

**3RD QUARTER 2021 GROUNDWATER
ASSESSMENT MONITORING REPORT
AUGUST 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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EXECUTIVE SUMMARY

This report documents the 3rd quarter 2021 assessment-monitoring event, which was performed at the former Environmental Waste Solutions, LLC (EWS) Camden Class II Landfill on August 26, 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 August 2021 event (18.4 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 3rd quarter 2021 sampling event at the facility included the following sampling activities:

Groundwater samples were collected by CEC on August 26, 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);" 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 September 24, 2021 for the groundwater samples and September 14, 2021 for the IWC leachate samples.

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 (0.00595 mg/l) and the duplicate sample collected from MW-3 (0.00584 mg/l) during this August 2021 sampling event, which were greater 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, no distinct statistically significant trend was identified for total cadmium concentrations at MW-3, when considering data from the past 22 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.

Nine 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), zinc (MW-3), and sulfate (MW-3). The chloride, total cadmium, zinc, 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
microhm ^{os} •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:

$$\text{Established Top of Casing Elevation} - \text{Depth to Water} = \text{Groundwater Elevation}$$

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 23.15 feet below the top of casing at the up-gradient monitor well MW-1 to approximately 12.02 feet below the top of casing at monitor well MW-4. The potentiometric gradient calculated from groundwater elevation data collected on August 26th, 2021 is approximately 1.25%.

The potentiometric gradient is calculated according to the following formula:

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

$$\frac{(393.32') - (369.45)}{1,910'} * 100 = 1.25\%$$

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 August 26, 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 ($\text{Na}_2\text{S}_2\text{O}_3$); 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 August 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 September 24, 2021. Laboratory analytical testing of the field blank presented in the analytical report showed no indications of any constituents above the laboratory PQL, with the exception of chemical oxygen demand (COD) and chloride. The results for the duplicate sample collected from MW-3 were similar to the original MW-3 sample results. Fluoride was detected in the duplicate sample collected from MW-3 (0.167 mg/l), but was not detected above the PQL (<0.150 mg/l) in the original MW-3 sample. However, the relative percent difference (RPD) between all constituent values (including fluoride) 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 August 2021 event indicated that the same analyte was found in the associated laboratory method blank for the detected concentrations of aluminum and chloride in MW-1, as indicated by laboratory qualifier “B”. The associated method blank sample result indicated values for aluminum (0.0545 mg/l) and chloride (0.499 mg/l) which were estimated values as indicated by laboratory method blank qualifier “J”, meaning that these method blank values were less than the respective PQL, but greater than the respective MDLs for each constituent. Since the same constituent concentrations were found in the method blank, the reported concentrations of aluminum and chloride (indicated as laboratory qualifier “B”) at MW-1 may be falsely higher than the actual concentrations. The nitrate samples collected at MW-1 and the duplicate sample from MW-3 were prepared and/or analyzed past holding time as defined in the method, as indicated by laboratory qualifier “Q”. However, no sample time was indicated for the blind duplicate sample collected at MW-3, and a default sample time of “00:00” was recorded by the laboratory. The duplicate sample was collected at MW-3 on August 26, 2021 at 14:25, and analyzed by the laboratory on August 28, 2021 at 13:44. Therefore, the nitrate sample analysis for the duplicate sample was within the 48-hour hold time for nitrate. Although the samples were received by the laboratory within the 48-hour hold time for nitrate at MW-1, the laboratory prepared these samples for analysis just four minutes past the 48-hour holding time. Therefore, the accuracy of the nitrate concentration at MW-1 is in question, but the duplicate concentration is within the hold time and is usable. 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 64 of 67 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 3rd 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 (0.019 mg/l) during this 3rd 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 August 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 above the MCL (0.005 mg/l) at MW-3 and the duplicate sample collected from MW-3 during this August 2021 monitoring event. During this event, the turbidity value observed at MW-3 was 28.7 NTU and a sample was collected for dissolved cadmium analysis (in addition to total cadmium) at MW-3 for comparative purposes. The dissolved cadmium concentration at MW-3 was slightly lower in concentration than total cadmium, but was also above the MCL. 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)
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

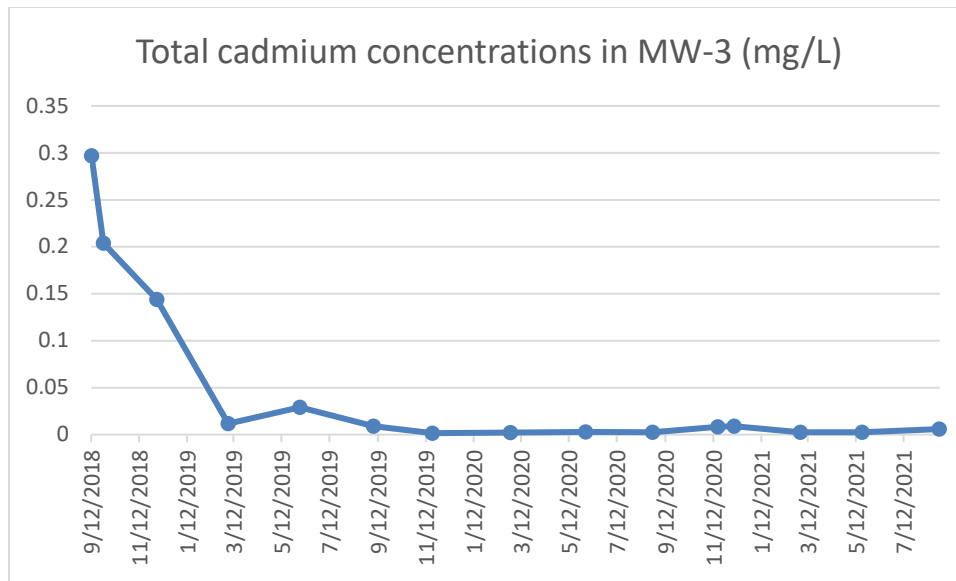


Figure – Cadmium Concentrations in MW-3

Since the fall of 2018, the total cadmium observed in MW-3 has shown an overall decrease in concentration. During the previous four consecutive sampling events from November 2019 to August 2020, the cadmium concentrations at MW-3 were below the MCL. However, during the previous November 17, 2020 sampling event and the verification re-sample event on December 8, 2020, the observed cadmium concentrations at MW-3 were slightly above the MCL before returning below the MCL during the previous March 2021 event and May 2021 events. Cadmium detections in MW-3 and MW-3 duplicate were detected above the MCL again during this August 2021 sample event. Although the cadmium concentrations during this event were above the MCL, these concentrations remain significantly lower than the concentrations observed in 2018.

Total Cobalt was detected in up-gradient well MW-1 (0.0585 mg/l). Cobalt was not detected in any down-gradient wells during this August 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 August 2021 event. 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 MW-3 (0.0041 mg/l) and MW-5 (0.00287 mg/l) which were not above the MCL of 0.1 mg/l for chromium.

Total Copper was detected in TMW-1 (0.00592 mg/l), and TMW-2 (0.00801 mg/l) which were not above the MCL of 1.3 mg/l for copper.

Total Mercury was not detected in any of the groundwater monitoring wells during this 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 August 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 August 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 down-gradient wells MW-3 and MW-5; **iron** in up-gradient well MW-1 and down-gradient wells MW-4 and MW-5; and **manganese** in up-gradient well MW-1 and down-gradient wells MW-3, 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 (0.218 mg/l) and MW-5 (0.236 mg/l) during this August 2021 sampling event were above the 2DWS (0.2 mg/l). However, dissolved aluminum was not detected above the PQL (<0.100 mg/l) in MW-3 during this event. Total aluminum was also detected in upgradient well MW-1 (0.155 mg/l) and down-gradient well TMW-2 (0.115 mg/l), but both were below the 2DWS (0.2 mg/l). However, the associated method blank sample result for MW-1, indicated values for aluminum (0.0545 mg/l), as indicated by laboratory qualifier “B”. Since the same constituent concentrations were found in the method blank at for MW-1, the reported concentrations may be falsely higher than the actual concentrations. Aluminum was not detected above the PQL (<0.1 mg/l) at MW-4, TMW-1, or TMW-3 during this August 2021 event.

The **Chloride** concentrations reported at MW-1 (4.1 mg/l), MW-3 (18.4 mg/l), MW-4 (8.88 mg/l), MW-5 (72.9 mg/l), TMW-1 (31.2 mg/l), TMW-2 (41.3 mg/l), and TMW-3 (64.2 mg/l) during this August 2021 event were below the 2DWS for chloride concentrations (250 mg/l). The chloride concentrations for this August 2021 event are similar to the concentrations observed at samples collected from each well during the previous May 2021 and November 2020 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 the duplicate sample taken at MW-3 (0.167 mg/l) during this August 2021 sampling event, which was well below the 2DWS for fluoride (2 mg/l). Fluoride was not detected (<0.150 mg/l) in the original MW-3 sample taken at MW-3.

Total Iron was detected above the 2DWS (0.3 mg/l) in up-gradient well MW-1 (13.8 mg/l) and down-gradient wells MW-4 (1.11 mg/l) and MW-5 (0.353 mg/l) during this August 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 August 2021 event at wells MW-3 (0.131 mg/l), TMW-1 (0.261 mg/l), TMW-2 (0.129 mg/l) and TMW-3 (0.19 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 (0.83 mg/l) and down-gradient wells MW-3 (0.283 mg/l), MW-4 (0.562 mg/l), and MW-5 (0.222 mg/l) during the August 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 August 2021 event, total manganese was also detected below 2DWS (0.05 mg/l) but above the laboratory PQL (<0.005 mg/l) in wells TMW-1 (0.0104 mg/l) and TMW-3 (0.0109 mg/l).

Total Nickel was detected in up-gradient well MW-1 (0.00559 mg/l) and down-gradient wells MW-3 (0.00467 mg/l) and MW-5 (0.00606 mg/l) during the August 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 (32.4 mg/l) during this August 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 (6.63 mg/l) and down-gradient well MW-5 (12 mg/l), during the August 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 August 2021 event (5.53 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 August 2021 event in MW-1 (2.68 mg/l), MW-4 (2.89 mg/l), MW-5 (10.8 mg/l), TMW-1 (3.95 mg/l), TMW-2 (4.84 mg/l), and TMW-3 (6.66 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. Six (6) QC qualifier codes (B, E, J, J4, Q, and V) were indicated during the laboratory analysis of groundwater samples collected during the August 2021 event. Specific information concerning each laboratory QC qualifier code can be found on page 64 of 67 in the September 24, 2021 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, 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, copper, nickel, silver, zinc, 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, copper, nickel, zinc, 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). 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 concentrations. However, trend analysis for MW-1 revealed downward trends in arsenic concentrations. There were no distinct statistically significant trends in concentrations for the detected barium, chloride, cobalt, 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, zinc 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, TMW-1, and TMW-3; chloride at MW-4, MW-5, TMW-1, TMW-2, and TMW-3; and sulfate at MW-5. Trend analysis revealed a downward trend in aluminum concentrations at TMW-2; barium 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 August 2021 sampling event was above the MCL. During the previous two monitoring events (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 and was just above the MCL, no distinct statistically significant trend was identified by Mann-Kendall for total cadmium concentrations at MW-3 when considering data from the past 22 sampling events since November 10, 2016.

The chloride concentrations observed at MW-3 (18.4 mg/l), MW-4 (8.88 mg/l), MW-5 (72.9 mg/l), TMW-1 (31.2 mg/l), TMW-2 (41.3 mg/l), and TMW-3 (64.2 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 (0.0041 mg/l) and MW-5 (0.00287 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 and MW-5 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.

The zinc concentration observed at MW-3 (0.0335 mg/l) produced an SSI over background during this event. The zinc concentration at MW-3 was less than the 2DWS limit of 5 mg/l. During the previous May 2021 monitoring event, zinc was not detected above the PQL (<0.0250 mg/l). However, zinc was most recently indicated as a SSI at MW-3 during the previous March 2021, November 2020, and June 2020 events. When considering zinc data from MW-3 since November

2016, the data did not show an upward or downward trend in zinc concentrations at MW-3 using the Mann-Kendall trend analysis at the 95% confidence level. Zinc was not detected above the PQL in any of the other monitoring wells across the site.

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 (32.4 mg/l) was lower than the previous March 2021 sample event (50.4 mg/l), and remains below the 2DWS of 250 mg/l. Sulfate was also detected in MW-5 (12.0 mg/l) during this August 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 May 2021 event (12.1 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 second 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), zinc (MW-3), and sulfate (MW-3).
- Trend analyses revealed a statistically significant upward trend in barium at MW-4, MW-5, TMW-1, and TMW-3; chloride at MW-4, MW-5, TMW-1, TMW-2, and TMW-3; and sulfate at MW-5. Trend analysis revealed a downward trend in aluminum concentrations at TMW-2; barium 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. Although the total cadmium detection at MW-3 was above the MCL during this monitoring event, the total cadmium detection at MW-3 was less than the MCL for the two prior consecutive sampling events in March 2021 and May 2021. 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 fourth quarter 2021 assessment-monitoring event is tentatively scheduled for November 2021 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 fourth quarter 2021 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. The

annual 2020 water use survey update is documented in a separate report. The next scheduled water use survey update is scheduled for November 2021.

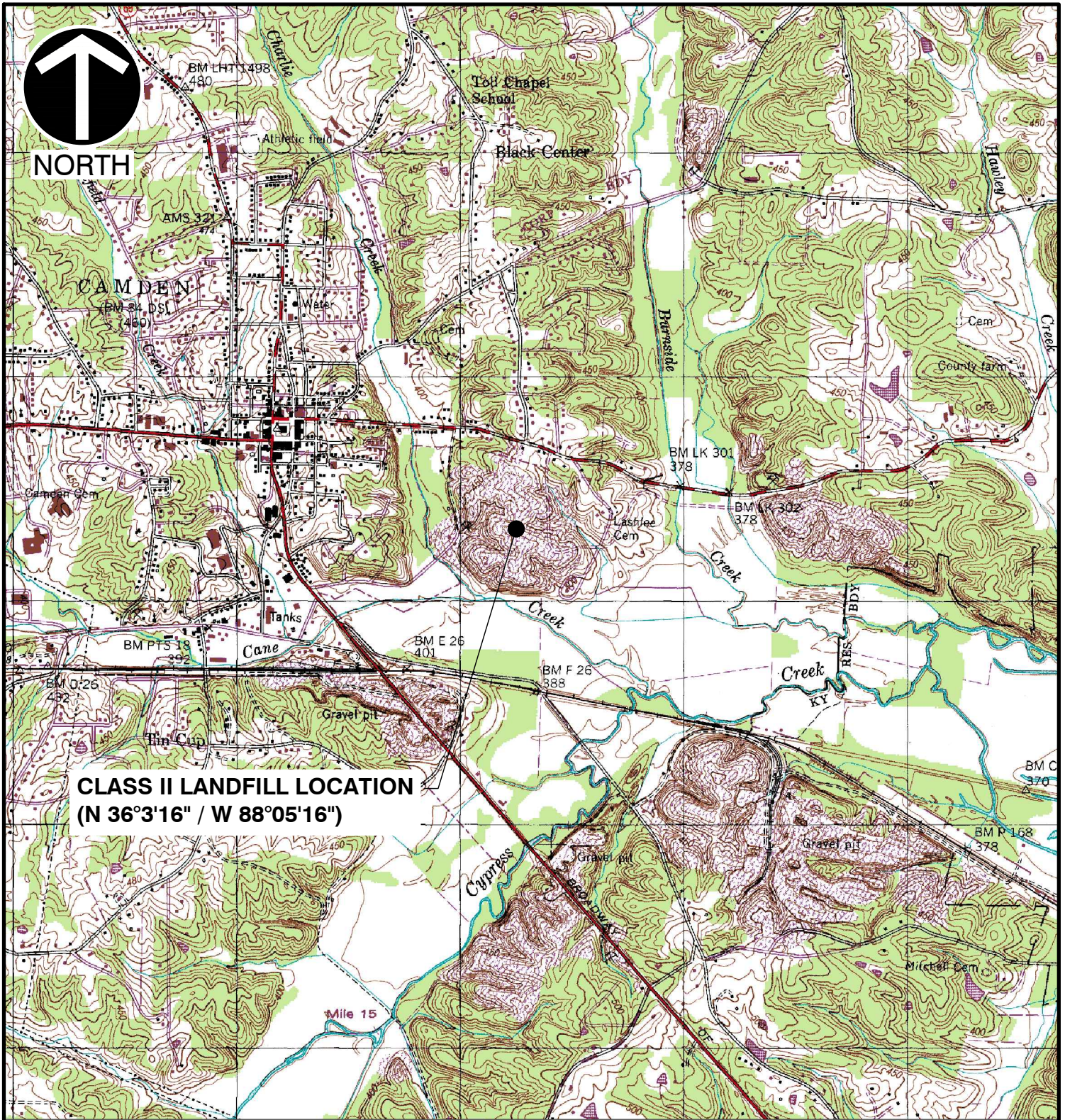
7.0 RECOMMENDATIONS

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

P:\2018\181-364\CADD\Dwg\181-364_FIGURE 1 - SITE LOCATION MAP.dwg\LAYOUI\LS\10/21/2021 - pcampbell) - LP: 10/21/2021 4:08 PM



REFERENCE

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



* HAND SIGNATURE ON FILE



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FORMER EWS SITE
 CLASS II CAMDEN LANDFILL
 CAMDEN, TENNESSEE

SITE LOCATION MAP 3Q2021

DRAWN BY:	AAB	CHECKED BY:	PJC	APPROVED BY:	KBW*	FIGURE NO.:
DATE:	OCTOBER 2021	DWG SCALE:	1"=200'	PROJECT NO:	181-364	1

P:\2018\181-364\CADD\DWG\181-364_GROUNDWATER MAP AUGUST 2021.DWG(FIG 2 (2))\LS:(PCAMPBELL - 10/21/2021) - LP: 10/26/2021_9:54:20_AM

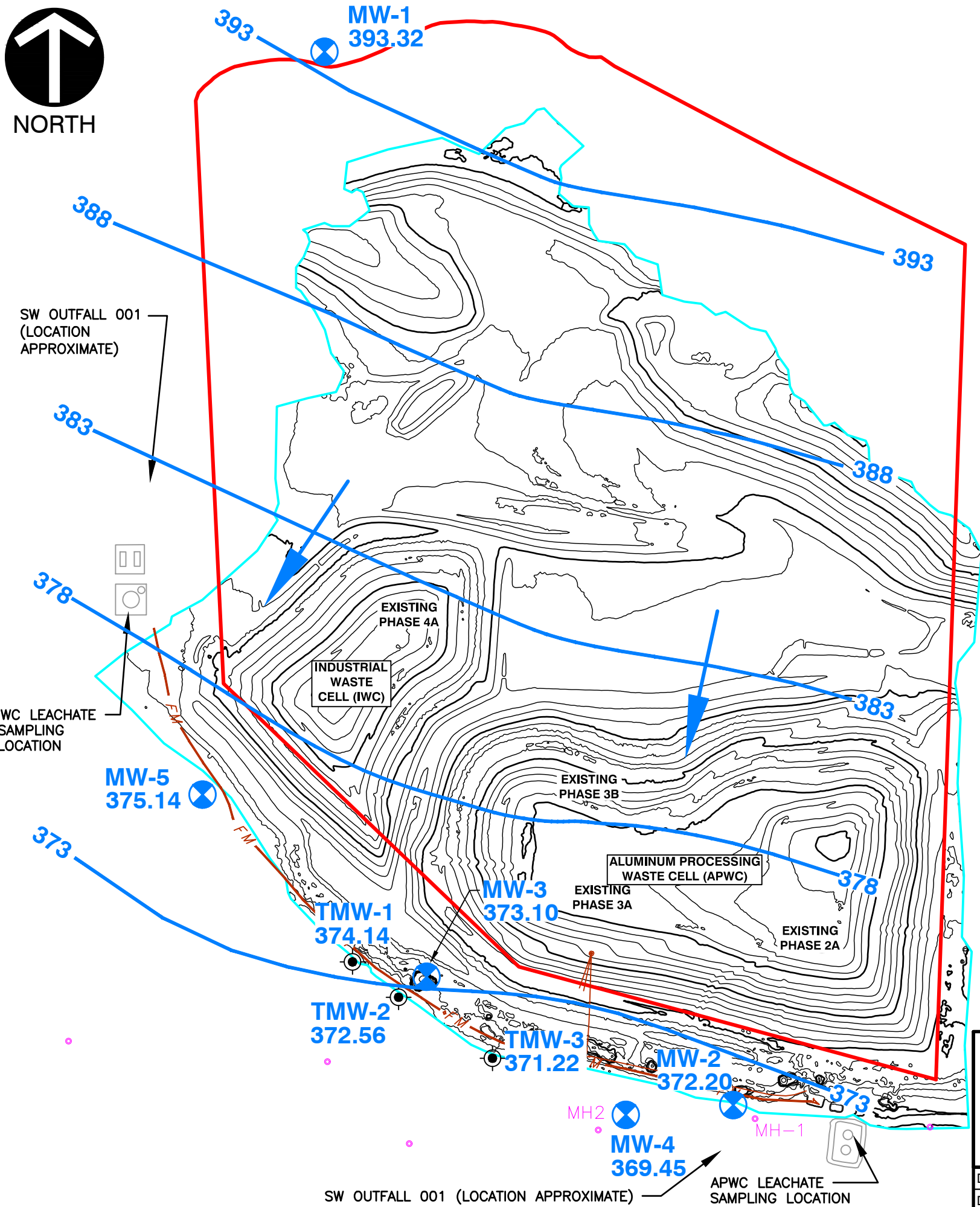


SW OUTFALL 001
(LOCATION APPROXIMATE)

IWC LEACHATE
SAMPLING
LOCATION

SW OUTFALL 001 (LOCATION APPROXIMATE)

APWC LEACHATE
SAMPLING LOCATION



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.

$$i = \frac{393.32' (MW-1) - 369.45' (MW-4)}{1,910'} = 0.0125 \text{ ft/ft}$$

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.



*HAND SIGNATURE ON FILE

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FORMER ENVIRONMENTAL WASTE SOLUTIONS
CAMDEN CLASS II LANDFILL
CAMDEN, TENNESSEE

AUGUST 2021
POTENTIOMETRIC SURFACE MAP

DRAWN BY: AAB	CHECKED BY: PJC	APPROVED BY: *KW	FIGURE NO.: 2
DATE: OCTOBER 2021	DWG SCALE: 1"=200'	PROJECT NO: 181-364.0005	

Table 1
Former Environmental Waste Solutions Camden Class II Landfill
Field Parameters and Potentiometric Data - 3rd 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	8/26/2021	10:50	416.47	385.97	0.17	1.2	23.15	393.32	16.9	102.9	121.6	5.51	0.81	143.5	1.92
MW-2*	8/26/2021	NS	380.35	367.70	0.17	0.8	8.15	372.20	22.8	222.4	232.0	6.07	5.61	210.9	36.47
MW-3	8/26/2021	14:25	392.90	365.10	0.17	1.4	19.80	373.10	24.1	213.8	217.4	5.54	0.03	195.3	28.7
MW-4	8/26/2021	12:25	381.47	358.37	0.17	1.9	12.02	369.45	17.5	72.6	84.7	5.72	0.05	190.0	3.87
MW-5	8/26/2021	11:45	385.25	351.40	0.17	4.0	10.11	375.14	17.6	286.5	334.0	5.24	1.10	198.0	9.34
TMW-1	8/26/2021	13:15	381.19	348.99	0.085	1.1	7.05	374.14	17.8	137.6	159.2	5.17	3.66	242.2	7.75
TMW-2	8/26/2021	12:15	384.27	356.77	0.085	0.7	11.71	372.56	18.4	150.0	171.7	5.09	4.86	241.5	8.78
TMW-3	8/26/2021	10:45	381.37	353.37	0.085	0.8	10.15	371.22	18.0	257.5	297.0	4.86	1.10	229.1	3.24
**Leachate (IWC-L)	8/26/2021	NS	NA	NA	NA	NA	NA	NA	25.4	196,107	194,520	3.35	2.3	289.1	NA
**Leachate (APWC-L)	8/26/2021	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 August 26, 2021.

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

**IWC-L and APWC-L were not producing leachate and were not sampled during this event.

NS= Not Sampled

NA= Not Applicable.

Table 2
Former EWS Camden Class II Landfill IDL 03-0212 (Terminated)
Groundwater and Leachate Analytical Data - 3rd 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	
		8/26/2021	Qualifier	8/26/2021	Qualifier	8/26/2021	Qualifier	8/26/2021	Qualifier	8/26/2021	Qualifier	8/26/2021	Qualifier	8/26/2021	Qualifier	8/26/2021	Qualifier	8/26/2021	Qualifier	8/26/2021	Qualifier	8/26/2021	Qualifier
		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)	
Hardness	-	19.8		56.8		55.7		25.3		84.0		49.7		51.9		79.2		43,400		NS*		<2.50	J
Alkalinity	-	24.8		26.1		26.4		21.2		<25.0		<20.0		<20.0		<21.2		<20.0		NS*		<20.4	
Ammonia Nitrogen	-	0.254		<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		1,830		NS*		<0.250	
COD	-	<20.0		21.5		21.2		<20.0		<20.0		<20.0		58.1		20.8		6,070		NS*		129	
Boron	-	<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<2.00		<0.200		<2.00		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	4.1	B	18.4		19.3		8.88		72.9		31.2		41.3		64.2		97,300		NS*		1.18	
Fluoride	2 ²	<0.150		<0.150		0.167		<0.150		<0.150		<0.150		<0.150		<0.150		<15.00		NS*		<0.150	
Nitrate	10 ¹	<1.00	Q	0.344		0.326	Q	0.33		1.10		1.74		0.872		5.77		<10.00		NS*		<0.100	
Sulfate	250 ²	6.63		32.4		31.7		<5.00		12.0		<5.00		<5.00		<5.00		<5.00		NS*		<5.00	
Aluminum	0.2 ²	0.155	B	0.218		0.272		<0.100		0.236		<0.100		0.115		<0.100		388		NS*		<0.100	
Aluminum, Dissolved	0.2 ²	NA		<0.100		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Antimony	0.006	<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.0800		NS*		<0.00400	
Arsenic	0.01	0.019		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NS*		<0.00200	
Barium	2	0.0198		0.0532		0.0492		0.0094		0.0505		0.0156		0.0337		0.0383		3.14		NS*		<0.00200	
Barium, Dissolved	2	NA		0.0506		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Beryllium	0.004	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NS*		<0.00200	
Cadmium	0.005	<0.00100		0.00595		0.00584		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		NS*		<0.00100	
Cadmium, Dissolved	0.005	NA		0.00589		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Calcium	-	3.51		13.6		13.3		5.39		15.8		13.4		12.8		20.7		15,200		NS*		<1.00	
Chromium	0.1	<0.00200		0.0041		0.00549		<0.00200		0.00287		<0.00200		<0.00200		<0.00200		<0.400		NS*		<0.00200	
Chromium, Dissolved	0.1	NA		0.00295	B	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cobalt	0.006 ³	0.0585		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		0.513		NS*		<0.00200	
Copper	1.3	<0.00500		0.00983		<0.00500		<0.00500		<0.00500		0.00592		0.00801		<0.00500		0.582		NS*		<0.00500	
Copper, Dissolved	1.3	NA		<0.00500		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Iron	0.3 ²	13.8		0.131		0.163		1.11		0.353		0.261		0.129		0.19		535		NS*		<1.00	
Iron, Dissolved	0.3 ²	NA		<0.100		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Lead	0.015	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		0.9		NS*		<0.00200	
Magnesium	-	2.68		5.53		5.47		2.89		10.8		3.95		4.84		6.66		1,320		NS*		<1.00	
Manganese	0.05 ²	0.83		0.283		0.286		0.0562		0.222		0.0104		<0.00500		0.0109		27.9		NS*		<0.00500	
Nickel	0.10 ¹	0.00559		0.00467		0.00560		<0.00200		0.00606		<0.00200		<0.00200		<0.00200		0.752		NS*		<0.00200	
Nickel, Dissolved	0.10 ¹	NA		0.00692	B	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Potassium	-	<2.00		6.52		6.03		<2.00		<2.00		<2.00		<2.00		<2.00		14,600		NS*		<2.00	
Selenium	0.05	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		0.461		NS*		<0.00200	
Silver	0.10 ²	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		0.00213		<0.00200		<0.0400		NS*		<0.00200	
Sodium	-	3.84		9.10		8.35		3.71		17.8		3.89		5.1		11.7		24,400		NS*		<2.00	
Thallium	0.002	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.0400		NS*		<0.00200	
Vanadium	-	<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<1.00		NS*		<0.00500	
Zinc	5 ²	<0.0250		0.0335		0.0314		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		112		NS*		<0.0250	
Zinc, Dissolved	5 ²	NA		0.0383		NA		NA		NA		NA		NA		NA		NA		NS*		NA	
Mercury	0.002	<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		NS*		<0.000200	
2-Butanone (Mek)	-	<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		0.452		NS*		<0.0100	
2-Hexanone	-	<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		0.0113		NS*		<0.0100	
4-Methyl-2-Pentanone (Mibk)	-	<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		0.0835		NS*		<0.0100	
Acetone	-	<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		2.41		NS*		<0.0500	
Carbon Disulfide	-	<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		0.00363		NS*		<0.00100	

Notes:
MCL: Maximum Contaminant Level Enforceable National Primary Drinking Water Standards
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 Cobalt
NS* - Not Sampled for analysis. APWC Leachate levels were minimal during the groundwater sampling event and no APWC Leachate sample was collected for analysis.
NA - Not Analyzed. Turbidity values were less than 10 NTU in all groundwater samples except MW-3.
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
J: The identification of the analyte is acceptable; the reported value is an estimate.
Q: Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.

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

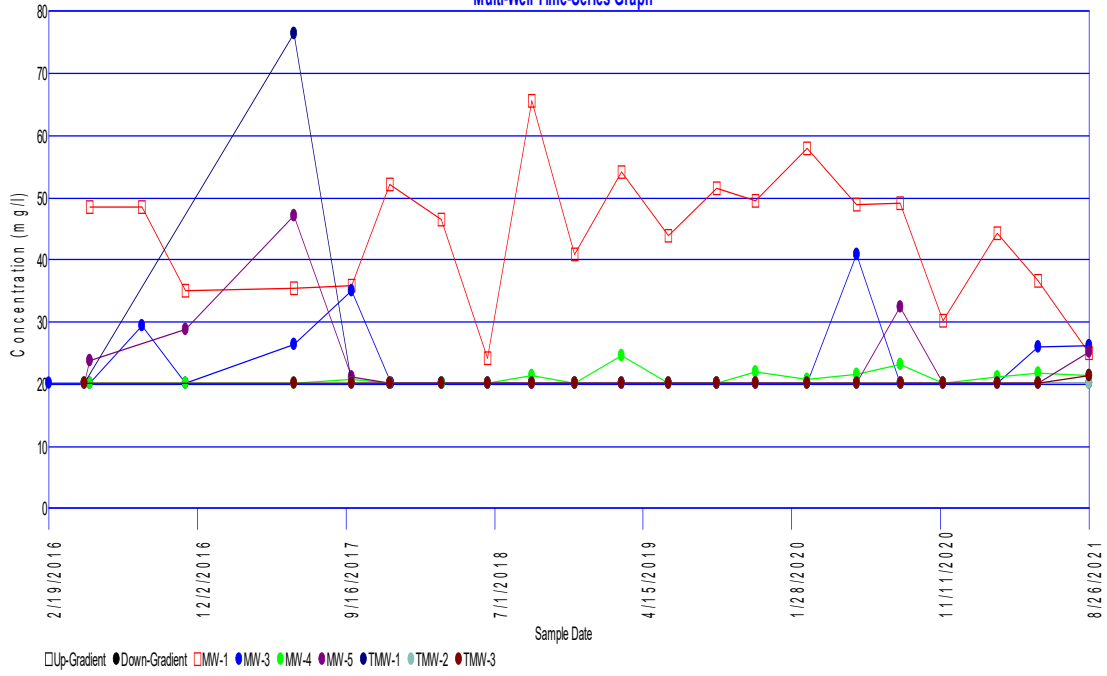
Intra-Well Statistical Summary (Upgradient Background Well MW-1)							
Constituent	Well	% Non Detects	Normality	Intra-well NPPL	Intra-well PPL	SSI	Mann-Kendall Trend Analysis ¹
Aluminum	MW-1	61.76	non-parametric	Pass	--	No	Upward Trend
Arsenic	MW-1	0.00	non-parametric	Pass	--	No	Downward Trend
Barium	MW-1	8.82	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
Nickel	MW-1	32.35	non-parametric	Pass	--	No	No Trend
Sulfate	MW-1	59.38	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	61.76	non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend
	TMW-1		non-parametric	Pass	--	No	No Trend
	TMW-2		non-parametric	Pass	--	No	Downward Trend
Barium	MW-3	8.82	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	Upward 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	No 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	94.12	non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend
Copper	TMW-1	82.35	non-parametric	Pass	--	No	No Trend
	TMW-2		non-parametric	Pass	--	No	No Trend
Nickel	MW-3	32.35	non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend
Silver	TMW-2	100.00	non-parametric	Pass	--	No	No Trend
Zinc	MW-3	73.53	non-parametric	Fail	--	Yes	No Trend
Sulfate	MW-3	59.38	non-parametric	Fail	--	Yes	No Trend
	MW-5		non-parametric	Pass	--	No	Upward Trend

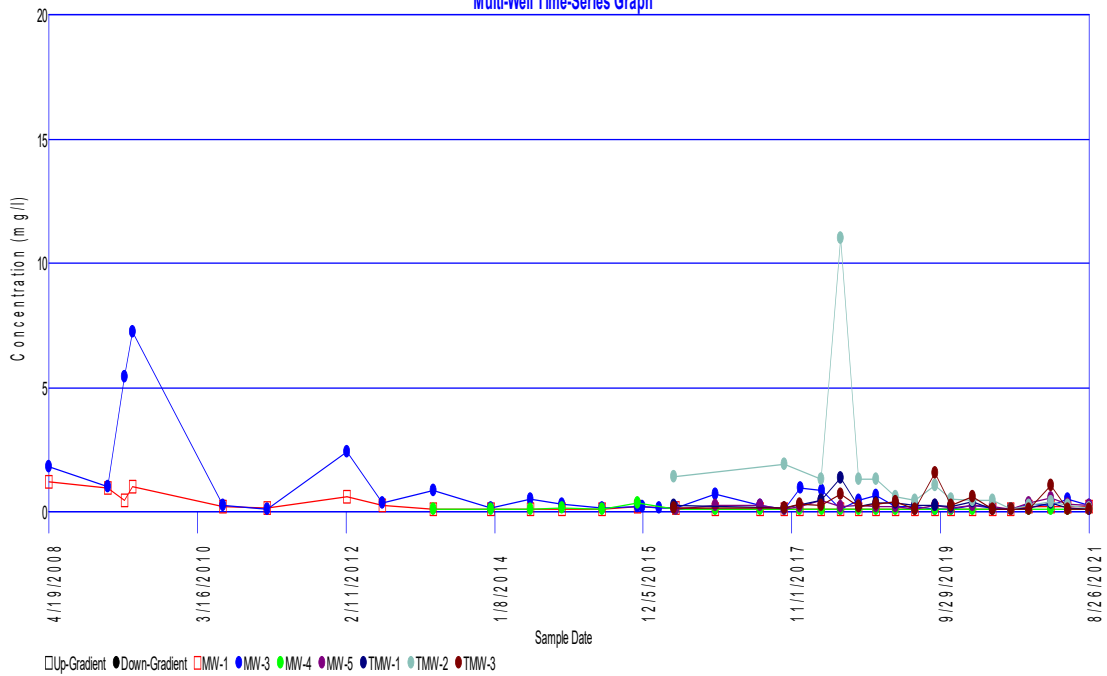
¹ Mann-Kendall Trend Analysis was completed using recent data since the November 10, 2016 sampling event.

APPENDIX B
STATISTICAL EVALUATIONS & TIME SERIES PLOTS

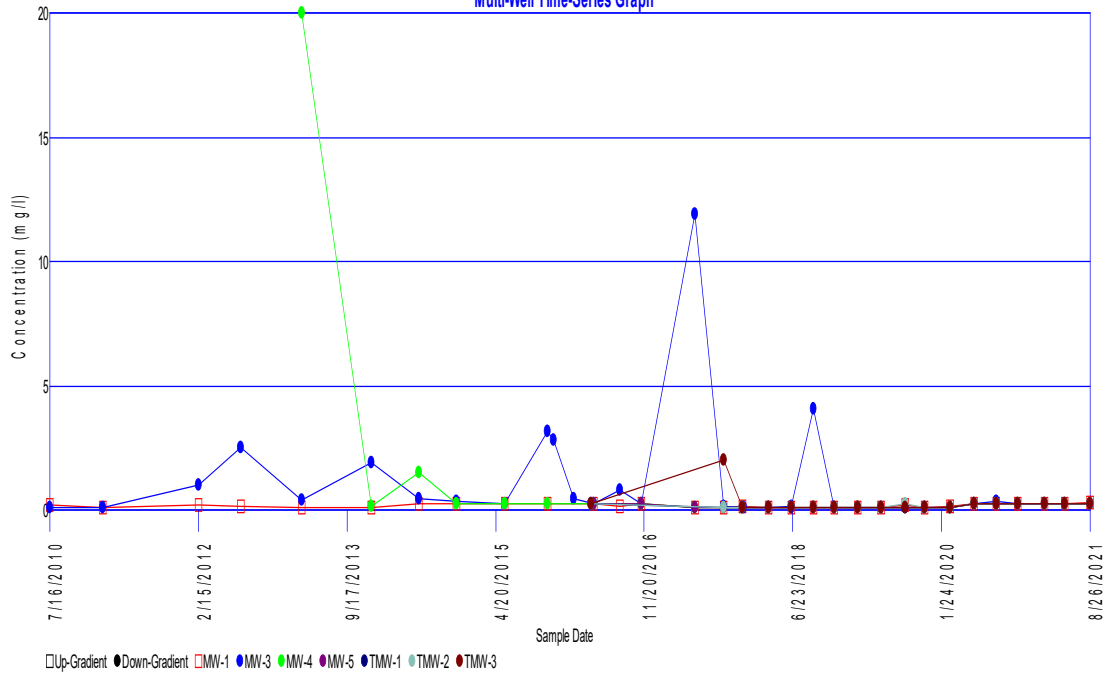
Alkalinity Multi-Well Time-Series Graph



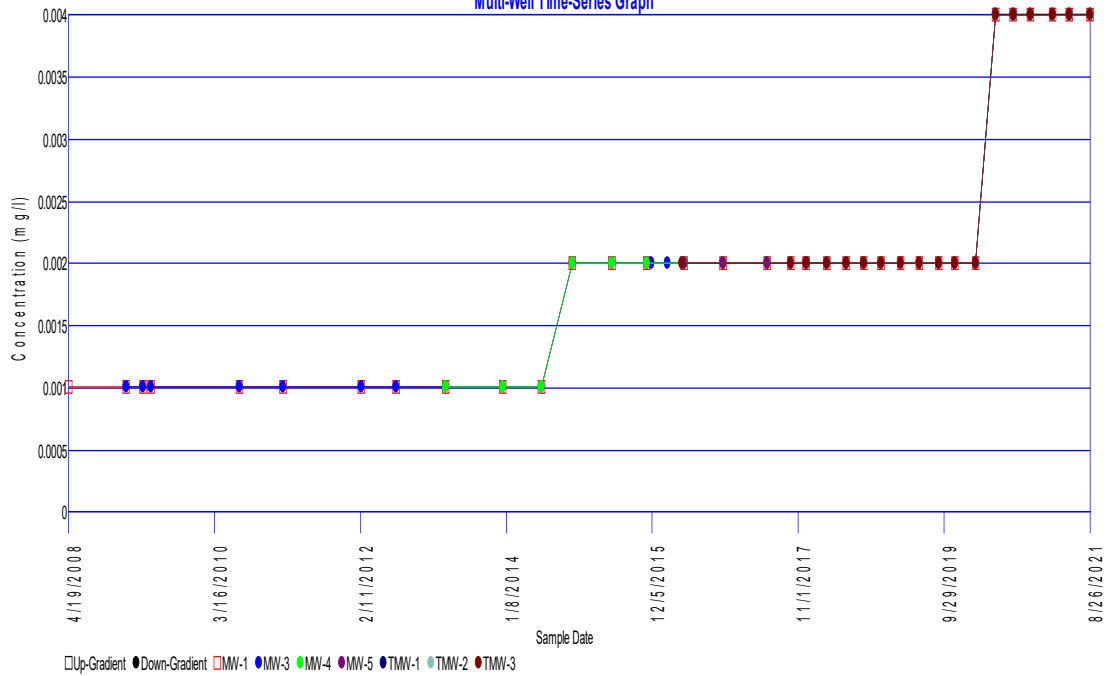
Aluminum Multi-Well Time-Series Graph

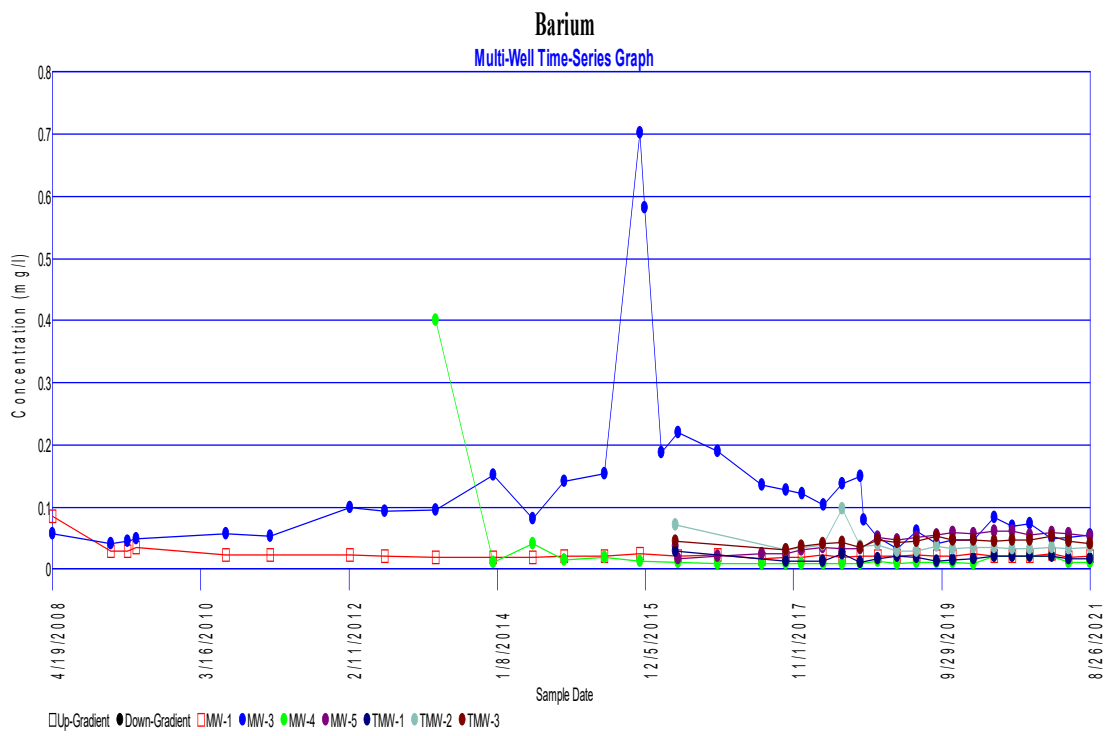
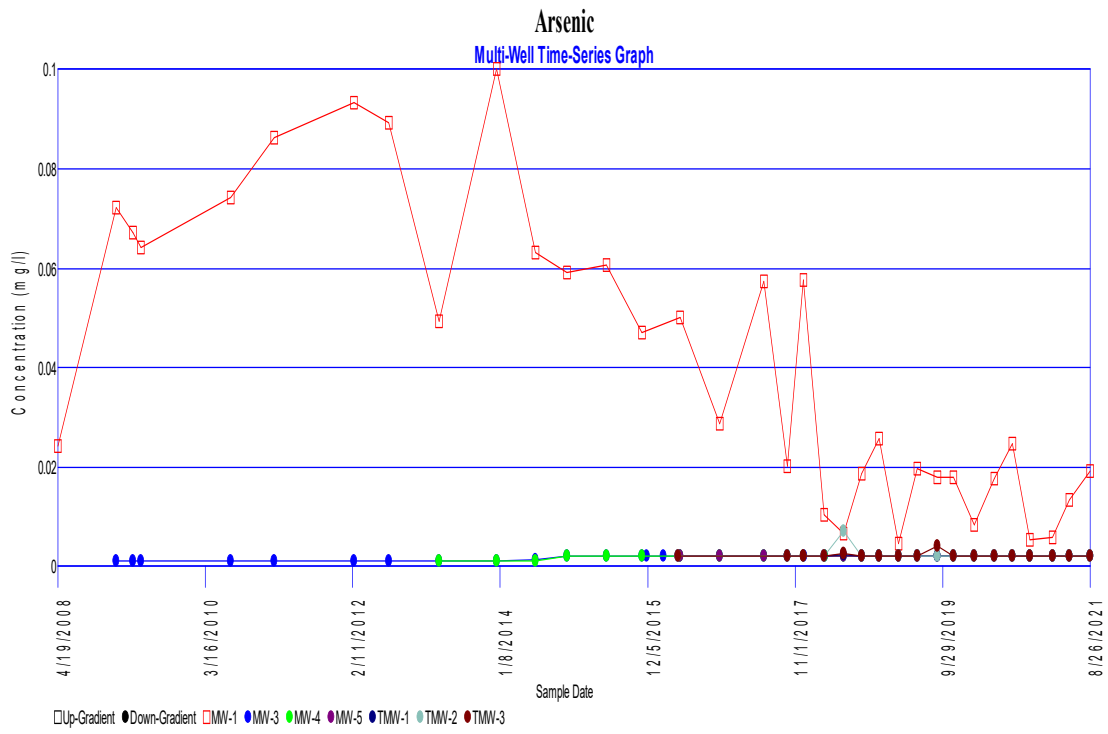


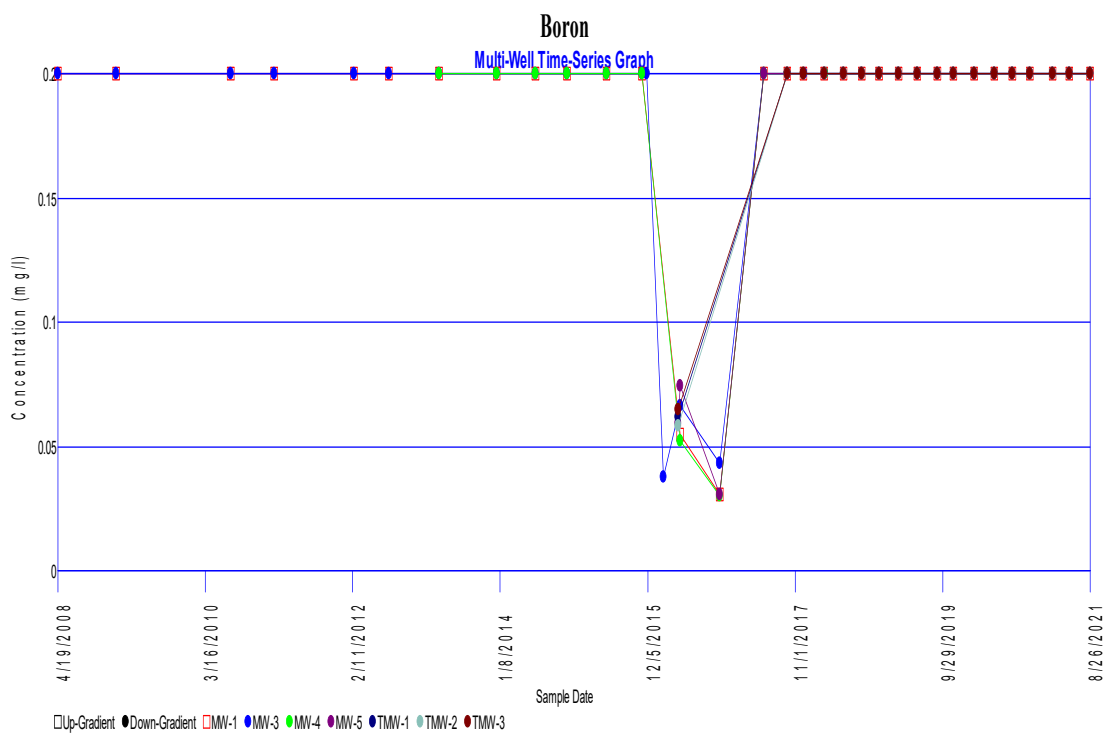
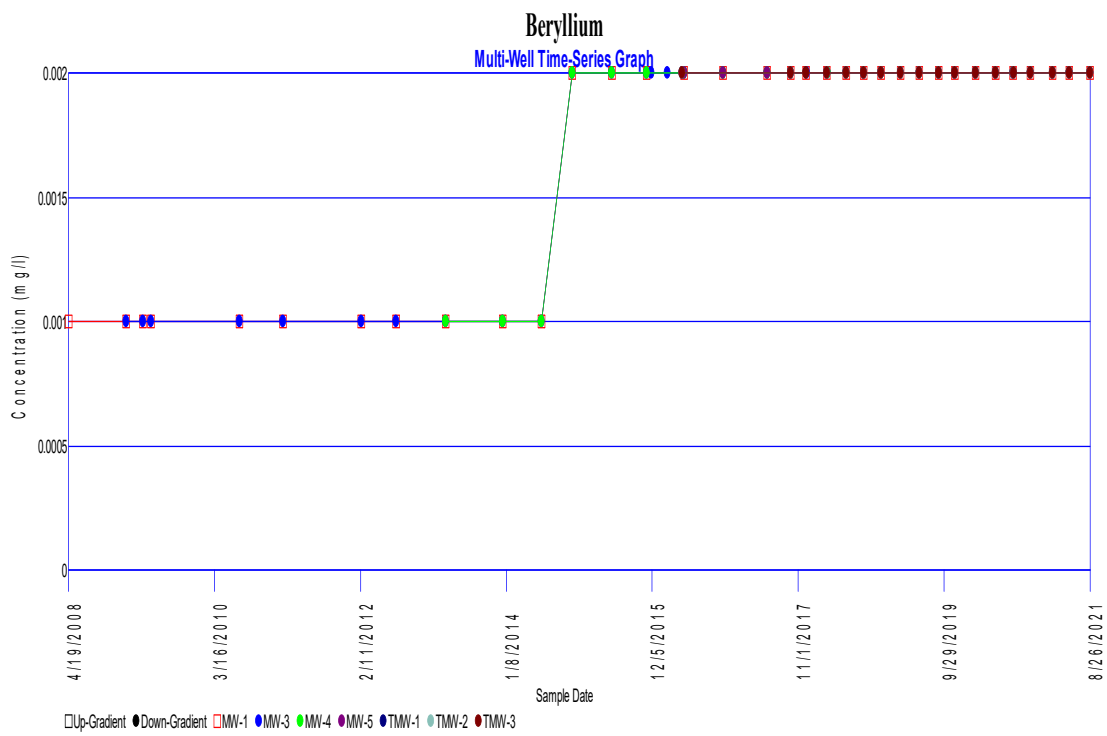
Ammonia Nitrogen Multi-Well Time-Series Graph

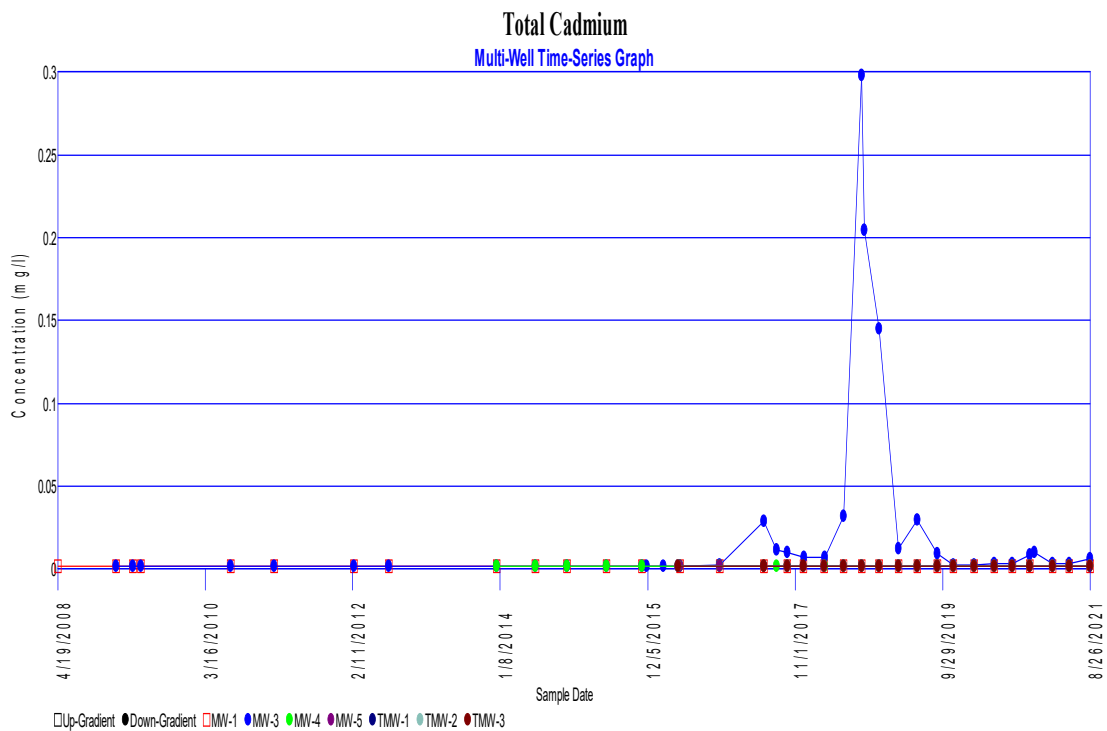
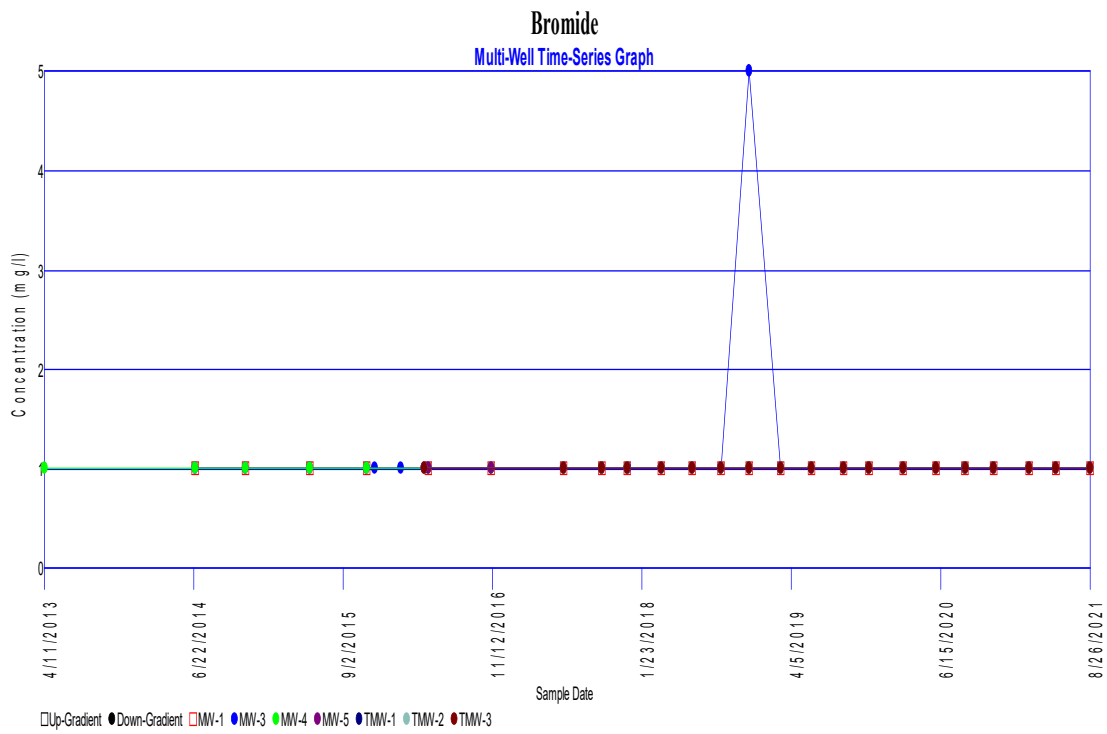


Antimony Multi-Well Time-Series Graph

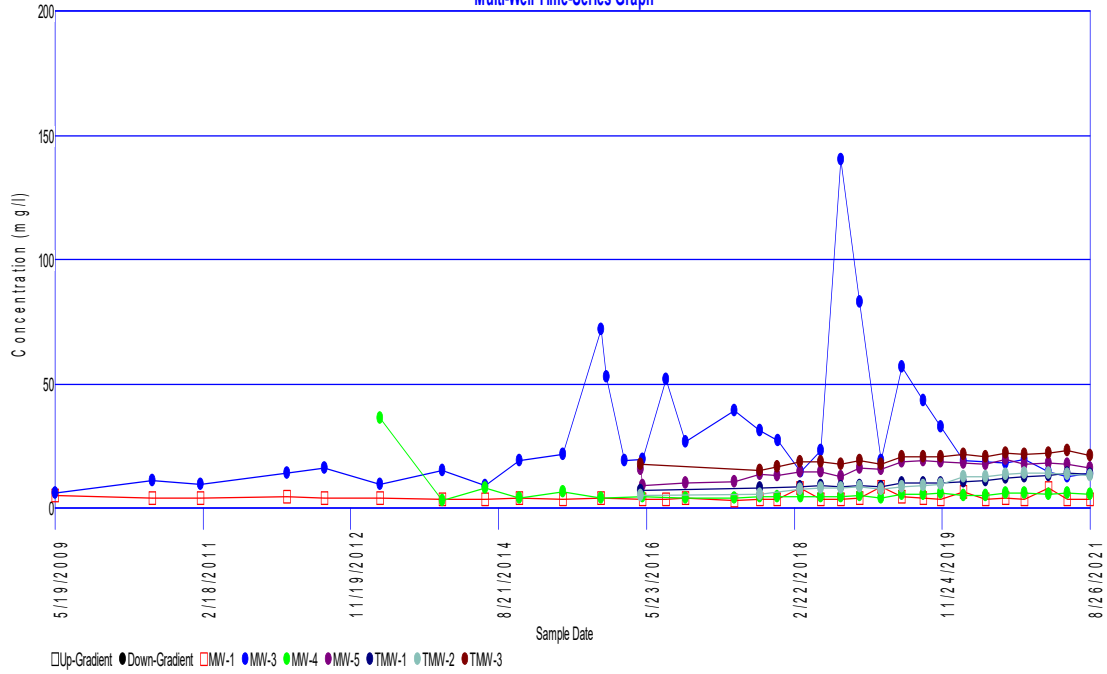




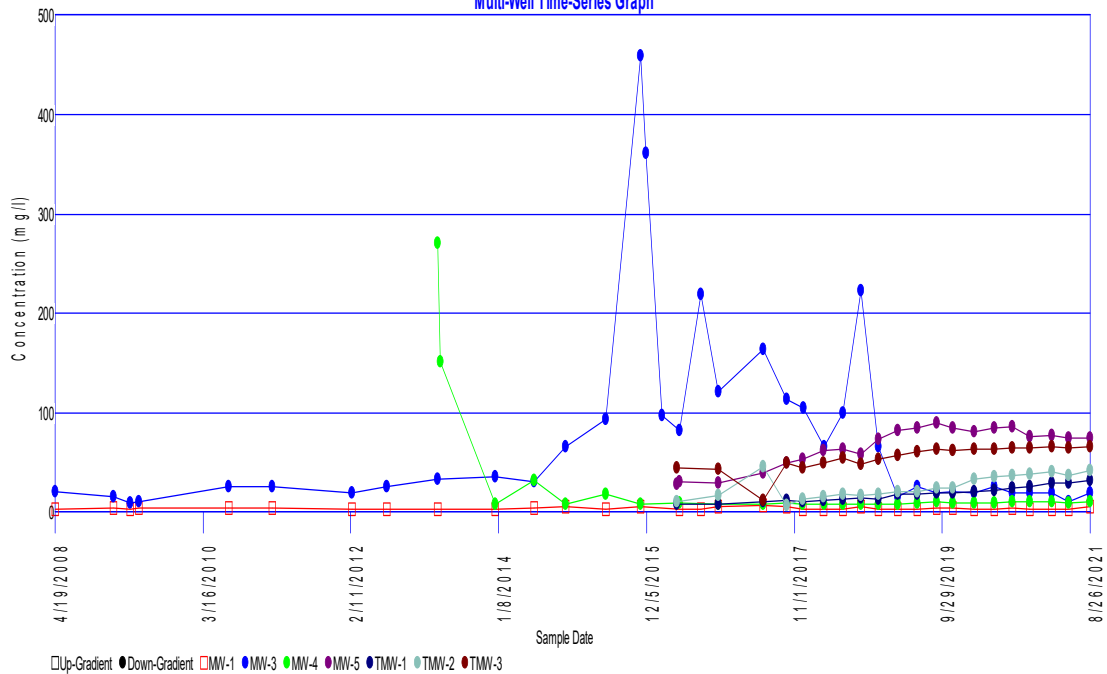




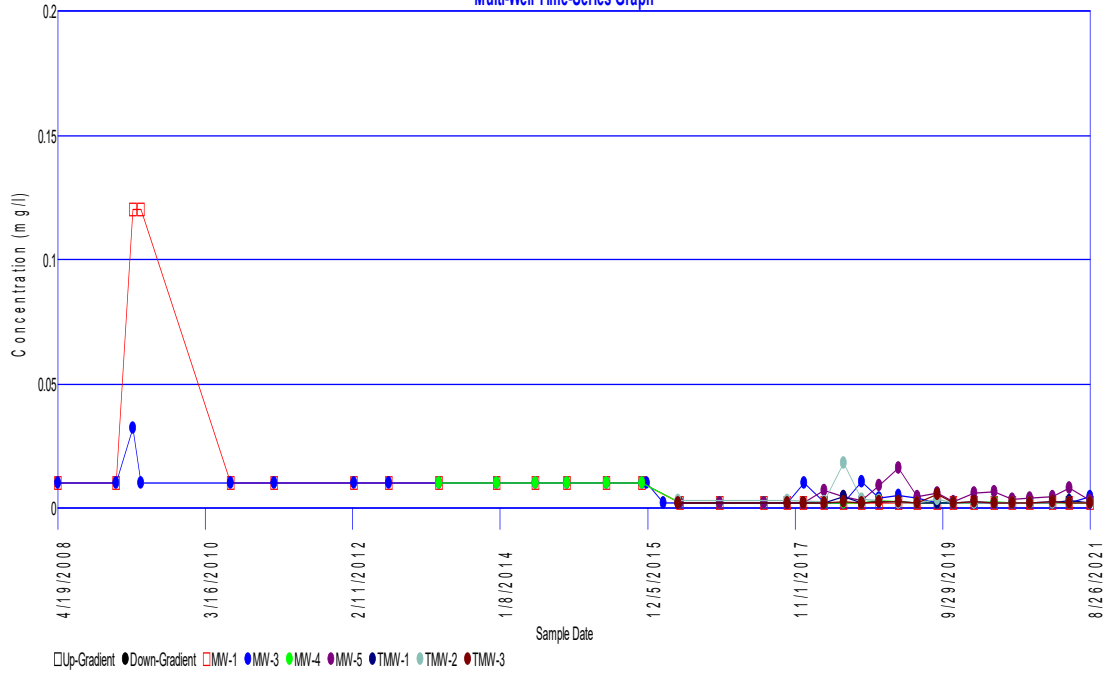
Calcium Multi-Well Time-Series Graph



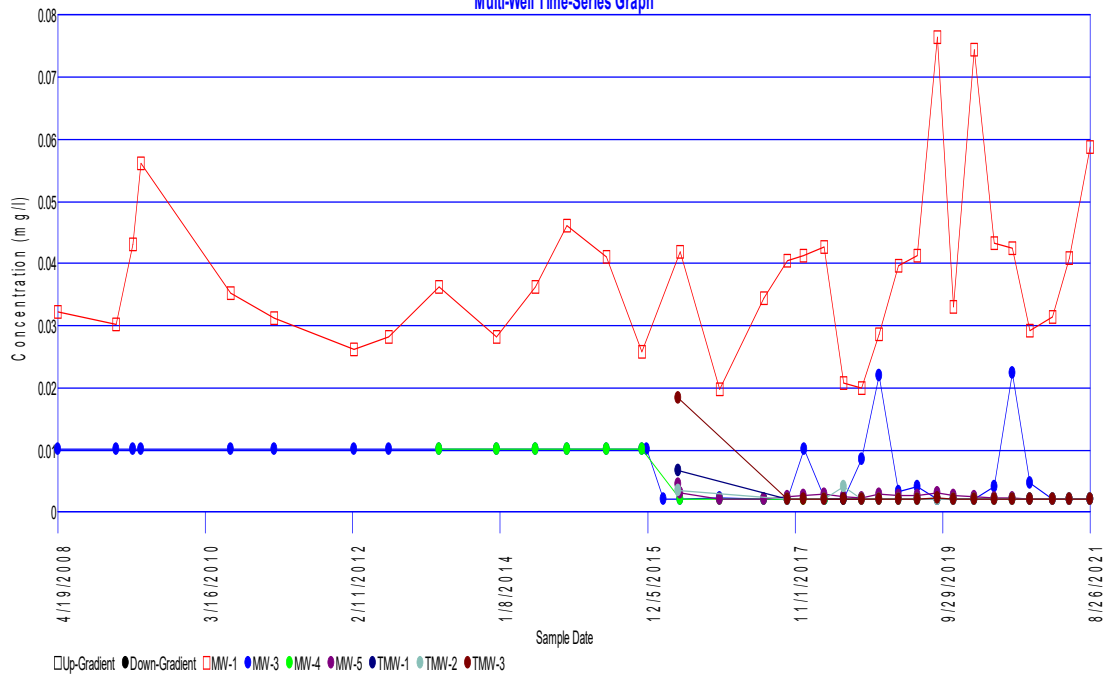
Chloride Multi-Well Time-Series Graph

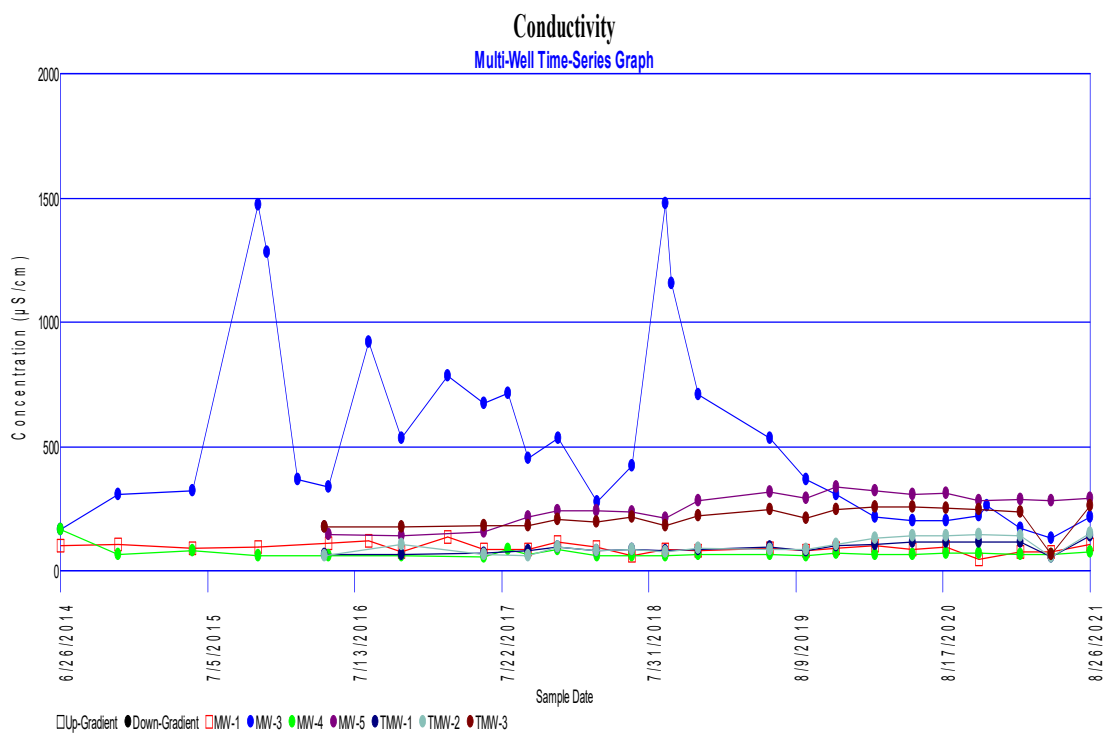
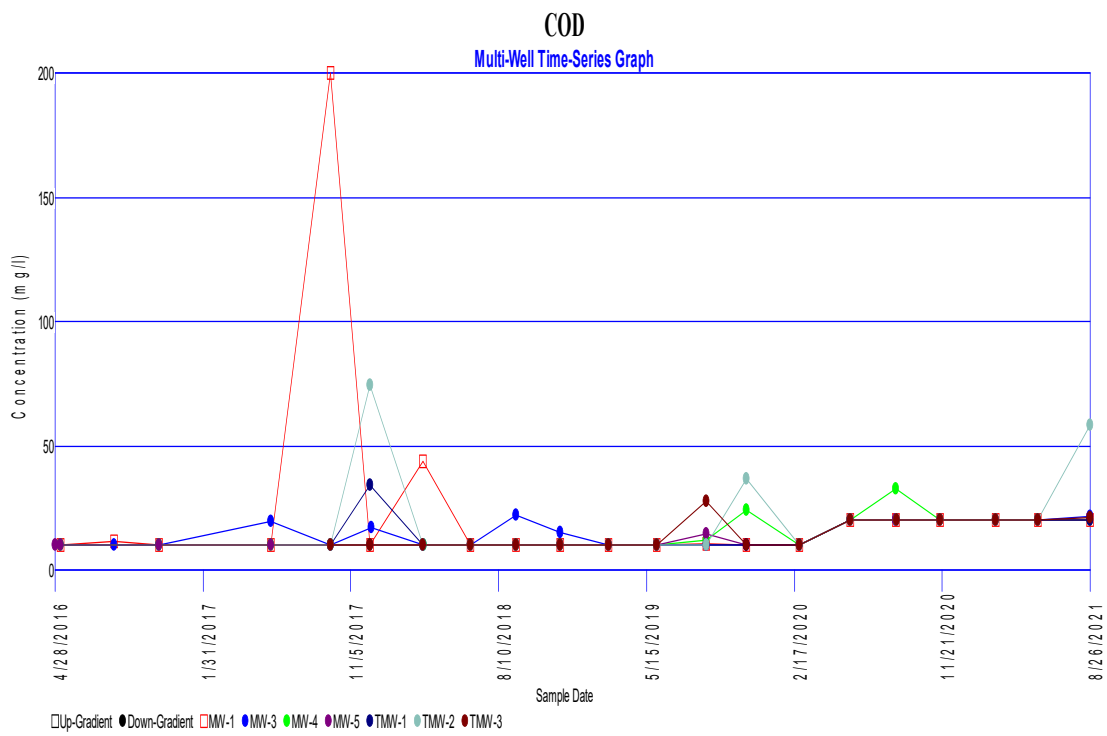


Chromium Multi-Well Time-Series Graph

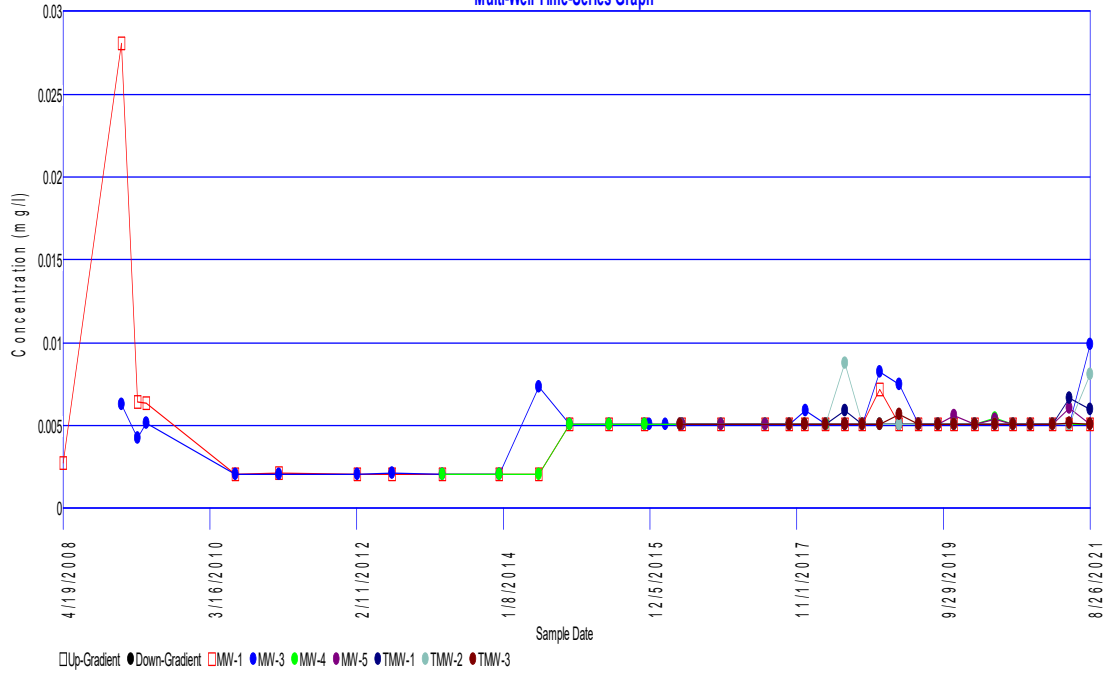


Cobalt Multi-Well Time-Series Graph

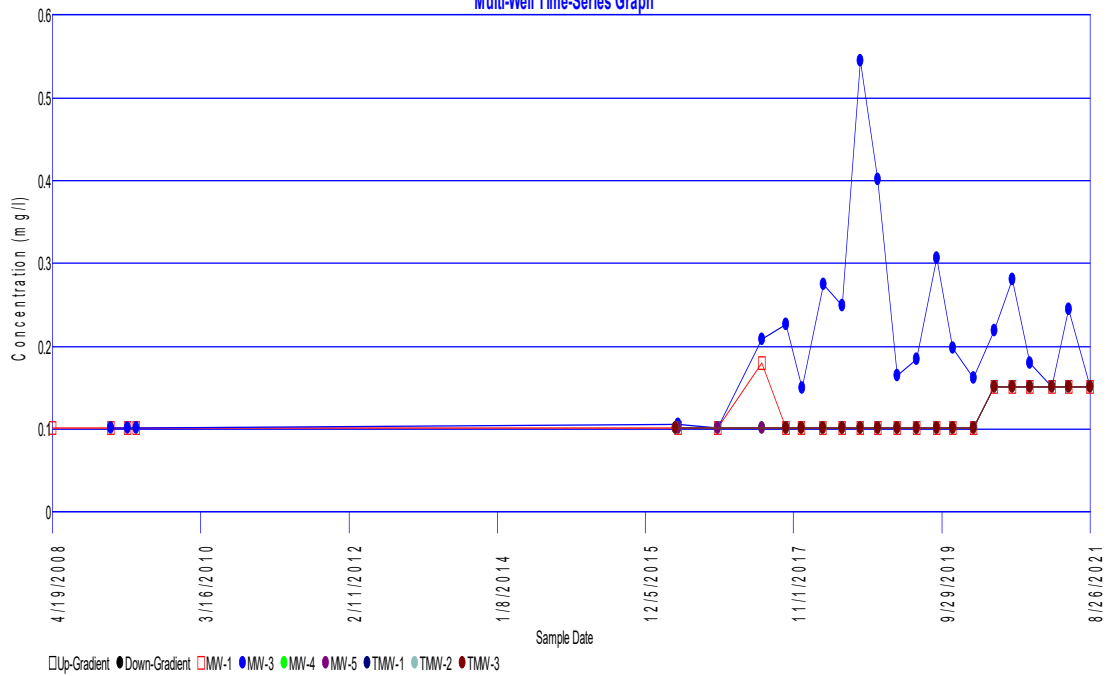




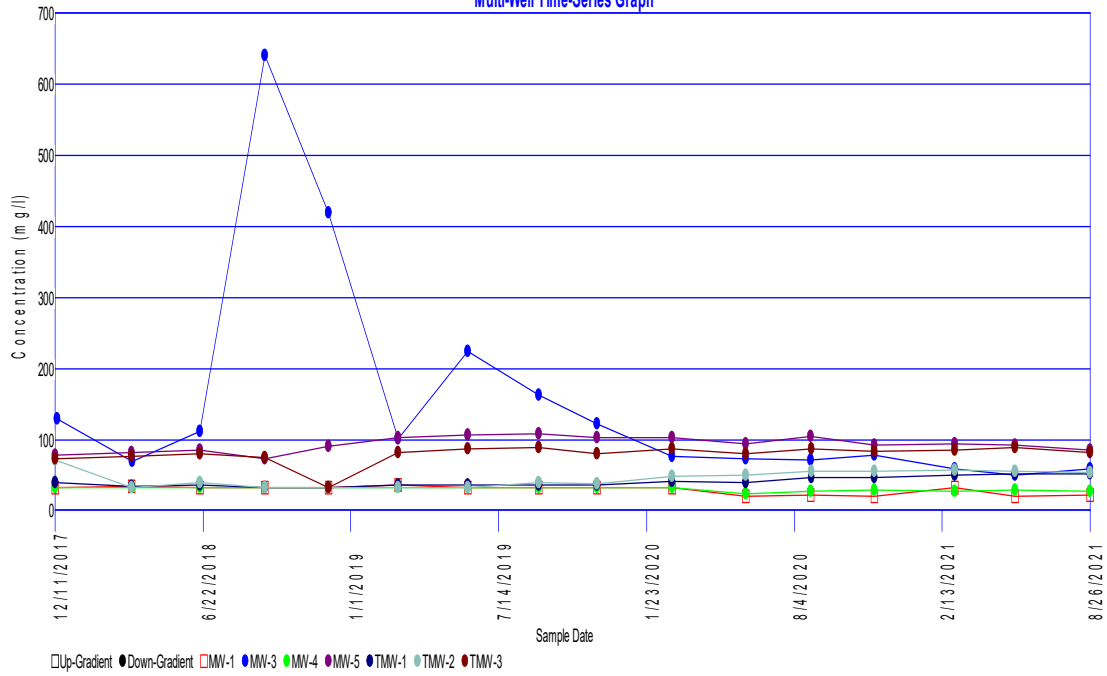
Copper Multi-Well Time-Series Graph



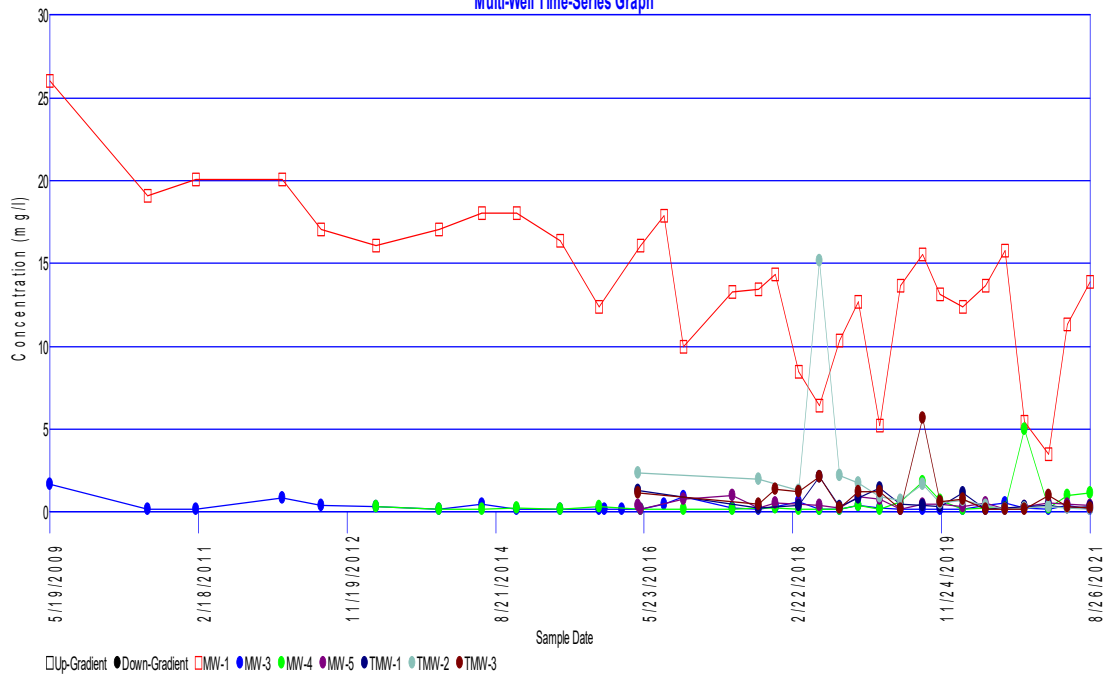
Fluoride Multi-Well Time-Series Graph



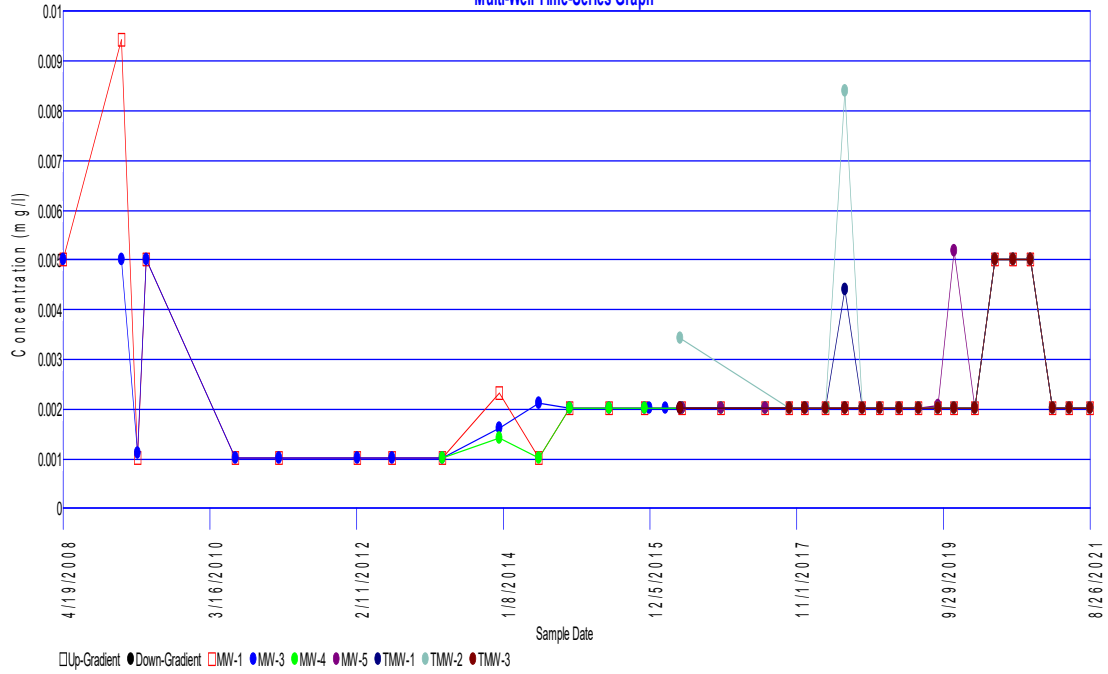
Hardness Multi-Well Time-Series Graph



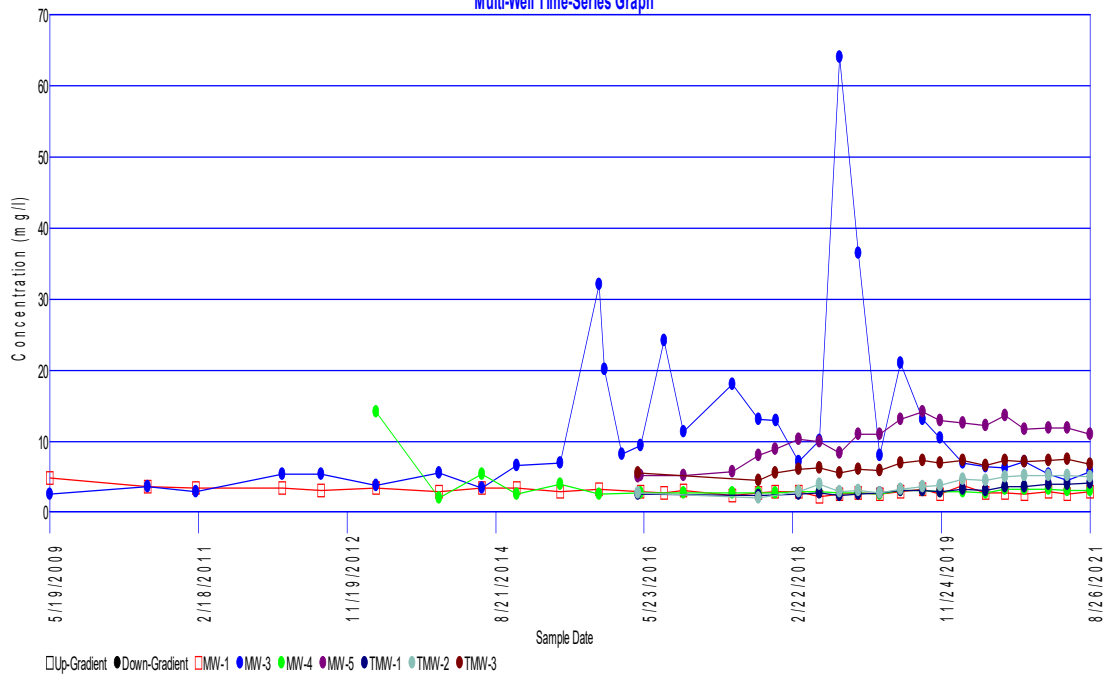
Iron Multi-Well Time-Series Graph



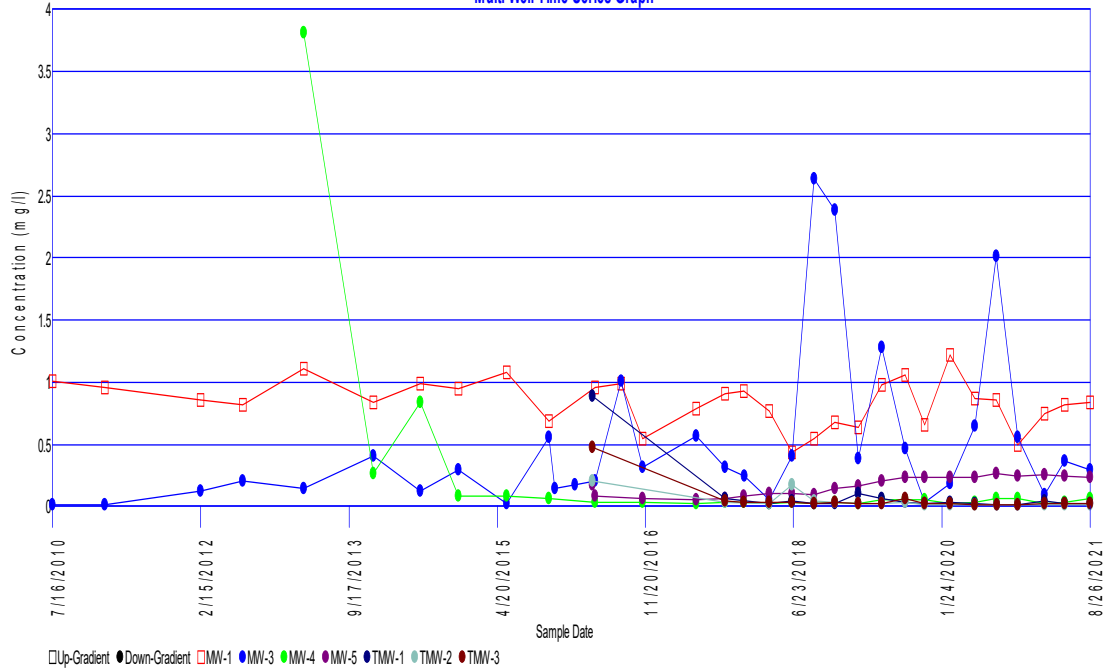
Lead Multi-Well Time-Series Graph



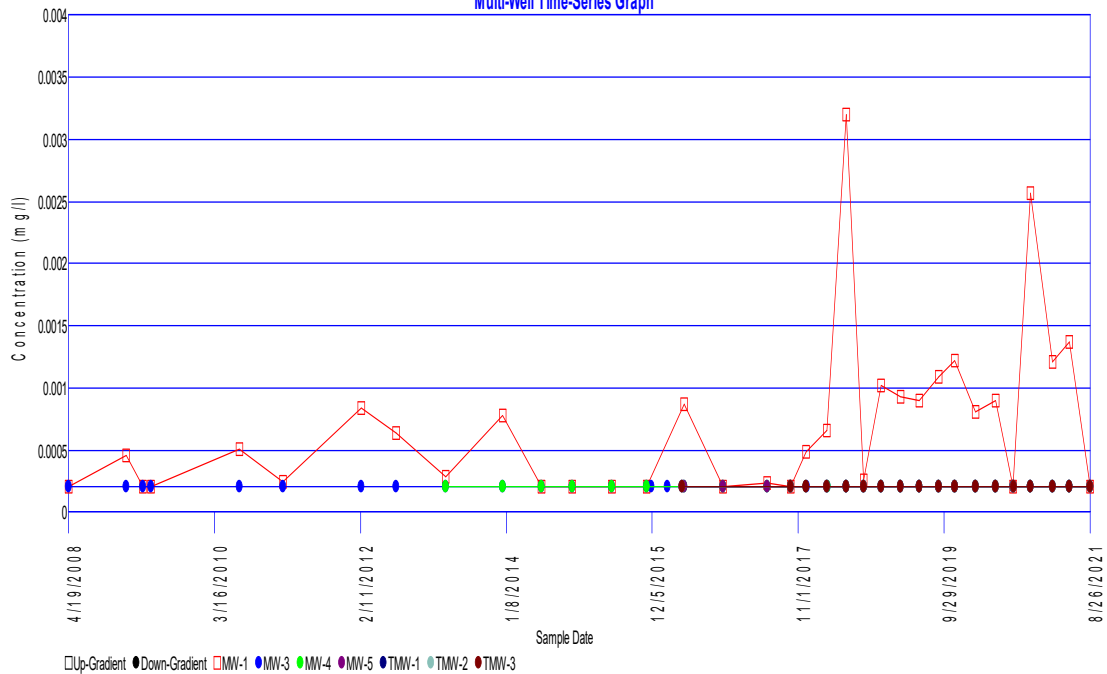
Magnesium Multi-Well Time-Series Graph

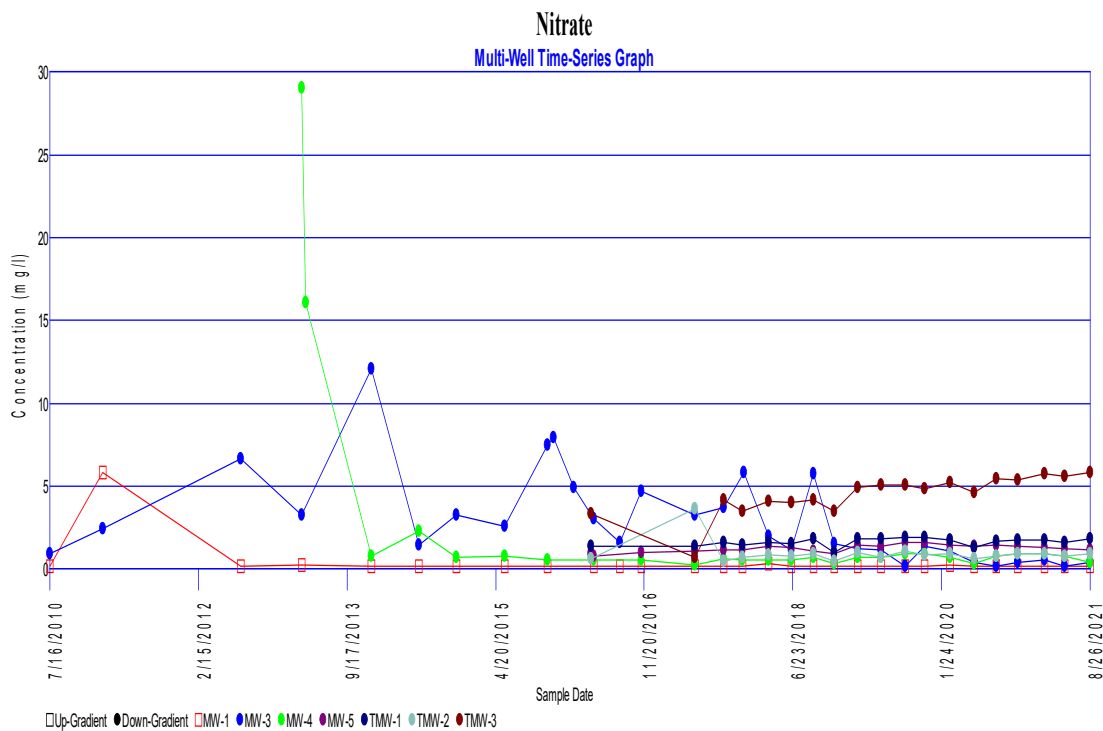
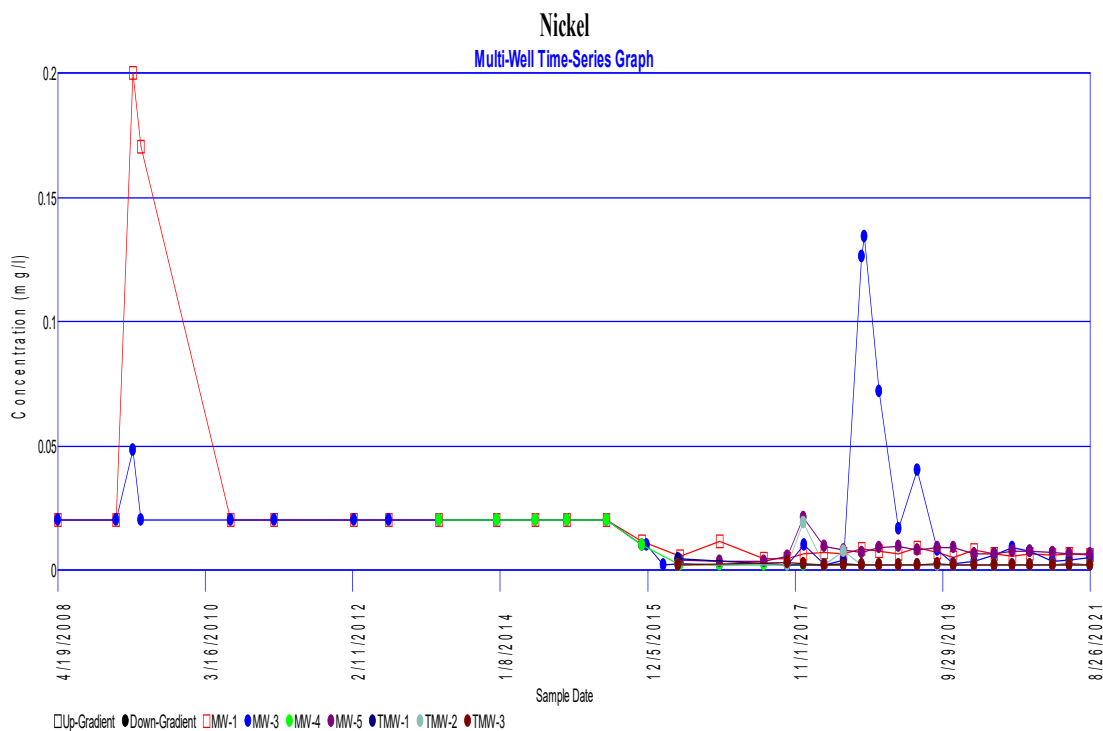


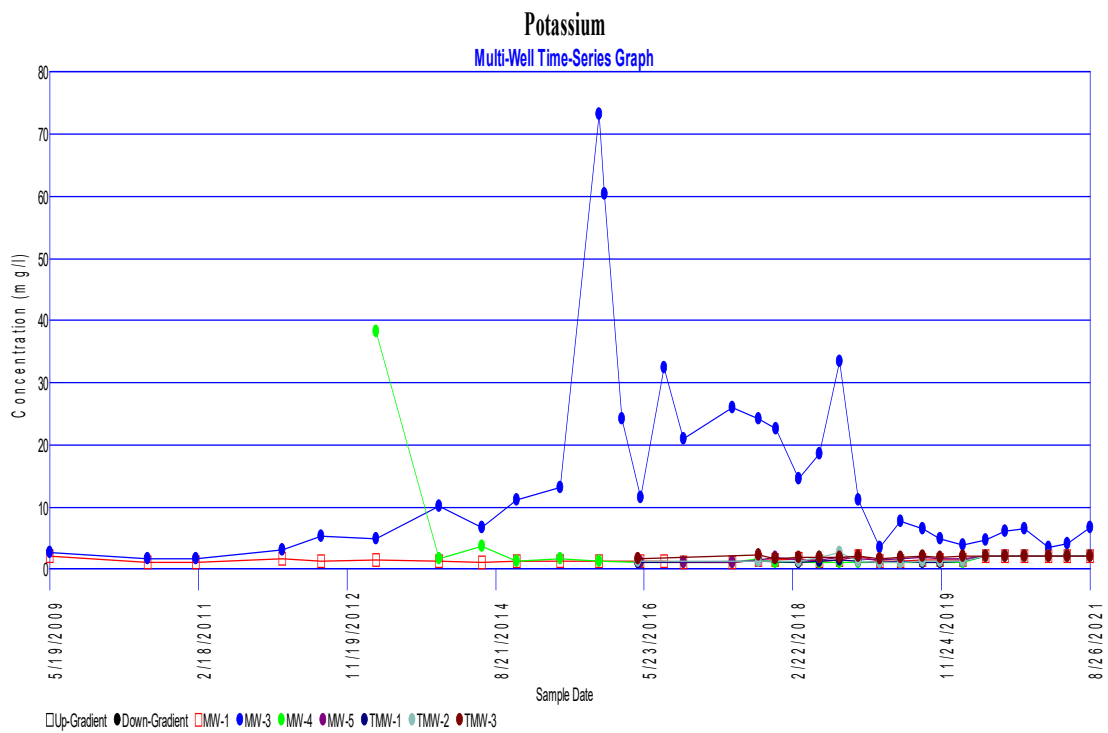
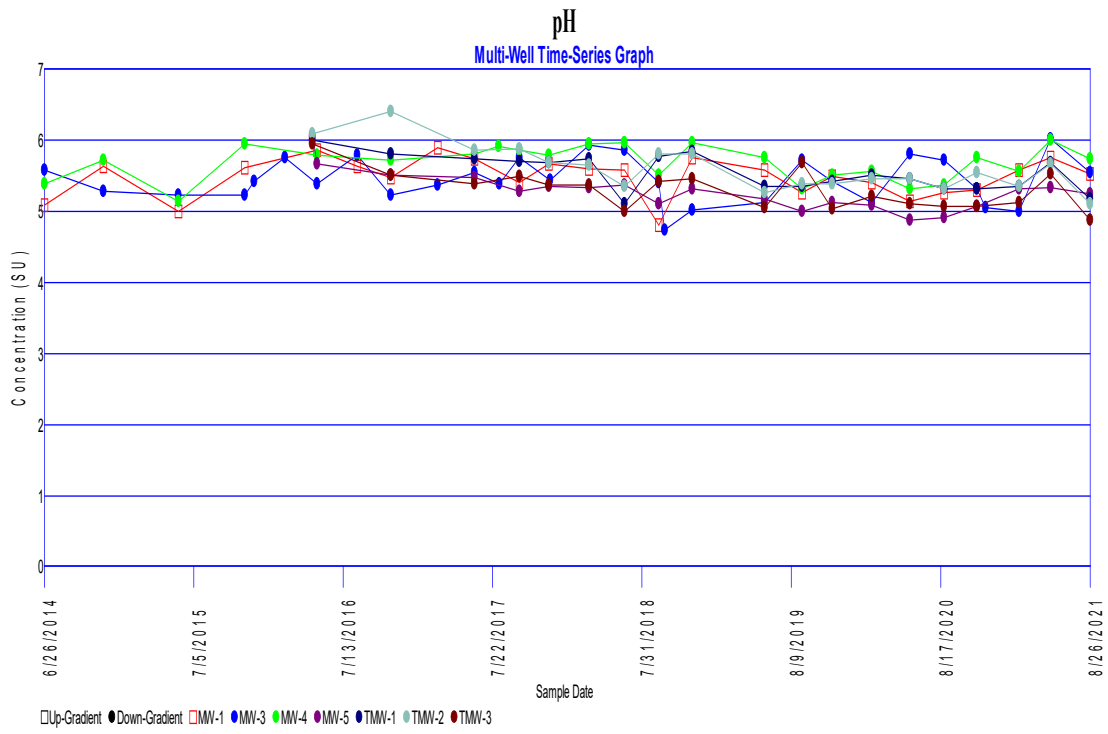
Manganese Multi-Well Time-Series Graph

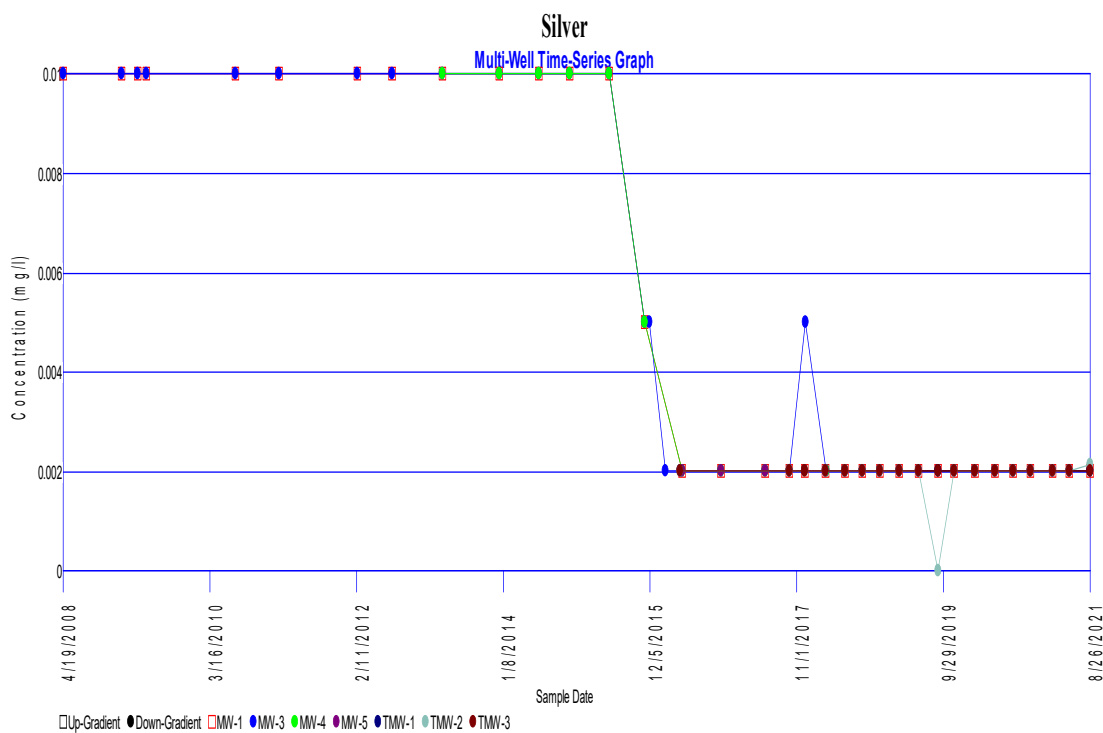
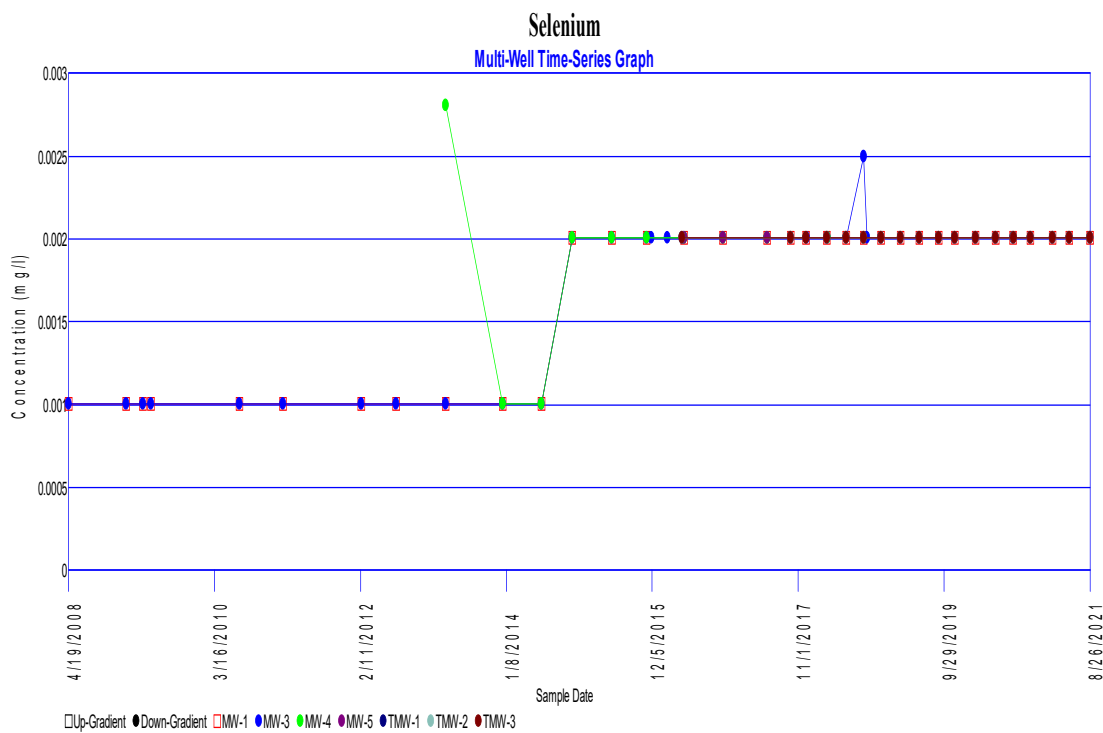


Mercury Multi-Well Time-Series Graph

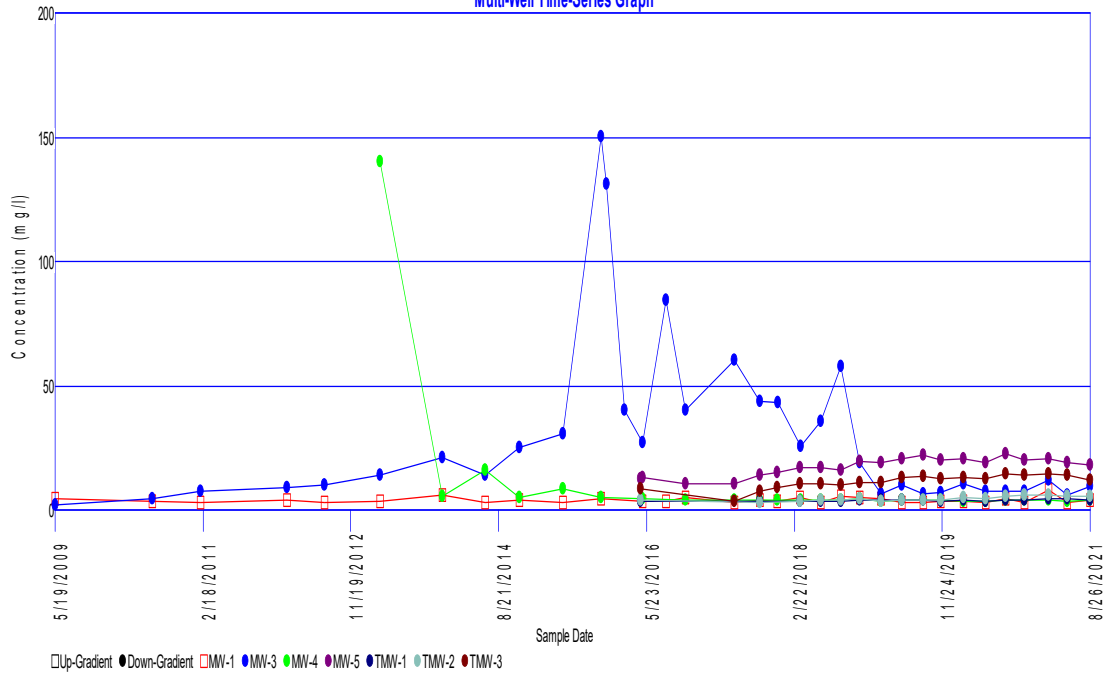




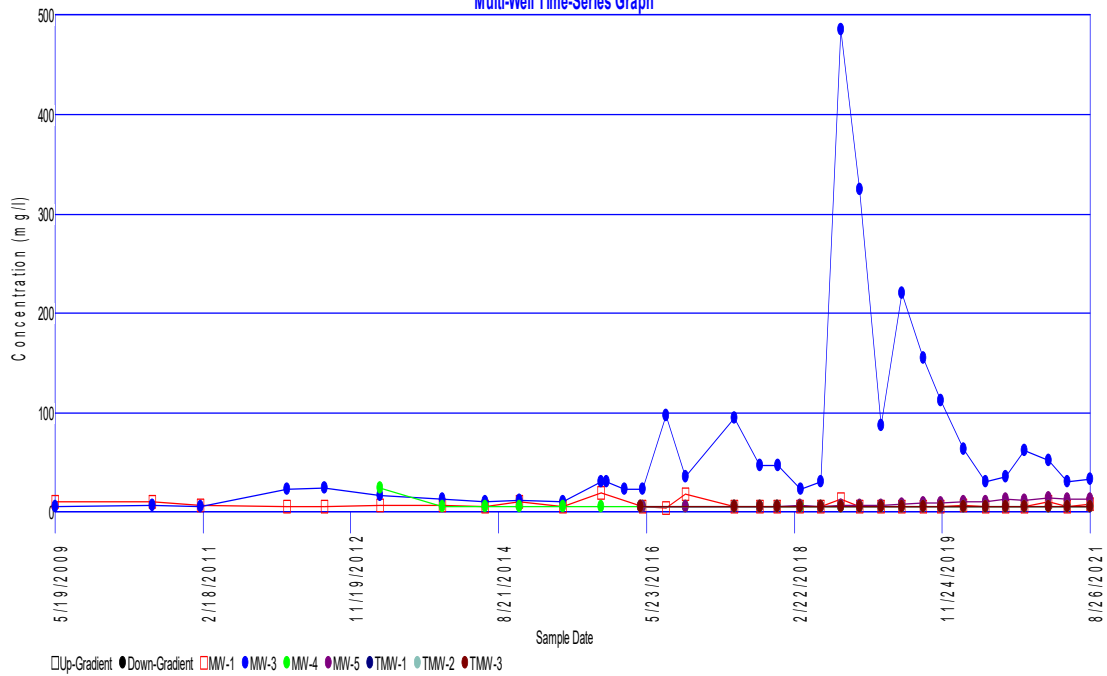


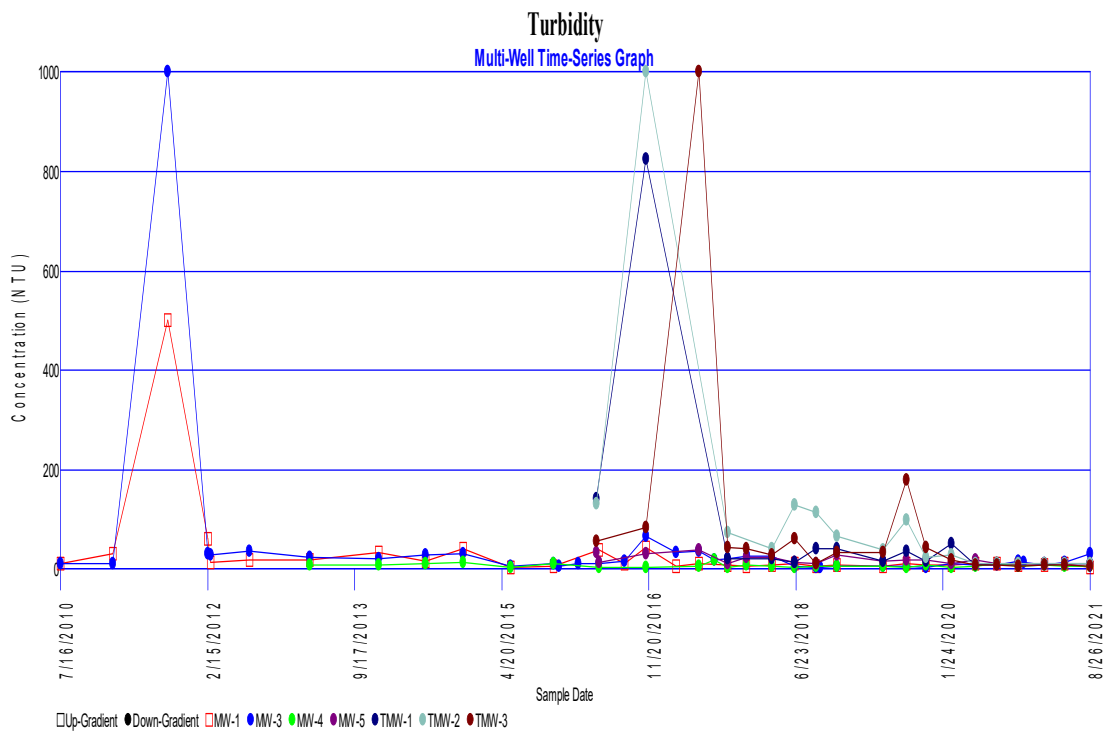
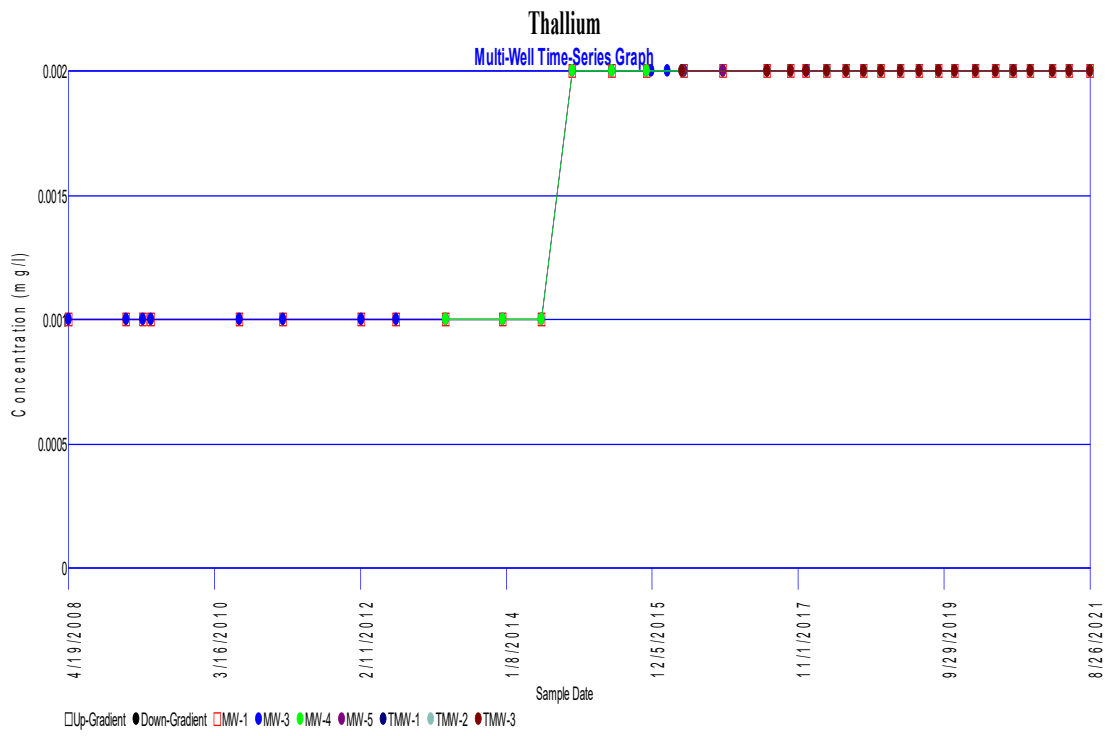


Sodium Multi-Well Time-Series Graph

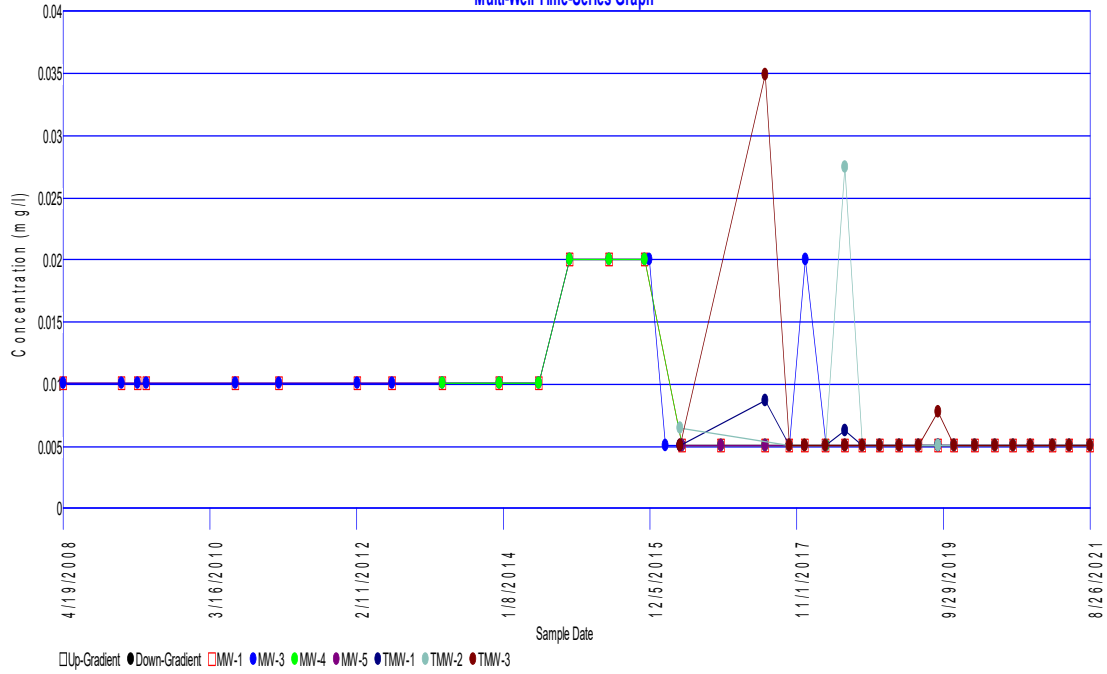


Sulfate Multi-Well Time-Series Graph

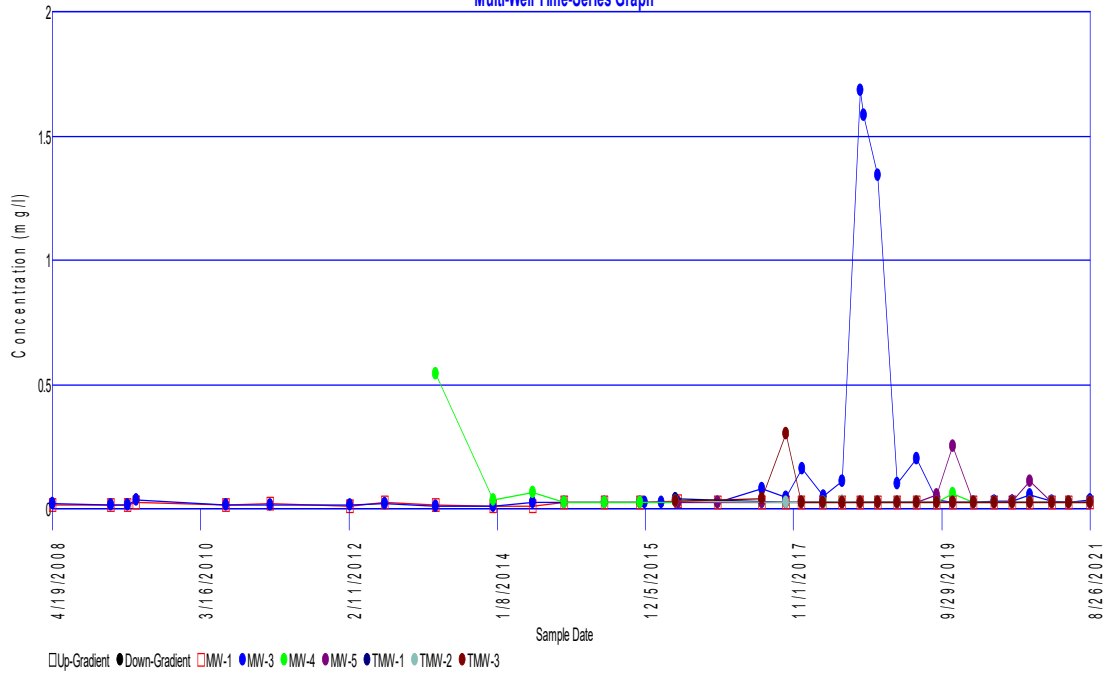




Vanadium Multi-Well Time-Series Graph



Zinc Multi-Well Time-Series Graph



Basic Statistics

Parameter: Aluminum

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	169
Total Non-Detects	67 (39.645%)
Pooled Mean	0.448089
Pooled Std Dev	1.11456
Compliance Meas.	135
Compliance Mean	0.504015
Compliance Std Dev	1.2339
Background Meas.	34
Background Mean	0.226029
Background Std Dev	0.279657

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total		
MW-1	34	21	61.7647	7.685		

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.226029	0.279657	0	2166	63.7059

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total		
MW-3	36	8	22.2222	27.149		
MW-4	26	24	92.3077	2.845		
MW-5	21	4	19.0476	4.484		
TMW-1	17	3	17.6471	4.838		
TMW-2	17	1	5.88235	22.456		
TMW-3	18	6	33.3333	6.27		

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.754139	1.46479	0.528109	0.256194	3726	103.5
MW-4	0.109423	0.0406528	-0.116606	0.2791	1021	39.2692
MW-5	0.213524	0.107643	-0.0125056	0.297332	1909	90.9048
TMW-1	0.284588	0.294812	0.0585588	0.318223	1639	96.4118
TMW-2	1.32094	2.54996	1.09491	0.318223	2260	132.941
TMW-3	0.348333	0.387041	0.122304	0.312274	1644	91.3333

Analysis of Variance Statistics

SS Wells	22.7714
SS Total	208.695

Kruskal-Wallis Statistics

Non-Detect Rank	34
Background Rank Sum	2166
Background Rank Mean	63.7059
H Statistic	52.1484
H Adjusted for Ties	55.613

Basic Statistics

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	168
Total Non-Detects	128 (76.1905%)
Pooled Mean	0.00973042
Pooled Std Dev	0.0201917
Compliance Meas.	134
Compliance Mean	0.00195791
Compliance Std Dev	0.000542001
Background Meas.	34
Background Mean	0.0403632
Background Std Dev	0.0291536

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total		
MW-1	34	0	0	1.37235		

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0403632	0.0291536	0	5147	151.382

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total		
MW-3	35	33	94.2857	0.0602		
MW-4	26	26	100	0.049		
MW-5	21	21	100	0.042		
TMW-1	17	16	94.1176	0.03417		
TMW-2	17	16	94.1176	0.0388		
TMW-3	18	16	88.8889	0.03819		

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.00172	0.000450359	-0.0386432	0.0031802	2387.5	68.2143
MW-4	0.00188462	0.000325813	-0.0384786	0.00344075	1677	64.5
MW-5	0.002	8.88781e-019	-0.0383632	0.00366552	1354.5	64.5
TMW-1	0.00201	4.12311e-005	-0.0383532	0.00392306	1163	68.4118
TMW-2	0.00228235	0.00116417	-0.0380809	0.00392306	1170	68.8235
TMW-3	0.00212167	0.000442775	-0.0382416	0.00384973	1297	72.0556

Analysis of Variance Statistics

SS Wells	0.0400042
SS Total	0.0680866

Kruskal-Wallis Statistics

Non-Detect Rank	64.5
Background Rank Sum	5147
Background Rank Mean	151.382
H Statistic	80.9547
H Adjusted for Ties	145.151

Basic Statistics

Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	170
Total Non-Detects	11 (6.47059%)
Pooled Mean	0.0498652
Pooled Std Dev	0.0795449
Compliance Meas.	136
Compliance Mean	0.0567411
Compliance Std Dev	0.0874681
Background Meas.	34
Background Mean	0.0223618
Background Std Dev	0.0114687

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	34	3	8.82353	0.7603

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0223618	0.0114687	0	1960	57.6471

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	37	0	0	4.4451
MW-4	26	4	15.3846	0.69775
MW-5	21	0	0	0.8815
TMW-1	17	4	23.5294	0.27924
TMW-2	17	0	0	0.6514
TMW-3	18	0	0	0.7618

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.120138	0.135677	0.0977761	0.016886	5305	143.378
MW-4	0.0268365	0.0764642	0.00447477	0.0185177	752	28.9231
MW-5	0.0419762	0.014803	0.0196144	0.0197274	2288	108.952
TMW-1	0.0164259	0.00478914	-0.00593588	0.0211134	576	33.8824
TMW-2	0.0383176	0.0177352	0.0159559	0.0211134	1649	97
TMW-3	0.0423222	0.00546427	0.0199605	0.0207188	2005	111.389

Analysis of Variance Statistics

SS Wells	0.245829
SS Total	1.06933

Kruskal-Wallis Statistics

Non-Detect Rank	6
Background Rank Sum	1960
Background Rank Mean	57.6471
H Statistic	125.781
H Adjusted for Ties	125.815

Basic Statistics

Parameter: Total Cadmium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	170
Total Non-Detects	148 (87.0588%)
Pooled Mean	0.00573724
Pooled Std Dev	0.0296423
Compliance Meas.	137
Compliance Mean	0.00687832
Compliance Std Dev	0.0329411
Background Meas.	33
Background Mean	0.001
Background Std Dev	6.60608e-019

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	33	33	100	0.033

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.001	6.60608e-019	0	2458.5	74.5

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	37	15	40.5405	0.84233
MW-4	26	26	100	0.026
MW-5	21	21	100	0.021
TMW-1	17	17	100	0.017
TMW-2	17	17	100	0.017
TMW-3	19	19	100	0.019

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.0227657	0.0611876	0.0217657	0.00688512	4626.5	125.041
MW-4	0.001	6.63404e-019	0	0.00754055	1937	74.5
MW-5	0.001	4.44391e-019	-2.1684e-019	0.00802696	1564.5	74.5
TMW-1	0.001	4.47028e-019	-2.1684e-019	0.00858468	1266.5	74.5
TMW-2	0.001	4.47028e-019	-2.1684e-019	0.00858468	1266.5	74.5
TMW-3	0.001	4.45565e-019	-2.1684e-019	0.00828111	1415.5	74.5

Analysis of Variance Statistics

SS Wells	0.0137135
SS Total	0.148495

Kruskal-Wallis Statistics

Non-Detect Rank	74.5
Background Rank Sum	2458.5
Background Rank Mean	74.5
H Statistic	30.5225
H Adjusted for Ties	89.7279

Basic Statistics

Parameter: Chloride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	180
Total Non-Detects	0 (0%)
Pooled Mean	37.5519
Pooled Std Dev	56.9047
Compliance Meas.	145
Compliance Mean	45.9619
Compliance Std Dev	60.4871
Background Meas.	35
Background Mean	2.71057
Background Std Dev	0.990629

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total		
MW-1	35	0	0	94.87		

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	2.71057	0.990629	0	631	18.0286

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total		
MW-3	37	0	0	2761.44		
MW-4	27	0	0	647.2		
MW-5	21	0	0	1359		
TMW-1	20	0	0	335.9		
TMW-2	20	0	0	490.33		
TMW-3	20	0	0	1070.6		

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	74.6335	98.7567	71.9229	12.008	4556	123.135
MW-4	23.9704	56.3517	21.2598	13.0443	1701	63
MW-5	64.7143	20.1911	62.0037	14.0569	3085	146.905
TMW-1	16.795	7.32241	14.0844	14.2749	1651	82.55
TMW-2	24.5165	11.8547	21.8059	14.2749	1945	97.25
TMW-3	53.53	12.8258	50.8194	14.2749	2721	136.05

Analysis of Variance Statistics

SS Wells	130959
SS Total	579628

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	631
Background Rank Mean	18.0286
H Statistic	130.435
H Adjusted for Ties	130.435

Basic Statistics

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	169
Total Non-Detects	124 (73.3728%)
Pooled Mean	0.00573586
Pooled Std Dev	0.013189
Compliance Meas.	135
Compliance Mean	0.00421748
Compliance Std Dev	0.0041453
Background Meas.	34
Background Mean	0.0117647
Background Std Dev	0.0277293

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	34	32	94.1176	0.4

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0117647	0.0277293	0	2337	68.7353

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	36	29	80.5556	0.23902
MW-4	26	23	88.4615	0.10095
MW-5	21	6	28.5714	0.09667
TMW-1	17	12	70.5882	0.03763
TMW-2	17	10	58.8235	0.0548
TMW-3	18	12	66.6667	0.04029

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.00663944	0.00578469	-0.00512526	0.00310465	2884.5	80.125
MW-4	0.00388269	0.00341969	-0.00788201	0.00338224	1833.5	70.5192
MW-5	0.00460333	0.00330039	-0.00716137	0.00360319	2676	127.429
TMW-1	0.00221353	0.000560022	-0.00955118	0.00385635	1440	84.7059
TMW-2	0.00322353	0.00380927	-0.00854118	0.00385635	1638	96.3529
TMW-3	0.00223833	0.000812442	-0.00952637	0.00378426	1556	86.4444

Analysis of Variance Statistics

SS Wells	0.00191982
SS Total	0.0292237

Kruskal-Wallis Statistics

Non-Detect Rank	62.5
Background Rank Sum	2337
Background Rank Mean	68.7353
H Statistic	23.1128
H Adjusted for Ties	38.2027

Basic Statistics

Parameter: Cobalt

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	169
Total Non-Detects	106 (62.7219%)
Pooled Mean	0.0107927
Pooled Std Dev	0.0152632
Compliance Meas.	135
Compliance Mean	0.00394637
Compliance Std Dev	0.00391509
Background Meas.	34
Background Mean	0.0379765
Background Std Dev	0.0130637

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	34	0	0	1.2912

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0379765	0.0130637	0	5179	152.324

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	36	28	77.7778	0.25407
MW-4	26	26	100	0.1
MW-5	21	5	23.8095	0.05055
TMW-1	17	16	94.1176	0.0386
TMW-2	17	15	88.2353	0.03724
TMW-3	18	16	88.8889	0.0523

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.0070575	0.00525256	-0.030919	0.0015907	2522	70.0556
MW-4	0.00384615	0.00343735	-0.0341303	0.00173292	1391	53.5
MW-5	0.00240714	0.000532824	-0.0355693	0.00184613	2131.5	101.5
TMW-1	0.00227059	0.00111566	-0.0357059	0.00197583	987	58.0588
TMW-2	0.00219059	0.000544122	-0.0357859	0.00197583	1053.5	61.9706
TMW-3	0.00290556	0.00379233	-0.0350709	0.0019389	1101	61.1667

Analysis of Variance Statistics

SS Wells	0.0319704
SS Total	0.039138

Kruskal-Wallis Statistics

Non-Detect Rank	53.5
Background Rank Sum	5179
Background Rank Mean	152.324
H Statistic	94.0782
H Adjusted for Ties	124.894

Basic Statistics

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	168
Total Non-Detects	141 (83.9286%)
Pooled Mean	0.0050281
Pooled Std Dev	0.0021348
Compliance Meas.	134
Compliance Mean	0.00500052
Compliance Std Dev	0.00108385
Background Meas.	34
Background Mean	0.00513676
Background Std Dev	0.0042794

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total		
MW-1	34	28	82.3529	0.17465		

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.00513676	0.0042794	0	2920	85.8824

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total		
MW-3	35	26	74.2857	0.17116		
MW-4	26	25	96.1538	0.12136		
MW-5	21	18	85.7143	0.10682		
TMW-1	17	14	82.3529	0.08834		
TMW-2	17	15	88.2353	0.09168		
TMW-3	18	15	83.3333	0.09071		

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.00489029	0.0017183	-0.000246479	0.00052104	3249	92.8286
MW-4	0.00466769	0.000985058	-0.000469072	0.000563728	1925	74.0385
MW-5	0.00508667	0.00024715	-5.0098e-005	0.000600554	1734	82.5714
TMW-1	0.00519647	0.000460447	5.97059e-005	0.000642749	1463	86.0588
TMW-2	0.00539294	0.00111535	0.000256176	0.000642749	1395	82.0588
TMW-3	0.00503944	0.000136618	-9.73203e-005	0.000630734	1510	83.8889

Analysis of Variance Statistics

SS Wells	7.26259e-006
SS Total	0.000761079

Kruskal-Wallis Statistics

Non-Detect Rank	71
Background Rank Sum	2920
Background Rank Mean	85.8824
H Statistic	2.35238
H Adjusted for Ties	5.75414

Basic Statistics

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	171
Total Non-Detects	101 (59.0643%)
Pooled Mean	0.0113242
Pooled Std Dev	0.0248664
Compliance Meas.	137
Compliance Mean	0.00879416
Compliance Std Dev	0.0175989
Background Meas.	34
Background Mean	0.0215185
Background Std Dev	0.0421344

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total		
MW-1	34	11	32.3529	0.73163		
Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean	
MW-1	0.0215185	0.0421344	0	3771	110.912	

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total		
MW-3	37	19	51.3514	0.76824		
MW-4	26	26	100	0.15		
MW-5	21	0	0	0.1543		
TMW-1	17	14	82.3529	0.03681		
TMW-2	18	16	88.8889	0.0582		
TMW-3	18	15	83.3333	0.03725		
Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.0207632	0.0300675	-0.000755286	0.0056575	3429	92.6757
MW-4	0.00576923	0.00725153	-0.0157493	0.00620419	1326	51
MW-5	0.00734762	0.00366233	-0.0141709	0.00660949	2929	139.476
TMW-1	0.00216529	0.000601904	-0.0193532	0.00707387	1043	61.3529
TMW-2	0.00323333	0.00410394	-0.0182852	0.00694163	1125	62.5
TMW-3	0.00206944	0.000219799	-0.0194491	0.00694163	1083	60.1667

Analysis of Variance Statistics

SS Wells	0.0121104
SS Total	0.105117

Kruskal-Wallis Statistics

Non-Detect Rank	51
Background Rank Sum	3771
Background Rank Mean	110.912
H Statistic	59.9482
H Adjusted for Ties	75.5052

Basic Statistics

Parameter: Silver

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	169
Total Non-Detects	168 (99.4083%)
Pooled Mean	0.00354515
Pooled Std Dev	0.00311442
Compliance Meas.	135
Compliance Mean	0.0031417
Compliance Std Dev	0.00275362
Background Meas.	34
Background Mean	0.00514706
Background Std Dev	0.00390906

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	34	34	100	0.175

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.00514706	0.00390906	0	2873	84.5

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	36	36	100	0.185
MW-4	26	26	100	0.095
MW-5	21	21	100	0.042
TMW-1	17	17	100	0.034
TMW-2	17	16	94.1176	0.03213
TMW-3	18	18	100	0.036

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.00513889	0.00379588	-8.16993e-006	0.00066965	3042	84.5
MW-4	0.00365385	0.00321176	-0.00149321	0.000729524	2197	84.5
MW-5	0.002	8.88781e-019	-0.00314706	0.000777181	1774.5	84.5
TMW-1	0.002	8.94056e-019	-0.00314706	0.000831785	1436.5	84.5
TMW-2	0.00189	0.000488057	-0.00325706	0.000831785	1521	89.4706
TMW-3	0.002	8.92508e-019	-0.00314706	0.000816236	1521	84.5

Analysis of Variance Statistics

SS Wells	0.000359266
SS Total	0.00162953

Kruskal-Wallis Statistics

Non-Detect Rank	84.5
Background Rank Sum	2873
Background Rank Mean	84.5
H Statistic	0.157785
H Adjusted for Ties	8.94118

Basic Statistics

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	171
Total Non-Detects	121 (70.7602%)
Pooled Mean	0.0609602
Pooled Std Dev	0.204856
Compliance Meas.	137
Compliance Mean	0.0707745
Compliance Std Dev	0.227949
Background Meas.	34
Background Mean	0.0214147
Background Std Dev	0.00604419

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	34	25	73.5294	0.7281

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0214147	0.00604419	0	2697	79.3235

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	37	11	29.7297	5.9611
MW-4	26	22	84.6154	1.2409
MW-5	21	16	76.1905	0.8633
TMW-1	17	16	94.1176	0.4381
TMW-2	17	15	88.2353	0.4257
TMW-3	19	16	84.2105	0.767

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.161111	0.417224	0.139696	0.0478243	4524	122.27
MW-4	0.0477269	0.100853	0.0263122	0.0524457	1976	76
MW-5	0.0411095	0.0508743	0.0196948	0.0558718	1749	83.2857
TMW-1	0.0257706	0.00317722	0.00435588	0.0597973	1128	66.3529
TMW-2	0.0250412	0.000117574	0.00362647	0.0597973	1194	70.2353
TMW-3	0.0403684	0.0632067	0.0189537	0.0576609	1438	75.6842

Analysis of Variance Statistics

SS Wells	0.488155
SS Total	7.13421

Kruskal-Wallis Statistics

Non-Detect Rank	61
Background Rank Sum	2697
Background Rank Mean	79.3235
H Statistic	26.8274
H Adjusted for Ties	41.5468

Basic Statistics

Parameter: Sulfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	170
Total Non-Detects	110 (64.7059%)
Pooled Mean	18.0616
Pooled Std Dev	50.1012
Compliance Meas.	138
Compliance Mean	20.7153
Compliance Std Dev	55.2818
Background Meas.	32
Background Mean	6.61781
Background Std Dev	3.43675

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total		
MW-1	32	19	59.375	211.77		

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	6.61781	3.43675	0	2683.5	83.8594

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total		
MW-3	34	2	5.88235	2265.89		
MW-4	26	25	96.1538	148		
MW-5	21	7	33.3333	159.82		
TMW-1	19	19	100	95		
TMW-2	19	19	100	95		
TMW-3	19	19	100	95		

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	66.6438	98.923	60.026	10.9771	4983	146.559
MW-4	5.69231	3.53009	-0.925505	11.7674	1536.5	59.0962
MW-5	7.61048	2.9086	0.992664	12.5165	2168.5	103.262
TMW-1	5	0	-1.61781	12.9081	1054.5	55.5
TMW-2	5	0	-1.61781	12.9081	1054.5	55.5
TMW-3	5	0	-1.61781	12.9081	1054.5	55.5

Analysis of Variance Statistics

SS Wells	100435
SS Total	424212

Kruskal-Wallis Statistics

Non-Detect Rank	55.5
Background Rank Sum	2683.5
Background Rank Mean	83.8594
H Statistic	83.7547
H Adjusted for Ties	114.874

Shapiro-Wilks Test of Normality

Parameter: Aluminum

Location: MW-1

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 17 for 34 measurements

Sum of b values = 1.15798
Sample Standard Deviation = 0.279657
W Statistic = 0.519565

5% Critical value of 0.933 exceeds 0.519565
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.519565
Evidence of non-normality at 99% level of significance

Page 1

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 34 measurements

Sum of b values = 0.158773
Sample Standard Deviation = 0.0291536
W Statistic = 0.898787

5% Critical value of 0.933 exceeds 0.898787
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.898787
Evidence of non-normality at 99% level of significance

Page 2

Shapiro-Wilks Test of Normality

Parameter: Barium

Location: MW-1

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 17 for 34 measurements

Sum of b values = 0.0429864
Sample Standard Deviation = 0.0114687
W Statistic = 0.425712

5% Critical value of 0.933 exceeds 0.425712
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.425712
Evidence of non-normality at 99% level of significance

Page 3

Shapiro-Wilks Test of Normality

Parameter: Chloride

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 = 5.2497
Sample Standard Deviation = 0.990629
W Statistic = 0.825976

5% Critical value of 0.934 exceeds 0.825976
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.825976
Evidence of non-normality at 99% level of significance

Page 4

Shapiro-Wilks Test of Normality

Parameter: Cobalt

Location: MW-1

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 17 for 34 measurements

Sum of b values = 0.0793539
Sample Standard Deviation = 0.0130637
W Statistic = 0.878884

5% Critical value of 0.933 exceeds 0.878884
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.878884
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Nickel

Location: MW-1

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 17 for 34 measurements

Sum of b values = 0.150221
Sample Standard Deviation = 0.0421344
W Statistic = 0.385188

5% Critical value of 0.933 exceeds 0.385188
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.385188
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Sulfate

Location: MW-1

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 16 for 32 measurements

Sum of b values = 3.1291
Sample Standard Deviation = 0.655569
W Statistic = 0.734919

5% Critical value of 0.93 exceeds 0.734919
Evidence of non-normality at 95% level of significance

1% Critical value of 0.904 exceeds 0.734919
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Aluminum

Location: MW-1

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 17 for 34 measurements

Sum of b values = 4.93148
Sample Standard Deviation = 1.01019
W Statistic = 0.722158

5% Critical value of 0.933 exceeds 0.722158
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.722158
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 34 measurements

Sum of b values = 5.06553
Sample Standard Deviation = 0.922208
W Statistic = 0.91536

5% Critical value of 0.933 exceeds 0.91536
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 is less than 0.91536
Data is normally distributed at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Barium

Location: MW-1

Normality Test of Parameter Concentrations

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

Sum of b values = 1.88486
Sample Standard Deviation = 0.363212
W Statistic = 0.816061

5% Critical value of 0.933 exceeds 0.816061
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.816061
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chloride

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 = 1.78012
Sample Standard Deviation = 0.319499
W Statistic = 0.913021

5% Critical value of 0.934 exceeds 0.913021
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 is less than 0.913021
Data is normally distributed at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Cobalt

Location: MW-1

Normality Test of Parameter Concentrations

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

Sum of b values = 1.8038
Sample Standard Deviation = 0.320788
W Statistic = 0.958132

5% Critical value of 0.933 is less than 0.958132
Data is normally distributed at 95% level of significance

1% Critical value of 0.908 is less than 0.958132
Data is normally distributed at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Nickel

Location: MW-1

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 17 for 34 measurements

Sum of b values = 3.60516
Sample Standard Deviation = 0.816222
W Statistic = 0.591507

5% Critical value of 0.933 exceeds 0.591507
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.591507
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Sulfate

Location: MW-1

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 16 for 32 measurements

Sum of b values = 14.92
Sample Standard Deviation = 3.43675
W Statistic = 0.607962

5% Critical value of 0.93 exceeds 0.607962
Evidence of non-normality at 95% level of significance

1% Critical value of 0.904 exceeds 0.607962
Evidence of non-normality at 99% level of significance

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% Two-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

From 33 baseline samples

Baseline mean = -3.33683

Baseline std Dev = 0.314

For 1 recent sampling event(s)

Actual confidence level is $1.0 - (0.05/1)/2 = 99.5\%$

t is Percentile of Student's T-Test $(0.99/1/2) = 0.995$

Degrees of Freedom = 33 (background observations) - 1

$t(0.995, 33) = 2.73849$

Date	Samples	Mean	Interval	Significant
8/26/2021	1	-2.83873	[-4.21, -2.46]	FALSE

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 = 63.6364%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 33

Maximum Baseline Concentration = 1.2

Confidence Level = 97.1%

False Positive Rate = 2.9%

Baseline MeasuremDate	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

Date	Count	Mean	Significant
8/26/2021	1	0.155	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) = 33

Maximum Baseline Concentration = 0.1

Confidence Level = 97.1%

False Positive Rate = 2.9%

Baseline MeasuremDate	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

Date	Count	Mean	Significant
8/26/2021	1	0.019	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 = 9.09091%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 33

Maximum Baseline Concentration = 0.084

Confidence Level = 97.1%

False Positive Rate = 2.9%

Baseline MeasuremDate	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

Date	Count	Mean	Significant
8/26/2021	1	0.0198	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) = 33

Maximum Baseline Concentration = 5.68

Confidence Level = 97.1%

False Positive Rate = 2.9%

Baseline Measurement 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

Date	Count	Mean	Significant
8/26/2021	1	4.1	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 = 33.3333%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 33

Maximum Baseline Concentration = 0.2

Confidence Level = 97.1%

False Positive Rate = 2.9%

Baseline MeasuremDate	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

Date	Count	Mean	Significant
8/26/2021	1	0.00559	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 = 61.2903%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 31

Maximum Baseline Concentration = 18.8

Confidence Level = 96.9%

False Positive Rate = 3.1%

Baseline MeasuremDate	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

Date	Count	Mean	Significant
8/26/2021	1	6.63	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 = 62 - 4 = 58

Tied GrouValue	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

There are 0 time periods with multiple data

A = 7350
 B = 0
 C = 2730
 D = 0
 E = 210
 F = 0
 a = 14706
 b = 52326
 c = 684
 Group Variance = 408.667

Z-Score = 2.81962

Comparison Level at 95% confidence level = 1.65463 (upward trend)

2.81962 > 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 = 56 - 114 = -58

Tied GrouValue	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

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 14706
 b = 52326
 c = 684
 Group Variance = 816

Z-Score = -1.9954

Comparison Level at 95% confidence level = -1.65463 (downward trend)

-1.9954 < -1.65463 indicating a downward 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 = 107 - 60 = 47

Tied GrouValue	Members
1	0.0199
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

There are 0 time periods with multiple data

A = 84
 B = 0
 C = 6
 D = 0
 E = 8
 F = 0
 a = 14706
 b = 52326
 c = 684
 Group Variance = 812.333

Z-Score = 1.61395

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)

[1.61395] <= 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 = 70 - 98 = -28

Tied GrouValue	Members
1	2.15
	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

There are 0 time periods with multiple data

A = 66
 B = 0
 C = 6
 D = 0
 E = 6
 F = 0
 a = 14706
 b = 52326
 c = 684
 Group Variance = 813.333

Z-Score = -0.946737

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)

[-0.946737] <= 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 = 108 - 62 = 46

Tied GrouValue	Members
1	0.0411
2	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

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 14706
 b = 52326
 c = 684
 Group Variance = 816
 Z-Score = 1.57532
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |1.57532| <= 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 = 74 - 97 = -23

Tied GrouValue	Members
1	0.0411
2	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

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 14706
 b = 52326
 c = 684
 Group Variance = 817
 Z-Score = -0.769683
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-0.769683| <= 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 = 44 - 36 = 8

Tied GrouValue	Members
1	5
14	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

There are 0 time periods with multiple data

A = 6006
 B = 0
 C = 2184
 D = 0
 E = 182
 F = 0
 a = 14706
 b = 52326
 c = 684
 Group Variance = 483.333
 Z-Score = 0.318401
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |0.318401| <= 1.97737 indicating no evidence of a trend

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 34 measurements

Sum of b values = 1.15798
Sample Standard Deviation = 0.279657
W Statistic = 0.519565

5% Critical value of 0.933 exceeds 0.519565
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.519565
Evidence of non-normality at 99% level of significance

Page 1

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 34 measurements

Sum of b values = 0.0429864
Sample Standard Deviation = 0.0114687
W Statistic = 0.425712

5% Critical value of 0.933 exceeds 0.425712
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.425712
Evidence of non-normality at 99% level of significance

Page 2

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 = 16 for 33 measurements

Sum of b values = 0
Sample Standard Deviation = 6.60608e-019
W Statistic = 0

5% Critical value of 0.931 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0
Evidence of non-normality at 99% level of significance

Page 3

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 = 17 for 35 measurements

Sum of b values = 5.2497
Sample Standard Deviation = 0.990629
W Statistic = 0.825976

5% Critical value of 0.934 exceeds 0.825976
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.825976
Evidence of non-normality at 99% level of significance

Page 4

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 34 measurements

Sum of b values = 0.0948454
Sample Standard Deviation = 0.0277293
W Statistic = 0.354521

5% Critical value of 0.933 exceeds 0.354521
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.354521
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Copper

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 = 0.0159816
Sample Standard Deviation = 0.0042794
W Statistic = 0.422632

5% Critical value of 0.933 exceeds 0.422632
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.422632
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 34 measurements

Sum of b values = 0.150221
Sample Standard Deviation = 0.0421344
W Statistic = 0.385188

5% Critical value of 0.933 exceeds 0.385188
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.385188
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Silver

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 = 0.0178339
Sample Standard Deviation = 0.00390906
W Statistic = 0.630716

5% Critical value of 0.933 exceeds 0.630716
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.630716
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Zinc

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 = 0.0281713
Sample Standard Deviation = 0.00604419
W Statistic = 0.658299

5% Critical value of 0.933 exceeds 0.658299
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.658299
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 32 measurements

Sum of b values = 14.92
Sample Standard Deviation = 3.43675
W Statistic = 0.607962

5% Critical value of 0.93 exceeds 0.607962
Evidence of non-normality at 95% level of significance

1% Critical value of 0.904 exceeds 0.607962
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 34 measurements

Sum of b values = 4.93148
Sample Standard Deviation = 1.01019
W Statistic = 0.722158

5% Critical value of 0.933 exceeds 0.722158
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.722158
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 34 measurements

Sum of b values = 1.88486
Sample Standard Deviation = 0.363212
W Statistic = 0.816061

5% Critical value of 0.933 exceeds 0.816061
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.816061
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 = 16 for 33 measurements

Sum of b values = 0
Sample Standard Deviation = 9.01949e-016
W Statistic = 0

5% Critical value of 0.931 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0
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 = 17 for 35 measurements

Sum of b values = 1.78012
Sample Standard Deviation = 0.319499
W Statistic = 0.913021

5% Critical value of 0.934 exceeds 0.913021
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 is less than 0.913021
Data is normally distributed 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 34 measurements

Sum of b values = 5.85078
Sample Standard Deviation = 1.25985
W Statistic = 0.653542

5% Critical value of 0.933 exceeds 0.653542
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.653542
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Copper

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 = 3.14716
Sample Standard Deviation = 0.64551
W Statistic = 0.720309

5% Critical value of 0.933 exceeds 0.720309
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.720309
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 34 measurements

Sum of b values = 3.60516
Sample Standard Deviation = 0.816222
W Statistic = 0.591507

5% Critical value of 0.933 exceeds 0.591507
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.591507
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Silver

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 = 3.60161
Sample Standard Deviation = 0.787895
W Statistic = 0.633204

5% Critical value of 0.933 exceeds 0.633204
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.633204
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Zinc

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 = 1.6636
Sample Standard Deviation = 0.345608
W Statistic = 0.702125

5% Critical value of 0.933 exceeds 0.702125
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.702125
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 32 measurements

Sum of b values = 3.1291
Sample Standard Deviation = 0.655569
W Statistic = 0.734919

5% Critical value of 0.93 exceeds 0.734919
Evidence of non-normality at 95% level of significance

1% Critical value of 0.904 exceeds 0.734919
Evidence of non-normality at 99% level of significance

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Aluminum

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 39.645%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 34

Maximum Background Value = 1.2

Confidence Level = 85%

False Positive Rate = 15%

Location	Date	Count	Mean	Significant
MW-3	8/26/2021	1	0.218	FALSE
MW-4	8/26/2021	1	0.1	FALSE
MW-5	8/26/2021	1	0.236	FALSE
TMW-1	8/26/2021	1	0.1	FALSE
TMW-2	8/26/2021	1	0.115	FALSE
TMW-3	8/26/2021	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 = 6.47059%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 34

Maximum Background Value = 0.084

Confidence Level = 85%

False Positive Rate = 15%

Location	Date	Count	Mean	Significant
MW-3	8/26/2021	1	0.0532	FALSE
MW-4	8/26/2021	1	0.0094	FALSE
MW-5	8/26/2021	1	0.0505	FALSE
TMW-1	8/26/2021	1	0.0156	FALSE
TMW-2	8/26/2021	1	0.0337	FALSE
TMW-3	8/26/2021	1	0.0383	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 = 87.0588%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 33

Maximum Background Value = 0.001

Confidence Level = 84.6%

False Positive Rate = 15.4%

Location	Date	Count	Mean	Significant
MW-3	8/26/2021	1	0.00595	TRUE
MW-4	8/26/2021	1	0.001	FALSE
MW-5	8/26/2021	1	0.001	FALSE
TMW-1	8/26/2021	1	0.001	FALSE
TMW-2	8/26/2021	1	0.001	FALSE
TMW-3	8/26/2021	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) = 35

Maximum Background Value = 5.68

Confidence Level = 85.4%

False Positive Rate = 14.6%

Location	Date	Count	Mean	Significant
MW-3	8/26/2021	1	18.4	TRUE
MW-4	8/26/2021	1	8.88	TRUE
MW-5	8/26/2021	1	72.9	TRUE
TMW-1	8/26/2021	1	31.2	TRUE
TMW-2	8/26/2021	1	41.3	TRUE
TMW-3	8/26/2021	1	64.2	TRUE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 73.3728%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 34

Maximum Background Value = 0.12

Confidence Level = 85%

False Positive Rate = 15%

Location	Date	Count	Mean	Significant
MW-3	8/26/2021	1	0.0041	FALSE
MW-4	8/26/2021	1	0.002	FALSE
MW-5	8/26/2021	1	0.00287	FALSE
TMW-1	8/26/2021	1	0.002	FALSE
TMW-2	8/26/2021	1	0.002	FALSE
TMW-3	8/26/2021	1	0.002	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 83.9286%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 34

Maximum Background Value = 0.028

Confidence Level = 85%

False Positive Rate = 15%

Location	Date	Count	Mean	Significant
MW-3	8/26/2021	1	0.00983	FALSE
MW-4	8/26/2021	1	0.005	FALSE
MW-5	8/26/2021	1	0.005	FALSE
TMW-1	8/26/2021	1	0.00592	FALSE
TMW-2	8/26/2021	1	0.00801	FALSE
TMW-3	8/26/2021	1	0.005	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 59.0643%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 34

Maximum Background Value = 0.2

Confidence Level = 85%

False Positive Rate = 15%

Location	Date	Count	Mean	Significant
MW-3	8/26/2021	1	0.00467	FALSE
MW-4	8/26/2021	1	0.002	FALSE
MW-5	8/26/2021	1	0.00606	FALSE
TMW-1	8/26/2021	1	0.002	FALSE
TMW-2	8/26/2021	1	0.002	FALSE
TMW-3	8/26/2021	1	0.002	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Silver

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 99.4083%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 34

Maximum Background Value = 0.01

Confidence Level = 85%

False Positive Rate = 15%

Location	Date	Count	Mean	Significant
MW-3	8/26/2021	1	0.002	FALSE
MW-4	8/26/2021	1	0.002	FALSE
MW-5	8/26/2021	1	0.002	FALSE
TMW-1	8/26/2021	1	0.002	FALSE
TMW-2	8/26/2021	1	0.00213	FALSE
TMW-3	8/26/2021	1	0.002	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 70.7602%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 34

Maximum Background Value = 0.0281

Confidence Level = 85%

False Positive Rate = 15%

Location	Date	Count	Mean	Significant
MW-3	8/26/2021	1	0.0335	TRUE
MW-4	8/26/2021	1	0.025	FALSE
MW-5	8/26/2021	1	0.025	FALSE
TMW-1	8/26/2021	1	0.025	FALSE
TMW-2	8/26/2021	1	0.025	FALSE
TMW-3	8/26/2021	1	0.025	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Sulfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 64.7059%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 32

Maximum Background Value = 18.8

Confidence Level = 84.2%

False Positive Rate = 15.8%

Location	Date	Count	Mean	Significant
MW-3	8/26/2021	1	32.4	TRUE
MW-4	8/26/2021	1	5	FALSE
MW-5	8/26/2021	1	12	FALSE
TMW-1	8/26/2021	1	5	FALSE
TMW-2	8/26/2021	1	5	FALSE
TMW-3	8/26/2021	1	5	FALSE

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 69 - 92 = -23

Tied Group	Value	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

There are 0 time periods with multiple data

A = 300
 B = 0
 C = 60
 D = 0
 E = 20
 F = 0
 a = 14706
 b = 52326
 c = 684
 Group Variance = 800.333
 Z-Score = -0.777655

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |0.777655| <= 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 = 90 - 78 = 12

Tied Group	Value	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

There are 0 time periods with multiple data

A = 66
 B = 0
 C = 6
 D = 0
 E = 6
 F = 0
 a = 14706
 b = 52326
 c = 684
 Group Variance = 813.333
 Z-Score = 0.385708

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |0.385708| <= 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 = 37 - 80 = -43

Tied Group	Value	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

There are 0 time periods with multiple data

A = 66
 B = 0
 C = 6
 D = 0
 E = 6
 F = 0
 a = 8880
 b = 30240
 c = 480
 Group Variance = 489.667
 Z-Score = -1.89801

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-1.89801| <= 1.97737 indicating no evidence of a 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 = 12 - 108 = -96

Tied Group	Value	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

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 8880
 b = 30240
 c = 480
 Group Variance = 493.333
 Z-Score = -4.27714

Comparison Level at 95% confidence level = -1.65463 (downward trend)
 -4.27714 < -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 = 53 - 137 = -84

Tied Group	Value	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

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 = -2.69288

Comparison Level at 95% confidence level = -1.65463 (downward trend)

-2.69288 < -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 = 119 - 46 = 73

Tied Group	Value	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

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 14706
b = 52326
c = 684

Group Variance = 808.333

Z-Score = 2.53243

Comparison Level at 95% confidence level = 1.65463 (upward trend)

2.53243 > 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 = 147 - 24 = 123

Tied Group	Value	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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 14706
b = 52326
c = 684

Group Variance = 817

Z-Score = 4.26824

Comparison Level at 95% confidence level = 1.65463 (upward trend)

4.26824 > 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 = 77 - 37 = 40

Tied Group	Value	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

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 8880
b = 30240
c = 480

Group Variance = 484.667

Z-Score = 1.77151

Comparison Level at 95% confidence level = 1.65463 (upward trend)

1.77151 > 1.65463 indicating an upward 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 = 50 - 69 = -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

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 6890
 b = 30240
 c = 480
 Group Variance = 492.333
 Z-Score = -0.811228

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-0.811228| <= 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 = 94 - 41 = 53

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

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 = 2.14384

Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.14384 > 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 = 88 - 143 = -55

Tied GrouValue	Members
1	
2	

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

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 22638
 b = 83160
 c = 924
 Group Variance = 1257.67
 Z-Score = -1.52269

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-1.52269| <= 1.97737 indicating no evidence of a 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 = 33 - 136 = -103

Tied GrouValue	Members
1	23.9
2	18.4

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

There are 0 time periods with multiple data

A = 36
 B = 0
 C = 0
 D = 0
 E = 4
 F = 0
 a = 14706
 b = 52326
 c = 684
 Group Variance = 815
 Z-Score = -3.5729

Comparison Level at 95% confidence level = -1.65463 (downward trend)
-3.5729 < -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 = 145 - 26 = 119

Tied Group	Value	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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 14706
b = 52326
c = 684
Group Variance = 817

Z-Score = 4.1283

Comparison Level at 95% confidence level = 1.65463 (upward trend)

4.1283 > 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 = 126 - 44 = 82

Tied Group	Value	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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 14706
b = 52326
c = 684

Group Variance = 816

Z-Score = 2.83557

Comparison Level at 95% confidence level = 1.65463 (upward trend)

2.83557 > 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 = 168 - 3 = 165

Tied Group	Value	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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 14706
b = 52326
c = 684
Group Variance = 817

Z-Score = 5.73763

Comparison Level at 95% confidence level = 1.65463 (upward trend)

5.73763 > 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 = 145 - 26 = 119

Tied Group	Value	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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 14706
b = 52326
c = 684

Group Variance = 817

Z-Score = 4.1283

Comparison Level at 95% confidence level = 1.65463 (upward trend)

4.1283 > 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 = 160 - 11 = 149

Tied Group	Value	Members
1	0.002	12

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 14706
b = 52326
c = 684
Group Variance = 817
Z-Score = 5.17786
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.17786 > 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 = 52 - 53 = -1

Tied Group	Value	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

There are 0 time periods with multiple data

A = 3828
B = 0
C = 1320
D = 0
E = 132
F = 0
a = 14706
b = 52326
c = 684
Group Variance = 604.333
Z-Score = 0
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0| <= 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 = 105 - 60 = 45

Tied Group	Value	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

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 14706
b = 52326
c = 684
Group Variance = 808.333
Z-Score = 1.5476
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.5476| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Copper

Location: TMW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 30 - 12 = 18

Tied Group	Value	Members
1	0.005	13

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

There are 0 time periods with multiple data

A = 4836
B = 0
C = 1716
D = 0
E = 156
F = 0
a = 8880
b = 30240
c = 480
Group Variance = 224.667
Z-Score = 1.13417
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.13417| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Copper

Location: TMW-2

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

95% Confidence Level

S Statistic = 16 - 13 = 3

Tied GrouValue	Members
1	0.005
	14

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

There are 0 time periods with multiple data

A = 6006
B = 0
C = 2184
D = 0
E = 182
F = 0
a = 8880
b = 30240
c = 480
Group Variance = 159.667
Z-Score = 0.158279
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.158279| <= 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 = 100 - 87 = 13

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

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 = 0.390085
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.390085| <= 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 = 73 - 97 = -24

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 14706
b = 52326
c = 684
Group Variance = 816
Z-Score = -0.805161
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.805161| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Silver

Location: TMW-2

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

95% Confidence Level

S Statistic = 22 - 7 = 15

Tied GrouValue	Members
1	0.002
	14

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

There are 0 time periods with multiple data

A = 6006
B = 0
C = 2184
D = 0
E = 182
F = 0
a = 8880
b = 30240
c = 480
Group Variance = 159.667
Z-Score = 1.10795
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.10795| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Zinc

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 68 - 119 = -51

Tied Group	Value	Members
1	0.025	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

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 = -1.62535
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-1.62535| <= 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 = 72 - 98 = -26

Tied Group	Value	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

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 14706
 b = 52326
 c = 684
 Group Variance = 816
 Z-Score = -0.875175
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-0.875175| <= 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 = 155 - 6 = 149

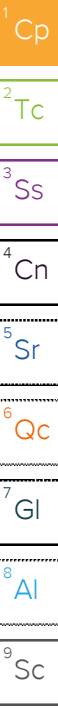
Tied Group	Value	Members
1	5	5

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

There are 0 time periods with multiple data

A = 300
 B = 0
 C = 60
 D = 0
 E = 20
 F = 0
 a = 14706
 b = 52326
 c = 684
 Group Variance = 800.333
 Z-Score = 5.2315
 Comparison Level at 95% confidence level = 1.65463 (upward trend)
 5.2315 > 1.65463 indicating an upward trend

APPENDIX C
LABORATORY ANALYTICAL REPORTS &
FIELD INFORMATION LOGS



Civil & Environmental Consultants - TN

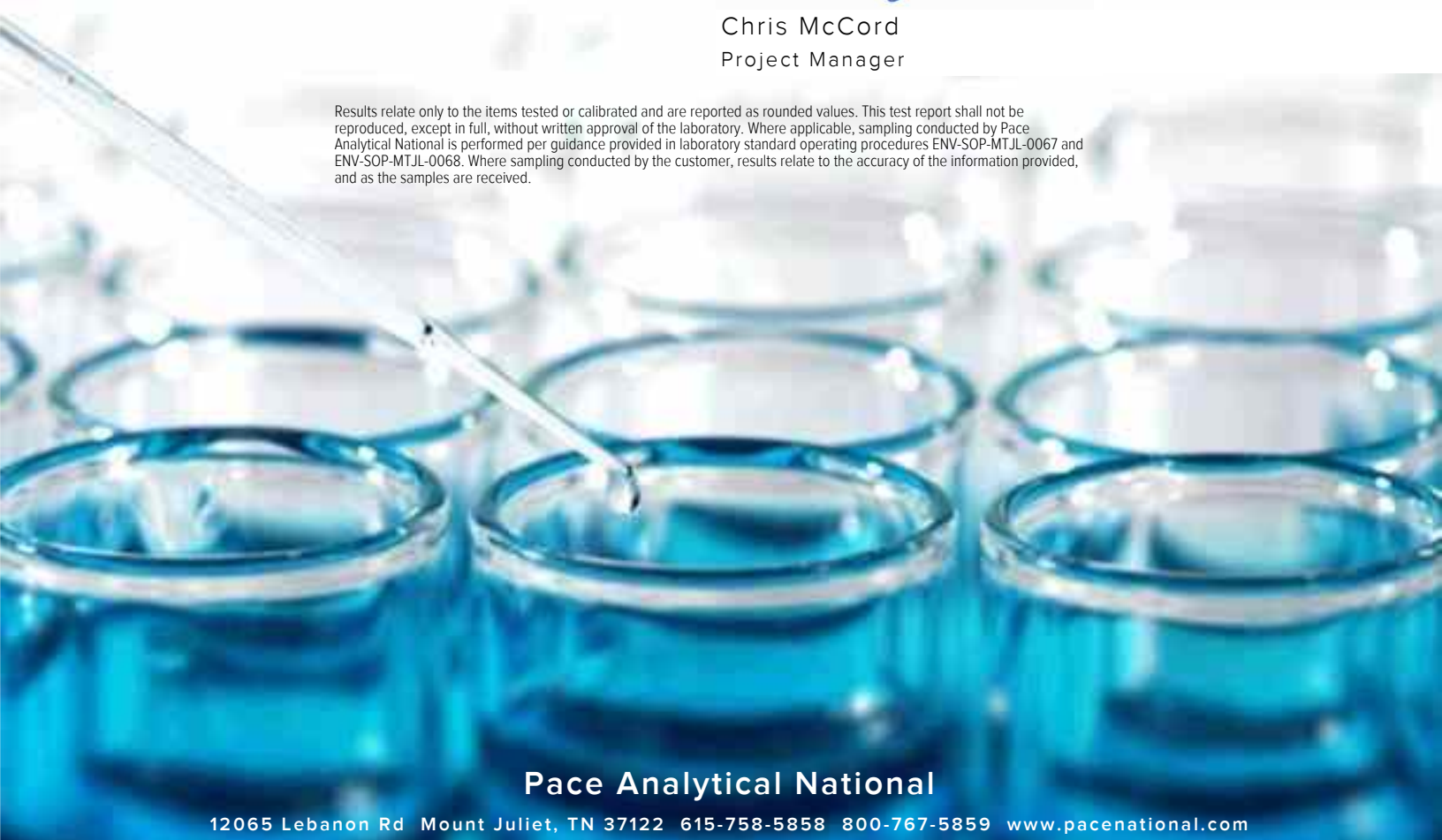
Sample Delivery Group: L1396050
Samples Received: 08/27/2021
Project Number: 181-364
Description: Former EWS Camden Class 2 Landfill
Site: CAMDEN, TN
Report To: Philip Campbell
117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Entire Report Reviewed By:



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.



Pace Analytical National

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

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SAMPLE SUMMARY

MW-1 L1396050-01 GW

Collected by
Collected date/time
Received date/time

08/26/21 10:50 08/27/21 17:05

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1734559	1	09/03/21 13:15	09/03/21 13:15	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1733234	1.04	09/02/21 18:04	09/02/21 18:04	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1737688	1	09/12/21 15:07	09/12/21 15:07	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1733850	1	09/02/21 15:27	09/02/21 17:42	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1730965	1	08/28/21 10:54	08/28/21 10:54	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1732495	1	08/31/21 21:17	08/31/21 21:17	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1731131	1	08/30/21 10:04	08/31/21 14:40	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1731567	1	08/30/21 18:04	09/02/21 06:50	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1734559	1	09/03/21 11:32	09/03/21 13:15	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1734559	1	09/03/21 11:32	09/03/21 14:12	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1732576	1	08/31/21 17:55	08/31/21 17:55	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1731594	1	08/30/21 07:46	08/30/21 17:49	HMH	Mt. Juliet, TN



MW-3 L1396050-02 GW

Collected by
Collected date/time
Received date/time

08/26/21 14:25 08/27/21 17:05

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731664	1	09/01/21 13:51	09/01/21 13:51	LAT	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1733234	1	09/02/21 18:08	09/02/21 18:08	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1737688	1	09/12/21 15:08	09/12/21 15:08	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1733850	1	09/02/21 15:27	09/02/21 17:42	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1730965	1	08/28/21 11:52	08/28/21 11:52	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1732495	1	08/31/21 21:32	08/31/21 21:32	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1731131	1	08/30/21 10:04	08/31/21 14:53	BMF	Mt. Juliet, TN
Mercury by Method 7470A	WG1732841	1	09/01/21 10:22	09/01/21 16:09	SD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1731567	1	08/30/21 18:04	09/02/21 06:58	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1731619	1	08/31/21 23:21	09/02/21 07:27	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1730613	1	08/29/21 23:56	08/30/21 18:04	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1731664	1	08/31/21 21:25	09/01/21 13:51	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1733470	1	09/01/21 22:42	09/02/21 10:22	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1732576	1	08/31/21 18:14	08/31/21 18:14	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1731594	1	08/30/21 07:46	08/30/21 19:04	HMH	Mt. Juliet, TN

MW-4 L1396050-03 GW

Collected by
Collected date/time
Received date/time

08/26/21 12:25 08/27/21 17:05

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731664	1	09/01/21 13:55	09/01/21 13:55	LAT	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1733234	1.02	09/02/21 18:10	09/02/21 18:10	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1737688	1	09/12/21 15:10	09/12/21 15:10	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1733850	1	09/02/21 15:27	09/02/21 17:42	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1730965	1	08/28/21 11:29	08/28/21 11:29	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1732495	1	08/31/21 21:46	08/31/21 21:46	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1731131	1	08/30/21 10:04	08/31/21 14:56	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1731567	1	08/30/21 18:04	09/02/21 07:01	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1731664	1	08/31/21 21:25	09/01/21 13:55	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1732576	1	08/31/21 18:33	08/31/21 18:33	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1731594	1	08/30/21 07:46	08/30/21 19:16	HMH	Mt. Juliet, TN

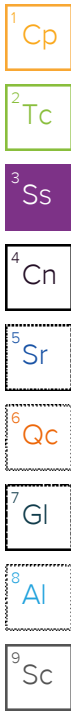
SAMPLE SUMMARY

MW-5 L1396050-04 GW

Collected by
Collected date/time
Received date/time

08/26/21 11:45 08/27/21 17:05

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731664	1	09/01/21 14:29	09/01/21 14:29	LAT	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1733234	1.25	09/02/21 18:15	09/02/21 18:15	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1737688	1	09/12/21 15:14	09/12/21 15:14	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1733850	1	09/02/21 15:27	09/02/21 17:43	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1730965	1	08/28/21 11:06	08/28/21 11:06	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1732495	1	08/31/21 22:00	08/31/21 22:00	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1731131	1	08/30/21 10:04	08/31/21 14:58	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1731567	1	08/30/21 18:04	09/02/21 07:04	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1731664	1	08/31/21 21:25	09/01/21 14:29	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1733470	1	09/01/21 22:42	09/02/21 10:26	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1732576	1	08/31/21 18:53	08/31/21 18:53	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1731594	1	08/30/21 07:46	08/30/21 19:29	HMH	Mt. Juliet, TN



TMW-1 L1396050-05 GW

Collected by
Collected date/time
Received date/time

08/26/21 13:15 08/27/21 17:05

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731664	1	09/01/21 14:32	09/01/21 14:32	LAT	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1733234	1	09/02/21 18:19	09/02/21 18:19	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1737688	1	09/12/21 15:16	09/12/21 15:16	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1733850	1	09/02/21 15:27	09/02/21 17:44	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1730965	1	08/28/21 11:40	08/28/21 11:40	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1732495	1	08/31/21 22:15	08/31/21 22:15	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1731131	1	08/30/21 10:04	08/31/21 15:04	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1731567	1	08/30/21 18:04	09/02/21 07:07	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1731664	1	08/31/21 21:25	09/01/21 14:32	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1732576	1	08/31/21 19:12	08/31/21 19:12	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1731594	1	08/30/21 07:46	08/30/21 19:41	HMH	Mt. Juliet, TN

TMW-2 L1396050-06 GW

Collected by
Collected date/time
Received date/time

08/26/21 12:15 08/27/21 17:05

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731664	1	09/01/21 14:36	09/01/21 14:36	LAT	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1733234	1	09/02/21 18:36	09/02/21 18:36	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1737688	1	09/12/21 15:17	09/12/21 15:17	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1733850	1	09/02/21 15:27	09/02/21 17:47	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1730965	1	08/28/21 11:17	08/28/21 11:17	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1732751	1	09/01/21 03:31	09/01/21 03:31	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1731131	1	08/30/21 10:04	08/31/21 15:07	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1731567	1	08/30/21 18:04	09/02/21 07:10	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1731664	1	08/31/21 21:25	09/01/21 14:36	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1732576	1	08/31/21 19:32	08/31/21 19:32	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1731594	1	08/30/21 07:46	08/30/21 19:53	HMH	Mt. Juliet, TN

TMW-3 L1396050-07 GW

Collected by
Collected date/time
Received date/time

08/26/21 10:45 08/27/21 17:05

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731664	1	09/01/21 14:39	09/01/21 14:39	LAT	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1733234	1.06	09/02/21 18:40	09/02/21 18:40	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1737688	1	09/12/21 15:23	09/12/21 15:23	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1733850	1	09/02/21 15:27	09/02/21 17:47	BMD	Mt. Juliet, TN

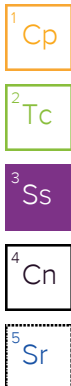
SAMPLE SUMMARY

TMW-3 L1396050-07 GW

Collected by
Collected date/time
Received date/time

08/26/21 10:45 08/27/21 17:05

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1730965	1	08/28/21 10:43	08/28/21 10:43	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1732751	1	09/01/21 03:48	09/01/21 03:48	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1731131	1	08/30/21 10:04	08/31/21 15:09	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1731567	1	08/30/21 18:04	09/02/21 07:13	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1731664	1	08/31/21 21:25	09/01/21 14:39	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1732576	1	08/31/21 19:51	08/31/21 19:51	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1731594	1	08/30/21 07:46	08/30/21 20:43	HMH	Mt. Juliet, TN



DUPLICATE L1396050-08 GW

Collected by
Collected date/time
Received date/time

08/26/21 00:00 08/27/21 17:05

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731664	1	09/01/21 14:43	09/01/21 14:43	LAT	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1733234	1	09/02/21 18:43	09/02/21 18:43	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1737688	1	09/12/21 15:25	09/12/21 15:25	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1733850	1	09/02/21 15:27	09/02/21 17:47	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1730965	1	08/28/21 13:44	08/28/21 13:44	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1731830	1	08/31/21 14:59	08/31/21 14:59	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1731131	1	08/30/21 10:04	08/31/21 15:11	BMF	Mt. Juliet, TN
Mercury by Method 7470A	WG1732841	1	09/01/21 10:22	09/01/21 16:11	SD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1731567	1	08/30/21 18:04	09/02/21 07:16	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1731619	1	08/31/21 23:21	09/02/21 07:30	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1730613	1	08/29/21 23:56	08/30/21 18:07	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1731664	1	08/31/21 21:25	09/01/21 14:43	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1733470	1	09/01/21 22:42	09/02/21 10:29	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1732943	1	09/01/21 20:00	09/01/21 20:00	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1731594	1	08/30/21 07:46	08/30/21 20:55	HMH	Mt. Juliet, TN

FIELD BLANK L1396050-09 GW

Collected by
Collected date/time
Received date/time

08/26/21 15:10 08/27/21 17:05

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731664	1	09/01/21 14:46	09/01/21 14:46	LAT	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1733234	1.02	09/02/21 18:46	09/02/21 18:46	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1737688	1	09/12/21 15:26	09/12/21 15:26	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1733850	1	09/02/21 15:27	09/02/21 17:48	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1730965	1	08/28/21 12:03	08/28/21 12:03	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1731830	1	08/31/21 15:15	08/31/21 15:15	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1731131	1	08/30/21 10:04	08/31/21 15:13	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1731567	1	08/30/21 18:04	09/02/21 07:19	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1731664	1	08/31/21 21:25	09/01/21 14:46	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1732943	1	09/01/21 20:21	09/01/21 20:21	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1731594	1	08/30/21 07:46	08/30/21 21:08	HMH	Mt. Juliet, TN

TRIP BLANK L1396050-10 GW

Collected by
Collected date/time
Received date/time

08/26/21 00:00 08/27/21 17:05

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1732943	1	09/01/21 14:14	09/01/21 14:14	ACG	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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	19.8		2.50	1	09/03/2021 13:15	WG1734559

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	24.8		20.8	1.04	09/02/2021 18:04	WG1733234

Sample Narrative:

L1396050-01 WG1733234: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	0.254		0.250	1	09/12/2021 15:07	WG1737688

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	09/02/2021 17:42	WG1733850

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/31/2021 21:17	WG1732495
Chloride	4.10	<u>B</u>	1.00	1	08/31/2021 21:17	WG1732495
Fluoride	ND		0.150	1	08/31/2021 21:17	WG1732495
Nitrate	ND	<u>Q</u>	0.100	1	08/28/2021 10:54	WG1730965
Sulfate	6.63		5.00	1	08/31/2021 21:17	WG1732495

Mercury by Method 7470A

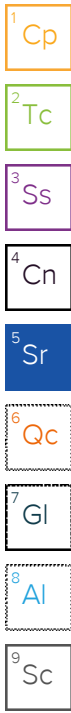
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2021 14:40	WG1731131

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	09/02/2021 06:50	WG1731567

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.155	<u>B</u>	0.100	1	09/03/2021 13:15	WG1734559
Antimony	ND		0.00400	1	09/03/2021 13:15	WG1734559
Arsenic	0.0190		0.00200	1	09/03/2021 13:15	WG1734559
Barium	0.0198		0.00200	1	09/03/2021 13:15	WG1734559
Beryllium	ND		0.00200	1	09/03/2021 13:15	WG1734559
Cadmium	ND		0.00100	1	09/03/2021 13:15	WG1734559
Calcium	3.51		1.00	1	09/03/2021 13:15	WG1734559
Chromium	ND		0.00200	1	09/03/2021 13:15	WG1734559
Cobalt	0.0585		0.00200	1	09/03/2021 13:15	WG1734559
Copper	ND		0.00500	1	09/03/2021 13:15	WG1734559



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	13.8		0.100	1	09/03/2021 13:15	WG1734559
Lead	ND		0.00200	1	09/03/2021 13:15	WG1734559
Magnesium	2.68		1.00	1	09/03/2021 13:15	WG1734559
Manganese	0.830		0.00500	1	09/03/2021 13:15	WG1734559
Nickel	0.00559		0.00200	1	09/03/2021 14:12	WG1734559
Potassium	ND		2.00	1	09/03/2021 13:15	WG1734559
Selenium	ND		0.00200	1	09/03/2021 13:15	WG1734559
Silver	ND		0.00200	1	09/03/2021 13:15	WG1734559
Sodium	3.84		2.00	1	09/03/2021 13:15	WG1734559
Thallium	ND		0.00200	1	09/03/2021 13:15	WG1734559
Vanadium	ND		0.00500	1	09/03/2021 13:15	WG1734559
Zinc	ND		0.0250	1	09/03/2021 13:15	WG1734559

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
Acetone	ND		0.0500	1	08/31/2021 17:55	WG1732576
Acrylonitrile	ND		0.0100	1	08/31/2021 17:55	WG1732576
Benzene	ND		0.00100	1	08/31/2021 17:55	WG1732576
Bromochloromethane	ND		0.00100	1	08/31/2021 17:55	WG1732576
Bromodichloromethane	ND		0.00100	1	08/31/2021 17:55	WG1732576
Bromoform	ND		0.00100	1	08/31/2021 17:55	WG1732576
Bromomethane	ND		0.00500	1	08/31/2021 17:55	WG1732576
Carbon disulfide	ND		0.00100	1	08/31/2021 17:55	WG1732576
Carbon tetrachloride	ND		0.00100	1	08/31/2021 17:55	WG1732576
Chlorobenzene	ND		0.00100	1	08/31/2021 17:55	WG1732576
Chlorodibromomethane	ND		0.00100	1	08/31/2021 17:55	WG1732576
Chloroethane	ND		0.00500	1	08/31/2021 17:55	WG1732576
Chloroform	ND		0.00500	1	08/31/2021 17:55	WG1732576
Chloromethane	ND		0.00250	1	08/31/2021 17:55	WG1732576
Dibromomethane	ND		0.00100	1	08/31/2021 17:55	WG1732576
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/31/2021 17:55	WG1732576
1,2-Dibromoethane	ND		0.00100	1	08/31/2021 17:55	WG1732576
1,2-Dichlorobenzene	ND	J4	0.00100	1	08/31/2021 17:55	WG1732576
1,4-Dichlorobenzene	ND		0.00100	1	08/31/2021 17:55	WG1732576
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/31/2021 17:55	WG1732576
1,1-Dichloroethane	ND		0.00100	1	08/31/2021 17:55	WG1732576
1,2-Dichloroethane	ND		0.00100	1	08/31/2021 17:55	WG1732576
1,1-Dichloroethene	ND		0.00100	1	08/31/2021 17:55	WG1732576
cis-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 17:55	WG1732576
trans-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 17:55	WG1732576
1,2-Dichloropropane	ND		0.00100	1	08/31/2021 17:55	WG1732576
cis-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 17:55	WG1732576
trans-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 17:55	WG1732576
Ethylbenzene	ND		0.00100	1	08/31/2021 17:55	WG1732576
2-Hexanone	ND		0.0100	1	08/31/2021 17:55	WG1732576
Iodomethane	ND		0.0100	1	08/31/2021 17:55	WG1732576
2-Butanone (MEK)	ND		0.0100	1	08/31/2021 17:55	WG1732576
Methylene Chloride	ND		0.00500	1	08/31/2021 17:55	WG1732576
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/31/2021 17:55	WG1732576
Styrene	ND		0.00100	1	08/31/2021 17:55	WG1732576
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 17:55	WG1732576
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 17:55	WG1732576
Tetrachloroethene	ND		0.00100	1	08/31/2021 17:55	WG1732576
Toluene	ND		0.00100	1	08/31/2021 17:55	WG1732576
1,1,1-Trichloroethane	ND		0.00100	1	08/31/2021 17:55	WG1732576

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	08/31/2021 17:55	WG1732576
Trichloroethene	ND		0.00100	1	08/31/2021 17:55	WG1732576
Trichlorofluoromethane	ND		0.00500	1	08/31/2021 17:55	WG1732576
1,2,3-Trichloropropane	ND	J4	0.00250	1	08/31/2021 17:55	WG1732576
Vinyl acetate	ND		0.0100	1	08/31/2021 17:55	WG1732576
Vinyl chloride	ND		0.00100	1	08/31/2021 17:55	WG1732576
Xylenes, Total	ND	J4	0.00300	1	08/31/2021 17:55	WG1732576
<i>(S) Toluene-d8</i>	98.6		80.0-120		08/31/2021 17:55	WG1732576
<i>(S) 4-Bromofluorobenzene</i>	83.4		77.0-126		08/31/2021 17:55	WG1732576
<i>(S) 1,2-Dichloroethane-d4</i>	121		70.0-130		08/31/2021 17:55	WG1732576

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	08/30/2021 17:49	WG1731594
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/30/2021 17:49	WG1731594

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	56.8		2.50	1	09/01/2021 13:51	WG1731664

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	26.1		20.0	1	09/02/2021 18:08	WG1733234

Sample Narrative:

L1396050-02 WG1733234: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	09/12/2021 15:08	WG1737688

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	21.5		20.0	1	09/02/2021 17:42	WG1733850

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/31/2021 21:32	WG1732495
Chloride	18.4		1.00	1	08/31/2021 21:32	WG1732495
Fluoride	ND		0.150	1	08/31/2021 21:32	WG1732495
Nitrate	0.344		0.100	1	08/28/2021 11:52	WG1730965
Sulfate	32.4		5.00	1	08/31/2021 21:32	WG1732495

Mercury by Method 7470A

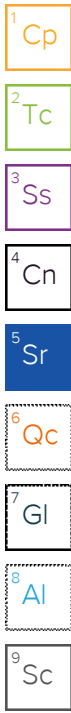
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2021 14:53	WG1731131
Mercury,Dissolved	ND		0.000200	1	09/01/2021 16:09	WG1732841

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	09/02/2021 06:58	WG1731567
Boron,Dissolved	ND		0.200	1	09/02/2021 07:27	WG1731619

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.218		0.100	1	09/01/2021 13:51	WG1731664
Aluminum,Dissolved	ND		0.100	1	08/30/2021 18:04	WG1730613
Antimony	ND		0.00400	1	09/01/2021 13:51	WG1731664
Antimony,Dissolved	ND		0.00400	1	08/30/2021 18:04	WG1730613
Arsenic	ND		0.00200	1	09/01/2021 13:51	WG1731664
Arsenic,Dissolved	ND		0.00200	1	08/30/2021 18:04	WG1730613
Barium	0.0532		0.00200	1	09/01/2021 13:51	WG1731664
Barium,Dissolved	0.0506		0.00200	1	08/30/2021 18:04	WG1730613



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Beryllium	ND		0.00200	1	09/01/2021 13:51	WG1731664
Beryllium,Dissolved	ND		0.00200	1	08/30/2021 18:04	WG1730613
Cadmium	0.00595		0.00100	1	09/01/2021 13:51	WG1731664
Cadmium,Dissolved	0.00589		0.00100	1	08/30/2021 18:04	WG1730613
Calcium	13.6		1.00	1	09/01/2021 13:51	WG1731664
Calcium,Dissolved	13.7		1.00	1	08/30/2021 18:04	WG1730613
Chromium	0.00410		0.00200	1	09/02/2021 10:22	WG1733470
Chromium,Dissolved	0.00295	B	0.00200	1	08/30/2021 18:04	WG1730613
Cobalt	ND		0.00200	1	09/01/2021 13:51	WG1731664
Cobalt,Dissolved	ND		0.00200	1	08/30/2021 18:04	WG1730613
Copper	0.00983		0.00500	1	09/01/2021 13:51	WG1731664
Copper,Dissolved	ND		0.00500	1	08/30/2021 18:04	WG1730613
Iron	0.131		0.100	1	09/01/2021 13:51	WG1731664
Iron,Dissolved	ND		0.100	1	08/30/2021 18:04	WG1730613
Lead	ND		0.00200	1	09/01/2021 13:51	WG1731664
Lead,Dissolved	ND		0.00200	1	08/30/2021 18:04	WG1730613
Magnesium	5.53		1.00	1	09/01/2021 13:51	WG1731664
Magnesium,Dissolved	5.62		1.00	1	08/30/2021 18:04	WG1730613
Manganese	0.283		0.00500	1	09/01/2021 13:51	WG1731664
Manganese,Dissolved	0.299		0.00500	1	08/30/2021 18:04	WG1730613
Nickel	0.00467		0.00200	1	09/01/2021 13:51	WG1731664
Nickel,Dissolved	0.00692	B	0.00200	1	08/30/2021 18:04	WG1730613
Potassium	6.52		2.00	1	09/01/2021 13:51	WG1731664
Potassium,Dissolved	6.29		2.00	1	08/30/2021 18:04	WG1730613
Selenium	ND		0.00200	1	09/01/2021 13:51	WG1731664
Selenium,Dissolved	ND		0.00200	1	08/30/2021 18:04	WG1730613
Silver	ND		0.00200	1	09/01/2021 13:51	WG1731664
Silver,Dissolved	ND		0.00200	1	08/30/2021 18:04	WG1730613
Sodium	9.10		2.00	1	09/01/2021 13:51	WG1731664
Sodium,Dissolved	9.25		2.00	1	08/30/2021 18:04	WG1730613
Thallium	ND		0.00200	1	09/01/2021 13:51	WG1731664
Thallium,Dissolved	ND		0.00200	1	08/30/2021 18:04	WG1730613
Vanadium	ND		0.00500	1	09/01/2021 13:51	WG1731664
Vanadium,Dissolved	ND		0.00500	1	08/30/2021 18:04	WG1730613
Zinc	0.0335		0.0250	1	09/01/2021 13:51	WG1731664
Zinc,Dissolved	0.0383		0.0250	1	08/30/2021 18:04	WG1730613

1
Cp

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Tc

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Ss

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Cn

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Sr

6
Qc

7
Gl

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Al

9
Sc

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	08/31/2021 18:14	WG1732576
Acrylonitrile	ND		0.0100	1	08/31/2021 18:14	WG1732576
Benzene	ND		0.00100	1	08/31/2021 18:14	WG1732576
Bromochloromethane	ND		0.00100	1	08/31/2021 18:14	WG1732576
Bromodichloromethane	ND		0.00100	1	08/31/2021 18:14	WG1732576
Bromoform	ND		0.00100	1	08/31/2021 18:14	WG1732576
Bromomethane	ND		0.00500	1	08/31/2021 18:14	WG1732576
Carbon disulfide	ND		0.00100	1	08/31/2021 18:14	WG1732576
Carbon tetrachloride	ND		0.00100	1	08/31/2021 18:14	WG1732576
Chlorobenzene	ND		0.00100	1	08/31/2021 18:14	WG1732576
Chlorodibromomethane	ND		0.00100	1	08/31/2021 18:14	WG1732576
Chloroethane	ND		0.00500	1	08/31/2021 18:14	WG1732576
Chloroform	ND		0.00500	1	08/31/2021 18:14	WG1732576
Chloromethane	ND		0.00250	1	08/31/2021 18:14	WG1732576
Dibromomethane	ND		0.00100	1	08/31/2021 18:14	WG1732576
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/31/2021 18:14	WG1732576

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	08/31/2021 18:14	WG1732576
1,2-Dichlorobenzene	ND	J4	0.00100	1	08/31/2021 18:14	WG1732576
1,4-Dichlorobenzene	ND		0.00100	1	08/31/2021 18:14	WG1732576
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/31/2021 18:14	WG1732576
1,1-Dichloroethane	ND		0.00100	1	08/31/2021 18:14	WG1732576
1,2-Dichloroethane	ND		0.00100	1	08/31/2021 18:14	WG1732576
1,1-Dichloroethene	ND		0.00100	1	08/31/2021 18:14	WG1732576
cis-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 18:14	WG1732576
trans-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 18:14	WG1732576
1,2-Dichloropropane	ND		0.00100	1	08/31/2021 18:14	WG1732576
cis-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 18:14	WG1732576
trans-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 18:14	WG1732576
Ethylbenzene	ND		0.00100	1	08/31/2021 18:14	WG1732576
2-Hexanone	ND		0.0100	1	08/31/2021 18:14	WG1732576
Iodomethane	ND		0.0100	1	08/31/2021 18:14	WG1732576
2-Butanone (MEK)	ND		0.0100	1	08/31/2021 18:14	WG1732576
Methylene Chloride	ND		0.00500	1	08/31/2021 18:14	WG1732576
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/31/2021 18:14	WG1732576
Styrene	ND		0.00100	1	08/31/2021 18:14	WG1732576
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 18:14	WG1732576
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 18:14	WG1732576
Tetrachloroethene	ND		0.00100	1	08/31/2021 18:14	WG1732576
Toluene	ND		0.00100	1	08/31/2021 18:14	WG1732576
1,1,1-Trichloroethane	ND		0.00100	1	08/31/2021 18:14	WG1732576
1,1,2-Trichloroethane	ND		0.00100	1	08/31/2021 18:14	WG1732576
Trichloroethene	ND		0.00100	1	08/31/2021 18:14	WG1732576
Trichlorofluoromethane	ND		0.00500	1	08/31/2021 18:14	WG1732576
1,2,3-Trichloropropane	ND	J4	0.00250	1	08/31/2021 18:14	WG1732576
Vinyl acetate	ND		0.0100	1	08/31/2021 18:14	WG1732576
Vinyl chloride	ND		0.00100	1	08/31/2021 18:14	WG1732576
Xylenes, Total	ND	J4	0.00300	1	08/31/2021 18:14	WG1732576
(S) Toluene-d8	95.8		80.0-120		08/31/2021 18:14	WG1732576
(S) 4-Bromofluorobenzene	87.4		77.0-126		08/31/2021 18:14	WG1732576
(S) 1,2-Dichloroethane-d4	118		70.0-130		08/31/2021 18:14	WG1732576

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	08/30/2021 19:04	WG1731594
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/30/2021 19:04	WG1731594

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	25.3		2.50	1	09/01/2021 13:55	WG1731664

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	21.2		20.4	1.02	09/02/2021 18:10	WG1733234

Sample Narrative:

L1396050-03 WG1733234: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	09/12/2021 15:10	WG1737688

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	09/02/2021 17:42	WG1733850

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/31/2021 21:46	WG1732495
Chloride	8.88		1.00	1	08/31/2021 21:46	WG1732495
Fluoride	ND		0.150	1	08/31/2021 21:46	WG1732495
Nitrate	0.330		0.100	1	08/28/2021 11:29	WG1730965
Sulfate	ND		5.00	1	08/31/2021 21:46	WG1732495

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2021 14:56	WG1731131

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	09/02/2021 07:01	WG1731567

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	09/01/2021 13:55	WG1731664
Antimony	ND		0.00400	1	09/01/2021 13:55	WG1731664
Arsenic	ND		0.00200	1	09/01/2021 13:55	WG1731664
Barium	0.00940		0.00200	1	09/01/2021 13:55	WG1731664
Beryllium	ND		0.00200	1	09/01/2021 13:55	WG1731664
Cadmium	ND		0.00100	1	09/01/2021 13:55	WG1731664
Calcium	5.39		1.00	1	09/01/2021 13:55	WG1731664
Chromium	ND		0.00200	1	09/01/2021 13:55	WG1731664
Cobalt	ND		0.00200	1	09/01/2021 13:55	WG1731664
Copper	ND		0.00500	1	09/01/2021 13:55	WG1731664

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	1.11		0.100	1	09/01/2021 13:55	WG1731664
Lead	ND		0.00200	1	09/01/2021 13:55	WG1731664
Magnesium	2.89		1.00	1	09/01/2021 13:55	WG1731664
Manganese	0.0562		0.00500	1	09/01/2021 13:55	WG1731664
Nickel	ND		0.00200	1	09/01/2021 13:55	WG1731664
Potassium	ND		2.00	1	09/01/2021 13:55	WG1731664
Selenium	ND		0.00200	1	09/01/2021 13:55	WG1731664
Silver	ND		0.00200	1	09/01/2021 13:55	WG1731664
Sodium	3.71		2.00	1	09/01/2021 13:55	WG1731664
Thallium	ND		0.00200	1	09/01/2021 13:55	WG1731664
Vanadium	ND		0.00500	1	09/01/2021 13:55	WG1731664
Zinc	ND		0.0250	1	09/01/2021 13:55	WG1731664



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	08/31/2021 18:33	WG1732576
Acrylonitrile	ND		0.0100	1	08/31/2021 18:33	WG1732576
Benzene	ND		0.00100	1	08/31/2021 18:33	WG1732576
Bromochloromethane	ND		0.00100	1	08/31/2021 18:33	WG1732576
Bromodichloromethane	ND		0.00100	1	08/31/2021 18:33	WG1732576
Bromoform	ND		0.00100	1	08/31/2021 18:33	WG1732576
Bromomethane	ND		0.00500	1	08/31/2021 18:33	WG1732576
Carbon disulfide	ND		0.00100	1	08/31/2021 18:33	WG1732576
Carbon tetrachloride	ND		0.00100	1	08/31/2021 18:33	WG1732576
Chlorobenzene	ND		0.00100	1	08/31/2021 18:33	WG1732576
Chlorodibromomethane	ND		0.00100	1	08/31/2021 18:33	WG1732576
Chloroethane	ND		0.00500	1	08/31/2021 18:33	WG1732576
Chloroform	ND		0.00500	1	08/31/2021 18:33	WG1732576
Chloromethane	ND		0.00250	1	08/31/2021 18:33	WG1732576
Dibromomethane	ND		0.00100	1	08/31/2021 18:33	WG1732576
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/31/2021 18:33	WG1732576
1,2-Dibromoethane	ND		0.00100	1	08/31/2021 18:33	WG1732576
1,2-Dichlorobenzene	ND	J4	0.00100	1	08/31/2021 18:33	WG1732576
1,4-Dichlorobenzene	ND		0.00100	1	08/31/2021 18:33	WG1732576
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/31/2021 18:33	WG1732576
1,1-Dichloroethane	ND		0.00100	1	08/31/2021 18:33	WG1732576
1,2-Dichloroethane	ND		0.00100	1	08/31/2021 18:33	WG1732576
1,1-Dichloroethene	ND		0.00100	1	08/31/2021 18:33	WG1732576
cis-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 18:33	WG1732576
trans-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 18:33	WG1732576
1,2-Dichloropropane	ND		0.00100	1	08/31/2021 18:33	WG1732576
cis-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 18:33	WG1732576
trans-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 18:33	WG1732576
Ethylbenzene	ND		0.00100	1	08/31/2021 18:33	WG1732576
2-Hexanone	ND		0.0100	1	08/31/2021 18:33	WG1732576
Iodomethane	ND		0.0100	1	08/31/2021 18:33	WG1732576
2-Butanone (MEK)	ND		0.0100	1	08/31/2021 18:33	WG1732576
Methylene Chloride	ND		0.00500	1	08/31/2021 18:33	WG1732576
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/31/2021 18:33	WG1732576
Styrene	ND		0.00100	1	08/31/2021 18:33	WG1732576
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 18:33	WG1732576
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 18:33	WG1732576
Tetrachloroethene	ND		0.00100	1	08/31/2021 18:33	WG1732576
Toluene	ND		0.00100	1	08/31/2021 18:33	WG1732576
1,1,1-Trichloroethane	ND		0.00100	1	08/31/2021 18:33	WG1732576

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	08/31/2021 18:33	WG1732576
Trichloroethene	ND		0.00100	1	08/31/2021 18:33	WG1732576
Trichlorofluoromethane	ND		0.00500	1	08/31/2021 18:33	WG1732576
1,2,3-Trichloropropane	ND	J4	0.00250	1	08/31/2021 18:33	WG1732576
Vinyl acetate	ND		0.0100	1	08/31/2021 18:33	WG1732576
Vinyl chloride	ND		0.00100	1	08/31/2021 18:33	WG1732576
Xylenes, Total	ND	J4	0.00300	1	08/31/2021 18:33	WG1732576
<i>(S) Toluene-d8</i>	94.5		80.0-120		08/31/2021 18:33	WG1732576
<i>(S) 4-Bromofluorobenzene</i>	88.6		77.0-126		08/31/2021 18:33	WG1732576
<i>(S) 1,2-Dichloroethane-d4</i>	122		70.0-130		08/31/2021 18:33	WG1732576

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

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	08/30/2021 19:16	WG1731594
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/30/2021 19:16	WG1731594

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	84.0		2.50	1	09/01/2021 14:29	WG1731664

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		25.0	1.25	09/02/2021 18:15	WG1733234

Sample Narrative:

L1396050-04 WG1733234: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	09/12/2021 15:14	WG1737688

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	09/02/2021 17:43	WG1733850

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/31/2021 22:00	WG1732495
Chloride	72.9		1.00	1	08/31/2021 22:00	WG1732495
Fluoride	ND		0.150	1	08/31/2021 22:00	WG1732495
Nitrate	1.10		0.100	1	08/28/2021 11:06	WG1730965
Sulfate	12.0		5.00	1	08/31/2021 22:00	WG1732495

Mercury by Method 7470A

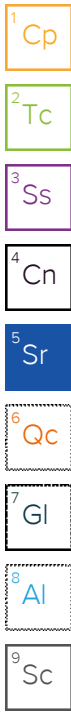
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2021 14:58	WG1731131

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	09/02/2021 07:04	WG1731567

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.236		0.100	1	09/01/2021 14:29	WG1731664
Antimony	ND		0.00400	1	09/01/2021 14:29	WG1731664
Arsenic	ND		0.00200	1	09/01/2021 14:29	WG1731664
Barium	0.0505		0.00200	1	09/01/2021 14:29	WG1731664
Beryllium	ND		0.00200	1	09/01/2021 14:29	WG1731664
Cadmium	ND		0.00100	1	09/01/2021 14:29	WG1731664
Calcium	15.8		1.00	1	09/01/2021 14:29	WG1731664
Chromium	0.00287		0.00200	1	09/02/2021 10:26	WG1733470
Cobalt	ND		0.00200	1	09/01/2021 14:29	WG1731664
Copper	ND		0.00500	1	09/01/2021 14:29	WG1731664



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.353		0.100	1	09/01/2021 14:29	WG1731664
Lead	ND		0.00200	1	09/01/2021 14:29	WG1731664
Magnesium	10.8		1.00	1	09/01/2021 14:29	WG1731664
Manganese	0.222		0.00500	1	09/01/2021 14:29	WG1731664
Nickel	0.00606		0.00200	1	09/01/2021 14:29	WG1731664
Potassium	ND		2.00	1	09/01/2021 14:29	WG1731664
Selenium	ND		0.00200	1	09/01/2021 14:29	WG1731664
Silver	ND		0.00200	1	09/01/2021 14:29	WG1731664
Sodium	17.8		2.00	1	09/01/2021 14:29	WG1731664
Thallium	ND		0.00200	1	09/01/2021 14:29	WG1731664
Vanadium	ND		0.00500	1	09/01/2021 14:29	WG1731664
Zinc	ND		0.0250	1	09/01/2021 14:29	WG1731664

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
Acetone	ND		0.0500	1	08/31/2021 18:53	WG1732576
Acrylonitrile	ND		0.0100	1	08/31/2021 18:53	WG1732576
Benzene	ND		0.00100	1	08/31/2021 18:53	WG1732576
Bromochloromethane	ND		0.00100	1	08/31/2021 18:53	WG1732576
Bromodichloromethane	ND		0.00100	1	08/31/2021 18:53	WG1732576
Bromoform	ND		0.00100	1	08/31/2021 18:53	WG1732576
Bromomethane	ND		0.00500	1	08/31/2021 18:53	WG1732576
Carbon disulfide	ND		0.00100	1	08/31/2021 18:53	WG1732576
Carbon tetrachloride	ND		0.00100	1	08/31/2021 18:53	WG1732576
Chlorobenzene	ND		0.00100	1	08/31/2021 18:53	WG1732576
Chlorodibromomethane	ND		0.00100	1	08/31/2021 18:53	WG1732576
Chloroethane	ND		0.00500	1	08/31/2021 18:53	WG1732576
Chloroform	ND		0.00500	1	08/31/2021 18:53	WG1732576
Chloromethane	ND		0.00250	1	08/31/2021 18:53	WG1732576
Dibromomethane	ND		0.00100	1	08/31/2021 18:53	WG1732576
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/31/2021 18:53	WG1732576
1,2-Dibromoethane	ND		0.00100	1	08/31/2021 18:53	WG1732576
1,2-Dichlorobenzene	ND	J4	0.00100	1	08/31/2021 18:53	WG1732576
1,4-Dichlorobenzene	ND		0.00100	1	08/31/2021 18:53	WG1732576
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/31/2021 18:53	WG1732576
1,1-Dichloroethane	ND		0.00100	1	08/31/2021 18:53	WG1732576
1,2-Dichloroethane	ND		0.00100	1	08/31/2021 18:53	WG1732576
1,1-Dichloroethene	ND		0.00100	1	08/31/2021 18:53	WG1732576
cis-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 18:53	WG1732576
trans-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 18:53	WG1732576
1,2-Dichloropropane	ND		0.00100	1	08/31/2021 18:53	WG1732576
cis-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 18:53	WG1732576
trans-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 18:53	WG1732576
Ethylbenzene	ND		0.00100	1	08/31/2021 18:53	WG1732576
2-Hexanone	ND		0.0100	1	08/31/2021 18:53	WG1732576
Iodomethane	ND		0.0100	1	08/31/2021 18:53	WG1732576
2-Butanone (MEK)	ND		0.0100	1	08/31/2021 18:53	WG1732576
Methylene Chloride	ND		0.00500	1	08/31/2021 18:53	WG1732576
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/31/2021 18:53	WG1732576
Styrene	ND		0.00100	1	08/31/2021 18:53	WG1732576
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 18:53	WG1732576
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 18:53	WG1732576
Tetrachloroethene	ND		0.00100	1	08/31/2021 18:53	WG1732576
Toluene	ND		0.00100	1	08/31/2021 18:53	WG1732576
1,1,1-Trichloroethane	ND		0.00100	1	08/31/2021 18:53	WG1732576

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	08/31/2021 18:53	WG1732576
Trichloroethene	ND		0.00100	1	08/31/2021 18:53	WG1732576
Trichlorofluoromethane	ND		0.00500	1	08/31/2021 18:53	WG1732576
1,2,3-Trichloropropane	ND	J4	0.00250	1	08/31/2021 18:53	WG1732576
Vinyl acetate	ND		0.0100	1	08/31/2021 18:53	WG1732576
Vinyl chloride	ND		0.00100	1	08/31/2021 18:53	WG1732576
Xylenes, Total	ND	J4	0.00300	1	08/31/2021 18:53	WG1732576
<i>(S) Toluene-d8</i>	100		80.0-120		08/31/2021 18:53	WG1732576
<i>(S) 4-Bromofluorobenzene</i>	85.9		77.0-126		08/31/2021 18:53	WG1732576
<i>(S) 1,2-Dichloroethane-d4</i>	127		70.0-130		08/31/2021 18:53	WG1732576

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	08/30/2021 19:29	WG1731594
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/30/2021 19:29	WG1731594

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	49.7		2.50	1	09/01/2021 14:32	WG1731664

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	09/02/2021 18:19	WG1733234

Sample Narrative:

L1396050-05 WG1733234: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	09/12/2021 15:16	WG1737688

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	09/02/2021 17:44	WG1733850

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/31/2021 22:15	WG1732495
Chloride	31.2		1.00	1	08/31/2021 22:15	WG1732495
Fluoride	ND		0.150	1	08/31/2021 22:15	WG1732495
Nitrate	1.74		0.100	1	08/28/2021 11:40	WG1730965
Sulfate	ND		5.00	1	08/31/2021 22:15	WG1732495

Mercury by Method 7470A

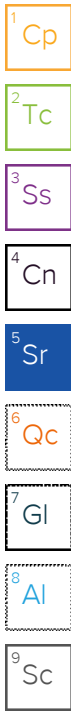
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2021 15:04	WG1731131

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	09/02/2021 07:07	WG1731567

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	09/01/2021 14:32	WG1731664
Antimony	ND		0.00400	1	09/01/2021 14:32	WG1731664
Arsenic	ND		0.00200	1	09/01/2021 14:32	WG1731664
Barium	0.0156		0.00200	1	09/01/2021 14:32	WG1731664
Beryllium	ND		0.00200	1	09/01/2021 14:32	WG1731664
Cadmium	ND		0.00100	1	09/01/2021 14:32	WG1731664
Calcium	13.4		1.00	1	09/01/2021 14:32	WG1731664
Chromium	ND		0.00200	1	09/01/2021 14:32	WG1731664
Cobalt	ND		0.00200	1	09/01/2021 14:32	WG1731664
Copper	0.00592		0.00500	1	09/01/2021 14:32	WG1731664



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.261		0.100	1	09/01/2021 14:32	WG1731664
Lead	ND		0.00200	1	09/01/2021 14:32	WG1731664
Magnesium	3.95		1.00	1	09/01/2021 14:32	WG1731664
Manganese	0.0104		0.00500	1	09/01/2021 14:32	WG1731664
Nickel	ND		0.00200	1	09/01/2021 14:32	WG1731664
Potassium	ND		2.00	1	09/01/2021 14:32	WG1731664
Selenium	ND		0.00200	1	09/01/2021 14:32	WG1731664
Silver	ND		0.00200	1	09/01/2021 14:32	WG1731664
Sodium	3.89		2.00	1	09/01/2021 14:32	WG1731664
Thallium	ND		0.00200	1	09/01/2021 14:32	WG1731664
Vanadium	ND		0.00500	1	09/01/2021 14:32	WG1731664
Zinc	ND		0.0250	1	09/01/2021 14:32	WG1731664

- 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
Acetone	ND		0.0500	1	08/31/2021 19:12	WG1732576
Acrylonitrile	ND		0.0100	1	08/31/2021 19:12	WG1732576
Benzene	ND		0.00100	1	08/31/2021 19:12	WG1732576
Bromochloromethane	ND		0.00100	1	08/31/2021 19:12	WG1732576
Bromodichloromethane	ND		0.00100	1	08/31/2021 19:12	WG1732576
Bromoform	ND		0.00100	1	08/31/2021 19:12	WG1732576
Bromomethane	ND		0.00500	1	08/31/2021 19:12	WG1732576
Carbon disulfide	ND		0.00100	1	08/31/2021 19:12	WG1732576
Carbon tetrachloride	ND		0.00100	1	08/31/2021 19:12	WG1732576
Chlorobenzene	ND		0.00100	1	08/31/2021 19:12	WG1732576
Chlorodibromomethane	ND		0.00100	1	08/31/2021 19:12	WG1732576
Chloroethane	ND		0.00500	1	08/31/2021 19:12	WG1732576
Chloroform	ND		0.00500	1	08/31/2021 19:12	WG1732576
Chloromethane	ND		0.00250	1	08/31/2021 19:12	WG1732576
Dibromomethane	ND		0.00100	1	08/31/2021 19:12	WG1732576
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/31/2021 19:12	WG1732576
1,2-Dibromoethane	ND		0.00100	1	08/31/2021 19:12	WG1732576
1,2-Dichlorobenzene	ND	J4	0.00100	1	08/31/2021 19:12	WG1732576
1,4-Dichlorobenzene	ND		0.00100	1	08/31/2021 19:12	WG1732576
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/31/2021 19:12	WG1732576
1,1-Dichloroethane	ND		0.00100	1	08/31/2021 19:12	WG1732576
1,2-Dichloroethane	ND		0.00100	1	08/31/2021 19:12	WG1732576
1,1-Dichloroethene	ND		0.00100	1	08/31/2021 19:12	WG1732576
cis-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 19:12	WG1732576
trans-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 19:12	WG1732576
1,2-Dichloropropane	ND		0.00100	1	08/31/2021 19:12	WG1732576
cis-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 19:12	WG1732576
trans-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 19:12	WG1732576
Ethylbenzene	ND		0.00100	1	08/31/2021 19:12	WG1732576
2-Hexanone	ND		0.0100	1	08/31/2021 19:12	WG1732576
Iodomethane	ND		0.0100	1	08/31/2021 19:12	WG1732576
2-Butanone (MEK)	ND		0.0100	1	08/31/2021 19:12	WG1732576
Methylene Chloride	ND		0.00500	1	08/31/2021 19:12	WG1732576
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/31/2021 19:12	WG1732576
Styrene	ND		0.00100	1	08/31/2021 19:12	WG1732576
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 19:12	WG1732576
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 19:12	WG1732576
Tetrachloroethene	ND		0.00100	1	08/31/2021 19:12	WG1732576
Toluene	ND		0.00100	1	08/31/2021 19:12	WG1732576
1,1,1-Trichloroethane	ND		0.00100	1	08/31/2021 19:12	WG1732576

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	08/31/2021 19:12	WG1732576
Trichloroethene	ND		0.00100	1	08/31/2021 19:12	WG1732576
Trichlorofluoromethane	ND		0.00500	1	08/31/2021 19:12	WG1732576
1,2,3-Trichloropropane	ND	J4	0.00250	1	08/31/2021 19:12	WG1732576
Vinyl acetate	ND		0.0100	1	08/31/2021 19:12	WG1732576
Vinyl chloride	ND		0.00100	1	08/31/2021 19:12	WG1732576
Xylenes, Total	ND	J4	0.00300	1	08/31/2021 19:12	WG1732576
<i>(S) Toluene-d8</i>	98.0		80.0-120		08/31/2021 19:12	WG1732576
<i>(S) 4-Bromofluorobenzene</i>	83.5		77.0-126		08/31/2021 19:12	WG1732576
<i>(S) 1,2-Dichloroethane-d4</i>	122		70.0-130		08/31/2021 19:12	WG1732576

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	08/30/2021 19:41	WG1731594
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/30/2021 19:41	WG1731594

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	51.9		2.50	1	09/01/2021 14:36	WG1731664

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	09/02/2021 18:36	WG1733234

Sample Narrative:

L1396050-06 WG1733234: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	09/12/2021 15:17	WG1737688

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	58.1		20.0	1	09/02/2021 17:47	WG1733850

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	09/01/2021 03:31	WG1732751
Chloride	41.3		1.00	1	09/01/2021 03:31	WG1732751
Fluoride	ND		0.150	1	09/01/2021 03:31	WG1732751
Nitrate	0.872		0.100	1	08/28/2021 11:17	WG1730965
Sulfate	ND		5.00	1	09/01/2021 03:31	WG1732751

Mercury by Method 7470A

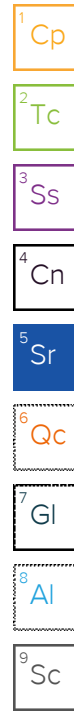
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2021 15:07	WG1731131

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	09/02/2021 07:10	WG1731567

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.115		0.100	1	09/01/2021 14:36	WG1731664
Antimony	ND		0.00400	1	09/01/2021 14:36	WG1731664
Arsenic	ND		0.00200	1	09/01/2021 14:36	WG1731664
Barium	0.0337		0.00200	1	09/01/2021 14:36	WG1731664
Beryllium	ND		0.00200	1	09/01/2021 14:36	WG1731664
Cadmium	ND		0.00100	1	09/01/2021 14:36	WG1731664
Calcium	12.8		1.00	1	09/01/2021 14:36	WG1731664
Chromium	ND		0.00200	1	09/01/2021 14:36	WG1731664
Cobalt	ND		0.00200	1	09/01/2021 14:36	WG1731664
Copper	0.00801		0.00500	1	09/01/2021 14:36	WG1731664



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.129		0.100	1	09/01/2021 14:36	WG1731664
Lead	ND		0.00200	1	09/01/2021 14:36	WG1731664
Magnesium	4.84		1.00	1	09/01/2021 14:36	WG1731664
Manganese	ND		0.00500	1	09/01/2021 14:36	WG1731664
Nickel	ND		0.00200	1	09/01/2021 14:36	WG1731664
Potassium	ND		2.00	1	09/01/2021 14:36	WG1731664
Selenium	ND		0.00200	1	09/01/2021 14:36	WG1731664
Silver	0.00213		0.00200	1	09/01/2021 14:36	WG1731664
Sodium	5.10		2.00	1	09/01/2021 14:36	WG1731664
Thallium	ND		0.00200	1	09/01/2021 14:36	WG1731664
Vanadium	ND		0.00500	1	09/01/2021 14:36	WG1731664
Zinc	ND		0.0250	1	09/01/2021 14:36	WG1731664

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
Acetone	ND		0.0500	1	08/31/2021 19:32	WG1732576
Acrylonitrile	ND		0.0100	1	08/31/2021 19:32	WG1732576
Benzene	ND		0.00100	1	08/31/2021 19:32	WG1732576
Bromochloromethane	ND		0.00100	1	08/31/2021 19:32	WG1732576
Bromodichloromethane	ND		0.00100	1	08/31/2021 19:32	WG1732576
Bromoform	ND		0.00100	1	08/31/2021 19:32	WG1732576
Bromomethane	ND		0.00500	1	08/31/2021 19:32	WG1732576
Carbon disulfide	ND		0.00100	1	08/31/2021 19:32	WG1732576
Carbon tetrachloride	ND		0.00100	1	08/31/2021 19:32	WG1732576
Chlorobenzene	ND		0.00100	1	08/31/2021 19:32	WG1732576
Chlorodibromomethane	ND		0.00100	1	08/31/2021 19:32	WG1732576
Chloroethane	ND		0.00500	1	08/31/2021 19:32	WG1732576
Chloroform	ND		0.00500	1	08/31/2021 19:32	WG1732576
Chloromethane	ND		0.00250	1	08/31/2021 19:32	WG1732576
Dibromomethane	ND		0.00100	1	08/31/2021 19:32	WG1732576
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/31/2021 19:32	WG1732576
1,2-Dibromoethane	ND		0.00100	1	08/31/2021 19:32	WG1732576
1,2-Dichlorobenzene	ND	J4	0.00100	1	08/31/2021 19:32	WG1732576
1,4-Dichlorobenzene	ND		0.00100	1	08/31/2021 19:32	WG1732576
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/31/2021 19:32	WG1732576
1,1-Dichloroethane	ND		0.00100	1	08/31/2021 19:32	WG1732576
1,2-Dichloroethane	ND		0.00100	1	08/31/2021 19:32	WG1732576
1,1-Dichloroethene	ND		0.00100	1	08/31/2021 19:32	WG1732576
cis-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 19:32	WG1732576
trans-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 19:32	WG1732576
1,2-Dichloropropane	ND		0.00100	1	08/31/2021 19:32	WG1732576
cis-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 19:32	WG1732576
trans-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 19:32	WG1732576
Ethylbenzene	ND		0.00100	1	08/31/2021 19:32	WG1732576
2-Hexanone	ND		0.0100	1	08/31/2021 19:32	WG1732576
Iodomethane	ND		0.0100	1	08/31/2021 19:32	WG1732576
2-Butanone (MEK)	ND		0.0100	1	08/31/2021 19:32	WG1732576
Methylene Chloride	ND		0.00500	1	08/31/2021 19:32	WG1732576
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/31/2021 19:32	WG1732576
Styrene	ND		0.00100	1	08/31/2021 19:32	WG1732576
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 19:32	WG1732576
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 19:32	WG1732576
Tetrachloroethene	ND		0.00100	1	08/31/2021 19:32	WG1732576
Toluene	ND		0.00100	1	08/31/2021 19:32	WG1732576
1,1,1-Trichloroethane	ND		0.00100	1	08/31/2021 19:32	WG1732576

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	08/31/2021 19:32	WG1732576
Trichloroethene	ND		0.00100	1	08/31/2021 19:32	WG1732576
Trichlorofluoromethane	ND		0.00500	1	08/31/2021 19:32	WG1732576
1,2,3-Trichloropropane	ND	J4	0.00250	1	08/31/2021 19:32	WG1732576
Vinyl acetate	ND		0.0100	1	08/31/2021 19:32	WG1732576
Vinyl chloride	ND		0.00100	1	08/31/2021 19:32	WG1732576
Xylenes, Total	ND	J4	0.00300	1	08/31/2021 19:32	WG1732576
<i>(S) Toluene-d8</i>	94.6		80.0-120		08/31/2021 19:32	WG1732576
<i>(S) 4-Bromofluorobenzene</i>	84.9		77.0-126		08/31/2021 19:32	WG1732576
<i>(S) 1,2-Dichloroethane-d4</i>	121		70.0-130		08/31/2021 19:32	WG1732576

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	08/30/2021 19:53	WG1731594
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/30/2021 19:53	WG1731594

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	79.2		2.50	1	09/01/2021 14:39	WG1731664

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		21.2	1.06	09/02/2021 18:40	WG1733234

Sample Narrative:

L1396050-07 WG1733234: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	09/12/2021 15:23	WG1737688

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	20.8		20.0	1	09/02/2021 17:47	WG1733850

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	09/01/2021 03:48	WG1732751
Chloride	64.2		1.00	1	09/01/2021 03:48	WG1732751
Fluoride	ND		0.150	1	09/01/2021 03:48	WG1732751
Nitrate	5.77		0.100	1	08/28/2021 10:43	WG1730965
Sulfate	ND		5.00	1	09/01/2021 03:48	WG1732751

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2021 15:09	WG1731131

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	09/02/2021 07:13	WG1731567

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	09/01/2021 14:39	WG1731664
Antimony	ND		0.00400	1	09/01/2021 14:39	WG1731664
Arsenic	ND		0.00200	1	09/01/2021 14:39	WG1731664
Barium	0.0383		0.00200	1	09/01/2021 14:39	WG1731664
Beryllium	ND		0.00200	1	09/01/2021 14:39	WG1731664
Cadmium	ND		0.00100	1	09/01/2021 14:39	WG1731664
Calcium	20.7		1.00	1	09/01/2021 14:39	WG1731664
Chromium	ND		0.00200	1	09/01/2021 14:39	WG1731664
Cobalt	ND		0.00200	1	09/01/2021 14:39	WG1731664
Copper	ND		0.00500	1	09/01/2021 14:39	WG1731664



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.190		0.100	1	09/01/2021 14:39	WG1731664
Lead	ND		0.00200	1	09/01/2021 14:39	WG1731664
Magnesium	6.66		1.00	1	09/01/2021 14:39	WG1731664
Manganese	0.0109		0.00500	1	09/01/2021 14:39	WG1731664
Nickel	ND		0.00200	1	09/01/2021 14:39	WG1731664
Potassium	ND		2.00	1	09/01/2021 14:39	WG1731664
Selenium	ND		0.00200	1	09/01/2021 14:39	WG1731664
Silver	ND		0.00200	1	09/01/2021 14:39	WG1731664
Sodium	11.7		2.00	1	09/01/2021 14:39	WG1731664
Thallium	ND		0.00200	1	09/01/2021 14:39	WG1731664
Vanadium	ND		0.00500	1	09/01/2021 14:39	WG1731664
Zinc	ND		0.0250	1	09/01/2021 14:39	WG1731664

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
Acetone	ND		0.0500	1	08/31/2021 19:51	WG1732576
Acrylonitrile	ND		0.0100	1	08/31/2021 19:51	WG1732576
Benzene	ND		0.00100	1	08/31/2021 19:51	WG1732576
Bromochloromethane	ND		0.00100	1	08/31/2021 19:51	WG1732576
Bromodichloromethane	ND		0.00100	1	08/31/2021 19:51	WG1732576
Bromoform	ND		0.00100	1	08/31/2021 19:51	WG1732576
Bromomethane	ND		0.00500	1	08/31/2021 19:51	WG1732576
Carbon disulfide	ND		0.00100	1	08/31/2021 19:51	WG1732576
Carbon tetrachloride	ND		0.00100	1	08/31/2021 19:51	WG1732576
Chlorobenzene	ND		0.00100	1	08/31/2021 19:51	WG1732576
Chlorodibromomethane	ND		0.00100	1	08/31/2021 19:51	WG1732576
Chloroethane	ND		0.00500	1	08/31/2021 19:51	WG1732576
Chloroform	ND		0.00500	1	08/31/2021 19:51	WG1732576
Chloromethane	ND		0.00250	1	08/31/2021 19:51	WG1732576
Dibromomethane	ND		0.00100	1	08/31/2021 19:51	WG1732576
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/31/2021 19:51	WG1732576
1,2-Dibromoethane	ND		0.00100	1	08/31/2021 19:51	WG1732576
1,2-Dichlorobenzene	ND	J4	0.00100	1	08/31/2021 19:51	WG1732576
1,4-Dichlorobenzene	ND		0.00100	1	08/31/2021 19:51	WG1732576
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/31/2021 19:51	WG1732576
1,1-Dichloroethane	ND		0.00100	1	08/31/2021 19:51	WG1732576
1,2-Dichloroethane	ND		0.00100	1	08/31/2021 19:51	WG1732576
1,1-Dichloroethene	ND		0.00100	1	08/31/2021 19:51	WG1732576
cis-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 19:51	WG1732576
trans-1,2-Dichloroethene	ND		0.00100	1	08/31/2021 19:51	WG1732576
1,2-Dichloropropane	ND		0.00100	1	08/31/2021 19:51	WG1732576
cis-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 19:51	WG1732576
trans-1,3-Dichloropropene	ND		0.00100	1	08/31/2021 19:51	WG1732576
Ethylbenzene	ND		0.00100	1	08/31/2021 19:51	WG1732576
2-Hexanone	ND		0.0100	1	08/31/2021 19:51	WG1732576
Iodomethane	ND		0.0100	1	08/31/2021 19:51	WG1732576
2-Butanone (MEK)	ND		0.0100	1	08/31/2021 19:51	WG1732576
Methylene Chloride	ND		0.00500	1	08/31/2021 19:51	WG1732576
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/31/2021 19:51	WG1732576
Styrene	ND		0.00100	1	08/31/2021 19:51	WG1732576
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 19:51	WG1732576
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/31/2021 19:51	WG1732576
Tetrachloroethene	ND		0.00100	1	08/31/2021 19:51	WG1732576
Toluene	ND		0.00100	1	08/31/2021 19:51	WG1732576
1,1,1-Trichloroethane	ND		0.00100	1	08/31/2021 19:51	WG1732576

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	08/31/2021 19:51	WG1732576
Trichloroethene	ND		0.00100	1	08/31/2021 19:51	WG1732576
Trichlorofluoromethane	ND		0.00500	1	08/31/2021 19:51	WG1732576
1,2,3-Trichloropropane	ND	<u>J4</u>	0.00250	1	08/31/2021 19:51	WG1732576
Vinyl acetate	ND		0.0100	1	08/31/2021 19:51	WG1732576
Vinyl chloride	ND		0.00100	1	08/31/2021 19:51	WG1732576
Xylenes, Total	ND	<u>J4</u>	0.00300	1	08/31/2021 19:51	WG1732576
<i>(S) Toluene-d8</i>	97.4		80.0-120		08/31/2021 19:51	WG1732576
<i>(S) 4-Bromofluorobenzene</i>	83.5		77.0-126		08/31/2021 19:51	WG1732576
<i>(S) 1,2-Dichloroethane-d4</i>	123		70.0-130		08/31/2021 19:51	WG1732576

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	08/30/2021 20:43	WG1731594
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/30/2021 20:43	WG1731594

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	55.7		2.50	1	09/01/2021 14:43	WG1731664

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	26.4		20.0	1	09/02/2021 18:43	WG1733234

Sample Narrative:

L1396050-08 WG1733234: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	09/12/2021 15:25	WG1737688

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	21.2		20.0	1	09/02/2021 17:47	WG1733850

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/31/2021 14:59	WG1731830
Chloride	19.3		1.00	1	08/31/2021 14:59	WG1731830
Fluoride	0.167		0.150	1	08/31/2021 14:59	WG1731830
Nitrate	0.326	Q	0.100	1	08/28/2021 13:44	WG1730965
Sulfate	31.7		5.00	1	08/31/2021 14:59	WG1731830

Mercury by Method 7470A

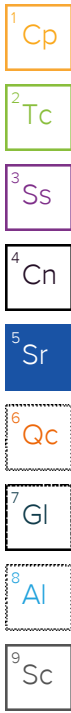
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2021 15:11	WG1731131
Mercury,Dissolved	ND		0.000200	1	09/01/2021 16:11	WG1732841

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	09/02/2021 07:16	WG1731567
Boron,Dissolved	ND		0.200	1	09/02/2021 07:30	WG1731619

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.272		0.100	1	09/01/2021 14:43	WG1731664
Aluminum,Dissolved	ND		0.100	1	08/30/2021 18:07	WG1730613
Antimony	ND		0.00400	1	09/01/2021 14:43	WG1731664
Antimony,Dissolved	ND		0.00400	1	08/30/2021 18:07	WG1730613
Arsenic	ND		0.00200	1	09/01/2021 14:43	WG1731664
Arsenic,Dissolved	ND		0.00200	1	08/30/2021 18:07	WG1730613
Barium	0.0492		0.00200	1	09/01/2021 14:43	WG1731664
Barium,Dissolved	0.0544		0.00200	1	08/30/2021 18:07	WG1730613



DUPLICATE

SAMPLE RESULTS - 08

Collected date/time: 08/26/21 00:00

L1396050

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Beryllium	ND		0.00200	1	09/01/2021 14:43	WG1731664
Beryllium,Dissolved	ND		0.00200	1	08/30/2021 18:07	WG1730613
Cadmium	0.00584		0.00100	1	09/01/2021 14:43	WG1731664
Cadmium,Dissolved	0.00606		0.00100	1	08/30/2021 18:07	WG1730613
Calcium	13.3		1.00	1	09/01/2021 14:43	WG1731664
Calcium,Dissolved	13.8		1.00	1	08/30/2021 18:07	WG1730613
Chromium	0.00549		0.00200	1	09/02/2021 10:29	WG1733470
Chromium,Dissolved	ND		0.00200	1	08/30/2021 18:07	WG1730613
Cobalt	ND		0.00200	1	09/01/2021 14:43	WG1731664
Cobalt,Dissolved	ND		0.00200	1	08/30/2021 18:07	WG1730613
Copper	ND		0.00500	1	09/01/2021 14:43	WG1731664
Copper,Dissolved	ND		0.00500	1	08/30/2021 18:07	WG1730613
Iron	0.163		0.100	1	09/01/2021 14:43	WG1731664
Iron,Dissolved	ND		0.100	1	08/30/2021 18:07	WG1730613
Lead	ND		0.00200	1	09/01/2021 14:43	WG1731664
Lead,Dissolved	ND		0.00200	1	08/30/2021 18:07	WG1730613
Magnesium	5.47		1.00	1	09/01/2021 14:43	WG1731664
Magnesium,Dissolved	5.64		1.00	1	08/30/2021 18:07	WG1730613
Manganese	0.286		0.00500	1	09/01/2021 14:43	WG1731664
Manganese,Dissolved	0.302		0.00500	1	08/30/2021 18:07	WG1730613
Nickel	0.00560		0.00200	1	09/01/2021 14:43	WG1731664
Nickel,Dissolved	0.00568	B	0.00200	1	08/30/2021 18:07	WG1730613
Potassium	6.03		2.00	1	09/01/2021 14:43	WG1731664
Potassium,Dissolved	6.28		2.00	1	08/30/2021 18:07	WG1730613
Selenium	ND		0.00200	1	09/01/2021 14:43	WG1731664
Selenium,Dissolved	ND		0.00200	1	08/30/2021 18:07	WG1730613
Silver	ND		0.00200	1	09/01/2021 14:43	WG1731664
Silver,Dissolved	ND		0.00200	1	08/30/2021 18:07	WG1730613
Sodium	8.35		2.00	1	09/01/2021 14:43	WG1731664
Sodium,Dissolved	9.66		2.00	1	08/30/2021 18:07	WG1730613
Thallium	ND		0.00200	1	09/01/2021 14:43	WG1731664
Thallium,Dissolved	ND		0.00200	1	08/30/2021 18:07	WG1730613
Vanadium	ND		0.00500	1	09/01/2021 14:43	WG1731664
Vanadium,Dissolved	ND		0.00500	1	08/30/2021 18:07	WG1730613
Zinc	0.0314		0.0250	1	09/01/2021 14:43	WG1731664
Zinc,Dissolved	0.0645		0.0250	1	08/30/2021 18:07	WG1730613

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
Acetone	ND		0.0500	1	09/01/2021 20:00	WG1732943
Acrylonitrile	ND		0.0100	1	09/01/2021 20:00	WG1732943
Benzene	ND		0.00100	1	09/01/2021 20:00	WG1732943
Bromochloromethane	ND		0.00100	1	09/01/2021 20:00	WG1732943
Bromodichloromethane	ND		0.00100	1	09/01/2021 20:00	WG1732943
Bromoform	ND		0.00100	1	09/01/2021 20:00	WG1732943
Bromomethane	ND		0.00500	1	09/01/2021 20:00	WG1732943
Carbon disulfide	ND		0.00100	1	09/01/2021 20:00	WG1732943
Carbon tetrachloride	ND		0.00100	1	09/01/2021 20:00	WG1732943
Chlorobenzene	ND		0.00100	1	09/01/2021 20:00	WG1732943
Chlorodibromomethane	ND		0.00100	1	09/01/2021 20:00	WG1732943
Chloroethane	ND		0.00500	1	09/01/2021 20:00	WG1732943
Chloroform	ND		0.00500	1	09/01/2021 20:00	WG1732943
Chloromethane	ND		0.00250	1	09/01/2021 20:00	WG1732943
Dibromomethane	ND		0.00100	1	09/01/2021 20:00	WG1732943
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	09/01/2021 20:00	WG1732943

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	09/01/2021 20:00	WG1732943
1,2-Dichlorobenzene	ND		0.00100	1	09/01/2021 20:00	WG1732943
1,4-Dichlorobenzene	ND		0.00100	1	09/01/2021 20:00	WG1732943
trans-1,4-Dichloro-2-butene	ND		0.00250	1	09/01/2021 20:00	WG1732943
1,1-Dichloroethane	ND		0.00100	1	09/01/2021 20:00	WG1732943
1,2-Dichloroethane	ND		0.00100	1	09/01/2021 20:00	WG1732943
1,1-Dichloroethene	ND		0.00100	1	09/01/2021 20:00	WG1732943
cis-1,2-Dichloroethene	ND		0.00100	1	09/01/2021 20:00	WG1732943
trans-1,2-Dichloroethene	ND		0.00100	1	09/01/2021 20:00	WG1732943
1,2-Dichloropropane	ND		0.00100	1	09/01/2021 20:00	WG1732943
cis-1,3-Dichloropropene	ND		0.00100	1	09/01/2021 20:00	WG1732943
trans-1,3-Dichloropropene	ND		0.00100	1	09/01/2021 20:00	WG1732943
Ethylbenzene	ND		0.00100	1	09/01/2021 20:00	WG1732943
2-Hexanone	ND		0.0100	1	09/01/2021 20:00	WG1732943
Iodomethane	ND		0.0100	1	09/01/2021 20:00	WG1732943
2-Butanone (MEK)	ND		0.0100	1	09/01/2021 20:00	WG1732943
Methylene Chloride	ND		0.00500	1	09/01/2021 20:00	WG1732943
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	09/01/2021 20:00	WG1732943
Styrene	ND		0.00100	1	09/01/2021 20:00	WG1732943
1,1,1,2-Tetrachloroethane	ND		0.00100	1	09/01/2021 20:00	WG1732943
1,1,2,2-Tetrachloroethane	ND		0.00100	1	09/01/2021 20:00	WG1732943
Tetrachloroethene	ND		0.00100	1	09/01/2021 20:00	WG1732943
Toluene	ND		0.00100	1	09/01/2021 20:00	WG1732943
1,1,1-Trichloroethane	ND		0.00100	1	09/01/2021 20:00	WG1732943
1,1,2-Trichloroethane	ND		0.00100	1	09/01/2021 20:00	WG1732943
Trichloroethene	ND		0.00100	1	09/01/2021 20:00	WG1732943
Trichlorofluoromethane	ND		0.00500	1	09/01/2021 20:00	WG1732943
1,2,3-Trichloropropane	ND		0.00250	1	09/01/2021 20:00	WG1732943
Vinyl acetate	ND		0.0100	1	09/01/2021 20:00	WG1732943
Vinyl chloride	ND		0.00100	1	09/01/2021 20:00	WG1732943
Xylenes, Total	ND		0.00300	1	09/01/2021 20:00	WG1732943
(S) Toluene-d8	102		80.0-120		09/01/2021 20:00	WG1732943
(S) 4-Bromofluorobenzene	93.1		77.0-126		09/01/2021 20:00	WG1732943
(S) 1,2-Dichloroethane-d4	95.1		70.0-130		09/01/2021 20:00	WG1732943

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

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	08/30/2021 20:55	WG1731594
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/30/2021 20:55	WG1731594

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	ND	J	2.50	1	09/01/2021 14:46	WG1731664

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.4	1.02	09/02/2021 18:46	WG1733234

Sample Narrative:

L1396050-09 WG1733234: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	09/12/2021 15:26	WG1737688

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	120		20.0	1	09/02/2021 17:48	WG1733850

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/31/2021 15:15	WG1731830
Chloride	1.18		1.00	1	08/31/2021 15:15	WG1731830
Fluoride	ND		0.150	1	08/31/2021 15:15	WG1731830
Nitrate	ND		0.100	1	08/28/2021 12:03	WG1730965
Sulfate	ND		5.00	1	08/31/2021 15:15	WG1731830

Mercury by Method 7470A

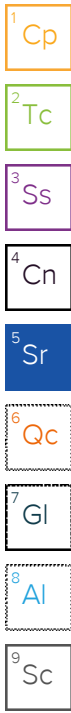
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2021 15:13	WG1731131

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	09/02/2021 07:19	WG1731567

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	09/01/2021 14:46	WG1731664
Antimony	ND		0.00400	1	09/01/2021 14:46	WG1731664
Arsenic	ND		0.00200	1	09/01/2021 14:46	WG1731664
Barium	0.00225		0.00200	1	09/01/2021 14:46	WG1731664
Beryllium	ND		0.00200	1	09/01/2021 14:46	WG1731664
Cadmium	ND		0.00100	1	09/01/2021 14:46	WG1731664
Calcium	ND		1.00	1	09/01/2021 14:46	WG1731664
Chromium	ND		0.00200	1	09/01/2021 14:46	WG1731664
Cobalt	ND		0.00200	1	09/01/2021 14:46	WG1731664
Copper	ND		0.00500	1	09/01/2021 14:46	WG1731664



FIELD BLANK

SAMPLE RESULTS - 09

Collected date/time: 08/26/21 15:10

L1396050

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	09/01/2021 14:46	WG1731664
Lead	ND		0.00200	1	09/01/2021 14:46	WG1731664
Magnesium	ND		1.00	1	09/01/2021 14:46	WG1731664
Manganese	ND		0.00500	1	09/01/2021 14:46	WG1731664
Nickel	ND		0.00200	1	09/01/2021 14:46	WG1731664
Potassium	ND		2.00	1	09/01/2021 14:46	WG1731664
Selenium	ND		0.00200	1	09/01/2021 14:46	WG1731664
Silver	ND		0.00200	1	09/01/2021 14:46	WG1731664
Sodium	ND		2.00	1	09/01/2021 14:46	WG1731664
Thallium	ND		0.00200	1	09/01/2021 14:46	WG1731664
Vanadium	ND		0.00500	1	09/01/2021 14:46	WG1731664
Zinc	ND		0.0250	1	09/01/2021 14:46	WG1731664

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
Acetone	ND		0.0500	1	09/01/2021 20:21	WG1732943
Acrylonitrile	ND		0.0100	1	09/01/2021 20:21	WG1732943
Benzene	ND		0.00100	1	09/01/2021 20:21	WG1732943
Bromochloromethane	ND		0.00100	1	09/01/2021 20:21	WG1732943
Bromodichloromethane	ND		0.00100	1	09/01/2021 20:21	WG1732943
Bromoform	ND		0.00100	1	09/01/2021 20:21	WG1732943
Bromomethane	ND		0.00500	1	09/01/2021 20:21	WG1732943
Carbon disulfide	ND		0.00100	1	09/01/2021 20:21	WG1732943
Carbon tetrachloride	ND		0.00100	1	09/01/2021 20:21	WG1732943
Chlorobenzene	ND		0.00100	1	09/01/2021 20:21	WG1732943
Chlorodibromomethane	ND		0.00100	1	09/01/2021 20:21	WG1732943
Chloroethane	ND		0.00500	1	09/01/2021 20:21	WG1732943
Chloroform	ND		0.00500	1	09/01/2021 20:21	WG1732943
Chloromethane	ND		0.00250	1	09/01/2021 20:21	WG1732943
Dibromomethane	ND		0.00100	1	09/01/2021 20:21	WG1732943
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	09/01/2021 20:21	WG1732943
1,2-Dibromoethane	ND		0.00100	1	09/01/2021 20:21	WG1732943
1,2-Dichlorobenzene	ND		0.00100	1	09/01/2021 20:21	WG1732943
1,4-Dichlorobenzene	ND		0.00100	1	09/01/2021 20:21	WG1732943
trans-1,4-Dichloro-2-butene	ND		0.00250	1	09/01/2021 20:21	WG1732943
1,1-Dichloroethane	ND		0.00100	1	09/01/2021 20:21	WG1732943
1,2-Dichloroethane	ND		0.00100	1	09/01/2021 20:21	WG1732943
1,1-Dichloroethene	ND		0.00100	1	09/01/2021 20:21	WG1732943
cis-1,2-Dichloroethene	ND		0.00100	1	09/01/2021 20:21	WG1732943
trans-1,2-Dichloroethene	ND		0.00100	1	09/01/2021 20:21	WG1732943
1,2-Dichloropropane	ND		0.00100	1	09/01/2021 20:21	WG1732943
cis-1,3-Dichloropropene	ND		0.00100	1	09/01/2021 20:21	WG1732943
trans-1,3-Dichloropropene	ND		0.00100	1	09/01/2021 20:21	WG1732943
Ethylbenzene	ND		0.00100	1	09/01/2021 20:21	WG1732943
2-Hexanone	ND		0.0100	1	09/01/2021 20:21	WG1732943
Iodomethane	ND		0.0100	1	09/01/2021 20:21	WG1732943
2-Butanone (MEK)	ND		0.0100	1	09/01/2021 20:21	WG1732943
Methylene Chloride	ND		0.00500	1	09/01/2021 20:21	WG1732943
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	09/01/2021 20:21	WG1732943
Styrene	ND		0.00100	1	09/01/2021 20:21	WG1732943
1,1,1,2-Tetrachloroethane	ND		0.00100	1	09/01/2021 20:21	WG1732943
1,1,2,2-Tetrachloroethane	ND		0.00100	1	09/01/2021 20:21	WG1732943
Tetrachloroethene	ND		0.00100	1	09/01/2021 20:21	WG1732943
Toluene	ND		0.00100	1	09/01/2021 20:21	WG1732943
1,1,1-Trichloroethane	ND		0.00100	1	09/01/2021 20:21	WG1732943

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	09/01/2021 20:21	WG1732943
Trichloroethene	ND		0.00100	1	09/01/2021 20:21	WG1732943
Trichlorofluoromethane	ND		0.00500	1	09/01/2021 20:21	WG1732943
1,2,3-Trichloropropane	ND		0.00250	1	09/01/2021 20:21	WG1732943
Vinyl acetate	ND		0.0100	1	09/01/2021 20:21	WG1732943
Vinyl chloride	ND		0.00100	1	09/01/2021 20:21	WG1732943
Xylenes, Total	ND		0.00300	1	09/01/2021 20:21	WG1732943
<i>(S) Toluene-d8</i>	100		80.0-120		09/01/2021 20:21	WG1732943
<i>(S) 4-Bromofluorobenzene</i>	91.4		77.0-126		09/01/2021 20:21	WG1732943
<i>(S) 1,2-Dichloroethane-d4</i>	96.1		70.0-130		09/01/2021 20:21	WG1732943

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	08/30/2021 21:08	WG1731594
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/30/2021 21:08	WG1731594

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	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	09/01/2021 14:14	WG1732943
Acrylonitrile	ND		0.0100	1	09/01/2021 14:14	WG1732943
Benzene	ND		0.00100	1	09/01/2021 14:14	WG1732943
Bromochloromethane	ND		0.00100	1	09/01/2021 14:14	WG1732943
Bromodichloromethane	ND		0.00100	1	09/01/2021 14:14	WG1732943
Bromoform	ND		0.00100	1	09/01/2021 14:14	WG1732943
Bromomethane	ND		0.00500	1	09/01/2021 14:14	WG1732943
Carbon disulfide	ND		0.00100	1	09/01/2021 14:14	WG1732943
Carbon tetrachloride	ND		0.00100	1	09/01/2021 14:14	WG1732943
Chlorobenzene	ND		0.00100	1	09/01/2021 14:14	WG1732943
Chlorodibromomethane	ND		0.00100	1	09/01/2021 14:14	WG1732943
Chloroethane	ND		0.00500	1	09/01/2021 14:14	WG1732943
Chloroform	ND		0.00500	1	09/01/2021 14:14	WG1732943
Chloromethane	ND		0.00250	1	09/01/2021 14:14	WG1732943
Dibromomethane	ND		0.00100	1	09/01/2021 14:14	WG1732943
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	09/01/2021 14:14	WG1732943
1,2-Dibromoethane	ND		0.00100	1	09/01/2021 14:14	WG1732943
1,2-Dichlorobenzene	ND		0.00100	1	09/01/2021 14:14	WG1732943
1,4-Dichlorobenzene	ND		0.00100	1	09/01/2021 14:14	WG1732943
trans-1,4-Dichloro-2-butene	ND		0.00250	1	09/01/2021 14:14	WG1732943
1,1-Dichloroethane	ND		0.00100	1	09/01/2021 14:14	WG1732943
1,2-Dichloroethane	ND		0.00100	1	09/01/2021 14:14	WG1732943
1,1-Dichloroethene	ND		0.00100	1	09/01/2021 14:14	WG1732943
cis-1,2-Dichloroethene	ND		0.00100	1	09/01/2021 14:14	WG1732943
trans-1,2-Dichloroethene	ND		0.00100	1	09/01/2021 14:14	WG1732943
1,2-Dichloropropane	ND		0.00100	1	09/01/2021 14:14	WG1732943
cis-1,3-Dichloropropene	ND		0.00100	1	09/01/2021 14:14	WG1732943
trans-1,3-Dichloropropene	ND		0.00100	1	09/01/2021 14:14	WG1732943
Ethylbenzene	ND		0.00100	1	09/01/2021 14:14	WG1732943
2-Hexanone	ND		0.0100	1	09/01/2021 14:14	WG1732943
Iodomethane	ND		0.0100	1	09/01/2021 14:14	WG1732943
2-Butanone (MEK)	ND		0.0100	1	09/01/2021 14:14	WG1732943
Methylene Chloride	ND		0.00500	1	09/01/2021 14:14	WG1732943
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	09/01/2021 14:14	WG1732943
Styrene	ND		0.00100	1	09/01/2021 14:14	WG1732943
1,1,1,2-Tetrachloroethane	ND		0.00100	1	09/01/2021 14:14	WG1732943
1,1,2,2-Tetrachloroethane	ND		0.00100	1	09/01/2021 14:14	WG1732943
Tetrachloroethene	ND		0.00100	1	09/01/2021 14:14	WG1732943
Toluene	ND		0.00100	1	09/01/2021 14:14	WG1732943
1,1,1-Trichloroethane	ND		0.00100	1	09/01/2021 14:14	WG1732943
1,1,2-Trichloroethane	ND		0.00100	1	09/01/2021 14:14	WG1732943
Trichloroethene	ND		0.00100	1	09/01/2021 14:14	WG1732943
Trichlorofluoromethane	ND		0.00500	1	09/01/2021 14:14	WG1732943
1,2,3-Trichloropropane	ND		0.00250	1	09/01/2021 14:14	WG1732943
Vinyl acetate	ND		0.0100	1	09/01/2021 14:14	WG1732943
Vinyl chloride	ND		0.00100	1	09/01/2021 14:14	WG1732943
Xylenes, Total	ND		0.00300	1	09/01/2021 14:14	WG1732943
(S) Toluene-d8	99.2		80.0-120		09/01/2021 14:14	WG1732943
(S) 4-Bromofluorobenzene	94.6		77.0-126		09/01/2021 14:14	WG1732943
(S) 1,2-Dichloroethane-d4	96.5		70.0-130		09/01/2021 14:14	WG1732943

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

Method Blank (MB)

(MB) R3699894-2 09/02/21 16:43

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

Laboratory Control Sample (LCS)

(LCS) R3699894-1 09/02/21 16:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	94.5	94.5	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3703295-1 09/12/21 14:44

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Ammonia Nitrogen	U		0.117	0.250

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1395830-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1395830-08 09/12/21 15:04 • (DUP) R3703295-4 09/12/21 15:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	1.17	1.16	1	0.858		10

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3703295-7 09/12/21 15:32

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen		0.679	1	3.33		10

Laboratory Control Sample (LCS)

(LCS) R3703295-2 09/12/21 14:46

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Ammonia Nitrogen	7.50	7.96	106	90.0-110	

Original Sample (OS) • Matrix Spike (MS)

(OS) • (MS) R3703295-3 09/12/21 14:58

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Ammonia Nitrogen	5.00		5.35	95.2	1	90.0-110	

L1396050-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396050-03 09/12/21 15:10 • (MS) R3703295-5 09/12/21 15:11 • (MSD) R3703295-6 09/12/21 15:13

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Ammonia Nitrogen	5.00	ND	5.18	5.14	104	103	1	90.0-110			0.814	10

Method Blank (MB)

(MB) R3699785-1 09/02/21 17:38

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
COD	U		11.7	20.0

L1396050-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1396050-04 09/02/21 17:43 • (DUP) R3699785-6 09/02/21 17:43

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	ND	ND	1	8.91		20

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

(LCS) R3699785-2 09/02/21 17:38 • (LCSD) R3699785-3 09/02/21 17:39

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
COD	500	509	509	102	102	90.0-110			0.0256	20

L1395871-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395871-03 09/02/21 17:39 • (MS) R3699785-4 09/02/21 17:40 • (MSD) R3699785-5 09/02/21 17:40

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
COD	500	536	1010	1020	94.2	97.6	1	80.0-120	E	E	1.69	20



Method Blank (MB)

(MB) R3698497-1 08/28/21 06:10

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Nitrate	U		0.0480	0.100

¹Cp

²Tc

³Ss

⁴Cn

L1396050-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1396050-03 08/28/21 11:29 • (DUP) R3698497-5 08/28/21 14:18

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Nitrate	0.330	0.328	1	0.456		15

⁵Sr

⁶Qc

L1396286-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1396286-04 08/28/21 18:16 • (DUP) R3698497-6 08/28/21 18:28

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Nitrate	ND	ND	1	7.63		15

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3698497-2 08/28/21 06:22

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Nitrate	8.00	8.29	104	80.0-120	

L1396050-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396050-02 08/28/21 11:52 • (MS) R3698497-3 08/28/21 13:55 • (MSD) R3698497-4 08/28/21 14:07

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Nitrate	5.00	0.344	5.59	5.58	105	105	1	80.0-120			0.149	15

L1396286-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1396286-04 08/28/21 18:16 • (MS) R3698497-7 08/28/21 18:39

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Nitrate	5.00	ND	5.07	99.7	1	80.0-120	

Method Blank (MB)

(MB) R3699226-1 08/31/21 13:22

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

L1396108-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1396108-02 08/31/21 16:21 • (DUP) R3699226-5 08/31/21 16:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	ND	1	0.948		15
Fluoride	0.368	0.359	1	2.39		15
Sulfate	93.1	93.3	1	0.220		15

L1396218-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1396218-12 08/31/21 21:32 • (DUP) R3699226-6 08/31/21 21:49

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	ND	1	0.000		15
Chloride	15.7	15.7	1	0.251		15
Fluoride	0.406	0.402	1	1.04		15
Sulfate	ND	ND	1	2.25		15

Laboratory Control Sample (LCS)

(LCS) R3699226-2 08/31/21 13:38

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	39.2	98.1	80.0-120	
Chloride	40.0	39.2	98.1	80.0-120	
Fluoride	8.00	8.01	100	80.0-120	
Sulfate	40.0	39.4	98.6	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1396108-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396108-01 08/31/21 15:31 • (MS) R3699226-3 08/31/21 15:48 • (MSD) R3699226-4 08/31/21 16:04

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 %
Bromide	50.0	ND	47.6	48.4	94.0	95.6	1	80.0-120			1.66	15
Chloride	50.0	145	189	189	87.5	88.0	1	80.0-120	E	E	0.145	15
Fluoride	5.00	0.268	4.31	4.37	80.8	82.1	1	80.0-120			1.53	15
Sulfate	50.0	110	154	154	88.4	89.3	1	80.0-120	E	E	0.316	15

L1396218-12 Original Sample (OS) • Matrix Spike (MS)

(OS) L1396218-12 08/31/21 21:32 • (MS) R3699226-7 08/31/21 22:05

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	ND	48.5	97.1	1	80.0-120	
Chloride	50.0	15.7	65.7	100	1	80.0-120	
Fluoride	5.00	0.406	5.51	102	1	80.0-120	
Sulfate	50.0	ND	50.5	96.0	1	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3698942-1 08/31/21 09:36

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.353	1.00
Chloride	0.499	J	0.379	1.00
Fluoride	U		0.0640	0.150
Sulfate	U		0.594	5.00

L1395216-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1395216-01 08/31/21 15:02 • (DUP) R3698942-3 08/31/21 15:16

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	ND	1	0.000		15
Chloride	39.0	38.9	1	0.276		15
Fluoride	ND	ND	1	0.000		15
Sulfate	25.2	25.0	1	0.942		15

L1395282-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1395282-05 08/31/21 19:07 • (DUP) R3698942-6 08/31/21 19:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	ND	1	0.000		15
Chloride	2.73	2.74	1	0.270		15
Fluoride	ND	ND	1	0.000		15
Sulfate	ND	ND	1	0.893		15

Laboratory Control Sample (LCS)

(LCS) R3698942-2 08/31/21 09:51

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	39.0	97.4	80.0-120	
Chloride	40.0	39.7	99.3	80.0-120	
Fluoride	8.00	8.51	106	80.0-120	
Sulfate	40.0	40.1	100	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1395216-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395216-01 08/31/21 15:02 • (MS) R3698942-4 08/31/21 15:30 • (MSD) R3698942-5 08/31/21 15:45

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	48.9	50.3	97.7	101	1	80.0-120			2.97	15
Chloride	50.0	39.0	87.8	89.3	97.6	101	1	80.0-120			1.64	15
Fluoride	5.00	ND	5.13	5.29	103	106	1	80.0-120			3.07	15
Sulfate	50.0	25.2	76.8	78.2	103	106	1	80.0-120			1.82	15

L1395282-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1395282-05 08/31/21 19:07 • (MS) R3698942-7 08/31/21 20:05

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	ND	49.8	99.6	1	80.0-120	
Chloride	50.0	2.73	52.9	100	1	80.0-120	
Fluoride	5.00	ND	5.18	104	1	80.0-120	
Sulfate	50.0	ND	53.9	102	1	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3698951-1 08/31/21 23:09

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

L1395860-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1395860-01 09/01/21 00:31 • (DUP) R3698951-3 09/01/21 00:47

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	ND	1	0.508		15
Chloride	49.7	49.7	1	0.0555		15
Fluoride	2.26	2.26	1	0.358		15

L1396405-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1396405-01 09/01/21 04:20 • (DUP) R3698951-6 09/01/21 04:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	ND	1	0.000		15
Fluoride	ND	ND	1	0.000		15
Sulfate	8.77	8.27	1	5.81		15

Laboratory Control Sample (LCS)

(LCS) R3698951-2 08/31/21 23:25

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	39.9	99.8	80.0-120	
Chloride	40.0	40.2	100	80.0-120	
Fluoride	8.00	8.27	103	80.0-120	
Sulfate	40.0	40.8	102	80.0-120	



L1395860-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395860-02 09/01/21 01:03 • (MS) R3698951-4 09/01/21 01:20 • (MSD) R3698951-5 09/01/21 01:36

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	45.0	45.2	88.5	89.1	1	80.0-120			0.606	15
Chloride	50.0	53.5	98.3	98.2	89.6	89.5	1	80.0-120			0.0194	15
Fluoride	5.00	2.05	6.73	6.75	93.7	94.2	1	80.0-120			0.329	15

L1396405-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1396405-02 09/01/21 04:53 • (MS) R3698951-7 09/01/21 05:43

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	ND	47.6	95.2	1	80.0-120	
Chloride	50.0	5.51	53.9	96.8	1	80.0-120	
Fluoride	5.00	ND	4.92	96.8	1	80.0-120	
Sulfate	50.0	6.07	55.8	99.4	1	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3698718-1 08/31/21 14:31

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) R3698718-2 08/31/21 14:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00276	92.0	80.0-120	

L1396050-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396050-01 08/31/21 14:40 • (MS) R3698718-3 08/31/21 14:42 • (MSD) R3698718-4 08/31/21 14:45

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	0.00281	0.00307	93.7	102	1	75.0-125			8.84	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3699240-1 09/01/21 15:51

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) R3699240-2 09/01/21 15:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury,Dissolved	0.00300	0.00262	87.3	80.0-120	

L1397267-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397267-04 09/01/21 15:55 • (MS) R3699240-3 09/01/21 15:58 • (MSD) R3699240-4 09/01/21 16:00

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	0.00295	0.00295	98.3	98.3	1	75.0-125			0.000	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3699466-1 09/02/21 06:24

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Boron	U		0.0200	0.200

¹Cp

²Tc

³Ss

Laboratory Control Sample (LCS)

(LCS) R3699466-2 09/02/21 06:27

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Boron	1.00	0.984	98.4	80.0-120	

⁴Cn

⁵Sr

L1396257-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396257-03 09/02/21 06:30 • (MS) R3699466-4 09/02/21 06:35 • (MSD) R3699466-5 09/02/21 06:38

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Boron	1.00	ND	1.05	1.06	97.9	99.1	1	75.0-125			1.06	20

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3699637-1 09/02/21 07:05

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Boron,Dissolved	U		0.0200	0.200

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3699637-2 09/02/21 07:07

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Boron,Dissolved	1.00	0.977	97.7	80.0-120	

4 Cn

5 Sr

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3699637-4 09/02/21 07:15 • (MSD) R3699637-5 09/02/21 07:18

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Boron,Dissolved	1.00		8.99	9.00	83.2	84.1	1	75.0-125			0.101	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3698262-1 08/30/21 17:24

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	0.000498	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	0.00182	U	0.00124	0.00200
Copper,Dissolved	U		0.00151	0.00500
Cobalt,Dissolved	U		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	0.000909	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	0.000409	U	0.000121	0.00200
Vanadium,Dissolved	U		0.000664	0.00500
Zinc,Dissolved	U		0.00302	0.0250

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Laboratory Control Sample (LCS)

(LCS) R3698262-2 08/30/21 17:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum,Dissolved	5.00	4.86	97.2	80.0-120	
Antimony,Dissolved	0.0500	0.0498	99.5	80.0-120	
Arsenic,Dissolved	0.0500	0.0471	94.2	80.0-120	
Barium,Dissolved	0.0500	0.0470	94.0	80.0-120	
Beryllium,Dissolved	0.0500	0.0500	100	80.0-120	
Cadmium,Dissolved	0.0500	0.0506	101	80.0-120	
Calcium,Dissolved	5.00	4.88	97.7	80.0-120	
Chromium,Dissolved	0.0500	0.0500	99.9	80.0-120	
Copper,Dissolved	0.0500	0.0460	91.9	80.0-120	
Cobalt,Dissolved	0.0500	0.0496	99.2	80.0-120	
Iron,Dissolved	5.00	4.83	96.7	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3698262-2 08/30/21 17:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Lead,Dissolved	0.0500	0.0469	93.8	80.0-120	
Magnesium,Dissolved	5.00	4.87	97.4	80.0-120	
Manganese,Dissolved	0.0500	0.0486	97.2	80.0-120	
Nickel,Dissolved	0.0500	0.0506	101	80.0-120	
Potassium,Dissolved	5.00	4.82	96.3	80.0-120	
Selenium,Dissolved	0.0500	0.0497	99.5	80.0-120	
Silver,Dissolved	0.0500	0.0503	101	80.0-120	
Sodium,Dissolved	5.00	5.01	100	80.0-120	
Thallium,Dissolved	0.0500	0.0457	91.4	80.0-120	
Vanadium,Dissolved	0.0500	0.0485	97.0	80.0-120	
Zinc,Dissolved	0.500	0.474	94.8	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1395549-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395549-05 08/30/21 17:31 • (MS) R3698262-4 08/30/21 17:37 • (MSD) R3698262-5 08/30/21 17:40

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Aluminum,Dissolved	5.00	ND	4.68	4.87	93.1	97.0	1	75.0-125			4.00	20
Antimony,Dissolved	0.0500	ND	0.0517	0.0522	103	104	1	75.0-125			0.950	20
Arsenic,Dissolved	0.0500	ND	0.0490	0.0498	97.3	99.0	1	75.0-125			1.68	20
Barium,Dissolved	0.0500	0.0189	0.0656	0.0683	93.3	98.8	1	75.0-125			4.05	20
Beryllium,Dissolved	0.0500	ND	0.0495	0.0507	99.0	101	1	75.0-125			2.45	20
Cadmium,Dissolved	0.0500	ND	0.0505	0.0524	101	105	1	75.0-125			3.66	20
Calcium,Dissolved	5.00	314	314	315	7.22	12.9	1	75.0-125	V	V	0.0904	20
Chromium,Dissolved	0.0500	ND	0.0502	0.0518	100	104	1	75.0-125			3.12	20
Copper,Dissolved	0.0500	ND	0.0476	0.0517	85.5	93.9	1	75.0-125			8.43	20
Cobalt,Dissolved	0.0500	ND	0.0498	0.0512	98.5	101	1	75.0-125			2.84	20
Potassium,Dissolved	5.00	ND	6.16	6.33	91.5	94.7	1	75.0-125			2.58	20
Iron,Dissolved	5.00	ND	4.91	4.98	98.2	99.6	1	75.0-125			1.35	20
Lead,Dissolved	0.0500	ND	0.0466	0.0491	93.3	98.2	1	75.0-125			5.12	20
Magnesium,Dissolved	5.00	31.8	36.0	37.0	82.7	103	1	75.0-125			2.84	20
Manganese,Dissolved	0.0500	0.00992	0.0580	0.0584	96.1	97.0	1	75.0-125			0.765	20
Nickel,Dissolved	0.0500	ND	0.0508	0.0531	98.6	103	1	75.0-125			4.42	20
Selenium,Dissolved	0.0500	0.00685	0.0562	0.0579	98.7	102	1	75.0-125			3.00	20
Silver,Dissolved	0.0500	ND	0.0490	0.0509	98.0	102	1	75.0-125			3.80	20
Sodium,Dissolved	5.00	394	386	391	0.000	0.000	1	75.0-125	V	V	1.15	20
Thallium,Dissolved	0.0500	ND	0.0459	0.0476	91.9	95.2	1	75.0-125			3.56	20
Vanadium,Dissolved	0.0500	ND	0.0504	0.0520	97.9	101	1	75.0-125			3.09	20
Zinc,Dissolved	0.500	ND	0.485	0.499	96.1	98.8	1	75.0-125			2.78	20

Method Blank (MB)

(MB) R3699087-6 09/01/21 14:17

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
Chromium	0.00207		0.00124	0.00200
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	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

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3699087-2 09/01/21 13:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	5.00	4.76	95.3	80.0-120	
Antimony	0.0500	0.0493	98.6	80.0-120	
Arsenic	0.0500	0.0477	95.5	80.0-120	
Barium	0.0500	0.0463	92.7	80.0-120	
Beryllium	0.0500	0.0473	94.6	80.0-120	
Cadmium	0.0500	0.0514	103	80.0-120	
Calcium	5.00	4.90	98.0	80.0-120	
Chromium	0.0500	0.0506	101	80.0-120	
Copper	0.0500	0.0489	97.9	80.0-120	
Cobalt	0.0500	0.0507	101	80.0-120	
Iron	5.00	4.88	97.7	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3699087-2 09/01/21 13:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Lead	0.0500	0.0471	94.3	80.0-120	
Magnesium	5.00	4.89	97.7	80.0-120	
Manganese	0.0500	0.0487	97.4	80.0-120	
Nickel	0.0500	0.0517	103	80.0-120	
Potassium	5.00	4.68	93.7	80.0-120	
Selenium	0.0500	0.0540	108	80.0-120	
Silver	0.0500	0.0489	97.8	80.0-120	
Sodium	5.00	4.80	95.9	80.0-120	
Thallium	0.0500	0.0474	94.7	80.0-120	
Vanadium	0.0500	0.0494	98.7	80.0-120	
Zinc	0.500	0.478	95.6	80.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R3699510-1 09/02/21 10:03

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3699510-2 09/02/21 10:06

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chromium	0.0500	0.0480	96.1	80.0-120	

4 Cn

5 Sr

L1397429-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397429-01 09/02/21 10:09 • (MS) R3699510-4 09/02/21 10:16 • (MSD) R3699510-5 09/02/21 10:19

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	0.0484	0.0468	96.8	93.6	1	75.0-125			3.35	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3700093-1 09/03/21 12:55

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum	0.0545	U	0.0185	0.100
Antimony	U		0.00103	0.00400
Arsenic	U		0.000180	0.00200
Barium	0.00185	U	0.000381	0.00200
Beryllium	U		0.000190	0.00200
Cadmium	U		0.000150	0.00100
Calcium	U		0.0936	1.00
Chromium	U		0.00124	0.00200
Copper	0.00470	U	0.00151	0.00500
Cobalt	U		0.0000596	0.00200
Iron	0.0644	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	0.000358	U	0.0000700	0.00200
Sodium	U		0.376	2.00
Thallium	0.000182	U	0.000121	0.00200
Vanadium	U		0.000664	0.00500
Zinc	U		0.00302	0.0250

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3700130-1 09/03/21 13:52

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

Laboratory Control Sample (LCS)

(LCS) R3700093-2 09/03/21 12:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	5.00	4.76	95.1	80.0-120	
Antimony	0.0500	0.0463	92.6	80.0-120	
Arsenic	0.0500	0.0475	95.1	80.0-120	
Barium	0.0500	0.0468	93.6	80.0-120	
Beryllium	0.0500	0.0465	93.0	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3700093-2 09/03/21 12:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Cadmium	0.0500	0.0509	102	80.0-120	
Calcium	5.00	4.87	97.3	80.0-120	
Chromium	0.0500	0.0504	101	80.0-120	
Copper	0.0500	0.0493	98.7	80.0-120	
Cobalt	0.0500	0.0498	99.6	80.0-120	
Iron	5.00	4.88	97.7	80.0-120	
Lead	0.0500	0.0478	95.6	80.0-120	
Magnesium	5.00	4.87	97.3	80.0-120	
Manganese	0.0500	0.0486	97.1	80.0-120	
Potassium	5.00	4.78	95.6	80.0-120	
Selenium	0.0500	0.0507	101	80.0-120	
Silver	0.0500	0.0492	98.5	80.0-120	
Sodium	5.00	5.56	111	80.0-120	
Thallium	0.0500	0.0455	91.0	80.0-120	
Vanadium	0.0500	0.0491	98.3	80.0-120	
Zinc	0.500	0.471	94.3	80.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Laboratory Control Sample (LCS)

(LCS) R3700130-2 09/03/21 13:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Nickel	0.0500	0.0498	99.7	80.0-120	

L1396762-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396762-01 09/03/21 13:05 • (MS) R3700093-4 09/03/21 13:09 • (MSD) R3700093-5 09/03/21 13:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Aluminum	5.00	ND	4.59	4.65	91.3	92.5	1	75.0-125			1.28	20
Antimony	0.0500	ND	0.0511	0.0518	102	104	1	75.0-125			1.42	20
Arsenic	0.0500	ND	0.0471	0.0480	91.8	93.5	1	75.0-125			1.80	20
Barium	0.0500	0.0588	0.106	0.106	93.5	94.2	1	75.0-125			0.316	20
Beryllium	0.0500	ND	0.0455	0.0449	91.1	89.9	1	75.0-125			1.29	20
Cadmium	0.0500	ND	0.0512	0.0517	102	103	1	75.0-125			1.05	20
Calcium	5.00	304	302	304	0.000	1.23	1	75.0-125	V	V	0.543	20
Chromium	0.0500	ND	0.0480	0.0489	95.9	97.7	1	75.0-125			1.87	20
Copper	0.0500	ND	0.0496	0.0488	93.1	91.6	1	75.0-125			1.51	20
Cobalt	0.0500	ND	0.0475	0.0487	94.3	96.6	1	75.0-125			2.40	20

L1396762-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396762-01 09/03/21 13:05 • (MS) R3700093-4 09/03/21 13:09 • (MSD) R3700093-5 09/03/21 13:12

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 %
Potassium	5.00	18.0	22.4	22.5	87.8	90.0	1	75.0-125			0.493	20
Iron	5.00	ND	4.77	4.91	93.8	96.4	1	75.0-125			2.72	20
Lead	0.0500	ND	0.0467	0.0482	93.3	96.3	1	75.0-125			3.18	20
Magnesium	5.00	55.2	58.6	60.2	66.9	98.9	1	75.0-125	V		2.70	20
Manganese	0.0500	2.47	2.44	2.48	0.000	17.2	1	75.0-125	V	V	1.48	20
Selenium	0.0500	0.00283	0.0531	0.0542	101	103	1	75.0-125			1.94	20
Silver	0.0500	ND	0.0477	0.0489	95.4	97.8	1	75.0-125			2.52	20
Sodium	5.00	97.6	101	103	68.1	100	1	75.0-125	V		1.57	20
Thallium	0.0500	ND	0.0449	0.0456	89.8	91.2	1	75.0-125			1.58	20
Vanadium	0.0500	ND	0.0492	0.0498	95.8	97.1	1	75.0-125			1.26	20
Zinc	0.500	ND	0.442	0.457	88.3	91.3	1	75.0-125			3.37	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1396762-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396762-01 09/03/21 13:58 • (MS) R3700130-4 09/03/21 14:05 • (MSD) R3700130-5 09/03/21 14:08

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 %
Nickel	0.0500	ND	0.0492	0.0479	95.2	92.6	1	75.0-125			2.69	20

Method Blank (MB)

(MB) R3699531-2 08/31/21 14:41

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

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3699531-2 08/31/21 14:41

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	101			80.0-120
(S) 4-Bromofluorobenzene	81.9			77.0-126
(S) 1,2-Dichloroethane-d4	107			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3699531-1 08/31/21 14:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.0250	0.0145	58.0	19.0-160	
Acrylonitrile	0.0250	0.0192	76.8	55.0-149	
Benzene	0.00500	0.00397	79.4	70.0-123	
Bromodichloromethane	0.00500	0.00456	91.2	75.0-120	
Bromochloromethane	0.00500	0.00395	79.0	76.0-122	
Bromoform	0.00500	0.00415	83.0	68.0-132	
Bromomethane	0.00500	0.00414	82.8	10.0-160	
Carbon disulfide	0.00500	0.00389	77.8	61.0-128	
Carbon tetrachloride	0.00500	0.00452	90.4	68.0-126	
Chlorobenzene	0.00500	0.00409	81.8	80.0-121	
Chlorodibromomethane	0.00500	0.00453	90.6	77.0-125	
Chloroethane	0.00500	0.00389	77.8	47.0-150	
Chloroform	0.00500	0.00437	87.4	73.0-120	
Chloromethane	0.00500	0.00458	91.6	41.0-142	
1,2-Dibromo-3-Chloropropane	0.00500	0.00583	117	58.0-134	
1,2-Dibromoethane	0.00500	0.00487	97.4	80.0-122	
Dibromomethane	0.00500	0.00430	86.0	80.0-120	
1,2-Dichlorobenzene	0.00500	0.00370	74.0	79.0-121	J4
1,4-Dichlorobenzene	0.00500	0.00417	83.4	79.0-120	
trans-1,4-Dichloro-2-butene	0.00500	0.00458	91.6	33.0-144	
1,1-Dichloroethane	0.00500	0.00433	86.6	70.0-126	
1,2-Dichloroethane	0.00500	0.00492	98.4	70.0-128	
1,1-Dichloroethene	0.00500	0.00471	94.2	71.0-124	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3699531-1 08/31/21 14:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
cis-1,2-Dichloroethene	0.00500	0.00389	77.8	73.0-120	
trans-1,2-Dichloroethene	0.00500	0.00419	83.8	73.0-120	
1,2-Dichloropropane	0.00500	0.00443	88.6	77.0-125	
cis-1,3-Dichloropropene	0.00500	0.00456	91.2	80.0-123	
trans-1,3-Dichloropropene	0.00500	0.00481	96.2	78.0-124	
Ethylbenzene	0.00500	0.00403	80.6	79.0-123	
2-Hexanone	0.0250	0.0302	121	67.0-149	
Iodomethane	0.0250	0.0243	97.2	33.0-147	
2-Butanone (MEK)	0.0250	0.0323	129	44.0-160	
Methylene Chloride	0.00500	0.00393	78.6	67.0-120	
4-Methyl-2-pentanone (MIBK)	0.0250	0.0306	122	68.0-142	
Styrene	0.00500	0.00390	78.0	73.0-130	
1,1,1,2-Tetrachloroethane	0.00500	0.00426	85.2	75.0-125	
1,1,2,2-Tetrachloroethane	0.00500	0.00560	112	65.0-130	
Tetrachloroethene	0.00500	0.00458	91.6	72.0-132	
Toluene	0.00500	0.00430	86.0	79.0-120	
1,1,1-Trichloroethane	0.00500	0.00485	97.0	73.0-124	
1,1,2-Trichloroethane	0.00500	0.00476	95.2	80.0-120	
Trichloroethene	0.00500	0.00437	87.4	78.0-124	
Trichlorofluoromethane	0.00500	0.00468	93.6	59.0-147	
1,2,3-Trichloropropane	0.00500	0.00675	135	73.0-130	J4
Vinyl acetate	0.0250	0.0341	136	11.0-160	
Vinyl chloride	0.00500	0.00418	83.6	67.0-131	
Xylenes, Total	0.0150	0.0116	77.3	79.0-123	J4
(S) Toluene-d8			101	80.0-120	
(S) 4-Bromofluorobenzene			84.9	77.0-126	
(S) 1,2-Dichloroethane-d4			112	70.0-130	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3699232-3 09/01/21 12:33

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

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3699232-3 09/01/21 12:33

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	100			80.0-120
(S) 4-Bromofluorobenzene	92.3			77.0-126
(S) 1,2-Dichloroethane-d4	94.1			70.0-130

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

(LCS) R3699232-1 09/01/21 11:32 • (LCSD) R3699232-2 09/01/21 11:52

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	0.0229	0.0280	91.6	112	19.0-160			20.0	27
Acrylonitrile	0.0250	0.0284	0.0289	114	116	55.0-149			1.75	20
Benzene	0.00500	0.00501	0.00526	100	105	70.0-123			4.87	20
Bromodichloromethane	0.00500	0.00454	0.00471	90.8	94.2	75.0-120			3.68	20
Bromochloromethane	0.00500	0.00502	0.00542	100	108	76.0-122			7.66	20
Bromoform	0.00500	0.00461	0.00448	92.2	89.6	68.0-132			2.86	20
Bromomethane	0.00500	0.00441	0.00433	88.2	86.6	10.0-160			1.83	25
Carbon disulfide	0.00500	0.00472	0.00509	94.4	102	61.0-128			7.54	20
Carbon tetrachloride	0.00500	0.00459	0.00497	91.8	99.4	68.0-126			7.95	20
Chlorobenzene	0.00500	0.00493	0.00508	98.6	102	80.0-121			3.00	20
Chlorodibromomethane	0.00500	0.00499	0.00490	99.8	98.0	77.0-125			1.82	20
Chloroethane	0.00500	0.00400	0.00445	80.0	89.0	47.0-150			10.7	20
Chloroform	0.00500	0.00482	0.00504	96.4	101	73.0-120			4.46	20
Chloromethane	0.00500	0.00562	0.00615	112	123	41.0-142			9.01	20
1,2-Dibromo-3-Chloropropane	0.00500	0.00479	0.00486	95.8	97.2	58.0-134			1.45	20
1,2-Dibromoethane	0.00500	0.00520	0.00516	104	103	80.0-122			0.772	20
Dibromomethane	0.00500	0.00506	0.00521	101	104	80.0-120			2.92	20
1,2-Dichlorobenzene	0.00500	0.00508	0.00503	102	101	79.0-121			0.989	20
1,4-Dichlorobenzene	0.00500	0.00498	0.00508	99.6	102	79.0-120			1.99	20
trans-1,4-Dichloro-2-butene	0.00500	0.00546	0.00563	109	113	33.0-144			3.07	20
1,1-Dichloroethane	0.00500	0.00510	0.00541	102	108	70.0-126			5.90	20
1,2-Dichloroethane	0.00500	0.00473	0.00489	94.6	97.8	70.0-128			3.33	20
1,1-Dichloroethene	0.00500	0.00432	0.00479	86.4	95.8	71.0-124			10.3	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

(LCS) R3699232-1 09/01/21 11:32 • (LCSD) R3699232-2 09/01/21 11:52

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	0.00484	0.00507	96.8	101	73.0-120			4.64	20
trans-1,2-Dichloroethene	0.00500	0.00483	0.00528	96.6	106	73.0-120			8.90	20
1,2-Dichloropropane	0.00500	0.00539	0.00559	108	112	77.0-125			3.64	20
cis-1,3-Dichloropropene	0.00500	0.00509	0.00539	102	108	80.0-123			5.73	20
trans-1,3-Dichloropropene	0.00500	0.00489	0.00491	97.8	98.2	78.0-124			0.408	20
Ethylbenzene	0.00500	0.00516	0.00505	103	101	79.0-123			2.15	20
2-Hexanone	0.0250	0.0280	0.0273	112	109	67.0-149			2.53	20
Iodomethane	0.0250	0.0241	0.0261	96.4	104	33.0-147			7.97	26
2-Butanone (MEK)	0.0250	0.0281	0.0289	112	116	44.0-160			2.81	20
Methylene Chloride	0.00500	0.00483	0.00524	96.6	105	67.0-120			8.14	20
4-Methyl-2-pentanone (MIBK)	0.0250	0.0291	0.0287	116	115	68.0-142			1.38	20
Styrene	0.00500	0.00475	0.00498	95.0	99.6	73.0-130			4.73	20
1,1,1,2-Tetrachloroethane	0.00500	0.00471	0.00480	94.2	96.0	75.0-125			1.89	20
1,1,2,2-Tetrachloroethane	0.00500	0.00557	0.00547	111	109	65.0-130			1.81	20
Tetrachloroethene	0.00500	0.00510	0.00560	102	112	72.0-132			9.35	20
Toluene	0.00500	0.00520	0.00531	104	106	79.0-120			2.09	20
1,1,1-Trichloroethane	0.00500	0.00466	0.00480	93.2	96.0	73.0-124			2.96	20
1,1,2-Trichloroethane	0.00500	0.00496	0.00495	99.2	99.0	80.0-120			0.202	20
Trichloroethene	0.00500	0.00516	0.00548	103	110	78.0-124			6.02	20
Trichlorofluoromethane	0.00500	0.00456	0.00501	91.2	100	59.0-147			9.40	20
1,2,3-Trichloropropane	0.00500	0.00601	0.00575	120	115	73.0-130			4.42	20
Vinyl acetate	0.0250	0.0314	0.0318	126	127	11.0-160			1.27	20
Vinyl chloride	0.00500	0.00494	0.00537	98.8	107	67.0-131			8.34	20
Xylenes, Total	0.0150	0.0146	0.0153	97.3	102	79.0-123			4.68	20
(S) Toluene-d8				101	97.8	80.0-120				
(S) 4-Bromofluorobenzene				92.3	92.1	77.0-126				
(S) 1,2-Dichloroethane-d4				96.8	98.3	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3698582-1 08/30/21 17:24

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Ethylene Dibromide	U		0.0000536	0.0000200
1,2-Dibromo-3-Chloropropane	U		0.0000748	0.0000200

L1396038-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1396038-01 08/30/21 18:14 • (DUP) R3698582-3 08/30/21 18:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l	%	%		%
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) R3698582-4 08/30/21 20:18 • (LCSD) R3698582-5 08/30/21 22:58

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Ethylene Dibromide	0.000250	0.000294	0.000297	118	119	60.0-140			1.02	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000260	0.000275	104	110	60.0-140			5.61	20

L1396050-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1396050-01 08/30/21 17:49 • (MS) R3698582-2 08/30/21 17:36

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	mg/l	mg/l	mg/l	%		%	
Ethylene Dibromide	0.000100	ND	0.000113	113	1	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000100	ND	0.000100	100	1	72.0-148	



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.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

ACCREDITATIONS & LOCATIONS

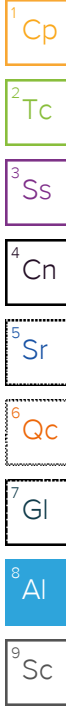
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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	LA000356
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:
 Dr. Kevin Wolfe
 117 Seaboard Ln.
 Suite E100
 Franklin, TN 37067

Report to:
Philip Campbell

Email To: **pcampbell@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):

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

Quote #

Immediately Packed on Ice N Y

Date Results Needed

No. of Cntrs

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-NH4ES	SV8011 40mlClr-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl	V8260AP1-Trip Blank 40mlAmb-HCl-Bik	Remarks	Sample # (lab only)
MW-1	G	GW		8/26/21	1050	11	X	X	X	X	X	X	X			-01
MW-3		GW			1425	11	X	X	X	X	X	X	X			-02
MW-4		GW		22	1195	11	X	X	X	X	X	X	X			-03
MW-5		GW			1145	11	X	X	X	X	X	X	X			-04
TMW-1		GW			1315	11	X	X	X	X	X	X	X			-05
TMW-2		GW			1215	11	X	X	X	X	X	X	X			-06
TMW-3		GW			1045	11	X	X	X	X	X	X	X			-07
DUPLICATE		GW				11	X	X	X	X	X	X	X			-08
FIELD BLANK		GW			1510	10	X	X	X	X	X	X	X			-09
EQUIPMENT BLANK		GW				10	X	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). Diss Metals = lab filtered**

Samples returned via:
 UPS FedEx Courier

Tracking #

pH _____ Temp _____
 Flow _____ Other _____

Sample Receipt Checklist
 COC Seal Present/Intact: 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 Headpace: Y N
 Preservation Correct/Checked: Y N
 RAD Screen <0.5 mR/hr: Y N

Relinquished by: (Signature)

Date: **8/27/21**

Time: **13:05**

Received by: (Signature)

Trip Blank Received: Yes/No
 Yes No
 HCl/MeOH TBR

Relinquished by: (Signature)

Date: **8-27-21**

Time: **17:05**

Received by: (Signature)

Temp: **36°C** Bottles Received: **9**
2.850=2.9

Relinquished by: (Signature)

Date: **8/27/21**

Time: **17:05**

Received for lab by: (Signature)

Date: **8/27/21** Time: **17:05**

Hold: Condition: **NCF / OK**



SDG # **U1396050**
K158

Accnum: **CEC**
 Template: **T133579**
 Prelogin: **P868392**
 PM: **526 - Chris McCord**
 PB: **BF 8/20/21**
 Shipped Via: **Courier**

Remarks Sample # (lab only)

Company Name/Address:

Civil & Environmental Consultants - TN

117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Report to:
Philip Campbell

Billing Information:

Dr. Kevin Wolfe
117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Pres
Chk

Email To: pcampbell@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):
[Signature]

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

Immediately Packed on Ice N Y

No. of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
TRIP BLANK	<u>W</u>	GW		8/27/21	—	1

Analysis / Container / Preservative						
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-BIK	

Chain of Custody Page ___ of ___

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubs/pas-standard-terms.pdf>

SDG # U396050

Table #

Acctnum: **CEC**

Template: **T133579**

Prelogin: **P868392**

PM: 526 - Chris McCord

PB: Bf 8/20/21

Shipped Via: **Courier**

Remarks | Sample # (lab only)

-10

* 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 Headpace:		Y	N
Preservation Correct/Checked:		Y	N
RAD Screen <0.5 mR/hr:		Y	N

Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>8/27/21</u>	Time: <u>13:05</u>	Received by: (Signature) <u>[Signature]</u>	Trip Blank Received: Yes <u> </u> / No <u> </u>	Temp: <u>73 DEC</u>	Bottles Received: <u>91</u>	If preservation required by Login: Date/Time
Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>8-27-21</u>	Time: <u>17:05</u>	Received by: (Signature) <u>[Signature]</u>	Flow: <u>2</u>	Temp: <u>2.8 ± 0.2</u>	Bottles Received: <u>91</u>	
Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>8/27/21</u>	Time: <u>17:05</u>	Received for lab by: (Signature) <u>[Signature]</u>	Date: <u>8/27/21</u>	Time: <u>17:05</u>	Hold:	Condition: <u>NCF / OK</u>

Civil & Environmental Consultants - TN

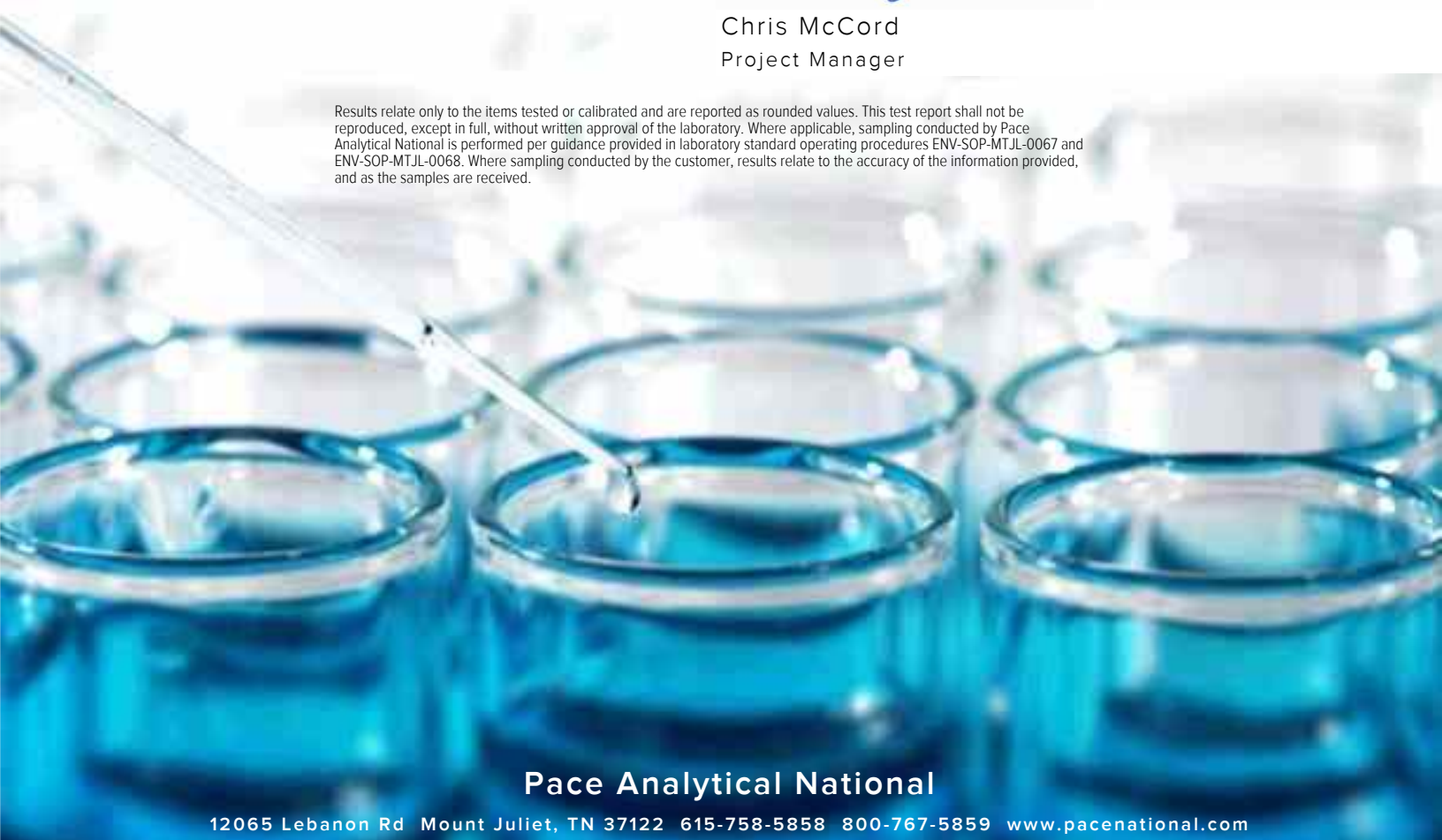
Sample Delivery Group: L1396038
Samples Received: 08/27/2021
Project Number: 181-364
Description: EWS Camden Class 2 Landfill
Site: CAMDEN, TN
Report To: Philip Campbell
117 Seaboard Ln.
Suite E100
Franklin, TN 37067

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.

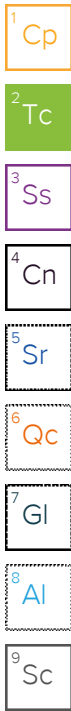


Pace Analytical National

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

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SAMPLE SUMMARY

IWC-L L1396038-01 GW

Collected by: Alex Black
 Collected date/time: 08/26/21 14:20
 Received date/time: 08/27/21 17:05

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1731664	1	09/01/21 13:48	09/01/21 13:48	LAT	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1733234	1	09/02/21 18:00	09/02/21 18:00	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1737686	500	09/12/21 14:13	09/12/21 14:13	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1734515	50	09/03/21 14:00	09/03/21 18:14	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1733132	100	09/01/21 21:30	09/01/21 21:30	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1733132	1000	09/01/21 21:45	09/01/21 21:45	ELN	Mt. Juliet, TN
Mercury by Method 7470A	WG1732839	1	09/01/21 10:26	09/01/21 17:17	SD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1731639	10	08/31/21 11:12	09/03/21 11:56	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1731664	100	08/31/21 21:25	09/01/21 15:54	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1731664	20	08/31/21 21:25	09/01/21 13:48	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1731664	200	08/31/21 21:25	09/01/21 16:01	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1732943	1	09/01/21 18:59	09/01/21 18:59	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1736381	10	09/08/21 04:04	09/08/21 04:04	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1731594	1	08/30/21 07:46	08/30/21 18:14	HMH	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	43400		49.9	1	09/01/2021 13:48	WG1731664

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	09/02/2021 18:00	WG1733234

Sample Narrative:

L1396038-01 WG1733234: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	1830		125	500	09/12/2021 14:13	WG1737686

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	6070		1000	50	09/03/2021 18:14	WG1734515

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	09/01/2021 21:30	WG1733132
Chloride	97300		1000	1000	09/01/2021 21:45	WG1733132
Fluoride	ND		15.0	100	09/01/2021 21:30	WG1733132
Nitrate	ND	T8	10.0	100	09/01/2021 21:30	WG1733132
Sulfate	1070		500	100	09/01/2021 21:30	WG1733132

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	09/01/2021 17:17	WG1732839

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		2.00	10	09/03/2021 11:56	WG1731639

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	388		2.00	20	09/01/2021 13:48	WG1731664
Antimony	ND		0.0800	20	09/01/2021 13:48	WG1731664
Arsenic	0.402		0.400	200	09/01/2021 16:01	WG1731664
Barium	3.14		0.0400	20	09/01/2021 13:48	WG1731664
Beryllium	0.0694		0.0400	20	09/01/2021 13:48	WG1731664
Cadmium	9.43		0.0200	20	09/01/2021 13:48	WG1731664
Calcium	15200		20.0	20	09/01/2021 13:48	WG1731664
Chromium	ND		0.400	200	09/01/2021 16:01	WG1731664
Cobalt	0.513		0.400	200	09/01/2021 16:01	WG1731664
Copper	0.582		0.100	20	09/01/2021 13:48	WG1731664

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	535		20.0	200	09/01/2021 16:01	WG1731664
Lead	0.900		0.0400	20	09/01/2021 13:48	WG1731664
Magnesium	1320		20.0	20	09/01/2021 13:48	WG1731664
Manganese	27.9		1.00	200	09/01/2021 16:01	WG1731664
Nickel	0.752		0.400	200	09/01/2021 16:01	WG1731664
Potassium	14600		40.0	20	09/01/2021 13:48	WG1731664
Selenium	0.461		0.0400	20	09/01/2021 13:48	WG1731664
Silver	ND		0.0400	20	09/01/2021 13:48	WG1731664
Sodium	24400		200	100	09/01/2021 15:54	WG1731664
Thallium	ND		0.0400	20	09/01/2021 13:48	WG1731664
Vanadium	ND		1.00	200	09/01/2021 16:01	WG1731664
Zinc	112		5.00	200	09/01/2021 16:01	WG1731664

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
Acetone	2.41		0.500	10	09/08/2021 04:04	WG1736381
Acrylonitrile	ND		0.0100	1	09/01/2021 18:59	WG1732943
Benzene	ND		0.00100	1	09/01/2021 18:59	WG1732943
Bromochloromethane	ND		0.00100	1	09/01/2021 18:59	WG1732943
Bromodichloromethane	ND		0.00100	1	09/01/2021 18:59	WG1732943
Bromoform	ND		0.00100	1	09/01/2021 18:59	WG1732943
Bromomethane	ND		0.00500	1	09/01/2021 18:59	WG1732943
Carbon disulfide	0.00363		0.00100	1	09/01/2021 18:59	WG1732943
Carbon tetrachloride	ND		0.00100	1	09/01/2021 18:59	WG1732943
Chlorobenzene	ND		0.00100	1	09/01/2021 18:59	WG1732943
Chlorodibromomethane	ND		0.00100	1	09/01/2021 18:59	WG1732943
Chloroethane	ND		0.00500	1	09/01/2021 18:59	WG1732943
Chloroform	ND		0.00500	1	09/01/2021 18:59	WG1732943
Chloromethane	ND		0.00250	1	09/01/2021 18:59	WG1732943
Dibromomethane	ND		0.00100	1	09/01/2021 18:59	WG1732943
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	09/01/2021 18:59	WG1732943
1,2-Dibromoethane	ND		0.00100	1	09/01/2021 18:59	WG1732943
1,2-Dichlorobenzene	ND		0.00100	1	09/01/2021 18:59	WG1732943
1,4-Dichlorobenzene	ND		0.00100	1	09/01/2021 18:59	WG1732943
trans-1,4-Dichloro-2-butene	ND		0.00250	1	09/01/2021 18:59	WG1732943
1,1-Dichloroethane	ND		0.00100	1	09/01/2021 18:59	WG1732943
1,2-Dichloroethane	ND		0.00100	1	09/01/2021 18:59	WG1732943
1,1-Dichloroethene	ND		0.00100	1	09/01/2021 18:59	WG1732943
cis-1,2-Dichloroethene	ND		0.00100	1	09/01/2021 18:59	WG1732943
trans-1,2-Dichloroethene	ND		0.00100	1	09/01/2021 18:59	WG1732943
1,2-Dichloropropane	ND		0.00100	1	09/01/2021 18:59	WG1732943
cis-1,3-Dichloropropene	ND		0.00100	1	09/01/2021 18:59	WG1732943
trans-1,3-Dichloropropene	ND		0.00100	1	09/01/2021 18:59	WG1732943
Ethylbenzene	ND		0.00100	1	09/01/2021 18:59	WG1732943
2-Hexanone	0.0113		0.0100	1	09/01/2021 18:59	WG1732943
Iodomethane	ND		0.0100	1	09/01/2021 18:59	WG1732943
2-Butanone (MEK)	0.452		0.0100	1	09/01/2021 18:59	WG1732943
Methylene Chloride	ND		0.00500	1	09/01/2021 18:59	WG1732943
4-Methyl-2-pentanone (MIBK)	0.0835		0.0100	1	09/01/2021 18:59	WG1732943
Styrene	ND		0.00100	1	09/01/2021 18:59	WG1732943
1,1,1,2-Tetrachloroethane	ND		0.00100	1	09/01/2021 18:59	WG1732943
1,1,2,2-Tetrachloroethane	ND		0.00100	1	09/01/2021 18:59	WG1732943
Tetrachloroethene	ND		0.00100	1	09/01/2021 18:59	WG1732943
Toluene	0.00141		0.00100	1	09/01/2021 18:59	WG1732943
1,1,1-Trichloroethane	ND		0.00100	1	09/01/2021 18:59	WG1732943

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	09/01/2021 18:59	WG1732943
Trichloroethene	ND		0.00100	1	09/01/2021 18:59	WG1732943
Trichlorofluoromethane	ND		0.00500	1	09/01/2021 18:59	WG1732943
1,2,3-Trichloropropane	ND		0.00250	1	09/01/2021 18:59	WG1732943
Vinyl acetate	ND		0.0100	1	09/01/2021 18:59	WG1732943
Vinyl chloride	ND		0.00100	1	09/01/2021 18:59	WG1732943
Xylenes, Total	0.00476		0.00300	1	09/01/2021 18:59	WG1732943
(S) Toluene-d8	99.9		80.0-120		09/01/2021 18:59	WG1732943
(S) Toluene-d8	105		80.0-120		09/08/2021 04:04	WG1736381
(S) 4-Bromofluorobenzene	91.9		77.0-126		09/01/2021 18:59	WG1732943
(S) 4-Bromofluorobenzene	97.6		77.0-126		09/08/2021 04:04	WG1736381
(S) 1,2-Dichloroethane-d4	98.8		70.0-130		09/01/2021 18:59	WG1732943
(S) 1,2-Dichloroethane-d4	102		70.0-130		09/08/2021 04:04	WG1736381

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	08/30/2021 18:14	WG1731594
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/30/2021 18:14	WG1731594

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3699894-2 09/02/21 16:43

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1395780-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1395780-11 09/02/21 17:18 • (DUP) R3699894-3 09/02/21 17:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	828	842	1	1.68		20

Sample Narrative:

OS: Endpoint pH 4.5
DUP: Endpoint pH 4.5

L1396108-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1396108-01 09/02/21 18:22 • (DUP) R3699894-4 09/02/21 18:26

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	296	293	1	1.04		20

Sample Narrative:

OS: Endpoint pH 4.5
DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3699894-1 09/02/21 16:39

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	94.5	94.5	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5



Method Blank (MB)

(MB) R3703261-1 09/12/21 12:53

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Ammonia Nitrogen	U		0.117	0.250

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1395856-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1395856-02 09/12/21 13:36 • (DUP) R3703261-7 09/12/21 13:38

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	1390	1470	200	5.87		10

L1395697-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1395697-01 09/12/21 14:06 • (DUP) R3703261-8 09/12/21 14:07

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	139	139	20	0.0584		10

Laboratory Control Sample (LCS)

(LCS) R3703261-2 09/12/21 12:54

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Ammonia Nitrogen	7.50	7.71	103	90.0-110	

L1395856-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395856-01 09/12/21 13:32 • (MS) R3703261-5 09/12/21 13:33 • (MSD) R3703261-6 09/12/21 13:35

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Ammonia Nitrogen	5.00	3.14	8.04	7.99	97.9	96.9	1	90.0-110			0.611	10

Method Blank (MB)

(MB) R3700260-1 09/03/21 18:13

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
COD	U		11.7	20.0

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1396336-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1396336-01 09/03/21 18:15 • (DUP) R3700260-3 09/03/21 18:16

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	ND	ND	1	0.000		20

L1396765-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1396765-01 09/03/21 18:23 • (DUP) R3700260-4 09/03/21 18:23

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	107	118	1	9.42		20

Laboratory Control Sample (LCS)

(LCS) R3700260-2 09/03/21 18:13

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
COD	500	514	103	90.0-110	

L1396886-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396886-01 09/03/21 18:24 • (MS) R3700260-5 09/03/21 18:24 • (MSD) R3700260-6 09/03/21 18:24

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
COD	500	ND	537	530	107	106	1	80.0-120			1.40	20

Method Blank (MB)

(MB) R3699411-1 09/01/21 10:00

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
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

L1397004-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1397004-01 09/01/21 12:26 • (DUP) R3699411-3 09/01/21 12:40

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Bromide	ND	ND	1	0.000		15
Chloride	4.51	4.41	1	2.14		15
Fluoride	0.563	0.560	1	0.428		15
Nitrate	ND	ND	1	0.000		15

L1397374-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1397374-03 09/01/21 16:47 • (DUP) R3699411-6 09/01/21 17:02

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Bromide	ND	ND	1	0.000		15
Chloride	10.7	10.7	1	0.129		15
Fluoride	ND	ND	1	0.000		15
Nitrate	1.10	1.10	1	0.445		15
Sulfate	9.13	9.09	1	0.404		15

Laboratory Control Sample (LCS)

(LCS) R3699411-2 09/01/21 10:15

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Bromide	40.0	39.0	97.6	80.0-120	
Chloride	40.0	39.4	98.6	80.0-120	
Fluoride	8.00	7.95	99.4	80.0-120	
Nitrate	8.00	8.12	101	80.0-120	
Sulfate	40.0	40.2	101	80.0-120	



L1397004-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1397004-01 09/01/21 12:26 • (MS) R3699411-4 09/01/21 12:55 • (MSD) R3699411-5 09/01/21 13:10

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	25.6	26.1	51.2	52.2	1	80.0-120	J6	J6	1.80	15
Chloride	50.0	4.51	54.0	55.1	98.9	101	1	80.0-120			2.13	15
Fluoride	5.00	0.563	5.24	5.33	93.6	95.4	1	80.0-120			1.64	15
Nitrate	5.00	ND	5.02	5.08	100	102	1	80.0-120			1.08	15

L1397374-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1397374-03 09/01/21 16:47 • (MS) R3699411-7 09/01/21 17:16

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	ND	48.2	96.5	1	80.0-120	
Chloride	50.0	10.7	60.2	99.0	1	80.0-120	
Fluoride	5.00	ND	5.09	99.6	1	80.0-120	
Nitrate	5.00	1.10	6.23	103	1	80.0-120	
Sulfate	50.0	9.13	59.1	99.9	1	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3699262-1 09/01/21 16:48

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) R3699262-2 09/01/21 16:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00301	100	80.0-120	

L1396942-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396942-04 09/01/21 16:53 • (MS) R3699262-3 09/01/21 16:55 • (MSD) R3699262-4 09/01/21 17:02

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	0.00319	0.00311	106	104	1	75.0-125			2.54	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3699921-1 09/03/21 02:52

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) R3699921-2 09/03/21 02:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.970	97.0	80.0-120	

L1395983-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1395983-02 09/03/21 02:57 • (MS) R3699921-4 09/03/21 03:02 • (MSD) R3699921-5 09/03/21 03:05

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 %
Boron	1.00	0.450	1.42	1.44	97.4	98.9	1	75.0-125			1.06	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3699087-6 09/01/21 14:17

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
Chromium	0.00207		0.00124	0.00200
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	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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3699087-2 09/01/21 13:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	5.00	4.76	95.3	80.0-120	
Antimony	0.0500	0.0493	98.6	80.0-120	
Arsenic	0.0500	0.0477	95.5	80.0-120	
Barium	0.0500	0.0463	92.7	80.0-120	
Beryllium	0.0500	0.0473	94.6	80.0-120	
Cadmium	0.0500	0.0514	103	80.0-120	
Calcium	5.00	4.90	98.0	80.0-120	
Chromium	0.0500	0.0506	101	80.0-120	
Copper	0.0500	0.0489	97.9	80.0-120	
Cobalt	0.0500	0.0507	101	80.0-120	
Iron	5.00	4.88	97.7	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3699087-2 09/01/21 13:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Lead	0.0500	0.0471	94.3	80.0-120	
Magnesium	5.00	4.89	97.7	80.0-120	
Manganese	0.0500	0.0487	97.4	80.0-120	
Nickel	0.0500	0.0517	103	80.0-120	
Potassium	5.00	4.68	93.7	80.0-120	
Selenium	0.0500	0.0540	108	80.0-120	
Silver	0.0500	0.0489	97.8	80.0-120	
Sodium	5.00	4.80	95.9	80.0-120	
Thallium	0.0500	0.0474	94.7	80.0-120	
Vanadium	0.0500	0.0494	98.7	80.0-120	
Zinc	0.500	0.478	95.6	80.0-120	

L1396364-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396364-01 09/01/21 13:31 • (MS) R3699087-4 09/01/21 13:38 • (MSD) R3699087-5 09/01/21 13:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Aluminum	5.00	ND	4.78	4.76	95.2	94.8	1	75.0-125			0.438	20
Antimony	0.0500	ND	0.0507	0.0517	101	103	1	75.0-125			1.92	20
Arsenic	0.0500	0.00319	0.0496	0.0505	92.8	94.6	1	75.0-125			1.77	20
Barium	0.0500	0.607	0.662	0.667	110	121	1	75.0-125			0.799	20
Beryllium	0.0500	ND	0.0477	0.0482	95.3	96.3	1	75.0-125			1.01	20
Cadmium	0.0500	ND	0.0500	0.0499	99.6	99.4	1	75.0-125			0.244	20
Calcium	5.00	85.1	88.8	89.5	74.5	87.7	1	75.0-125	V		0.737	20
Copper	0.0500	ND	0.0515	0.0511	94.9	94.2	1	75.0-125			0.756	20
Cobalt	0.0500	0.0216	0.0703	0.0710	97.4	98.7	1	75.0-125			0.943	20
Potassium	5.00	3.13	7.73	7.67	92.1	90.8	1	75.0-125			0.811	20
Iron	5.00	19.0	24.3	25.5	106	129	1	75.0-125		J5	4.63	20
Lead	0.0500	ND	0.0481	0.0490	96.2	98.1	1	75.0-125			1.87	20
Magnesium	5.00	23.1	27.6	27.2	91.5	83.0	1	75.0-125			1.55	20
Manganese	0.0500	8.05	8.36	8.37	620	657	1	75.0-125	V	V	0.220	20
Nickel	0.0500	0.0128	0.0608	0.0627	96.0	99.9	1	75.0-125			3.19	20
Selenium	0.0500	ND	0.0571	0.0575	113	114	1	75.0-125			0.627	20
Silver	0.0500	ND	0.0491	0.0492	98.1	98.4	1	75.0-125			0.290	20
Sodium	5.00	63.3	65.9	66.8	53.0	70.0	1	75.0-125	V	V	1.28	20
Thallium	0.0500	ND	0.0459	0.0479	91.8	95.7	1	75.0-125			4.18	20
Vanadium	0.0500	ND	0.0471	0.0471	94.3	94.2	1	75.0-125			0.0331	20
Zinc	0.500	ND	0.454	0.458	88.6	89.6	1	75.0-125			1.01	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3699232-3 09/01/21 12:33

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

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3699232-3 09/01/21 12:33

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	100			80.0-120
(S) 4-Bromofluorobenzene	92.3			77.0-126
(S) 1,2-Dichloroethane-d4	94.1			70.0-130

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

(LCS) R3699232-1 09/01/21 11:32 • (LCSD) R3699232-2 09/01/21 11:52

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	0.0284	0.0289	114	116	55.0-149			1.75	20
Benzene	0.00500	0.00501	0.00526	100	105	70.0-123			4.87	20
Bromodichloromethane	0.00500	0.00454	0.00471	90.8	94.2	75.0-120			3.68	20
Bromochloromethane	0.00500	0.00502	0.00542	100	108	76.0-122			7.66	20
Bromoform	0.00500	0.00461	0.00448	92.2	89.6	68.0-132			2.86	20
Bromomethane	0.00500	0.00441	0.00433	88.2	86.6	10.0-160			1.83	25
Carbon disulfide	0.00500	0.00472	0.00509	94.4	102	61.0-128			7.54	20
Carbon tetrachloride	0.00500	0.00459	0.00497	91.8	99.4	68.0-126			7.95	20
Chlorobenzene	0.00500	0.00493	0.00508	98.6	102	80.0-121			3.00	20
Chlorodibromomethane	0.00500	0.00499	0.00490	99.8	98.0	77.0-125			1.82	20
Chloroethane	0.00500	0.00400	0.00445	80.0	89.0	47.0-150			10.7	20
Chloroform	0.00500	0.00482	0.00504	96.4	101	73.0-120			4.46	20
Chloromethane	0.00500	0.00562	0.00615	112	123	41.0-142			9.01	20
1,2-Dibromo-3-Chloropropane	0.00500	0.00479	0.00486	95.8	97.2	58.0-134			1.45	20
1,2-Dibromoethane	0.00500	0.00520	0.00516	104	103	80.0-122			0.772	20
Dibromomethane	0.00500	0.00506	0.00521	101	104	80.0-120			2.92	20
1,2-Dichlorobenzene	0.00500	0.00508	0.00503	102	101	79.0-121			0.989	20
1,4-Dichlorobenzene	0.00500	0.00498	0.00508	99.6	102	79.0-120			1.99	20
trans-1,4-Dichloro-2-butene	0.00500	0.00546	0.00563	109	113	33.0-144			3.07	20
1,1-Dichloroethane	0.00500	0.00510	0.00541	102	108	70.0-126			5.90	20
1,2-Dichloroethane	0.00500	0.00473	0.00489	94.6	97.8	70.0-128			3.33	20
1,1-Dichloroethene	0.00500	0.00432	0.00479	86.4	95.8	71.0-124			10.3	20
cis-1,2-Dichloroethene	0.00500	0.00484	0.00507	96.8	101	73.0-120			4.64	20
trans-1,2-Dichloroethene	0.00500	0.00483	0.00528	96.6	106	73.0-120			8.90	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

(LCS) R3699232-1 09/01/21 11:32 • (LCSD) R3699232-2 09/01/21 11:52

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	0.00539	0.00559	108	112	77.0-125			3.64	20
cis-1,3-Dichloropropene	0.00500	0.00509	0.00539	102	108	80.0-123			5.73	20
trans-1,3-Dichloropropene	0.00500	0.00489	0.00491	97.8	98.2	78.0-124			0.408	20
Ethylbenzene	0.00500	0.00516	0.00505	103	101	79.0-123			2.15	20
2-Hexanone	0.0250	0.0280	0.0273	112	109	67.0-149			2.53	20
Iodomethane	0.0250	0.0241	0.0261	96.4	104	33.0-147			7.97	26
2-Butanone (MEK)	0.0250	0.0281	0.0289	112	116	44.0-160			2.81	20
Methylene Chloride	0.00500	0.00483	0.00524	96.6	105	67.0-120			8.14	20
4-Methyl-2-pentanone (MIBK)	0.0250	0.0291	0.0287	116	115	68.0-142			1.38	20
Styrene	0.00500	0.00475	0.00498	95.0	99.6	73.0-130			4.73	20
1,1,1,2-Tetrachloroethane	0.00500	0.00471	0.00480	94.2	96.0	75.0-125			1.89	20
1,1,2,2-Tetrachloroethane	0.00500	0.00557	0.00547	111	109	65.0-130			1.81	20
Tetrachloroethene	0.00500	0.00510	0.00560	102	112	72.0-132			9.35	20
Toluene	0.00500	0.00520	0.00531	104	106	79.0-120			2.09	20
1,1,1-Trichloroethane	0.00500	0.00466	0.00480	93.2	96.0	73.0-124			2.96	20
1,1,2-Trichloroethane	0.00500	0.00496	0.00495	99.2	99.0	80.0-120			0.202	20
Trichloroethene	0.00500	0.00516	0.00548	103	110	78.0-124			6.02	20
Trichlorofluoromethane	0.00500	0.00456	0.00501	91.2	100	59.0-147			9.40	20
1,2,3-Trichloropropane	0.00500	0.00601	0.00575	120	115	73.0-130			4.42	20
Vinyl acetate	0.0250	0.0314	0.0318	126	127	11.0-160			1.27	20
Vinyl chloride	0.00500	0.00494	0.00537	98.8	107	67.0-131			8.34	20
Xylenes, Total	0.0150	0.0146	0.0153	97.3	102	79.0-123			4.68	20
(S) Toluene-d8				101	97.8	80.0-120				
(S) 4-Bromofluorobenzene				92.3	92.1	77.0-126				
(S) 1,2-Dichloroethane-d4				96.8	98.3	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1396257-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396257-03 09/01/21 23:52 • (MS) R3699232-4 09/02/21 01:34 • (MSD) R3699232-5 09/02/21 02:51

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 %
Acrylonitrile	0.0250	ND	0.0293	0.0351	117	140	1	21.0-160			18.0	32
Benzene	0.00500	ND	0.00505	0.00622	101	124	1	17.0-158			20.8	27
Bromodichloromethane	0.00500	ND	0.00456	0.00560	91.2	112	1	31.0-150			20.5	27
Bromochloromethane	0.00500	ND	0.00528	0.00634	106	127	1	38.0-142			18.2	26
Bromoform	0.00500	ND	0.00441	0.00541	88.2	108	1	29.0-150			20.4	29
Bromomethane	0.00500	ND	ND	ND	66.6	91.8	1	10.0-160			31.8	38
Carbon disulfide	0.00500	ND	0.00458	0.00593	91.6	119	1	10.0-156			25.7	28
Carbon tetrachloride	0.00500	ND	0.00441	0.00579	88.2	116	1	23.0-159			27.1	28

L1396257-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396257-03 09/01/21 23:52 • (MS) R3699232-4 09/02/21 01:34 • (MSD) R3699232-5 09/02/21 02:51

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 %
Chlorobenzene	0.00500	ND	0.00485	0.00595	97.0	119	1	33.0-152			20.4	27
Chlorodibromomethane	0.00500	ND	0.00485	0.00594	97.0	119	1	37.0-149			20.2	27
Chloroethane	0.00500	ND	ND	0.00514	85.6	103	1	10.0-160			18.3	30
Chloroform	0.00500	ND	ND	0.00592	98.0	118	1	29.0-154			18.9	28
Chloromethane	0.00500	ND	0.00471	0.00575	94.2	115	1	10.0-160			19.9	29
1,2-Dibromo-3-Chloropropane	0.00500	ND	ND	0.00554	83.2	111	1	22.0-151			28.5	34
1,2-Dibromoethane	0.00500	ND	0.00535	0.00610	107	122	1	34.0-147			13.1	27
Dibromomethane	0.00500	ND	0.00493	0.00589	98.6	118	1	30.0-151			17.7	27
1,2-Dichlorobenzene	0.00500	ND	0.00471	0.00595	94.2	119	1	34.0-149			23.3	28
1,4-Dichlorobenzene	0.00500	ND	0.00472	0.00579	94.4	116	1	35.0-142			20.4	27
trans-1,4-Dichloro-2-butene	0.00500	ND	ND	0.00560	44.6	112	1	10.0-157		J3	86.1	37
1,1-Dichloroethane	0.00500	ND	0.00509	0.00615	102	123	1	25.0-158			18.9	27
1,2-Dichloroethane	0.00500	ND	0.00493	0.00569	98.6	114	1	29.0-151			14.3	27
1,1-Dichloroethene	0.00500	ND	0.00425	0.00530	85.0	106	1	11.0-160			22.0	29
cis-1,2-Dichloroethene	0.00500	ND	0.00482	0.00594	96.4	119	1	10.0-160			20.8	27
trans-1,2-Dichloroethene	0.00500	ND	0.00494	0.00609	98.8	122	1	17.0-153			20.9	27
1,2-Dichloropropane	0.00500	ND	0.00546	0.00670	109	134	1	30.0-156			20.4	27
cis-1,3-Dichloropropene	0.00500	ND	0.00485	0.00578	97.0	116	1	34.0-149			17.5	28
trans-1,3-Dichloropropene	0.00500	ND	0.00474	0.00560	94.8	112	1	32.0-149			16.6	28
Ethylbenzene	0.00500	ND	0.00513	0.00625	103	125	1	30.0-155			19.7	27
2-Hexanone	0.0250	ND	0.0273	0.0332	109	133	1	21.0-160			19.5	29
Iodomethane	0.0250	ND	0.0239	0.0289	95.6	116	1	10.0-160			18.9	40
2-Butanone (MEK)	0.0250	ND	0.0287	0.0347	115	139	1	10.0-160			18.9	32
Methylene Chloride	0.00500	ND	0.00500	0.00564	100	113	1	23.0-144			12.0	28
4-Methyl-2-pentanone (MIBK)	0.0250	ND	0.0297	0.0350	119	140	1	29.0-160			16.4	29
Styrene	0.00500	ND	0.00471	0.00587	94.2	117	1	33.0-155			21.9	28
1,1,1,2-Tetrachloroethane	0.00500	ND	0.00459	0.00562	91.8	112	1	36.0-151			20.2	29
1,1,2,2-Tetrachloroethane	0.00500	ND	0.00553	0.00647	111	129	1	33.0-150			15.7	28
Tetrachloroethene	0.00500	ND	0.00495	0.00606	99.0	121	1	10.0-160			20.2	27
Toluene	0.00500	ND	0.00525	0.00642	105	128	1	26.0-154			20.1	28
1,1,1-Trichloroethane	0.00500	ND	0.00465	0.00569	93.0	114	1	23.0-160			20.1	28
1,1,2-Trichloroethane	0.00500	ND	0.00505	0.00598	101	120	1	35.0-147			16.9	27
Trichloroethene	0.00500	ND	0.00482	0.00614	96.4	123	1	10.0-160			24.1	25
Trichlorofluoromethane	0.00500	ND	ND	0.00568	90.6	114	1	17.0-160			22.5	31
1,2,3-Trichloropropane	0.00500	ND	0.00528	0.00656	106	131	1	34.0-151			21.6	29
Vinyl acetate	0.0250	ND	0.0329	0.0402	132	161	1	12.0-160		J5	20.0	31
Vinyl chloride	0.00500	ND	0.00421	0.00544	84.2	109	1	10.0-160			25.5	27
Xylenes, Total	0.0150	ND	0.0152	0.0182	101	121	1	29.0-154			18.0	28
(S) Toluene-d8					98.4	96.8		80.0-120				
(S) 4-Bromofluorobenzene					92.8	92.8		77.0-126				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1396257-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1396257-03 09/01/21 23:52 • (MS) R3699232-4 09/02/21 01:34 • (MSD) R3699232-5 09/02/21 02:51

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 %
(S) 1,2-Dichloroethane-d4					98.6	97.9		70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3701634-3 09/07/21 18:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0113	0.0500
(S) Toluene-d8	110			80.0-120
(S) 4-Bromofluorobenzene	97.6			77.0-126
(S) 1,2-Dichloroethane-d4	102			70.0-130

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

(LCS) R3701634-1 09/07/21 17:49 • (LCSD) R3701634-2 09/07/21 18:09

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	0.0199	0.0202	79.6	80.8	19.0-160			1.50	27
(S) Toluene-d8				110	101	80.0-120				
(S) 4-Bromofluorobenzene				98.6	88.6	77.0-126				
(S) 1,2-Dichloroethane-d4				108	104	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3698582-1 08/30/21 17:24

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Ethylene Dibromide	U		0.0000536	0.0000200
1,2-Dibromo-3-Chloropropane	U		0.0000748	0.0000200

L1396038-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1396038-01 08/30/21 18:14 • (DUP) R3698582-3 08/30/21 18:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
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) R3698582-4 08/30/21 20:18 • (LCSD) R3698582-5 08/30/21 22:58

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Ethylene Dibromide	0.000250	0.000294	0.000297	118	119	60.0-140			1.02	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000260	0.000275	104	110	60.0-140			5.61	20

L1396050-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1396050-01 08/30/21 17:49 • (MS) R3698582-2 08/30/21 17:36

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	mg/l	mg/l	mg/l	%		%	
Ethylene Dibromide	0.000100	ND	0.000113	113	1	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000100	ND	0.000100	100	1	72.0-148	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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.

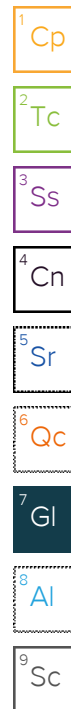
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

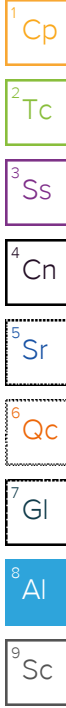
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122


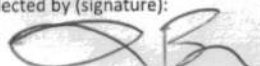
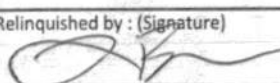
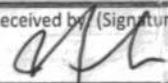
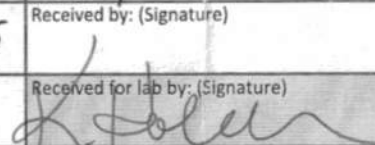
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	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	LA000356
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		Billing Information: Dr. Kevin Wolfe 117 Seaboard Ln. Suite E100 Franklin, TN 37067		Analysis / Container / Preservative		Chain of Custody Page ___ of ___		
117 Seaboard Ln. Suite E100 Franklin, TN 37067		Email To: pcampbell@cecinc.com		Pres Chk		 <small>12065 Lebanon Rd Mount Juliet, TN 37122 Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/tubfs/pas-standard-terms.pdf</small>		
Report to: Philip Campbell		City/State Collected: <u>Camden, TN</u>		Please Circle: PT MT CT ET		SDG # <u>U396038</u> C122		
Project Description: EWS Camden Class 2 Landfill		Client Project # 181-364		Lab Project # CEC-181364		T: _____ Acctnum: CEC Template: T133582 Prelogin: P868393 PM: 526 - Chris McCord PB: <u>BF 8/20/21</u> Shipped Via: Courier		
Phone: 615-333-7797		Site/Facility ID # CAMDEN, TN		P.O. #		Remarks _____ Sample # (lab only) _____		
Collected by (print): <u>Alex Black</u>		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Quote #		Date Results Needed _____ No. of Cntrs _____		
Collected by (signature): 		Immediately Packed on Ice N ___ Y <input checked="" type="checkbox"/>		Date Results Needed		**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		
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time			
IWC-L	<u>IN</u>	GW		<u>8/28/21</u>	<u>13:05</u>	11	X X X X X X X	
APWEL		GW				11	X 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*, CHLORIDE, BROMIDE, SULFATE, FLUORIDE Tot/Diss Metals=M6020AP1 + Al, Ca, Fe, K, Mg, Mn, Na, B(6010)				pH _____ Temp _____ Flow _____ Other _____		Sample Receipt Checklist COC Seal Present/Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N COC Signed/Accurate: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Bottles arrive intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Correct bottles used: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Sufficient volume sent: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If Applicable VOA Zero Headspace: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Preservation Correct/Checked: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N RAD Screen <0.5 mR/hr: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Relinquished by: (Signature) 		Date: <u>8/27/21</u> Time: <u>13:05</u>		Received by: (Signature) 		Trip Blank Received: Yes/No HCL MeOH TBR		
Relinquished by: (Signature) <u>QAM</u>		Date: <u>8-27-21</u> Time: <u>17:05</u>		Received by: (Signature) 		Temp: <u>13.0°C</u> Bottles Received: <u>9</u> <u>3.5 ± 0 = 3.5</u>		
Relinquished by: (Signature)		Date: _____ Time: _____		Received for lab by: (Signature)		Date: <u>8/27/21</u> Time: <u>17:05</u> Hold: _____ Condition: NCF / <input checked="" type="checkbox"/> OK		

8/27-NCF-L1396038 CEC TD

R5

Time estimate: oh Time spent: oh

Members

- Troy Dunlap (responsible)
- Christopher McCord

- 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
- Date/Time: 8/31/21 09:17
- PM initials: CM
- Client Contact: Philip Campbell

Comments

Troy Dunlap 27 August 2021 5:57 PM
 Did not receive Wetchem 250ml-nopres or the Dissolved metals 250ml-nopres container.

Christopher McCord 31 August 2021 9:18 AM
 Client notified.

Troy Dunlap 31 August 2021 11:23 AM
 Done.

8/27-NCF-L1396038 CEC TD

R5

Time estimate: oh Time spent: oh

Members

- Troy Dunlap (responsible)
- Christopher McCord

- 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
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- Client informed by Voicemail
- Date/Time: 8/31/21 09:17
- PM initials: CM
- Client Contact: Philip Campbell

Comments

- Troy Dunlap* 27 August 2021 5:57 PM

Did not receive Wetchem 250ml-nopres or the Dissolved metals 250ml-nopres container.
- Christopher McCord* 31 August 2021 9:18 AM

Client notified.
- Troy Dunlap* 31 August 2021 11:23 AM

Done.
- Christopher McCord* 31 August 2021 4:02 PM

Pour off 25ml from the ALK container for Anions.
- Troy Dunlap* 1 September 2021 8:18 AM

Checking to see if any volume is left.

Troy Duntap

50ml will be left after ALK. Added analysis.

1 September 2021 4:31 PM



GROUNDWATER MONITORING FIELD INFORMATION LOG

Civil & Environmental Consultants, Inc. 117 Seaboard Lane, Suite E100 Franklin, Tennessee 37667 - 800-783-2326 - www.cecinc.com

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-1
LOCATION	Camden, TN	TEMPERATURE & WEATHER	90s, Sunny
DATE & TIME	8/26/21 0950	EVENT FREQUENCY	Quarterly
PURGE METHOD	Peristaltic Pump	FIELD REPRESENTATIVE	A. Blank
TOTAL WELL DEPTH (feet)	30.5	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	21.15	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	7.35	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	5.5	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	23.15	0958	21.0	7.24	65.6	60.5	7.77	174.4	15.1
0.5	23.34	1002	17.2	4.58	48.9	41.4	2.76	223.2	545
1.0	23.45	1006	17.3	4.61	48.2	41.1	2.37	221.6	6.16
1.5	23.45	1010	17.3	4.82	56.2	47.9	1.98	197.6	12.2
1.75	23.55	1014	17.3	5.01	64.5	50.2	1.47	177.5	5.97
2.0	23.65	1018	16.9	5.04	73.0	61.7	1.15	172.3	3.42
2.5	23.77	1022	16.9	5.17	86.2	72.9	0.97	161.6	2.89
3.0	23.77	1026	17.1	5.28	96.6	81.8	0.93	154.2	3.80
3.5	23.70	1030	16.9	5.39	106.9	90.4	0.92	148.5	3.87
4.0	23.65	1034	16.9	5.45	117.0	96.0	0.88	145.0	4.14
4.5	23.65	1038	16.9	5.47	127.0	98.7	0.85	143.3	2.82
5.0	23.65	1042	16.9	5.51	139.7	101.4	0.81	143.7	2.09
5.5	23.65	1046	16.9		121.6	102.9	0.81	143.5	1.92

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
5.5	23.65	1050	16.9	5.51	121.6	102.2	0.81	143.5	1.92
Preservatives Used	See CEC			Sample Characteristics (Odor, Color)			Clear, pale smell		
Number of Containers	10			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	covered in weeds	Well Clear of Weeds/Accessible?	fair



GROUNDWATER MONITORING FIELD INFORMATION LOG

Civil & Environmental Consultants, Inc. 117 Seaboard Lane, Suite E100 Franklin, Tennessee 37067 - 800-783-2326 - www.cecinc.com

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-2
LOCATION	Camden, TN	TEMPERATURE & WEATHER	90s Sunny
DATE & TIME	8/26/21 0940	EVENT FREQUENCY	Quarterly
PURGE METHOD	NA, parameters only	FIELD REPRESENTATIVE	A. Black / A. Bailey
TOTAL WELL DEPTH (feet)	10	SAMPLING EQUIPMENT	Bailer
DEPTH TO WATER (feet)	8.15	IS SAMPLE EQUIPMENT DEDICATED?	No
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	1.85	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	-	EQUIPMENT BLANK COLLECTED?	N

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
-	8.15	0940	22.8	6.07	232.0	232.0	5.61	210.9	36.47
Preservatives Used	-			Sample Characteristics (Odor, Color)		2224	cloudy in odor		
Number of Containers	-			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	covered in weeds	Well Clear of Weeds/Accessible?	Yes



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-3
LOCATION	Camden, TN	TEMPERATURE & WEATHER	90s, Sunny
DATE & TIME	6/26/21 12:55	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	A. O'Leary
TOTAL WELL DEPTH (feet)	27	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	19.80	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	Y
WATER COLUMN (feet)	7.20	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	2.45 26	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	19.80	1246	21.5	5.60	265.8	248.8	0.04	183.7	99.0
0.25	21.69	1250	21.7	5.59	283.5	266.0	0.04	194.2	72.3
0.5	22.52	1254	21.8	5.36	323.6	304.5	0.04	186.0	61.9
0.75	22.38	1258	23.3	5.35	318.0	302.8	0.04	194.5	96.0
1.0	22.30	1302	23.8	5.35	310.7	303.2	0.03	193.0	29.8
1.25	22.15	1306	24.2	5.35	301.3	296.7	0.03	193.0	30.9
1.5	22.30	1310	22.9	5.35	293.0	281.3	0.04	194.9	12.7
1.75	22.32	1314	23.1	5.37	279.7	269.4	0.04	195.8	56.7
2.0	22.32	1318	23.2	5.37	280.1	270.2	0.04	195.6	72.1
2.1	22.32	1322	23.1	5.38	272.6	262.6	0.04	195.4	70.5
2.25	22.32	1326	24.1	5.39	268.2	263.6	0.03	194.8	67.0
2.35	22.32	1330	24.1	5.40	265.9	259.0	0.04	194.9	86.2
2.45	22.32	1334	24.1	5.43	253.9	249.8	0.03	193.9	51.1

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.6	22.32	1425	24.1	5.54	217.4	213.8	0.03	193.3	28.7
Preservatives Used	See Log			Sample Characteristics (Odor, Color)			Cloudy, no odor		
Number of Containers	12			Sampler Signature			<i>[Signature]</i>		

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	Yes
Lock Condition	Good	Fittings/Well Head Condition	Good
Pad/Casing Quality	Covered in Weeds	Well Clear of Weeds/Accessible?	lot of brush in way

64.0
Continued on back

MW-3

GLS Cardfill

8/26/21

Water Punged	DTU	Time	OC	pH	Sp. cond.	Cond.	DO	ORP	NTU
2.5	22.32	1338	24.0	5.43	252.3	248.3	0.03	194.0	190
2.6	22.32	1342	24.0	5.46	247.8	239.2	0.04	193.9	181
2.7	22.32	1346	23.7	5.46	239.6	233.2	0.04	193.9	19.4
2.8	22.32	1350	23.8	5.47	274.3	274.5	0.03	194.1	56.7
2.9	22.32	1354	27.4	5.48	230.9	223.7	0.04	194.3	44.2
2.0	22.32	1358	23.5	5.49	227.4	220.9	0.04	194.7	35.8
3.1	22.32	1402	24.1	5.50	224.0	220.2	0.03	195.3	30.2
3.2	22.32	1406	24.0	5.50	224.3	220.0	0.03	195.1	29.7
3.3	22.32	1410	24.1	5.52	221.2	217.0	0.03	194.8	23.8
3.4	22.32	1414	23.8	5.52	219.4	214.4	0.04	195.0	27.3
2.5	22.32	1418	24.3	5.53	217.7	215.0	0.03	195.5	28.3
3.6	22.32	1422	24.1	5.54	217.4	213.8	0.03	195.3	28.7



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-4
LOCATION	Camden, TN	TEMPERATURE & WEATHER	80s, Sunny
DATE & TIME	8/26/21 1155	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	A. Black
TOTAL WELL DEPTH (feet)	23.1	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	12.02	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	11.08	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	1.5	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	12.02	1208	17.7	5.76	88.7	75.8	7.68	188.6	2.71
0.5	12.15	1212	17.5	5.72	85.8	72.4	0.05	190.1	18.4
1.0	12.15	1216	17.5	5.70	85.0	72.8	0.05	191.1	3.52
1.5	12.15	1220	17.5	5.72	84.7	72.6	0.05	190.0	3.87

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.5	12.15	1225	17.5	5.72	84.7	72.6	0.05	190.0	3.87
Preservatives Used	Spec. CEC			Sample Characteristics (Odor, Color)			Clear, no odor		
Number of Containers	10			Sampler Signature					

WELL DATA

Number of Baffles	0	Well Cap Dedicated/In Place?	Yes
Lock Condition	Good	Fittings/Well Head Condition	Good
Pad/Casing Quality	located in grass	Well Clear of Weeds/Accessible?	False, free in way



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-5
LOCATION	Camden, TN	TEMPERATURE & WEATHER	90s, Sunny
DATE & TIME	8/26/21 1100	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	A. Black
TOTAL WELL DEPTH (feet)	33.85	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	10.11	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	23.74	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	3.5	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	10.11	1108	12.4	5.22	323.4	719.0	1.56	182.1	6.81
0.25	11.20	1112	12.0	5.23	350.4	704.5	1.05	196.8	29.7
1.25	11.19	1116	12.6	5.22	345.8	296.9	1.10	197.7	50.7
1.5	11.20	1120	12.6	5.23	346.7	297.7	1.04	196.3	29.1
2.0	11.20	1124	12.6	5.24	343.8	295.7	1.04	196.6	20.7
2.25	11.20	1128	12.5	5.24	347.3	293.2	1.05	196.9	16.0
3.25	11.20	1132	12.6	5.24	339.3	291.2	1.07	197.2	14.2
3.0	11.20	1136	12.6	5.25	336.3	288.6	1.08	197.5	11.9
3.5	11.20	1140	12.6	5.24	334.0	286.5	1.10	198.0	9.34

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.5	11.20	1145	12.6	5.24	334.0	286.5	1.10	198.0	9.34
Preservatives Used	5% C0C			Sample Characteristics (Odor, Color)			Clear, no odor		
Number of Containers	12			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	covered in weeds	Well Clear of Weeds/Accessible?	Fair



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	90% Sunny
DATE & TIME	8/26/2021 1230	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	32.50	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	7.05	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	25.45	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	2.25	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	7.05	1240	18.9	5.79	154.6	136.7	4.63	217.4	44.4
1.75	4.8	1250	18.3	5.50	162.5	141.6	4.02	223.0	43.2
1.75	10.3	1300	17.8	5.28	160.2	138.3	3.77	235.9	12.3
2.25	10.3	1310	17.8	5.17	159.2	137.6	3.66	242.2	7.75

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
2.25	10.30	1315	17.8	5.17	159.7	137.6	2.66	242.2	7.75
Preservatives Used	No coc			Sample Characteristics (Odor, Color)			Clear no odor		
Number of Containers	10			Sampler Signature			A. Baugh		

WELL DATA

Number of Baffles	concrete barrier	Well Cap Dedicated/In Place?	Yes
Lock Condition	fair	Fittings/Well Head Condition	fair
Pad/Casing Quality	fair	Well Clear of Weeds/Accessible?	Covered in weeds



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	90° Sunny
DATE & TIME	8/26/20 1105	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	27.50	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	11.71	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	15.79	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	3.5	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	11.71	1123	18.3	5.83	144.3	125.8	6.07	183.6	202
1.25	16.0	1133	17.4	5.29	155.8	132.9	5.08	218.2	94.5
1.75	14.4	1143	18.7	5.23	173.7	153.0	4.85	225.6	62.3
2.25	14.3	1153	18.6	5.21	170.7	149.8	4.92	230.4	21.0
3.0	14.3	1203	18.5	5.15	170.5	149.4	4.92	237.0	12.1
3.5	14.3	1213	18.4	5.09	171.7	150.0	4.86	241.5	8.78

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.5	11.71	1215	18.4	5.09	171.7	150.0	4.86	241.5	8.78
Preservatives Used	Seccoc			Sample Characteristics (Odor, Color)			Clear no odor		
Number of Containers	10			Sampler Signature			[Signature]		

WELL DATA

Number of Baffles	1 concrete barrier	Well Cap Dedicated/In Place?	Yes
Lock Condition	fair	Fittings/Well Head Condition	fair
Pad/Casing Quality	fair	Well Clear of Weeds/Accessible?	Covered in weeds



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	85 sunny
DATE & TIME	8/26/2021 940	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	28.00	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	10.15	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2.2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	17.85	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	
1.0	10.15	953	20.2	5.40	344.6	219.0	216.0	178	216.6	49.0
1.75	10.54	1003	18.9	4.93	505.1	269.2	1.01		235.4	21.89
1.25	11.6	1013	17.9	4.86	301.9	261.8	1.04		237.7	18.8
2.0	11.6	1023	17.5	4.84	300.2	258.7	1.06		231.2	13.8
2.5	11.6	1033	17.9	4.85	298.5	254.0	1.08		230.0	9.85
3.0	11.6	1043	18.0	4.86	292.0	252.5	1.10		229.1	3.24

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	10.15	1045	18.0	4.86	297.0	257.5	1.10		229.1	3.24
Preservatives Used	See COL			Sample Characteristics (Odor, Color)			Small air bubbles when purging			
Number of Containers	See COL			Sampler Signature			[Signature]			

WELL DATA

Number of Baffles	1 10" cap barrier	Well Cap Dedicated/In Place?	Yes
Lock Condition	fair	Fittings/Well Head Condition	fair
Pad/Casing Quality	casing separated at ground level	Well Clear of Weeds/Accessible?	covered in weeds



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	8/25/21 0800
Equipment and Model # (ex. YSI Pro Plus 556)	YSI Pro D05
Equipment Serial #	YSI Pro #1

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	4.01	125.9	160 to 180	N	3.98	Y
7	4/23	7.00	-47.1	+/-50	Y	7.02	Y
10	7/27	10.00	-210.7	-160 to -180	N	9.98	Y

Temperature Calibration Check		DO Calibration				
Cert. Thermometer Value (deg C)	Meter Value (deg C)	Actual Barometric Pressure	Barometric Pressure (mm Hg)	D.O. Value (% Saturated)	Unit reading (%)	% DO accepted?
25.0	24.6	764.3	744.9	98.0	98.0	Y

Specific Conductivity Calibration				ORP Calibration			
Sp. Conductivity Calibration Standard buffer solution	Buffer solution exp. date	Pre Cal Reading (umhos)	Post Cal Reading (umhos)	ORP Calibration (mV)	Buffer solution exp. date	Pre Cal Reading (mV)	Post Cal Reading (mV)
1413	4/22	1405	1413	240	12/21	243.4	239.0

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				



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	8/25/21 0800
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	7/23	4.00	156.7	160 to 180	N	4.02	Y
7	4/23	7.01	-16.6	+/-50	Y	7.05	Y
10	7/23	10.01	-187.4	-160 to -180	N	9.99	Y
Temperature Calibration Check		DO Calibration					
Cert. Thermometer Value (deg C)	Meter Value (deg C)	Actual Barometric Pressure	Barometric Pressure (mm Hg)	D.O. Value (% Saturated)	Unit reading (%)	% DO accepted?	
25.0	24.4	764.3	764.3	764.3	100.2	Y	
Specific Conductivity Calibration				88.8 ORP Calibration			
Sp. Conductivity Calibration Standard buffer solution	Buffer solution exp. date	Pre Cal Reading (umhos)	Post Cal Reading (umhos)	ORP Calibration (mV)	Buffer solution exp. date	Pre Cal Reading (mV)	Post Cal Reading (mV)
1413	4/22	1414	1415	240	12/21	233.2	233.4
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						



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.	Leachate (IWC)
LOCATION	Camden, TN	TEMPERATURE & WEATHER	90s, Sunny
DATE & TIME	8/26/2021	EVENT FREQUENCY	Quarterly
PURGE METHOD	Grab	FIELD REPRESENTATIVE	A. Baugh
TOTAL WELL DEPTH (feet)	NA	SAMPLING EQUIPMENT	Grab
DEPTH TO WATER (feet)	NA	IS SAMPLE EQUIPMENT DEDICATED?	No
CASING DIAMETER (inches)	NA	DUPLICATE COLLECTED?	No
WATER COLUMN (feet)	NA	FIELD BLANK COLLECTED?	No
PURGE VOLUME (gallons)	NA	EQUIPMENT BLANK COLLECTED?	No

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
NA	-		25.4	3.35	194520	196107	2.33	289.1	NA
Preservatives Used	See COC			Sample Characteristics (Odor, Color)			Clear, trash smell		
Number of Containers	See COC			Sampler Signature					

WELL DATA

Number of Baffles	NA	Well Cap Dedicated/In Place?	NA
Lock Condition	NA	Fittings/Well Head Condition	NA
Pad/Casing Quality	NA	Well Clear of Weeds/Accessible?	NA