary of Terms

Appendix I	Refers to the required regulatory sample list of groundwater parameters
CEC	Civil & Environmental Consultants, Inc.
Class I Landfill	Municipal Solid Waste Landfill
Class II Landfill	Industrial Waste Landfill
Class IV Landfill	Construction/Demolition Waste Landfill
Class III/IV Landfill	Landscaping and Construction/Demolition Waste Landfill
DML	Construction Demolition Landfill
US EPA	United States Environmental Protection Agency
Pace	Pace Analytical
EWS	Environmental Waste Solutions
GW	Groundwater
HDPE	High Density Polyethylene
HI	Hydrogeologic Investigation
MCL	Maximum Contaminant Level
microomhos•cm-1	micro-Siemens per centimeter
mg/l	milligrams per Liter
MW	Monitor Well
NPPL	Non-parametric prediction limit analysis
ORP	Oxidation Reduction Potential
POTW	Publically Owned Treatment Works
ppm	parts per million*
PQL	Practical Quantitation Limit
QC	Quality Control
2DWS	Secondary Drinking Water Standard (EPA)
SESD	Science and Ecosystem Support Division
SNL	Sanitary Landfill
SSI	Statistically Significant Increase
TDEC	Tennessee Department of Environment and Conservation
TDOG	Tennessee Division of Geology
TDSWM	Tennessee Division of Solid Waste Management
TOC	Top of Casing
VOC	Volatile Organic Compound

* ppm – parts per million* is equivalent to mg/l – milligrams per Liter for water samples

1.0 INTRODUCTION

1.1 SITE LOCATION

The former EWS Camden Class II landfill is located just off Highway US 70 at 200 Omar Circle, Camden, Tennessee. The site is located on the Camden, Tennessee USGS quadrangle at north latitude 36° 03' 16" and west longitude -88° 05' 16" at an average elevation of 400 feet above mean sea level datum (MSL). The location of the facility is shown in **Appendix A – Figure 1 – Site Location Map**. The landfill footprint can be viewed in **Appendix A – Figure 2 – Potentiometric Surface Map**.

1.2 CURRENT ACTIVITIES

The former EWS Camden Class II landfill is not currently operating (i.e., the permit has been terminated) and landfill cap construction and closure activities have been completed by TDEC. Continued post-closure activities at the facility are being implemented to protect the environment and human health. These activities include leachate pre-treatment, leachate hauling and disposal, storm water management activities, and groundwater monitoring activities.

2.0 AQUIFER CHARACTERISTICS

2.1 GEOLOGIC AND AQUIFER CHARACTERISTICS

The extensive reworking of the site because of the excavation of chert for local road and fill projects has impacted the original site geology. Based upon a review of the Tennessee Division of Geology (TDOG) Geologic Map and site observations, it appears that the site is within the Camden and Harriman Formations. It is reported by the TDOG that the Camden and Harriman Formations are lithologically identical and not enough fossils are present to form a convenient basis for subdivision.

2.1.1 Camden and Harriman Formations

The Camden and Harriman Formations are described as follows: chert, gray with specks and mottling's of very light-gray and yellowish-gray (surfaces stained pale to dark yellowish-orange), bedded and blocky (beds 2 to 8 inches thick), dense, conchoidal fracture, contains pods of white to light gray tripolitic clay, locally stained yellow and brown, and fossiliferous. Locally, especially near the top, fragments of chert are cemented into large masses and beds of breccia by dark-brown to moderate-red limonite.

Groundwater potentiometric data collected from the uppermost water-bearing zone across the entire landfill site footprint during the 1999 and 2006 hydrogeological investigations indicated that groundwater flow in the uppermost aquifer is generally to the south. Comparisons of the water bearing zone elevations to static groundwater elevations indicate an unconfined aquifer.

2.2 MONITOR WELL INTEGRITY & STATIC WATER LEVELS

The groundwater-monitoring network for the former EWS Class II Landfill currently consists of monitoring wells MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3. Due to insufficient groundwater recharge volumes for sampling, MW-2 has been removed from the regular sampling network and replaced by MW-4. MW-2 is still intact and is used for potentiometric surface measurements and field parameter testing. Monitoring well MW-1 serves as an up-gradient monitoring point, while monitoring wells MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 serve as down-gradient monitoring points. The temporary wells (TMW-1, TMW-2, and TMW-3) were installed with the purpose of delineating the areal extent of groundwater contamination and providing additional potentiometric interpretation. The installation of these temporary wells was in response to elevated chloride concentrations at MW-3, which were first detected during the November 2015 sampling event. In addition to providing potentiometric information for the site, these temporary wells yield groundwater samples for water-quality analyses.

The following table presents the wells that were used to develop this report.

Up-gradient Monitoring Points	Down-gradient Monitoring Points
MW-1	MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3

Before purging and sampling activities began, depth to water (DTW) measurements were collected at each of the above-referenced monitoring wells using an electronic water level indicator such as the Solinst® model #122 electronic water-level indicator. DTW measurements were also collected from MW-2 for potentiometric interpretation. DTW measurements were collected in the following order from first to last: MW-1, MW-5, TMW-1, TMW-2, TMW-3, MW-4, MW-2, and finally MW-3.

The integrity of each monitoring well was checked during each sampling event prior to groundwater collection. The physical condition of each wellhead was observed and noted along with the condition of all locking mechanisms for each monitoring well. Once the watertight seal was removed from the top of each monitoring well's casing, the well was allowed to equilibrate to atmospheric conditions. The water-level indicator was decontaminated in accordance with the United States Environmental Protection Agency-Science and Ecosystem Support Division (USEPA SESD) procedures for field water-level measurements in between wells and a new pair of clean nitrile gloves were donned at each monitoring location while collecting DTW measurements. The decontaminated electronic water-level indicator was slowly lowered into the well to establish the distance between the top of casing and the elevation of free groundwater. The electronic probe was capable of determining this distance to within one-hundredth of one foot (0.01 foot). The distance was written in the site-specific field book or field data sheet as DTW. Upon collection of these data, the electronic water-level indicator was removed from the monitoring well and decontaminated.

The following equation is used to determine the elevation of groundwater at each well:

Established Top of Casing Elevation – Depth to Water = Groundwater Elevation

Top of casing elevation has been determined by a licensed land surveyor and is referenced to the current Tennessee State Plane Coordinate System. The top of casing elevations for all site-monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3) were updated by a licensed land surveyor on May 12, 2016. Groundwater elevations are listed in **Appendix A – Table 1 – Field Parameters & Potentiometric Data** and reflect the most recent survey.

2.3 GROUNDWATER FLOW DIRECTION

Groundwater at the landfill appears to generally flow in a southern direction towards Charlie Creek and Cane Creek. Groundwater flow in the vicinity of the former EWS Class II Landfill generally flows from a topographic high north of the landfill towards monitoring wells MW-2, MW-3, MW-

4, and MW-5 and temporary monitoring wells TMW-1, TMW-2, and TMW-3, which are all down-gradient of the waste cells.

2.4 POTENTIOMETRIC GRADIENT

The potentiometric surface of the unconfined aquifer occurring beneath the former EWS Class II Landfill occurs at approximately 22.02 feet below the top of casing at the up-gradient monitor well MW-1 to approximately 11.22 feet below the top of casing at monitor well MW-4. The potentiometric gradient calculated from groundwater elevation data collected on November 18, 2021 is approximately 1.27%.

The potentiometric gradient is calculated according to the following formula:

$$\frac{\text{Highest GW. Elev. (MW-1)} - \text{Lowest GW. Elev. (MW-4)}}{\text{Horizontal Distance between the Wells}} * 100 = \text{Pot. Grad.}$$

$$\frac{(394.45') - (370.25)}{1{,}910'} * 100 = 1.27\%$$

The above calculation assumes a perpendicular gradient between the potentiometric elevations from MW-1 and MW-4. These assumptions may provide an artificially higher potentiometric gradient than is likely occurring at the site.

2.5 HYDRAULIC CONDUCTIVITY

Hydraulic conductivity estimations within the uppermost aquifer occurring beneath the landfill have not been determined at this time.

3.0 GROUNDWATER SAMPLING PROCEDURES

3.1 INSTRUMENTATION

Before purging and sampling activities began, DTW measurements were collected at each of the monitoring wells. A YSI Professional Plus® multi-parameter instrument (YSI) was used to record pH, conductivity, temperature, dissolved oxygen (DO), and oxidation-reduction potential (ORP) during groundwater sampling events at the landfill. A Hach® model 2100Q turbidity meter was used to collect turbidity readings. Each instrument was either checked against known standards or calibrated per manufacturers' specifications prior to the commencement of sampling activities.

3.2 GROUNDWATER PURGING AND COLLECTION OF FIELD PARAMETER VALUES

On November 29, 2017, dedicated submersible bladder pumps (low-flow bladder pumps) were installed in each of the groundwater monitoring wells (MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3). During the December 11, 2017 sampling event, monitoring personnel for the former EWS Class II Landfill began utilizing low-flow protocols as described within the USEPA's Issue Paper EPA/540/S-95/504: Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures, April 1996. The low-flow protocols have continued to be utilized by monitoring personnel during each quarterly groundwater assessment-monitoring event since December 11, 2017. Additionally, groundwater-sampling activities were completed during this sampling event in accordance with the USEPA SESD sampling procedure -SESDPROC-301-R4 titled "Groundwater Sampling", effective April 26, 2017.

Each dedicated submersible bladder pump is of stainless steel construction, and each is equipped with a Teflon™ bladder and dedicated Teflon™-lined bonded twin polyethylene tubing (airline and water discharge line). The low-flow bladder pumps were operated by using a special control box, which controls the pressure and frequency of the pumping action and was used to adjust the flow rate of the water. The flow rate used was adjusted to minimize stress (drawdown), prevent damage to monitoring well components, and to minimize the risk of introducing sediments into the monitoring well through the well's gravel pack. Water pumped was withdrawn directly from the formation with little mixing of casing water or disturbance to the sampling zone. The initial amount of purged groundwater was collected in a clean, high-density polyethylene (HDPE) flow-through cell while measuring temperature, pH, conductivity, DO, and ORP. A turbidity meter was used to collect turbidity readings during low-flow purging activities.

The start time of purging, the parameter measurements at intervals during purging, estimated pumped volumes, depths to water for low-flow sampling, and any notes of unusual conditions were recorded during purging activities. Field parameter measurements (temperature, pH, conductivity, DO, ORP, and turbidity) were collected periodically until proper field stabilization goals had been met, which are defined by the USEPA SESD as: "for at least three consecutive

measurements, the pH remains constant within 0.1 Standard Unit (SU), conductivity varies no more than 5 percent, and the turbidity has either stabilized or is below 10 Nephelometric Turbidity Units (NTUs)". Other parameters such as DO were also measured as a purge-adequacy parameter. Normal goals for DO are 0.2 mg/l or 10% saturation, whichever is greater. Temperature and ORP were measured during purging to obtain measurements of record for these parameters for each sampling event.

During the November 18, 2021 monitoring event, a peristaltic pump was utilized during purging activities in the temporary monitoring wells (TMW-1, TMW-2, and TMW-3). According to the USEPA SESD groundwater sampling procedures, peristaltic pumps can be utilized as an alternative and acceptable method for low-flow or multiple volume purging and sampling activities.

Peristaltic pumps require three separate pieces of tubing in order to function: (1) a section of Teflon® tubing, which is lowered into the well; (2) a small section of flexible Masterflex® silicone tubing, which is installed into the peristaltic pump head; and (3) a small section of Teflon® tubing, which connects the pump head to the flow-through cell. The first section of tubing was deployed to the approximate mid-screen within the well (approximately 4 feet above the bottom of the well casing) and cut above the ground surface. The free end of the first section of tubing was connected to the flexible Masterflex® silicone tubing situated in the peristaltic pump head. Finally, the third section of tubing (second section of Teflon® tubing) connected the Masterflex® silicone tubing at the pump head to the flow-through cell for collection of field chemistry parameter measurements. In order to prevent the transfer of residuals between sampling locations, all three sections of tubing were replaced between each well. After replacement of all sections of tubing, the peristaltic pump was turned on, and a suitable (slow) pumping rate was achieved to maintain a minimal and stable drawdown level. Field parameters were collected from the initial amount of water that was purged and measurements were collected periodically until the parameters had stabilized as described above.

With respect to groundwater chemistry, an adequate purge is achieved when the pH and conductivity have stabilized and the turbidity either has stabilized or is below 10 NTUs. If the field parameters were not stable, the purging procedures continued until one of the following adequate purge conditions were met:

1. Field stabilization occurred.
2. Well was purged dry. For wells with slow recovery, attempts were made to avoid purging to dryness by slowing the purge rate. In some situations, even with slow purge rates, the well may be pumped dry. This situation generally indicates that an adequate purge had been achieved and the well was sampled following sufficient recovery (enough volume to allow filling of all sample containers).
3. A minimum of three well volumes were purged.

Field chemistry parameters were collected periodically at the temporary wells until field parameter measurements had stabilized, and at least three well volumes were removed from each temporary monitoring well. The purge water from down-gradient monitoring wells MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 were containerized and discarded into the on-site leachate collection system storage tank.

A summary of field parameter values for each well are presented in **Table 1 – Field Parameters and Potentiometric Data in Appendix A**. A detailed account of each purge and sample procedure conducted at each monitoring well is presented in the field information logs located in **Appendix C – Laboratory Analytical Report & Field Information Logs.**

3.3 GROUNDWATER SAMPLE COLLECTION & PRESERVATION

Groundwater samples were collected from monitoring wells when field parameter data indicated that stagnant water had been purged from the well and replaced by groundwater from the adjacent formation that is representative of actual aquifer conditions. Groundwater was placed in the laboratory supplied sample vessels in the following order: Appendix I organics – three (3) forty (40) mL amber glass containers preserved with hydrochloric acid (HCl); Appendix I organics EDB and DBCP – three (3) forty (40) mL clear glass containers preserved with sodium thiosulfate ($Na_2S_2O_3$); total metals (Appendix I metals, Al, Ca, Fe, K, Mg, Mn, Na, and Boron) – one (1) two-hundred fifty (250) ml HDPE container preserved with nitric acid (HNO_3); alkalinity – one (1) one-hundred (100) ml unpreserved amber glass container; bromide, chloride, nitrate, and sulfate – one (1) two-hundred fifty (250) ml unpreserved HDPE container; COD & ammonia – one (1) two-hundred fifty (250) ml HDPE jar preserved with sulfuric acid (H_2SO_4).

As described in the previous section, a peristaltic pump was used to purge temporary monitoring wells TMW-1, TMW-2, and TMW-3. Samples for organic analysis cannot be exposed to the flexible peristaltic pump-head tubing, due to the risk of contaminant sorption and/or the risk of the dissolution of organic compounds to the sample.

3.4 LEACHATE SAMPLING PROCEDURES

The amount of leachate produced from the "Industrial Waste Cell (IWC)" and "Aluminum Processing Waste Cell (APWC)" has been minimal since the landfill was capped, and the leachate being pumped from the IWC and APWC cells has been intermittent. During this November 2021 groundwater-sampling event, a leachate sample was collected from the IWC cell. However, no leachate was being pumped from the APWC. Therefore, no APWC leachate sample was collected for analysis during this monitoring event. Attempts will be made to sample the IWC and APWC leachate during each groundwater monitoring event in the future. The approximate APWC and IWC leachate sample locations are shown on **Figure 2 – Potentiometric Surface Map located in Appendix A**.

3.5 QUALITY ASSURANCE AND QUALITY CONTROL

3.5.1 Field Quality Assurance and Quality Control

Field Quality Assurance and Quality Control (QA/QC) samples were collected as part of the groundwater-sampling program. Quality assurance (with internal laboratory quality controls) addresses the accuracy and repeatability of analytical results after analysis in the laboratory. Quality control addresses methods to preserve the integrity of samples in the field and during shipping to the laboratory. Quality control may be accomplished by incorporating trip blanks, field blanks, field duplicates, and equipment (rinsate) blanks into the analytical program.

A field blank and a duplicate sample were collected during this groundwater-monitoring event. CEC collected a field blank near monitoring well TMW-1 and a duplicate sample was collected from MW-3. The field blank was collected by pouring deionized water into a set of sample bottles provided by the laboratory, thereby allowing any airborne contaminants a chance to enter the field blank sample. The duplicate sample was collected by taking separate samples from within MW-3 at the same time. In addition, a laboratory supplied trip blank for VOC analysis was prepared and placed in a cooler, which was present during groundwater sampling activities. Upon the collection of the final groundwater sample, the trip blank was placed in a sample cooler and delivered to Pace for VOC analysis. No VOCs were detected above the laboratory PQL in the trip blank sample.

Pace reported the groundwater QA/QC laboratory analytical results to CEC on January 06, 2022. Laboratory analytical testing of the field blank presented in the analytical report showed no indications of any constituents above the laboratory PQL. The results for the duplicate sample collected from MW-3 were similar to the original MW-3 sample results. Chromium was detected in the sample collected from the original MW-3 (0.0029 mg/l), but was not detected above the PQL (<0.002 mg/l) in the duplicate sample MW-3 sample. However, the relative percent difference (RPD) between all constituent values (including chromium) reported in MW-3 and the duplicate sample were within the acceptable 20% RPD control limit.

3.5.2 Laboratory Quality Assurance and Quality Control

In order to demonstrate that a laboratory is producing data of adequate precision, accuracy and sensitivity, it is necessary to assess all laboratory procedures at all stages from sampling to reporting. The laboratory completed specific control and assessment procedures designed to monitor, quantitatively, the accuracy and precision of specific assays. Laboratory Internal Quality Assurance (IQA) refers to the full range of practices employed to ensure that laboratory results are reliable. Internal Laboratory Quality Control (IQC) consists of the operational techniques used by the laboratory staff for continuous assessment of the quality of the results of individual analytical procedures. The specific quality-control procedures utilized by the analytical laboratory are summarized in the following table:

Quality Criteria Category	Quality Control Laboratory Methods
Precision	Laboratory duplicates at a frequency of one per matrix spike, one per laboratory control sample, and one per method blank.
Bias	Matrix spikes, laboratory control samples, method blanks at a frequency of one sample per standard batch.
Representative and Comparable Data	Adherence to standard analytical procedures, analytical methods, units of measurement, and detection limits.

The groundwater laboratory report from this November 2021 event indicated that the same analyte was found in the associated laboratory method blank for the detected concentrations of chromium in MW-1 and MW-3 and potassium in TMW-3, as indicated by laboratory qualifier "B". Since the same constituent concentrations were found in the method blank, the reported concentrations of chromium at MW-1 and MW-3 and potassium at TMW-3 (indicated as laboratory qualifier "B") may be falsely higher than the actual concentrations. The internal laboratory IQA and IQC results are included in the laboratory analytical reports located in **Appendix C – Laboratory Analytical Reports & Field Information Logs**.

All qualifier codes and their descriptions can be found on page 62 of 66 in the laboratory report found in **Appendix C**.

3.6 SAMPLE CHAIN-OF-CUSTODY

A sample Chain-of-Custody (COC) traveled with each sample kit from Pace to the former EWS Class II Landfill site and back to Pace for analysis.

4.0 LABORATORY ANALYTICAL PROCEDURES

4.1 ANALYTICAL METHODS

All laboratory analyses for the 4th quarter 2021 groundwater assessment-monitoring event were completed by Pace Analytical. The analytical methods chosen for these monitoring events were in full compliance with the procedures required by the DSWM and the USEPA's publication SW-846, entitled Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (3rd Edition).

The SW-846 methods used for the analysis of **groundwater and leachate samples** were as follows:

Method 6010b	Inductively Coupled Plasma (ICP) – Atomic Emission Spectrometry (Boron only)
Method 6020	ICP – Mass Spectrometry (metals)
Method 2320 B-2011	Alkalinity
Method 7470A	Mercury in Liquid Waste – Manual Cold Vapor Technique
Method 8011	1,2-dibromoethane & 1,2 dibromo-3-chloropropane by Micro-extraction and Gas Chromatography
Method 8260B	Volatile Organic Compounds by Gas Chromatograph/Mass Spectrometry
Method 9056A	Determination of Inorganic Anions by Ion Chromatography (Bromide, Chloride, Fluoride, Nitrate, and Sulfate)
Method 130.1	Hardness (colorimetric) as $CaCO_3$
Method 350.1	Ammonia Nitrogen
Method 410.4	Chemical Oxygen Demand (COD)

4.2 LABORATORY ANALYTICAL RESULTS

Constituent values from all inorganic laboratory analyses for groundwater and leachate samples, along with applicable MCLs or 2DWSs, are presented in **Table 2a – Groundwater and Leachate Analytical Data in Appendix A**. Copies of the laboratory reports are located in **Appendix C – Laboratory Analytical Report & Field Information Logs**.

4.2.1 EWS Groundwater Quality Relative to the EPA Primary Drinking Water Standards

Total Arsenic was detected above the MCL (0.01 mg/l) at up-gradient MW-1 (0.0192 mg/l) during this 4th Quarter 2021 event. Arsenic has been detected at concentrations that exceed the MCL during previous monitoring events only at up-gradient well MW-1. Arsenic was not detected above the laboratory PQL (<0.002 mg/l) in any of the down-gradient monitoring wells during this November 2021 event, which is consistent with previous sampling events. For this site, the presence of arsenic in the local groundwater is considered to be naturally occurring, originating

from deposits in the soil overburden since there is no immediate development up-gradient of MW-1.

Total Cadmium was detected **below** the MCL (0.005 mg/l) at MW-3 and the duplicate sample collected from MW-3 during this November 2021 monitoring event. During this event, the turbidity value observed at MW-3 was 18.5 NTU. A summary of cadmium concentrations (total cadmium and dissolved cadmium), turbidity values, and groundwater elevations observed at MW-3 during each sampling event since May 9, 2016 is referenced in the table and graph below:

MW-3 **Summary of Cadmium Concentrations, Turbidity Measurements, and Groundwater Elevations**				
Date	**Total Cadmium (mg/l)**	**Cadmium, Dissolved (mg/l)**	**Turbidity (NTU)**	**Groundwater Elevations (ft. MSL)**
11/18/2021	**0.00188**	**NA**	**18.5**	374.10
8/26/21	**0.00595**	**0.00589**	**28.7**	373.10
5/20/2021	**0.00265**	NA	**12.5**	374.45
3/2/2021	**0.00249**	NA	**5.38**	384.27
12/8/2020	**0.00906**	**0.00787**	**10.8**	373.35
11/17/2020	**0.00816**	NA	**14.0**	373.24
8/26/2020	**0.00242**	NA	**6.66**	375.87
6/2/2020	**0.00278**	NA	**5.38**	374.31
2/27/2020	**0.00214**	NA	**7.63**	373.97
11/20/2019	**0.00157**	NA	**2.11**	378.22
9/6/2019	**0.0088**	NA	**2.98**	373.25
6/4/2019	**0.0292**	**0.0297**	**2.98**	374.29
3/5/2019	**0.0117**	**0.0133**	**6.27**	374.40
12/4/2018	**0.144**	**0.139**	**4.77**	377.73
9/27/2018	**0.204**	**0.204**	**1.05**	384.61
9/12/2018	**0.297**	**0.320**	**1.12**	375.02
6/19/2018	**0.0312**	**0.0292**	**4.90**	373.47
3/22/2018	**0.00671**	**0.00637**	**24.3**	377.25
12/14/2017	**0.00659**	**0.00733**	**23.0**	373.03
9/28/2017	**0.00926**	**0.0102**	**18.9**	373.25
8/8/2017	**0.0113**	NA	**16.6**	373.42
6/8/2017	**0.0286**	NA	**34.8**	372.92
11/10/2016	**0.00177**	NA	**64.5**	372.91
5/9/2016	<0.001	NA	**8.39**	379.50

NA-Not Analyzed

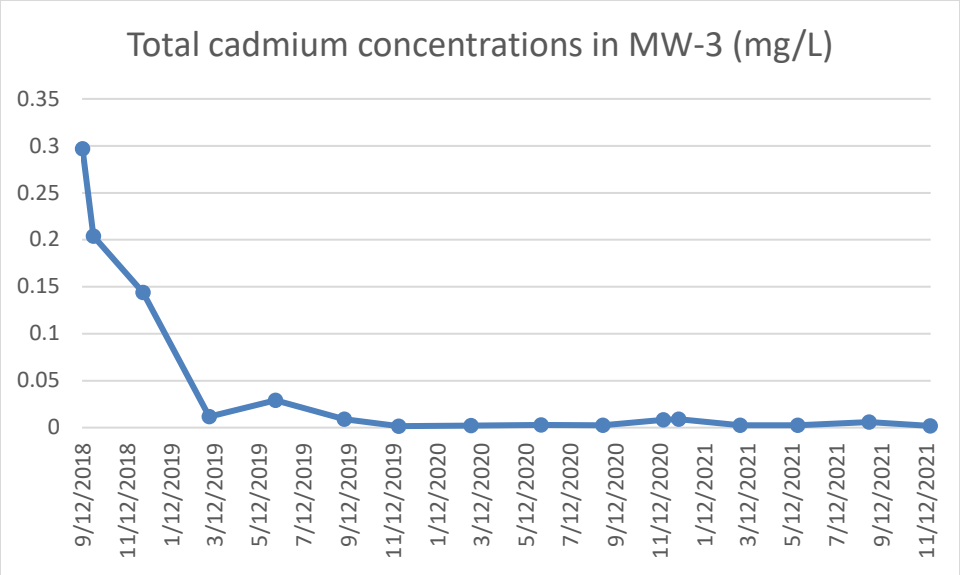


Figure – Cadmium Concentrations in MW-3

Since the fall of 2018, the total cadmium observed in MW-3 has shown an overall decrease in concentration. During the four consecutive sampling events from November 2019 to August 2020, the cadmium concentrations at MW-3 were below the MCL. Since August 2020, the total cadmium detections at MW-3 have been intermittent during recent events at concentrations just above the MCL (November 2020, December 2020, and August 2021) and below the MCL (March 2020 and May 2021). During this November 2021 sample event, the total cadmium concentrations reported in MW-3 and the duplicate sample collected from MW-3 were below the MCL. These cadmium concentrations remain significantly lower than the concentrations observed in 2018.

Total Cobalt was detected in up-gradient well MW-1 (0.0721 mg/l) and down-gradient well MW-5 (0.00222 mg/l) during this November 2021 event. Cobalt does not have an MCL; however, the TDEC-DSWM uses the EPA regional screening level (RSL) of 0.006 mg/l as the groundwater protection standard for this constituent. The reported cobalt detection at up-gradient well MW-1 was above the RSL for cobalt during this November 2021 event. However, the cobalt detection at down-gradient MW-5 was below the RSL for cobalt. Cobalt has historically been detected at concentrations that exceed the RSL at MW-1 prior to the disposal of waste in the landfill, and total cobalt was detected in MW-1 at similar concentrations during previous events. For this site, the presence of cobalt in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden, since there is no development immediately up-gradient of MW-1.

Total Chromium was detected in upgradient MW-1 (0.00249 mg/l), downgradient wells MW-3 (0.0029 mg/l) and MW-5 (0.0100 mg/l), which were not above the MCL of 0.1 mg/l for chromium.

Total Mercury was detected in up-gradient well MW-1 (0.000785 mg/l), which was below the MCL of 0.002 mg/l for mercury concentrations during this November 2021 sample event. Mercury

was not detected in any of the groundwater monitoring wells during the previous August 2021 sample event. During the previous May 2021 monitoring event, mercury was detected in up-gradient well MW-1 (0.00136 mg/l), which was below the MCL of 0.002 mg/l for mercury concentrations. Total mercury has consistently been detected above the PQL at MW-1 since January 2009. Total mercury was not detected above the laboratory PQL (0.000200 mg/l) at any of the down-gradient wells during this November 2021 event. Although total mercury has been previously detected above the PQL at up-gradient MW-1, total mercury has not been detected above the laboratory PQL in any of the down-gradient monitoring wells since monitoring began at the site in 2008. The presence of mercury in the local groundwater near up-gradient monitoring well MW-1 may be attributable to naturally occurring deposits in the soil overburden, since there is no development immediately up-gradient of MW-1.

4.2.2 EWS Groundwater Quality Relative to the National Secondary Drinking Water Standards

Laboratory analytical results for the groundwater samples collected during the November 2021 sampling event from the former EWS Class II Landfill groundwater monitoring well network indicated that three of the site-specific groundwater-monitoring list of compounds were detected at concentrations that exceeded the National Secondary Drinking Water Standards (2DWS). Those parameters include **aluminum** in up-gradient MW-1 and down-gradient wells MW-3 and MW-5; **iron** in up-gradient well MW-1 and down-gradient wells MW-4, MW-5, and TMW-1; and **manganese** in up-gradient well MW-1 and down-gradient wells MW-4 and MW-5. **Chloride, sulfate, nickel, silver,** and **zinc** detections were below the 2DWS during this event. The observed concentrations for the constituents given below are discussed relative to the 2DWS.

The **Total Aluminum** concentrations observed in MW-3 (0.43 mg/l) and MW-5 (0.202 mg/l) during this November 2021 sampling event were above the 2DWS (0.2 mg/l). Total aluminum was also detected in upgradient well MW-1 (0.634 mg/l) above the 2DWS. Total aluminum was detected in down-gradient wells TMW-1 (0.11 mg/l) and TMW-2 (0.155 mg/l), but both were below the 2DWS (0.2 mg/l). Aluminum was not detected above the PQL (<0.1 mg/l) at MW-4 or TMW-3 during this November 2021 event.

The **Chloride** concentrations reported at MW-1 (1.95 mg/l), MW-3 (14.1 mg/l), MW-4 (9.89 mg/l), MW-5 (78.8 mg/l), TMW-1 (32.9 mg/l), TMW-2 (36.0 mg/l), and TMW-3 (64.7 mg/l) during this November 2021 event were below the 2DWS for chloride concentrations (250 mg/l). The chloride concentrations for this November 2021 event are similar to the concentrations observed at samples collected from each well during the recent previous events. The chloride concentration at MW-3 continues to be significantly lower in concentration compared to the previous events in December 2018 (65 mg/l), September 2018 (222 mg/l), November 2015 (458 mg/l), and the supplemental re-sampling in December 2015 (360 mg/l).

Fluoride was detected in MW-3 (0.272 mg/l) during this November 2021 sampling event, which was well below the 2DWS for fluoride (2 mg/l). Fluoride was not detected (<0.150 mg/l) in any other wells during this current sample event.

Total Iron was detected above the 2DWS (0.3 mg/l) in up-gradient well MW-1 (19.6 mg/l) and down-gradient wells MW-4 (1.23 mg/l), MW-5 (0.708 mg/l), and TMW-1 (0.689 mg/l) during this November 2021 monitoring event. Iron was detected above the PQLs of the laboratory (0.1 mg/l), but below the 2DWS (0.3 mg/l) during this November 2021 event at wells MW-3 (0.245 mg/l), TMW-2 (0.196 mg/l), and TMW-3 (0.141 mg/l). The reported total iron concentrations at each of the groundwater monitoring wells were less than the highest concentrations observed prior to placement of waste and do not exhibit a trend via time-series graphs. The presence of iron in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden, and iron has consistently been detected above the 2DWS in up-gradient well MW-1.

Total Manganese detections were observed above the 2DWS (0.05 mg/l) in up-gradient MW-1 (1.24 mg/l) and down-gradient wells MW-4 (0.094 mg/l), and MW-5 (0.281 mg/l) during the November 2021 monitoring event. Total Manganese has been consistently detected at concentrations above the 2DWS (0.05 mg/l) in up-gradient well MW-1. The presence of total manganese in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden. During this November 2021 event, total manganese was also detected below 2DWS (0.05 mg/l) but above the laboratory PQL (<0.005 mg/l) in wells MW-3 (0.0309 mg/l), TMW-1 (0.0149 mg/l), TMW-2 (0.00608 mg/l), and TMW-3 (0.0121 mg/l).

Total Nickel was detected in up-gradient well MW-1 (0.00859 mg/l) and down-gradient wells MW-3 (0.00323 mg/l), MW-5 (0.00745 mg/l), and TMW-2 (0.00226 mg/l) during the November 2021 sampling event, and these values were below the MCL value (0.10 mg/l) obtained from the Tennessee Division of Water Resources (TN DWR) Public Water Systems chapter rule 0400-45-01-.06 (0.10 mg/l). Total nickel has been detected at concentrations above the TN DWR Public Water Systems MCL (0.1 mg/l) in up-gradient well MW-1 during previous events on April 9, 2009 (total nickel at MW-1= 0.2 mg/l) and May 19, 2009 (total nickel at MW-1=0.17 mg/l). Therefore, the presence of total nickel in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden.

The **Sulfate** concentration reported at MW-3 (57.2 mg/l) during this November 2021 sampling event was below the 2DWS for sulfate (250 mg/l). In addition, the sulfate concentrations at MW-3 have been consistently decreasing each event since September 2018.

Sulfate was also detected up-gradient well MW-1 (7.59 mg/l) and down-gradient well MW-5 (14.2 mg/l), during the November 2021 event and were also below the 2DWS. Sulfate was not detected above the PQL of 5.00 mg/l in any of the other monitoring wells across the site.

Total Magnesium does not currently have an established MCL, 2DWS, EPA RSL, or an approved alternate groundwater protection standard (GWPS). The total magnesium concentration at MW-3 during this November 2021 event (6.91 mg/l) shows that overall total magnesium levels in MW-3 have been decreasing since 2018.

Magnesium was also detected above the laboratory PQL (1.00 mg/l) during the November 2021 event in MW-1 (3.48 mg/l), MW-4 (3.18 mg/l), MW-5 (12.5 mg/l), TMW-1 (4.28 mg/l), TMW-2 (4.92 mg/l), and TMW-3 (7.16 mg/l).

4.3 QUALITY CONTROL QUALIFIER CODES

The EPA Contract Laboratory Program states that sample and result qualifiers should be utilized as part of a total quality-control process. Pace complies with this directive and reports all qualifiers along with explanations of QC qualifier codes. Seven (7) QC qualifier codes (B, E, J, J4, J6, P1, and V) were indicated during the laboratory analysis of groundwater samples collected during the November 2021 event. Specific information concerning each laboratory QC qualifier code can be found on page 62 of 66 in the January 6, 2022 Laboratory Analytical Report in **Appendix C**.

5.0 STATISTICAL ANALYSIS

5.1 APPLICABLE METHODS

The Rules of the Tennessee Department of Environment and Conservation, Division of Solid Waste Management Chapter 0400-11-01-.04(7) state, in part, that each landfill must conduct and report statistical analyses as part of the evaluation of groundwater monitoring data. Statistical analyses of the data for each constituent detected was performed on monitoring wells MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3.

The solid waste rules require groundwater sample results and associated statistical methods used to determine the statistical background of a groundwater detection/assessment monitoring program be "protective of human health and the environment". Furthermore, the rules require that the results be "representative" of the background groundwater quality of the geologic formation(s) being monitored. Various influences may affect the representativeness of sample results, which include possible errors in sampling. As previously discussed, reported total metals concentrations are likely affected by elevated turbidity values and would not be representative of the natural groundwater conditions. Before statistical evaluations were completed, the turbidity values which were collected during historical groundwater sampling events were evaluated for elevated turbidity values (>150 NTU). If the turbidity value at the time of sample collection at any given location was greater than 150 NTUs, the total metals concentrations for each sample location would not be representative of natural groundwater conditions. As a result, the corresponding data were removed from the background data set.

After the non-representative background sample data were removed, the distribution of the data in the background monitoring well (MW-1) was evaluated for normality. The tests for normality were conducted using the Shapiro-Wilks method if N <50 or Shapiro-Francia method if N>50. The normality test was performed for both raw and log-transformed data, with replacement of non-detects to half of the corresponding laboratory PQL. Data determined to be normally distributed in the background well were evaluated using parametric prediction limit (PPL) analysis. Inter-well and intra-well (intra-well utilized for upgradient MW-1) statistical methods were appropriately utilized to determine statistically significant increases in constituent concentrations in compliance (down-gradient) monitoring wells MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3.

Intra-well analyses was utilized only at MW-1 to compare the concentrations observed during the current groundwater-sampling event to the established background data set for MW-1 concentrations. Intra-well PPL and non-parametric statistical methods were appropriately utilized to determine statistically significant changes in background water quality data in up-gradient monitoring well MW-1. The cobalt data at MW-1 were normally distributed using the Shapiro-Wilks test for normality when the data were log-transformed and non-detects were replaced by half of the corresponding PQL. Therefore, intra-well PPL analysis was performed for the cobalt data set that passed normality testing. However, all other data sets (aluminum, arsenic, barium,

chloride, chromium, chloride, mercury, nickel, and sulfate data) for MW-1 were not normally distributed and were evaluated using intra-well non-parametric statistical methods.

Inter-well analyses compared the concentrations observed at the down-gradient monitoring locations (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3) to the concentrations observed at the up-gradient monitoring location (MW-1) during this monitoring event. The data distribution tests from all data sets (aluminum, barium, total cadmium, chloride, chromium, nickel, and sulfate data) indicated that the data for each constituent are not normally distributed and were evaluated for SSIs using non-parametric statistical methods.

If the data are normally distributed (using normal or log-transformed data), parametric statistical procedures may be used to evaluate SSIs. If the data are normally distributed, the percentage of non-detects in background well MW-1 for each parameter determined the primary statistical method utilized for inter-well analysis. If the background data are normally distributed and < 50% non-detects exist for the given parameter, parametric inter-well prediction limit analysis may be conducted on the data. If the percentage of non-detects in the background samples was less than 50%, Shewart-CUSUM control charts may also be utilized as a secondary statistical method utilized for inter-well analysis. However, since the aluminum, barium, total cadmium, chloride, chromium, nickel, and sulfate background data are not normally distributed, non-parametric inter-well prediction limit analysis was conducted for the background data from up-gradient well MW-1 compared to down-gradient monitoring wells (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3). The cobalt data in the background dataset from MW-1 were normally distributed using the Shapiro-Wilks test for normality when the data were log-transformed and non-detects were replaced by half of the corresponding PQL. Therefore, intra-well PPL analysis was performed for the cobalt data that passed normality testing. Additional statistical procedures performed included Mann-Kendall trend analyses. Although the Mann-Kendall trend analyses are not used to determine SSIs relative to background, they provide a non-parametric intra-well statistical procedure to identify statistical trends (increasing, decreasing, or no trend) in data at a single well over a given period of time.

The computer program ChemStat v.6.4 was used for all statistical computations. Worksheets for inter-well and intra-well statistical analysis and time versus concentration charts are given in **Appendix B – Statistical Evaluations and Time Series Plots.**

5.2 STATISTICAL RESULTS

No statistically significant increases (SSIs) were identified in up-gradient well MW-1 during this event. When considering data since the November 10, 2016 sampling event, statistically significant trends in data from MW-1 were observed using the Mann-Kendall trend analyses at the 95% confidence level. Trend analyses for MW-1 revealed statistically significant upward trends in aluminum and barium concentrations. There were no distinct statistically significant trends in

concentrations for the detected arsenic, chromium, chloride, cobalt, mercury, nickel, and sulfate concentrations at MW-1.

SSIs over background identified for the current monitoring event include chloride at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3, total cadmium at MW-3, and sulfate at MW-3. When considering data since the November 10, 2016 sampling event, statistically significant trends in data were observed using the Mann-Kendall trend analyses at the 95% confidence level. Trend analyses revealed a statistically significant upward trend in barium at MW-4, MW-5, and TMW-3; chloride at MW-4, MW-5, TMW-1, TMW-2, and TMW-3; chromium at MW-4; and sulfate at MW-5. Trend analysis revealed a downward trend in aluminum concentrations at TMW-1 and TMW-2; barium concentrations at MW-3; total cadmium concentrations at MW-3; and chloride concentrations at MW-3. There were no distinct statistically significant trends in concentrations for any of the other detected constituents.

The total cadmium concentration observed at MW-3 indicated an SSI in reported concentrations using inter-well non-parametric prediction limits by using cadmium concentrations observed at the up-gradient monitoring location (MW-1) as background for comparison. The total cadmium concentration observed at MW-3 during this November 2021 sampling event was **below** the MCL. During the previous August 2021 monitoring event, the total cadmium concentration at MW-3 was above the MCL. However, during the previous monitoring events in March 2021 and May 2021 the total cadmium concentration at MW-3 was below the MCL. During previous sampling events prior to March 2021, the total cadmium concentrations observed at MW-3 were above the MCL of 0.005 mg/l from June 2017 to September 2019, and during the previous two sampling events in November 2020 and December 2020. However, the total cadmium concentrations observed at MW-3 from November 2019 to August 2020 were below the MCL. Although the total cadmium concentration at MW-3 during this event was indicated as an SSI compared to background MW-1, a statistically significant decreasing trend was identified by Mann-Kendall for total cadmium concentrations at MW-3 when considering data from the past 23 sampling events since November 10, 2016.

The chloride concentrations observed at MW-3 (14.1 mg/l), MW-4 (13.8 mg/l), MW-5 (78.8 mg/l), TMW-1 (32.9 mg/l), TMW-2 (36.0 mg/l), and TMW-3 (64.7 mg/l) produced SSIs over background during this event. The chloride detections at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 are consistent with previous data and are below the 2DWS for chloride concentrations (250 mg/l). When considering data from the monitoring events since November 2016, the data showed a downward trend in chloride concentrations at MW-3 and an upward trend in chloride concentrations at MW-4, MW-5, TMW-1, TMW-2, and TMW-3 using the Mann-Kendall trend analyses at the 95% confidence level.

The chromium concentrations observed at MW-3 (0.0029 mg/l) and MW-5 (0.0100 mg/l) were less than the MCL (0.1 mg/l), and did not produce SSIs in reported concentrations during this event. When considering chromium data from MW-3 since November 2016, the data did not show

an upward or downward trend in chromium concentrations using the Mann-Kendall trend analysis at the 95% confidence level. However, the chromium data from MW-5 since November 2016 showed an upward trend in chromium concentrations using the Mann-Kendall trend analysis at the 95% confidence level.

A SSI for sulfate concentrations at MW-3 was identified during this sampling event. However, when considering all data accumulated from MW-3 since November 10, 2016, the data did not show an upward or downward trend in sulfate concentrations at MW-3 using the Mann-Kendall trend analysis at the 95% confidence level. The sulfate concentration reported during this sampling event at MW-3 (57.2 mg/l) remains below the 2DWS of 250 mg/l. Sulfate was also detected in MW-5 (14.2 mg/l) during this November 2021 event, which was well below the 2DWS of 250 mg/l. While there was an upward trend in sulfate concentrations identified in MW-5 during this event, there was no reported SSI and the sulfate concentration during this event was similar to the previous August 2021 event (12.0 mg/l). Sulfate was not detected above the PQL in any of the other monitoring wells across the site.

A summary of intra-well and inter-well statistical analysis is presented in **Table 3 – Intra-Well and Inter-Well Statistical Summary in Appendix A.**

6.0 CONCLUSIONS

The results of the fourth quarter assessment-monitoring event of 2021 are summarized as follows:

- SSIs included chloride (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), total cadmium (MW-3), and sulfate (MW-3).
- Trend analyses revealed a statistically significant upward trend in barium at MW-4, MW-5, and TMW-3; chloride at MW-4, MW-5, TMW-1, TMW-2, and TMW-3; chromium at MW-5; and sulfate at MW-5. Trend analysis revealed a downward trend in aluminum concentrations at TMW-1 and TMW-2; barium concentrations at MW-3; total cadmium concentrations at MW-3; and chloride concentrations at MW-3. There were no distinct statistically significant trends in concentrations for any of the other detected constituents during this event.
- The total cadmium levels at MW-3 have generally improved since closure activities have been completed. During this event, the total cadmium detection at MW-3 was less than the MCL. In addition, there have been no cadmium detections from groundwater samples obtained from temporary monitoring wells TMW-2 and TMW-3 that are immediately down-gradient of MW-3. The cadmium concentrations at MW-3 remain significantly lower than the cadmium concentrations observed at MW-3 in previous sampling events in 2017, 2018 and most of 2019.
- A SSI was identified for the reported sulfate concentration at MW-3. However, the sulfate concentrations at MW-3 do not exhibit a statistically significant increasing or decreasing trend when considering data from MW-3 since November 10, 2016.
- The chloride concentrations at MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 remain well below the 250 mg/l 2DWS.
- No VOCs were detected above their respective laboratory PQL in any of the groundwater monitoring wells during the monitoring event.

The first quarter 2021 assessment-monitoring event is tentatively scheduled for February 2022 and will consist of collecting groundwater samples from up-gradient well MW-1 and down-gradient wells MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3. As mentioned previously, the amount of leachate produced from the IWC and APWC has been minimal since the landfill was capped, and the leachate being pumped from the IWC and APWC cells has been intermittent. If possible, leachate samples will also be collected from the APWC and IWC during the first quarter 2022 assessment-monitoring event.

Since the former EWS Class II Landfill site remains in assessment monitoring, a private water use survey update is required annually. An annual water use survey update for the former EWS Class II Landfill site was completed by CEC in November 2020, and no new wells or springs were identified within the required search radius for the site during the November 2020 update. CEC prepared a 2021 annual water use survey update using information obtained in November 2021,

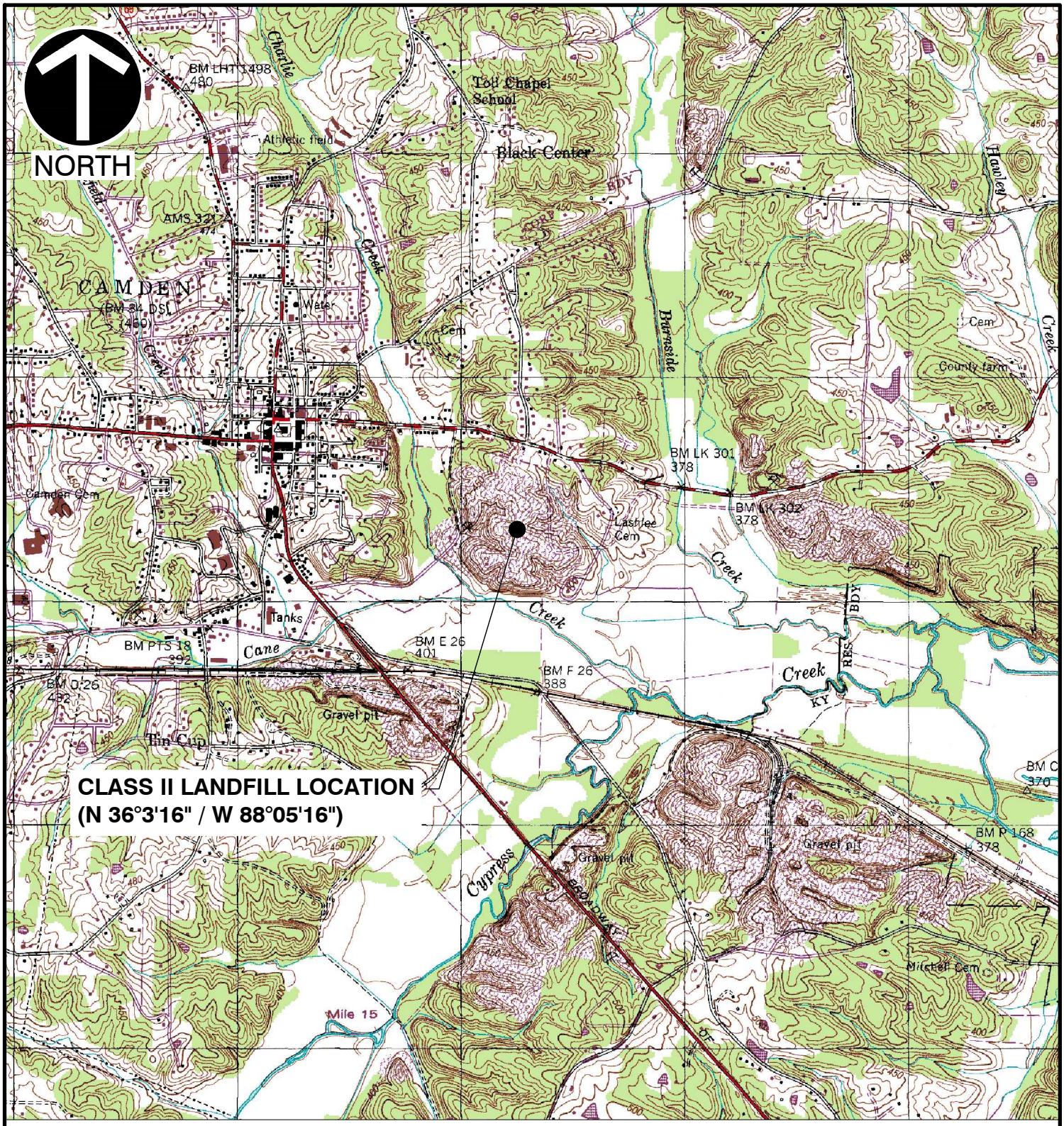
and no new wells or springs were identified during the November 2021 update. The annual 2021 water use survey update will be documented in a separate report.

7.0 RECOMMENDATIONS

The following recommendations are presented in an effort to ensure the continuance of securing representative groundwater samples and to obtain analytical results with a high-degree of accuracy and precision (i.e., repeatability).

1. It is recommended that all permanent monitoring wells on the site continue to be monitored quarterly. In addition, quarterly groundwater samples will continue to be collected from temporary monitoring wells down-gradient from MW-3.
2. If certain groundwater samples have turbidities that are elevated, samples will be collected for dissolved metals analysis (in addition to total metals analysis).

APPENDIX A
MAPS & TABLES



REFERENCE

1. U.S.G.S. 7.5' TOPOGRAPHIC MAP, CAMDEN QUADRANGLE, TENN. DATED: 1950, PHOTOREVISED: 1984.

SCALE IN FEET

0 2000' 4000'

* HAND SIGNATURE ON FILE

Civil & Environmental Consultants, Inc.

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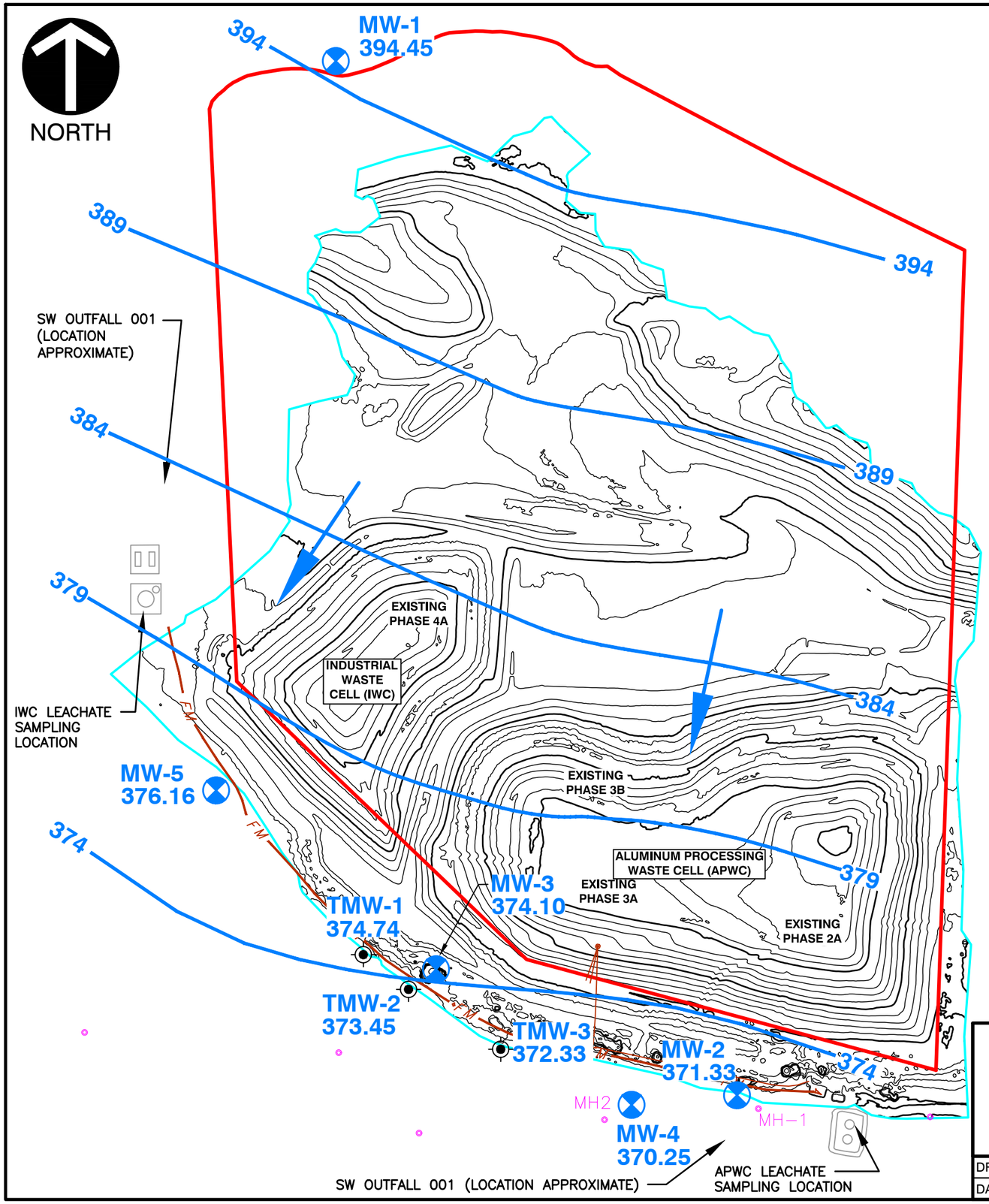
FORMER EWS SITE
CLASS II CAMDEN LANDFILL
CAMDEN, TENNESSEE

SITE LOCATION MAP 4Q2021

DRAWN BY:	AAB	CHECKED BY:	PJC	APPROVED BY:	KBW*	FIGURE NO.:	1
DATE:	JANUARY 2022	DWG SCALE:	1"=2000'	PROJECT NO:	181-364		

P:\2018\181-364\-CADD\Dwg\181-364_ FIGURE 1 - SITE LOCATION MAP.dwg{LAYOUT1} LS:(1/14/2022 - pcampbell) - LP: 2/7/2022 10:35 AM



LEGEND

- MW1 395.04 — GROUND WATER MONITORING WELL GROUND WATER ELEVATION (FMSL)
- TMW-1 374.97 — TEMPORARY GROUND WATER MONITORING WELL GROUND WATER ELEVATION (FMSL)
- 390 — POTENTIOMETRIC SURFACE CONTOUR (FMSL)
- GROUND WATER FLOW DIRECTION
- MH1 — MANHOLE
- APPROXIMATE FILL LIMITS
- FM — FORMER LEACHATE FORCE MAIN

NOTE:

Hydraulic gradient calculation between MW−1 and MW−4 locations.

$$i = \frac{394.45' \text{ (MW−1)} - 370.25' \text{ (MW−4)}}{1{,}910'} = 0.0127 \text{ ft/ft}$$

GROUNDWATER CONDITIONS

THE WATER LEVELS PRESENTED HEREIN ARE APPLICABLE TO THE LOCATION AND TIME OF MEASUREMENT. WATER LEVELS MAY FLUCTUATE THROUGH TIME.

POTENTIOMETRIC CONTOURS GENERATED FROM THESE DATA ARE CONSTRUCTED BY INTERPOLATION BETWEEN POINTS OF KNOWN STATIC WATER LEVEL ELEVATIONS AND USING KNOWLEDGE OF SPECIFIC SITE CONDITIONS. ACTUAL STATIC WATER LEVELS AT LOCATIONS BETWEEN THE MONITORING POINTS MAY DIFFER FROM THOSE DEPICTED.

SCALE IN FEET
0 200 400

*HAND SIGNATURE ON FILE

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FORMER ENVIRONMENTAL WASTE SOLUTIONS
CAMDEN CLASS II LANDFILL
CAMDEN, TENNESSEE

NOVEMBER 2021
POTENTIOMETRIC SURFACE MAP

DRAWN BY:	AAB	CHECKED BY:	PJC	APPROVED BY:	*KW	FIGURE NO.:	2
DATE:	JANUARY 2022	DWG SCALE:	1"=200'	PROJECT NO:	181-364.0005		

Table 1

Former Environmental Waste Solutions Camden Class II Landfill

Field Parameters and Potentiometric Data - 4th Quarter 2021

Monitoring Well/ Sample Location	Date	Sample Time	Top of Casing Elevation[1] (Feet MSL)	Bottom of Well Elevation (Feet)	Well Diameter (Feet)	Well Volume (Gallons)	Depth to Water (Feet)[2]	Potentiometric Surface (Feet MSL)	Temp. (˚C)	Conductivity (µS/cm)	Specific Conductivity (µS/cm)	pH (SU)	Dissolved Oxygen (mg/l)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
MW-1	11/18/2021	11:00	416.47	385.97	0.17	1.4	22.02	394.45	15.9	101.6	122.8	5.48	0.44	24.9	19.8
MW-2*	11/18/2021	NS	380.35	367.70	0.17	0.6	9.02	371.33	16.6	218.1	260.0	6.23	3.46	96.0	3.34
MW-3	11/18/2021	14:20	392.90	365.10	0.17	1.5	18.80	374.10	16.0	170.5	205.8	5.98	1.46	172.5	18.5
MW-4	11/18/2021	13:05	381.47	358.37	0.17	2.0	11.22	370.25	16.8	63.8	75.6	5.53	2.37	156.6	8.20
MW-5	11/18/2021	12:10	385.25	351.40	0.17	4.2	9.09	376.16	16.1	261.1	314.5	4.96	0.52	271.6	21.6
TMW-1	11/18/2021	13:40	381.19	348.99	0.085	1.1	6.45	374.74	16.3	133.5	160.8	5.54	4.24	131.9	8.17
TMW-2	11/18/2021	12:10	384.27	356.77	0.085	0.7	10.82	373.45	16.6	138.4	164.7	5.52	5.17	124.5	8.80
TMW-3	11/18/2021	10:40	381.37	353.37	0.085	0.8	9.04	372.33	16.5	249.9	298.2	5.35	1.22	120.4	8.97
**Leachate (IWC-L)	11/19/2021	NS	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--
**Leachate (APWC-L)	NS	NS	NA	NA	NA	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS

[1] Top of Casing Elevations from survey by Civil & Environmental Consultants, Inc. on May 12, 2016.

[2] Depth to water measurements collected by Civil & Environmental Consultants, Inc. on November 18, 2021.

*MW-2 has been removed from monitoring network. Only water level and field parameters collected at MW-2.

**APWC-L was not producing leachate and were not sampled during this event. A sample was collected for analysis at the IWC-L, but no field parameters were collected on 11/19/21 at the IWC-L.

NS= Not Sampled

NA= Not Applicable.

Table 2
Former EWS Camden Class II Landfill IDL 03-0212 (Terminated)
Groundwater and Leachate Analytical Data - 4th Quarter 2021

Parameter	MCL/GWPS (mg/l)	MW-1		MW-3		Duplicate (MW-3)		MW-4		MW-5		TMW-1		TMW-2		TMW-3		IWC-Leachate		APWC-Leachate		Field Blank	
		11/18/2021		11/18/2021		11/18/2021		11/18/2021		11/18/2021		11/18/2021		11/18/2021		11/18/2021		11/19/2021		11/19/2021		11/18/2021	
		Value (mg/l)	Qualifier	Value (mg/l)	Qualifier	Value (mg/l)	Qualifier	Value (mg/l)	Qualifier	Value (mg/l)	Qualifier	Value (mg/l)	Qualifier	Value (mg/l)	Qualifier	Value (mg/l)	Qualifier	Value (mg/l)	Qualifier	Value (mg/l)	Qualifier	Value (mg/l)	Qualifier
Hardness	-	**27.1**		**81.9**		**83.3**		**27.4**		**96.1**		**55.3**		**54.3**		**85.5**		**26,200**		NS*		<2.50	
Alkalinity	-	**54.9**		**20.8**		**21.0**		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		NS*		<20.4	
Ammonia Nitrogen	-	<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		**1,320**		NS*		<0.250	
COD	-	<20.0		<20.0		<20.0		**23.6**		<20.0		<20.0		<20.0		<20.0		**8,460**		NS*		<20.0	
Boron	-	<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<1.00		NS*		<0.200	
Bromide	-	<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<100		NS*		<1.00	
Chloride	250 [2]	**1.95**		**14.1**		**13.8**		**9.89**		**78.8**		**32.9**		**36**		**64.7**		**70,600**		NS*		<1.00	
Fluoride	2 [2]	<0.150		**0.272**		**0.23**		<0.150		<0.150		<0.150		<0.150		<0.150		<15.0		NS*		<0.150	
Nitrate	10 [1]	<0.100		**0.226**		**0.394**		**0.811**		**1.02**		**1.51**		**0.695**		**5.50**		<10.0		NS*		<0.100	
Sulfate	250 [2]	**7.59**		**57.2**		**55.9**		<5.00		**14.2**		<5.00		<5.00		<5.00		**1,240**		NS*		<5.00	
Aluminum	0.2 [2]	**0.634**		**0.430**		**0.243**		<0.100		**0.202**		**0.110**		**0.155**		<0.100		**133**		NS*		<0.100	
Antimony	0.006	<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.0400		NS*		<0.00400	
Arsenic	0.01	**0.0192**		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		**0.139**		NS*		<0.00200	
Barium	2	**0.0276**		**0.0564**		**0.0567**		**0.0102**		**0.0646**		**0.014**		**0.0328**		**0.0488**		**1.49**		NS*		<0.00200	
Beryllium	0.004	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		**0.0339**		NS*		<0.00200	
Cadmium	0.005	<0.00100		**0.00188**		**0.0019**		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		**51**		NS*		<0.00100	
Calcium	-	**5.13**		**21.4**		**21.9**		**5.73**		**18.0**		**15.1**		**13.6**		**22.4**		**10,300**		NS*		<1.00	
Chromium	0.1	**0.00249**	B	**0.0029**	B	<0.00200		<0.00200		**0.0100**		<0.00200		<0.00200		<0.00200		**0.119**		NS*		<0.00200	
Cobalt	0.006 [3]	**0.0721**		<0.00200		<0.00200		<0.00200		**0.00222**		<0.00200		<0.00200		<0.00200		**0.508**		NS*		<0.00200	
Copper	1.3	<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		**1.97**		NS*		<0.00500	
Iron	0.3 [2]	**19.6**		**0.245**		**0.273**		**1.23**		**0.708**		**0.689**		**0.196**		**0.141**		**209**		NS*		<1.00	
Lead	0.015	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		**0.512**		NS*		<0.00200	
Magnesium	-	**3.48**		**6.91**		**6.95**		**3.18**		**12.5**		**4.28**		**4.92**		**7.16**		**1,360**		NS*		<1.00	
Manganese	0.05 [2]	**1.24**		**0.0309**		**0.0329**		**0.094**		**0.281**		**0.0149**		**0.00608**		**0.0121**		**99.8**		NS*		<0.00500	
Nickel	0.10 [1]	**0.00859**		**0.00323**		**0.00258**		<0.00200		**0.00745**		<0.00200		**0.00226**		<0.00200		**0.532**		NS*		<0.00200	
Potassium	-	<2.00		**6.13**		**6.31**		<2.00		<2.00		<2.00		<2.00		**2.09**	B	**9,550**		NS*		<2.00	
Selenium	0.05	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		**0.113**		NS*		<0.00200	
Silver	0.10 [2]	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.0200		NS*		<0.00200	
Sodium	-	**4.67**		**5.80**		**5.90**		**3.98**		**20.6**		**4.37**		**5.42**		**14.4**		**16,900**		NS*		<2.00	
Thallium	0.002	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.0200		NS*		<0.00200	
Vanadium	-	<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.250		NS*		<0.00500	
Zinc	5 [2]	<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		**455**		NS*		<0.0250	
Mercury	0.002	**0.000785**		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		NS*		<0.000200	
Xylenes, Total		<0.00300		<0.00300		<0.00300		<0.00300		<0.00300		<0.00300		<0.00300		<0.00300		**0.00342**		NS*		<0.00300	
Ethylbenzene		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		**0.00759**		NS*		<0.00100	
2-Butanone (Mek)	-	<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		**0.476**		NS*		<0.0100	
2-Hexanone	-	<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		**0.0268**		NS*		<0.0100	
4-Methyl-2-Pentanone (Mibk)	-	<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		**0.0369**		NS*		<0.0100	
Chloromethane		<0.00250		<0.00250		<0.00250		<0.00250		<0.00250		<0.00250		<0.00250		<0.00250		**0.00324**		NS*		<0.00250	
Acetone	-	<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		**2.04**		NS*		<0.0500	
Carbon Disulfide	-	<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		**0.00937**		NS*		<0.00100	

Notes:
MCL: Maximum Contaminant Level Enforceable National Primary Drinking Water Standard
GWPS: Groundwater Protection Standard
[1] - MCL value obtained from TN Division of Water Supply rule 1200-5-.06(1)(b)11
[2] - MCL value obtained from TN Division of Water Supply rule 1200-5-1-.12(1)(n). (EPA Secondary Drinking Water Standard
[3] - GWPS value is referenced from EPA Regional Screening Level for Cobal
NS*- Not Sampled for analysis. APWC Leachate levels were minimal during the groundwater sampling event and no APWC Leachate sample was collected for analysi
Bold text indicates laboratory analytical detections above the practical quantitation leve
Dark gray shaded text indicates detection above respective MCL/GWPS
Light gray shaded text indicates detection above respective Non-Enforceable National Secondary Drinking Water Standard
Qualifiers:
B The same analyte is found in the associated blank

Table 3
Intra-Well and Inter-Well Statistical Summary
Environmental Waste Solutions Camden Class II Landfill IDL 03-0212 (Terminated)
Inorganic Analytical Data - 4th Quarter 2021

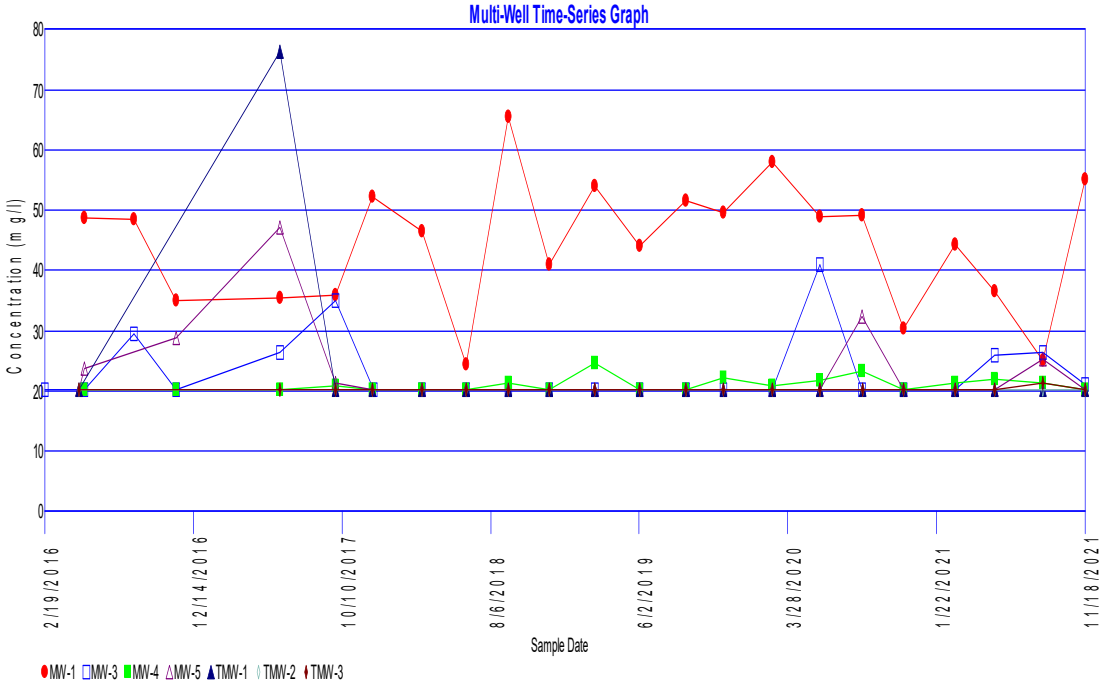
Intra-Well Statistical Summary (Upgradient Background Well MW-1)							
Constituent	Well	% Non Detects	Normality	Intra-well NPPL	Intra-well PPL	SSI	Mann-Kendall Trend Analysis[1]
Aluminum	MW-1	60	non-parametric	Pass	--	No	**Upward Trend**
Arsenic	MW-1	0.00	non-parametric	Pass	--	No	No Trend
Barium	MW-1	8.57	non-parametric	Pass	--	No	**Upward Trend**
Chromium	MW-1	91.43	non-parametric	Pass	--	No	No Trend
Chloride	MW-1	0.00	non-parametric	Pass	--	No	No Trend
Cobalt	MW-1	0.00	log-normal	--	Pass	No	No Trend
Mercury	MW-1	31.43	non-parametric	Pass	--	No	No Trend
Nickel	MW-1	31.43	non-parametric	Pass	--	No	No Trend
Sulfate	MW-1	57.58	non-parametric	Pass	--	No	No Trend

Inter-Well Statistical Summary (Downgradient Compliance Wells)							
Constituent	Well	% Non Detects in Background well MW-1	Normality	Inter-well NPPL	Inter-well PPL	SSI	Mann-Kendall Trend Analysis[1]
Aluminum	MW-3	60.00	non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend
	TMW-1		non-parametric	Pass	--	No	**Downward Trend**
	TMW-2		non-parametric	Pass	--	No	**Downward Trend**
Barium	MW-3	8.57	non-parametric	Pass	--	No	**Downward Trend**
	MW-4		non-parametric	Pass	--	No	**Upward Trend**
	MW-5		non-parametric	Pass	--	No	**Upward Trend**
	TMW-1		non-parametric	Pass	--	No	No Trend
	TMW-2		non-parametric	Pass	--	No	No Trend
	TMW-3		non-parametric	Pass	--	No	**Upward Trend**
Cadmium	MW-3	100.00	non-parametric	**Fail**	--	**Yes**	**Downward Trend**
Chloride	MW-3	0.00	non-parametric	**Fail**	--	**Yes**	**Downward Trend**
	MW-4		non-parametric	**Fail**	--	**Yes**	**Upward Trend**
	MW-5		non-parametric	**Fail**	--	**Yes**	**Upward Trend**
	TMW-1		non-parametric	**Fail**	--	**Yes**	**Upward Trend**
	TMW-2		non-parametric	**Fail**	--	**Yes**	**Upward Trend**
	TMW-3		non-parametric	**Fail**	--	**Yes**	**Upward Trend**
Chromium	MW-3	91.43	non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	**Upward Trend**
Cobalt	MW-5	0.00	log-normal	--	Pass	No	No Trend
Nickel	MW-3	31.43	non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend
	TMW-2		non-parametric	Pass	--	No	No Trend
Sulfate	MW-3	57.58	non-parametric	**Fail**	--	**Yes**	No Trend
	MW-5		non-parametric	Pass	--	No	**Upward Trend**

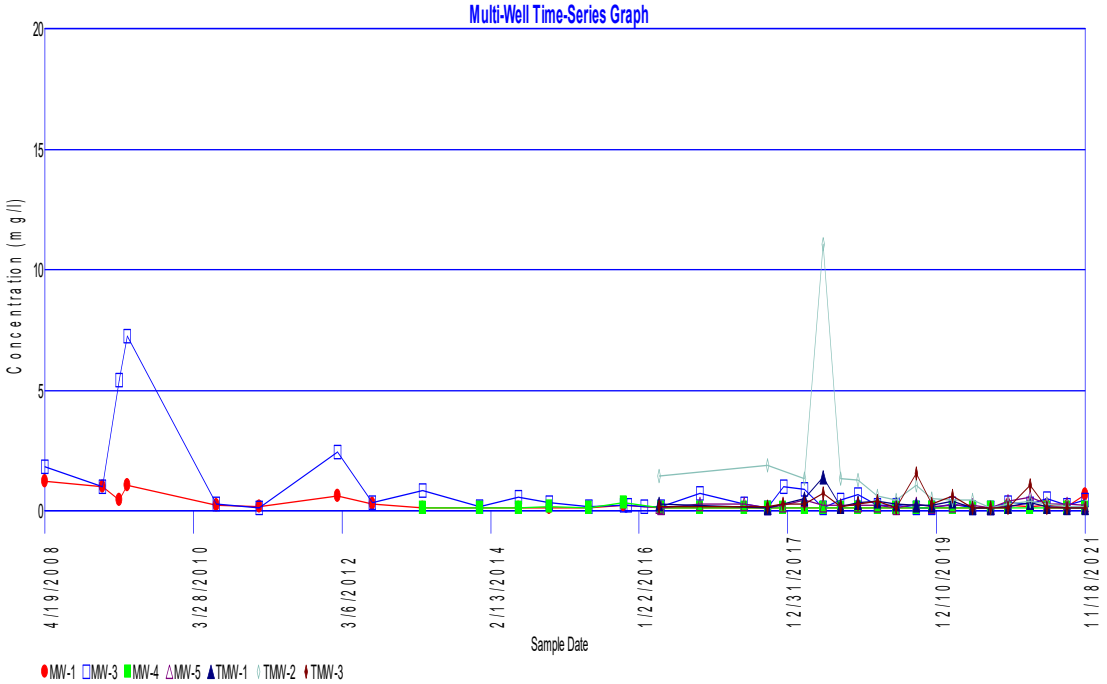
[1] **Mann-Kendall Trend Analysis was completed using recent data since the November 10, 2016 sampling event.**

APPENDIX B
STATISTICAL EVALUATIONS & TIME SERIES PLOTS

Alkalinity

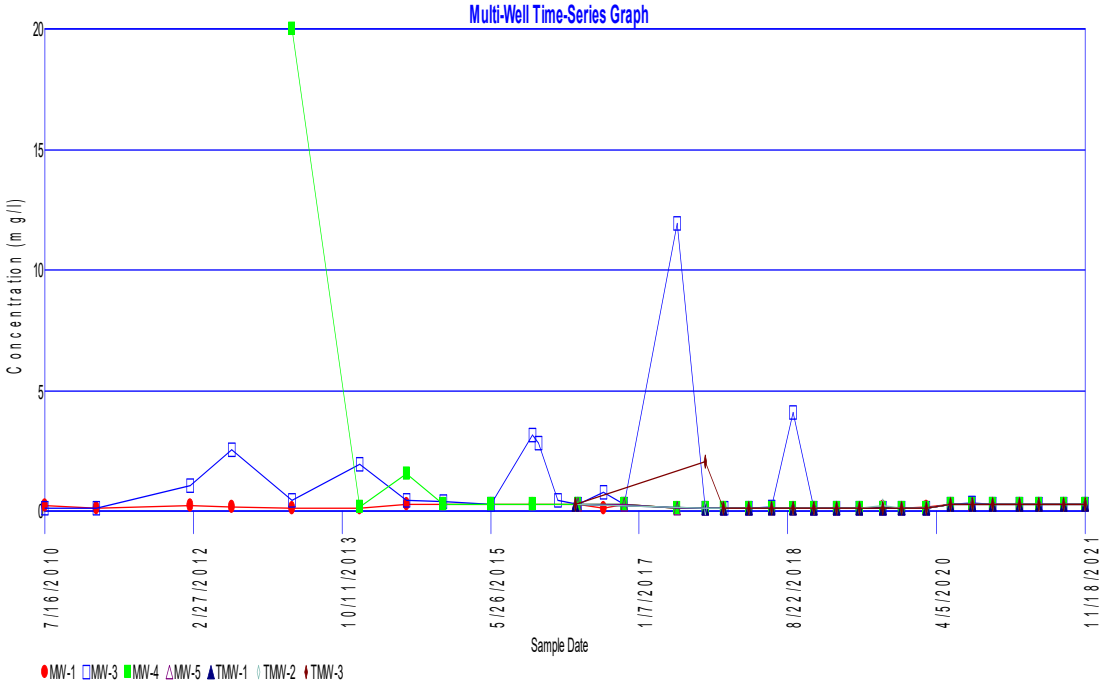


Aluminum



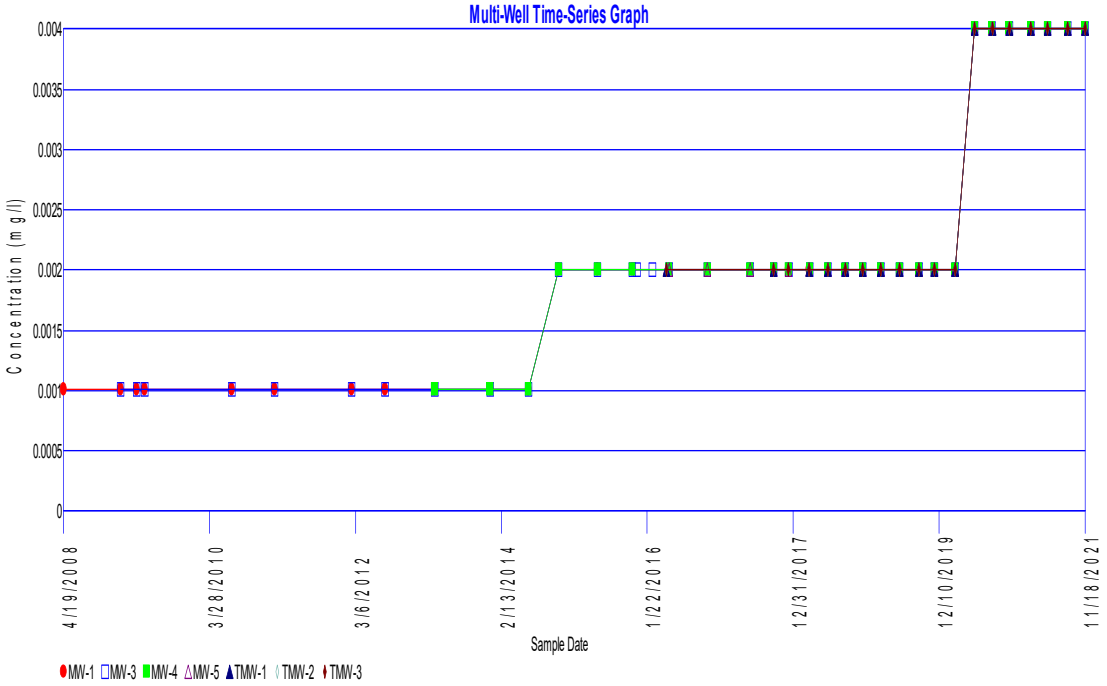
Ammonia Nitrogen

Multi-Well Time-Series Graph

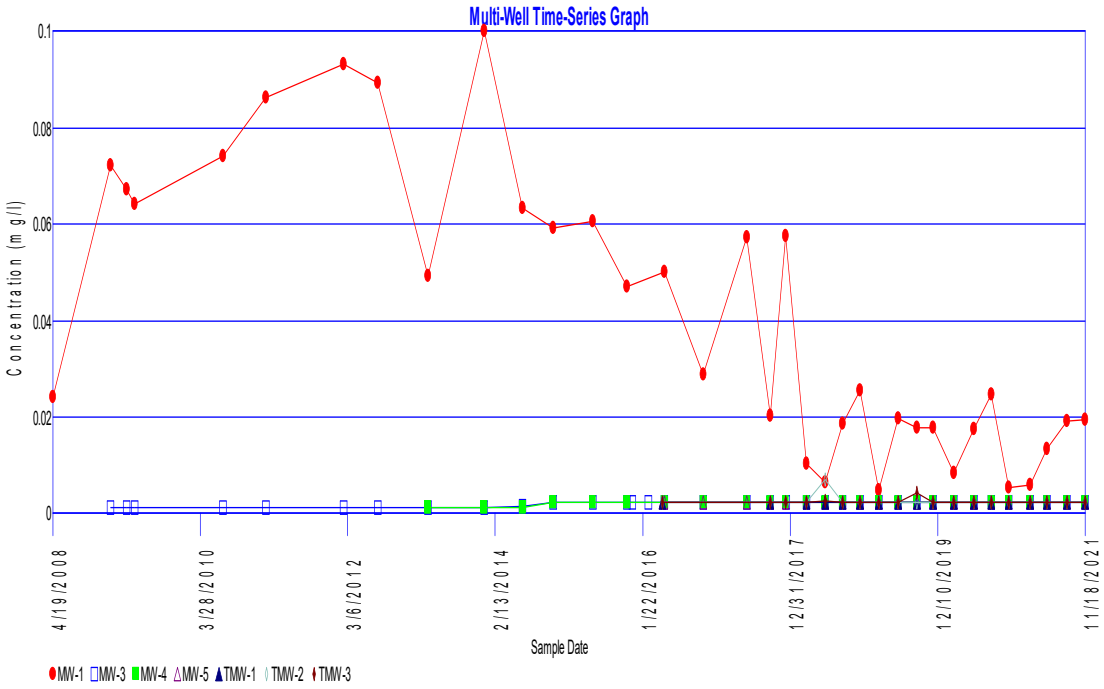


Antimony

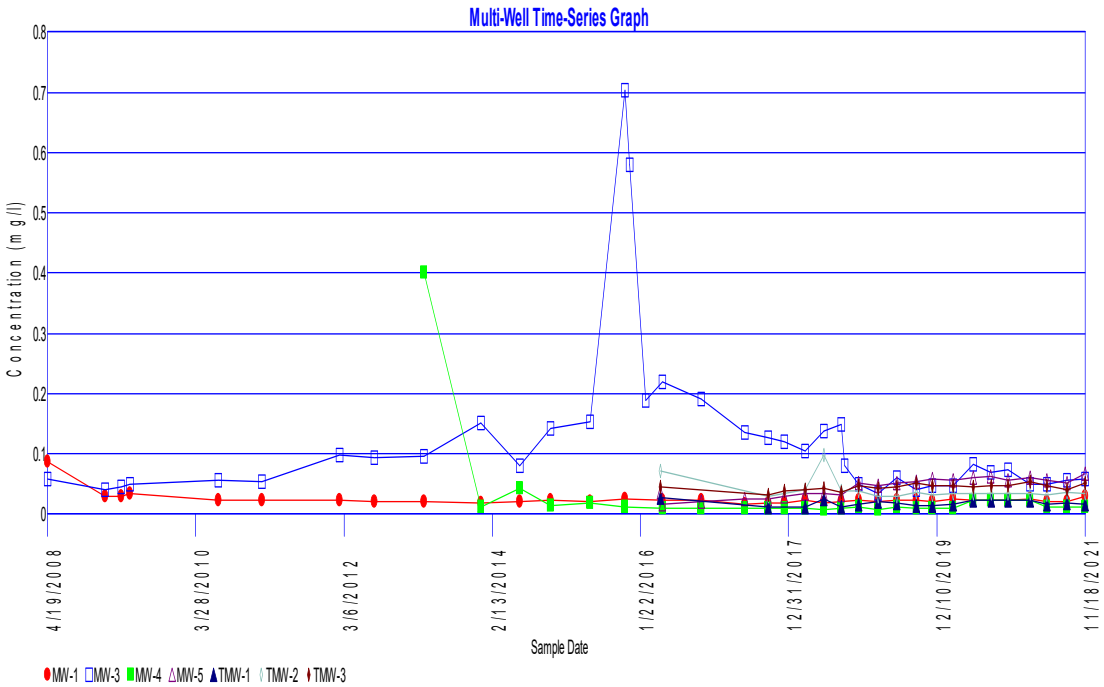
Multi-Well Time-Series Graph

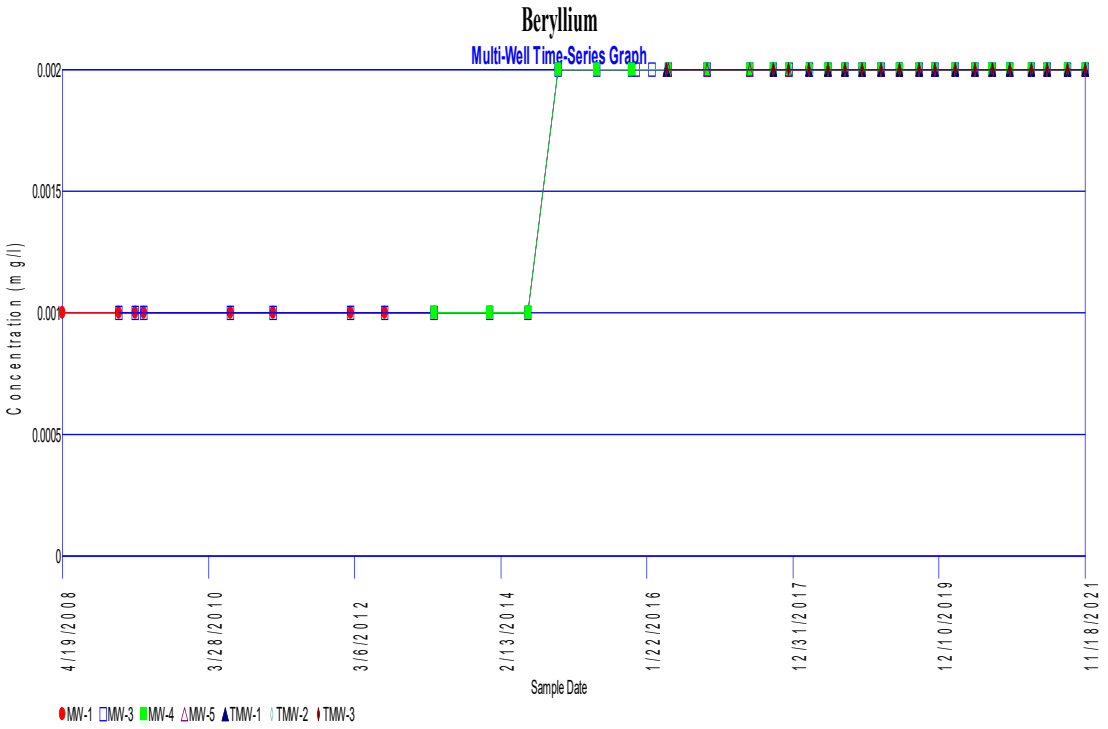


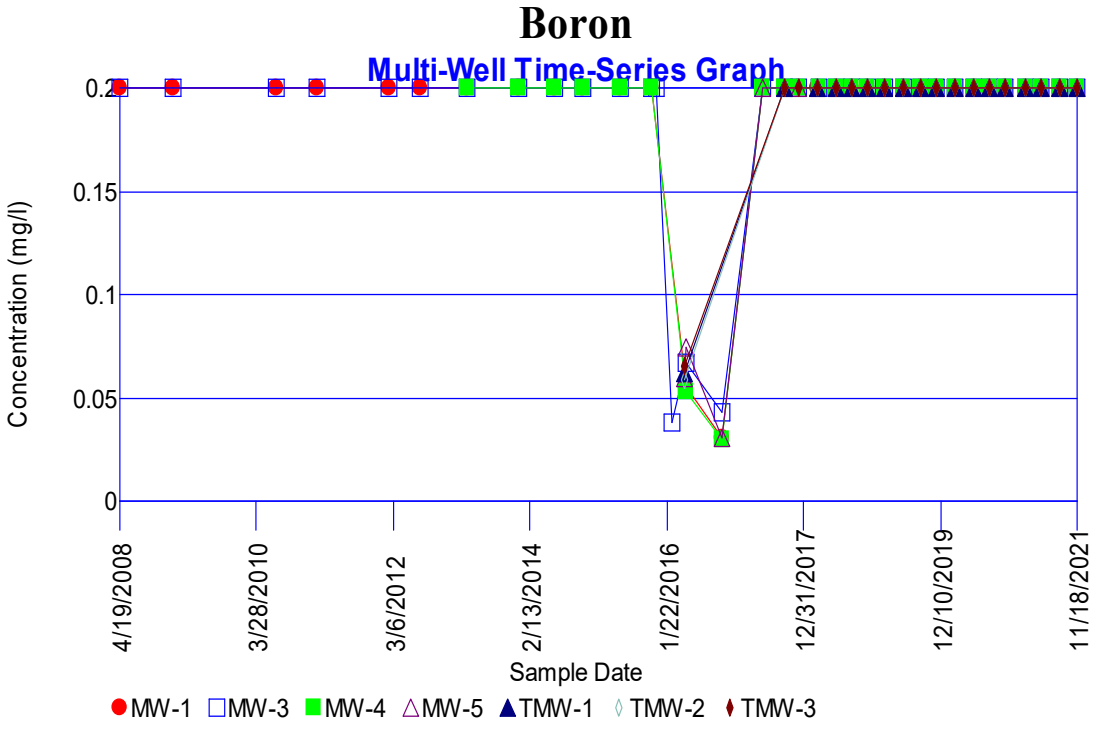
Arsenic



Barium

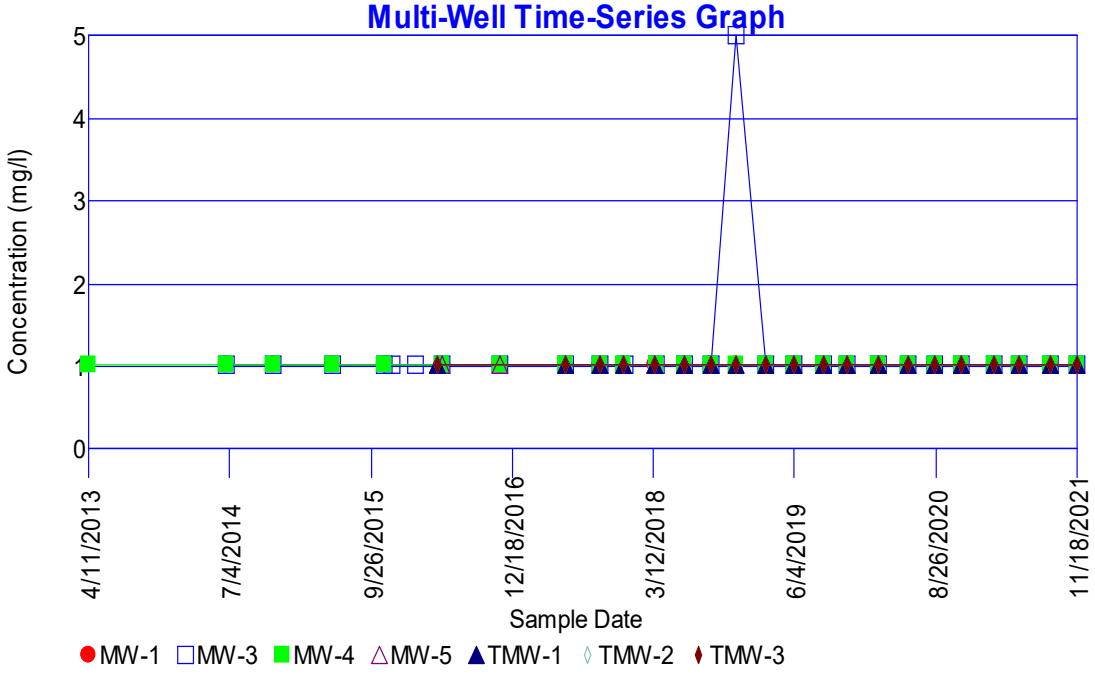



Beryllium
Multi-Well Time-Series Graph
0.002
0.0015
0.001
0.0005
0
Concentration (mg/l)
4/19/2008
3/28/2010
3/6/2012
2/13/2014
1/22/2016
12/31/2017
12/10/2019
11/18/2021
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3


Boron
Multi-Well Time-Series Graph
0.2
0.15
0.1
0.05
0
Concentration (mg/l)
4/19/2008
3/28/2010
3/6/2012
2/13/2014
1/22/2016
12/31/2017
12/10/2019
11/18/2021
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

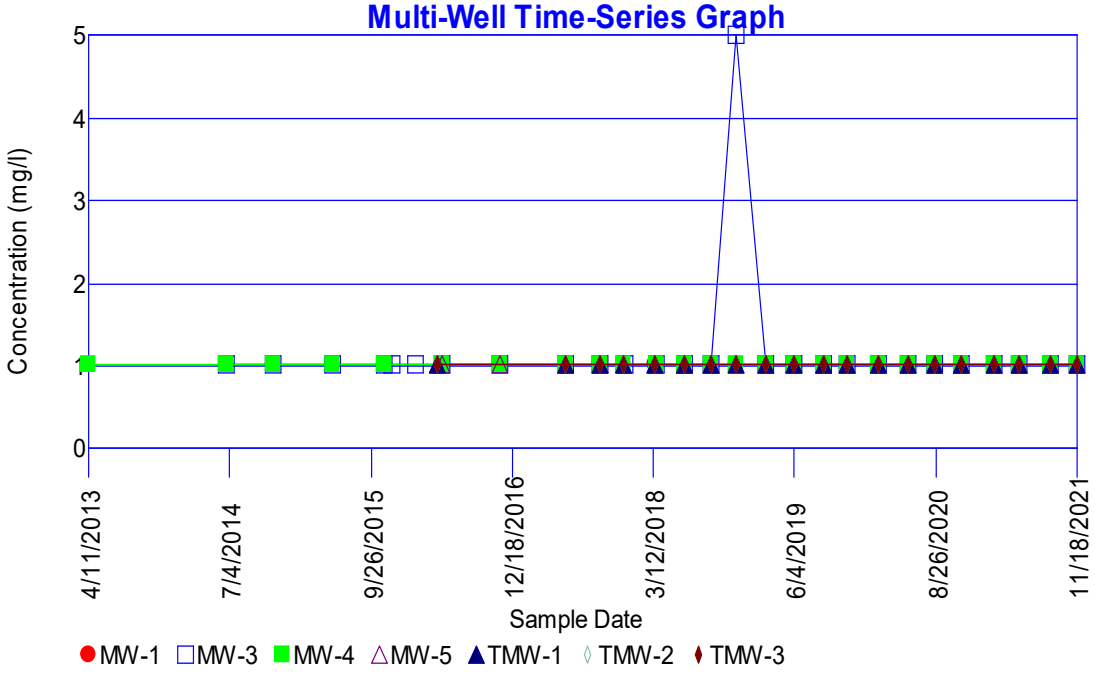
Bromide

Multi-Well Time-Series Graph

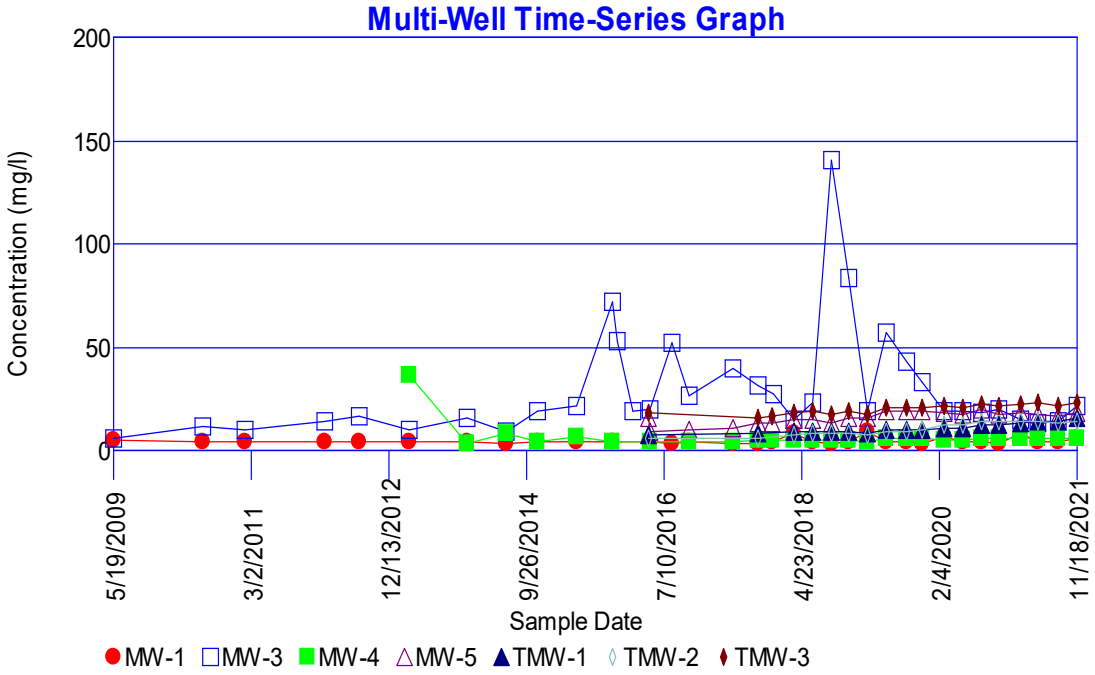


Bromide

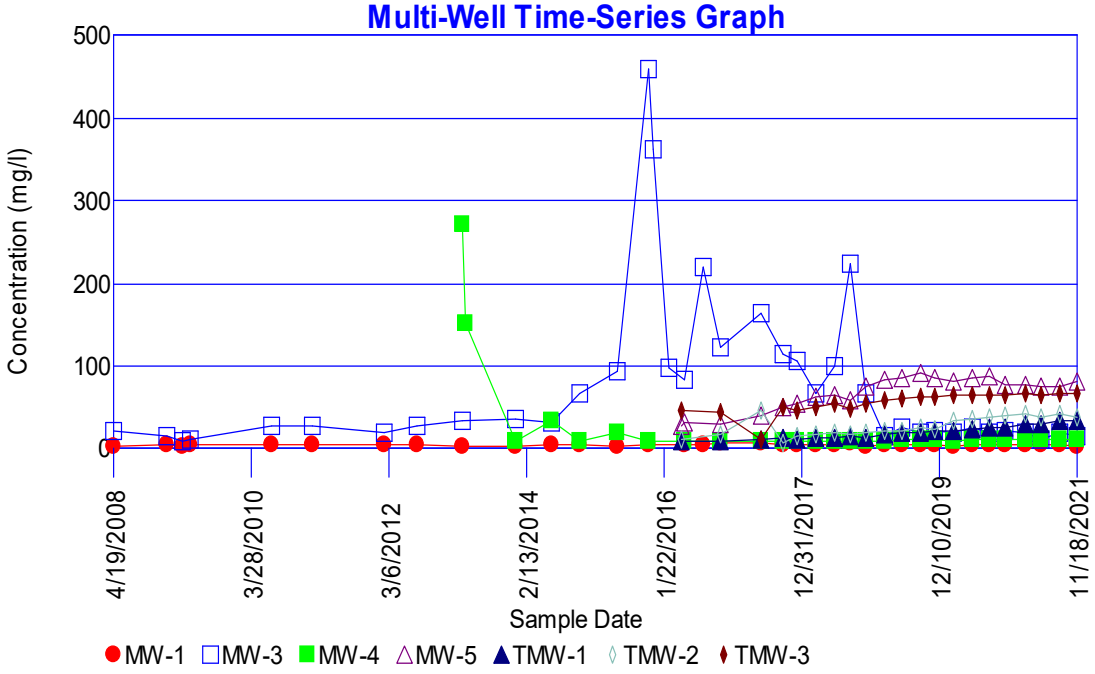
Multi-Well Time-Series Graph



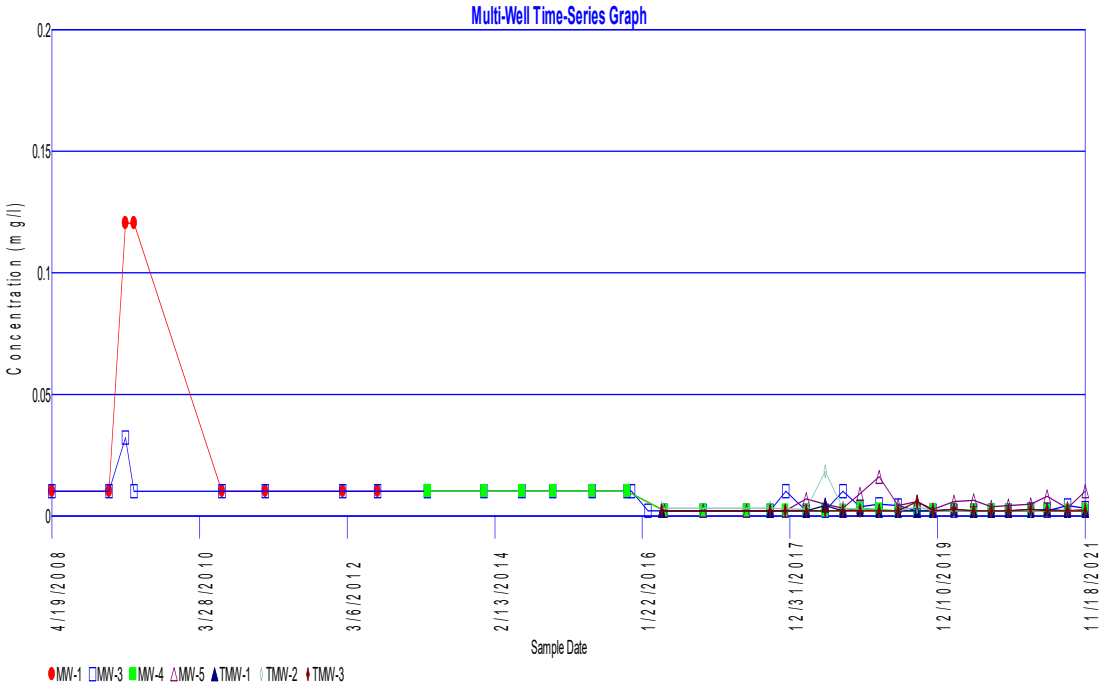
Calcium



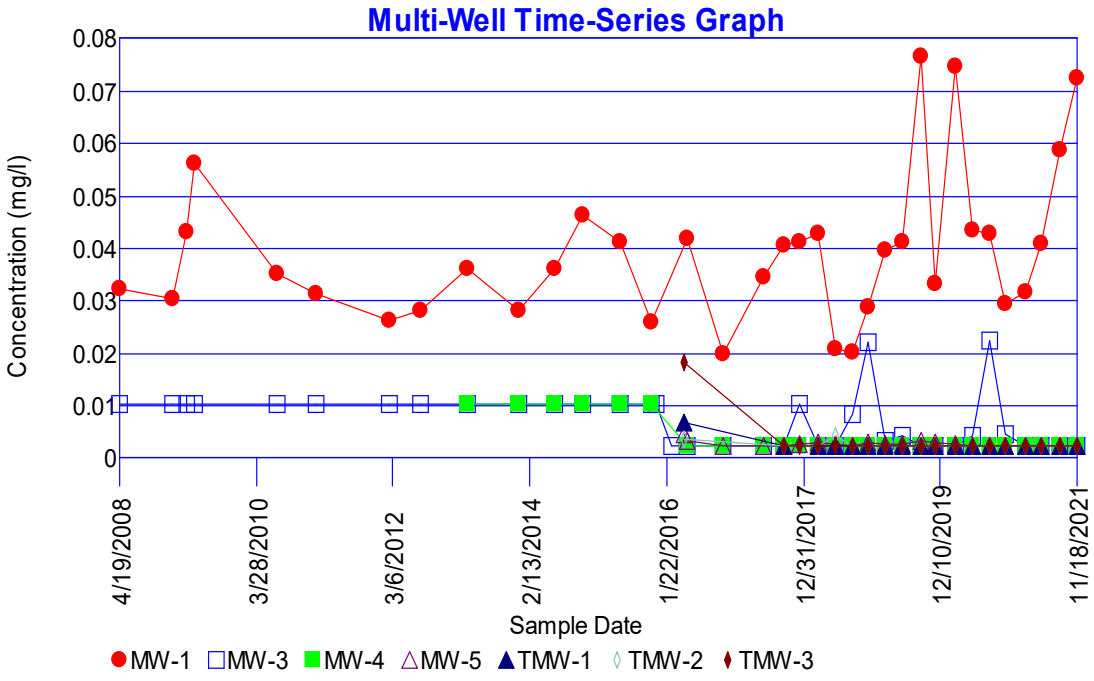
Chloride



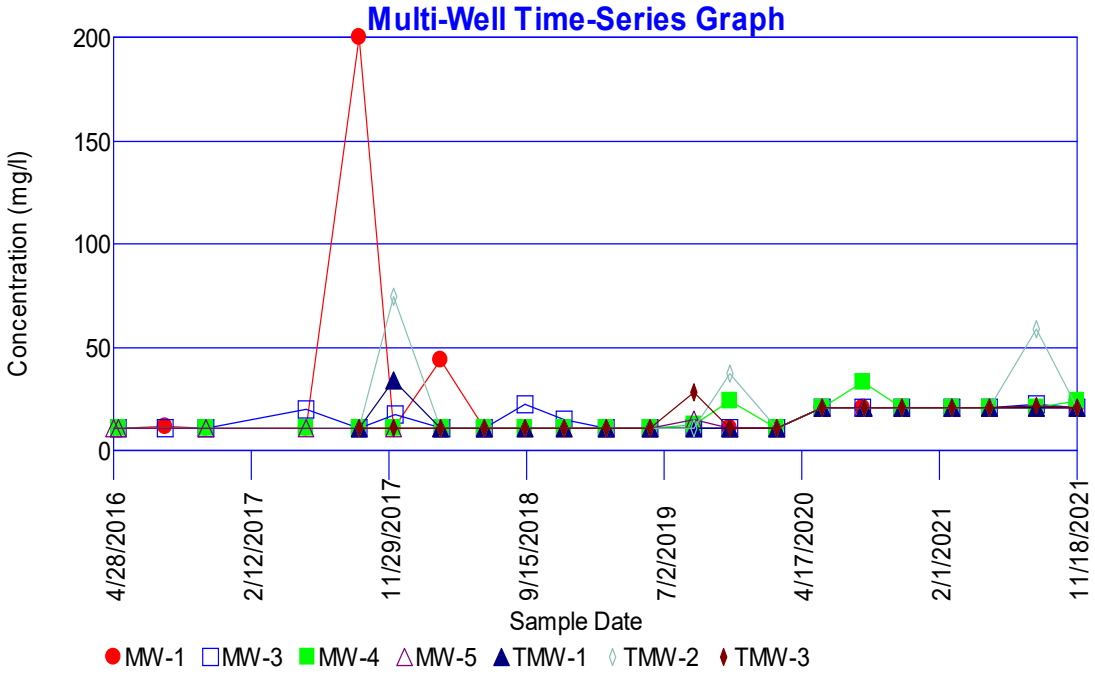
Chromium



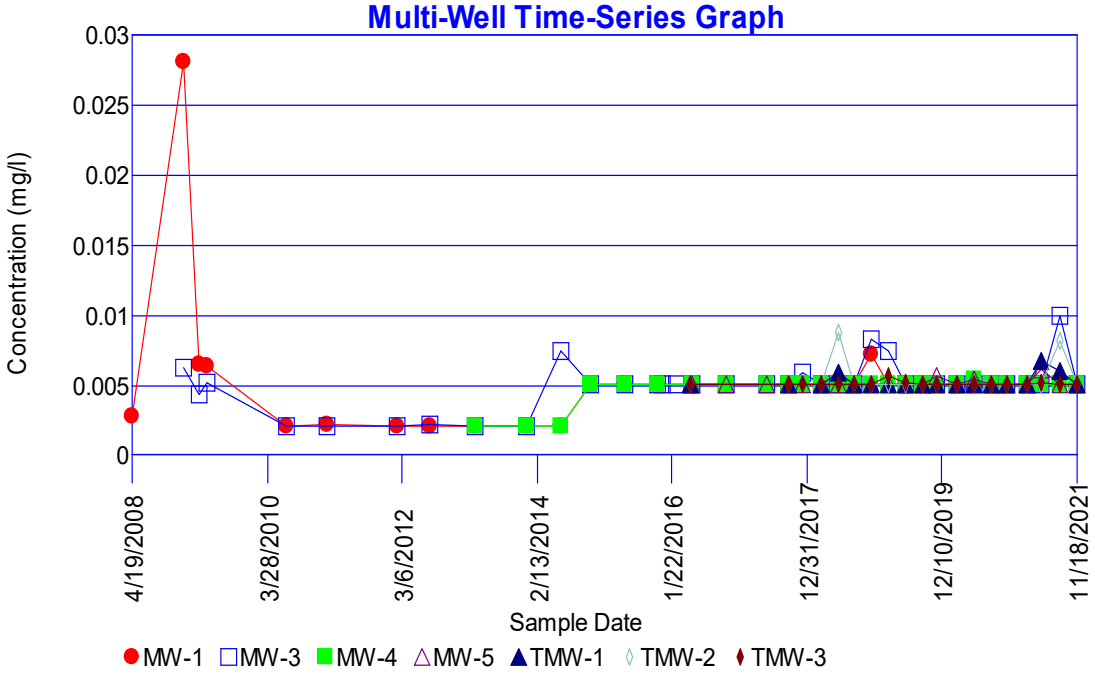
Cobalt



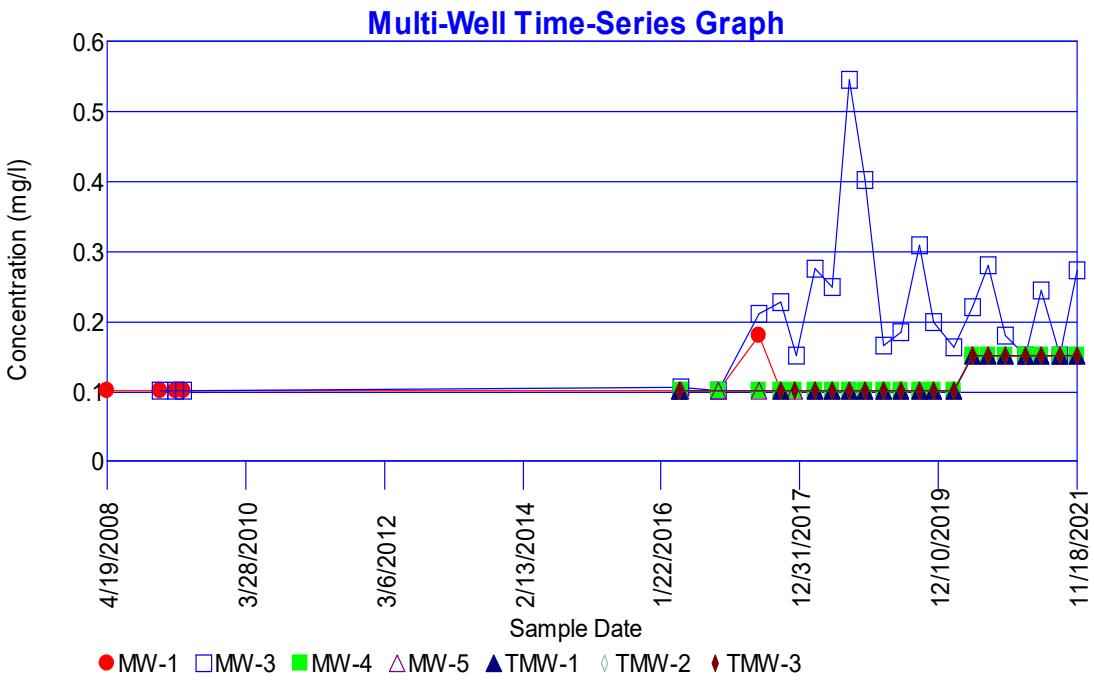
COD


Multi-Well Time-Series Graph
Concentration (mg/l)
200
150
100
50
0
4/28/2016
2/12/2017
11/29/2017
9/15/2018
7/2/2019
4/17/2020
2/1/2021
11/18/2021
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

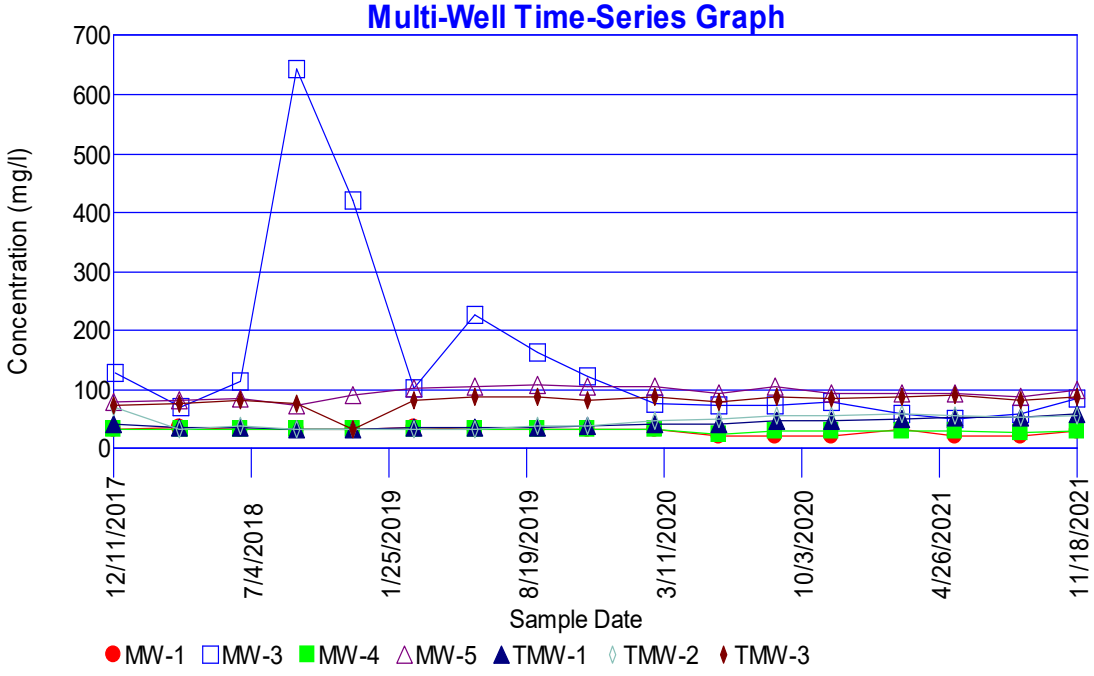
Copper


Multi-Well Time-Series Graph
Concentration (mg/l)
0.03
0.025
0.02
0.015
0.01
0.005
0
4/19/2008
3/28/2010
3/6/2012
2/13/2014
1/22/2016
12/31/2017
12/10/2019
11/18/2021
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

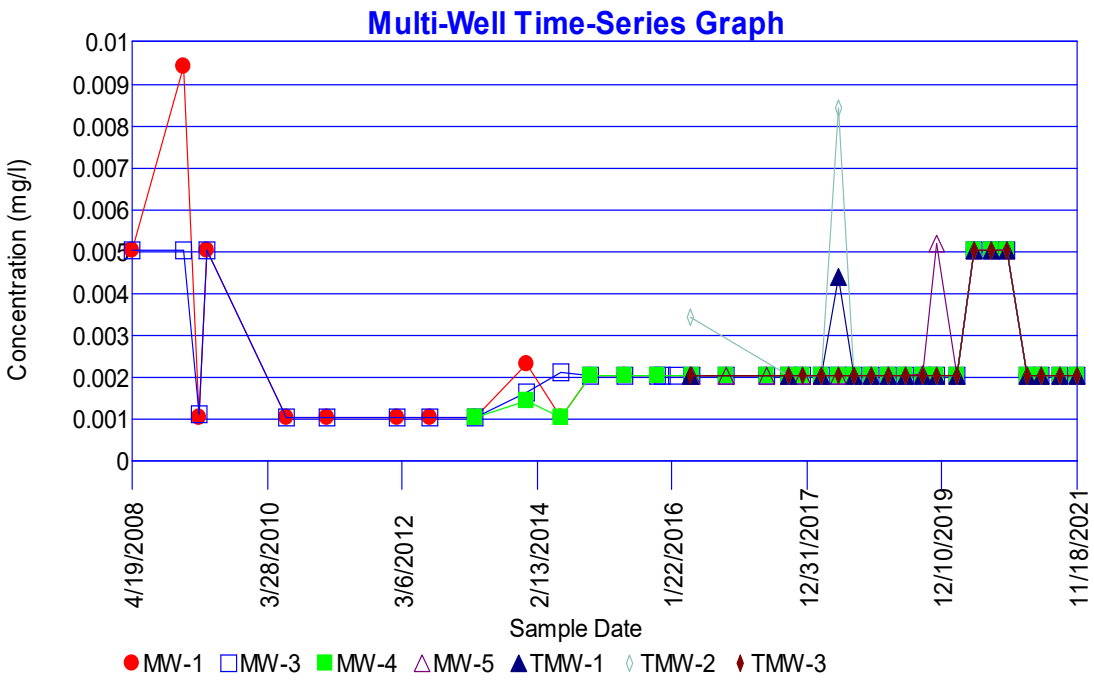
Fluoride



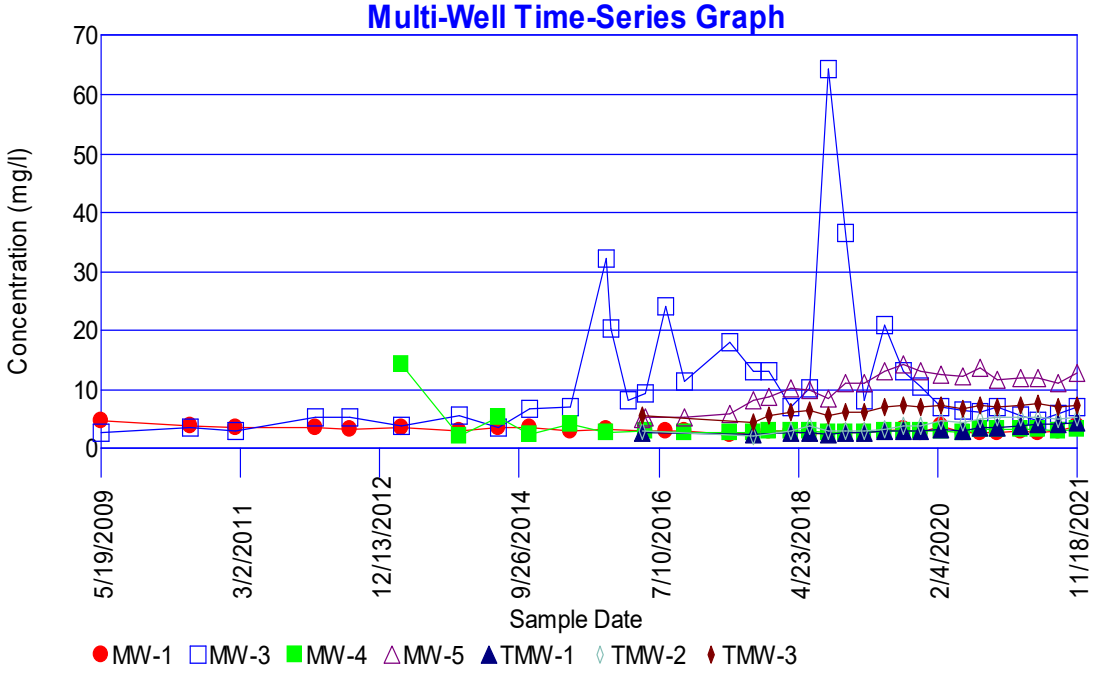
Hardness



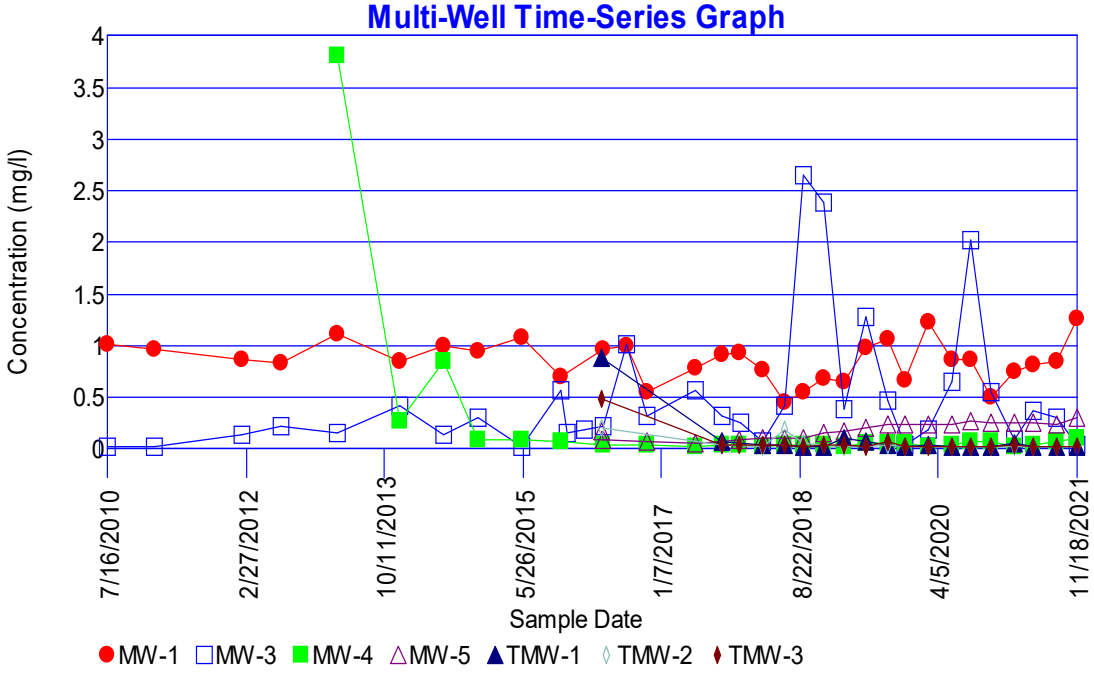
Lead



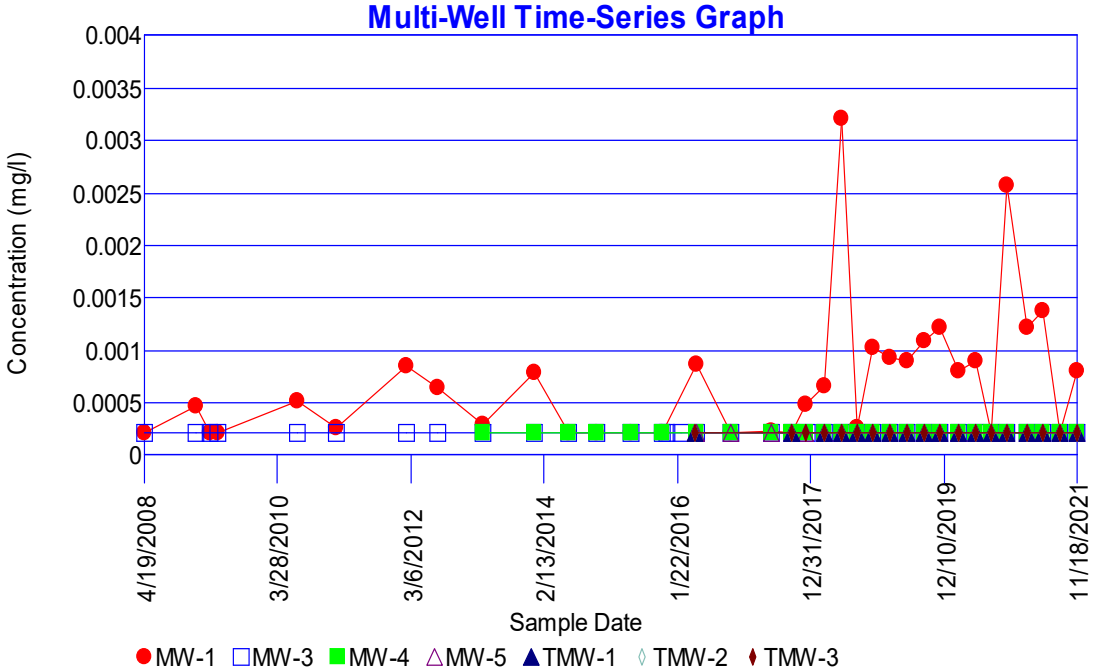
Magnesium



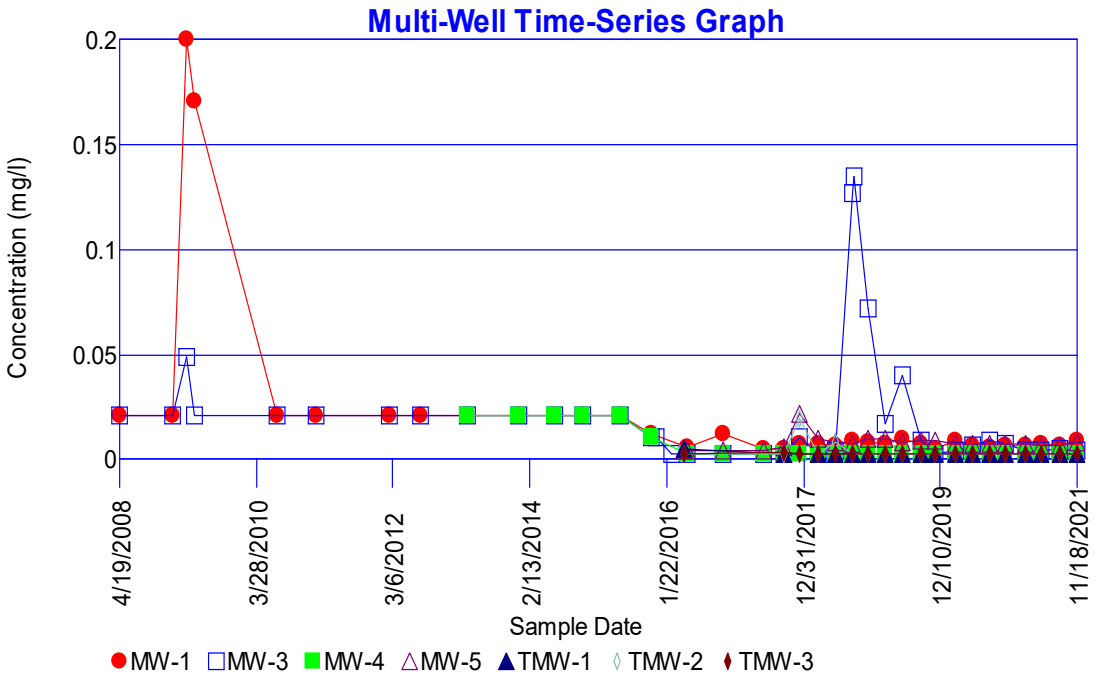
Manganese



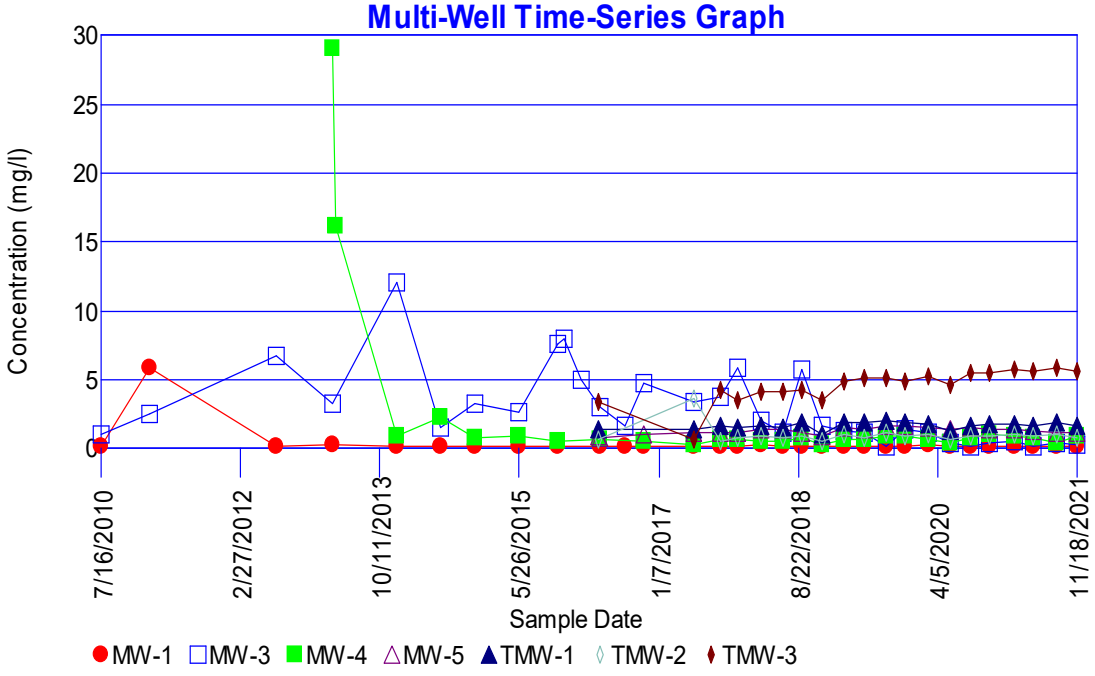
Mercury

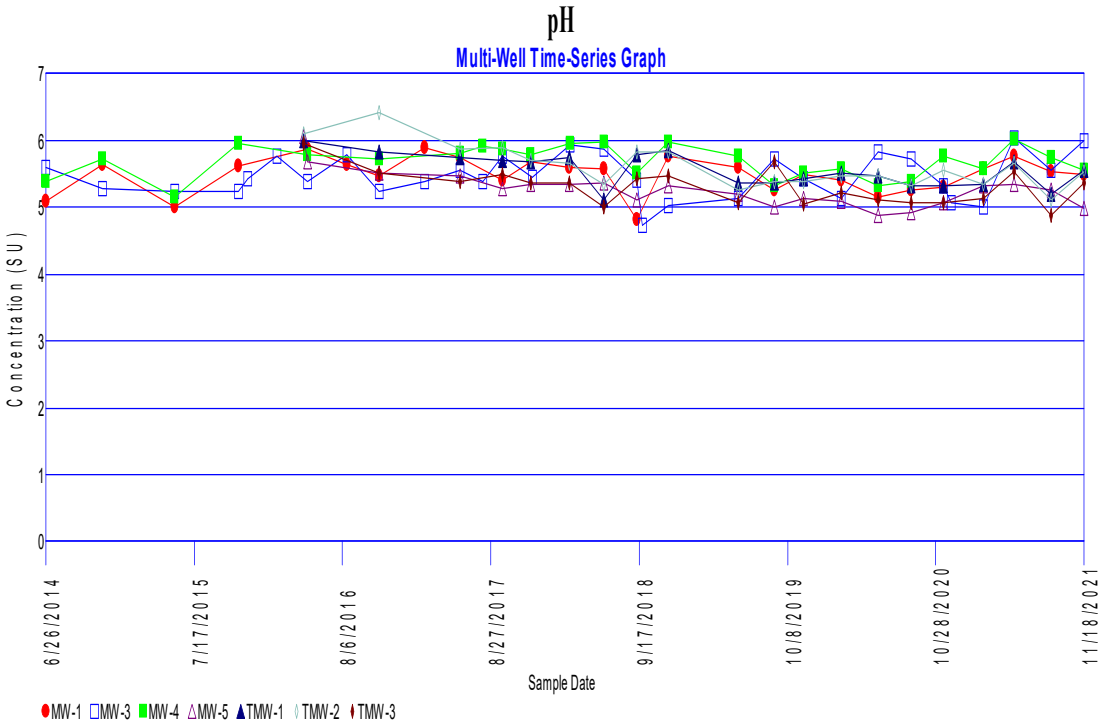


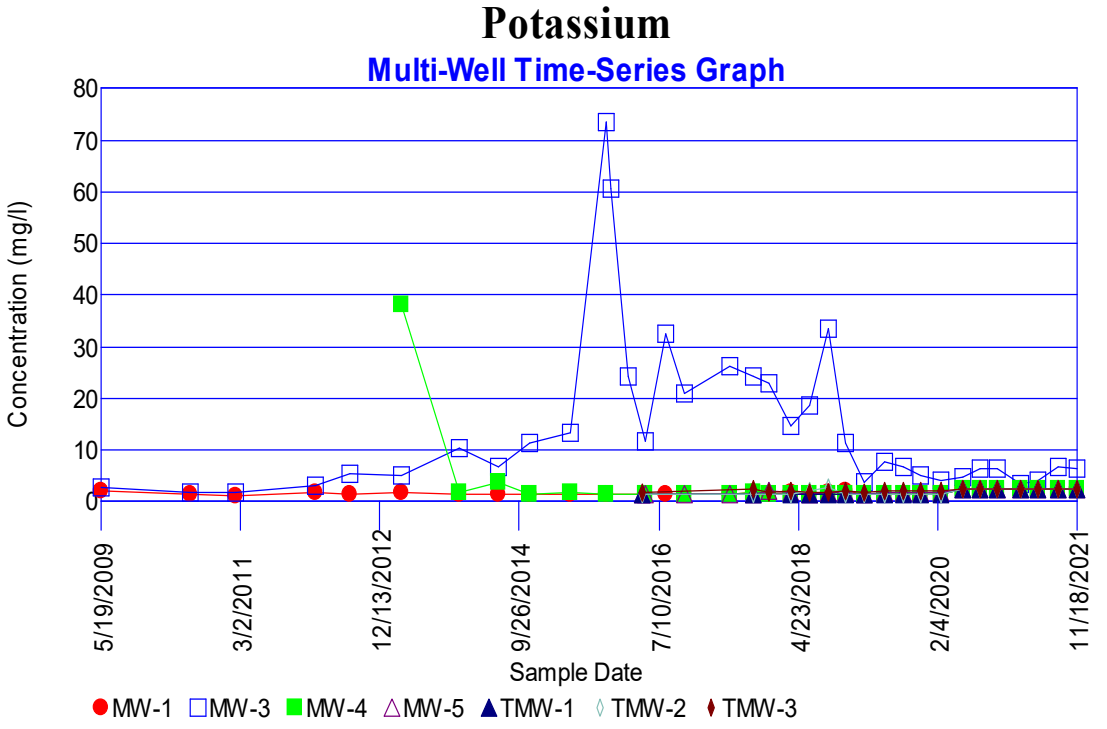
Nickel



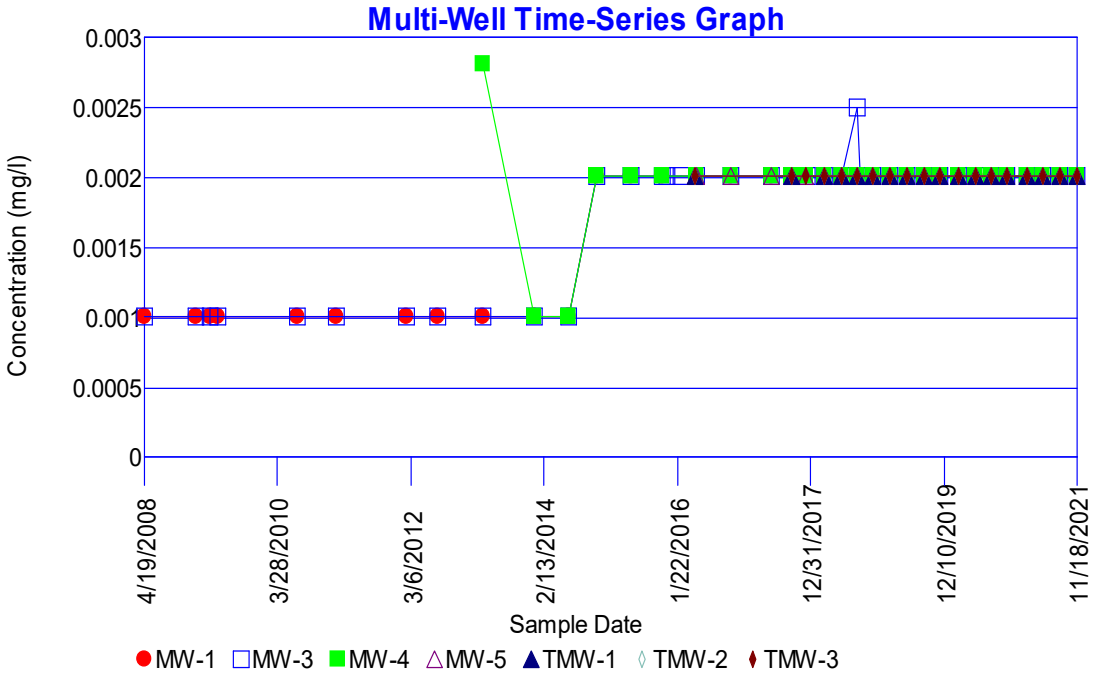
Nitrate



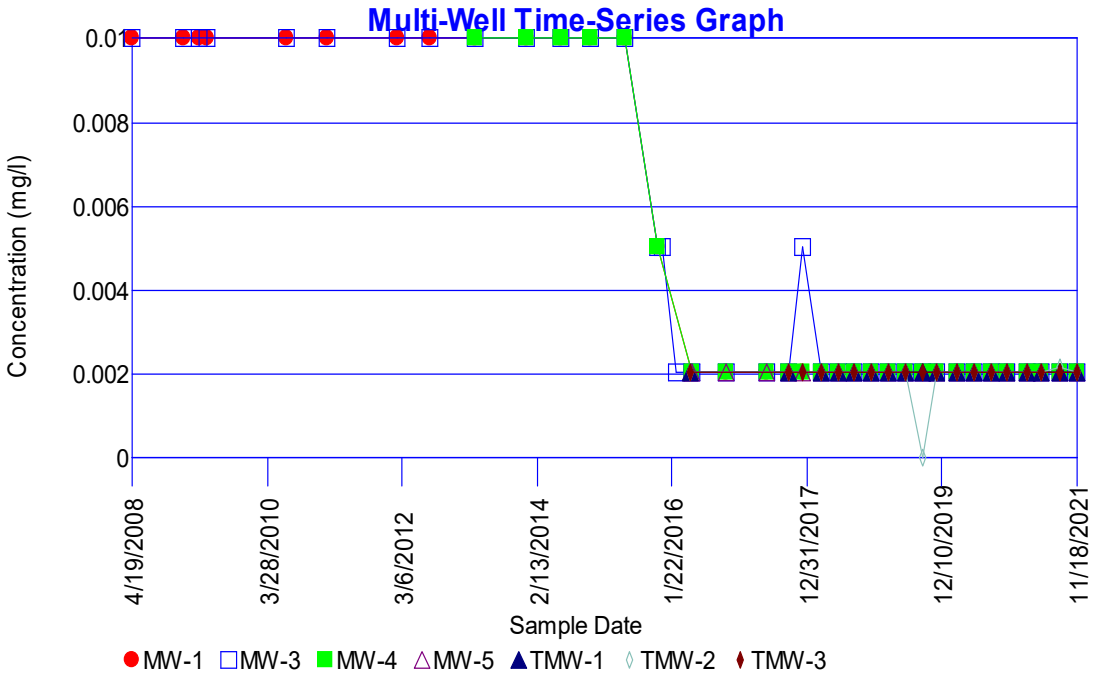

pH
Multi-Well Time-Series Graph
Concentration (SU)
0
1
2
3
4
5
6
7
6/26/2014
7/17/2015
8/6/2016
8/27/2017
9/17/2018
10/8/2019
10/28/2020
11/18/2021
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3


Potassium
Multi-Well Time-Series Graph
Concentration (mg/l)
0
10
20
30
40
50
60
70
80
5/19/2009
3/2/2011
12/13/2012
9/26/2014
7/10/2016
4/23/2018
2/4/2020
11/18/2021
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

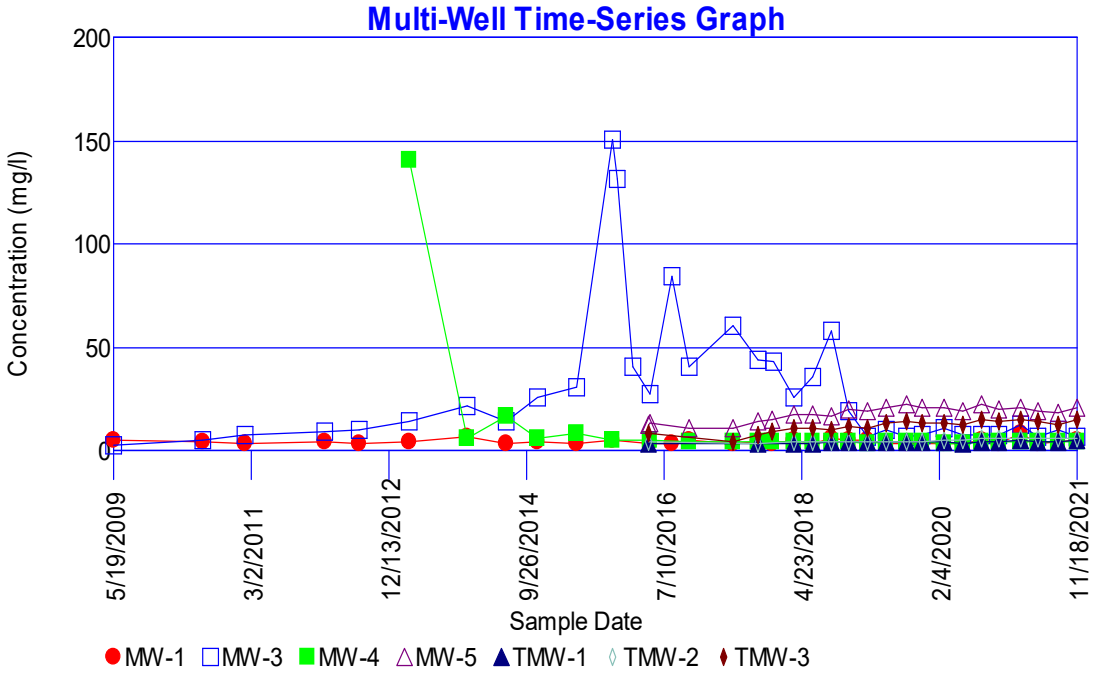
Selenium



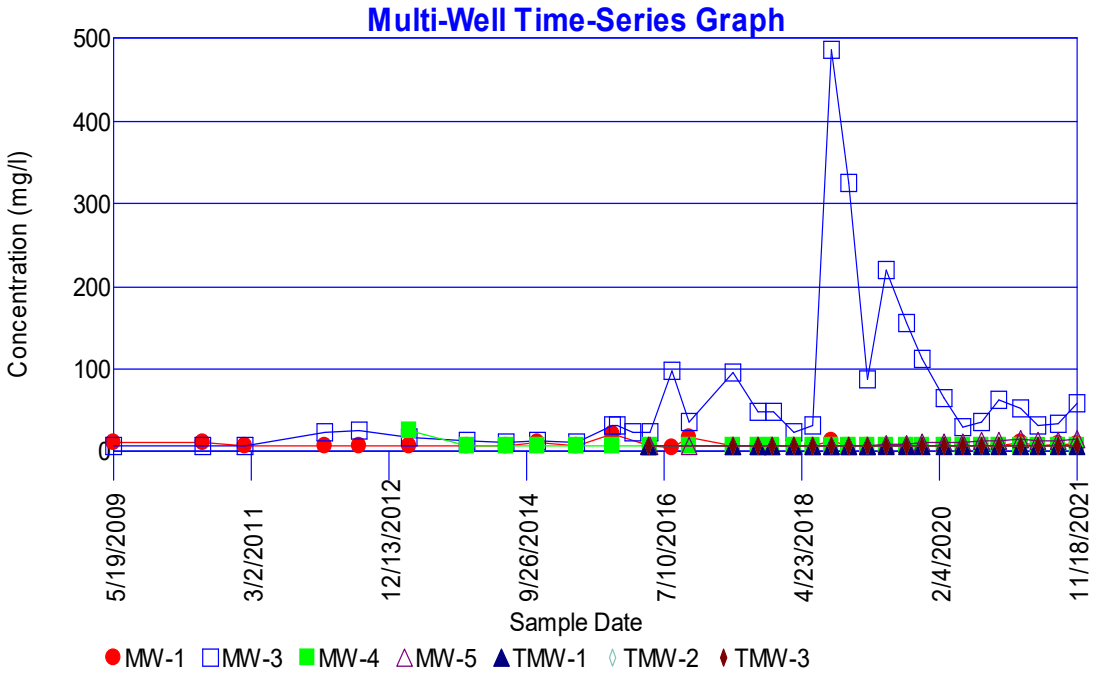
Silver



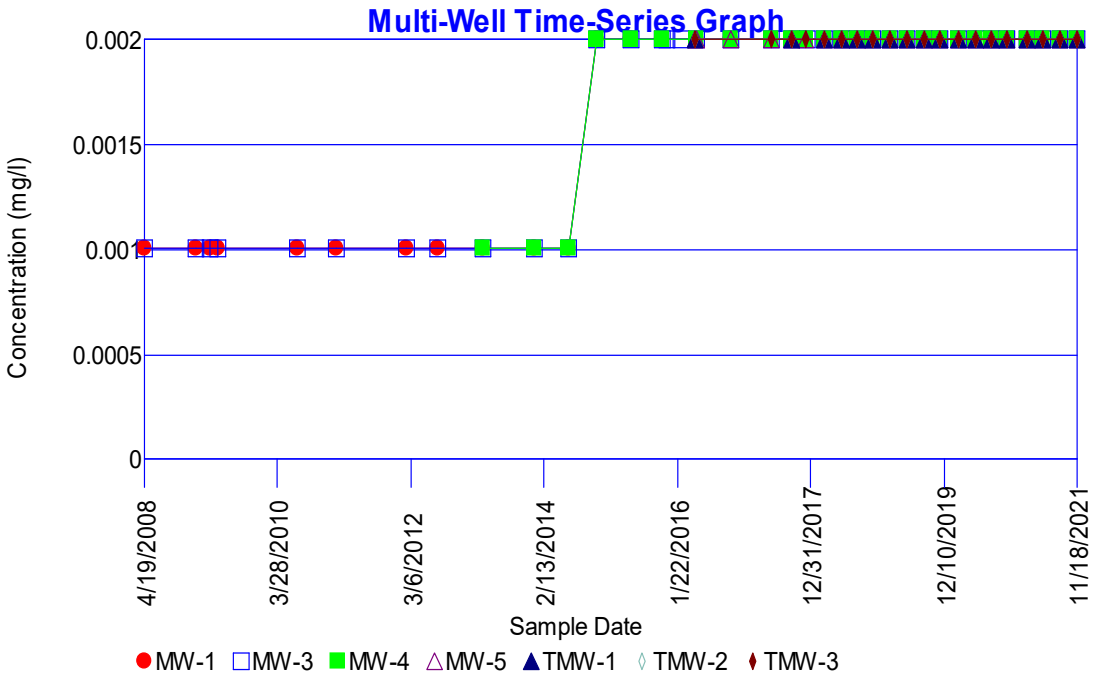
Sodium



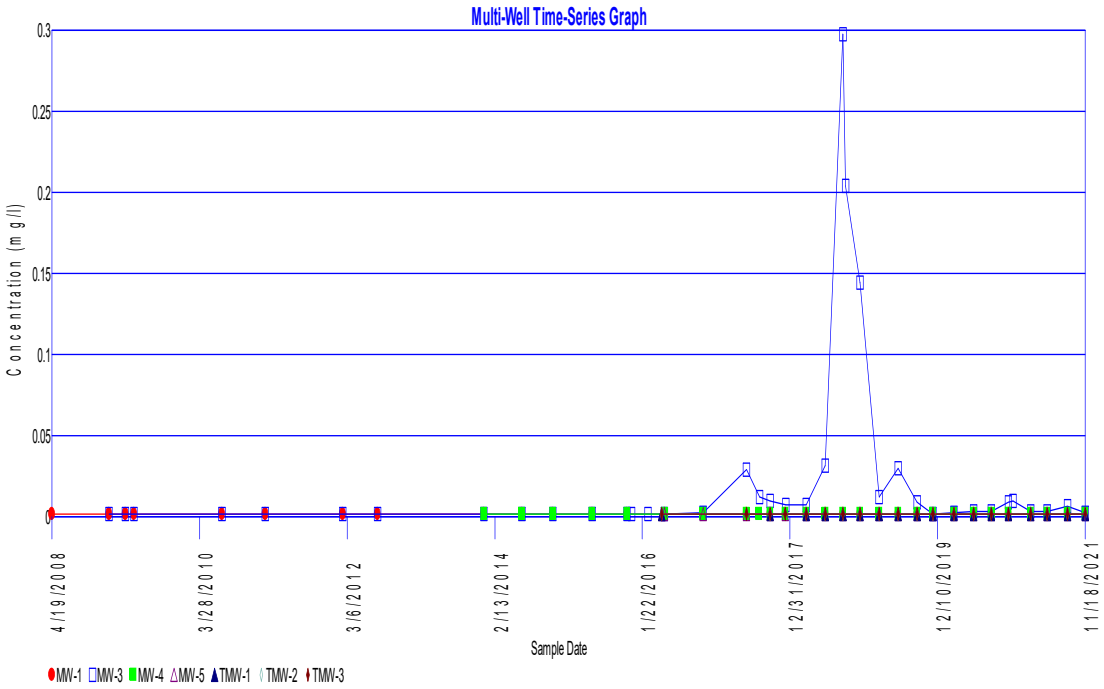
Sulfate

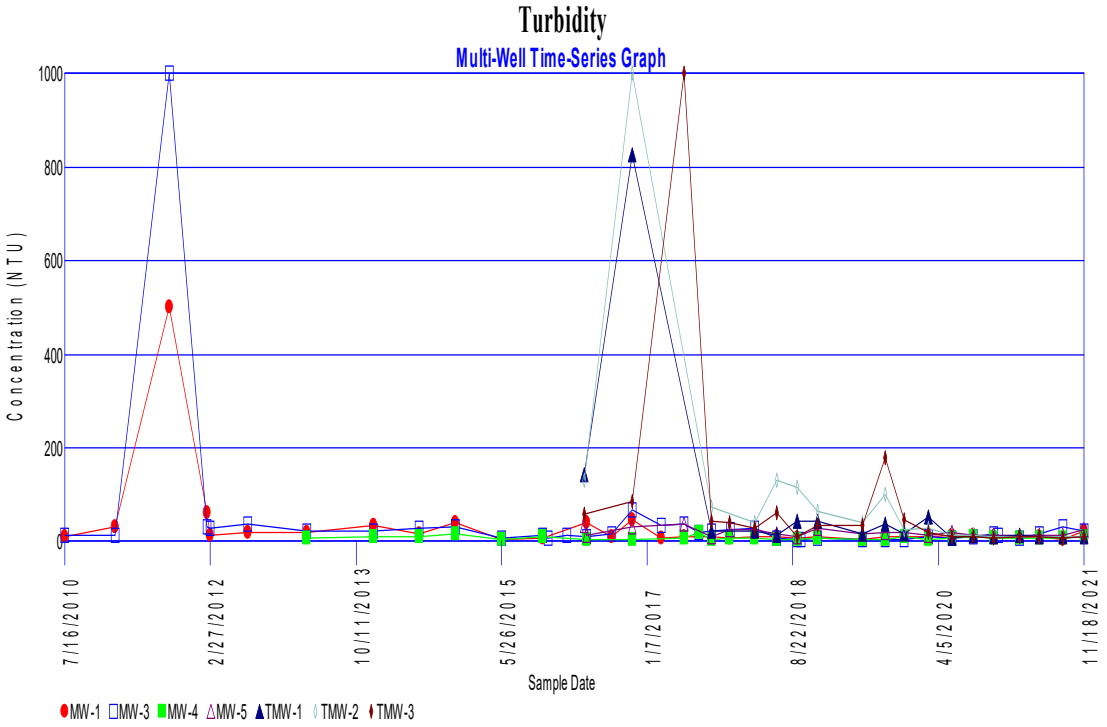


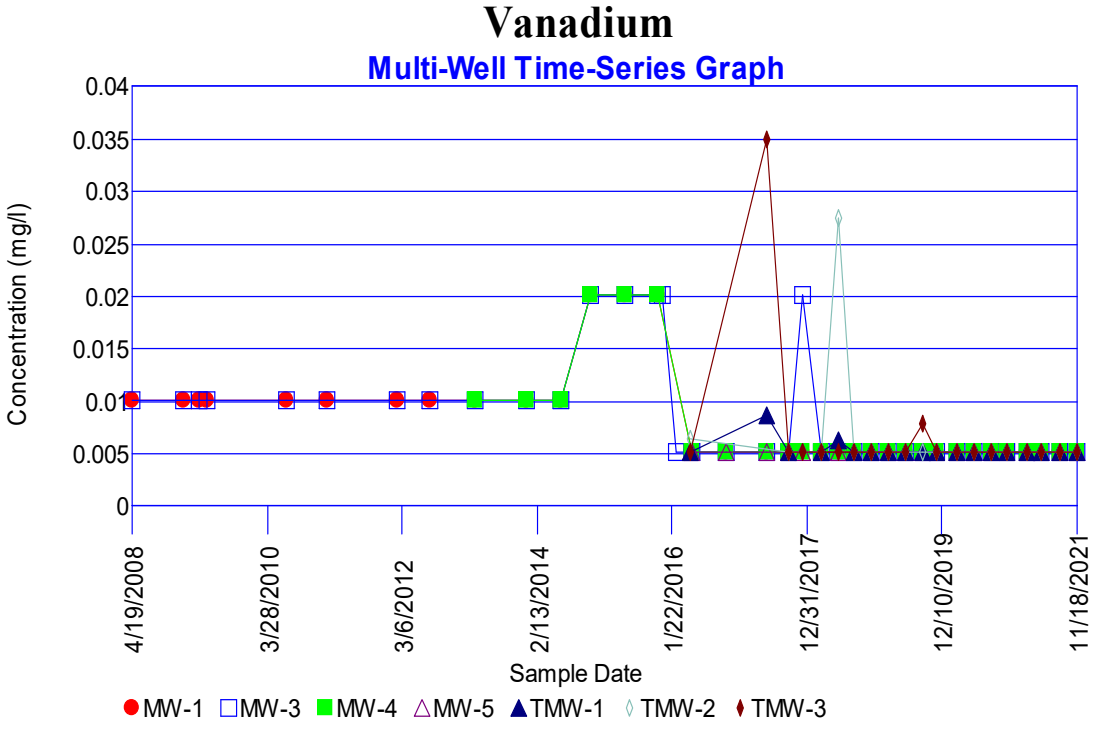
Thallium



Total Cadmium

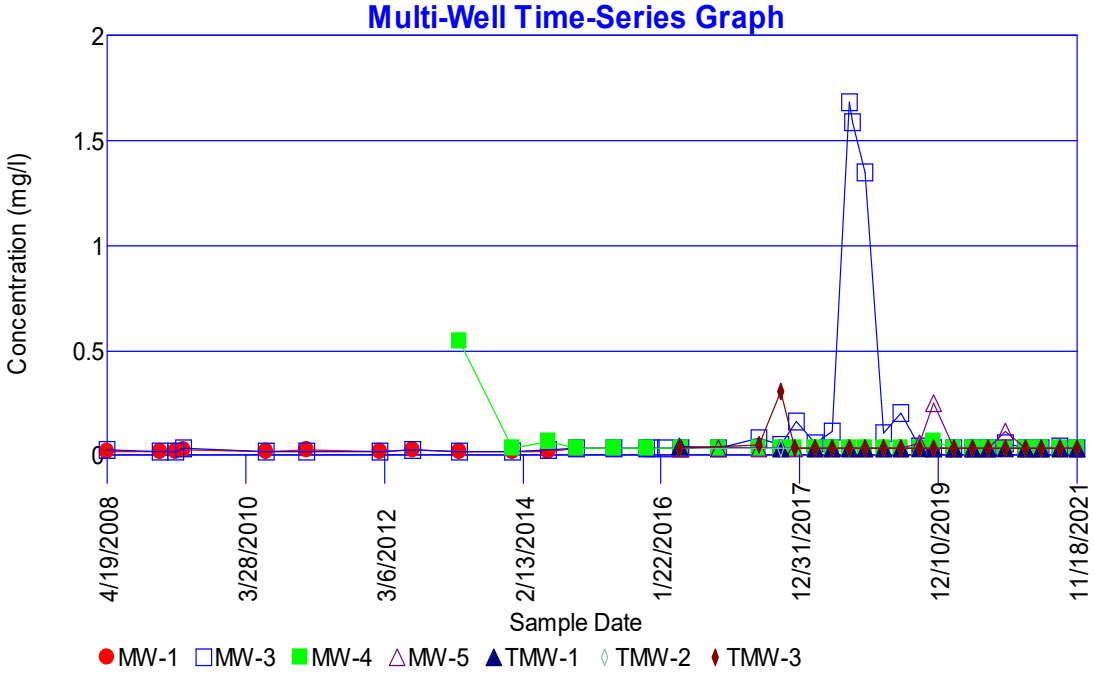



Turbidity
Multi-Well Time-Series Graph
1000
800
600
400
200
0
Concentration (NTU)
7/16/2010
2/27/2012
10/11/2013
5/26/2015
1/7/2017
8/22/2018
4/5/2020
11/18/2021
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3


Vanadium
Multi-Well Time-Series Graph
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
Concentration (mg/l)
4/19/2008
3/28/2010
3/6/2012
2/13/2014
1/22/2016
12/31/2017
12/10/2019
11/18/2021
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

Zinc

Multi-Well Time-Series Graph



Shapiro-Wilks Test of Normality

Parameter: Aluminum

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 17 for 35 measurements

Sum of b values = 1.23776
Sample Standard Deviation = 0.284012
W Statistic = 0.558626

5% Critical value of 0.934 exceeds 0.558626
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.558626
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Aluminum

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 17 for 35 measurements

Sum of b values = 5.21641
Sample Standard Deviation = 1.04268
W Statistic = 0.73615

5% Critical value of 0.934 exceeds 0.73615
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.73615
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Arsenic

Location: MW-1

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 17 for 35 measurements

Sum of b values = 0.159518
Sample Standard Deviation = 0.0289436
W Statistic = 0.893379

5% Critical value of 0.934 exceeds 0.893379
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.893379
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Arsenic

Location: MW-1

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 17 for 35 measurements

Sum of b values = 5.09161
Sample Standard Deviation = 0.911092
W Statistic = 0.918559

5% Critical value of 0.934 exceeds 0.918559
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 is less than 0.918559
Data is normally distributed at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Barium

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 17 for 35 measurements

Sum of b values = 0.0438952
Sample Standard Deviation = 0.0113335
W Statistic = 0.441193

5% Critical value of 0.934 exceeds 0.441193
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.441193
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Barium

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 17 for 35 measurements

Sum of b values = 1.9246
Sample Standard Deviation = 0.362167
W Statistic = 0.830587

5% Critical value of 0.934 exceeds 0.830587
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.830587
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chloride

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 18 for 36 measurements

Sum of b values = 5.27391
Sample Standard Deviation = 0.984569
W Statistic = 0.819795

5% Critical value of 0.935 exceeds 0.819795
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.819795
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chloride

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 18 for 36 measurements

Sum of b values = 1.79418
Sample Standard Deviation = 0.318231
W Statistic = 0.908189

5% Critical value of 0.935 exceeds 0.908189
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.908189
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chromium

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 17 for 35 measurements

Sum of b values = 0.0944261
Sample Standard Deviation = 0.0273634
W Statistic = 0.35024

5% Critical value of 0.934 exceeds 0.35024
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.35024
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chromium

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 17 for 35 measurements

Sum of b values = 5.89245
Sample Standard Deviation = 1.24123
W Statistic = 0.662836

5% Critical value of 0.934 exceeds 0.662836
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.662836
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Cobalt

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 17 for 35 measurements

Sum of b values = 0.0768076
Sample Standard Deviation = 0.0141035
W Statistic = 0.872319

5% Critical value of 0.934 exceeds 0.872319
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.872319
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Cobalt

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 17 for 35 measurements

Sum of b values = 1.91879
Sample Standard Deviation = 0.337015
W Statistic = 0.953408

5% Critical value of 0.934 is less than 0.953408
Data is normally distributed at 95% level of significance

1% Critical value of 0.91 is less than 0.953408
Data is normally distributed at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Mercury

Location: MW-1

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 17 for 35 measurements

Sum of b values = 0.0032774
Sample Standard Deviation = 0.000658948
W Statistic = 0.727574

5% Critical value of 0.934 exceeds 0.727574
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.727574
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Mercury

Location: MW-1

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 17 for 35 measurements

Sum of b values = 5.94166
Sample Standard Deviation = 1.09304
W Statistic = 0.869087

5% Critical value of 0.934 exceeds 0.869087
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.869087
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Nickel

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 17 for 35 measurements

Sum of b values = 0.149555
Sample Standard Deviation = 0.0415676
W Statistic = 0.380725

5% Critical value of 0.934 exceeds 0.380725
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.380725
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Nickel

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 17 for 35 measurements

Sum of b values = 3.5987
Sample Standard Deviation = 0.80419
W Statistic = 0.588972

5% Critical value of 0.934 exceeds 0.588972
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.588972
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Sulfate

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 16 for 33 measurements

Sum of b values = 15.1208
Sample Standard Deviation = 3.38686
W Statistic = 0.622881

5% Critical value of 0.931 exceeds 0.622881
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.622881
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Sulfate

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 16 for 33 measurements

Sum of b values = 3.20665
Sample Standard Deviation = 0.654621
W Statistic = 0.749848

5% Critical value of 0.931 exceeds 0.749848
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.749848
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Total Cadmium

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 17 for 34 measurements

Sum of b values = 0
Sample Standard Deviation = 6.60304e-019
W Statistic = 0

5% Critical value of 0.933 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Total Cadmium

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 17 for 34 measurements

Sum of b values = 0
Sample Standard Deviation = 0
Divide by Zero Error

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Aluminum

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 61.7647%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 34
Maximum Baseline Concentration = 1.2
Confidence Level = 97.1%
False Positive Rate = 2.9%

Baseline Measurem	Date	Value
	4/19/2008	1.2
	1/21/2009	0.94
	4/9/2009	0.44
	5/19/2009	1
	7/16/2010	0.2
	2/8/2011	0.12
	2/17/2012	0.57
	7/31/2012	0.24
	3/27/2013	<0.1
	12/23/2013	<0.1
	6/26/2014	<0.1
	11/21/2014	<0.1
	5/28/2015	<0.1
	11/11/2015	<0.2
	5/9/2016	0.108
	11/10/2016	<0.1
	6/8/2017	<0.1
	9/28/2017	<0.1
	12/11/2017	<0.1
	3/21/2018	<0.1
	6/19/2018	<0.1
	9/12/2018	<0.1
	12/4/2018	<0.1
	3/5/2019	<0.1
	6/4/2019	<0.1
	9/5/2019	<0.1
	11/20/2019	<0.1
	2/27/2020	<0.1
	6/2/2020	<0.1
	8/26/2020	<0.1
	11/17/2020	0.19
	3/2/2021	0.152
	5/20/2021	0.17
	8/26/2021	0.155

Date	Count	Mean	Significant
11/18/2021	1	0.634	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Arsenic

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 0%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 34
Maximum Baseline Concentration = 0.1
Confidence Level = 97.1%
False Positive Rate = 2.9%

Baseline Measurem	Date	Value
	4/19/2008	0.024
	1/21/2009	0.072
	4/9/2009	0.067
	5/19/2009	0.064
	7/16/2010	0.074
	2/8/2011	0.086
	2/17/2012	0.093
	7/31/2012	0.089
	3/27/2013	0.049
	12/23/2013	0.1
	6/26/2014	0.063
	11/21/2014	0.059
	5/28/2015	0.0604
	11/11/2015	0.0469
	5/9/2016	0.05
	11/10/2016	0.0286
	6/8/2017	0.0571
	9/28/2017	0.0199
	12/11/2017	0.0573
	3/21/2018	0.0101
	6/19/2018	0.0063
	9/12/2018	0.0184
	12/4/2018	0.0254
	3/5/2019	0.00449
	6/4/2019	0.0194
	9/5/2019	0.0176
	11/20/2019	0.0176
	2/27/2020	0.00807
	6/2/2020	0.0174
	8/26/2020	0.0244
	11/17/2020	0.00513
	3/2/2021	0.00576
	5/20/2021	0.0131
	8/26/2021	0.019

Date	Count	Mean	Significant
11/18/2021	1	0.0192	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Barium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 8.82353%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 34
Maximum Baseline Concentration = 0.084
Confidence Level = 97.1%
False Positive Rate = 2.9%

Baseline Measurem	Date	Value
	4/19/2008	0.084
	1/21/2009	0.028
	4/9/2009	0.028
	5/19/2009	0.033
	7/16/2010	0.021
	2/8/2011	0.021
	2/17/2012	0.022
	7/31/2012	0.019
	3/27/2013	0.018
	12/23/2013	0.017
	6/26/2014	0.018
	11/21/2014	0.02
	5/28/2015	0.0188
	11/11/2015	0.0237
	5/9/2016	0.02
	11/10/2016	0.0207
	6/8/2017	0.0146
	9/28/2017	0.0175
	12/11/2017	0.0166
	3/21/2018	0.0212
	6/19/2018	0.0163
	9/12/2018	0.0186
	12/4/2018	0.0199
	3/5/2019	0.0184
	6/4/2019	0.0219
	9/5/2019	0.0199
	11/20/2019	0.0194
	2/27/2020	0.0241
	6/2/2020	<0.02
	8/26/2020	<0.02
	11/17/2020	<0.02
	3/2/2021	0.0222
	5/20/2021	0.0177
	8/26/2021	0.0198

Date	Count	Mean	Significant
11/18/2021	1	0.0276	FALSE

Parametric Prediction Interval Analysis

Intra-Well Comparison for MW-1

Parameter: Cobalt

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Intra-Well Unified Guid. Formula 99% One-Sided Comparison

Baseline Samples	Date	Result
	4/19/2008	-3.44202
	1/21/2009	-3.50656
	4/9/2009	-3.14656
	5/19/2009	-2.8824
	7/16/2010	-3.35241
	2/8/2011	-3.47377
	2/17/2012	-3.64966
	7/31/2012	-3.57555
	3/27/2013	-3.32424
	12/23/2013	-3.57555
	6/26/2014	-3.32424
	11/21/2014	-3.07911
	5/28/2015	-3.19418
	11/11/2015	-3.66126
	5/9/2016	-3.17725
	11/10/2016	-3.93223
	6/8/2017	-3.37553
	9/28/2017	-3.2114
	12/11/2017	-3.19175
	3/21/2018	-3.15825
	6/19/2018	-3.88246
	9/12/2018	-3.92207
	12/4/2018	-3.56137
	3/5/2019	-3.23145
	6/4/2019	-3.19175
	9/5/2019	-2.57308
	11/20/2019	-3.41428
	2/27/2020	-2.59964
	6/2/2020	-3.14191
	8/26/2020	-3.16061
	11/17/2020	-3.53702
	3/2/2021	-3.46414
	5/20/2021	-3.20153
	8/26/2021	-2.83873

From 34 baseline samples
Baseline mean = -3.32218
Baseline std Dev = 0.320788

For 1 recent sampling event(s)
Actual confidence level is 1.0 - (0.01/1) = 99 %
t is Percentile of Student's T-Test (0.99/1) = 0.99
Degrees of Freedom = 34 (background observations) - 1
t(0.99, 33) = 2.44479

Date	Samples	Mean	Interval	Significant
11/18/2021	1	-2.6297	[0, -2.52646]	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Chloride

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 0%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 34
Maximum Baseline Concentration = 5.68
Confidence Level = 97.1%
False Positive Rate = 2.9%

Baseline Measurem	Date	Value
	4/19/2008	2
	1/21/2009	2.9
	4/9/2009	1.9
	5/19/2009	2.8
	7/16/2010	2.8
	2/8/2011	2.6
	2/17/2012	2.1
	7/31/2012	2.2
	3/27/2013	1.8
	12/23/2013	1.5
	6/26/2014	2.9
	11/21/2014	3.9
	5/28/2015	2.01
	11/11/2015	3.97
	5/9/2016	2.12
	8/18/2016	2.4
	11/10/2016	4.59
	6/8/2017	5.68
	9/28/2017	4.11
	12/11/2017	2.31
	3/21/2018	2.1
	6/19/2018	2.24
	9/12/2018	4.94
	12/4/2018	1.67
	3/5/2019	2.11
	6/4/2019	2.15
	9/5/2019	2.84
	11/20/2019	2.52
	2/27/2020	1.95
	6/2/2020	2.27
	8/26/2020	2.61
	11/17/2020	2.48
	3/2/2021	2.15
	5/20/2021	2.15

Date	Count	Mean	Significant
11/18/2021	1	1.95	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Chromium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 94.1176%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 34
Maximum Baseline Concentration = 0.12
Confidence Level = 97.1%
False Positive Rate = 2.9%

Baseline Measurem	Date	Value
	4/19/2008	<0.01
	1/21/2009	<0.01
	4/9/2009	0.12
	5/19/2009	0.12
	7/16/2010	<0.01
	2/8/2011	<0.01
	2/17/2012	<0.01
	7/31/2012	<0.01
	3/27/2013	<0.01
	12/23/2013	<0.01
	6/26/2014	<0.01
	11/21/2014	<0.01
	5/28/2015	<0.01
	11/11/2015	<0.01
	5/9/2016	<0.002
	11/10/2016	<0.002
	6/8/2017	<0.002
	9/28/2017	<0.002
	12/11/2017	<0.002
	3/21/2018	<0.002
	6/19/2018	<0.002
	9/12/2018	<0.002
	12/4/2018	<0.002
	3/5/2019	<0.002
	6/4/2019	<0.002
	9/5/2019	<0.002
	11/20/2019	<0.002
	2/27/2020	<0.002
	6/2/2020	<0.002
	8/26/2020	<0.002
	11/17/2020	<0.002
	3/2/2021	<0.002
	5/20/2021	<0.002
	8/26/2021	<0.002

Date	Count	Mean	Significant
11/18/2021	1	0.00249	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Mercury

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 32.3529%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 34
Maximum Baseline Concentration = 0.00319
Confidence Level = 97.1%
False Positive Rate = 2.9%

Baseline Measurem	Date	Value
	4/19/2008	<0.0002
	1/21/2009	0.00045
	4/9/2009	<0.0002
	5/19/2009	<0.0002
	7/16/2010	0.0005
	2/8/2011	0.00024
	2/17/2012	0.00083
	7/31/2012	0.00063
	3/27/2013	0.00028
	12/23/2013	0.00077
	6/26/2014	<0.0002
	11/21/2014	<0.0002
	5/28/2015	<0.0002
	11/11/2015	<0.0002
	5/9/2016	0.000858
	11/10/2016	<0.0002
	6/8/2017	0.000222
	9/28/2017	<0.0002
	12/11/2017	0.000473
	3/21/2018	0.000651
	6/19/2018	0.00319
	9/12/2018	0.000244
	12/4/2018	0.00101
	3/5/2019	0.000922
	6/4/2019	0.000889
	9/5/2019	0.00108
	11/20/2019	0.00121
	2/27/2020	0.000796
	6/2/2020	0.000888
	8/26/2020	<0.0002
	11/17/2020	0.00256
	3/2/2021	0.0012
	5/20/2021	0.00136
	8/26/2021	<0.0002

Date	Count	Mean	Significant
11/18/2021	1	0.000785	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Nickel

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 32.3529%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 34
Maximum Baseline Concentration = 0.2
Confidence Level = 97.1%
False Positive Rate = 2.9%

Baseline Measurem	Date	Value
	4/19/2008	<0.02
	1/21/2009	<0.02
	4/9/2009	0.2
	5/19/2009	0.17
	7/16/2010	<0.02
	2/8/2011	<0.02
	2/17/2012	<0.02
	7/31/2012	<0.02
	3/27/2013	<0.02
	12/23/2013	<0.02
	6/26/2014	<0.02
	11/21/2014	<0.02
	5/28/2015	<0.02
	11/11/2015	0.0112
	5/9/2016	0.00512
	11/10/2016	0.0112
	6/8/2017	0.00418
	9/28/2017	0.00445
	12/11/2017	0.00652
	3/21/2018	0.00658
	6/19/2018	0.00637
	9/12/2018	0.00839
	12/4/2018	0.00744
	3/5/2019	0.00638
	6/4/2019	0.0088
	9/5/2019	0.00686
	11/20/2019	0.00468
	2/27/2020	0.00803
	6/2/2020	0.0063
	8/26/2020	0.00512
	11/17/2020	0.00632
	3/2/2021	0.0057
	5/20/2021	0.0064
	8/26/2021	0.00559

Date	Count	Mean	Significant
11/18/2021	1	0.00859	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Sulfate

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 55.8824%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 34
Maximum Baseline Concentration = 18.8
Confidence Level = 97.1%
False Positive Rate = 2.9%

Baseline Measurem	Date	Value
	5/19/2009	8.9
	7/16/2010	9.4
	2/8/2011	5.8
	2/17/2012	<5
	7/31/2012	<5
	3/27/2013	5.1
	12/23/2013	6.1
	6/26/2014	<5
	11/21/2014	9.1
	5/28/2015	<5
	11/11/2015	18.8
	5/9/2016	<5
	8/18/2016	3.51
	11/10/2016	16.5
	6/8/2017	<5
	9/28/2017	<5
	12/11/2017	<5
	3/21/2018	<5
	6/19/2018	<5
	9/12/2018	12.3
	12/4/2018	<5
	3/5/2019	<5
	6/4/2019	<5
	9/5/2019	<5
	11/20/2019	<5
	2/27/2020	5.72
	6/2/2020	<5
	8/26/2020	<5
	11/17/2020	<5
	3/2/2021	8.91
	5/20/2021	<5
	8/26/2021	6.63
	11/18/2021	7.59

Date	Count	Mean	Significant
11/18/2021	1	7.59	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Aluminum

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 39.2045%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 35
Maximum Background Value = 1.2
Confidence Level = 85.4%
False Positive Rate = 14.6%

Location	Date	Count	Mean	Significant
MW-3	11/18/2021	1	0.43	FALSE
MW-4	11/18/2021	1	0.1	FALSE
MW-5	11/18/2021	1	0.202	FALSE
TMW-1	11/18/2021	1	0.11	FALSE
TMW-2	11/18/2021	1	0.155	FALSE
TMW-3	11/18/2021	1	0.1	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Barium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 6.21469%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 35
Maximum Background Value = 0.084
Confidence Level = 85.4%
False Positive Rate = 14.6%

Location	Date	Count	Mean	Significant
MW-3	11/18/2021	1	0.0564	FALSE
MW-4	11/18/2021	1	0.0102	FALSE
MW-5	11/18/2021	1	0.0646	FALSE
TMW-1	11/18/2021	1	0.014	FALSE
TMW-2	11/18/2021	1	0.0328	FALSE
TMW-3	11/18/2021	1	0.0488	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Total Cadmium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.0056%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 34
Maximum Background Value = 0.001
Confidence Level = 85%
False Positive Rate = 15%

Location	Date	Count	Mean	Significant
MW-3	**11/18/2021**	**1**	**0.00188**	**TRUE**
MW-4	11/18/2021	1	0.001	FALSE
MW-5	11/18/2021	1	0.001	FALSE
TMW-1	11/18/2021	1	0.001	FALSE
TMW-2	11/18/2021	1	0.001	FALSE
TMW-3	11/18/2021	1	0.001	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Chloride

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 0%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 36
Maximum Background Value = 5.68
Confidence Level = 85.7%
False Positive Rate = 14.3%

Location	Date	Count	Mean	Significant
MW-3	11/18/2021	1	14.1	TRUE
MW-4	11/18/2021	1	9.89	TRUE
MW-5	11/18/2021	1	78.8	TRUE
TMW-1	11/18/2021	1	32.9	TRUE
TMW-2	11/18/2021	1	36	TRUE
TMW-3	11/18/2021	1	64.7	TRUE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Chromium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 72.7273%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 35
Maximum Background Value = 0.12
Confidence Level = 85.4%
False Positive Rate = 14.6%

Location	Date	Count	Mean	Significant
MW-3	11/18/2021	1	0.0029	FALSE
MW-4	11/18/2021	1	0.002	FALSE
MW-5	11/18/2021	1	0.01	FALSE
TMW-1	11/18/2021	1	0.002	FALSE
TMW-2	11/18/2021	1	0.002	FALSE
TMW-3	11/18/2021	1	0.002	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Nickel

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 58.427%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 35
Maximum Background Value = 0.2
Confidence Level = 85.4%
False Positive Rate = 14.6%

Location	Date	Count	Mean	Significant
MW-3	11/18/2021	1	0.00323	FALSE
MW-4	11/18/2021	1	0.002	FALSE
MW-5	11/18/2021	1	0.00745	FALSE
TMW-1	11/18/2021	1	0.002	FALSE
TMW-2	11/18/2021	1	0.00226	FALSE
TMW-3	11/18/2021	1	0.002	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Sulfate

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 64.4068%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 33
Maximum Background Value = 18.8
Confidence Level = 84.6%
False Positive Rate = 15.4%

Location	Date	Count	Mean	Significant
MW-3	**11/18/2021**	**1**	**57.2**	**TRUE**
MW-4	11/18/2021	1	5	FALSE
MW-5	11/18/2021	1	14.2	FALSE
TMW-1	11/18/2021	1	5	FALSE
TMW-2	11/18/2021	1	5	FALSE
TMW-3	11/18/2021	1	5	FALSE

Parametric Prediction Interval Analysis

Inter-Well Comparison

Parameter: Cobalt

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Inter-Well Unified Guid. Formula 95% One-Sided Comparison

Background Samples = 35
Background Mean = -3.30239
Background Std Dev = 0.337015

Number of comparisons = 6
Future Samples (k) = 6
Actual confidence level is 1.0 - (0.05/6) = 99.1667 %
t is Percentile of Student's T-Test (0.95/6) = 0.991667
Degrees of Freedom = 35 (background observations) - 1
t(0.991667, 35) = 2.5369

Well MW-3

Date	Samples	Mean	Interval	Significant
11/18/2021	1	-6.90776	[0, -2.43529]	FALSE

Well MW-4

Date	Samples	Mean	Interval	Significant
11/18/2021	1	-6.90776	[0, -2.43529]	FALSE

Well MW-5

Date	Samples	Mean	Interval	Significant
11/18/2021	1	-6.11025	[0, -2.43529]	FALSE

Well TMW-1

Date	Samples	Mean	Interval	Significant
11/18/2021	1	-6.90776	[0, -2.43529]	FALSE

Well TMW-2

Date	Samples	Mean	Interval	Significant
11/18/2021	1	-6.90776	[0, -2.43529]	FALSE

Well TMW-3

Date	Samples	Mean	Interval	Significant
11/18/2021	1	-6.90776	[0, -2.43529]	FALSE

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: MW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 81 - 4 = 77

Tied Group	Value	Members
1	0.1	15

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 7350
B = 0
C = 2730
D = 0
E = 210
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 541.667
Z-Score = 3.26548
Comparison Level at 95% confidence level = 1.65463 (upward trend)
3.26548 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Arsenic

Location: MW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 68 - 121 = -53

Tied Group	Value	Members
1	0.0176	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 949
Z-Score = -1.68799
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.68799| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 126 - 60 = 66

Tied Group	Value	Members
1	0.0199	2
2	0.02	3

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 84
B = 0
C = 6
D = 0
E = 8
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 945.333
Z-Score = 2.11408
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.11408 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chromium

Location: MW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 19 - 0 = 19

Tied Group	Value	Members
1	0.002	19

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 14706
B = 0
C = 5814
D = 0
E = 342
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 133
Z-Score = 1.5608
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.5608| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 71 - 115 = -44

Tied GrouValue		Members
1	2.15	3
2	1.95	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 84
B = 0
C = 6
D = 0
E = 8
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 945.333
Z-Score = -1.39854
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.39854| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Cobalt

Location: MW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 125 - 64 = 61

Tied GrouValue		Members
1	0.0411	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 949
Z-Score = 1.94768
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.94768| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Mercury

Location: MW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 116 - 68 = 48

Tied GrouValue		Members
1	0.0002	4

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 941.333
Z-Score = 1.53188
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.53188| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Nickel

Location: MW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 91 - 99 = -8

Tied GrouValue	Members

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 950
Z-Score = -0.22711
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.22711| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate

Location: MW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 60 - 39 = 21

Tied Grou	Value	Members
1	5	14

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 6006
B = 0
C = 2184
D = 0
E = 182
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 616.333
Z-Score = 0.805605
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.805605| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: MW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 83 - 97 = -14

Tied GrouValue	Members
1 0.1	5

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 933.333
Z-Score = -0.425525
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.425525| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: MW-5

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 99 - 88 = 11

Tied GrouValue	Members
1 0.1	3

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 946.333
Z-Score = 0.325071
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.325071| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: TMW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 41 - 92 = -51

Tied GrouValue	Members
1 0.1	3

Time Period	Observations
9/28/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0
a = 10608
b = 36720
c = 544
Group Variance = 585.667
Z-Score = -2.06607
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-2.06607 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: TMW-2

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 14 - 122 = -108

Tied GrouValue	Members

Time Period	Observations
9/28/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 10608
b = 36720
c = 544
Group Variance = 589.333
Z-Score = -4.40761
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-4.40761 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 61 - 149 = -88

Tied GrouValue	Members

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
9/27/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1096.67
Z-Score = -2.62713
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-2.62713 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-4

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 134 - 50 = 84

Tied GrouValue		Members
1	0.02	4

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 941.333
Z-Score = 2.70524
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.70524 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-5

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 166 - 24 = 142

Tied GrouValue	Members

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 950
Z-Score = 4.57464
Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.57464 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: TMW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 82 - 48 = 34

Tied GrouValue		Members
1	0.02	4

Time Period	Observations
9/28/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 10608
b = 36720
c = 544
Group Variance = 580.667
Z-Score = 1.36946
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.36946| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Barium
Location: TMW-2

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 58 - 77 = -19

Tied GrouValue		Members
1	0.033	2

Time Period	Observations
9/28/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 10608
b = 36720
c = 544
Group Variance = 588.333
Z-Score = -0.742097
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.742097| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Barium
Location: TMW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 109 - 43 = 66

Tied GrouValue		Members
1	0.0451	2

Time Period	Observations
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 12546
b = 44064
c = 612
Group Variance = 696
Z-Score = 2.46382
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.46382 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Total Cadmium
Location: MW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 90 - 163 = -73

Tied GrouValue	Members

Time Period	Observations
11/10/2016	1
6/8/2017	1
8/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
9/27/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
12/8/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 25806
b = 95634
c = 1012
Group Variance = 1433.67
Z-Score = -1.90155
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-1.90155 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Chloride
Location: MW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 35 - 153 = -118

Tied GrouValue		Members
1	23.9	2
2	18.4	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 36
B = 0
C = 0
D = 0
E = 4
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 948
Z-Score = -3.79998
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-3.79998 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-4

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 164 - 26 = 138

Tied GrouValue	Members

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 950
Z-Score = 4.44487
Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.44487 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-5

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 138 - 51 = 87

Tied GrouValue	Members
1 83.5	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 949
Z-Score = 2.79168
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.79168 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: TMW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 187 - 3 = 184

Tied GrouValue	Members

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 950
Z-Score = 5.9373
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.9373 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: TMW-2

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 160 - 30 = 130

Tied GrouValue	Members

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 950
Z-Score = 4.18531
Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.18531 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: TMW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 178 - 12 = 166

Tied GrouValue	Members

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 950
Z-Score = 5.35331
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.35331 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chromium

Location: MW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 65 - 59 = 6

Tied GrouValue		Members
1	0.002	12

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 3828
B = 0
C = 1320
D = 0
E = 132
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 737.333
Z-Score = 0.184136
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.184136| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Chromium

Location: MW-5

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 123 - 61 = 62

Tied GrouValue		Members
1	0.002	4

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 941.333
Z-Score = 1.98819
Comparison Level at 95% confidence level = 1.65463 (upward trend)
1.98819 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Cobalt

Location: MW-5

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 70 - 108 = -38

Tied GrouValue		Members
1	0.002	5
2	0.00264	2
3	0.00204	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 336
B = 0
C = 60
D = 0
E = 24
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 931.333
Z-Score = -1.21241
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.21241| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Nickel
Location: MW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 105 - 102 = 3

Tied GrouValue		Members
1	0.002	3

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
9/27/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1093
Z-Score = 0.0604951
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.0604951| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Nickel
Location: MW-5

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 84 - 105 = -21

Tied GrouValue		Members
1	0.00651	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 949
Z-Score = -0.649227
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.649227| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Nickel
Location: TMW-2

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 18 - 30 = -12

Tied GrouValue		Members
1	0.002	15

Time Period	Observations
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 7350
B = 0
C = 2730
D = 0
E = 210
F = 0
a = 12546
b = 44064
c = 612
Group Variance = 288.667
Z-Score = -0.647432
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.647432| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate
Location: MW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 82 - 107 = -25

Tied GrouValue		Members
1	46.2	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 949
Z-Score = -0.779073
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.779073| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate

Location: MW-5

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 174 - 6 = 168

Tied Grou	Value	Members
1	5	5

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 933.333
Z-Score = 5.46636
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.46636 > 1.65463 indicating an upward trend

APPENDIX C
LABORATORY ANALYTICAL REPORTS & FIELD INFORMATION LOGS

ANALYTICAL REPORT

January 06, 2022

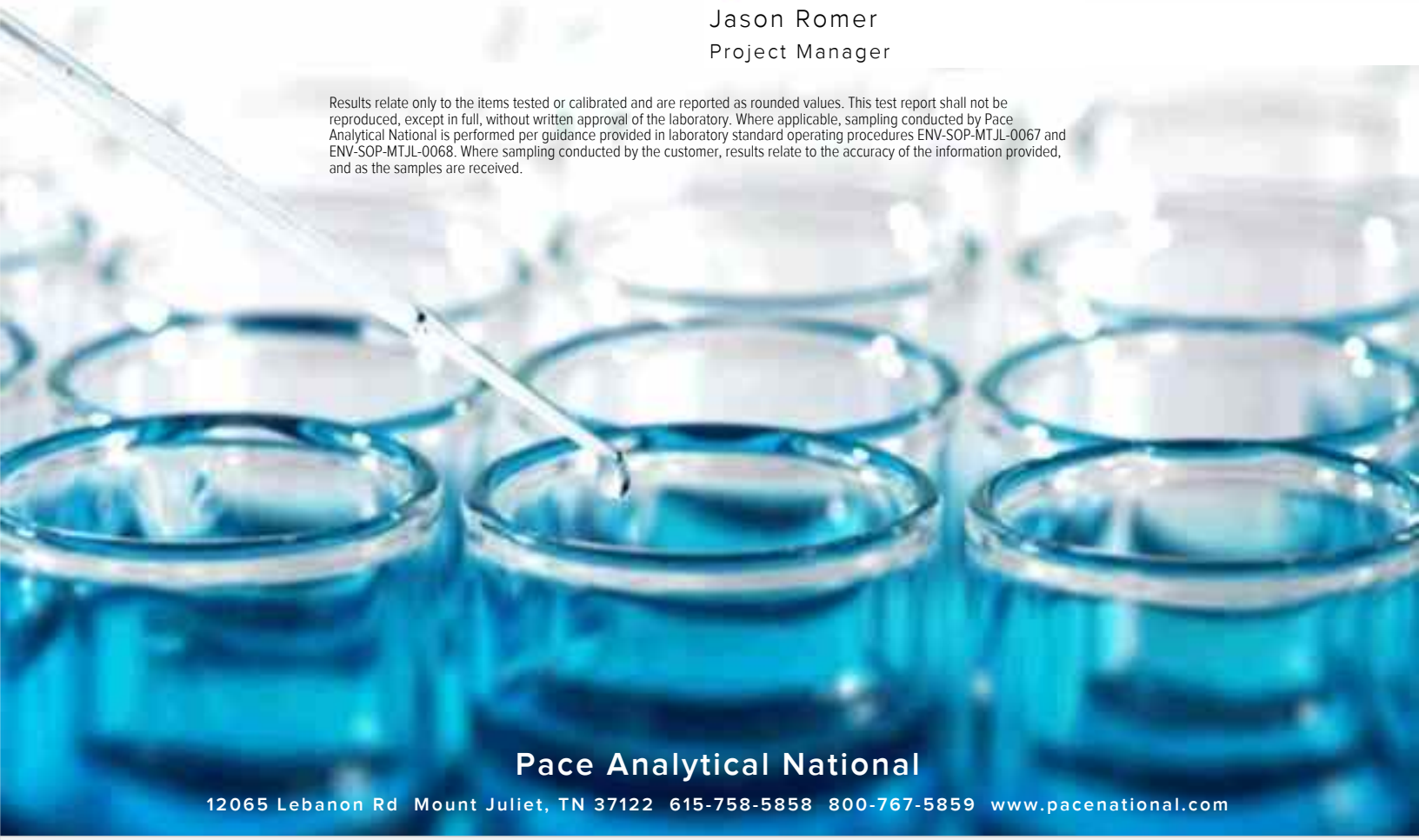
Civil & Environmental Consultants - TN

Sample Delivery Group:	L1433668
Samples Received:	11/19/2021
Project Number:	181-364
Description:	Former EWS Camden Class 2 Landfill
Site:	CAMDEN, TN
Report To:	Philip Campbell 117 Seaboard Ln. Suite E100 Franklin, TN 37067

Entire Report Reviewed By:

Jason Romer
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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MW-1 L1433668-01 GW

Collected by: Alex Black | Collected date/time: 11/18/21 11:00 | Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1790958	1	12/26/21 15:49	12/26/21 15:49	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1780267	1	11/28/21 03:40	11/28/21 03:40	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1783002	1	12/02/21 13:55	12/02/21 13:55	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1780208	1	11/25/21 10:00	11/25/21 13:19	AW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1777474	1	11/20/21 01:07	11/20/21 01:07	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1778234	1	11/30/21 08:35	12/01/21 10:00	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1792056	1	12/20/21 17:58	12/22/21 01:35	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1790958	1	12/21/21 07:42	12/26/21 15:49	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1790958	1	12/21/21 07:42	12/27/21 12:08	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1780204	1	11/25/21 17:59	11/25/21 17:59	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1781138	1	11/29/21 18:24	11/29/21 18:24	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1778716	1.05	11/23/21 13:07	11/25/21 08:37	HMH	Mt. Juliet, TN

MW-3 L1433668-02 GW

Collected by: Alex Black | Collected date/time: 11/18/21 14:20 | Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1790958	1	12/26/21 15:52	12/26/21 15:52	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1780267	1	11/28/21 03:43	11/28/21 03:43	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1783002	1	12/02/21 14:00	12/02/21 14:00	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1780208	1	11/25/21 10:00	11/25/21 13:19	AW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1777732	1	11/20/21 13:55	11/20/21 13:55	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1778234	1	11/30/21 08:35	12/01/21 10:02	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1792056	1	12/20/21 17:58	12/22/21 01:49	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1790958	1	12/21/21 07:42	12/26/21 15:52	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1790958	1	12/21/21 07:42	12/27/21 14:31	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1780204	1	11/25/21 18:19	11/25/21 18:19	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1779326	1.04	11/24/21 12:24	11/24/21 19:42	HMH	Mt. Juliet, TN

MW-4 L1433668-03 GW

Collected by: Alex Black | Collected date/time: 11/18/21 13:05 | Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1790962	1	12/27/21 17:32	12/27/21 17:32	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1780267	1	11/28/21 03:47	11/28/21 03:47	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1783002	1	12/02/21 14:07	12/02/21 14:07	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1780208	1	11/25/21 10:00	11/25/21 13:20	AW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1777474	1	11/20/21 01:22	11/20/21 01:22	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1778234	1	11/30/21 08:35	12/01/21 10:05	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1792056	1	12/20/21 17:58	12/22/21 01:51	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1790962	1	12/22/21 06:50	12/27/21 17:32	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1796119	1	12/29/21 20:14	12/29/21 23:12	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1780204	1	11/25/21 18:40	11/25/21 18:40	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1779326	1.01	11/24/21 12:24	11/24/21 21:25	HMH	Mt. Juliet, TN

MW-5 L1433668-04 GW

Collected by: Alex Black | Collected date/time: 11/18/21 12:10 | Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1790962	1	12/27/21 17:36	12/27/21 17:36	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1780267	1	11/28/21 03:50	11/28/21 03:50	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1783002	1	12/02/21 14:09	12/02/21 14:09	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1779376	1	11/23/21 21:30	11/24/21 00:23	UNP	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

MW-5 L1433668-04 GW

Collected by: Alex Black | Collected date/time: 11/18/21 12:10 | Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1777474	1	11/20/21 01:37	11/20/21 01:37	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1778234	1	11/30/21 08:35	12/01/21 10:07	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1792056	1	12/20/21 17:58	12/22/21 01:54	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1790962	1	12/22/21 06:50	12/27/21 17:36	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1790962	1	12/22/21 06:50	12/27/21 21:00	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1796119	1	12/29/21 20:14	12/29/21 23:15	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1780204	1	11/25/21 19:00	11/25/21 19:00	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1779326	1.04	11/24/21 12:24	11/24/21 21:37	HMH	Mt. Juliet, TN

TMW-1 L1433668-05 GW

Collected by: Alex Black | Collected date/time: 11/18/21 13:40 | Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1790962	1	12/27/21 17:39	12/27/21 17:39	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1780267	1	11/28/21 03:53	11/28/21 03:53	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1783002	1	12/02/21 14:10	12/02/21 14:10	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1779376	1	11/23/21 21:30	11/24/21 00:23	UNP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1777345	1	11/19/21 20:28	11/19/21 20:28	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1778234	1	11/30/21 08:35	12/01/21 10:10	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1792056	1	12/20/21 17:58	12/22/21 02:02	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1790962	1	12/22/21 06:50	12/27/21 17:39	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1796119	1	12/29/21 20:14	12/29/21 23:19	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1780204	1	11/25/21 19:21	11/25/21 19:21	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1779326	1.01	11/24/21 12:24	11/24/21 21:49	HMH	Mt. Juliet, TN

TMW-2 L1433668-06 GW

Collected by: Alex Black | Collected date/time: 11/18/21 12:10 | Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1790962	1	12/27/21 17:43	12/27/21 17:43	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1780267	1	11/28/21 03:56	11/28/21 03:56	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1783002	1	12/02/21 14:12	12/02/21 14:12	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1779376	1	11/23/21 21:30	11/24/21 00:24	UNP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1777474	1	11/20/21 02:22	11/20/21 02:22	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1778235	1	11/30/21 08:32	12/01/21 07:59	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1792056	1	12/20/21 17:58	12/22/21 02:05	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1790962	1	12/22/21 06:50	12/27/21 17:43	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1796647	1	12/31/21 10:58	01/04/22 11:41	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1780204	1	11/25/21 19:41	11/25/21 19:41	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1779326	1.13	11/24/21 12:24	11/24/21 22:41	HMH	Mt. Juliet, TN

TMW-3 L1433668-07 GW

Collected by: Alex Black | Collected date/time: 11/18/21 10:40 | Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1790962	1	12/27/21 17:56	12/27/21 17:56	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1780267	1	11/28/21 03:59	11/28/21 03:59	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1783002	1	12/02/21 14:13	12/02/21 14:13	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1779376	1	11/23/21 21:30	11/24/21 00:24	UNP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1777474	1	11/20/21 02:37	11/20/21 02:37	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1778235	1	11/30/21 08:32	12/01/21 08:07	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1792056	1	12/20/21 17:58	12/22/21 02:07	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1790962	1	12/22/21 06:50	12/27/21 17:56	LD	Mt. Juliet, TN

TMW-3 L1433668-07 GW

Collected by: Alex Black | Collected date/time: 11/18/21 10:40 | Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020A	WG1796119	1	12/29/21 20:14	12/29/21 23:22	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1780204	1	11/25/21 20:02	11/25/21 20:02	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1779326	1	11/24/21 12:24	11/24/21 22:54	HMH	Mt. Juliet, TN

DUPLICATE L1433668-08 GW

Collected by: Alex Black | Collected date/time: 11/18/21 00:00 | Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1790962	1	12/27/21 17:59	12/27/21 17:59	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1780267	1	11/28/21 04:02	11/28/21 04:02	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1783002	1	12/02/21 14:15	12/02/21 14:15	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1779376	1	11/23/21 21:30	11/24/21 00:24	UNP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1777474	1	11/19/21 23:53	11/19/21 23:53	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1778235	1	11/30/21 08:32	12/01/21 08:09	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1792056	1	12/20/21 17:58	12/22/21 02:10	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1790962	1	12/22/21 06:50	12/27/21 17:59	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1796119	1	12/29/21 20:14	12/29/21 23:26	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1780204	1	11/25/21 20:22	11/25/21 20:22	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1779326	1.05	11/24/21 12:24	11/24/21 23:07	HMH	Mt. Juliet, TN

FIELD BLANK L1433668-09 GW

Collected by: Alex Black | Collected date/time: 11/18/21 13:10 | Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1790962	1	12/27/21 18:03	12/27/21 18:03	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1780267	1	11/28/21 04:06	11/28/21 04:06	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1783002	1	12/02/21 14:16	12/02/21 14:16	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1779376	1	11/23/21 21:30	11/24/21 00:24	UNP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1777345	1	11/19/21 20:44	11/19/21 20:44	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1778235	1	11/30/21 08:32	12/01/21 08:11	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1792056	1	12/20/21 17:58	12/22/21 02:13	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1790962	1	12/22/21 06:50	12/27/21 18:03	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1796119	9	12/29/21 20:14	12/29/21 23:29	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1780204	1	11/25/21 17:18	11/25/21 17:18	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1779326	1.13	11/24/21 12:24	11/24/21 23:20	HMH	Mt. Juliet, TN

TRIP BLANK L1433668-10 GW

Collected by: Alex Black | Collected date/time: 11/18/21 00:00 | Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1780204	1	11/25/21 16:57	11/25/21 16:57	JHH	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jason Romer
Project Manager

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	27.1		2.50	1	12/26/2021 15:49	WG1790958

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	54.9		20.0	1	11/28/2021 03:40	WG1780267

Sample Narrative:
L1433668-01 WG1780267: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/02/2021 13:55	WG1783002

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/25/2021 13:19	WG1780208

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/20/2021 01:07	WG1777474
Chloride	1.95		1.00	1	11/20/2021 01:07	WG1777474
Fluoride	ND		0.150	1	11/20/2021 01:07	WG1777474
Nitrate	ND		0.100	1	11/20/2021 01:07	WG1777474
Sulfate	7.59		5.00	1	11/20/2021 01:07	WG1777474

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	0.000785		0.000200	1	12/01/2021 10:00	WG1778234

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/22/2021 01:35	WG1792056

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.634		0.100	1	12/26/2021 15:49	WG1790958
Antimony	ND		0.00400	1	12/26/2021 15:49	WG1790958
Arsenic	0.0192		0.00200	1	12/26/2021 15:49	WG1790958
Barium	0.0276		0.00200	1	12/26/2021 15:49	WG1790958
Beryllium	ND		0.00200	1	12/27/2021 12:08	WG1790958
Cadmium	ND		0.00100	1	12/26/2021 15:49	WG1790958
Calcium	5.13		1.00	1	12/26/2021 15:49	WG1790958
Chromium	0.00249	B	0.00200	1	12/26/2021 15:49	WG1790958
Cobalt	0.0721		0.00200	1	12/26/2021 15:49	WG1790958
Copper	ND		0.00500	1	12/26/2021 15:49	WG1790958

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	19.6		0.100	1	12/26/2021 15:49	WG1790958
Lead	ND		0.00200	1	12/26/2021 15:49	WG1790958
Magnesium	3.48		1.00	1	12/26/2021 15:49	WG1790958
Manganese	1.24		0.00500	1	12/26/2021 15:49	WG1790958
Nickel	0.00859		0.00200	1	12/27/2021 12:08	WG1790958
Potassium	ND		2.00	1	12/26/2021 15:49	WG1790958
Selenium	ND		0.00200	1	12/26/2021 15:49	WG1790958
Silver	ND		0.00200	1	12/26/2021 15:49	WG1790958
Sodium	4.67		2.00	1	12/26/2021 15:49	WG1790958
Thallium	ND		0.00200	1	12/26/2021 15:49	WG1790958
Vanadium	ND		0.00500	1	12/26/2021 15:49	WG1790958
Zinc	ND		0.0250	1	12/26/2021 15:49	WG1790958

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/29/2021 18:24	WG1781138
Acrylonitrile	ND		0.0100	1	11/25/2021 17:59	WG1780204
Benzene	ND		0.00100	1	11/25/2021 17:59	WG1780204
Bromochloromethane	ND		0.00100	1	11/25/2021 17:59	WG1780204
Bromodichloromethane	ND		0.00100	1	11/25/2021 17:59	WG1780204
Bromoform	ND		0.00100	1	11/25/2021 17:59	WG1780204
Bromomethane	ND		0.00500	1	11/25/2021 17:59	WG1780204
Carbon disulfide	ND		0.00100	1	11/25/2021 17:59	WG1780204
Carbon tetrachloride	ND	J4	0.00100	1	11/25/2021 17:59	WG1780204
Chlorobenzene	ND		0.00100	1	11/25/2021 17:59	WG1780204
Chlorodibromomethane	ND		0.00100	1	11/25/2021 17:59	WG1780204
Chloroethane	ND		0.00500	1	11/25/2021 17:59	WG1780204
Chloroform	ND	J4	0.00500	1	11/25/2021 17:59	WG1780204
Chloromethane	ND		0.00250	1	11/25/2021 17:59	WG1780204
Dibromomethane	ND		0.00100	1	11/25/2021 17:59	WG1780204
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/25/2021 17:59	WG1780204
1,2-Dibromoethane	ND		0.00100	1	11/25/2021 17:59	WG1780204
1,2-Dichlorobenzene	ND		0.00100	1	11/25/2021 17:59	WG1780204
1,4-Dichlorobenzene	ND		0.00100	1	11/25/2021 17:59	WG1780204
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/25/2021 17:59	WG1780204
1,1-Dichloroethane	ND		0.00100	1	11/25/2021 17:59	WG1780204
1,2-Dichloroethane	ND		0.00100	1	11/25/2021 17:59	WG1780204
1,1-Dichloroethene	ND		0.00100	1	11/25/2021 17:59	WG1780204
cis-1,2-Dichloroethene	ND		0.00100	1	11/25/2021 17:59	WG1780204
trans-1,2-Dichloroethene	ND	J4	0.00100	1	11/25/2021 17:59	WG1780204
1,2-Dichloropropane	ND		0.00100	1	11/25/2021 17:59	WG1780204
cis-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 17:59	WG1780204
trans-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 17:59	WG1780204
Ethylbenzene	ND		0.00100	1	11/25/2021 17:59	WG1780204
2-Hexanone	ND		0.0100	1	11/25/2021 17:59	WG1780204
Iodomethane	ND		0.0100	1	11/25/2021 17:59	WG1780204
2-Butanone (MEK)	ND		0.0100	1	11/25/2021 17:59	WG1780204
Methylene Chloride	ND	J4	0.00500	1	11/25/2021 17:59	WG1780204
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/25/2021 17:59	WG1780204
Styrene	ND		0.00100	1	11/25/2021 17:59	WG1780204
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 17:59	WG1780204
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 17:59	WG1780204
Tetrachloroethene	ND		0.00100	1	11/25/2021 17:59	WG1780204
Toluene	ND		0.00100	1	11/25/2021 17:59	WG1780204
1,1,1-Trichloroethane	ND	J4	0.00100	1	11/25/2021 17:59	WG1780204

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/25/2021 17:59	WG1780204
Trichloroethene	ND		0.00100	1	11/25/2021 17:59	WG1780204
Trichlorofluoromethane	ND		0.00500	1	11/25/2021 17:59	WG1780204
1,2,3-Trichloropropane	ND		0.00250	1	11/25/2021 17:59	WG1780204
Vinyl acetate	ND		0.0100	1	11/25/2021 17:59	WG1780204
Vinyl chloride	ND		0.00100	1	11/25/2021 17:59	WG1780204
Xylenes, Total	ND		0.00300	1	11/25/2021 17:59	WG1780204
(S) Toluene-d8	*110*		*80.0-120*		*11/25/2021 17:59*	WG1780204
(S) Toluene-d8	*116*		*80.0-120*		*11/29/2021 18:24*	WG1781138
(S) 4-Bromofluorobenzene	*112*		*77.0-126*		*11/25/2021 17:59*	WG1780204
(S) 4-Bromofluorobenzene	*99.9*		*77.0-126*		*11/29/2021 18:24*	WG1781138
(S) 1,2-Dichloroethane-d4	*118*		*70.0-130*		*11/25/2021 17:59*	WG1780204
(S) 1,2-Dichloroethane-d4	*121*		*70.0-130*		*11/29/2021 18:24*	WG1781138

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000210	1.05	11/25/2021 08:37	WG1778716
1,2-Dibromo-3-Chloropropane	ND		0.0000210	1.05	11/25/2021 08:37	WG1778716

Sample Narrative:

L1433668-01 WG1778716: Dilution due to sample volume.

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	81.9		2.50	1	12/26/2021 15:52	WG1790958

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	20.8		20.0	1	11/28/2021 03:43	WG1780267

Sample Narrative:
L1433668-02 WG1780267: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/02/2021 14:00	WG1783002

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/25/2021 13:19	WG1780208

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/20/2021 13:55	WG1777732
Chloride	14.1		1.00	1	11/20/2021 13:55	WG1777732
Fluoride	0.272		0.150	1	11/20/2021 13:55	WG1777732
Nitrate	0.226		0.100	1	11/20/2021 13:55	WG1777732
Sulfate	57.2		5.00	1	11/20/2021 13:55	WG1777732

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	12/01/2021 10:02	WG1778234

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/22/2021 01:49	WG1792056

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.430		0.100	1	12/26/2021 15:52	WG1790958
Antimony	ND		0.00400	1	12/26/2021 15:52	WG1790958
Arsenic	ND		0.00200	1	12/26/2021 15:52	WG1790958
Barium	0.0564		0.00200	1	12/26/2021 15:52	WG1790958
Beryllium	ND		0.00200	1	12/27/2021 14:31	WG1790958
Cadmium	0.00188		0.00100	1	12/26/2021 15:52	WG1790958
Calcium	21.4		1.00	1	12/26/2021 15:52	WG1790958
Chromium	0.00290	B	0.00200	1	12/26/2021 15:52	WG1790958
Cobalt	ND		0.00200	1	12/26/2021 15:52	WG1790958
Copper	ND		0.00500	1	12/26/2021 15:52	WG1790958

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.245		0.100	1	12/26/2021 15:52	WG1790958
Lead	ND		0.00200	1	12/26/2021 15:52	WG1790958
Magnesium	6.91		1.00	1	12/26/2021 15:52	WG1790958
Manganese	0.0309		0.00500	1	12/26/2021 15:52	WG1790958
Nickel	0.00323		0.00200	1	12/27/2021 14:31	WG1790958
Potassium	6.13		2.00	1	12/26/2021 15:52	WG1790958
Selenium	ND		0.00200	1	12/26/2021 15:52	WG1790958
Silver	ND		0.00200	1	12/26/2021 15:52	WG1790958
Sodium	5.80		2.00	1	12/26/2021 15:52	WG1790958
Thallium	ND		0.00200	1	12/26/2021 15:52	WG1790958
Vanadium	ND		0.00500	1	12/26/2021 15:52	WG1790958
Zinc	ND		0.0250	1	12/26/2021 15:52	WG1790958

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/25/2021 18:19	WG1780204
Acrylonitrile	ND		0.0100	1	11/25/2021 18:19	WG1780204
Benzene	ND		0.00100	1	11/25/2021 18:19	WG1780204
Bromochloromethane	ND		0.00100	1	11/25/2021 18:19	WG1780204
Bromodichloromethane	ND		0.00100	1	11/25/2021 18:19	WG1780204
Bromoform	ND		0.00100	1	11/25/2021 18:19	WG1780204
Bromomethane	ND		0.00500	1	11/25/2021 18:19	WG1780204
Carbon disulfide	ND		0.00100	1	11/25/2021 18:19	WG1780204
Carbon tetrachloride	ND	J4	0.00100	1	11/25/2021 18:19	WG1780204
Chlorobenzene	ND		0.00100	1	11/25/2021 18:19	WG1780204
Chlorodibromomethane	ND		0.00100	1	11/25/2021 18:19	WG1780204
Chloroethane	ND		0.00500	1	11/25/2021 18:19	WG1780204
Chloroform	ND	J4	0.00500	1	11/25/2021 18:19	WG1780204
Chloromethane	ND		0.00250	1	11/25/2021 18:19	WG1780204
Dibromomethane	ND		0.00100	1	11/25/2021 18:19	WG1780204
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/25/2021 18:19	WG1780204
1,2-Dibromoethane	ND		0.00100	1	11/25/2021 18:19	WG1780204
1,2-Dichlorobenzene	ND		0.00100	1	11/25/2021 18:19	WG1780204
1,4-Dichlorobenzene	ND		0.00100	1	11/25/2021 18:19	WG1780204
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/25/2021 18:19	WG1780204
1,1-Dichloroethane	ND		0.00100	1	11/25/2021 18:19	WG1780204
1,2-Dichloroethane	ND		0.00100	1	11/25/2021 18:19	WG1780204
1,1-Dichloroethene	ND		0.00100	1	11/25/2021 18:19	WG1780204
cis-1,2-Dichloroethene	ND		0.00100	1	11/25/2021 18:19	WG1780204
trans-1,2-Dichloroethene	ND	J4	0.00100	1	11/25/2021 18:19	WG1780204
1,2-Dichloropropane	ND		0.00100	1	11/25/2021 18:19	WG1780204
cis-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 18:19	WG1780204
trans-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 18:19	WG1780204
Ethylbenzene	ND		0.00100	1	11/25/2021 18:19	WG1780204
2-Hexanone	ND		0.0100	1	11/25/2021 18:19	WG1780204
Iodomethane	ND		0.0100	1	11/25/2021 18:19	WG1780204
2-Butanone (MEK)	ND		0.0100	1	11/25/2021 18:19	WG1780204
Methylene Chloride	ND	J4	0.00500	1	11/25/2021 18:19	WG1780204
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/25/2021 18:19	WG1780204
Styrene	ND		0.00100	1	11/25/2021 18:19	WG1780204
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 18:19	WG1780204
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 18:19	WG1780204
Tetrachloroethene	ND		0.00100	1	11/25/2021 18:19	WG1780204
Toluene	ND		0.00100	1	11/25/2021 18:19	WG1780204
1,1,1-Trichloroethane	ND	J4	0.00100	1	11/25/2021 18:19	WG1780204

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/25/2021 18:19	WG1780204
Trichloroethene	ND		0.00100	1	11/25/2021 18:19	WG1780204
Trichlorofluoromethane	ND		0.00500	1	11/25/2021 18:19	WG1780204
1,2,3-Trichloropropane	ND		0.00250	1	11/25/2021 18:19	WG1780204
Vinyl acetate	ND		0.0100	1	11/25/2021 18:19	WG1780204
Vinyl chloride	ND		0.00100	1	11/25/2021 18:19	WG1780204
Xylenes, Total	ND		0.00300	1	11/25/2021 18:19	WG1780204
(S) Toluene-d8	*107*		*80.0-120*		*11/25/2021 18:19*	WG1780204
(S) 4-Bromofluorobenzene	*110*		*77.0-126*		*11/25/2021 18:19*	WG1780204
(S) 1,2-Dichloroethane-d4	*115*		*70.0-130*		*11/25/2021 18:19*	WG1780204

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000208	1.04	11/24/2021 19:42	WG1779326
1,2-Dibromo-3-Chloropropane	ND		0.0000208	1.04	11/24/2021 19:42	WG1779326

Sample Narrative:

L1433668-02 WG1779326: Dilution due to sample volume.

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	27.4		2.50	1	12/27/2021 17:32	WG1790962

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/28/2021 03:47	WG1780267

Sample Narrative:
L1433668-03 WG1780267: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/02/2021 14:07	WG1783002

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	23.6		20.0	1	11/25/2021 13:20	WG1780208

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/20/2021 01:22	WG1777474
Chloride	9.89		1.00	1	11/20/2021 01:22	WG1777474
Fluoride	ND		0.150	1	11/20/2021 01:22	WG1777474
Nitrate	0.811		0.100	1	11/20/2021 01:22	WG1777474
Sulfate	ND		5.00	1	11/20/2021 01:22	WG1777474

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	12/01/2021 10:05	WG1778234

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/22/2021 01:51	WG1792056

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	12/27/2021 17:32	WG1790962
Antimony	ND		0.00400	1	12/27/2021 17:32	WG1790962
Arsenic	ND		0.00200	1	12/27/2021 17:32	WG1790962
Barium	0.0102		0.00200	1	12/27/2021 17:32	WG1790962
Beryllium	ND		0.00200	1	12/27/2021 17:32	WG1790962
Cadmium	ND		0.00100	1	12/27/2021 17:32	WG1790962
Calcium	5.73		1.00	1	12/27/2021 17:32	WG1790962
Chromium	ND		0.00200	1	12/29/2021 23:12	WG1796119
Cobalt	ND		0.00200	1	12/27/2021 17:32	WG1790962
Copper	ND		0.00500	1	12/27/2021 17:32	WG1790962

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	1.23		0.100	1	12/27/2021 17:32	WG1790962
Lead	ND		0.00200	1	12/27/2021 17:32	WG1790962
Magnesium	3.18		1.00	1	12/27/2021 17:32	WG1790962
Manganese	0.0940		0.00500	1	12/27/2021 17:32	WG1790962
Nickel	ND		0.00200	1	12/27/2021 17:32	WG1790962
Potassium	ND		2.00	1	12/27/2021 17:32	WG1790962
Selenium	ND		0.00200	1	12/27/2021 17:32	WG1790962
Silver	ND		0.00200	1	12/27/2021 17:32	WG1790962
Sodium	3.98		2.00	1	12/27/2021 17:32	WG1790962
Thallium	ND		0.00200	1	12/27/2021 17:32	WG1790962
Vanadium	ND		0.00500	1	12/27/2021 17:32	WG1790962
Zinc	ND		0.0250	1	12/27/2021 17:32	WG1790962

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/25/2021 18:40	WG1780204
Acrylonitrile	ND		0.0100	1	11/25/2021 18:40	WG1780204
Benzene	ND		0.00100	1	11/25/2021 18:40	WG1780204
Bromochloromethane	ND		0.00100	1	11/25/2021 18:40	WG1780204
Bromodichloromethane	ND		0.00100	1	11/25/2021 18:40	WG1780204
Bromoform	ND		0.00100	1	11/25/2021 18:40	WG1780204
Bromomethane	ND		0.00500	1	11/25/2021 18:40	WG1780204
Carbon disulfide	ND		0.00100	1	11/25/2021 18:40	WG1780204
Carbon tetrachloride	ND	J4	0.00100	1	11/25/2021 18:40	WG1780204
Chlorobenzene	ND		0.00100	1	11/25/2021 18:40	WG1780204
Chlorodibromomethane	ND		0.00100	1	11/25/2021 18:40	WG1780204
Chloroethane	ND		0.00500	1	11/25/2021 18:40	WG1780204
Chloroform	ND	J4	0.00500	1	11/25/2021 18:40	WG1780204
Chloromethane	ND		0.00250	1	11/25/2021 18:40	WG1780204
Dibromomethane	ND		0.00100	1	11/25/2021 18:40	WG1780204
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/25/2021 18:40	WG1780204
1,2-Dibromoethane	ND		0.00100	1	11/25/2021 18:40	WG1780204
1,2-Dichlorobenzene	ND		0.00100	1	11/25/2021 18:40	WG1780204
1,4-Dichlorobenzene	ND		0.00100	1	11/25/2021 18:40	WG1780204
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/25/2021 18:40	WG1780204
1,1-Dichloroethane	ND		0.00100	1	11/25/2021 18:40	WG1780204
1,2-Dichloroethane	ND		0.00100	1	11/25/2021 18:40	WG1780204
1,1-Dichloroethene	ND		0.00100	1	11/25/2021 18:40	WG1780204
cis-1,2-Dichloroethene	ND		0.00100	1	11/25/2021 18:40	WG1780204
trans-1,2-Dichloroethene	ND	J4	0.00100	1	11/25/2021 18:40	WG1780204
1,2-Dichloropropane	ND		0.00100	1	11/25/2021 18:40	WG1780204
cis-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 18:40	WG1780204
trans-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 18:40	WG1780204
Ethylbenzene	ND		0.00100	1	11/25/2021 18:40	WG1780204
2-Hexanone	ND		0.0100	1	11/25/2021 18:40	WG1780204
Iodomethane	ND		0.0100	1	11/25/2021 18:40	WG1780204
2-Butanone (MEK)	ND		0.0100	1	11/25/2021 18:40	WG1780204
Methylene Chloride	ND	J4	0.00500	1	11/25/2021 18:40	WG1780204
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/25/2021 18:40	WG1780204
Styrene	ND		0.00100	1	11/25/2021 18:40	WG1780204
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 18:40	WG1780204
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 18:40	WG1780204
Tetrachloroethene	ND		0.00100	1	11/25/2021 18:40	WG1780204
Toluene	ND		0.00100	1	11/25/2021 18:40	WG1780204
1,1,1-Trichloroethane	ND	J4	0.00100	1	11/25/2021 18:40	WG1780204

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/25/2021 18:40	WG1780204
Trichloroethene	ND		0.00100	1	11/25/2021 18:40	WG1780204
Trichlorofluoromethane	ND		0.00500	1	11/25/2021 18:40	WG1780204
1,2,3-Trichloropropane	ND		0.00250	1	11/25/2021 18:40	WG1780204
Vinyl acetate	ND		0.0100	1	11/25/2021 18:40	WG1780204
Vinyl chloride	ND		0.00100	1	11/25/2021 18:40	WG1780204
Xylenes, Total	ND		0.00300	1	11/25/2021 18:40	WG1780204
(S) Toluene-d8	*110*		*80.0-120*		*11/25/2021 18:40*	WG1780204
(S) 4-Bromofluorobenzene	*114*		*77.0-126*		*11/25/2021 18:40*	WG1780204
(S) 1,2-Dichloroethane-d4	*117*		*70.0-130*		*11/25/2021 18:40*	WG1780204

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000202	1.01	11/24/2021 21:25	WG1779326
1,2-Dibromo-3-Chloropropane	ND		0.0000202	1.01	11/24/2021 21:25	WG1779326

Sample Narrative:

L1433668-03 WG1779326: Dilution due to sample volume.

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	96.1		2.50	1	12/27/2021 17:36	WG1790962

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/28/2021 03:50	WG1780267

Sample Narrative:
L1433668-04 WG1780267: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/02/2021 14:09	WG1783002

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/24/2021 00:23	WG1779376

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/20/2021 01:37	WG1777474
Chloride	78.8		1.00	1	11/20/2021 01:37	WG1777474
Fluoride	ND		0.150	1	11/20/2021 01:37	WG1777474
Nitrate	1.02		0.100	1	11/20/2021 01:37	WG1777474
Sulfate	14.2		5.00	1	11/20/2021 01:37	WG1777474

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	12/01/2021 10:07	WG1778234

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/22/2021 01:54	WG1792056

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.202		0.100	1	12/27/2021 17:36	WG1790962
Antimony	ND		0.00400	1	12/27/2021 17:36	WG1790962
Arsenic	ND		0.00200	1	12/27/2021 17:36	WG1790962
Barium	0.0646		0.00200	1	12/27/2021 17:36	WG1790962
Beryllium	ND		0.00200	1	12/27/2021 17:36	WG1790962
Cadmium	ND		0.00100	1	12/27/2021 17:36	WG1790962
Calcium	18.0		1.00	1	12/27/2021 17:36	WG1790962
Chromium	0.0100		0.00200	1	12/29/2021 23:15	WG1796119
Cobalt	0.00222		0.00200	1	12/27/2021 17:36	WG1790962
Copper	ND		0.00500	1	12/27/2021 17:36	WG1790962

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.708		0.100	1	12/27/2021 17:36	WG1790962
Lead	ND		0.00200	1	12/27/2021 21:00	WG1790962
Magnesium	12.5		1.00	1	12/27/2021 17:36	WG1790962
Manganese	0.281		0.00500	1	12/27/2021 17:36	WG1790962
Nickel	0.00745		0.00200	1	12/27/2021 17:36	WG1790962
Potassium	ND		2.00	1	12/27/2021 17:36	WG1790962
Selenium	ND		0.00200	1	12/27/2021 17:36	WG1790962
Silver	ND		0.00200	1	12/27/2021 17:36	WG1790962
Sodium	20.6		2.00	1	12/27/2021 17:36	WG1790962
Thallium	ND		0.00200	1	12/27/2021 17:36	WG1790962
Vanadium	ND		0.00500	1	12/27/2021 17:36	WG1790962
Zinc	ND		0.0250	1	12/27/2021 17:36	WG1790962

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/25/2021 19:00	WG1780204
Acrylonitrile	ND		0.0100	1	11/25/2021 19:00	WG1780204
Benzene	ND		0.00100	1	11/25/2021 19:00	WG1780204
Bromochloromethane	ND		0.00100	1	11/25/2021 19:00	WG1780204
Bromodichloromethane	ND		0.00100	1	11/25/2021 19:00	WG1780204
Bromoform	ND		0.00100	1	11/25/2021 19:00	WG1780204
Bromomethane	ND		0.00500	1	11/25/2021 19:00	WG1780204
Carbon disulfide	ND		0.00100	1	11/25/2021 19:00	WG1780204
Carbon tetrachloride	ND	J4	0.00100	1	11/25/2021 19:00	WG1780204
Chlorobenzene	ND		0.00100	1	11/25/2021 19:00	WG1780204
Chlorodibromomethane	ND		0.00100	1	11/25/2021 19:00	WG1780204
Chloroethane	ND		0.00500	1	11/25/2021 19:00	WG1780204
Chloroform	ND	J4	0.00500	1	11/25/2021 19:00	WG1780204
Chloromethane	ND		0.00250	1	11/25/2021 19:00	WG1780204
Dibromomethane	ND		0.00100	1	11/25/2021 19:00	WG1780204
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/25/2021 19:00	WG1780204
1,2-Dibromoethane	ND		0.00100	1	11/25/2021 19:00	WG1780204
1,2-Dichlorobenzene	ND		0.00100	1	11/25/2021 19:00	WG1780204
1,4-Dichlorobenzene	ND		0.00100	1	11/25/2021 19:00	WG1780204
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/25/2021 19:00	WG1780204
1,1-Dichloroethane	ND		0.00100	1	11/25/2021 19:00	WG1780204
1,2-Dichloroethane	ND		0.00100	1	11/25/2021 19:00	WG1780204
1,1-Dichloroethene	ND		0.00100	1	11/25/2021 19:00	WG1780204
cis-1,2-Dichloroethene	ND		0.00100	1	11/25/2021 19:00	WG1780204
trans-1,2-Dichloroethene	ND	J4	0.00100	1	11/25/2021 19:00	WG1780204
1,2-Dichloropropane	ND		0.00100	1	11/25/2021 19:00	WG1780204
cis-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 19:00	WG1780204
trans-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 19:00	WG1780204
Ethylbenzene	ND		0.00100	1	11/25/2021 19:00	WG1780204
2-Hexanone	ND		0.0100	1	11/25/2021 19:00	WG1780204
Iodomethane	ND		0.0100	1	11/25/2021 19:00	WG1780204
2-Butanone (MEK)	ND		0.0100	1	11/25/2021 19:00	WG1780204
Methylene Chloride	ND	J4	0.00500	1	11/25/2021 19:00	WG1780204
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/25/2021 19:00	WG1780204
Styrene	ND		0.00100	1	11/25/2021 19:00	WG1780204
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 19:00	WG1780204
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 19:00	WG1780204
Tetrachloroethene	ND		0.00100	1	11/25/2021 19:00	WG1780204
Toluene	ND		0.00100	1	11/25/2021 19:00	WG1780204
1,1,1-Trichloroethane	ND	J4	0.00100	1	11/25/2021 19:00	WG1780204

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/25/2021 19:00	WG1780204
Trichloroethene	ND		0.00100	1	11/25/2021 19:00	WG1780204
Trichlorofluoromethane	ND		0.00500	1	11/25/2021 19:00	WG1780204
1,2,3-Trichloropropane	ND		0.00250	1	11/25/2021 19:00	WG1780204
Vinyl acetate	ND		0.0100	1	11/25/2021 19:00	WG1780204
Vinyl chloride	ND		0.00100	1	11/25/2021 19:00	WG1780204
Xylenes, Total	ND		0.00300	1	11/25/2021 19:00	WG1780204
(S) Toluene-d8	*109*		*80.0-120*		*11/25/2021 19:00*	WG1780204
(S) 4-Bromofluorobenzene	*109*		*77.0-126*		*11/25/2021 19:00*	WG1780204
(S) 1,2-Dichloroethane-d4	*121*		*70.0-130*		*11/25/2021 19:00*	WG1780204

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000208	1.04	11/24/2021 21:37	WG1779326
1,2-Dibromo-3-Chloropropane	ND		0.0000208	1.04	11/24/2021 21:37	WG1779326

Sample Narrative:

L1433668-04 WG1779326: Dilution due to sample volume.

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	55.3		2.50	1	12/27/2021 17:39	WG1790962

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/28/2021 03:53	WG1780267

Sample Narrative:
L1433668-05 WG1780267: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/02/2021 14:10	WG1783002

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/24/2021 00:23	WG1779376

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/19/2021 20:28	WG1777345
Chloride	32.9		1.00	1	11/19/2021 20:28	WG1777345
Fluoride	ND		0.150	1	11/19/2021 20:28	WG1777345
Nitrate	1.51		0.100	1	11/19/2021 20:28	WG1777345
Sulfate	ND		5.00	1	11/19/2021 20:28	WG1777345

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	12/01/2021 10:10	WG1778234

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/22/2021 02:02	WG1792056

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.110		0.100	1	12/27/2021 17:39	WG1790962
Antimony	ND		0.00400	1	12/27/2021 17:39	WG1790962
Arsenic	ND		0.00200	1	12/27/2021 17:39	WG1790962
Barium	0.0140		0.00200	1	12/27/2021 17:39	WG1790962
Beryllium	ND		0.00200	1	12/27/2021 17:39	WG1790962
Cadmium	ND		0.00100	1	12/27/2021 17:39	WG1790962
Calcium	15.1		1.00	1	12/27/2021 17:39	WG1790962
Chromium	ND		0.00200	1	12/29/2021 23:19	WG1796119
Cobalt	ND		0.00200	1	12/27/2021 17:39	WG1790962
Copper	ND		0.00500	1	12/27/2021 17:39	WG1790962

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.689		0.100	1	12/27/2021 17:39	WG1790962
Lead	ND		0.00200	1	12/27/2021 17:39	WG1790962
Magnesium	4.28		1.00	1	12/27/2021 17:39	WG1790962
Manganese	0.0149		0.00500	1	12/27/2021 17:39	WG1790962
Nickel	ND		0.00200	1	12/27/2021 17:39	WG1790962
Potassium	ND		2.00	1	12/27/2021 17:39	WG1790962
Selenium	ND		0.00200	1	12/27/2021 17:39	WG1790962
Silver	ND		0.00200	1	12/27/2021 17:39	WG1790962
Sodium	4.37		2.00	1	12/27/2021 17:39	WG1790962
Thallium	ND		0.00200	1	12/27/2021 17:39	WG1790962
Vanadium	ND		0.00500	1	12/27/2021 17:39	WG1790962
Zinc	ND		0.0250	1	12/27/2021 17:39	WG1790962

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/25/2021 19:21	WG1780204
Acrylonitrile	ND		0.0100	1	11/25/2021 19:21	WG1780204
Benzene	ND		0.00100	1	11/25/2021 19:21	WG1780204
Bromochloromethane	ND		0.00100	1	11/25/2021 19:21	WG1780204
Bromodichloromethane	ND		0.00100	1	11/25/2021 19:21	WG1780204
Bromoform	ND		0.00100	1	11/25/2021 19:21	WG1780204
Bromomethane	ND		0.00500	1	11/25/2021 19:21	WG1780204
Carbon disulfide	ND		0.00100	1	11/25/2021 19:21	WG1780204
Carbon tetrachloride	ND	J4	0.00100	1	11/25/2021 19:21	WG1780204
Chlorobenzene	ND		0.00100	1	11/25/2021 19:21	WG1780204
Chlorodibromomethane	ND		0.00100	1	11/25/2021 19:21	WG1780204
Chloroethane	ND		0.00500	1	11/25/2021 19:21	WG1780204
Chloroform	ND	J4	0.00500	1	11/25/2021 19:21	WG1780204
Chloromethane	ND		0.00250	1	11/25/2021 19:21	WG1780204
Dibromomethane	ND		0.00100	1	11/25/2021 19:21	WG1780204
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/25/2021 19:21	WG1780204
1,2-Dibromoethane	ND		0.00100	1	11/25/2021 19:21	WG1780204
1,2-Dichlorobenzene	ND		0.00100	1	11/25/2021 19:21	WG1780204
1,4-Dichlorobenzene	ND		0.00100	1	11/25/2021 19:21	WG1780204
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/25/2021 19:21	WG1780204
1,1-Dichloroethane	ND		0.00100	1	11/25/2021 19:21	WG1780204
1,2-Dichloroethane	ND		0.00100	1	11/25/2021 19:21	WG1780204
1,1-Dichloroethene	ND		0.00100	1	11/25/2021 19:21	WG1780204
cis-1,2-Dichloroethene	ND		0.00100	1	11/25/2021 19:21	WG1780204
trans-1,2-Dichloroethene	ND	J4	0.00100	1	11/25/2021 19:21	WG1780204
1,2-Dichloropropane	ND		0.00100	1	11/25/2021 19:21	WG1780204
cis-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 19:21	WG1780204
trans-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 19:21	WG1780204
Ethylbenzene	ND		0.00100	1	11/25/2021 19:21	WG1780204
2-Hexanone	ND		0.0100	1	11/25/2021 19:21	WG1780204
Iodomethane	ND		0.0100	1	11/25/2021 19:21	WG1780204
2-Butanone (MEK)	ND		0.0100	1	11/25/2021 19:21	WG1780204
Methylene Chloride	ND	J4	0.00500	1	11/25/2021 19:21	WG1780204
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/25/2021 19:21	WG1780204
Styrene	ND		0.00100	1	11/25/2021 19:21	WG1780204
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 19:21	WG1780204
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 19:21	WG1780204
Tetrachloroethene	ND		0.00100	1	11/25/2021 19:21	WG1780204
Toluene	ND		0.00100	1	11/25/2021 19:21	WG1780204
1,1,1-Trichloroethane	ND	J4	0.00100	1	11/25/2021 19:21	WG1780204

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/25/2021 19:21	WG1780204
Trichloroethene	ND		0.00100	1	11/25/2021 19:21	WG1780204
Trichlorofluoromethane	ND		0.00500	1	11/25/2021 19:21	WG1780204
1,2,3-Trichloropropane	ND		0.00250	1	11/25/2021 19:21	WG1780204
Vinyl acetate	ND		0.0100	1	11/25/2021 19:21	WG1780204
Vinyl chloride	ND		0.00100	1	11/25/2021 19:21	WG1780204
Xylenes, Total	ND		0.00300	1	11/25/2021 19:21	WG1780204
(S) Toluene-d8	*108*		*80.0-120*		*11/25/2021 19:21*	WG1780204
(S) 4-Bromofluorobenzene	*106*		*77.0-126*		*11/25/2021 19:21*	WG1780204
(S) 1,2-Dichloroethane-d4	*121*		*70.0-130*		*11/25/2021 19:21*	WG1780204

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000202	1.01	11/24/2021 21:49	WG1779326
1,2-Dibromo-3-Chloropropane	ND		0.0000202	1.01	11/24/2021 21:49	WG1779326

Sample Narrative:

L1433668-05 WG1779326: Dilution due to sample volume.

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	54.3		2.50	1	12/27/2021 17:43	WG1790962

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/28/2021 03:56	WG1780267

Sample Narrative:
L1433668-06 WG1780267: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/02/2021 14:12	WG1783002

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/24/2021 00:24	WG1779376

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/20/2021 02:22	WG1777474
Chloride	36.0		1.00	1	11/20/2021 02:22	WG1777474
Fluoride	ND		0.150	1	11/20/2021 02:22	WG1777474
Nitrate	0.695		0.100	1	11/20/2021 02:22	WG1777474
Sulfate	ND		5.00	1	11/20/2021 02:22	WG1777474

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	12/01/2021 07:59	WG1778235

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/22/2021 02:05	WG1792056

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.155		0.100	1	12/27/2021 17:43	WG1790962
Antimony	ND		0.00400	1	12/27/2021 17:43	WG1790962
Arsenic	ND		0.00200	1	12/27/2021 17:43	WG1790962
Barium	0.0328		0.00200	1	12/27/2021 17:43	WG1790962
Beryllium	ND		0.00200	1	12/27/2021 17:43	WG1790962
Cadmium	ND		0.00100	1	12/27/2021 17:43	WG1790962
Calcium	13.6		1.00	1	12/27/2021 17:43	WG1790962
Chromium	ND		0.00200	1	01/04/2022 11:41	WG1796647
Cobalt	ND		0.00200	1	12/27/2021 17:43	WG1790962
Copper	ND		0.00500	1	12/27/2021 17:43	WG1790962

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.196		0.100	1	12/27/2021 17:43	WG1790962
Lead	ND		0.00200	1	12/27/2021 17:43	WG1790962
Magnesium	4.92		1.00	1	12/27/2021 17:43	WG1790962
Manganese	0.00608		0.00500	1	12/27/2021 17:43	WG1790962
Nickel	0.00226		0.00200	1	12/27/2021 17:43	WG1790962
Potassium	ND		2.00	1	12/27/2021 17:43	WG1790962
Selenium	ND		0.00200	1	12/27/2021 17:43	WG1790962
Silver	ND		0.00200	1	12/27/2021 17:43	WG1790962
Sodium	5.42		2.00	1	12/27/2021 17:43	WG1790962
Thallium	ND		0.00200	1	12/27/2021 17:43	WG1790962
Vanadium	ND		0.00500	1	12/27/2021 17:43	WG1790962
Zinc	ND		0.0250	1	12/27/2021 17:43	WG1790962

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/25/2021 19:41	WG1780204
Acrylonitrile	ND		0.0100	1	11/25/2021 19:41	WG1780204
Benzene	ND		0.00100	1	11/25/2021 19:41	WG1780204
Bromochloromethane	ND		0.00100	1	11/25/2021 19:41	WG1780204
Bromodichloromethane	ND		0.00100	1	11/25/2021 19:41	WG1780204
Bromoform	ND		0.00100	1	11/25/2021 19:41	WG1780204
Bromomethane	ND		0.00500	1	11/25/2021 19:41	WG1780204
Carbon disulfide	ND		0.00100	1	11/25/2021 19:41	WG1780204
Carbon tetrachloride	ND	J4	0.00100	1	11/25/2021 19:41	WG1780204
Chlorobenzene	ND		0.00100	1	11/25/2021 19:41	WG1780204
Chlorodibromomethane	ND		0.00100	1	11/25/2021 19:41	WG1780204
Chloroethane	ND		0.00500	1	11/25/2021 19:41	WG1780204
Chloroform	ND	J4	0.00500	1	11/25/2021 19:41	WG1780204
Chloromethane	ND		0.00250	1	11/25/2021 19:41	WG1780204
Dibromomethane	ND		0.00100	1	11/25/2021 19:41	WG1780204
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/25/2021 19:41	WG1780204
1,2-Dibromoethane	ND		0.00100	1	11/25/2021 19:41	WG1780204
1,2-Dichlorobenzene	ND		0.00100	1	11/25/2021 19:41	WG1780204
1,4-Dichlorobenzene	ND		0.00100	1	11/25/2021 19:41	WG1780204
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/25/2021 19:41	WG1780204
1,1-Dichloroethane	ND		0.00100	1	11/25/2021 19:41	WG1780204
1,2-Dichloroethane	ND		0.00100	1	11/25/2021 19:41	WG1780204
1,1-Dichloroethene	ND		0.00100	1	11/25/2021 19:41	WG1780204
cis-1,2-Dichloroethene	ND		0.00100	1	11/25/2021 19:41	WG1780204
trans-1,2-Dichloroethene	ND	J4	0.00100	1	11/25/2021 19:41	WG1780204
1,2-Dichloropropane	ND		0.00100	1	11/25/2021 19:41	WG1780204
cis-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 19:41	WG1780204
trans-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 19:41	WG1780204
Ethylbenzene	ND		0.00100	1	11/25/2021 19:41	WG1780204
2-Hexanone	ND		0.0100	1	11/25/2021 19:41	WG1780204
Iodomethane	ND		0.0100	1	11/25/2021 19:41	WG1780204
2-Butanone (MEK)	ND		0.0100	1	11/25/2021 19:41	WG1780204
Methylene Chloride	ND	J4	0.00500	1	11/25/2021 19:41	WG1780204
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/25/2021 19:41	WG1780204
Styrene	ND		0.00100	1	11/25/2021 19:41	WG1780204
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 19:41	WG1780204
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 19:41	WG1780204
Tetrachloroethene	ND		0.00100	1	11/25/2021 19:41	WG1780204
Toluene	ND		0.00100	1	11/25/2021 19:41	WG1780204
1,1,1-Trichloroethane	ND	J4	0.00100	1	11/25/2021 19:41	WG1780204

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/25/2021 19:41	WG1780204
Trichloroethene	ND		0.00100	1	11/25/2021 19:41	WG1780204
Trichlorofluoromethane	ND		0.00500	1	11/25/2021 19:41	WG1780204
1,2,3-Trichloropropane	ND		0.00250	1	11/25/2021 19:41	WG1780204
Vinyl acetate	ND		0.0100	1	11/25/2021 19:41	WG1780204
Vinyl chloride	ND		0.00100	1	11/25/2021 19:41	WG1780204
Xylenes, Total	ND		0.00300	1	11/25/2021 19:41	WG1780204
(S) Toluene-d8	*110*		*80.0-120*		*11/25/2021 19:41*	WG1780204
(S) 4-Bromofluorobenzene	*115*		*77.0-126*		*11/25/2021 19:41*	WG1780204
(S) 1,2-Dichloroethane-d4	*118*		*70.0-130*		*11/25/2021 19:41*	WG1780204

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000226	1.13	11/24/2021 22:41	WG1779326
1,2-Dibromo-3-Chloropropane	ND		0.0000226	1.13	11/24/2021 22:41	WG1779326

Sample Narrative:

L1433668-06 WG1779326: Dilution due to sample volume.

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	85.5		2.50	1	12/27/2021 17:56	WG1790962

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/28/2021 03:59	WG1780267

Sample Narrative:
L1433668-07 WG1780267: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/02/2021 14:13	WG1783002

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/24/2021 00:24	WG1779376

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/20/2021 02:37	WG1777474
Chloride	64.7		1.00	1	11/20/2021 02:37	WG1777474
Fluoride	ND		0.150	1	11/20/2021 02:37	WG1777474
Nitrate	5.50		0.100	1	11/20/2021 02:37	WG1777474
Sulfate	ND		5.00	1	11/20/2021 02:37	WG1777474

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	12/01/2021 08:07	WG1778235

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/22/2021 02:07	WG1792056

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	12/27/2021 17:56	WG1790962
Antimony	ND		0.00400	1	12/27/2021 17:56	WG1790962
Arsenic	ND		0.00200	1	12/27/2021 17:56	WG1790962
Barium	0.0488		0.00200	1	12/27/2021 17:56	WG1790962
Beryllium	ND		0.00200	1	12/27/2021 17:56	WG1790962
Cadmium	ND		0.00100	1	12/27/2021 17:56	WG1790962
Calcium	22.4		1.00	1	12/27/2021 17:56	WG1790962
Chromium	ND		0.00200	1	12/29/2021 23:22	WG1796119
Cobalt	ND		0.00200	1	12/27/2021 17:56	WG1790962
Copper	ND		0.00500	1	12/27/2021 17:56	WG1790962

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.141		0.100	1	12/27/2021 17:56	WG1790962
Lead	ND		0.00200	1	12/27/2021 17:56	WG1790962
Magnesium	7.16		1.00	1	12/27/2021 17:56	WG1790962
Manganese	0.0121		0.00500	1	12/27/2021 17:56	WG1790962
Nickel	ND		0.00200	1	12/27/2021 17:56	WG1790962
Potassium	2.09	B	2.00	1	12/27/2021 17:56	WG1790962
Selenium	ND		0.00200	1	12/27/2021 17:56	WG1790962
Silver	ND		0.00200	1	12/27/2021 17:56	WG1790962
Sodium	14.4		2.00	1	12/27/2021 17:56	WG1790962
Thallium	ND		0.00200	1	12/27/2021 17:56	WG1790962
Vanadium	ND		0.00500	1	12/27/2021 17:56	WG1790962
Zinc	ND		0.0250	1	12/27/2021 17:56	WG1790962

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/25/2021 20:02	WG1780204
Acrylonitrile	ND		0.0100	1	11/25/2021 20:02	WG1780204
Benzene	ND		0.00100	1	11/25/2021 20:02	WG1780204
Bromochloromethane	ND		0.00100	1	11/25/2021 20:02	WG1780204
Bromodichloromethane	ND		0.00100	1	11/25/2021 20:02	WG1780204
Bromoform	ND		0.00100	1	11/25/2021 20:02	WG1780204
Bromomethane	ND		0.00500	1	11/25/2021 20:02	WG1780204
Carbon disulfide	ND		0.00100	1	11/25/2021 20:02	WG1780204
Carbon tetrachloride	ND	J4	0.00100	1	11/25/2021 20:02	WG1780204
Chlorobenzene	ND		0.00100	1	11/25/2021 20:02	WG1780204
Chlorodibromomethane	ND		0.00100	1	11/25/2021 20:02	WG1780204
Chloroethane	ND		0.00500	1	11/25/2021 20:02	WG1780204
Chloroform	ND	J4	0.00500	1	11/25/2021 20:02	WG1780204
Chloromethane	ND		0.00250	1	11/25/2021 20:02	WG1780204
Dibromomethane	ND		0.00100	1	11/25/2021 20:02	WG1780204
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/25/2021 20:02	WG1780204
1,2-Dibromoethane	ND		0.00100	1	11/25/2021 20:02	WG1780204
1,2-Dichlorobenzene	ND		0.00100	1	11/25/2021 20:02	WG1780204
1,4-Dichlorobenzene	ND		0.00100	1	11/25/2021 20:02	WG1780204
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/25/2021 20:02	WG1780204
1,1-Dichloroethane	ND		0.00100	1	11/25/2021 20:02	WG1780204
1,2-Dichloroethane	ND		0.00100	1	11/25/2021 20:02	WG1780204
1,1-Dichloroethene	ND		0.00100	1	11/25/2021 20:02	WG1780204
cis-1,2-Dichloroethene	ND		0.00100	1	11/25/2021 20:02	WG1780204
trans-1,2-Dichloroethene	ND	J4	0.00100	1	11/25/2021 20:02	WG1780204
1,2-Dichloropropane	ND		0.00100	1	11/25/2021 20:02	WG1780204
cis-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 20:02	WG1780204
trans-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 20:02	WG1780204
Ethylbenzene	ND		0.00100	1	11/25/2021 20:02	WG1780204
2-Hexanone	ND		0.0100	1	11/25/2021 20:02	WG1780204
Iodomethane	ND		0.0100	1	11/25/2021 20:02	WG1780204
2-Butanone (MEK)	ND		0.0100	1	11/25/2021 20:02	WG1780204
Methylene Chloride	ND	J4	0.00500	1	11/25/2021 20:02	WG1780204
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/25/2021 20:02	WG1780204
Styrene	ND		0.00100	1	11/25/2021 20:02	WG1780204
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 20:02	WG1780204
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 20:02	WG1780204
Tetrachloroethene	ND		0.00100	1	11/25/2021 20:02	WG1780204
Toluene	ND		0.00100	1	11/25/2021 20:02	WG1780204
1,1,1-Trichloroethane	ND	J4	0.00100	1	11/25/2021 20:02	WG1780204

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/25/2021 20:02	WG1780204
Trichloroethene	ND		0.00100	1	11/25/2021 20:02	WG1780204
Trichlorofluoromethane	ND		0.00500	1	11/25/2021 20:02	WG1780204
1,2,3-Trichloropropane	ND		0.00250	1	11/25/2021 20:02	WG1780204
Vinyl acetate	ND		0.0100	1	11/25/2021 20:02	WG1780204
Vinyl chloride	ND		0.00100	1	11/25/2021 20:02	WG1780204
Xylenes, Total	ND		0.00300	1	11/25/2021 20:02	WG1780204
(S) Toluene-d8	*109*		*80.0-120*		*11/25/2021 20:02*	WG1780204
(S) 4-Bromofluorobenzene	*109*		*77.0-126*		*11/25/2021 20:02*	WG1780204
(S) 1,2-Dichloroethane-d4	*122*		*70.0-130*		*11/25/2021 20:02*	WG1780204

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	11/24/2021 22:54	WG1779326
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	11/24/2021 22:54	WG1779326

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	83.3		2.50	1	12/27/2021 17:59	WG1790962

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	21.0		20.0	1	11/28/2021 04:02	WG1780267

Sample Narrative:
L1433668-08 WG1780267: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/02/2021 14:15	WG1783002

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/24/2021 00:24	WG1779376

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/19/2021 23:53	WG1777474
Chloride	13.8		1.00	1	11/19/2021 23:53	WG1777474
Fluoride	0.230		0.150	1	11/19/2021 23:53	WG1777474
Nitrate	0.394		0.100	1	11/19/2021 23:53	WG1777474
Sulfate	55.9		5.00	1	11/19/2021 23:53	WG1777474

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	12/01/2021 08:09	WG1778235

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/22/2021 02:10	WG1792056

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.243		0.100	1	12/27/2021 17:59	WG1790962
Antimony	ND		0.00400	1	12/27/2021 17:59	WG1790962
Arsenic	ND		0.00200	1	12/27/2021 17:59	WG1790962
Barium	0.0567		0.00200	1	12/27/2021 17:59	WG1790962
Beryllium	ND		0.00200	1	12/27/2021 17:59	WG1790962
Cadmium	0.00190		0.00100	1	12/27/2021 17:59	WG1790962
Calcium	21.9		1.00	1	12/27/2021 17:59	WG1790962
Chromium	ND		0.00200	1	12/29/2021 23:26	WG1796119
Cobalt	ND		0.00200	1	12/27/2021 17:59	WG1790962
Copper	ND		0.00500	1	12/27/2021 17:59	WG1790962

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.273		0.100	1	12/27/2021 17:59	WG1790962
Lead	ND		0.00200	1	12/27/2021 17:59	WG1790962
Magnesium	6.95		1.00	1	12/27/2021 17:59	WG1790962
Manganese	0.0329		0.00500	1	12/27/2021 17:59	WG1790962
Nickel	0.00258		0.00200	1	12/27/2021 17:59	WG1790962
Potassium	6.31		2.00	1	12/27/2021 17:59	WG1790962
Selenium	ND		0.00200	1	12/27/2021 17:59	WG1790962
Silver	ND		0.00200	1	12/27/2021 17:59	WG1790962
Sodium	5.90		2.00	1	12/27/2021 17:59	WG1790962
Thallium	ND		0.00200	1	12/27/2021 17:59	WG1790962
Vanadium	ND		0.00500	1	12/27/2021 17:59	WG1790962
Zinc	ND		0.0250	1	12/27/2021 17:59	WG1790962

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/25/2021 20:22	WG1780204
Acrylonitrile	ND		0.0100	1	11/25/2021 20:22	WG1780204
Benzene	ND		0.00100	1	11/25/2021 20:22	WG1780204
Bromochloromethane	ND		0.00100	1	11/25/2021 20:22	WG1780204
Bromodichloromethane	ND		0.00100	1	11/25/2021 20:22	WG1780204
Bromoform	ND		0.00100	1	11/25/2021 20:22	WG1780204
Bromomethane	ND		0.00500	1	11/25/2021 20:22	WG1780204
Carbon disulfide	ND		0.00100	1	11/25/2021 20:22	WG1780204
Carbon tetrachloride	ND	J4	0.00100	1	11/25/2021 20:22	WG1780204
Chlorobenzene	ND		0.00100	1	11/25/2021 20:22	WG1780204
Chlorodibromomethane	ND		0.00100	1	11/25/2021 20:22	WG1780204
Chloroethane	ND		0.00500	1	11/25/2021 20:22	WG1780204
Chloroform	ND	J4	0.00500	1	11/25/2021 20:22	WG1780204
Chloromethane	ND		0.00250	1	11/25/2021 20:22	WG1780204
Dibromomethane	ND		0.00100	1	11/25/2021 20:22	WG1780204
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/25/2021 20:22	WG1780204
1,2-Dibromoethane	ND		0.00100	1	11/25/2021 20:22	WG1780204
1,2-Dichlorobenzene	ND		0.00100	1	11/25/2021 20:22	WG1780204
1,4-Dichlorobenzene	ND		0.00100	1	11/25/2021 20:22	WG1780204
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/25/2021 20:22	WG1780204
1,1-Dichloroethane	ND		0.00100	1	11/25/2021 20:22	WG1780204
1,2-Dichloroethane	ND		0.00100	1	11/25/2021 20:22	WG1780204
1,1-Dichloroethene	ND		0.00100	1	11/25/2021 20:22	WG1780204
cis-1,2-Dichloroethene	ND		0.00100	1	11/25/2021 20:22	WG1780204
trans-1,2-Dichloroethene	ND	J4	0.00100	1	11/25/2021 20:22	WG1780204
1,2-Dichloropropane	ND		0.00100	1	11/25/2021 20:22	WG1780204
cis-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 20:22	WG1780204
trans-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 20:22	WG1780204
Ethylbenzene	ND		0.00100	1	11/25/2021 20:22	WG1780204
2-Hexanone	ND		0.0100	1	11/25/2021 20:22	WG1780204
Iodomethane	ND		0.0100	1	11/25/2021 20:22	WG1780204
2-Butanone (MEK)	ND		0.0100	1	11/25/2021 20:22	WG1780204
Methylene Chloride	ND	J4	0.00500	1	11/25/2021 20:22	WG1780204
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/25/2021 20:22	WG1780204
Styrene	ND		0.00100	1	11/25/2021 20:22	WG1780204
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 20:22	WG1780204
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 20:22	WG1780204
Tetrachloroethene	ND		0.00100	1	11/25/2021 20:22	WG1780204
Toluene	ND		0.00100	1	11/25/2021 20:22	WG1780204
1,1,1-Trichloroethane	ND	J4	0.00100	1	11/25/2021 20:22	WG1780204

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/25/2021 20:22	WG1780204
Trichloroethene	ND		0.00100	1	11/25/2021 20:22	WG1780204
Trichlorofluoromethane	ND		0.00500	1	11/25/2021 20:22	WG1780204
1,2,3-Trichloropropane	ND		0.00250	1	11/25/2021 20:22	WG1780204
Vinyl acetate	ND		0.0100	1	11/25/2021 20:22	WG1780204
Vinyl chloride	ND		0.00100	1	11/25/2021 20:22	WG1780204
Xylenes, Total	ND		0.00300	1	11/25/2021 20:22	WG1780204
(S) Toluene-d8	*110*		*80.0-120*		*11/25/2021 20:22*	WG1780204
(S) 4-Bromofluorobenzene	*108*		*77.0-126*		*11/25/2021 20:22*	WG1780204
(S) 1,2-Dichloroethane-d4	*122*		*70.0-130*		*11/25/2021 20:22*	WG1780204

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000210	1.05	11/24/2021 23:07	WG1779326
1,2-Dibromo-3-Chloropropane	ND		0.0000210	1.05	11/24/2021 23:07	WG1779326

Sample Narrative:

L1433668-08 WG1779326: Dilution due to sample volume.

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	ND		2.50	1	12/27/2021 18:03	WG1790962

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/28/2021 04:06	WG1780267

Sample Narrative:
L1433668-09 WG1780267: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/02/2021 14:16	WG1783002

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/24/2021 00:24	WG1779376

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/19/2021 20:44	WG1777345
Chloride	ND		1.00	1	11/19/2021 20:44	WG1777345
Fluoride	ND		0.150	1	11/19/2021 20:44	WG1777345
Nitrate	ND		0.100	1	11/19/2021 20:44	WG1777345
Sulfate	ND		5.00	1	11/19/2021 20:44	WG1777345

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	12/01/2021 08:11	WG1778235

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/22/2021 02:13	WG1792056

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	12/27/2021 18:03	WG1790962
Antimony	ND		0.00400	1	12/27/2021 18:03	WG1790962
Arsenic	ND		0.00200	1	12/27/2021 18:03	WG1790962
Barium	ND		0.00200	1	12/27/2021 18:03	WG1790962
Beryllium	ND		0.00200	1	12/27/2021 18:03	WG1790962
Cadmium	ND		0.00100	1	12/27/2021 18:03	WG1790962
Calcium	ND		1.00	1	12/27/2021 18:03	WG1790962
Chromium	ND		0.0180	9	12/29/2021 23:29	WG1796119
Cobalt	ND		0.00200	1	12/27/2021 18:03	WG1790962
Copper	ND		0.00500	1	12/27/2021 18:03	WG1790962

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	12/27/2021 18:03	WG1790962
Lead	ND		0.00200	1	12/27/2021 18:03	WG1790962
Magnesium	ND		1.00	1	12/27/2021 18:03	WG1790962
Manganese	ND		0.00500	1	12/27/2021 18:03	WG1790962
Nickel	ND		0.00200	1	12/27/2021 18:03	WG1790962
Potassium	ND		2.00	1	12/27/2021 18:03	WG1790962
Selenium	ND		0.00200	1	12/27/2021 18:03	WG1790962
Silver	ND		0.00200	1	12/27/2021 18:03	WG1790962
Sodium	ND		2.00	1	12/27/2021 18:03	WG1790962
Thallium	ND		0.00200	1	12/27/2021 18:03	WG1790962
Vanadium	ND		0.00500	1	12/27/2021 18:03	WG1790962
Zinc	ND		0.0250	1	12/27/2021 18:03	WG1790962

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/25/2021 17:18	WG1780204
Acrylonitrile	ND		0.0100	1	11/25/2021 17:18	WG1780204
Benzene	ND		0.00100	1	11/25/2021 17:18	WG1780204
Bromochloromethane	ND		0.00100	1	11/25/2021 17:18	WG1780204
Bromodichloromethane	ND		0.00100	1	11/25/2021 17:18	WG1780204
Bromoform	ND		0.00100	1	11/25/2021 17:18	WG1780204
Bromomethane	ND		0.00500	1	11/25/2021 17:18	WG1780204
Carbon disulfide	ND		0.00100	1	11/25/2021 17:18	WG1780204
Carbon tetrachloride	ND	J4	0.00100	1	11/25/2021 17:18	WG1780204
Chlorobenzene	ND		0.00100	1	11/25/2021 17:18	WG1780204
Chlorodibromomethane	ND		0.00100	1	11/25/2021 17:18	WG1780204
Chloroethane	ND		0.00500	1	11/25/2021 17:18	WG1780204
Chloroform	ND	J4	0.00500	1	11/25/2021 17:18	WG1780204
Chloromethane	ND		0.00250	1	11/25/2021 17:18	WG1780204
Dibromomethane	ND		0.00100	1	11/25/2021 17:18	WG1780204
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/25/2021 17:18	WG1780204
1,2-Dibromoethane	ND		0.00100	1	11/25/2021 17:18	WG1780204
1,2-Dichlorobenzene	ND		0.00100	1	11/25/2021 17:18	WG1780204
1,4-Dichlorobenzene	ND		0.00100	1	11/25/2021 17:18	WG1780204
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/25/2021 17:18	WG1780204
1,1-Dichloroethane	ND		0.00100	1	11/25/2021 17:18	WG1780204
1,2-Dichloroethane	ND		0.00100	1	11/25/2021 17:18	WG1780204
1,1-Dichloroethene	ND		0.00100	1	11/25/2021 17:18	WG1780204
cis-1,2-Dichloroethene	ND		0.00100	1	11/25/2021 17:18	WG1780204
trans-1,2-Dichloroethene	ND	J4	0.00100	1	11/25/2021 17:18	WG1780204
1,2-Dichloropropane	ND		0.00100	1	11/25/2021 17:18	WG1780204
cis-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 17:18	WG1780204
trans-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 17:18	WG1780204
Ethylbenzene	ND		0.00100	1	11/25/2021 17:18	WG1780204
2-Hexanone	ND		0.0100	1	11/25/2021 17:18	WG1780204
Iodomethane	ND		0.0100	1	11/25/2021 17:18	WG1780204
2-Butanone (MEK)	ND		0.0100	1	11/25/2021 17:18	WG1780204
Methylene Chloride	ND	J4	0.00500	1	11/25/2021 17:18	WG1780204
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/25/2021 17:18	WG1780204
Styrene	ND		0.00100	1	11/25/2021 17:18	WG1780204
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 17:18	WG1780204
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 17:18	WG1780204
Tetrachloroethene	ND		0.00100	1	11/25/2021 17:18	WG1780204
Toluene	ND		0.00100	1	11/25/2021 17:18	WG1780204
1,1,1-Trichloroethane	ND	J4	0.00100	1	11/25/2021 17:18	WG1780204

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/25/2021 17:18	WG1780204
Trichloroethene	ND		0.00100	1	11/25/2021 17:18	WG1780204
Trichlorofluoromethane	ND		0.00500	1	11/25/2021 17:18	WG1780204
1,2,3-Trichloropropane	ND		0.00250	1	11/25/2021 17:18	WG1780204
Vinyl acetate	ND		0.0100	1	11/25/2021 17:18	WG1780204
Vinyl chloride	ND		0.00100	1	11/25/2021 17:18	WG1780204
Xylenes, Total	ND		0.00300	1	11/25/2021 17:18	WG1780204
(S) Toluene-d8	*112*		*80.0-120*		*11/25/2021 17:18*	WG1780204
(S) 4-Bromofluorobenzene	*108*		*77.0-126*		*11/25/2021 17:18*	WG1780204
(S) 1,2-Dichloroethane-d4	*123*		*70.0-130*		*11/25/2021 17:18*	WG1780204

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000226	1.13	11/24/2021 23:20	WG1779326
1,2-Dibromo-3-Chloropropane	ND		0.0000226	1.13	11/24/2021 23:20	WG1779326

Sample Narrative:

L1433668-09 WG1779326: Dilution due to sample volume.

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/25/2021 16:57	WG1780204
Acrylonitrile	ND		0.0100	1	11/25/2021 16:57	WG1780204
Benzene	ND		0.00100	1	11/25/2021 16:57	WG1780204
Bromochloromethane	ND		0.00100	1	11/25/2021 16:57	WG1780204
Bromodichloromethane	ND		0.00100	1	11/25/2021 16:57	WG1780204
Bromoform	ND		0.00100	1	11/25/2021 16:57	WG1780204
Bromomethane	ND		0.00500	1	11/25/2021 16:57	WG1780204
Carbon disulfide	ND		0.00100	1	11/25/2021 16:57	WG1780204
Carbon tetrachloride	ND	J4	0.00100	1	11/25/2021 16:57	WG1780204
Chlorobenzene	ND		0.00100	1	11/25/2021 16:57	WG1780204
Chlorodibromomethane	ND		0.00100	1	11/25/2021 16:57	WG1780204
Chloroethane	ND		0.00500	1	11/25/2021 16:57	WG1780204
Chloroform	ND	J4	0.00500	1	11/25/2021 16:57	WG1780204
Chloromethane	ND		0.00250	1	11/25/2021 16:57	WG1780204
Dibromomethane	ND		0.00100	1	11/25/2021 16:57	WG1780204
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/25/2021 16:57	WG1780204
1,2-Dibromoethane	ND		0.00100	1	11/25/2021 16:57	WG1780204
1,2-Dichlorobenzene	ND		0.00100	1	11/25/2021 16:57	WG1780204
1,4-Dichlorobenzene	ND		0.00100	1	11/25/2021 16:57	WG1780204
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/25/2021 16:57	WG1780204
1,1-Dichloroethane	ND		0.00100	1	11/25/2021 16:57	WG1780204
1,2-Dichloroethane	ND		0.00100	1	11/25/2021 16:57	WG1780204
1,1-Dichloroethene	ND		0.00100	1	11/25/2021 16:57	WG1780204
cis-1,2-Dichloroethene	ND		0.00100	1	11/25/2021 16:57	WG1780204
trans-1,2-Dichloroethene	ND	J4	0.00100	1	11/25/2021 16:57	WG1780204
1,2-Dichloropropane	ND		0.00100	1	11/25/2021 16:57	WG1780204
cis-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 16:57	WG1780204
trans-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 16:57	WG1780204
Ethylbenzene	ND		0.00100	1	11/25/2021 16:57	WG1780204
2-Hexanone	ND		0.0100	1	11/25/2021 16:57	WG1780204
Iodomethane	ND		0.0100	1	11/25/2021 16:57	WG1780204
2-Butanone (MEK)	ND		0.0100	1	11/25/2021 16:57	WG1780204
Methylene Chloride	ND	J4	0.00500	1	11/25/2021 16:57	WG1780204
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/25/2021 16:57	WG1780204
Styrene	ND		0.00100	1	11/25/2021 16:57	WG1780204
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 16:57	WG1780204
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 16:57	WG1780204
Tetrachloroethene	ND		0.00100	1	11/25/2021 16:57	WG1780204
Toluene	ND		0.00100	1	11/25/2021 16:57	WG1780204
1,1,1-Trichloroethane	ND	J4	0.00100	1	11/25/2021 16:57	WG1780204
1,1,2-Trichloroethane	ND		0.00100	1	11/25/2021 16:57	WG1780204
Trichloroethene	ND		0.00100	1	11/25/2021 16:57	WG1780204
Trichlorofluoromethane	ND		0.00500	1	11/25/2021 16:57	WG1780204
1,2,3-Trichloropropane	ND		0.00250	1	11/25/2021 16:57	WG1780204
Vinyl acetate	ND		0.0100	1	11/25/2021 16:57	WG1780204
Vinyl chloride	ND		0.00100	1	11/25/2021 16:57	WG1780204
Xylenes, Total	ND		0.00300	1	11/25/2021 16:57	WG1780204
(S) Toluene-d8	*112*		*80.0-120*		*11/25/2021 16:57*	WG1780204
(S) 4-Bromofluorobenzene	*110*		*77.0-126*		*11/25/2021 16:57*	WG1780204
(S) 1,2-Dichloroethane-d4	*120*		*70.0-130*		*11/25/2021 16:57*	WG1780204

Method Blank (MB)

(MB) R3734361-2 11/28/21 02:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1433582-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1433582-03 11/28/21 03:02 • (DUP) R3734361-3 11/28/21 03:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	265	265	1	0.142		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

L1433727-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1433727-02 11/28/21 04:18 • (DUP) R3734361-4 11/28/21 04:20

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3734361-1 11/28/21 02:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	92.8	92.8	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

Method Blank (MB)

(MB) R3736496-1 12/02/21 13:48

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ammonia Nitrogen	U		0.117	0.250

L1433668-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1433668-02 12/02/21 14:00 • (DUP) R3736496-5 12/02/21 14:01

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	ND	ND	1	0.000		10

L1433793-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1433793-01 12/02/21 14:30 • (DUP) R3736496-7 12/02/21 14:31

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	ND	ND	1	0.000		10

Laboratory Control Sample (LCS)

(LCS) R3736496-2 12/02/21 13:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ammonia Nitrogen	7.50	7.94	106	90.0-110	

L1433668-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433668-01 12/02/21 13:55 • (MS) R3736496-3 12/02/21 13:57 • (MSD) R3736496-4 12/02/21 13:58

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	5.00	ND	5.29	5.33	106	107	1	90.0-110			0.678	10

L1433792-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1433792-01 12/02/21 14:27 • (MS) R3736496-6 12/02/21 14:28

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ammonia Nitrogen	5.00	4.07	9.08	100	1	90.0-110	

Method Blank (MB)

(MB) R3733225-1 11/24/21 00:21

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
COD	U		11.7	20.0

L1433789-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1433789-01 11/24/21 00:24 • (DUP) R3733225-5 11/24/21 00:25

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	261	253	1	3.04		20

L1433791-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1433791-01 11/24/21 00:25 • (DUP) R3733225-6 11/24/21 00:26

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	289	295	1	2.07		20

Laboratory Control Sample (LCS)

(LCS) R3733225-2 11/24/21 00:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	500	519	104	90.0-110	

L1433582-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433582-05 11/24/21 00:21 • (MS) R3733225-3 11/24/21 00:22 • (MSD) R3733225-4 11/24/21 00:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
COD	500	28.8	522	518	98.7	97.9	1	80.0-120			0.798	20

Method Blank (MB)

(MB) R3733862-1 11/25/21 13:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
COD	U		11.7	20.0

L1433505-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1433505-04 11/25/21 13:16 • (DUP) R3733862-5 11/25/21 13:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	64.7	65.0	1	0.571		20

L1433515-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1433515-01 11/25/21 13:16 • (DUP) R3733862-6 11/25/21 13:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	227	227	1	0.0220		20

Laboratory Control Sample (LCS)

(LCS) R3733862-2 11/25/21 13:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	500	520	104	90.0-110	

L1433413-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433413-02 11/25/21 13:14 • (MS) R3733862-3 11/25/21 13:14 • (MSD) R3733862-4 11/25/21 13:14

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
COD	500	ND	511	514	102	103	1	80.0-120			0.560	20

Method Blank (MB)

(MB) R3732813-1 11/19/21 09:46

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	0.589	J	0.353	1.00
Chloride	0.387	J	0.379	1.00
Fluoride	U		0.0640	0.150
Nitrate	0.0573	J	0.0480	0.100
Sulfate	U		0.594	5.00

L1433346-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1433346-01 11/19/21 13:01 • (DUP) R3732813-3 11/19/21 14:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	0.000		15
Chloride	4.66	4.67	1	0.172		15
Fluoride	0.351	0.352	1	0.199		15
Nitrate	0.701	0.707	1	0.853		15
Sulfate	8.68	8.69	1	0.137		15

L1433362-16 Original Sample (OS) • Duplicate (DUP)

(OS) L1433362-16 11/19/21 21:00 • (DUP) R3732813-6 11/19/21 19:23

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	161	161	5	0.213		15
Fluoride	ND	ND	5	15.9	P1	15
Nitrate	13.2	13.2	5	0.223		15
Sulfate	86.5	86.9	5	0.364		15

Laboratory Control Sample (LCS)

(LCS) R3732813-2 11/19/21 10:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	39.4	98.4	80.0-120	
Chloride	40.0	40.4	101	80.0-120	
Fluoride	8.00	8.28	104	80.0-120	
Nitrate	8.00	8.31	104	80.0-120	
Sulfate	40.0	40.3	101	80.0-120	

L1433346-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433346-02 11/19/21 13:16 • (MS) R3732813-4 11/19/21 15:40 • (MSD) R3732813-5 11/19/21 15:56

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50.0	13.0	65.7	66.1	105	106	1	80.0-120			0.583	15
Fluoride	5.00	0.207	5.38	5.35	104	103	1	80.0-120			0.652	15
Nitrate	5.00	1.34	6.68	6.72	107	107	1	80.0-120			0.548	15
Sulfate	50.0	6.40	59.3	59.7	106	107	1	80.0-120			0.701	15

L1433362-18 Original Sample (OS) • Matrix Spike (MS)

(OS) L1433362-18 11/19/21 19:39 • (MS) R3732813-7 11/19/21 19:55

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Fluoride	5.00	ND	3.76	72.9	1	80.0-120	J6
Nitrate	5.00	ND	4.92	98.4	1	80.0-120	
Sulfate	50.0	ND	50.2	99.1	1	80.0-120	

Method Blank (MB)

(MB) R3734863-1 11/19/21 16:41

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	U		0.353	1.00
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Nitrate	U		0.0480	0.100
Sulfate	U		0.594	5.00

L1433416-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1433416-01 11/19/21 17:17 • (DUP) R3734863-3 11/19/21 17:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	7.47		15
Chloride	11.7	11.8	1	0.863		15
Fluoride	ND	ND	1	0.737		15
Nitrate	ND	ND	1	0.000		15
Sulfate	ND	ND	1	2.66		15

L1433437-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1433437-06 11/20/21 05:21 • (DUP) R3734865-5 11/20/21 05:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	1.49	1.49	1	0.168		15
Chloride	22.4	21.9	1	2.21		15
Fluoride	0.180	0.181	1	0.832		15
Nitrate	ND	ND	1	0.000		15
Sulfate	6.18	6.16	1	0.403		15

Laboratory Control Sample (LCS)

(LCS) R3734863-2 11/19/21 16:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	39.3	98.3	80.0-120	
Chloride	40.0	39.7	99.2	80.0-120	
Fluoride	8.00	8.33	104	80.0-120	
Nitrate	8.00	8.32	104	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3734863-2 11/19/21 16:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sulfate	40.0	39.7	99.3	80.0-120	

L1433416-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433416-01 11/19/21 17:17 • (MS) R3734863-4 11/19/21 17:43 • (MSD) R3734863-5 11/19/21 17:56

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	ND	50.9	51.1	101	101	1	80.0-120			0.300	15
Chloride	50.0	11.7	63.8	63.9	104	104	1	80.0-120			0.190	15
Fluoride	5.00	ND	5.31	5.21	104	102	1	80.0-120			1.87	15
Nitrate	5.00	ND	5.11	5.11	102	102	1	80.0-120			0.145	15
Sulfate	50.0	ND	52.8	52.5	102	102	1	80.0-120			0.549	15

L1433437-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1433437-06 11/20/21 05:21 • (MS) R3734865-6 11/20/21 05:51

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	1.49	49.4	95.7	1	80.0-120	
Chloride	50.0	22.4	71.1	97.5	1	80.0-120	
Fluoride	5.00	0.180	5.01	96.6	1	80.0-120	
Nitrate	5.00	ND	4.42	88.3	1	80.0-120	
Sulfate	50.0	6.18	55.0	97.6	1	80.0-120	

Method Blank (MB)

(MB) R3735372-1 11/20/21 07:05

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	U		0.353	1.00
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Nitrate	U		0.0480	0.100
Sulfate	U		0.594	5.00

L1433758-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1433758-03 11/20/21 09:58 • (DUP) R3735372-3 11/20/21 10:45

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	0.000		15
Chloride	4.94	4.91	1	0.575		15
Fluoride	0.157	0.151	1	3.95		15
Nitrate	0.483	0.462	1	4.40		15
Sulfate	61.8	62.0	1	0.271		15

L1433788-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1433788-01 11/20/21 15:26 • (DUP) R3735450-5 11/20/21 15:42

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	0.000		15
Chloride	46.4	46.8	1	0.703		15
Fluoride	0.198	0.194	1	2.04		15
Nitrate	ND	ND	1	0.000		15
Sulfate	ND	ND	1	6.21		15

Laboratory Control Sample (LCS)

(LCS) R3735372-2 11/20/21 07:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	39.5	98.8	80.0-120	
Chloride	40.0	40.8	102	80.0-120	
Fluoride	8.00	7.97	99.7	80.0-120	
Nitrate	8.00	7.94	99.2	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3735372-2 11/20/21 07:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sulfate	40.0	40.4	101	80.0-120	

L1433758-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433758-03 11/20/21 09:58 • (MS) R3735372-4 11/20/21 11:00 • (MSD) R3735372-5 11/20/21 11:14

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	ND	48.3	48.5	96.6	97.0	1	80.0-120			0.441	15
Chloride	50.0	4.94	56.9	56.3	104	103	1	80.0-120			1.02	15
Fluoride	5.00	0.157	5.10	5.11	98.9	99.1	1	80.0-120			0.159	15
Nitrate	5.00	0.483	4.83	4.74	86.9	85.2	1	80.0-120			1.80	15
Sulfate	50.0	61.8	110	109	96.9	94.0	1	80.0-120	E	E	1.32	15

L1433788-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1433788-01 11/20/21 15:26 • (MS) R3735450-6 11/20/21 16:29

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	ND	49.5	99.0	1	80.0-120	
Chloride	50.0	46.4	94.2	95.6	1	80.0-120	
Fluoride	5.00	0.198	4.20	80.1	1	80.0-120	
Nitrate	5.00	ND	4.96	99.1	1	80.0-120	
Sulfate	50.0	ND	49.4	97.5	1	80.0-120	

Method Blank (MB)

(MB) R3735701-1 12/01/21 09:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Mercury	U		0.000100	0.000200

Laboratory Control Sample (LCS)

(LCS) R3735701-2 12/01/21 09:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00302	101	80.0-120	

L1433510-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433510-08 12/01/21 09:07 • (MS) R3735701-3 12/01/21 09:09 • (MSD) R3735701-4 12/01/21 09:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.00300	ND	0.00295	0.00295	98.4	98.4	1	75.0-125			0.0251	20

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3735673-1 12/01/21 07:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Mercury	U		0.000100	0.000200

Laboratory Control Sample (LCS)

(LCS) R3735673-2 12/01/21 07:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00305	102	80.0-120	

L1433668-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433668-06 12/01/21 07:59 • (MS) R3735673-3 12/01/21 08:02 • (MSD) R3735673-4 12/01/21 08:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.00300	ND	0.00296	0.00300	98.6	99.8	1	75.0-125			1.20	20

QUALITY CONTROL SUMMARY

L1433668-01,02,03,04,05,06,07,08,09

Method Blank (MB)

(MB) R3743730-1 12/22/21 01:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Boron	U		0.0200	0.200

Laboratory Control Sample (LCS)

(LCS) R3743730-2 12/22/21 01:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.963	96.3	80.0-120	

L1433668-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433668-01 12/22/21 01:35 • (MS) R3743730-4 12/22/21 01:40 • (MSD) R3743730-5 12/22/21 01:43

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	0.960	0.957	96.0	95.7	1	75.0-125			0.261	20

Method Blank (MB)

(MB) R3744806-1 12/26/21 15:29

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum	U		0.0185	0.100
Antimony	U		0.00103	0.00400
Arsenic	U		0.000180	0.00200
Barium	U		0.000381	0.00200
Cadmium	U		0.000150	0.00100
Calcium	U		0.0936	1.00
Chromium	0.00160	J	0.00124	0.00200
Copper	0.00180	J	0.00151	0.00500
Cobalt	U		0.0000596	0.00200
Iron	U		0.0281	0.100
Lead	U		0.000849	0.00200
Magnesium	U		0.0735	1.00
Manganese	U		0.000704	0.00500
Potassium	U		0.108	2.00
Selenium	U		0.000300	0.00200
Silver	U		0.0000700	0.00200
Sodium	U		0.376	2.00
Thallium	0.000122	J	0.000121	0.00200
Vanadium	U		0.000664	0.00500
Zinc	U		0.00302	0.0250

Method Blank (MB)

(MB) R3745048-1 12/27/21 11:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Beryllium	U		0.000190	0.00200
Nickel	U		0.000816	0.00200

Laboratory Control Sample (LCS)

(LCS) R3744806-2 12/26/21 15:32

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	5.00	4.89	97.7	80.0-120	
Antimony	0.0500	0.0482	96.5	80.0-120	
Arsenic	0.0500	0.0473	94.6	80.0-120	
Barium	0.0500	0.0471	94.3	80.0-120	
Cadmium	0.0500	0.0518	104	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3744806-2 12/26/21 15:32

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	5.00	5.06	101	80.0-120	
Chromium	0.0500	0.0509	102	80.0-120	
Copper	0.0500	0.0452	90.4	80.0-120	
Cobalt	0.0500	0.0505	101	80.0-120	
Iron	5.00	5.10	102	80.0-120	
Lead	0.0500	0.0486	97.1	80.0-120	
Magnesium	5.00	4.99	99.8	80.0-120	
Manganese	0.0500	0.0491	98.3	80.0-120	
Potassium	5.00	4.95	99.0	80.0-120	
Selenium	0.0500	0.0503	101	80.0-120	
Silver	0.0500	0.0496	99.2	80.0-120	
Sodium	5.00	5.05	101	80.0-120	
Thallium	0.0500	0.0460	91.9	80.0-120	
Vanadium	0.0500	0.0494	98.8	80.0-120	
Zinc	0.500	0.476	95.2	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3745048-2 12/27/21 11:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Beryllium	0.0500	0.0488	97.7	80.0-120	
Nickel	0.0500	0.0533	107	80.0-120	

L1433526-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433526-04 12/26/21 15:36 • (MS) R3744806-4 12/26/21 15:42 • (MSD) R3744806-5 12/26/21 15:46

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum	5.00	ND	4.75	4.78	94.2	94.9	1	75.0-125			0.648	20
Antimony	0.0500	ND	0.0498	0.0488	99.7	97.6	1	75.0-125			2.06	20
Arsenic	0.0500	ND	0.0478	0.0488	93.8	95.9	1	75.0-125			2.15	20
Barium	0.0500	0.0481	0.0958	0.0957	95.6	95.4	1	75.0-125			0.107	20
Cadmium	0.0500	ND	0.0516	0.0520	102	103	1	75.0-125			0.699	20
Calcium	5.00	104	109	109	86.9	85.2	1	75.0-125			0.0780	20
Chromium	0.0500	ND	0.0494	0.0506	95.1	97.5	1	75.0-125			2.38	20
Copper	0.0500	ND	0.0459	0.0481	82.3	86.6	1	75.0-125			4.61	20
Cobalt	0.0500	ND	0.0482	0.0490	96.0	97.7	1	75.0-125			1.74	20
Potassium	5.00	2.59	7.38	7.41	95.9	96.5	1	75.0-125			0.400	20

L1433526-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433526-04 12/26/21 15:36 • (MS) R3744806-4 12/26/21 15:42 • (MSD) R3744806-5 12/26/21 15:46

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Iron	5.00	0.143	5.04	5.10	97.9	99.2	1	75.0-125			1.23	20
Lead	0.0500	ND	0.0483	0.0493	96.6	98.7	1	75.0-125			2.16	20
Magnesium	5.00	36.5	41.0	41.0	90.6	91.0	1	75.0-125			0.0422	20
Manganese	0.0500	0.0284	0.0766	0.0775	96.3	98.2	1	75.0-125			1.23	20
Selenium	0.0500	ND	0.0530	0.0528	103	103	1	75.0-125			0.384	20
Silver	0.0500	ND	0.0501	0.0515	99.3	102	1	75.0-125			2.70	20
Sodium	5.00	39.3	42.8	41.9	69.7	53.3	1	75.0-125	V	V	1.94	20
Thallium	0.0500	ND	0.0465	0.0467	93.0	93.4	1	75.0-125			0.346	20
Vanadium	0.0500	ND	0.0500	0.0526	96.7	102	1	75.0-125			4.97	20
Zinc	0.500	ND	0.470	0.480	92.5	94.5	1	75.0-125			2.09	20

L1433526-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433526-04 12/27/21 11:54 • (MS) R3745048-4 12/27/21 12:01 • (MSD) R3745048-5 12/27/21 12:05

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Beryllium	0.0500	ND	0.0486	0.0489	97.2	97.9	1	75.0-125			0.712	20
Nickel	0.0500	0.00330	0.0529	0.0545	99.1	102	1	75.0-125			3.07	20

Method Blank (MB)

(MB) R3745179-1 12/27/21 17:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum	U		0.0185	0.100
Antimony	U		0.00103	0.00400
Arsenic	U		0.000180	0.00200
Barium	U		0.000381	0.00200
Beryllium	U		0.000190	0.00200
Cadmium	U		0.000150	0.00100
Calcium	U		0.0936	1.00
Copper	U		0.00151	0.00500
Cobalt	U		0.0000596	0.00200
Iron	U		0.0281	0.100
Lead	U		0.000849	0.00200
Magnesium	U		0.0735	1.00
Manganese	U		0.000704	0.00500
Nickel	U		0.000816	0.00200
Potassium	0.254	J	0.108	2.00
Selenium	0.000566	J	0.000300	0.00200
Silver	U		0.0000700	0.00200
Sodium	U		0.376	2.00
Thallium	U		0.000121	0.00200
Vanadium	U		0.000664	0.00500
Zinc	U		0.00302	0.0250

Laboratory Control Sample (LCS)

(LCS) R3745179-2 12/27/21 17:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	5.00	4.98	99.7	80.0-120	
Antimony	0.0500	0.0533	107	80.0-120	
Arsenic	0.0500	0.0517	103	80.0-120	
Barium	0.0500	0.0476	95.2	80.0-120	
Beryllium	0.0500	0.0507	101	80.0-120	
Cadmium	0.0500	0.0492	98.4	80.0-120	
Calcium	5.00	5.19	104	80.0-120	
Copper	0.0500	0.0474	94.7	80.0-120	
Cobalt	0.0500	0.0531	106	80.0-120	
Iron	5.00	5.56	111	80.0-120	
Lead	0.0500	0.0497	99.3	80.0-120	
Magnesium	5.00	4.99	99.8	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3745179-2 12/27/21 17:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Manganese	0.0500	0.0535	107	80.0-120	
Nickel	0.0500	0.0554	111	80.0-120	
Potassium	5.00	5.09	102	80.0-120	
Selenium	0.0500	0.0496	99.2	80.0-120	
Silver	0.0500	0.0504	101	80.0-120	
Sodium	5.00	5.09	102	80.0-120	
Thallium	0.0500	0.0497	99.4	80.0-120	
Vanadium	0.0500	0.0533	107	80.0-120	
Zinc	0.500	0.514	103	80.0-120	

L1433740-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433740-04 12/27/21 17:18 • (MS) R3745179-4 12/27/21 17:25 • (MSD) R3745179-5 12/27/21 17:29

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum	5.00	8.51	13.7	13.4	103	97.9	1	75.0-125			2.03	20
Antimony	0.0500	ND	0.0561	0.0541	112	108	1	75.0-125			3.67	20
Arsenic	0.0500	0.00455	0.0432	0.0448	77.3	80.4	1	75.0-125			3.58	20
Barium	0.0500	0.0207	0.0678	0.0688	94.3	96.3	1	75.0-125			1.47	20
Beryllium	0.0500	ND	0.0510	0.0510	98.9	99.0	1	75.0-125			0.0844	20
Cadmium	0.0500	0.00132	0.0520	0.0497	101	96.8	1	75.0-125			4.49	20
Calcium	5.00	39.6	45.8	44.6	124	101	1	75.0-125			2.57	20
Copper	0.0500	0.00502	0.0439	0.0437	77.7	77.3	1	75.0-125			0.473	20
Cobalt	0.0500	0.204	0.248	0.247	89.2	86.3	1	75.0-125			0.599	20
Potassium	5.00	ND	6.43	6.30	100	97.5	1	75.0-125			2.00	20
Iron	5.00	1.33	5.25	5.28	78.5	79.0	1	75.0-125			0.429	20
Lead	0.0500	ND	0.0516	0.0512	100	99.2	1	75.0-125			0.845	20
Magnesium	5.00	43.0	49.1	48.3	121	105	1	75.0-125			1.64	20
Manganese	0.0500	7.91	8.06	8.01	302	203	1	75.0-125	V	V	0.619	20
Nickel	0.0500	0.142	0.181	0.183	79.3	83.7	1	75.0-125			1.21	20
Selenium	0.0500	0.00615	0.0552	0.0572	98.2	102	1	75.0-125			3.40	20
Silver	0.0500	ND	0.0500	0.0507	100	101	1	75.0-125			1.42	20
Sodium	5.00	4.08	9.19	9.06	102	99.7	1	75.0-125			1.35	20
Thallium	0.0500	ND	0.0475	0.0491	95.1	98.1	1	75.0-125			3.18	20
Vanadium	0.0500	ND	0.0401	0.0408	78.1	79.6	1	75.0-125			1.91	20
Zinc	0.500	0.151	0.529	0.546	75.7	78.9	1	75.0-125			3.02	20

Method Blank (MB)

(MB) R3746160-1 12/29/21 23:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chromium	U		0.00124	0.00200

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3746160-2 12/29/21 23:03 • (LCSD) R3746160-3 12/29/21 23:07

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chromium	0.0500	0.0493	0.0502	98.5	100	80.0-120			1.86	20

Method Blank (MB)

(MB) R3747234-1 01/04/22 11:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chromium	U		0.00124	0.00200

Laboratory Control Sample (LCS)

(LCS) R3747234-2 01/04/22 11:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chromium	0.0500	0.0537	107	80.0-120	

L1437900-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1437900-11 01/04/22 11:27 • (MS) R3747234-4 01/04/22 11:34 • (MSD) R3747234-5 01/04/22 11:37

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chromium	0.0500	ND	0.0487	0.0489	97.4	97.9	1	75.0-125			0.519	20

Method Blank (MB)

(MB) R3734597-3 11/25/21 16:37

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0113	0.0500
Acrylonitrile	U		0.000671	0.0100
Benzene	U		0.0000941	0.00100
Bromodichloromethane	U		0.000136	0.00100
Bromochloromethane	U		0.000128	0.00100
Bromoform	U		0.000129	0.00100
Bromomethane	U		0.000605	0.00500
Carbon disulfide	U		0.0000962	0.00100
Carbon tetrachloride	U		0.000128	0.00100
Chlorobenzene	U		0.000116	0.00100
Chlorodibromomethane	U		0.000140	0.00100
Chloroethane	U		0.000192	0.00500
Chloroform	U		0.000111	0.00500
Chloromethane	U		0.000960	0.00250
1,2-Dibromo-3-Chloropropane	U		0.000276	0.00500
1,2-Dibromoethane	U		0.000126	0.00100
Dibromomethane	U		0.000122	0.00100
1,2-Dichlorobenzene	U		0.000107	0.00100
1,4-Dichlorobenzene	U		0.000120	0.00100
trans-1,4-Dichloro-2-butene	U		0.000467	0.00250
1,1-Dichloroethane	U		0.000100	0.00100
1,2-Dichloroethane	U		0.0000819	0.00100
1,1-Dichloroethene	U		0.000188	0.00100
cis-1,2-Dichloroethene	U		0.000126	0.00100
trans-1,2-Dichloroethene	U		0.000149	0.00100
1,2-Dichloropropane	U		0.000149	0.00100
cis-1,3-Dichloropropene	U		0.000111	0.00100
trans-1,3-Dichloropropene	U		0.000118	0.00100
Ethylbenzene	U		0.000137	0.00100
2-Hexanone	U		0.000787	0.0100
Iodomethane	U		0.00600	0.0100
2-Butanone (MEK)	U		0.00119	0.0100
Methylene Chloride	U		0.000430	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.000478	0.0100
Styrene	U		0.000118	0.00100
1,1,1,2-Tetrachloroethane	U		0.000147	0.00100
1,1,2,2-Tetrachloroethane	U		0.000133	0.00100
Tetrachloroethene	U		0.000300	0.00100
Toluene	U		0.000278	0.00100
1,1,1-Trichloroethane	U		0.000149	0.00100

Method Blank (MB)

(MB) R3734597-3 11/25/21 16:37

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1,1,2-Trichloroethane	U		0.000158	0.00100
Trichloroethene	U		0.000190	0.00100
Trichlorofluoromethane	U		0.000160	0.00500
1,2,3-Trichloropropane	U		0.000237	0.00250
Vinyl acetate	U		0.000692	0.0100
Vinyl chloride	U		0.000234	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*109*			*80.0-120*
(S) 4-Bromofluorobenzene	*112*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*121*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3734597-1 11/25/21 15:15 • (LCSD) R3734597-2 11/25/21 15:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.0250	0.0240	0.0280	96.0	112	19.0-160			15.4	27
Acrylonitrile	0.0250	0.0260	0.0274	104	110	55.0-149			5.24	20
Benzene	0.00500	0.00501	0.00531	100	106	70.0-123			5.81	20
Bromodichloromethane	0.00500	0.00551	0.00542	110	108	75.0-120			1.65	20
Bromochloromethane	0.00500	0.00559	0.00600	112	120	76.0-122			7.08	20
Bromoform	0.00500	0.00479	0.00545	95.8	109	68.0-132			12.9	20
Bromomethane	0.00500	0.00563	0.00577	113	115	10.0-160			2.46	25
Carbon disulfide	0.00500	0.00528	0.00550	106	110	61.0-128			4.08	20
Carbon tetrachloride	0.00500	0.00652	0.00667	130	133	68.0-126	J4	J4	2.27	20
Chlorobenzene	0.00500	0.00513	0.00532	103	106	80.0-121			3.64	20
Chlorodibromomethane	0.00500	0.00488	0.00547	97.6	109	77.0-125			11.4	20
Chloroethane	0.00500	0.00519	0.00522	104	104	47.0-150			0.576	20
Chloroform	0.00500	0.00577	0.00611	115	122	73.0-120		J4	5.72	20
Chloromethane	0.00500	0.00553	0.00523	111	105	41.0-142			5.58	20
1,2-Dibromo-3-Chloropropane	0.00500	0.00492	0.00520	98.4	104	58.0-134			5.53	20
1,2-Dibromoethane	0.00500	0.00452	0.00493	90.4	98.6	80.0-122			8.68	20
Dibromomethane	0.00500	0.00528	0.00592	106	118	80.0-120			11.4	20
1,2-Dichlorobenzene	0.00500	0.00523	0.00534	105	107	79.0-121			2.08	20
1,4-Dichlorobenzene	0.00500	0.00461	0.00475	92.2	95.0	79.0-120			2.99	20
trans-1,4-Dichloro-2-butene	0.00500	0.00179	0.00216	35.8	43.2	33.0-144			18.7	20
1,1-Dichloroethane	0.00500	0.00575	0.00566	115	113	70.0-126			1.58	20
1,2-Dichloroethane	0.00500	0.00543	0.00558	109	112	70.0-128			2.72	20
1,1-Dichloroethene	0.00500	0.00548	0.00620	110	124	71.0-124			12.3	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3734597-1 11/25/21 15:15 • (LCSD) R3734597-2 11/25/21 15:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
cis-1,2-Dichloroethene	0.00500	0.00565	0.00588	113	118	73.0-120			3.99	20
trans-1,2-Dichloroethene	0.00500	0.00580	0.00604	116	121	73.0-120		J4	4.05	20
1,2-Dichloropropane	0.00500	0.00488	0.00489	97.6	97.8	77.0-125			0.205	20
cis-1,3-Dichloropropene	0.00500	0.00527	0.00522	105	104	80.0-123			0.953	20
trans-1,3-Dichloropropene	0.00500	0.00472	0.00500	94.4	100	78.0-124			5.76	20
Ethylbenzene	0.00500	0.00500	0.00546	100	109	79.0-123			8.80	20
2-Hexanone	0.0250	0.0219	0.0232	87.6	92.8	67.0-149			5.76	20
Iodomethane	0.0250	0.0275	0.0290	110	116	33.0-147			5.31	26
2-Butanone (MEK)	0.0250	0.0231	0.0258	92.4	103	44.0-160			11.0	20
Methylene Chloride	0.00500	0.00603	0.00609	121	122	67.0-120	J4	J4	0.990	20
4-Methyl-2-pentanone (MIBK)	0.0250	0.0242	0.0260	96.8	104	68.0-142			7.17	20
Styrene	0.00500	0.00477	0.00562	95.4	112	73.0-130			16.4	20
1,1,1,2-Tetrachloroethane	0.00500	0.00520	0.00575	104	115	75.0-125			10.0	20
1,1,2,2-Tetrachloroethane	0.00500	0.00468	0.00451	93.6	90.2	65.0-130			3.70	20
Tetrachloroethene	0.00500	0.00487	0.00557	97.4	111	72.0-132			13.4	20
Toluene	0.00500	0.00501	0.00508	100	102	79.0-120			1.39	20
1,1,1-Trichloroethane	0.00500	0.00648	0.00661	130	132	73.0-124	J4	J4	1.99	20
1,1,2-Trichloroethane	0.00500	0.00485	0.00449	97.0	89.8	80.0-120			7.71	20
Trichloroethene	0.00500	0.00552	0.00600	110	120	78.0-124			8.33	20
Trichlorofluoromethane	0.00500	0.00611	0.00646	122	129	59.0-147			5.57	20
1,2,3-Trichloropropane	0.00500	0.00433	0.00509	86.6	102	73.0-130			16.1	20
Vinyl acetate	0.0250	0.0282	0.0247	113	98.8	11.0-160			13.2	20
Vinyl chloride	0.00500	0.00543	0.00570	109	114	67.0-131			4.85	20
Xylenes, Total	0.0150	0.0154	0.0165	103	110	79.0-123			6.90	20
(S) Toluene-d8				*103*	*108*	*80.0-120*				
(S) 4-Bromofluorobenzene				*108*	*108*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*120*	*121*	*70.0-130*				

Method Blank (MB)

(MB) R3734973-3 11/29/21 14:17

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0113	0.0500
(S) Toluene-d8	*118*			*80.0-120*
(S) 4-Bromofluorobenzene	*97.4*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*126*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3734973-1 11/29/21 13:00 • (LCSD) R3734973-2 11/29/21 13:22

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.0250	0.0269	0.0278	108	111	19.0-160			3.29	27
(S) Toluene-d8				*114*	*112*	*80.0-120*				
(S) 4-Bromofluorobenzene				*102*	*102*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*127*	*127*	*70.0-130*				

Method Blank (MB)

(MB) R3734698-1 11/25/21 07:45

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ethylene Dibromide	U		0.00000536	0.0000200
1,2-Dibromo-3-Chloropropane	U		0.00000748	0.0000200

L1433668-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1433668-01 11/25/21 08:37 • (DUP) R3734698-3 11/25/21 08:24

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ethylene Dibromide	ND	ND	1.06	0.000		20
1,2-Dibromo-3-Chloropropane	ND	ND	1.06	0.000		20

Sample Narrative:

OS: Dilution due to sample volume.

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3734698-5 11/25/21 10:59 • (LCSD) R3734698-6 11/25/21 13:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethylene Dibromide	0.000250	0.000312	0.000329	125	132	60.0-140			5.30	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000255	0.000269	102	108	60.0-140			5.34	20

L1434049-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1434049-08 11/25/21 12:04 • (MS) R3734698-4 11/25/21 08:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ethylene Dibromide	0.000107	0.155	0.165	9350	1.07	64.0-159	E V
1,2-Dibromo-3-Chloropropane	0.000107	ND	0.000100	93.5	1.07	72.0-148	

Sample Narrative:

OS: Dilution due to sample volume.

L1433272-15 Original Sample (OS) • Matrix Spike (MS)

(OS) L1433272-15 11/25/21 08:11 • (MS) R3734698-2 11/25/21 07:58

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ethylene Dibromide	0.000107	ND	0.000119	111	1.07	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000107	ND	0.000123	115	1.07	72.0-148	

Sample Narrative:

OS: Dilution due to sample volume.

QUALITY CONTROL SUMMARY

L1433668-02,03,04,05,06,07,08,09

Method Blank (MB)

(MB) R3734699-1 11/24/21 19:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ethylene Dibromide	U		0.00000536	0.0000200
1,2-Dibromo-3-Chloropropane	U		0.00000748	0.0000200

L1433642-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1433642-01 11/24/21 20:08 • (DUP) R3734699-3 11/24/21 19:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ethylene Dibromide	ND	ND	1	0.000		20
1,2-Dibromo-3-Chloropropane	ND	ND	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3734699-4 11/24/21 22:15 • (LCSD) R3734699-5 11/25/21 01:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethylene Dibromide	0.000250	0.000301	0.000305	120	122	60.0-140			1.32	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000242	0.000247	96.8	98.8	60.0-140			2.04	20

L1433668-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1433668-02 11/24/21 19:42 • (MS) R3734699-2 11/24/21 19:29

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ethylene Dibromide	0.000103	ND	0.000102	99.0	1.03	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000103	ND	0.0000992	96.3	1.03	72.0-148	

Sample Narrative:

OS: Dilution due to sample volume.

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
Civil & Environmental Consultants - TN

117 Seaboard Ln.
Suite E100
Franklin. TN 37067

Billing Information:
Accounts Payable
117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Pres Chk

Report to:
Keri Clayton

Email To: **kclayton@cecinc.com**

Project Description:
Former EWS Camden Class 2 Landfill

City/State Collected: Camden, TN

Please Circle: PT MT CT ET

Phone: **615-333-7797**

Client Project #
181-364

Lab Project #
CEC-181364

Collected by (print):
Alex Black

Site/Facility ID #
CAMDEN, TN

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

No. of Cntrs

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	**WetChem** 250mlHDPE-NoPres	ALK 100ml Amb-NoPres	COD,NH3 250mlHDPE-H2SO4	Diss. Metals-FF 250mlHDPE-HNO3	SV8011 40mlClr-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl	V8260AP1-Trip Blank 40mlAmb-HCl-Blk	Remarks	Sample # (lab only)
MW-1	G	GW		11/18/21	1100	10	X	X	X	X	X	X	X			-01
MW-3		GW			1420	10	X	X	X	X	X	X	X			-02
MW-4		GW			1305	10	X	X	X	X	X	X	X			-03
MW-5		GW			1210	10	X	X	X	X	X	X	X			-04
TMW-1		GW			1340	10	X	X	X	X	X	X	X			-05
~~TMW-2~~ TMW-2		GW			1210	10	X	X	X	X	X	X	X			-06
TMW-3		GW			~~1420~~ 1040	10	X	X	X	X	X	X	X			-07
DUPLICATE		GW			—	10	X	X	X	X	X	X	X			-08
FIELD BLANK		GW			1310	10	X	X	X		X	X	X			-09
~~EQUIPMENT BLANK~~		GW				10	X	X	X		X	X	X			

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: WetChem** = *NITRATE*(48hr hold),CHLORIDE,BROMIDE,SULFATE,FLUORIDE Tot/Diss Metals=M6020AP1+Al,Ca,Fe,K,Mg,Mn,Na(6020/7470),and B(6010).**

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Chain of Custody Page ___ of ___

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SDG # L1433668

C247

Tat

Acctnum: **CEC**

Template:**T133579**

Prelogin: **P886109**

PM: **526 - Chris McCord**

PB: BF 11/6/21

Shipped Via: **Courier**

Sample Receipt Checklist
COC Seal Present/Intact: ___NP ✓Y ___N
COC Signed/Accurate: ✓Y ___N
Bottles arrive intact: ✓Y ___N
Correct bottles used: ✓Y ___N
Sufficient volume sent: ✓Y ___N
If Applicable
VOA Zero Headspace: ✓Y ___N
Preservation Correct/Checked: ✓Y ___N
RAD Screen <0.5 mR/hr: ✓Y ___N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
	11/19/21	13:45			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 1.6 +0.1=1.7 °C Bottles Received: 10	
	11-19-21	16:50			
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11/19/21 Time: 1650	Hold: Condition: NCF / OK

Company Name/Address:
Civil & Environmental Consultants - TN

117 Seaboard Ln.
Suite E100
Franklin. TN 37067

Billing Information:
Accounts Payable
117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Pres Chk

Report to:
Keri Clayton

Email To: **kclayton@cecinc.com**

Project Description:
Former EWS Camden Class 2 Landfill

City/State Collected: Camden, TN

Please Circle: PT MT CT ET

Phone: **615-333-7797**

Client Project #
181-364

Lab Project #
CEC-181364

Collected by (print):
Ave Black

Site/Facility ID #
CAMDEN, TN

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

No. of Cntrs

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	**WetChem** 250mlHDPE-NoPres	ALK 100ml Amb-NoPres	COD,NH3 250mlHDPE-H2SO4	Diss. Metals-FF 250mlHDPE-HNO3	SV8011 40mlClr-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl	V8260AP1-Trip Blank 40mlAmb-HCl-Blk			Remarks	Sample # (lab only)
TRIP BLANK	G	GW	—	11/18/21	—	1								X				-10

Chain of Custody Page ___ of ___

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SDG # L1433668

Table #

Acctnum: **CEC**

Template: **T133579**

Prelogin: **P886109**

PM: **526 - Chris McCord**

PB: BF 11/16/21

Shipped Via: **Courier**

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: WetChem** = *NITRATE*(48hr hold),CHLORIDE,BROMIDE,SULFATE,FLUORIDE Tot/Diss Metals=M6020AP1+Al,Ca,Fe,K,Mg,Mn,Na(6020/7470),and B(6010).**

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier ✓

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N
RAD Screen <0.5 mR/hr: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCl / MeoH TBR	If preservation required by Login: Date/Time
	11/19/21	13:45			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 1.6 °C 1.2 1.2 Bottles Received: 9	
	11-19-21	16:50			
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date:	Time:	Hold:	Condition: NCF / OK
			K. Holden	11/19/21	1650		

11/19-NCF-L1433668 CEC TD

R5

Time estimate: oh **Time spent:** oh

Members

Troy Dunlap (responsible) Christopher McCord

- [x] Login Clarification needed
- [ ] Chain of custody is incomplete
- [ ] Please specify Metals requested
- [ ] Please specify TCLP requested
- [ ] Received additional samples not listed on COC
- [ ] Sample IDs on containers do not match IDs on COC
- [ ] Client did not "X" analysis
- [ ] Chain of Custody is missing
- [ ] If no COC: Received by:_____
- [ ] If no COC: Date/Time:_____
- [ ] If no COC: Temp./Cont.Rec./pH:_____
- [ ] If no COC: Carrier:_____
- [ ] If no COC: Tracking #:_____
- [ ] Client informed by call
- [ ] Client informed by Email
- [ ] Client informed by Voicemail
- [x] Date/Time: 11/24/21 10:38
- [x] PM initials: CM
- [ ] Client Contact:_____

Comments

Troy Dunlap *19 November 2021 7:24 PM*

Did not receive a Dissolved Metals container for all samples.

Christopher McCord *24 November 2021 10:38 AM*

Only log for Total Metals.

Troy Dunlap *24 November 2021 2:53 PM*

Done.

ANALYTICAL REPORT

December 30, 2021

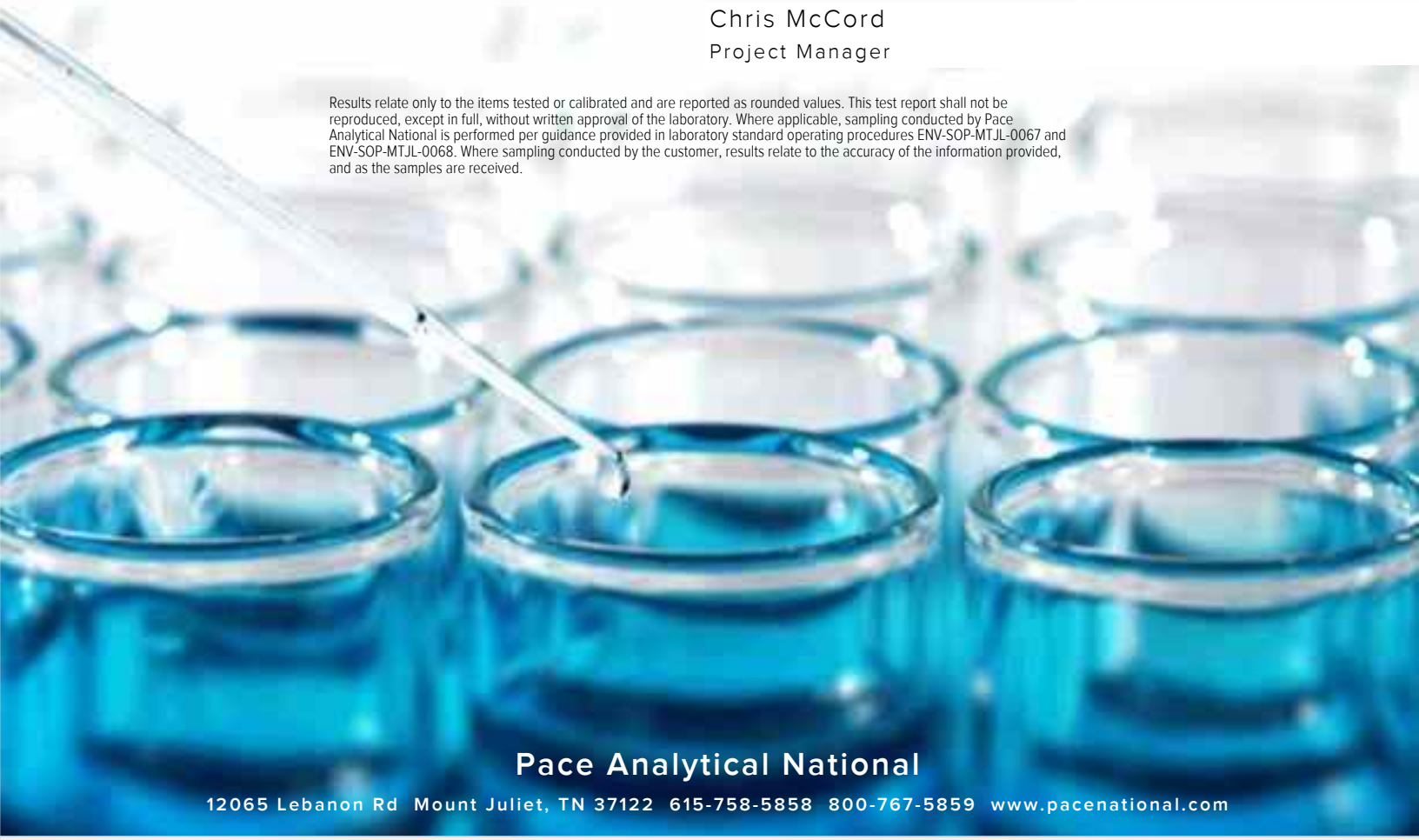
Civil & Environmental Consultants - TN

Sample Delivery Group:	L1433642
Samples Received:	11/19/2021
Project Number:	181-364
Description:	EWS Camden Class 2 Landfill
Site:	CAMDEN, TN
Report To:	Philip Campbell 117 Seaboard Ln. Suite E100 Franklin, TN 37067

Entire Report Reviewed By:

Chris McCord
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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SAMPLE SUMMARY

IWC-L L1433642-01 GW

Collected by: Todd Hughes
Collected date/time: 11/19/21 09:40
Received date/time: 11/19/21 16:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1792645	1	12/26/21 16:37	12/26/21 16:37	JDG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1780267	1	11/28/21 03:25	11/28/21 03:25	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1783002	500	12/02/21 13:54	12/02/21 13:54	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1780208	20	11/25/21 10:00	11/25/21 13:18	AW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1781124	100	11/30/21 20:33	11/30/21 20:33	LBR	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1781124	1000	11/30/21 20:46	11/30/21 20:46	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1778234	1	11/30/21 08:35	12/01/21 09:58	ABL	Mt. Juliet, TN
Mercury by Method 7470A	WG1780298	1	11/29/21 10:38	11/30/21 08:23	MRW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1785830	5	12/08/21 08:36	12/09/21 03:14	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1792056	5	12/20/21 17:58	12/22/21 22:12	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1784660	100	12/13/21 03:34	12/13/21 13:45	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1784660	20	12/13/21 03:34	12/13/21 12:32	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1784660	5	12/13/21 03:34	12/13/21 12:19	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1784660	50	12/13/21 03:34	12/13/21 12:49	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1792645	10	12/22/21 07:36	12/26/21 16:30	JDG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1792645	10	12/22/21 07:36	12/27/21 22:15	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1792645	50	12/22/21 07:36	12/26/21 16:37	JDG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1792645	50	12/22/21 07:36	12/28/21 00:07	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1780204	1	11/25/21 17:38	11/25/21 17:38	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1781138	20	11/29/21 18:46	11/29/21 18:46	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1779326	1	11/24/21 12:24	11/24/21 20:08	HMH	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Chris McCord
Project Manager

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	26200		4.12	1	12/26/2021 16:37	WG1792645

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/28/2021 03:25	WG1780267

Sample Narrative:
L1433642-01 WG1780267: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	1320		125	500	12/02/2021 13:54	WG1783002

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	8460		400	20	11/25/2021 13:18	WG1780208

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	11/30/2021 20:33	WG1781124
Chloride	70600		1000	1000	11/30/2021 20:46	WG1781124
Fluoride	ND		15.0	100	11/30/2021 20:33	WG1781124
Nitrate	ND	T8	10.0	100	11/30/2021 20:33	WG1781124
Sulfate	1240		500	100	11/30/2021 20:33	WG1781124

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	12/01/2021 09:58	WG1778234
Mercury,Dissolved	ND	J3 J6 O1	0.000200	1	11/30/2021 08:23	WG1780298

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		1.00	5	12/22/2021 22:12	WG1792056
Boron,Dissolved	ND		1.00	5	12/09/2021 03:14	WG1785830

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	133		1.00	10	12/26/2021 16:30	WG1792645
Aluminum,Dissolved	124		0.500	5	12/13/2021 12:19	WG1784660
Antimony	ND		0.0400	10	12/26/2021 16:30	WG1792645
Antimony,Dissolved	ND		0.0200	5	12/13/2021 12:19	WG1784660
Arsenic	0.139		0.100	50	12/26/2021 16:37	WG1792645
Arsenic,Dissolved	0.156		0.100	50	12/13/2021 12:49	WG1784660
Barium	1.49		0.0200	10	12/26/2021 16:30	WG1792645
Barium,Dissolved	1.53		0.0100	5	12/13/2021 12:19	WG1784660

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Beryllium	0.0339		0.0200	10	12/27/2021 22:15	WG1792645
Beryllium,Dissolved	0.0272		0.0100	5	12/13/2021 12:19	WG1784660
Cadmium	51.0		0.0100	10	12/26/2021 16:30	WG1792645
Cadmium,Dissolved	54.4		0.0200	20	12/13/2021 12:32	WG1784660
Calcium	10300		50.0	50	12/26/2021 16:37	WG1792645
Calcium,Dissolved	11000		20.0	20	12/13/2021 12:32	WG1784660
Chromium	0.119	B	0.100	50	12/28/2021 00:07	WG1792645
Chromium,Dissolved	ND		0.100	50	12/13/2021 12:49	WG1784660
Cobalt	0.508		0.100	50	12/26/2021 16:37	WG1792645
Cobalt,Dissolved	0.556		0.100	50	12/13/2021 12:49	WG1784660
Copper	1.97		0.0500	10	12/26/2021 16:30	WG1792645
Copper,Dissolved	0.930		0.0250	5	12/13/2021 12:19	WG1784660
Iron	209		5.00	50	12/26/2021 16:37	WG1792645
Iron,Dissolved	176		5.00	50	12/13/2021 12:49	WG1784660
Lead	0.512		0.0200	10	12/26/2021 16:30	WG1792645
Lead,Dissolved	0.482		0.0100	5	12/13/2021 12:19	WG1784660
Magnesium	1360		10.0	10	12/26/2021 16:30	WG1792645
Magnesium,Dissolved	1410		5.00	5	12/13/2021 12:19	WG1784660
Manganese	99.8		0.250	50	12/26/2021 16:37	WG1792645
Manganese,Dissolved	109		0.250	50	12/13/2021 12:49	WG1784660
Nickel	0.532	B	0.100	50	12/28/2021 00:07	WG1792645
Nickel,Dissolved	0.600		0.100	50	12/13/2021 12:49	WG1784660
Potassium	9550		20.0	10	12/26/2021 16:30	WG1792645
Potassium,Dissolved	10400		40.0	20	12/13/2021 12:32	WG1784660
Selenium	0.113		0.0200	10	12/26/2021 16:30	WG1792645
Selenium,Dissolved	0.104		0.0100	5	12/13/2021 12:19	WG1784660
Silver	ND		0.0200	10	12/26/2021 16:30	WG1792645
Silver,Dissolved	ND		0.0100	5	12/13/2021 12:19	WG1784660
Sodium	16900		100	50	12/26/2021 16:37	WG1792645
Sodium,Dissolved	17800		40.0	20	12/13/2021 12:32	WG1784660
Thallium	ND		0.0200	10	12/26/2021 16:30	WG1792645
Thallium,Dissolved	0.0193		0.0100	5	12/13/2021 12:19	WG1784660
Vanadium	ND		0.250	50	12/26/2021 16:37	WG1792645
Vanadium,Dissolved	ND		0.250	50	12/13/2021 12:49	WG1784660
Zinc	455		1.25	50	12/26/2021 16:37	WG1792645
Zinc,Dissolved	506		2.50	100	12/13/2021 13:45	WG1784660

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	2.04		1.00	20	11/29/2021 18:46	WG1781138
Acrylonitrile	ND		0.0100	1	11/25/2021 17:38	WG1780204
Benzene	ND		0.00100	1	11/25/2021 17:38	WG1780204
Bromochloromethane	ND		0.00100	1	11/25/2021 17:38	WG1780204
Bromodichloromethane	ND		0.00100	1	11/25/2021 17:38	WG1780204
Bromoform	ND		0.00100	1	11/25/2021 17:38	WG1780204
Bromomethane	ND		0.00500	1	11/25/2021 17:38	WG1780204
Carbon disulfide	0.00937		0.00100	1	11/25/2021 17:38	WG1780204
Carbon tetrachloride	ND	J4	0.00100	1	11/25/2021 17:38	WG1780204
Chlorobenzene	ND		0.00100	1	11/25/2021 17:38	WG1780204
Chlorodibromomethane	ND		0.00100	1	11/25/2021 17:38	WG1780204
Chloroethane	ND		0.00500	1	11/25/2021 17:38	WG1780204
Chloroform	ND	J4	0.00500	1	11/25/2021 17:38	WG1780204
Chloromethane	0.00324		0.00250	1	11/25/2021 17:38	WG1780204
Dibromomethane	ND		0.00100	1	11/25/2021 17:38	WG1780204
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/25/2021 17:38	WG1780204

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,2-Dibromoethane	ND		0.00100	1	11/25/2021 17:38	WG1780204
1,2-Dichlorobenzene	ND		0.00100	1	11/25/2021 17:38	WG1780204
1,4-Dichlorobenzene	ND		0.00100	1	11/25/2021 17:38	WG1780204
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/25/2021 17:38	WG1780204
1,1-Dichloroethane	ND		0.00100	1	11/25/2021 17:38	WG1780204
1,2-Dichloroethane	ND		0.00100	1	11/25/2021 17:38	WG1780204
1,1-Dichloroethene	ND		0.00100	1	11/25/2021 17:38	WG1780204
cis-1,2-Dichloroethene	ND		0.00100	1	11/25/2021 17:38	WG1780204
trans-1,2-Dichloroethene	ND	J4	0.00100	1	11/25/2021 17:38	WG1780204
1,2-Dichloropropane	ND		0.00100	1	11/25/2021 17:38	WG1780204
cis-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 17:38	WG1780204
trans-1,3-Dichloropropene	ND		0.00100	1	11/25/2021 17:38	WG1780204
Ethylbenzene	0.00759		0.00100	1	11/25/2021 17:38	WG1780204
2-Hexanone	0.0268		0.0100	1	11/25/2021 17:38	WG1780204
Iodomethane	ND		0.0100	1	11/25/2021 17:38	WG1780204
2-Butanone (MEK)	0.476		0.0100	1	11/25/2021 17:38	WG1780204
Methylene Chloride	ND	J4	0.00500	1	11/25/2021 17:38	WG1780204
4-Methyl-2-pentanone (MIBK)	0.0369		0.0100	1	11/25/2021 17:38	WG1780204
Styrene	ND		0.00100	1	11/25/2021 17:38	WG1780204
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 17:38	WG1780204
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/25/2021 17:38	WG1780204
Tetrachloroethene	ND		0.00100	1	11/25/2021 17:38	WG1780204
Toluene	ND		0.00100	1	11/25/2021 17:38	WG1780204
1,1,1-Trichloroethane	ND	J4	0.00100	1	11/25/2021 17:38	WG1780204
1,1,2-Trichloroethane	ND		0.00100	1	11/25/2021 17:38	WG1780204
Trichloroethene	ND		0.00100	1	11/25/2021 17:38	WG1780204
Trichlorofluoromethane	ND		0.00500	1	11/25/2021 17:38	WG1780204
1,2,3-Trichloropropane	ND		0.00250	1	11/25/2021 17:38	WG1780204
Vinyl acetate	ND		0.0100	1	11/25/2021 17:38	WG1780204
Vinyl chloride	ND		0.00100	1	11/25/2021 17:38	WG1780204
Xylenes, Total	0.00342		0.00300	1	11/25/2021 17:38	WG1780204
(S) Toluene-d8	*109*		*80.0-120*		*11/25/2021 17:38*	WG1780204
(S) Toluene-d8	*118*		*80.0-120*		*11/29/2021 18:46*	WG1781138
(S) 4-Bromofluorobenzene	*114*		*77.0-126*		*11/25/2021 17:38*	WG1780204
(S) 4-Bromofluorobenzene	*99.4*		*77.0-126*		*11/29/2021 18:46*	WG1781138
(S) 1,2-Dichloroethane-d4	*118*		*70.0-130*		*11/25/2021 17:38*	WG1780204
(S) 1,2-Dichloroethane-d4	*120*		*70.0-130*		*11/29/2021 18:46*	WG1781138

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	11/24/2021 20:08	WG1779326
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	11/24/2021 20:08	WG1779326

Method Blank (MB)

(MB) R3734361-2 11/28/21 02:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1433582-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1433582-03 11/28/21 03:02 • (DUP) R3734361-3 11/28/21 03:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	265	265	1	0.142		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

L1433727-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1433727-02 11/28/21 04:18 • (DUP) R3734361-4 11/28/21 04:20

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3734361-1 11/28/21 02:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	92.8	92.8	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

Method Blank (MB)

(MB) R3736496-1 12/02/21 13:48

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ammonia Nitrogen	U		0.117	0.250

L1433668-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1433668-02 12/02/21 14:00 • (DUP) R3736496-5 12/02/21 14:01

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	ND	ND	1	0.000		10

L1433793-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1433793-01 12/02/21 14:30 • (DUP) R3736496-7 12/02/21 14:31

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	ND	ND	1	0.000		10

Laboratory Control Sample (LCS)

(LCS) R3736496-2 12/02/21 13:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ammonia Nitrogen	7.50	7.94	106	90.0-110	

L1433668-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433668-01 12/02/21 13:55 • (MS) R3736496-3 12/02/21 13:57 • (MSD) R3736496-4 12/02/21 13:58

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	5.00	ND	5.29	5.33	106	107	1	90.0-110			0.678	10

L1433792-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1433792-01 12/02/21 14:27 • (MS) R3736496-6 12/02/21 14:28

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ammonia Nitrogen	5.00	4.07	9.08	100	1	90.0-110	

Method Blank (MB)

(MB) R3733862-1 11/25/21 13:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
COD	U		11.7	20.0

L1433505-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1433505-04 11/25/21 13:16 • (DUP) R3733862-5 11/25/21 13:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	64.7	65.0	1	0.571		20

L1433515-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1433515-01 11/25/21 13:16 • (DUP) R3733862-6 11/25/21 13:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	227	227	1	0.0220		20

Laboratory Control Sample (LCS)

(LCS) R3733862-2 11/25/21 13:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	500	520	104	90.0-110	

L1433413-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433413-02 11/25/21 13:14 • (MS) R3733862-3 11/25/21 13:14 • (MSD) R3733862-4 11/25/21 13:14

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
COD	500	ND	511	514	102	103	1	80.0-120			0.560	20

Method Blank (MB)

(MB) R3735832-1 11/30/21 10:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	0.591	J	0.353	1.00
Chloride	U		0.379	1.00
Fluoride	0.0768	J	0.0640	0.150
Nitrate	U		0.0480	0.100
Sulfate	U		0.594	5.00

L1435844-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1435844-01 11/30/21 21:12 • (DUP) R3735832-6 11/30/21 21:25

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	0.000		15
Chloride	91.4	91.2	1	0.240		15
Fluoride	0.568	0.560	1	1.28		15
Nitrate	0.252	0.250	1	0.518		15

L1428041-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1428041-03 11/30/21 16:00 • (DUP) R3735832-9 11/30/21 16:13

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	0.278		15
Chloride	72.3	72.3	1	0.0509		15
Fluoride	0.404	0.409	1	1.33		15
Nitrate	3.81	3.80	1	0.142		15
Sulfate	63.8	63.9	1	0.138		15

Laboratory Control Sample (LCS)

(LCS) R3735832-2 11/30/21 10:24

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	38.2	95.5	80.0-120	
Chloride	40.0	38.8	97.0	80.0-120	
Fluoride	8.00	7.86	98.3	80.0-120	
Nitrate	8.00	7.88	98.6	80.0-120	
Sulfate	40.0	40.2	100	80.0-120	

L1428041-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1428041-03 11/30/21 16:00 • (MS) R3735832-4 11/30/21 16:26 • (MSD) R3735832-5 11/30/21 16:39

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	ND	47.6	47.7	93.6	93.9	1	80.0-120			0.221	15
Chloride	50.0	72.3	118	118	91.8	92.1	1	80.0-120	E	E	0.131	15
Fluoride	5.00	0.404	5.35	5.38	99.0	99.6	1	80.0-120			0.529	15
Nitrate	5.00	3.81	8.54	8.76	94.7	98.9	1	80.0-120			2.45	15
Sulfate	50.0	63.8	109	111	90.8	93.6	1	80.0-120	E	E	1.27	15

L1435844-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1435844-01 11/30/21 21:12 • (MS) R3735832-7 11/30/21 21:38 • (MSD) R3735832-8 11/30/21 21:51

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	ND	48.2	50.3	96.4	101	1	80.0-120			4.33	15
Chloride	50.0	91.4	137	143	91.2	103	1	80.0-120	E	E	4.22	15
Fluoride	5.00	0.568	5.53	5.80	99.3	105	1	80.0-120			4.79	15
Nitrate	5.00	0.252	5.06	5.26	96.2	100	1	80.0-120			3.98	15

Method Blank (MB)

(MB) R3735701-1 12/01/21 09:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Mercury	U		0.000100	0.000200

Laboratory Control Sample (LCS)

(LCS) R3735701-2 12/01/21 09:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00302	101	80.0-120	

L1433510-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433510-08 12/01/21 09:07 • (MS) R3735701-3 12/01/21 09:09 • (MSD) R3735701-4 12/01/21 09:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.00300	ND	0.00295	0.00295	98.4	98.4	1	75.0-125			0.0251	20

Method Blank (MB)

(MB) R3735194-1 11/30/21 08:18

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Mercury,Dissolved	U		0.000100	0.000200

Laboratory Control Sample (LCS)

(LCS) R3735194-2 11/30/21 08:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury,Dissolved	0.00300	0.00310	103	80.0-120	

L1433642-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433642-01 11/30/21 08:23 • (MS) R3735194-3 11/30/21 08:25 • (MSD) R3735194-4 11/30/21 08:28

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury,Dissolved	0.00300	ND	0.000503	0.000616	16.8	20.5	1	75.0-125	J6	J3 J6	20.2	20

Method Blank (MB)

(MB) R3739021-1 12/09/21 02:26

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Boron,Dissolved	U		0.0200	0.200

Laboratory Control Sample (LCS)

(LCS) R3739021-2 12/09/21 02:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron,Dissolved	1.00	0.986	98.6	80.0-120	

L1433347-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433347-01 12/09/21 02:31 • (MS) R3739021-4 12/09/21 02:36 • (MSD) R3739021-5 12/09/21 02:39

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron,Dissolved	1.00	ND	0.992	0.974	99.2	97.4	1	75.0-125			1.84	20

Method Blank (MB)

(MB) R3743730-1 12/22/21 01:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Boron	U		0.0200	0.200

Laboratory Control Sample (LCS)

(LCS) R3743730-2 12/22/21 01:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.963	96.3	80.0-120	

L1433668-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433668-01 12/22/21 01:35 • (MS) R3743730-4 12/22/21 01:40 • (MSD) R3743730-5 12/22/21 01:43

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	0.960	0.957	96.0	95.7	1	75.0-125			0.261	20

Method Blank (MB)

(MB) R3739982-1 12/13/21 09:55

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum,Dissolved	U		0.0185	0.100
Antimony,Dissolved	U		0.00103	0.00400
Arsenic,Dissolved	U		0.000180	0.00200
Barium,Dissolved	U		0.000381	0.00200
Beryllium,Dissolved	U		0.000190	0.00200
Cadmium,Dissolved	U		0.000150	0.00100
Calcium,Dissolved	U		0.0936	1.00
Chromium,Dissolved	U		0.00124	0.00200
Copper,Dissolved	U		0.00151	0.00500
Cobalt,Dissolved	0.0000681	J	0.0000596	0.00200
Iron,Dissolved	U		0.0281	0.100
Lead,Dissolved	U		0.000849	0.00200
Magnesium,Dissolved	U		0.0735	1.00
Manganese,Dissolved	U		0.000704	0.00500
Nickel,Dissolved	U		0.000816	0.00200
Potassium,Dissolved	U		0.108	2.00
Selenium,Dissolved	U		0.000300	0.00200
Silver,Dissolved	U		0.0000700	0.00200
Sodium,Dissolved	U		0.376	2.00
Thallium,Dissolved	U		0.000121	0.00200
Vanadium,Dissolved	U		0.000664	0.00500
Zinc,Dissolved	U		0.00302	0.0250

Laboratory Control Sample (LCS)

(LCS) R3739982-2 12/13/21 09:59

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum,Dissolved	5.00	4.85	97.0	80.0-120	
Antimony,Dissolved	0.0500	0.0488	97.6	80.0-120	
Arsenic,Dissolved	0.0500	0.0476	95.2	80.0-120	
Barium,Dissolved	0.0500	0.0467	93.5	80.0-120	
Beryllium,Dissolved	0.0500	0.0426	85.2	80.0-120	
Cadmium,Dissolved	0.0500	0.0488	97.6	80.0-120	
Calcium,Dissolved	5.00	4.82	96.4	80.0-120	
Chromium,Dissolved	0.0500	0.0497	99.5	80.0-120	
Copper,Dissolved	0.0500	0.0456	91.2	80.0-120	
Cobalt,Dissolved	0.0500	0.0494	98.7	80.0-120	
Iron,Dissolved	5.00	4.75	94.9	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3739982-2 12/13/21 09:59

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lead,Dissolved	0.0500	0.0465	93.0	80.0-120	
Magnesium,Dissolved	5.00	4.94	98.7	80.0-120	
Manganese,Dissolved	0.0500	0.0496	99.2	80.0-120	
Nickel,Dissolved	0.0500	0.0493	98.5	80.0-120	
Potassium,Dissolved	5.00	4.91	98.2	80.0-120	
Selenium,Dissolved	0.0500	0.0492	98.5	80.0-120	
Silver,Dissolved	0.0500	0.0479	95.8	80.0-120	
Sodium,Dissolved	5.00	5.24	105	80.0-120	
Thallium,Dissolved	0.0500	0.0458	91.7	80.0-120	
Vanadium,Dissolved	0.0500	0.0500	100	80.0-120	
Zinc,Dissolved	0.500	0.469	93.7	80.0-120	

L1431968-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1431968-08 12/13/21 10:02 • (MS) R3739982-4 12/13/21 10:08 • (MSD) R3739982-5 12/13/21 10:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum,Dissolved	5.00	ND	4.72	4.68	94.4	93.7	1	75.0-125			0.802	20
Antimony,Dissolved	0.0500	ND	0.0504	0.0507	101	101	1	75.0-125			0.599	20
Arsenic,Dissolved	0.0500	ND	0.0477	0.0483	95.4	96.7	1	75.0-125			1.37	20
Barium,Dissolved	0.0500	0.270	0.320	0.320	99.9	102	1	75.0-125			0.244	20
Beryllium,Dissolved	0.0500	ND	0.0431	0.0432	86.2	86.4	1	75.0-125			0.209	20
Cadmium,Dissolved	0.0500	ND	0.0489	0.0486	97.8	97.2	1	75.0-125			0.606	20
Calcium,Dissolved	5.00	200	204	202	82.6	38.2	1	75.0-125		V	1.10	20
Chromium,Dissolved	0.0500	ND	0.0478	0.0486	95.5	97.1	1	75.0-125			1.65	20
Copper,Dissolved	0.0500	ND	0.0472	0.0464	87.8	86.2	1	75.0-125			1.73	20
Cobalt,Dissolved	0.0500	ND	0.0476	0.0479	94.6	95.3	1	75.0-125			0.685	20
Potassium,Dissolved	5.00	ND	5.02	4.94	94.2	92.7	1	75.0-125			1.42	20
Iron,Dissolved	5.00	ND	4.69	4.69	93.9	93.7	1	75.0-125			0.158	20
Lead,Dissolved	0.0500	ND	0.0459	0.0458	91.9	91.5	1	75.0-125			0.370	20
Magnesium,Dissolved	5.00	136	142	140	114	74.5	1	75.0-125		V	1.41	20
Manganese,Dissolved	0.0500	0.00918	0.0560	0.0562	93.7	93.9	1	75.0-125			0.194	20
Nickel,Dissolved	0.0500	ND	0.0484	0.0486	94.5	94.8	1	75.0-125			0.357	20
Selenium,Dissolved	0.0500	ND	0.0495	0.0495	99.0	99.0	1	75.0-125			0.00646	20
Silver,Dissolved	0.0500	ND	0.0477	0.0477	95.4	95.4	1	75.0-125			0.0250	20
Sodium,Dissolved	5.00	236	244	242	151	113	1	75.0-125	V		0.772	20
Thallium,Dissolved	0.0500	ND	0.0457	0.0466	91.4	93.3	1	75.0-125			1.97	20
Vanadium,Dissolved	0.0500	ND	0.0492	0.0497	98.3	99.5	1	75.0-125			1.16	20
Zinc,Dissolved	0.500	ND	0.463	0.468	92.7	93.5	1	75.0-125			0.938	20

L1432215-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1432215-06 12/13/21 10:15 • (MS) R3739982-6 12/13/21 10:18 • (MSD) R3739982-7 12/13/21 10:21

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony,Dissolved	0.0500	ND	0.0490	0.0505	98.0	101	1	75.0-125			3.07	20
Arsenic,Dissolved	0.0500	ND	0.0467	0.0475	92.8	94.5	1	75.0-125			1.77	20
Beryllium,Dissolved	0.0500	ND	0.0430	0.0459	82.9	88.6	1	75.0-125			6.36	20
Cadmium,Dissolved	0.0500	ND	0.0483	0.0491	96.6	98.2	1	75.0-125			1.68	20
Chromium,Dissolved	0.0500	ND	0.0461	0.0468	92.2	93.7	1	75.0-125			1.57	20
Copper,Dissolved	0.0500	0.0673	0.112	0.113	90.4	92.3	1	75.0-125			0.819	20
Cobalt,Dissolved	0.0500	0.00237	0.0493	0.0506	93.8	96.5	1	75.0-125			2.78	20
Potassium,Dissolved	5.00	ND	7.25	7.34	110	112	1	75.0-125			1.30	20
Iron,Dissolved	5.00	0.262	4.88	4.92	92.4	93.2	1	75.0-125			0.822	20
Lead,Dissolved	0.0500	ND	0.0482	0.0481	93.0	92.9	1	75.0-125			0.0566	20
Selenium,Dissolved	0.0500	ND	0.0482	0.0484	96.3	96.7	1	75.0-125			0.442	20
Silver,Dissolved	0.0500	ND	0.0472	0.0478	94.4	95.6	1	75.0-125			1.22	20
Thallium,Dissolved	0.0500	ND	0.0464	0.0461	92.8	92.1	1	75.0-125			0.732	20
Vanadium,Dissolved	0.0500	ND	0.0470	0.0482	94.0	96.4	1	75.0-125			2.51	20
Zinc,Dissolved	0.500	0.0538	0.532	0.542	95.7	97.6	1	75.0-125			1.80	20

Method Blank (MB)

(MB) R3744815-1 12/26/21 16:10

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum	U		0.0185	0.100
Antimony	U		0.00103	0.00400
Arsenic	U		0.000180	0.00200
Barium	0.000562	J	0.000381	0.00200
Beryllium	U		0.000190	0.00200
Cadmium	U		0.000150	0.00100
Calcium	U		0.0936	1.00
Copper	0.00230	J	0.00151	0.00500
Cobalt	U		0.0000596	0.00200
Iron	U		0.0281	0.100
Lead	U		0.000849	0.00200
Magnesium	U		0.0735	1.00
Manganese	U		0.000704	0.00500
Potassium	U		0.108	2.00
Selenium	U		0.000300	0.00200
Silver	U		0.0000700	0.00200
Sodium	U		0.376	2.00
Thallium	U		0.000121	0.00200
Vanadium	U		0.000664	0.00500
Zinc	U		0.00302	0.0250

Method Blank (MB)

(MB) R3745199-1 12/27/21 21:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chromium	0.00286		0.00124	0.00200
Nickel	0.00127	J	0.000816	0.00200

Laboratory Control Sample (LCS)

(LCS) R3744815-2 12/26/21 16:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	5.00	4.84	96.9	80.0-120	
Antimony	0.0500	0.0484	96.8	80.0-120	
Arsenic	0.0500	0.0478	95.6	80.0-120	
Barium	0.0500	0.0469	93.8	80.0-120	
Beryllium	0.0500	0.0443	88.5	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3744815-2 12/26/21 16:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cadmium	0.0500	0.0533	107	80.0-120	
Calcium	5.00	4.90	98.0	80.0-120	
Copper	0.0500	0.0465	92.9	80.0-120	
Cobalt	0.0500	0.0499	99.9	80.0-120	
Iron	5.00	5.08	102	80.0-120	
Lead	0.0500	0.0495	99.0	80.0-120	
Magnesium	5.00	5.04	101	80.0-120	
Manganese	0.0500	0.0481	96.2	80.0-120	
Potassium	5.00	4.93	98.5	80.0-120	
Selenium	0.0500	0.0529	106	80.0-120	
Silver	0.0500	0.0509	102	80.0-120	
Sodium	5.00	5.14	103	80.0-120	
Thallium	0.0500	0.0472	94.3	80.0-120	
Vanadium	0.0500	0.0489	97.8	80.0-120	
Zinc	0.500	0.474	94.7	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3745199-2 12/27/21 21:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chromium	0.0500	0.0506	101	80.0-120	
Nickel	0.0500	0.0508	102	80.0-120	

L1433493-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433493-09 12/26/21 16:17 • (MS) R3744815-4 12/26/21 16:23 • (MSD) R3744815-5 12/26/21 16:26

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum	5.00	ND	4.82	4.83	96.3	96.5	1	75.0-125			0.206	20
Antimony	0.0500	ND	0.0475	0.0476	94.9	95.2	1	75.0-125			0.283	20
Arsenic	0.0500	ND	0.0487	0.0478	97.3	95.6	1	75.0-125			1.76	20
Barium	0.0500	0.0374	0.0843	0.0843	93.9	93.8	1	75.0-125			0.0444	20
Beryllium	0.0500	ND	0.0429	0.0430	85.8	85.9	1	75.0-125			0.181	20
Cadmium	0.0500	ND	0.0541	0.0539	108	108	1	75.0-125			0.387	20
Calcium	5.00	49.6	54.0	54.2	88.2	91.1	1	75.0-125			0.273	20
Copper	0.0500	ND	0.0449	0.0442	89.8	88.4	1	75.0-125			1.50	20
Cobalt	0.0500	ND	0.0507	0.0502	101	100	1	75.0-125			0.901	20
Potassium	5.00	ND	5.84	5.90	97.9	99.0	1	75.0-125			0.938	20

L1433493-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433493-09 12/26/21 16:17 • (MS) R3744815-4 12/26/21 16:23 • (MSD) R3744815-5 12/26/21 16:26

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Iron	5.00	ND	5.07	5.12	101	102	1	75.0-125			0.903	20
Lead	0.0500	ND	0.0492	0.0489	98.5	97.8	1	75.0-125			0.687	20
Magnesium	5.00	14.1	19.0	19.0	97.8	97.9	1	75.0-125			0.00627	20
Manganese	0.0500	ND	0.0477	0.0472	95.5	94.4	1	75.0-125			1.09	20
Selenium	0.0500	ND	0.0553	0.0525	107	102	1	75.0-125			5.23	20
Silver	0.0500	ND	0.0513	0.0514	103	103	1	75.0-125			0.101	20
Sodium	5.00	5.38	10.4	10.6	101	104	1	75.0-125			1.55	20
Thallium	0.0500	ND	0.0470	0.0466	94.0	93.1	1	75.0-125			0.919	20
Vanadium	0.0500	ND	0.0498	0.0499	99.7	99.8	1	75.0-125			0.146	20
Zinc	0.500	ND	0.479	0.473	95.9	94.7	1	75.0-125			1.27	20

L1433493-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1433493-09 12/27/21 22:01 • (MS) R3745199-4 12/27/21 22:08 • (MSD) R3745199-5 12/27/21 22:11

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chromium	0.0500	ND	0.0504	0.0505	101	101	1	75.0-125			0.174	20
Nickel	0.0500	ND	0.0499	0.0501	99.7	100	1	75.0-125			0.405	20

Method Blank (MB)

(MB) R3734597-3 11/25/21 16:37

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acrylonitrile	U		0.000671	0.0100
Benzene	U		0.0000941	0.00100
Bromodichloromethane	U		0.000136	0.00100
Bromochloromethane	U		0.000128	0.00100
Bromoform	U		0.000129	0.00100
Bromomethane	U		0.000605	0.00500
Carbon disulfide	U		0.0000962	0.00100
Carbon tetrachloride	U		0.000128	0.00100
Chlorobenzene	U		0.000116	0.00100
Chlorodibromomethane	U		0.000140	0.00100
Chloroethane	U		0.000192	0.00500
Chloroform	U		0.000111	0.00500
Chloromethane	U		0.000960	0.00250
1,2-Dibromo-3-Chloropropane	U		0.000276	0.00500
1,2-Dibromoethane	U		0.000126	0.00100
Dibromomethane	U		0.000122	0.00100
1,2-Dichlorobenzene	U		0.000107	0.00100
1,4-Dichlorobenzene	U		0.000120	0.00100
trans-1,4-Dichloro-2-butene	U		0.000467	0.00250
1,1-Dichloroethane	U		0.000100	0.00100
1,2-Dichloroethane	U		0.0000819	0.00100
1,1-Dichloroethene	U		0.000188	0.00100
cis-1,2-Dichloroethene	U		0.000126	0.00100
trans-1,2-Dichloroethene	U		0.000149	0.00100
1,2-Dichloropropane	U		0.000149	0.00100
cis-1,3-Dichloropropene	U		0.000111	0.00100
trans-1,3-Dichloropropene	U		0.000118	0.00100
Ethylbenzene	U		0.000137	0.00100
2-Hexanone	U		0.000787	0.0100
Iodomethane	U		0.00600	0.0100
2-Butanone (MEK)	U		0.00119	0.0100
Methylene Chloride	U		0.000430	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.000478	0.0100
Styrene	U		0.000118	0.00100
1,1,1,2-Tetrachloroethane	U		0.000147	0.00100
1,1,2,2-Tetrachloroethane	U		0.000133	0.00100
Tetrachloroethene	U		0.000300	0.00100
Toluene	U		0.000278	0.00100
1,1,1-Trichloroethane	U		0.000149	0.00100
1,1,2-Trichloroethane	U		0.000158	0.00100

Method Blank (MB)

(MB) R3734597-3 11/25/21 16:37

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Trichloroethene	U		0.000190	0.00100
Trichlorofluoromethane	U		0.000160	0.00500
1,2,3-Trichloropropane	U		0.000237	0.00250
Vinyl acetate	U		0.000692	0.0100
Vinyl chloride	U		0.000234	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*109*			*80.0-120*
(S) 4-Bromofluorobenzene	*112*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*121*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3734597-1 11/25/21 15:15 • (LCSD) R3734597-2 11/25/21 15:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acrylonitrile	0.0250	0.0260	0.0274	104	110	55.0-149			5.24	20
Benzene	0.00500	0.00501	0.00531	100	106	70.0-123			5.81	20
Bromodichloromethane	0.00500	0.00551	0.00542	110	108	75.0-120			1.65	20
Bromochloromethane	0.00500	0.00559	0.00600	112	120	76.0-122			7.08	20
Bromoform	0.00500	0.00479	0.00545	95.8	109	68.0-132			12.9	20
Bromomethane	0.00500	0.00563	0.00577	113	115	10.0-160			2.46	25
Carbon disulfide	0.00500	0.00528	0.00550	106	110	61.0-128			4.08	20
Carbon tetrachloride	0.00500	0.00652	0.00667	130	133	68.0-126	J4	J4	2.27	20
Chlorobenzene	0.00500	0.00513	0.00532	103	106	80.0-121			3.64	20
Chlorodibromomethane	0.00500	0.00488	0.00547	97.6	109	77.0-125			11.4	20
Chloroethane	0.00500	0.00519	0.00522	104	104	47.0-150			0.576	20
Chloroform	0.00500	0.00577	0.00611	115	122	73.0-120		J4	5.72	20
Chloromethane	0.00500	0.00553	0.00523	111	105	41.0-142			5.58	20
1,2-Dibromo-3-Chloropropane	0.00500	0.00492	0.00520	98.4	104	58.0-134			5.53	20
1,2-Dibromoethane	0.00500	0.00452	0.00493	90.4	98.6	80.0-122			8.68	20
Dibromomethane	0.00500	0.00528	0.00592	106	118	80.0-120			11.4	20
1,2-Dichlorobenzene	0.00500	0.00523	0.00534	105	107	79.0-121			2.08	20
1,4-Dichlorobenzene	0.00500	0.00461	0.00475	92.2	95.0	79.0-120			2.99	20
trans-1,4-Dichloro-2-butene	0.00500	0.00179	0.00216	35.8	43.2	33.0-144			18.7	20
1,1-Dichloroethane	0.00500	0.00575	0.00566	115	113	70.0-126			1.58	20
1,2-Dichloroethane	0.00500	0.00543	0.00558	109	112	70.0-128			2.72	20
1,1-Dichloroethene	0.00500	0.00548	0.00620	110	124	71.0-124			12.3	20
cis-1,2-Dichloroethene	0.00500	0.00565	0.00588	113	118	73.0-120			3.99	20
trans-1,2-Dichloroethene	0.00500	0.00580	0.00604	116	121	73.0-120		J4	4.05	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3734597-1 11/25/21 15:15 • (LCSD) R3734597-2 11/25/21 15:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,2-Dichloropropane	0.00500	0.00488	0.00489	97.6	97.8	77.0-125			0.205	20
cis-1,3-Dichloropropene	0.00500	0.00527	0.00522	105	104	80.0-123			0.953	20
trans-1,3-Dichloropropene	0.00500	0.00472	0.00500	94.4	100	78.0-124			5.76	20
Ethylbenzene	0.00500	0.00500	0.00546	100	109	79.0-123			8.80	20
2-Hexanone	0.0250	0.0219	0.0232	87.6	92.8	67.0-149			5.76	20
Iodomethane	0.0250	0.0275	0.0290	110	116	33.0-147			5.31	26
2-Butanone (MEK)	0.0250	0.0231	0.0258	92.4	103	44.0-160			11.0	20
Methylene Chloride	0.00500	0.00603	0.00609	121	122	67.0-120	J4	J4	0.990	20
4-Methyl-2-pentanone (MIBK)	0.0250	0.0242	0.0260	96.8	104	68.0-142			7.17	20
Styrene	0.00500	0.00477	0.00562	95.4	112	73.0-130			16.4	20
1,1,1,2-Tetrachloroethane	0.00500	0.00520	0.00575	104	115	75.0-125			10.0	20
1,1,2,2-Tetrachloroethane	0.00500	0.00468	0.00451	93.6	90.2	65.0-130			3.70	20
Tetrachloroethene	0.00500	0.00487	0.00557	97.4	111	72.0-132			13.4	20
Toluene	0.00500	0.00501	0.00508	100	102	79.0-120			1.39	20
1,1,1-Trichloroethane	0.00500	0.00648	0.00661	130	132	73.0-124	J4	J4	1.99	20
1,1,2-Trichloroethane	0.00500	0.00485	0.00449	97.0	89.8	80.0-120			7.71	20
Trichloroethene	0.00500	0.00552	0.00600	110	120	78.0-124			8.33	20
Trichlorofluoromethane	0.00500	0.00611	0.00646	122	129	59.0-147			5.57	20
1,2,3-Trichloropropane	0.00500	0.00433	0.00509	86.6	102	73.0-130			16.1	20
Vinyl acetate	0.0250	0.0282	0.0247	113	98.8	11.0-160			13.2	20
Vinyl chloride	0.00500	0.00543	0.00570	109	114	67.0-131			4.85	20
Xylenes, Total	0.0150	0.0154	0.0165	103	110	79.0-123			6.90	20
(S) Toluene-d8				*103*	*108*	*80.0-120*				
(S) 4-Bromofluorobenzene				*108*	*108*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*120*	*121*	*70.0-130*				

Method Blank (MB)

(MB) R3734973-3 11/29/21 14:17

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0113	0.0500
(S) Toluene-d8	*118*			*80.0-120*
(S) 4-Bromofluorobenzene	*97.4*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*126*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3734973-1 11/29/21 13:00 • (LCSD) R3734973-2 11/29/21 13:22

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.0250	0.0269	0.0278	108	111	19.0-160			3.29	27
(S) Toluene-d8				*114*	*112*	*80.0-120*				
(S) 4-Bromofluorobenzene				*102*	*102*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*127*	*127*	*70.0-130*				

Method Blank (MB)

(MB) R3734699-1 11/24/21 19:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ethylene Dibromide	U		0.00000536	0.0000200
1,2-Dibromo-3-Chloropropane	U		0.00000748	0.0000200

L1433642-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1433642-01 11/24/21 20:08 • (DUP) R3734699-3 11/24/21 19:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ethylene Dibromide	ND	ND	1	0.000		20
1,2-Dibromo-3-Chloropropane	ND	ND	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3734699-4 11/24/21 22:15 • (LCSD) R3734699-5 11/25/21 01:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethylene Dibromide	0.000250	0.000301	0.000305	120	122	60.0-140			1.32	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000242	0.000247	96.8	98.8	60.0-140			2.04	20

Original Sample (OS) • Matrix Spike (MS)

(OS) • (MS) R3734699-2 11/24/21 19:29

Analyte	Spike Amount mg/l	Original Result	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ethylene Dibromide	0.000103		0.000102	99.0	1.03	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000103		0.0000992	96.3	1.03	72.0-148	

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
Civil & Environmental Consultants - TN

117 Seaboard Ln.
Suite E100
Franklin. TN 37067

Billing Information:
Accounts Payable
117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Pres Chk

Report to:
Philip Campbell

Email To: **pcampbell@cecinc.com**

Project Description:
EWS Camden Class 2 Landfill

City/State Collected:

Please Circle: PT MT CT ET

Phone: **615-333-7797**

Client Project #
181-364

Lab Project #
CEC-EWS CAMDEN LF

Collected by (print):
Todd Hyatt

Site/Facility ID #
CAMDEN, TN

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

No. of Cntrs

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	**WetChem** 250mlHDPE-NoPres	ALK 100ml Amb-NoPres	COD,NH3 250mlHDPE-H2SO4	Diss.Metals 250mlHDPE-NoPres	SV8011 40mlClr-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl			Remarks	Sample # (lab only)
IWC-L	Grab	GW		11/14/21	0940	11	X	X	X	X	X	X	X				-01
APWC-L		GW				11	X	X	X	X	X	X	X			DRY	

Chain of Custody Page ___ of ___

Pace Analytical®

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Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1433642
C245

Acctnum: **CEC**
Template: **T133582**
Prelogin: **P886110**
PM: **526 - Chris McCord**
PB: BF 11/16/21
Shipped Via: **Courier**

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: WetChem** = *NITRATE*,CHLORIDE,BROMIDE,SULFATE,FLUORIDE**
Tot/Diss Metals=M6020AP1 + Al,Ca,Fe,K,Mg,Mn,Na,B(6010)

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier ✓

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
	11/14/21	13:45			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 2.6 °C 2.6 Bottles Received: 11	
	11-19-21	16:50			
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11/19/21 Time: 1650	Hold: / Condition: NCF / OK

GROUNDWATER MONITORING FIELD INFORMATION LOG

Civil & Environmental Consultants, Inc. 117 Seaboard Lane, Suite E100 Franklin, Tennessee 37067 - 800-763-2326 - www.cecinc.com

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-1
LOCATION	Camden, TN	TEMPERATURE & WEATHER	40s P.C.
DATE & TIME	11/18/21 1000	EVENT FREQUENCY	Quarterly
PURGE METHOD	Peristaltic Pump	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	30.5	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	22.02	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	8.44	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	3.0	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	22.02	1004	16.3	5.16	89.2	68.4	6.86	166.3	506
.4	22.12	1008	15.5	4.79	46.5	38.2	5.33	194.4	11.3
.65	22.12	1012	15.0	4.84	43.3	35.5	4.95	215.8	6.76
.95	22.12	1016	15.8	4.85	43.0	35.4	3.48	232.5	10.4
1.15	22.12	1020	15.8	4.89	44.7	36.9	2.01	160.4	11.0
1.30	22.12	1024	15.9	5.13	66.0	54.6	1.20	71.6	10.9
1.5	22.12	1028	15.9	5.34	88.7	73.3	.87	47.6	17.2
1.65	22.12	1032	15.9	5.38	95.8	79.3	.82	41.6	19.3
1.80	22.12	1036	15.9	5.41	101.8	84.2	.75	36.5	18.3
2.0	22.12	1040	15.9	5.43	110.4	91.2	.65	30.9	19.2
2.2	22.12	1044	15.8	5.46	115.6	95.3	.6	28.3	20.1
2.4	22.12	1048	15.9	5.46	119.3	98.5	.52	26.5	19.9

See next page

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.0	21.12	1100	15.9	5.48	122.8	101.6	0.44	24.9	19.8

Preservatives Used	See COC	Sample Charateristics (Odor, Color)	Cloudy; no odor
Number of Containers	10	Sampler Signature	

WELL DATA

Number of Baffles	4 + Fence	Well Cap Dedicated/In Place?	yes
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	fair	Well Clear of Weeds/Accessible?	yes

MW-1 Former EWS 11/18/21

gal	DTW	Time	Temp	pH	Sp. Cond	Cond.	DO	ORP	NTU
2.6	21.12	1052	16.0	5.47	121.0	100.2	.48	25.7	21.0
2.8	21.12	1056	15.9	5.47	122.0	100.8	.46	25.5	21.4
3.0	21.12	1100	15.9	5.48	122.8	101.6	.44	24.9	19.8 @ metals

Sampled @ 1100

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	**MONITORING WELL I.D.**	MW-2
LOCATION	Camden, TN	**TEMPERATURE & WEATHER**	40s P.C.
DATE & TIME	11/14/24 955	**EVENT FREQUENCY**	Quarterly
PURGE METHOD	NA, parameters only	**FIELD REPRESENTATIVE**	Bays
TOTAL WELL DEPTH (feet)	10	**SAMPLING EQUIPMENT**	Bailer
DEPTH TO WATER (feet)	9.02	**IS SAMPLE EQUIPMENT DEDICATED?**	No
CASING DIAMETER (inches)	2	**DUPLICATE COLLECTED?**	—
WATER COLUMN (feet)	0.98	**FIELD BLANK COLLECTED?**	—
PURGE VOLUME (gallons)	—	**EQUIPMENT BLANK COLLECTED?**	—

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	9.02	956	16.6	6.23	260.0	218.1	3.46	96.0	5.59
Preservatives Used	—			**Sample Charateristics (Odor, Color)**					
Number of Containers	—			**Sampler Signature**					

WELL DATA

Number of Baffles		**Well Cap Dedicated/In Place?**	Yes
Lock Condition	good	**Fittings/Well Head Condition**	N/A
Pad/Casing Quality	fair	**Well Clear of Weeds/Accessible?**	Yes

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-3
LOCATION	Camden, TN	TEMPERATURE & WEATHER	50s P.C.
DATE & TIME	11/16/21 1315	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	27	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	18.80	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	Yes
WATER COLUMN (feet)	8.2	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	3.0	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
Ø	18.8	1326	17.0	5.76	147.4	167.6	4.82	190.0	14.7
.75	18.85	1330	16.9	5.85	149.3	168.1	8.29	190.1	24.0
.95	18.85	1334	16.7	5.86	149.9	168.1	4.23	189.2	20.8
1.15	18.85	1338	16.7	5.86	200.5	168.1	1.87	188.1	21.2
1.4	18.85	1342	16.6	5.88	204.7	171.8	1.76	185.7	20.3
1.75	18.85	1346	16.6	5.91	205.1	172.2	1.37	187.4	19.4
2.0	18.85	1350	16.5	5.92	205.3	172.6	1.40	180.2	21.2
2.25	18.85	1354	16.4	5.94	205.1	172.0	1.43	178.8	20.0
2.50	18.85	1358	16.4	5.95	206.1	172.1	1.39	177.8	19.6
2.8	18.84	1402	16.0	5.97	205.6	170.3	1.43	174.7	18.6
2.9	18.84	1410	15.9	5.94	205.6	170.1	1.45	174.3	18.3
3.0	18.84	1420	16.0	5.98	205.5	170.5	1.46	172.5	18.5 @ metals

14 min break in reading

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.0	18.84	1420	16.0	5.98	205.8	170.5	1.46	172.5	18.5

Preservatives Used	See COC	Sample Charateristics (Odor, Color)	Cloudy; no odor
Number of Containers	10	Sampler Signature	A Baugh

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	Yes
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	ok	Well Clear of Weeds/Accessible?	yes

Pulled pump to check for damage. none noticable

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-4
LOCATION	Camden, TN	TEMPERATURE & WEATHER	50s P.C.
DATE & TIME	11/18/21 1235	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	23.1	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	11.22	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	11.88	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	2.0	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU	
0	11.22	1242	16.6	5.46	76.7	64.5	2.65	188.6	OR	*
.4	11.32	1246	16.7	5.49	77.3	65.0	2.50	170.5	102	
.8	11.32	1250	16.8	5.53	77.1	65.3	2.50	163.7	54.5	
1.2	11.32	1254	16.8	5.49	77.4	65.2	2.50	159.5	21.9	
1.6	11.32	1258	16.8	5.57	76.9	64.8	2.39	152.3	11.5	
2.0	11.32	1302	16.8	5.53	75.9	63.8	2.37	156.6	8.20	

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
2.0	11.32	1305	16.8	5.53	75.6	63.8	2.37	156.6	8.20

Preservatives Used	See COC	Sample Charateristics (Odor, Color)	clear no odor
Number of Containers	See COC	Sampler Signature	L Baugh

WELL DATA

Number of Baffles	0 Fence only	Well Cap Dedicated/In Place?	Yes
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	good	Well Clear of Weeds/Accessible?	Yes

* Orange suspended solids @ initial purge

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-5
LOCATION	Camden, TN	TEMPERATURE & WEATHER	40s P.C.
DATE & TIME	4/18/21 1120	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	
TOTAL WELL DEPTH (feet)	33.85	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	9.09	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	24.76	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	1.3	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	9.09	1138	16.3	4.89	324.4	269.2	1.73	173.9	11.8
.25	9.3	1142	16.1	4.90	324.2	269.4	.79	211.3	24.5
.4	9.3	1146	16.1	5.03	322.3	267.4	.62	233.0	25.1
.5	9.3	1150	16.1	4.95	319.1	265.0	.55	249.9	22.4
.6	9.3	1154	16.1	4.97	317.9	264.1	.55	257.6	22.4
.8	9.3	1158	16.1	4.92	316.6	262.8	.53	263.3	20.9
.95	9.3	1202	16.2	4.93	316.1	262.2	.52	265.9	21.1
1.1	9.3	1206	16.2	4.94	315.1	261.8	.51	270.1	21.2
1.3	9.3	1210	16.1	4.96	314.5	261.1	.52	271.6	21.6

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.3	9.3	1210	16.1	4.96	314.5	261.1	.52	271.6	

Preservatives Used	see COC	Sample Charateristics (Odor, Color)	very fine white sands no odor
Number of Containers	see COC	Sampler Signature	

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	yes
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	good	Well Clear of Weeds/Accessible?	yes

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-1
LOCATION	Camden, TN	TEMPERATURE & WEATHER	60s, Sunny
DATE & TIME	11/18/21 1220	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	A. Black
TOTAL WELL DEPTH (feet)	32.50	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	6.45	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	26.05	FIELD BLANK COLLECTED?	Y 1310
PURGE VOLUME (gallons)	8.0	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	6.45	1226	16.8	5.58	139.2	117.5	5.41	126.4	54.2
1.5	11.60	1236	16.4	5.56	162.2	135.2	4.61	123.1	85.0
2.75	11.60	1246	16.4	5.58	160.9	134.7	4.64	122.1	40.8
3.5	11.60	1256	16.4	5.54	161.1	134.6	4.47	127.9	26.1
4.5	11.60	1306	16.4	5.56	160.9	134.5	4.03	131.1	17.6
5.5	11.60	1316	16.3	5.52	160.5	134.0	4.18	133.2	15.3
6.5	11.60	1326	16.4	5.50	160.8	134.3	4.26	133.8	10.6
8.0	11.60	1336	16.3	5.54	160.8	133.5	4.24	131.9	8.17

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
8.0	11.60	1340	16.3	5.54	160.8	133.5	4.24	~~181~~ 131.9	8.17
Preservatives Used	See COC			Sample Charateristics (Odor, Color)					
Number of Containers	10			Sampler Signature					

WELL DATA

Number of Baffles	concrete barrier	Well Cap Dedicated/In Place?	Yes
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	no pad / casing	Well Clear of Weeds/Accessible?	Yes

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	**MONITORING WELL I.D.**	TMW-2
LOCATION	Camden, TN	**TEMPERATURE & WEATHER**	50s, Sunny
DATE & TIME	11/18/21 1050	**EVENT FREQUENCY**	Quarterly
PURGE METHOD	Low-flow	**FIELD REPRESENTATIVE**	A. Black
TOTAL WELL DEPTH (feet)	27.50	**SAMPLING EQUIPMENT**	Bladder Pump
DEPTH TO WATER (feet)	~~11.12~~ 10.82	**IS SAMPLE EQUIPMENT DEDICATED?**	Yes
CASING DIAMETER (inches)	2	**DUPLICATE COLLECTED?**	N
WATER COLUMN (feet)	16.68	**FIELD BLANK COLLECTED?**	N
PURGE VOLUME (gallons)	8.5	**EQUIPMENT BLANK COLLECTED?**	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	10.82	1058	16.8	5.68	129.3	110.3	7.81	118.5	167
1.5	17.40	1108	16.7	5.62	158.6	132.4	5.91	122.4	555
2.75	17.75	1118	16.7	5.58	158.9	133.8	5.56	123.2	314
3.75	17.75	1128	16.6	5.58	160.8	134.8	5.30	123.5	59.7
5.0	17.75	1138	16.6	5.57	161.4	135.8	5.76	123.2	29.4
6.5	17.75	1148	16.6	5.54	162.6	136.2	5.06	124.4	21.8
7.5	17.75	1158	16.6	5.52	164.5	138.1	5.07	123.8	11.6
8.5	17.75	1208	16.6	5.52	164.7	138.4	5.17	124.5	9.99

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
8.5	17.75	1210	16.6	5.52	164.7	138.4	5.17	124.5	8.80 @ 1206

Preservatives Used	See COC	**Sample Charateristics (Odor, Color)**	Clear; no odor
Number of Containers	10	**Sampler Signature**	

WELL DATA

Number of Baffles	Concrete barrier	**Well Cap Dedicated/In Place?**	Yes
Lock Condition	good	**Fittings/Well Head Condition**	good
Pad/Casing Quality	No pad / Casing	**Well Clear of Weeds/Accessible?**	yes

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	**MONITORING WELL I.D.**	TMW-3
LOCATION	Camden, TN	**TEMPERATURE & WEATHER**	50s, Sunny
DATE & TIME	11/18/21 1000	**EVENT FREQUENCY**	Quarterly
PURGE METHOD	Low-flow	**FIELD REPRESENTATIVE**	A. Black
TOTAL WELL DEPTH (feet)	28.00	**SAMPLING EQUIPMENT**	Bladder Pump
DEPTH TO WATER (feet)	9.04	**IS SAMPLE EQUIPMENT DEDICATED?**	Yes
CASING DIAMETER (inches)	2	**DUPLICATE COLLECTED?**	N
WATER COLUMN (feet)	18.96	**FIELD BLANK COLLECTED?**	N
PURGE VOLUME (gallons)	3.75	**EQUIPMENT BLANK COLLECTED?**	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	9.04	1008	16.5	5.91	321.8	270.1	2.04	107.7	251
1.5	11.65	1018	16.5	5.41	304.6	255.4	1.31	110.2	75.7
2.75	11.80	1028	16.4	5.37	300.0	251.9	1.26	116.0	17.2
3.75	11.80	1038	16.5	5.35	298.2	249.9	1.22	120.4	9.94

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.75	11.80	1040	16.5	5.35	298.2	249.9	1.22	120.4	8.97 @ Metals

Preservatives Used	See COC	**Sample Charateristics (Odor, Color)**	Clear, no odor
Number of Containers	10	**Sampler Signature**	

WELL DATA

Number of Baffles	concrete barrier	**Well Cap Dedicated/In Place?**	yes
Lock Condition	good	**Fittings/Well Head Condition**	good
Pad/Casing Quality	No pad/casing	**Well Clear of Weeds/Accessible?**	yes

EQUIPMENT CALIBRATION LOG

Civil & Environmental Consultants, Inc. 117 Seaboard Lane Suite E-100 Franklin, Tennessee 37067 - 800-763-2326 - www.cecinc.com

EQUIPMENT CALIBRATION FORM

NAME OF REPRESENTATIVE	A. Black
LOCATION	Former EWS
DATE AND TIME	11/17/21 1400
Equipment and Model # (ex. YSI Pro Plus 556)	YSI Pro Plus / HACH 2100Q
Equipment Serial #	YSI #2 / HACH # 7

pH Calibration							
pH buffer Calibration Standard	Buffer solution exp. date	Pre-Cal Reading (S.U.)	ph mV Value	Accepted Range mV	Within Range? (Yes or No)	Post-Cal Reading (S.U.)	Calibrated? (yes/no)
4	3/23	4.00	151.8	160 to 180	N	4.04	Y
7	4/23	7.01	-19.1	+/-50	Y	7.02	Y
10	3/23	10.03	-189.9	-160 to -180	N	10.01	Y

Temperature Calibration Check	
Cert. Thermometer Value (deg C)	Meter Value (deg C)
22.3	21.9

DO Calibration				
Actual Barometric Pressure	Barometric Pressure (mm Hg)	D.O. Value (% Saturated)	Unit reading (%)	% DO accepted?
763.9	763.1	105.5	100.1	Y

Specific Conductivity Calibration			
Sp. Conductivity Calibration Standard buffer solution	Buffer solution exp. date	Pre Cal Reading (umhos)	Post Cal Reading (umhos)
1413	6/22	1396	1411

ORP Calibration			
ORP Calibration (mV)	Buffer solution exp. date	Pre Cal Reading (mV)	Post Cal Reading (mV)
220	4/22	217.7	220.1

Hach Model 2100P Turbidimeter Calibration					
Calibration verification Test performed and passed?	NTU Standard	Within Range? (Yes/No)	Measured Value	Stored?	Final Verification test passed? (Yes/No)
(Yes)	20				
No	100				
Note: if verification passed, calibration not required	800				

FIELD ENVIRONMENTAL INSTRUMENTS, INC.
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301 Brushton Ave
Suite A
Pittsburgh, PA 15221
Toll Free (800) 393-4009
Local (412) 436-2600
Fax (412) 436-2616

YSI Pro Plus Calibration Certificate

Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
PH 7 @ 25C	8012081	12/17/2022	7.15	7.03	(6.86 - 7.14)
			pH mV value	-15.5	(0 mV +/- 50mV)
Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
PH 4 @ 25C	7007637	8/14/2022	4.25	3.92	(3.92 - 4.08)
			pH mV value	156.0	(149.5mV to 164.5mV)
Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
PH 10 @ 25C	8012077	12/16/2022	9.91	9.85	(9.8 - 10.20)
			pH mV value	-170.0	(-180.5mV to -195.5mV)
Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
Conductivity	8012061	12/16/2022	1.410	1.390	(1.338 to 1.479)
			Cell Constant	5.0	(4.5 to 5.5)

Check Standard ORP	Temp ©	Reading	Acceptable Range
	19.2	220.0	(+/- 2.0mV)

ORP Offset	-8.90	(0 +/- 100)

Dissolved Oxygen	% Saturation	mg/L
	100.6	9.00

	mm Hg	Sensor Value	Acceptable Range
Barometer	761.0	3.4	(2.37 - 4.4)

New DO Membrane: (•) Yes ( ) No

Model	Pro Plus
S/N	13B100153
Barcode	-
Order #	463624

( ) Black (•) Blue ( ) Yellow

Calibrated By: Aaron Barsh

Date of Calibration: 11/12/2021

*Solutions provided by LabChem (412-826-5230)

All calibrations performed by FEI conform to manufacturer's specifications. Please report any issues within 24 hours of receiving equipment.
All calibration solutions used are traceable to NIST. Additional documentation is available upon request.