

**2nd QUARTER 2021 GROUNDWATER
ASSESSMENT MONITORING REPORT
MAY 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**

**Prepared for:
THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND
CONSERVATION**

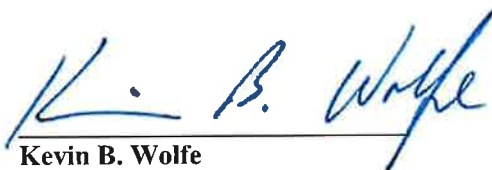
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EXECUTIVE SUMMARY

This report documents the 2nd quarter 2021 assessment-monitoring event, which was performed at the former Environmental Waste Solutions, LLC (EWS) Camden Class II Landfill on May 20, 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 May 2021 event (9.04 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 2nd quarter 2021 sampling event at the facility included the following sampling activities:

Groundwater samples were collected by CEC on May 20, 2021 from MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3. No leachate samples were collected from the "Industrial Waste Cell (IWC)" or the "Aluminum Processing Waste Cell (APWC)" during this sampling event since leachate was not currently being generated from the IWC or 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 2nd quarter 2021 groundwater analyses were prepared by Pace and reported to CEC on June 10th, 2021 for the groundwater 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 (0.00265 mg/l) and the duplicate sample collected from MW-3 (0.00274 mg/l) during this May 2021 sampling event, which were less than the respective EPA maximum contamination limit (MCL) of 0.005 mg/l. The cadmium detections at MW-3 during this event were the only cadmium detections above the Practical Quantification Limit (PQL) at any of the groundwater monitoring locations. Based on the Mann-Kendall trend test, no distinct statistically significant trend was identified for total cadmium concentrations at MW-3, when considering data from the past 21 sampling events 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), fluoride (MW-3), and sulfate (MW-3). The chloride, total cadmium, fluoride, 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:

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

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 21.43 feet below the top of casing at the up-gradient monitor well MW-1 to approximately 10.97 feet below the top of casing at monitor well MW-4. The potentiometric gradient calculated from groundwater elevation data collected on May 20th, 2021 is approximately 1.28%.

The potentiometric gradient is calculated according to the following formula:

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

$$\frac{(395.04') - (370.50')}{1,910'} * 100 = 1.28\%$$

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 May 20th, 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 May 2021 groundwater-sampling event, no leachate was being pumped from the IWC or APWC. Therefore, no IWC or APWC leachate samples were collected for analysis during this monitoring event. However, attempts will be made to sample the IWC and APWC leachate during the next scheduled pumping event. 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 June 10, 2021. Laboratory analytical testing of the field blank presented in the analytical report showed no indications of any constituents above the laboratory PQL. The results for the duplicate sample collected from MW-3 were similar to the original MW-3 sample results.

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 report from the May 2021 event indicated that the same analyte was found in the associated laboratory method blank for the detected concentrations of aluminum (MW-1, TMW-1, and TMW-2) as indicated by laboratory qualifier “B”. The associated method blank sample result indicated values for aluminum (0.0227 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 (indicated as laboratory qualifier “B”) may be falsely higher than the actual concentrations. The internal laboratory IQA and IQC results are included in the laboratory analytical reports located in **Appendix C – Laboratory Analytical Reports & Field Information Logs**.

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 2nd 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 (0.0131 mg/l) during this 2nd 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 May 2021 event, which is consistent with previous sampling events. For this site, the presence of arsenic

in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden since there is no immediate development up-gradient of MW-1.

Total Cadmium was detected below the MCL (0.005 mg/l) at MW-3 and the duplicate sample collected from MW-3 during this May 2021 monitoring event. A summary of cadmium concentrations (total cadmium and dissolved cadmium) and turbidity values 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 and Turbidity Measurements			
Date	Total Cadmium (mg/l)	Cadmium, Dissolved (mg/l)	Turbidity (NTU)
5/20/2021	0.00265	NA	12.5
3/2/2021	0.00249	NA	5.38
12/8/2020	0.00906	0.00787	10.8
11/17/2020	0.00816	NA	14.0
8/26/2020	0.00242	NA	6.66
6/2/2020	0.00278	NA	5.38
2/27/2020	0.00214	NA	7.63
11/20/2019	0.00157	NA	2.11
9/6/2019	0.0088	NA	2.98
6/4/2019	0.0292	0.0297	2.98
3/5/2019	0.0117	0.0133	6.27
12/4/2018	0.144	0.139	4.77
9/27/2018	0.204	0.204	1.05
9/12/2018	0.297	0.320	1.12
6/19/2018	0.0312	0.0292	4.90
3/22/2018	0.00671	0.00637	24.3
12/14/2017	0.00659	0.00733	23.0
9/28/2017	0.00926	0.0102	18.9
8/8/2017	0.0113	NA	16.6
6/8/2017	0.0286	NA	34.8
11/10/2016	0.00177	NA	64.5
5/9/2016	<0.001	NA	8.39

NA-Not Analyzed

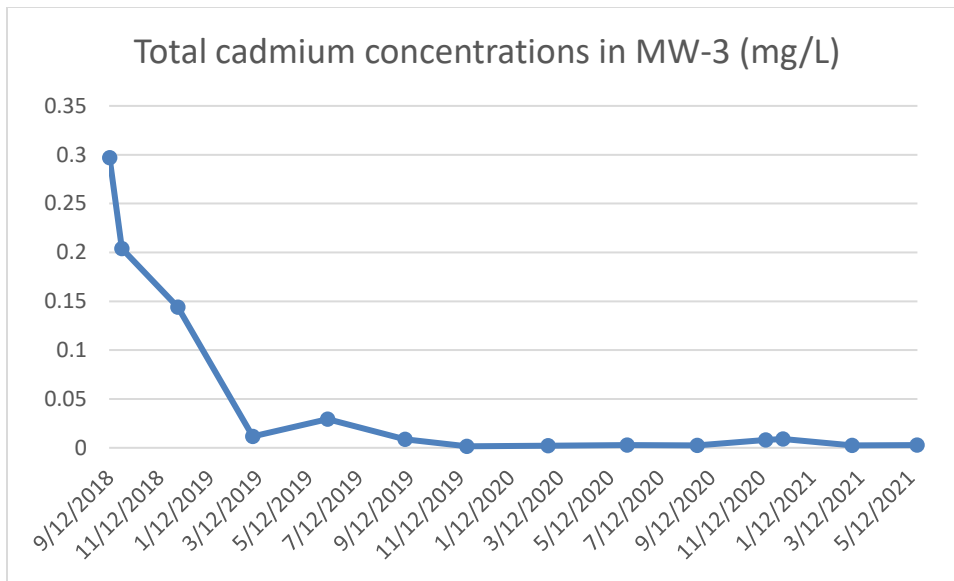


Figure – Cadmium Concentrations in MW-3

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 this May 2021 event. Although the cadmium concentrations during the previous November 2020 event were above the MCL, these concentrations remain significantly lower than the concentrations observed in 2018. TDEC and CEC will continue to carefully monitor the total cadmium concentrations at MW-3 during future events.

Total Cobalt was detected in up-gradient well MW-1 (0.0407 mg/l). Cobalt was not detected in any down-gradient wells during this May 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 May 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-5 (0.0078 mg/l) and TMW-1 (0.00253 mg/l) which were not above the MCL of 0.1 mg/l for chromium.

Total Copper was detected in the duplicate sample collected from MW-3 (0.00565 mg/l), MW-5 (0.00601 mg/l), TMW-1 (0.00658 mg/l), and TMW-3 (0.00508 mg/l) which were not above the MCL of 1.3 mg/l for copper.

Total Mercury was detected in up-gradient well MW-1 (0.00136 mg/l) during this May 2021 monitoring event, 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 May 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 May 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, MW-5, and TMW-2; **iron** in up-gradient well MW-1 and down-gradient well MW-4; and **manganese** in up-gradient well MW-1 and down-gradient wells MW-3 and MW-5. **Chloride, sulfate, and nickel** 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 (0.454 mg/l), MW-5 (0.273 mg/l), and TMW-2 (0.222 mg/l), during this May 2021 sampling event were above the 2DWS (0.2 mg/l). During the previous August 2020 event, total aluminum was not detected above the PQL (<0.1 mg/l) in MW-3, MW-5, or TMW-2. Total aluminum was also detected in upgradient well MW-1 (0.17 mg/l) and down-gradient well TMW-1 (0.139 mg/l), but both were below the 2DWS (0.2 mg/l). However, the associated method blank sample result for MW-1, TMW-1, and TMW-2 indicated values for aluminum (0.0227 mg/l), as indicated by laboratory qualifier “B”. Since the same constituent concentrations were found in the method blank at for MW-1, TMW-1, and TMW-2, the reported concentrations at these wells may be falsely higher than the actual concentrations. Aluminum was not detected above the PQL (<0.1 mg/l) at MW-4 or TMW-3 during this May 2021 event.

The **Chloride** concentrations reported at MW-1 (2.15 mg/l), MW-3 (9.04 mg/l), MW-4 (8.58 mg/l), MW-5 (73.4 mg/l), TMW-1 (27.9 mg/l), TMW-2 (35.6 mg/l), and TMW-3 (63.1 mg/l) during this May 2021 event were below the 2DWS for chloride concentrations (250 mg/l). The chloride concentrations for this May 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 MW-3 (0.243 mg/l) during this May 2021 sampling event, which was well below the 2DWS for fluoride (2 mg/l).

Total Iron was detected above the 2DWS (0.3 mg/l) in up-gradient well MW-1 (11.3 mg/l) and down-gradient well MW-4 (0.922 mg/l) during this May 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 May 2021 event at wells MW-3 (0.321 mg/l), MW-5 (0.397 mg/l), TMW-1 (0.157 mg/l), TMW-2 (0.189 mg/l) and TMW-3 (0.259 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 (0.808 mg/l) and down-gradient wells MW-3 (0.361 mg/l), and MW-5 (0.241 mg/l) during the May 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 May 2021 event, total manganese was also detected below 2DWS (0.05 mg/l) but above the laboratory PQL (<0.005 mg/l) in wells MW-4 (0.0212 mg/l), TMW-1 (0.0112 mg/l), and TMW-3 (0.0120 mg/l).

Total Nickel was detected in up-gradient well MW-1 (0.0064 mg/l) and down-gradient wells MW-3 (0.00366 mg/l), MW-5 (0.00636 mg/l), and TMW-1 (0.00223 mg/l) during the May 2021 sampling event, and these values were not above the MCL value 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 (29.7mg/l) during this May 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 in MW-5 (12.1mg/l) during this May 2021 event and was 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 May 2021 event (4.37 mg/l) is lower than the previous March 2021 (5.21 mg/l) and November 2020 (6.86 mg/l) events. 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 May 2021 event in MW-1 (2.41 mg/l), MW-4 (2.94 mg/l), MW-5 (11.7 mg/l), TMW-1 (3.85 mg/l), TMW-2 (4.95 mg/l), and TMW-3 (7.37 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. Five (5) QC qualifier codes (B, J, J6, Q, and V) were indicated during the laboratory analysis of groundwater samples collected during the May 2021 event. Specific information concerning each laboratory QC qualifier code can be found on page 51 of 54 in the May 20, 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 mercury 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, fluoride, nickel, 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, fluoride, nickel, and sulfate background data are not normally distributed, non-parametric inter-well prediction limit analysis was conducted for the background data from up-gradient well MW-1 compared to down-gradient monitoring wells (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3). Additional statistical procedures performed included Mann-Kendall trend analyses. Although the Mann-Kendall trend analyses are not used to determine SSIs relative to background, they provide a non-parametric intra-well statistical procedure to identify statistical trends (increasing, decreasing, or no trend) in data at a single well over a given period of time.

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

5.2 STATISTICAL RESULTS

No statistically significant increases (SSIs) were identified in up-gradient well MW-1 during this event. When considering data since the November 10, 2016 sampling event, statistically significant trends in data from MW-1 were observed using the Mann-Kendall trend analyses at the 95% confidence level. Trend analyses for MW-1 revealed statistically significant upward trends in aluminum and mercury concentrations. However trend analysis for MW-1 revealed downward trends in arsenic and nickel concentrations. There were no distinct statistically significant trends in concentrations for the detected barium, chloride, and cobalt 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, fluoride at MW-3, and sulfate at MW-3. When considering data since the November 10, 2016 sampling event, statistically significant trends in data were observed using the Mann-Kendall trend analyses at the 95% confidence level. Trend analyses revealed a statistically significant upward trend in barium at MW-4, MW-5, and TMW-3; chloride at MW-4, MW-5, TMW-1, TMW-2, and TMW-3; 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 during this May 2021 sampling event was below the MCL for the second consecutive sampling event. Previously, 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, no distinct statistically significant trend was identified by Mann-Kendall for total cadmium concentrations at MW-3 when considering data from the past 21 sampling events since November 10, 2016.

The chloride concentrations observed at MW-3 (9.04 mg/l), MW-4 (8.58 mg/l), MW-5 (73.4mg/l), TMW-1 (27.9 mg/l), TMW-2 (35.6 mg/l), and TMW-3 (63.1mg/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 past 18 sampling 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-5 (0.0078 mg/l), and TMW-1 (0.00253 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-5 and TMW-1 since November 2016, the data did not show an upward or downward trend in chromium concentrations at MW-5 using the Mann-Kendall trend analysis at the 95% confidence level.

A SSI for the fluoride concentrations at MW-3 was identified during this sampling event. The fluoride concentration at MW-3 (0.243 mg/l) was less than the MCL (4.0 mg/l) during this event. Although fluoride was not detected above the laboratory PQL (<0.15 mg/l) during the previous March 2021 event, the fluoride concentration at MW-3 is consistent with previous data from June

2017 to December 2020. In addition, no distinct statistically significant trend was identified by Mann-Kendall for fluoride concentrations at MW-3 when considering data from the past 18 sampling events since November 10, 2016.

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 (29.7mg/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 (12.1 mg/l) during this May 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. 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), fluoride (MW-3), and sulfate (MW-3).
- Trend analyses revealed a statistically significant upward trend in barium at MW-4, MW-5, and TMW-3; chloride at MW-4, MW-5, TMW-1, TMW-2, and TMW-3; 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. During this monitoring event, the total cadmium detection at MW-3 was less than the MCL for the second consecutive sampling event. 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. TDEC and CEC expect that the total cadmium concentrations observed at MW-3 will continue to decrease since landfill closure activities have been completed. TDEC and CEC will continue to carefully monitor the total cadmium concentrations at MW-3 during future events.
- 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.
- Although the fluoride concentration reported at MW-3 was indicated as an SSI using all available data since 2008, the concentration remains well below the MCL of 4 mg/l and also below the 2DWS of 2 mg/l. In addition, the fluoride concentrations at MW-3 did not exhibit a statistically significant increasing or decreasing trend when considering data from MW-3 since November 10, 2016.
- No VOCs were detected above their respective laboratory PQL in any of the groundwater monitoring wells during the monitoring event.

The third quarter 2021 assessment-monitoring event is tentatively scheduled for August 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 third quarter 2021 assessment-monitoring event.

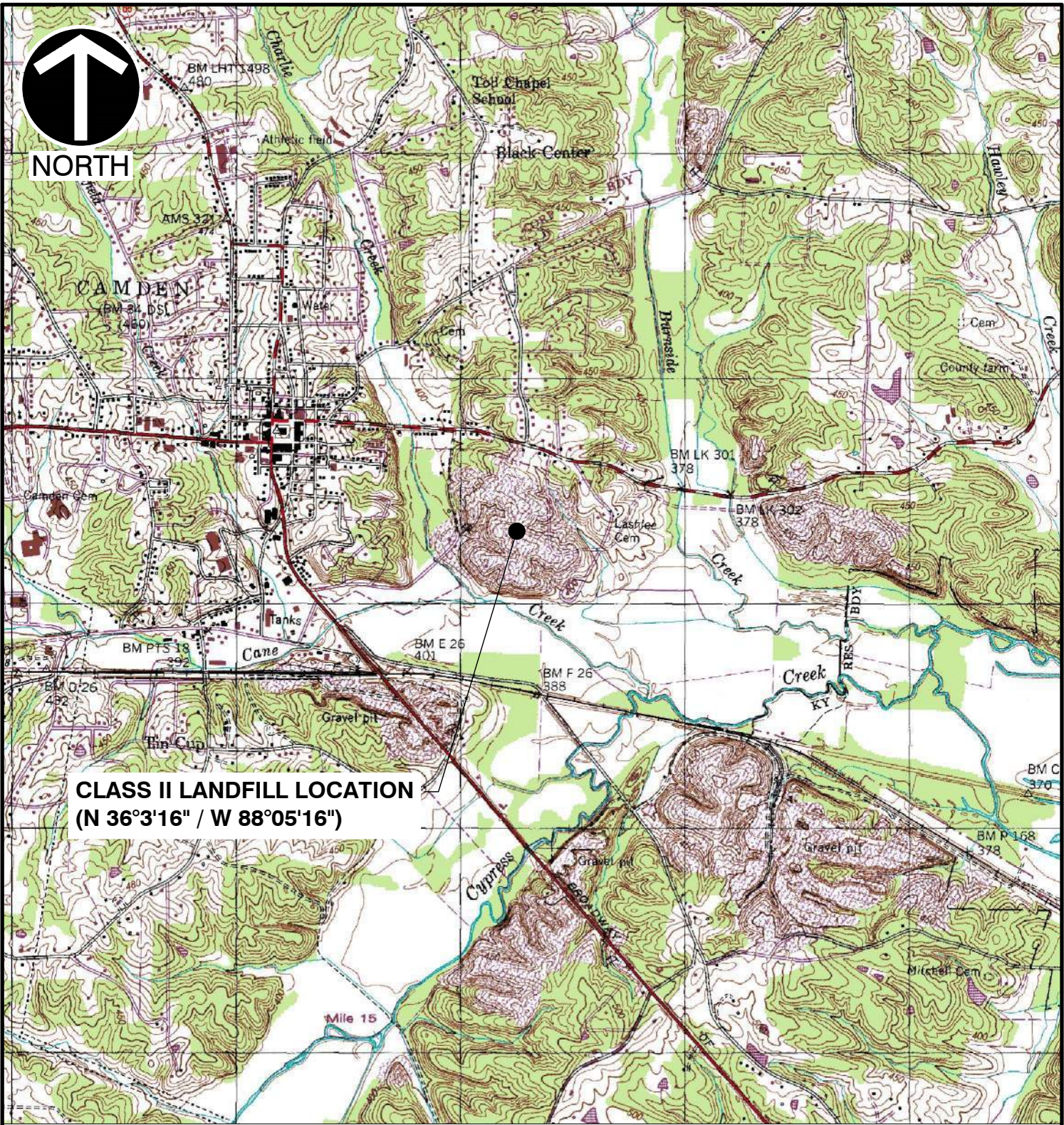
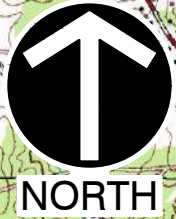
Since the former EWS Class II Landfill site remains in assessment monitoring, a private water use survey update is required annually. An annual water use survey update for the former EWS Class II Landfill site was completed by CEC in November 2020, and no new wells or springs were identified within the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

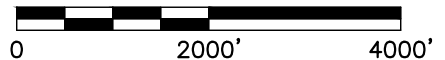


CLASS II LANDFILL LOCATION
(N 36°3'16" / W 88°05'16")

REFERENCE

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

SCALE IN FEET



* HAND SIGNATURE ON FILE



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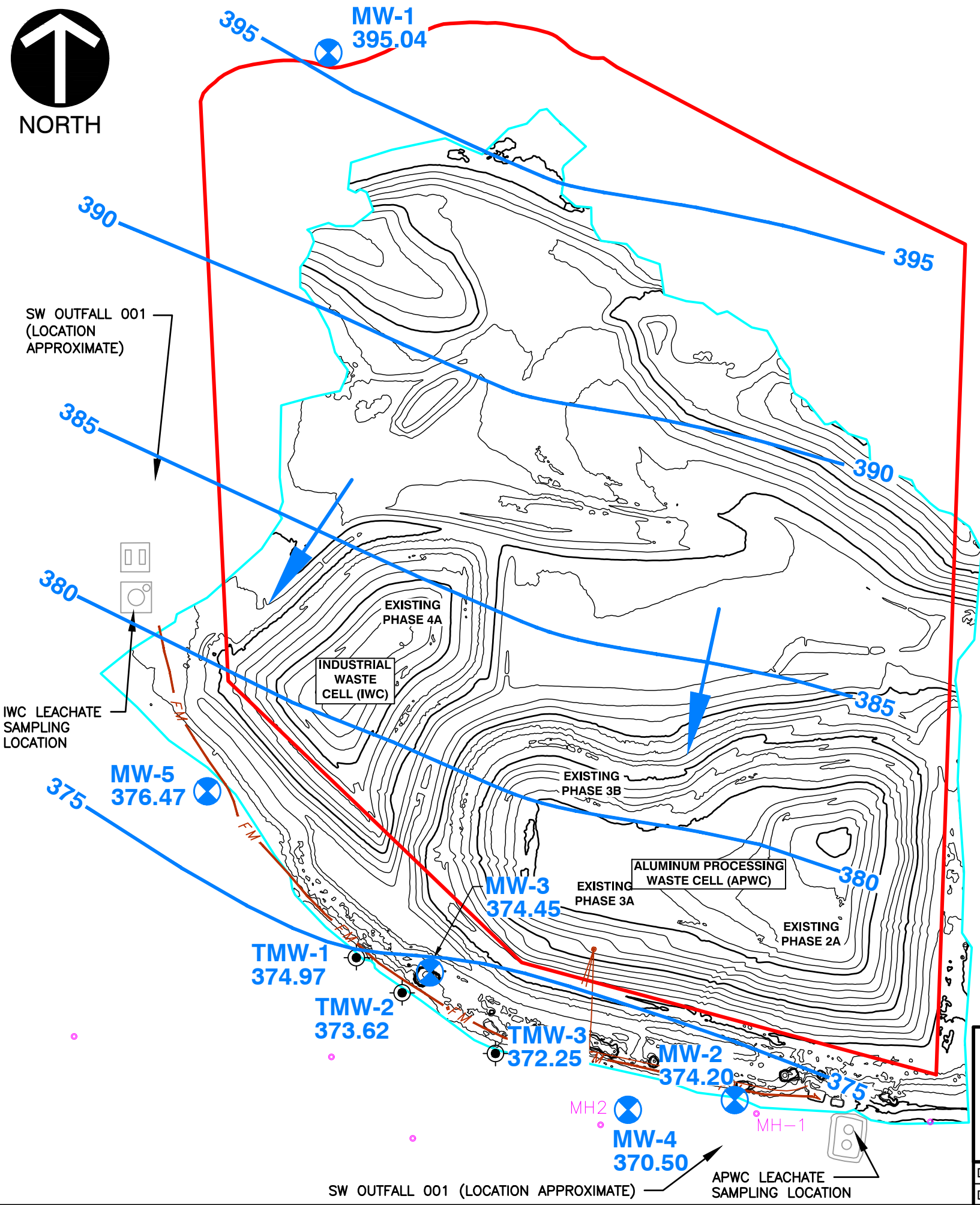
FORMER EWS SITE
CLASS II CAMDEN LANDFILL
CAMDEN, TENNESSEE

SITE LOCATION MAP 2Q2021

DRAWN BY:	AAB	CHECKED BY:	PC	APPROVED BY:	KBW*	FIGURE NO.:	1
DATE:	JUNE 2021	DWG SCALE:	1"=2000'	PROJECT NO:	181-364		

P:\2018\181-364\CADD\DWG\181-364_FIGURE 1 - SITE LOCATION MAP.dwg[LAYOUT1] LS:(3/8/2021 - abaugh) - LP: 6/7/2021 9:21 AM

P:\2018\181-364\CADD\DWG\181-364_GROUNDWATER MAP MAY 2021.DWG(FIG 2 (2))\LS:(PCAMPBELL - 7/19/2021_4:50:30_PM - LP: 7/19/2021_4:50:30_PM



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	LEACHATE FORCE MAIN

NOTE:
Hydraulic gradient calculation between MW-1 and MW-4 locations.

$$i = \frac{395.04' \text{ (MW-1)} - 370.50' \text{ (MW-4)}}{1,910'} = 0.0128 \text{ ft/ft}$$

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

 Civil & Environmental Consultants, Inc. 117 Seaboard Lane · Suite E-100 · Franklin, TN 37067 615-333-7797 · 800-763-2326 www.cecinc.com		FORMER ENVIRONMENTAL WASTE SOLUTIONS CAMDEN CLASS II LANDFILL CAMDEN, TENNESSEE	
		MAY 2021 POTENTIOMETRIC SURFACE MAP	
DRAWN BY: AAB	CHECKED BY: PC	APPROVED BY: *KW	FIGURE NO.: 2
DATE: JUNE 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 - 2nd 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	5/20/2021	11:10	416.47	385.97	0.17	1.5	21.43	395.04	16.7	72.1	85.8	5.75	1.02	89.4	8.81
MW-2*	5/20/2021	NS	380.35	367.70	0.17	1.1	6.15	374.20	18.5	57.9	66.1	6.22	3.46	377.7	7.57
MW-3	5/20/2021	14:35	392.90	365.10	0.17	1.6	18.45	374.45	16.1	130.0	156.6	6.01	0.64	133.1	12.5
MW-4	5/20/2021	13:15	381.47	358.37	0.17	2.1	10.97	370.50	15.7	63.9	77.7	5.99	6.48	135.2	4.58
MW-5	5/20/2021	12:25	385.25	351.40	0.17	4.3	8.78	376.47	16.6	276.9	330.2	5.32	0.88	149.5	9.79
TMW-1	5/20/2021	13:30	381.19	348.99	0.085	1.1	6.22	374.97	15.7	50.7	61.8	5.67	4.28	392.3	8.14
TMW-2	5/20/2021	12:00	384.27	356.77	0.085	0.7	10.65	373.62	16.7	52.8	62.8	5.65	5.11	351.6	8.83
TMW-3	5/20/2021	9:50	381.37	353.37	0.085	0.8	9.12	372.25	15.6	61.5	75.0	5.52	1.15	238.0	7.04
**Leachate (IWC-L)	5/20/2021	NS	NA	NA	NA	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
**Leachate (APWC-L)	5/20/2021	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 May 20, 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 - 2nd 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	
		5/20/2021	Qualifier	5/20/2021	Qualifier	5/20/2021	Qualifier	5/20/2021	Qualifier	5/20/2021	Qualifier	5/20/2021	Qualifier	5/20/2021	Qualifier	5/20/2021	Qualifier	5/20/2021	Qualifier	5/20/2021	Qualifier	5/20/2021	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	-	18.4		49.0		49.3		26.4		91.1		50.0		53.8		87.2		NS*		NS*		<2.50	
Alkalinity	-	36.4		25.8		26.9		21.7		<20.0		<20.0		<20.0		<20.0		NS*		NS*		<20.0	
Ammonia Nitrogen	-	<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		<0.250	J6	<0.250		NS*		NS*		<0.250	
COD	-	<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		NS*		NS*		<20.0	
Boron	-	<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		NS*		NS*		<0.200	
Bromide	-	<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		NS*		NS*		<1.00	
Chloride	250 ²	2.15		9.04		9.08		8.58		73.4		27.9		35.6		63.1		NS*		NS*		<1.00	
Fluoride	2 ²	<0.150		0.243		0.241		<0.150		<0.150		<0.150		<0.150		<0.150		NS*		NS*		<0.150	
Nitrate	10 ¹	<0.100		<0.100		<0.100	Q	0.704		1.14		1.58		0.751		5.54		NS*		NS*		<0.100	
Sulfate	250 ²	<5.00		29.7		29.8		<5.00		12.1		<5.00		<5.00		<5.00		NS*		NS*		<5.00	
Aluminum	0.2 ²	0.17	B	0.454		0.446		<0.100		0.273		0.139	B	0.222	B	<0.100		NS*		NS*		<0.100	
Antimony	0.006	<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		NS*		NS*		<0.00400	
Arsenic	0.01	0.0131		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NS*		NS*		<0.00200	
Barium	2	0.0177		0.0483		0.0467		0.00898		0.0551		0.0151		0.0305		0.0442		NS*		NS*		<0.0200	
Beryllium	0.004	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NS*		NS*		<0.00200	
Cadmium	0.005	<0.00100		0.00265		0.00274		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		NS*		NS*		<0.00100	
Calcium	-	3.38		12.4		12.6		5.70		17.2		13.7		13.4		22.8		NS*		NS*		<1.00	
Chromium	0.1	<0.00200		<0.00200		<0.00200		<0.00200		0.0078		0.00253		<0.00200		<0.00200		NS*		NS*		<0.00200	
Cobalt	0.006 ³	0.0407		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NS*		NS*		<0.00200	
Copper	1.3	<0.00500		<0.00500		0.00565		<0.00500		0.00601		0.00658		<0.00500		0.00508		NS*		NS*		<0.00500	
Iron	0.3 ²	11.3		0.321		0.334		0.922		0.397		0.157		0.189		0.259		NS*		NS*		<0.100	
Lead	0.015	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NS*		NS*		<0.00200	
Magnesium	-	2.41		4.37		4.30		2.94		11.7		3.85		4.95		7.37		NS*		NS*		<1.00	
Manganese	0.05 ²	0.808		0.361		0.353		0.0212		0.241		0.0112		<0.00500		0.012		NS*		NS*		<0.00500	
Nickel	0.10 ¹	0.0064		0.00366		0.00389		<0.00200		0.00636		0.00223		<0.00200		<0.00200		NS*		NS*		<0.00200	
Potassium	-	<2.00		3.88		3.87		<2.00		<2.00		<2.00		<2.00		<2.00		NS*		NS*		<2.00	
Selenium	0.05	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NS*		NS*		<0.00200	
Silver	0.10 ²	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NS*		NS*		<0.00200	
Sodium	-	2.76		5.92		5.91		3.50		18.7		4.07		5.22		13.9		NS*		NS*		<2.00	
Thallium	0.002	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NS*		NS*		<0.00200	
Vanadium	-	<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		NS*		NS*		<0.00500	
Zinc	5 ²	<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		NS*		NS*		<0.0250	
Mercury	0.002	0.00136		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		NS*		NS*		<0.000200	

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. Leachate levels were minimal during the groundwater sampling event and no leachate samples were collected for analysis.

Bold text indicates laboratory analytical detections above the practical quantitation level

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

J6: The sample matrix interfered with the ability to make any accurate determination; spike value is low

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 - 2nd Quarter 2021

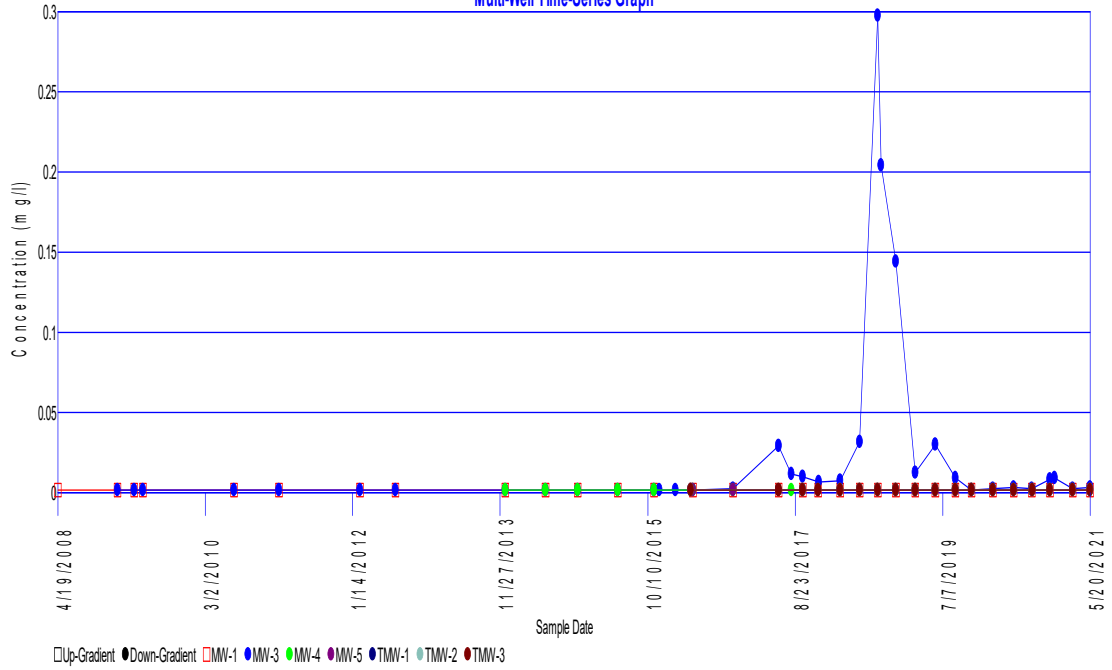
Intra-Well Statistical Summary (Upgradient Background Well MW-1)							
Constituent	Well	% Non Detects	Normality	Intra-well NPPL	Intra-well PPL	SSI	Mann-Kendall Trend Analysis ¹
Aluminum	MW-1	63.64	non-parametric	Pass	--	No	Upward Trend
Arsenic	MW-1	0.00	non-parametric	Pass	--	No	Downward Trend
Barium	MW-1	9.09	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	33.33	non-parametric	Pass	--	No	Downward Trend
Mercury	MW-1	30.30	non-parametric	Pass	--	No	Upward 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	63.64	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	9.09	non-parametric	Pass	--	No	Downward Trend
	MW-4		non-parametric	Pass	--	No	Upward Trend
	MW-5		non-parametric	Pass	--	No	Upward Trend
	TMW-1		non-parametric	Pass	--	No	No Trend
	TMW-2		non-parametric	Pass	--	No	No Trend
	TMW-3		non-parametric	Pass	--	No	Upward Trend
Total 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-5	93.94	non-parametric	Pass	--	No	No Trend
	TMW-1		non-parametric	Pass	--	No	No Trend
Copper	MW-5	81.82	non-parametric	Pass	--	No	No Trend
	TMW-1		non-parametric	Pass	--	No	No Trend
	TMW-3		non-parametric	Pass	--	No	No Trend
Fluoride	MW-3	95.65	non-parametric	Fail	--	Yes	No Trend
Nickel	MW-3	33.33	non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend
	TMW-1		non-parametric	Pass	--	No	No Trend
Sulfate	MW-3	61.29	non-parametric	Fail	--	Yes	No Trend
	MW-5		non-parametric	Pass	--	No	Upward Trend

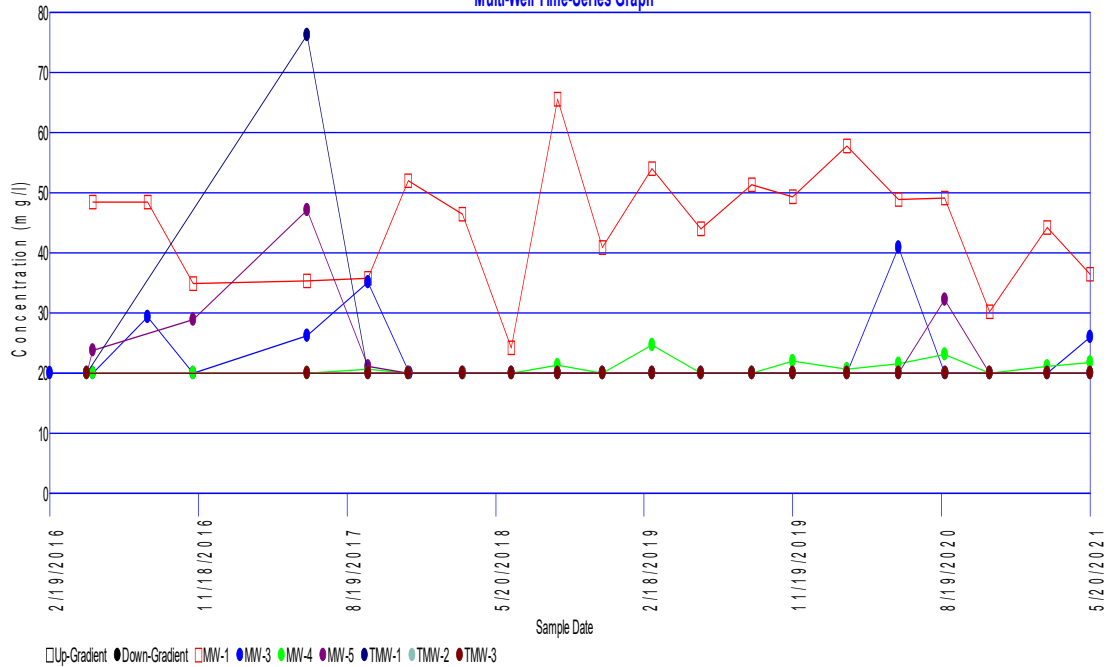
¹ Mann-Kendall Trend Analysis was completed using recent data since the November 10, 2016 sampling event.

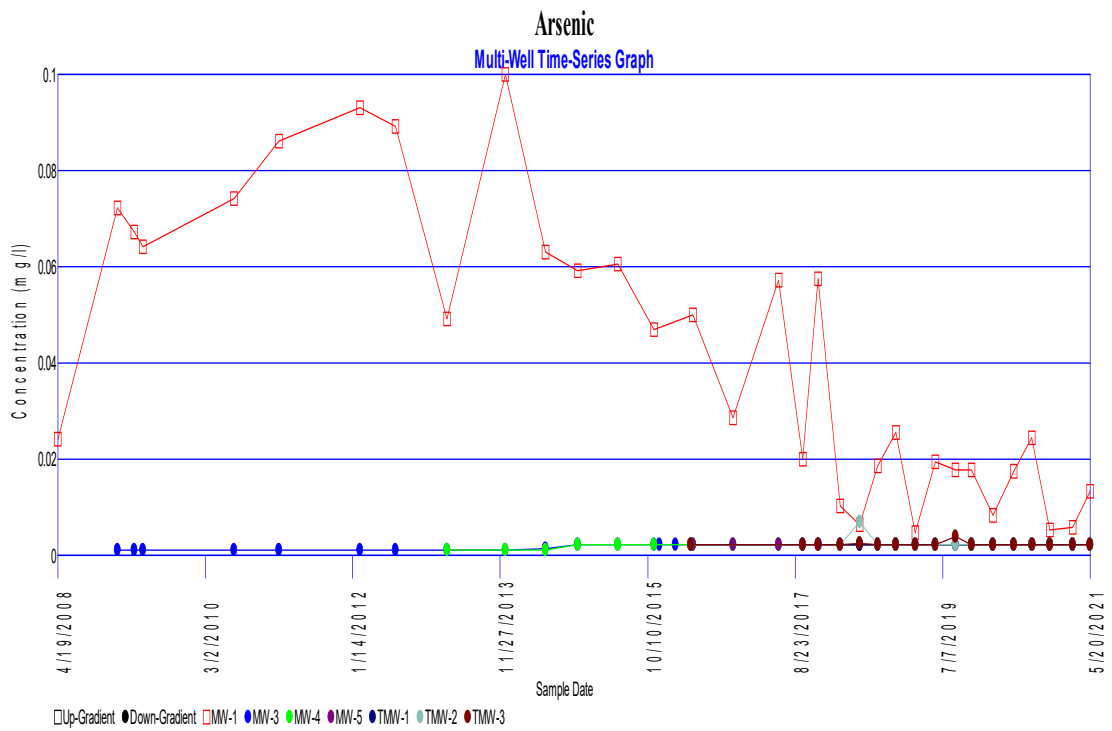
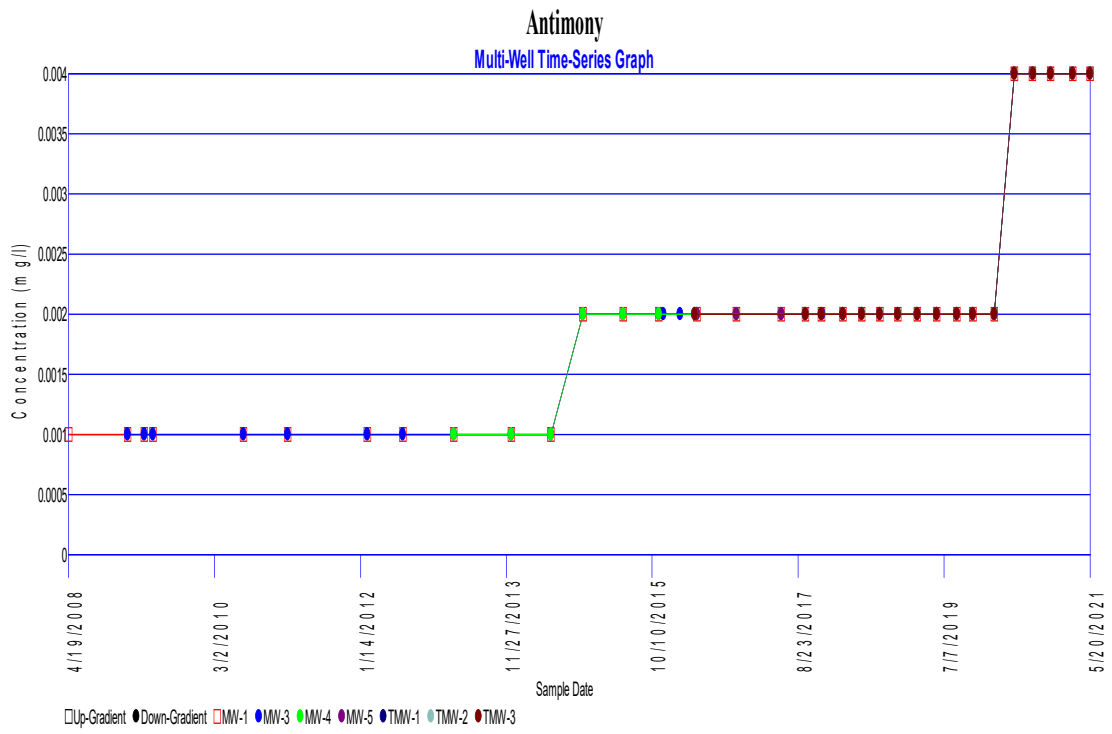
APPENDIX B
STATISTICAL EVALUATIONS & TIME SERIES PLOTS

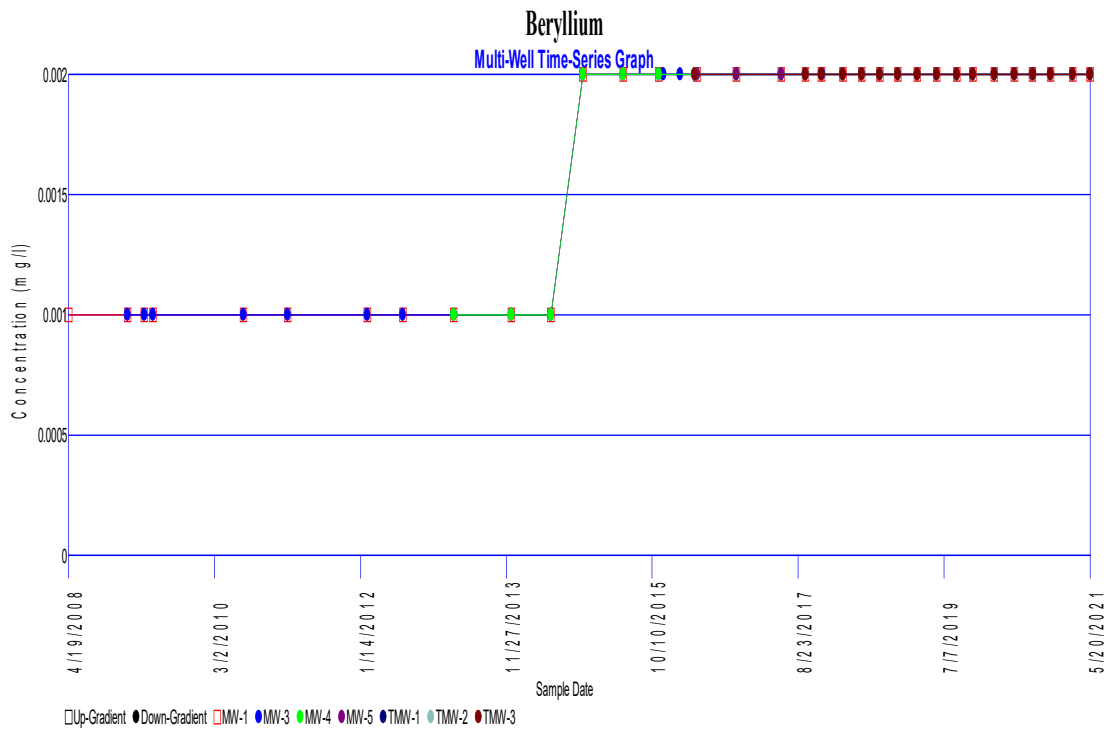
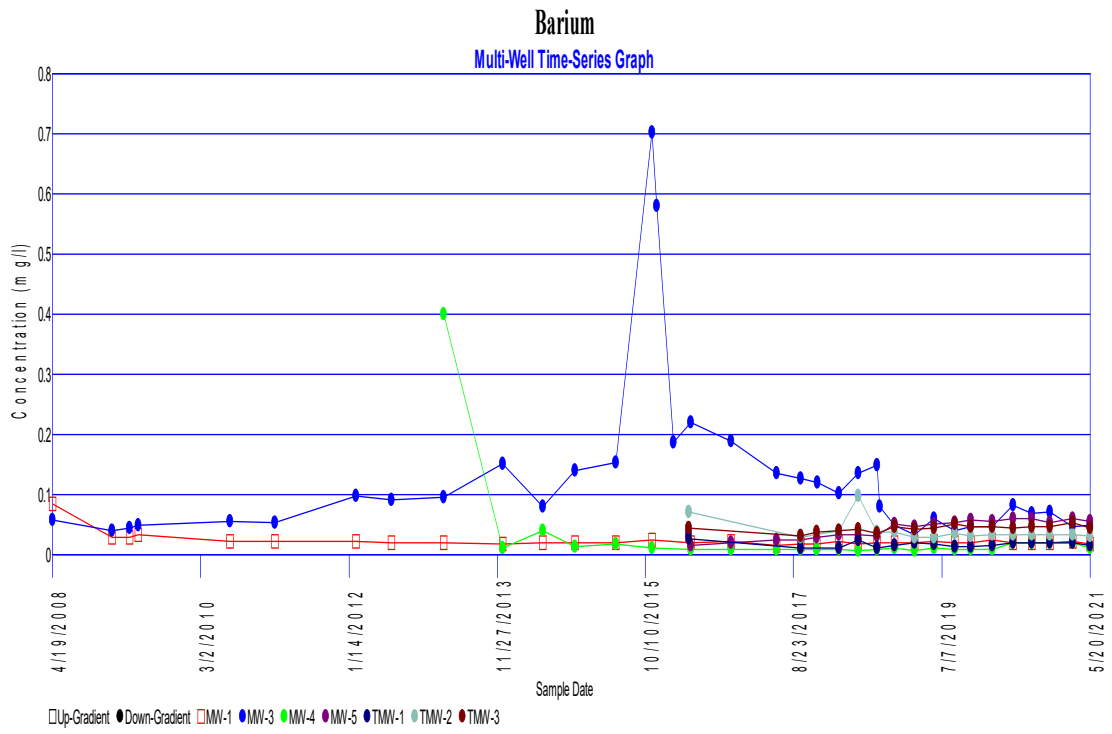
Total Cadmium Multi-Well Time-Series Graph

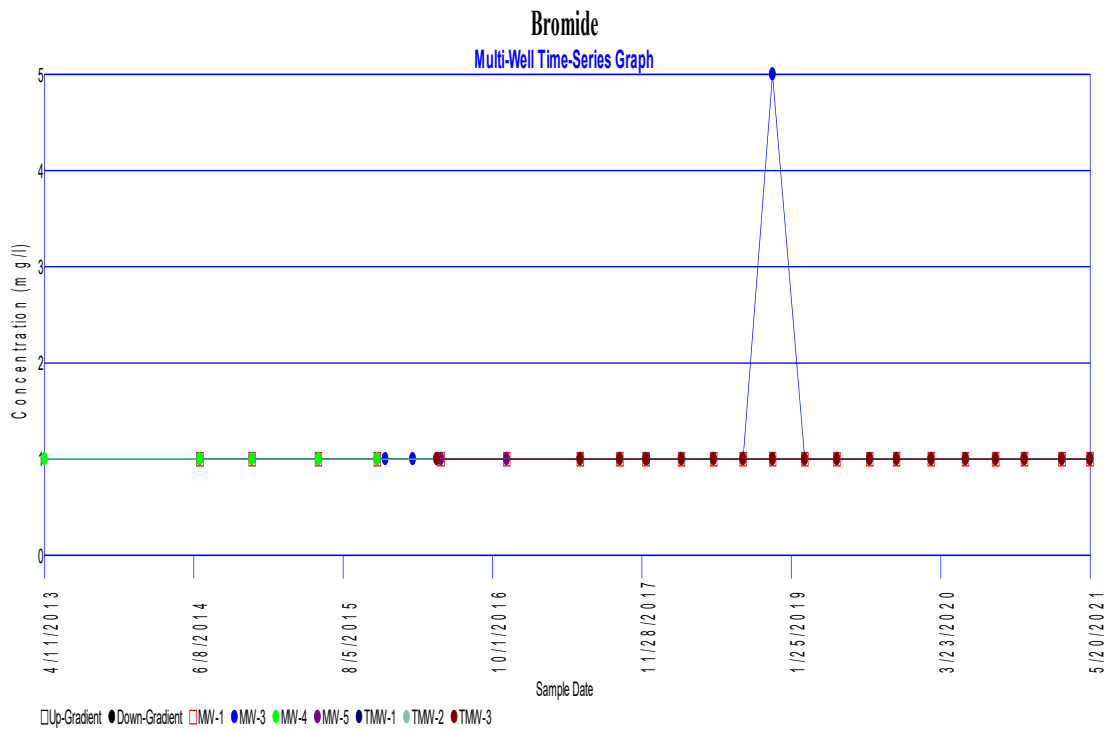
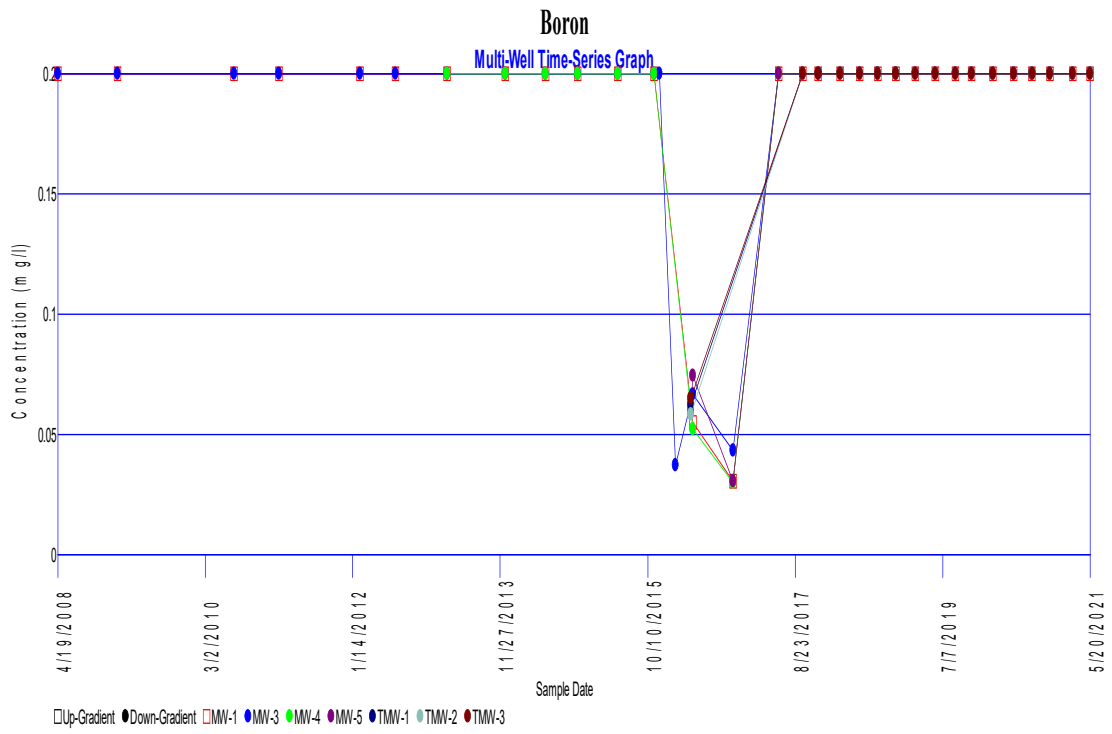


Alkalinity Multi-Well Time-Series Graph

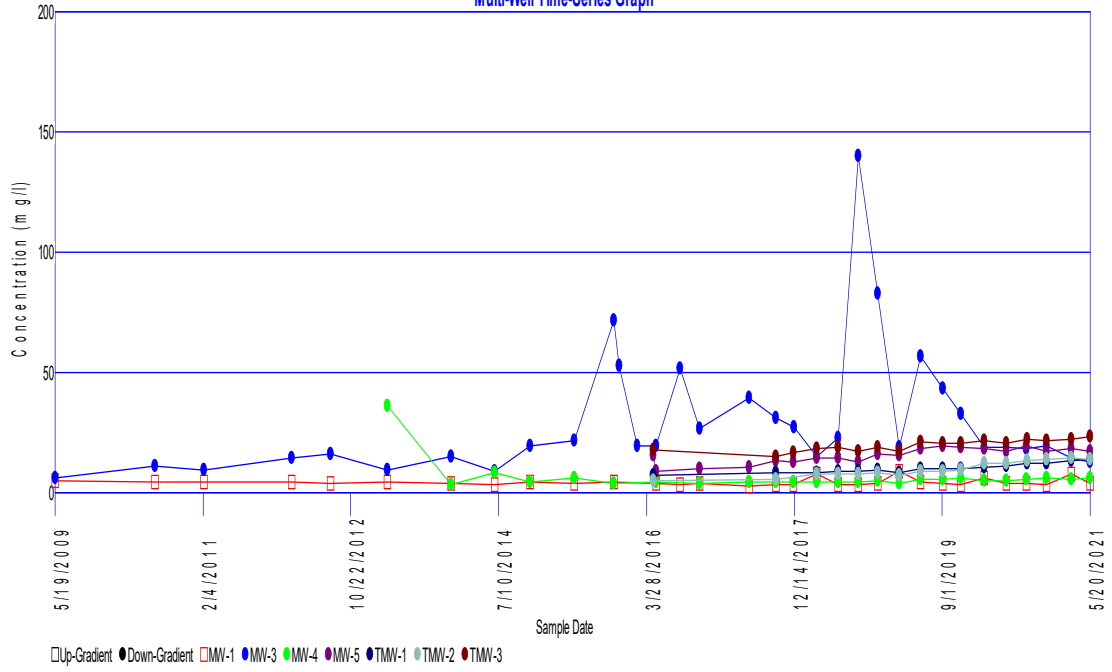




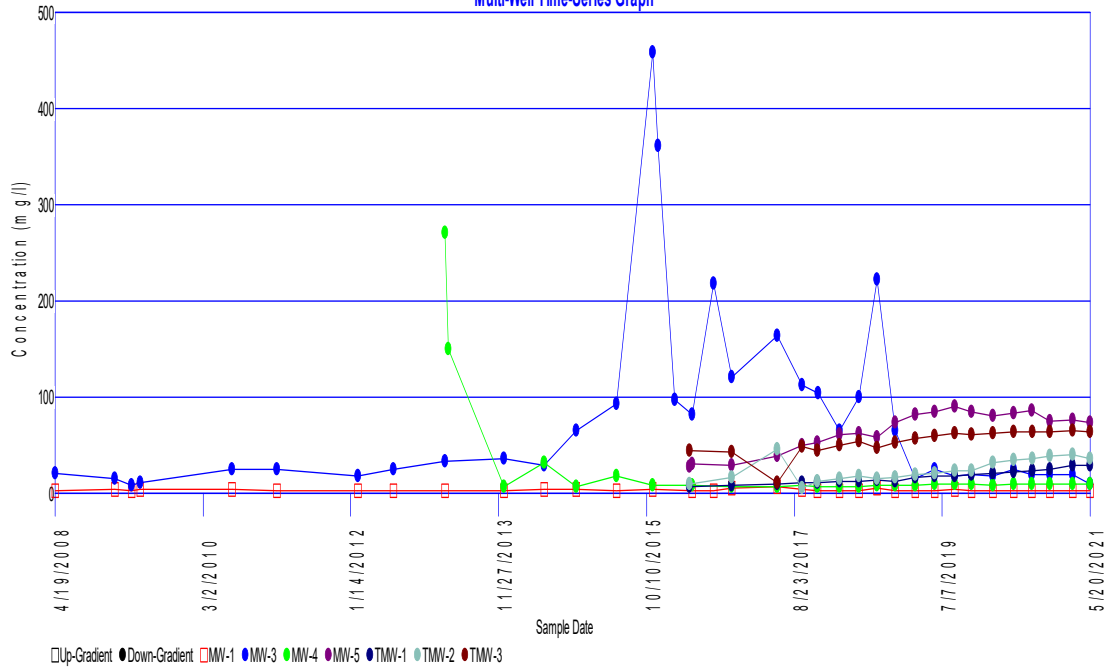




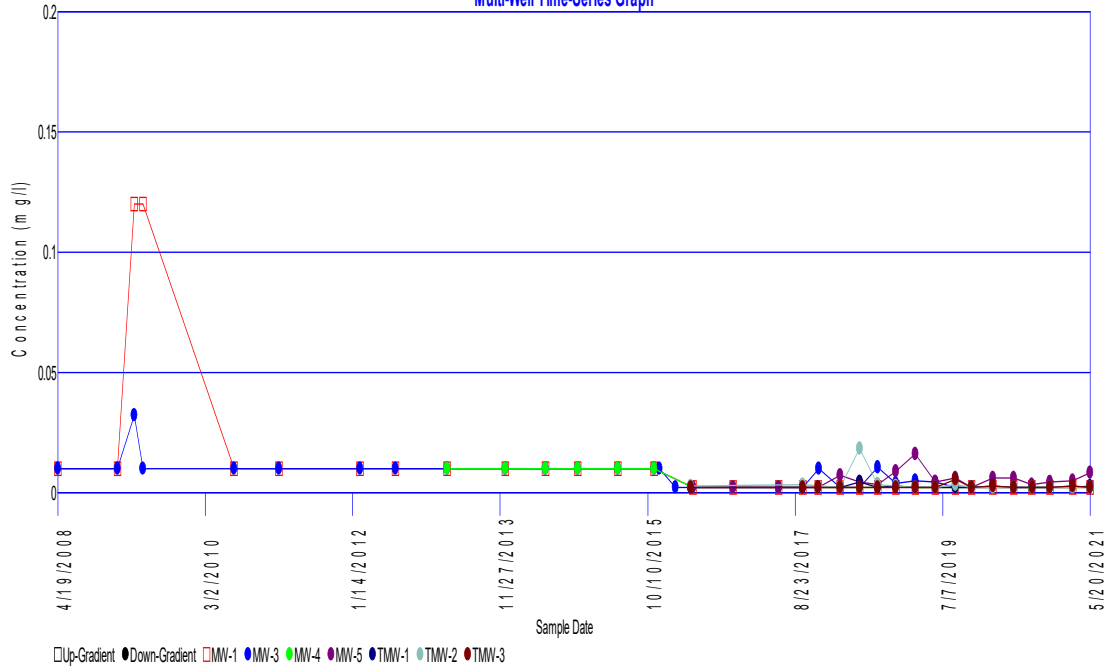
Calcium Multi-Well Time-Series Graph



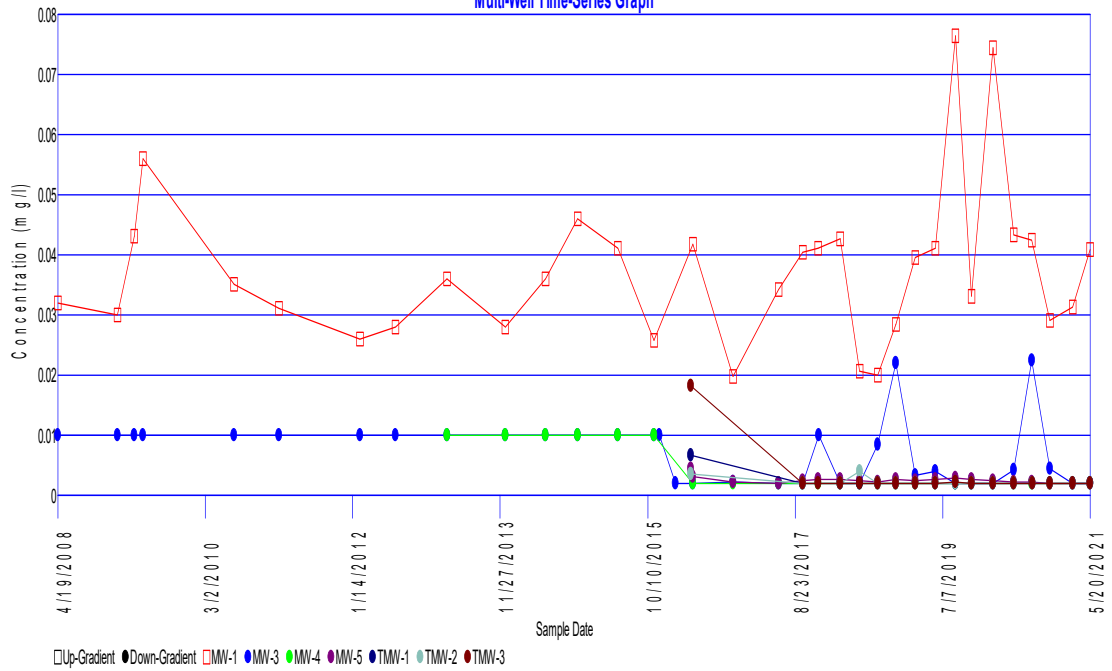
Chloride Multi-Well Time-Series Graph

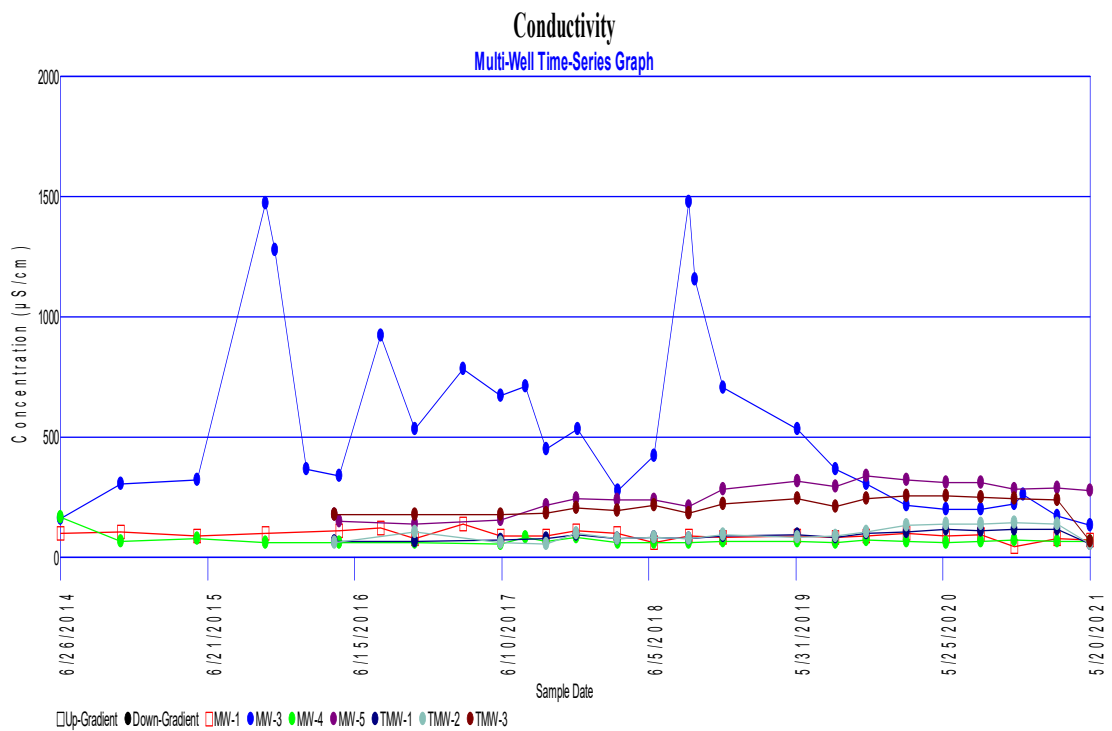
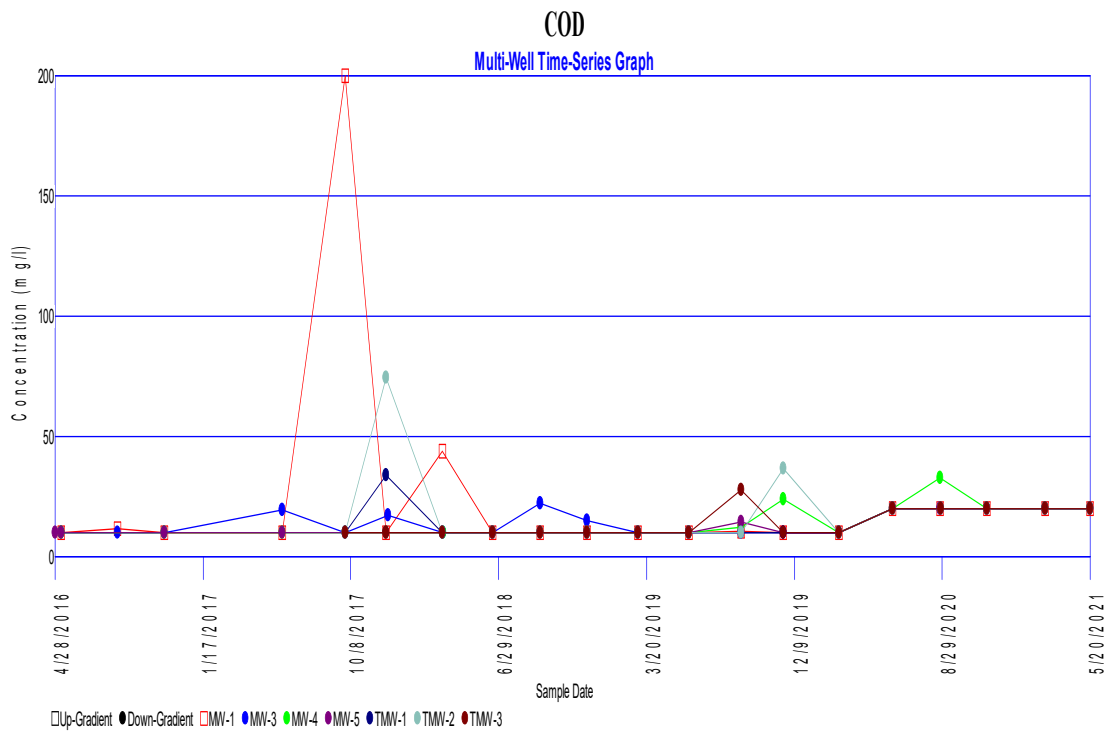


Chromium Multi-Well Time-Series Graph

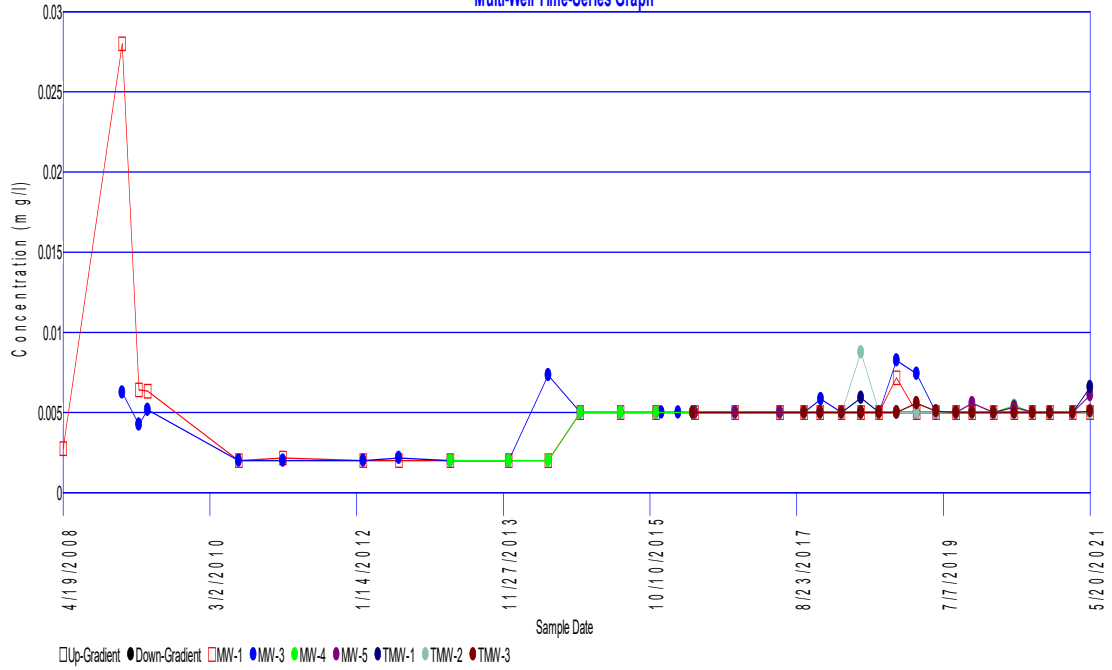


Cobalt Multi-Well Time-Series Graph

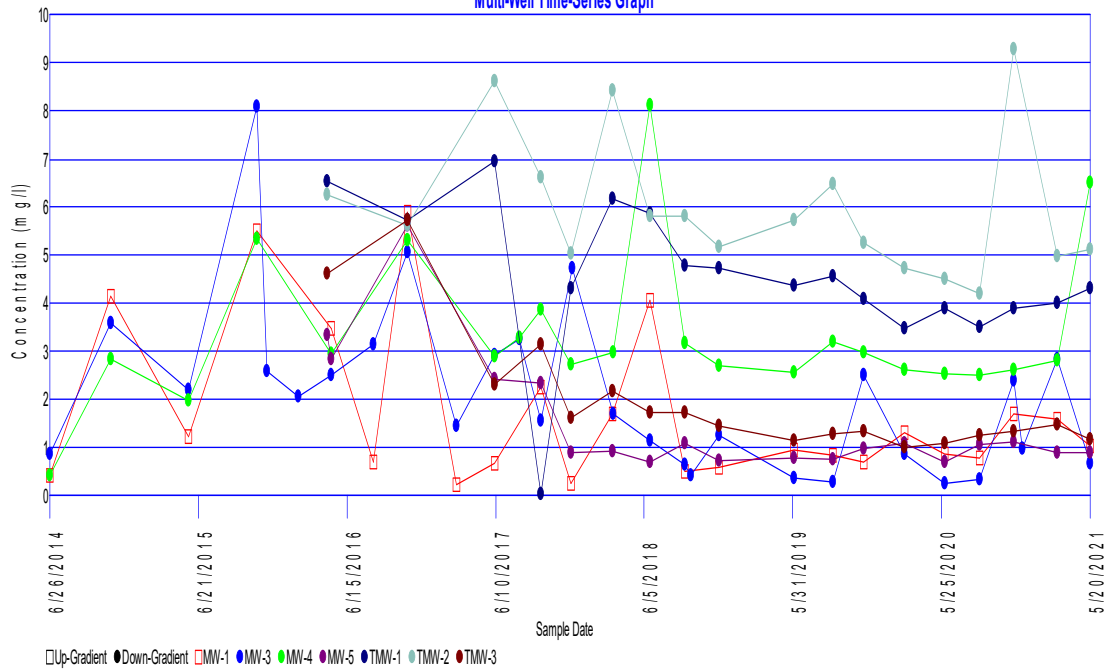




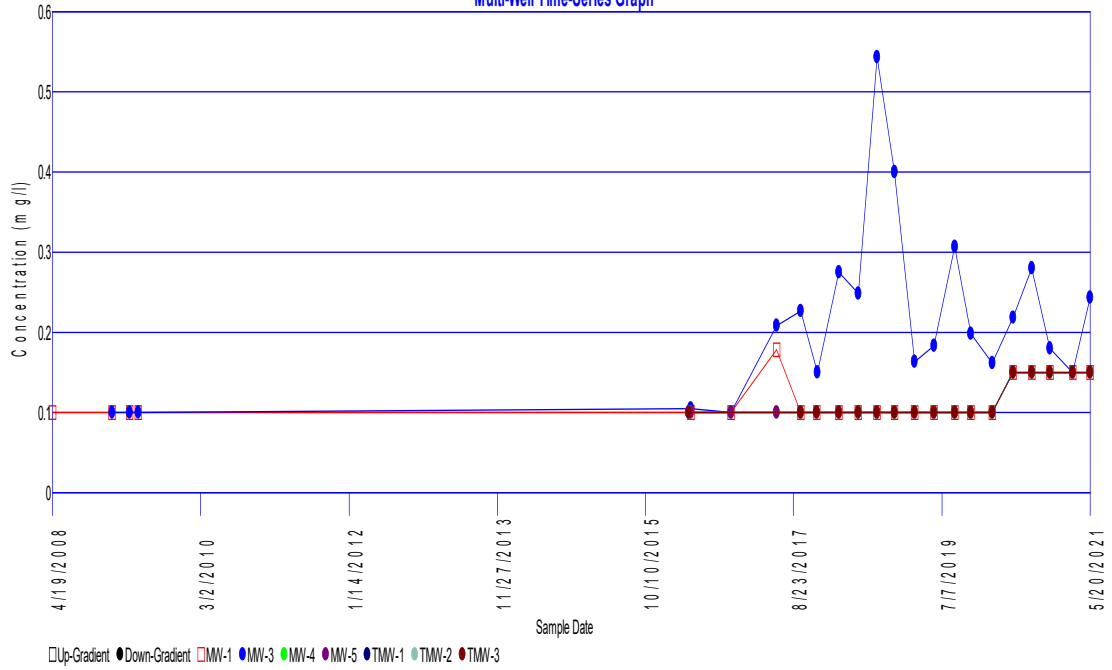
Copper Multi-Well Time-Series Graph



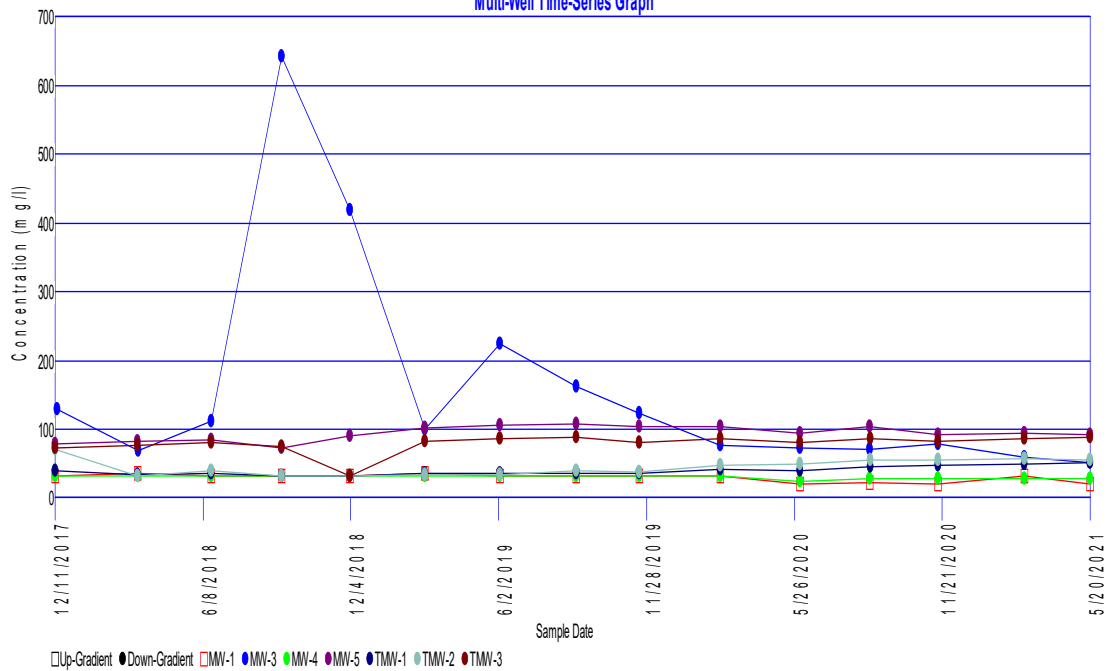
Dissolved Oxygen Multi-Well Time-Series Graph



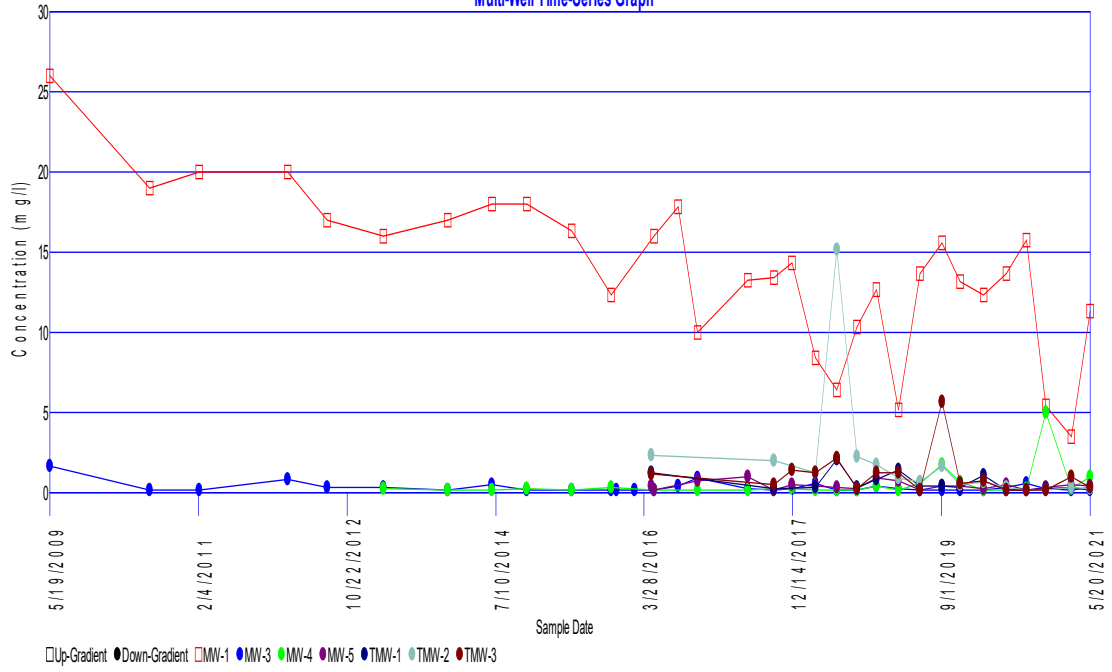
Fluoride Multi-Well Time-Series Graph



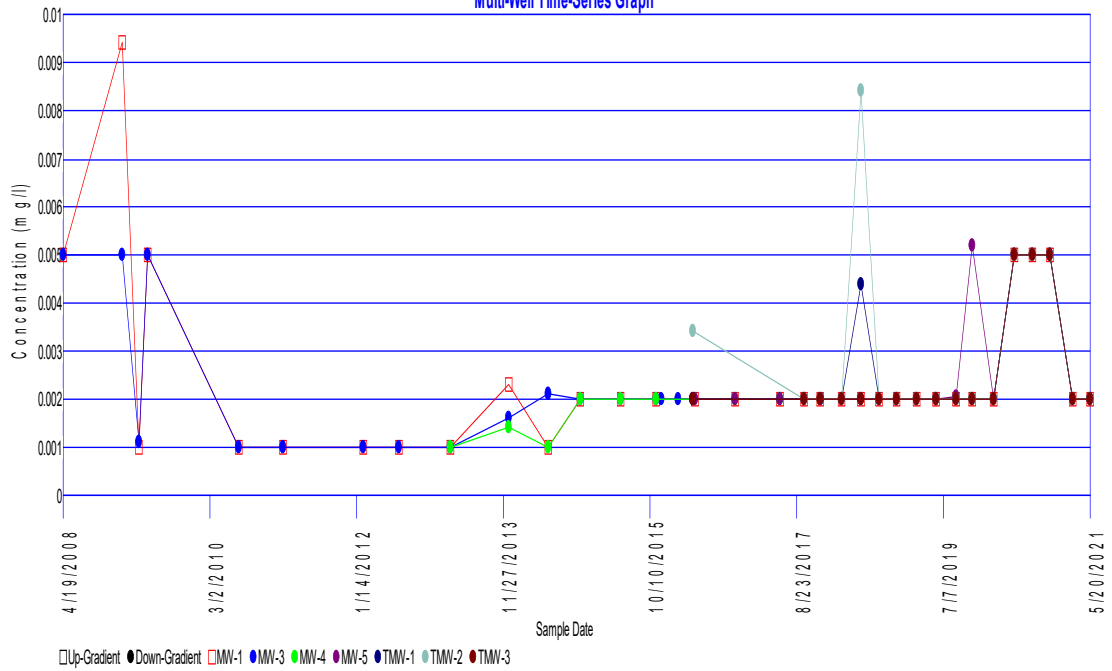
Hardness Multi-Well Time-Series Graph



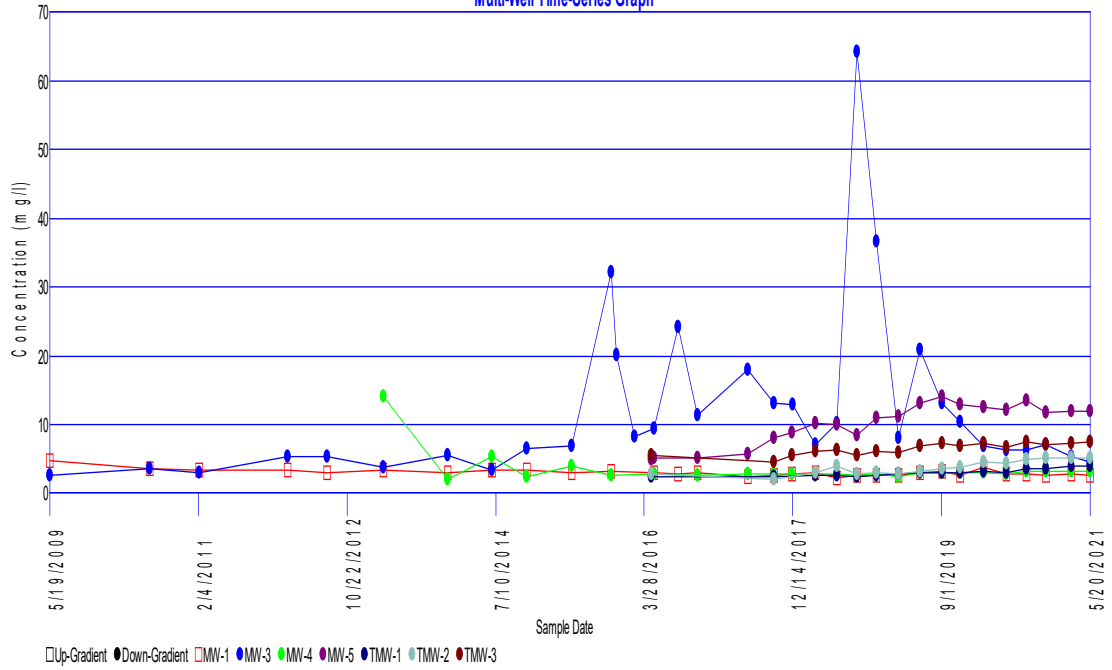
Iron Multi-Well Time-Series Graph



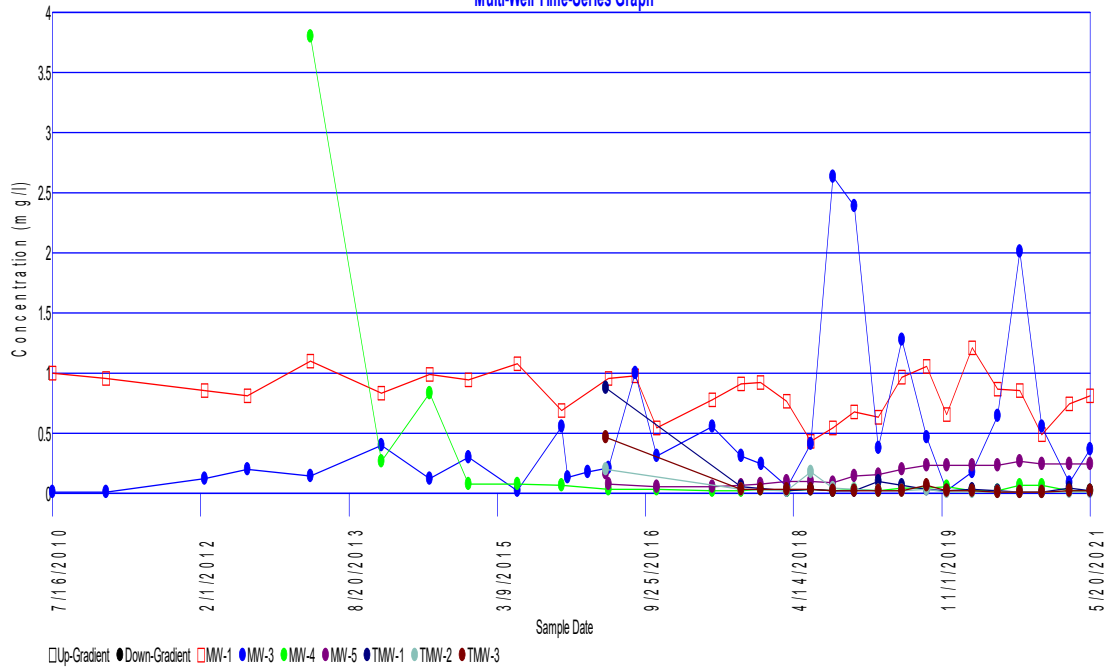
Lead Multi-Well Time-Series Graph



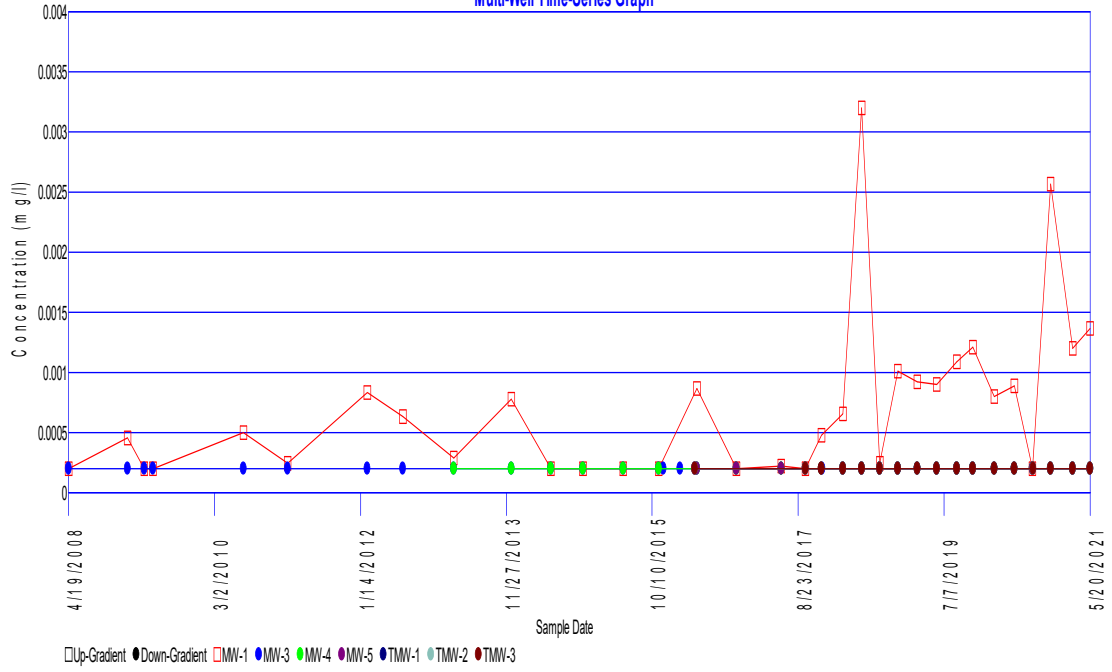
Magnesium Multi-Well Time-Series Graph



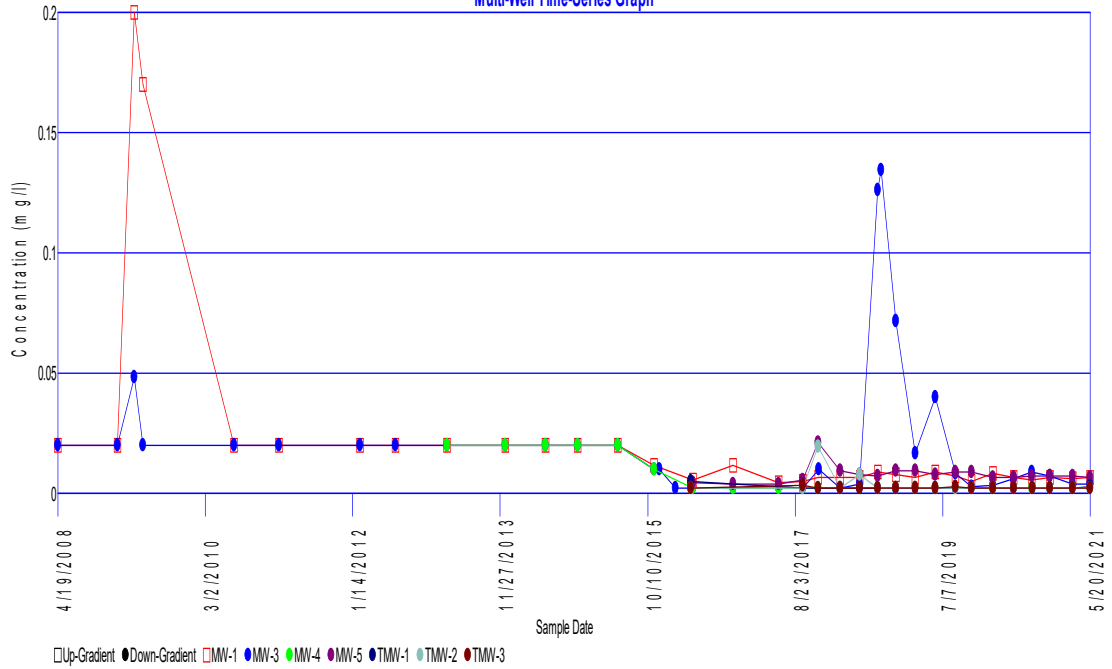
Manganese Multi-Well Time-Series Graph



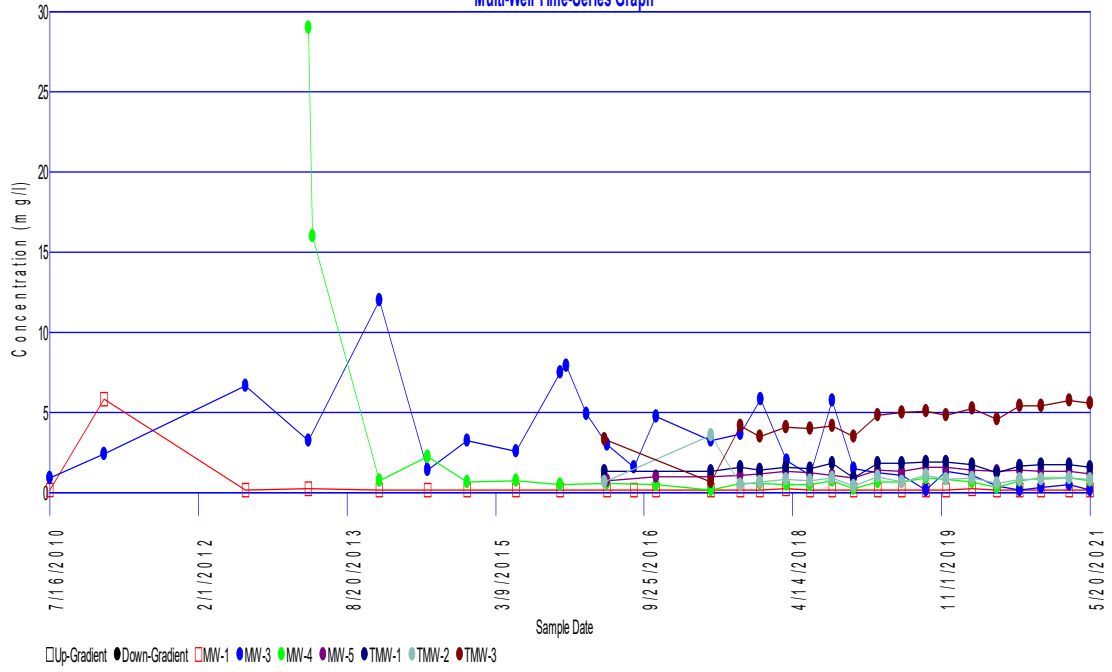
Mercury Multi-Well Time-Series Graph



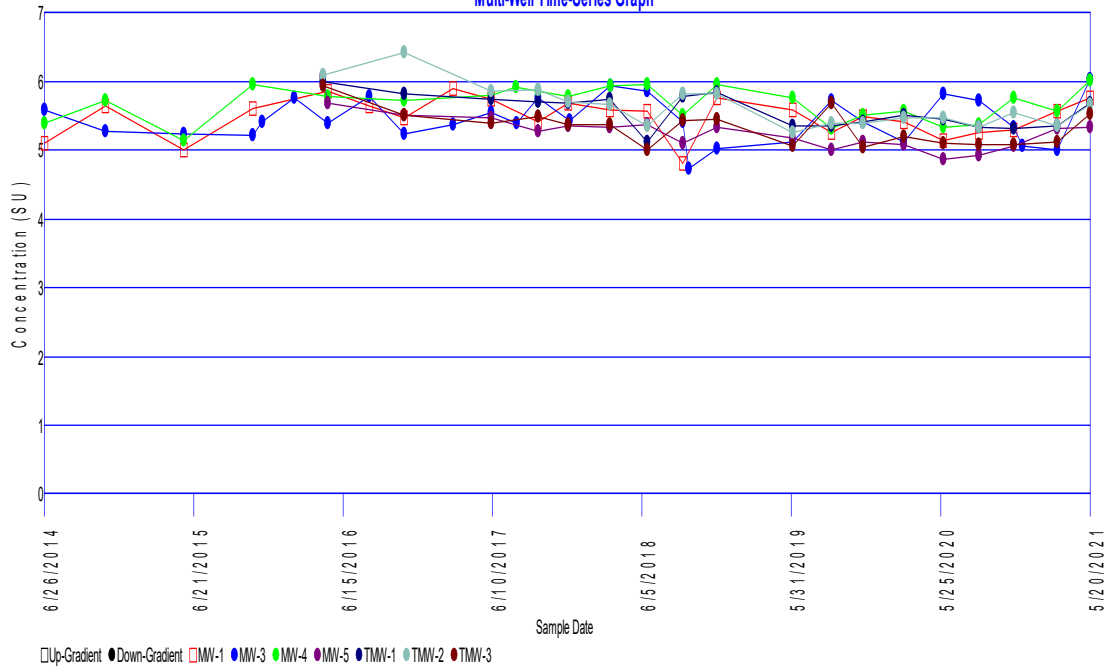
Nickel Multi-Well Time-Series Graph



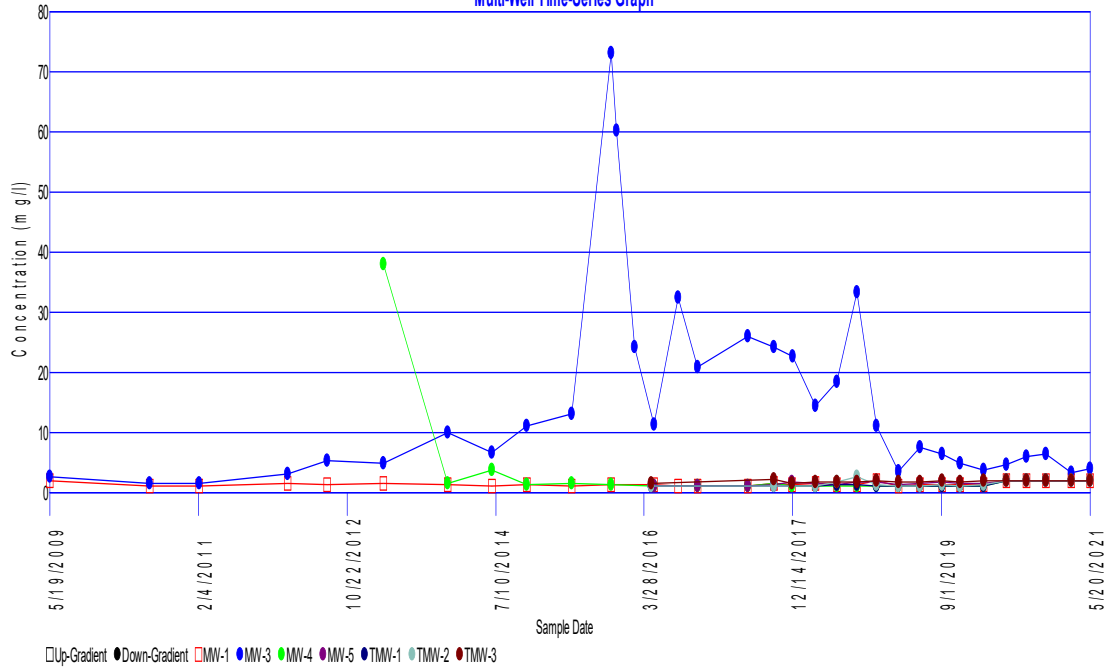
Nitrate Multi-Well Time-Series Graph



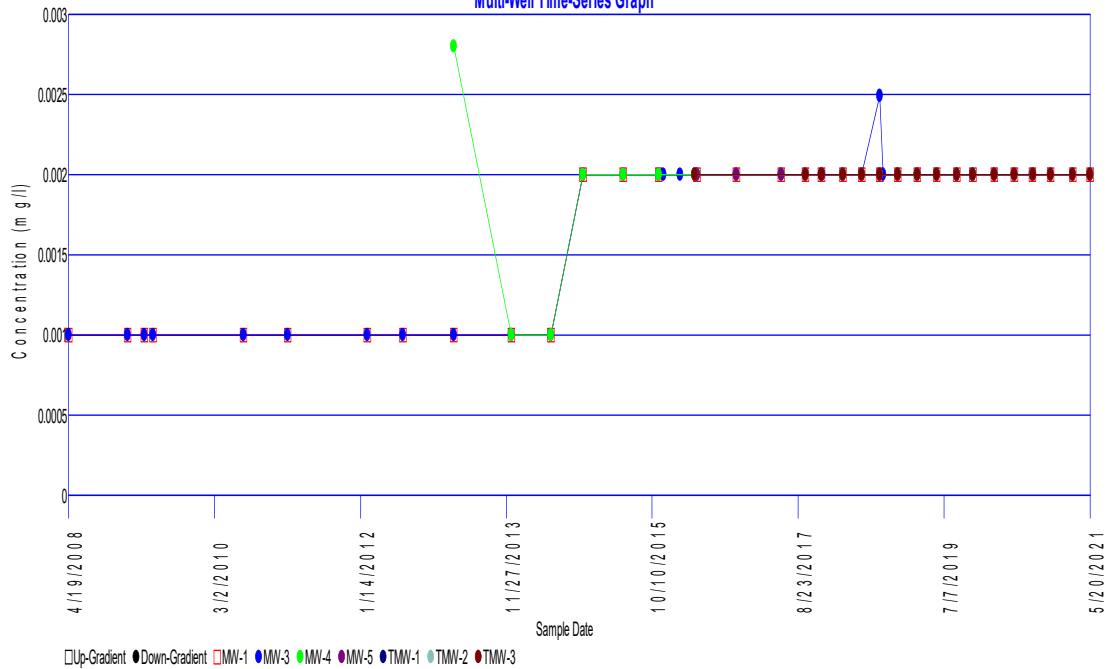
pH Multi-Well Time-Series Graph

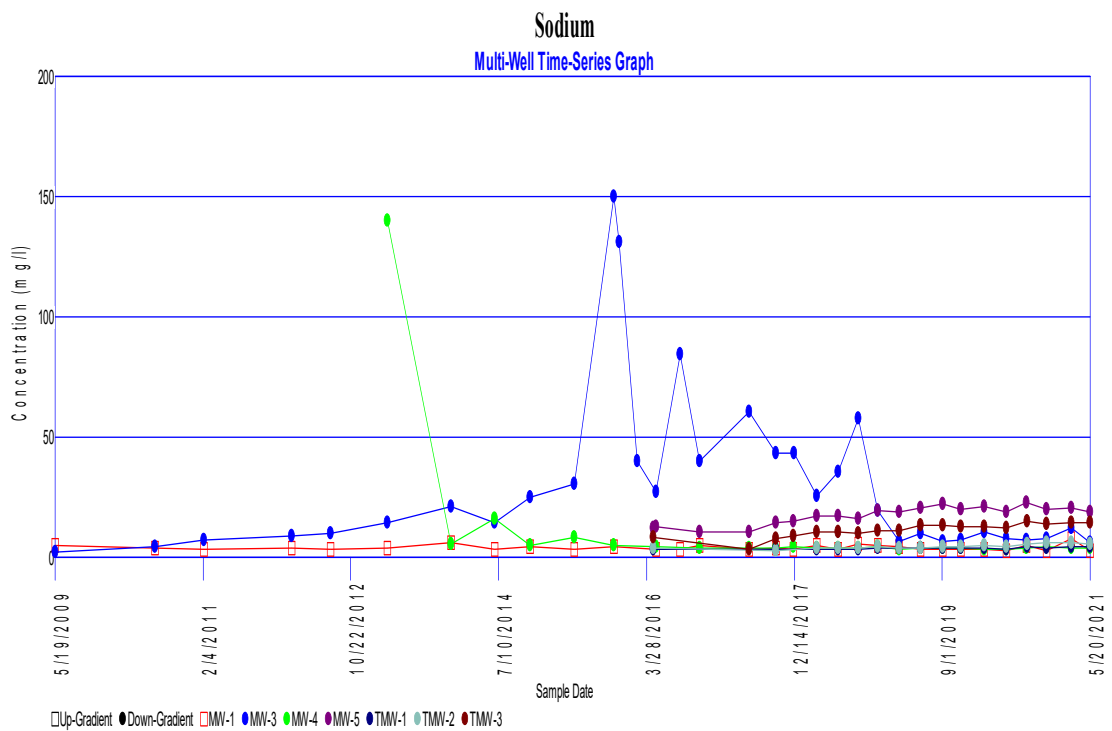
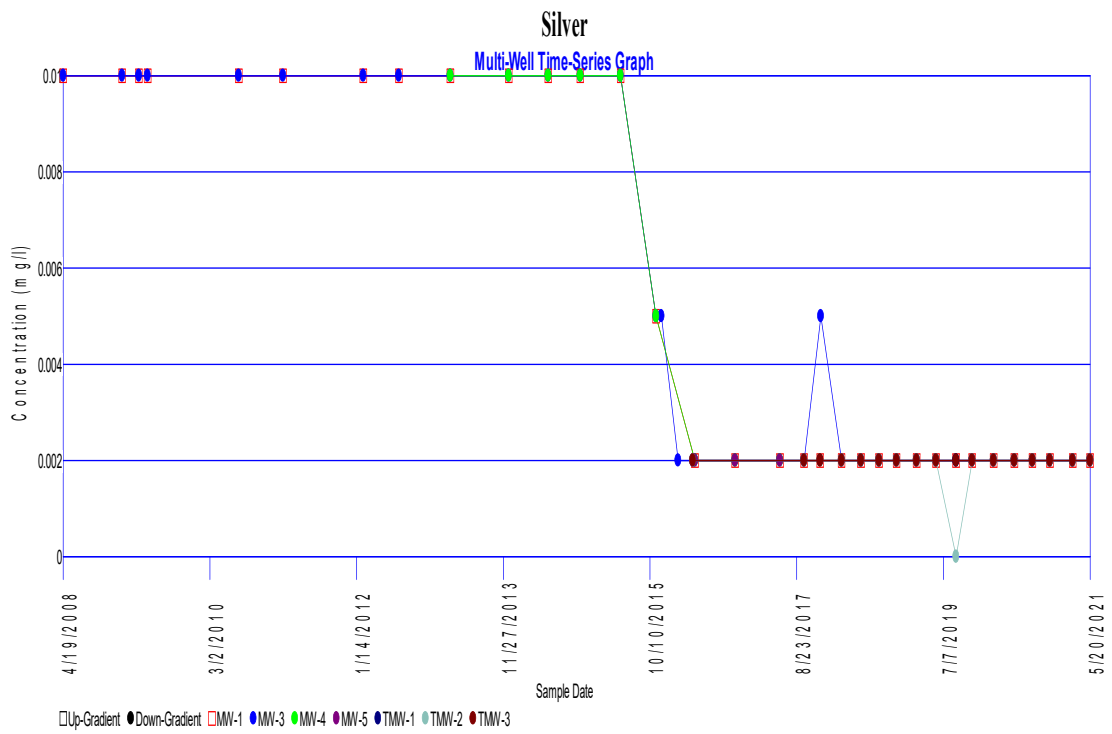


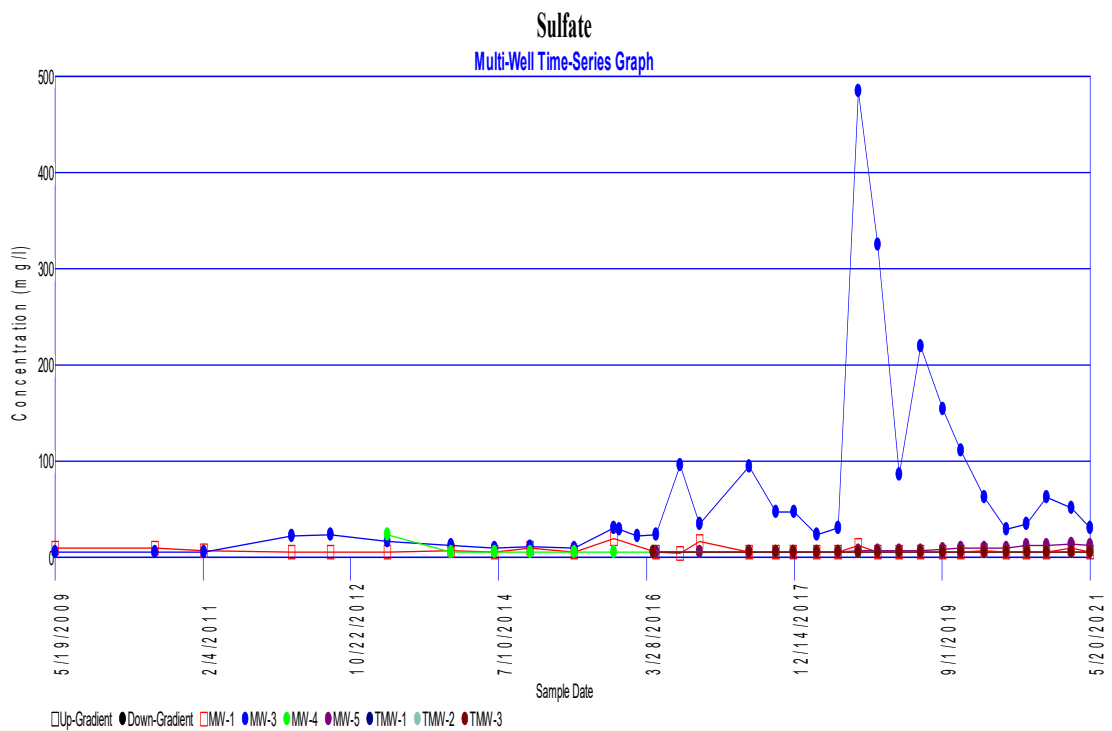
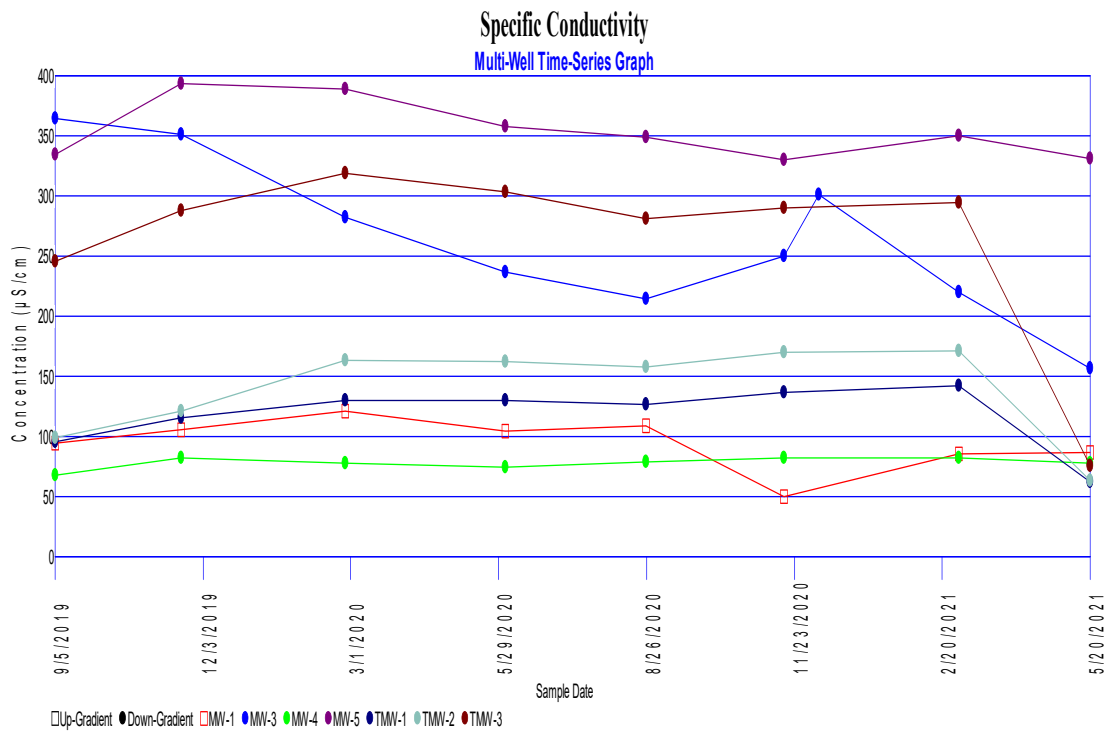
Potassium Multi-Well Time-Series Graph

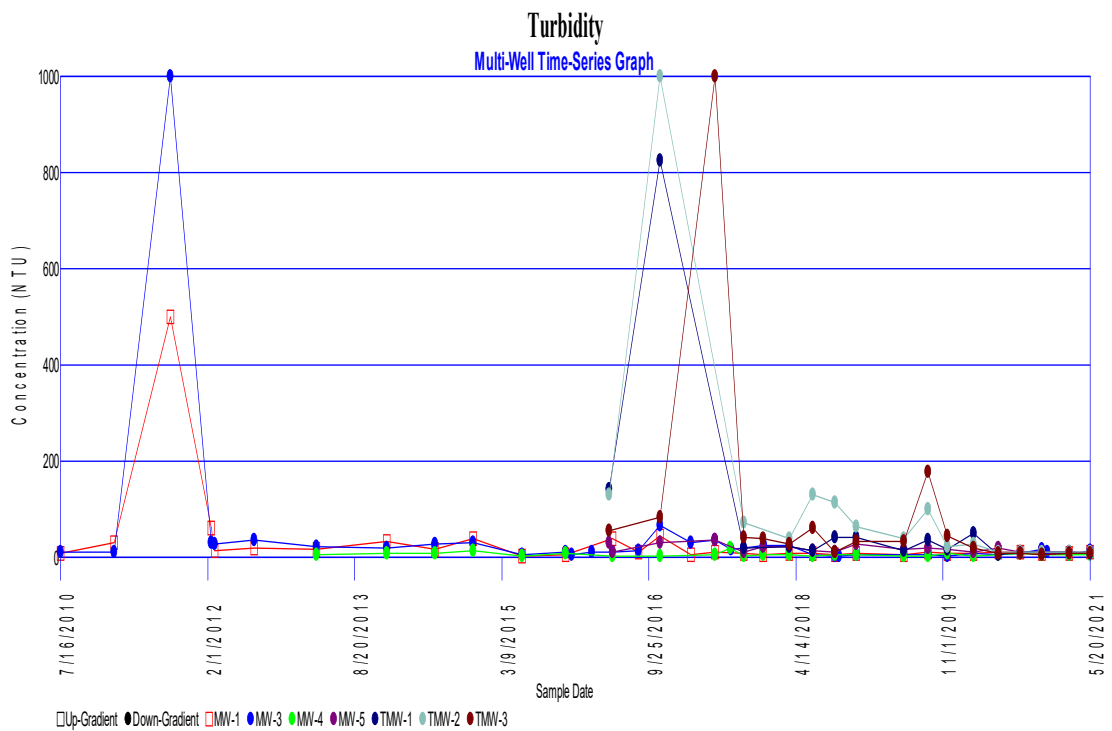
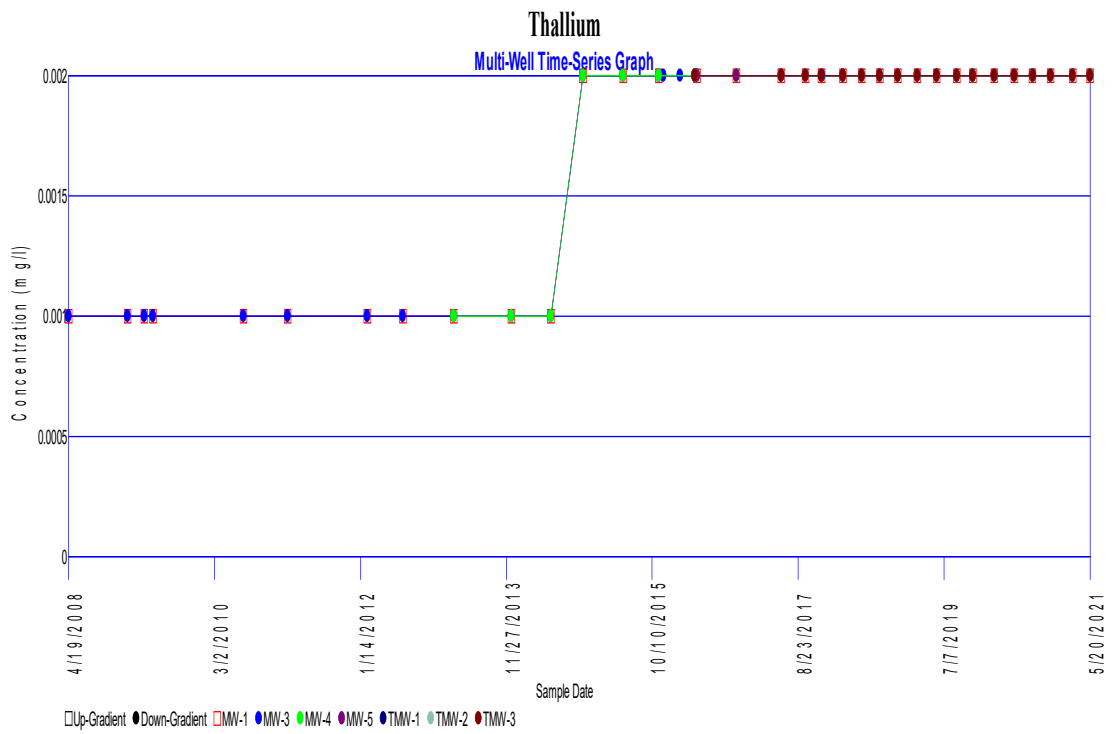


Selenium Multi-Well Time-Series Graph

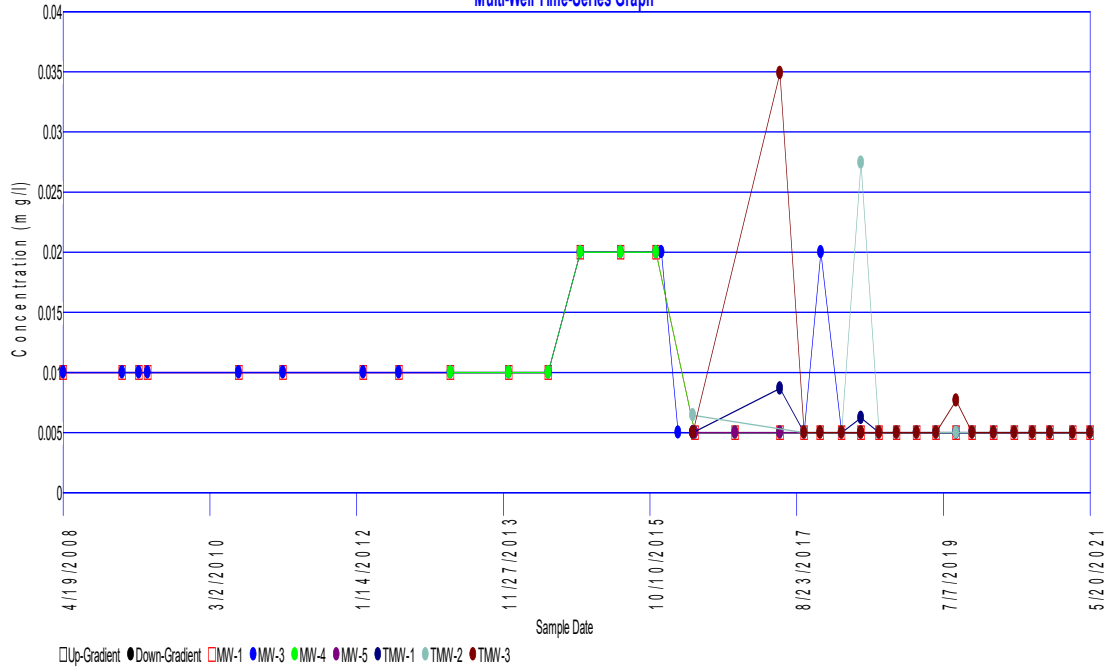




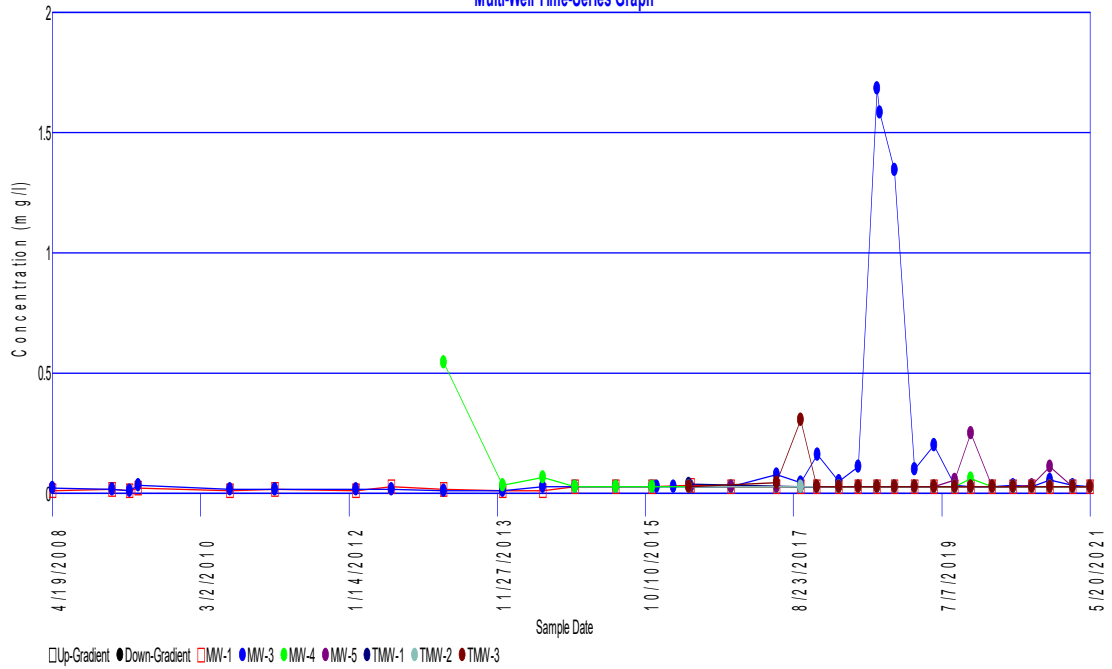




Vanadium Multi-Well Time-Series Graph



Zinc Multi-Well Time-Series Graph



Shapiro-Wilks Test of Normality

Parameter: Aluminum
Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit
K = 16 for 33 measurements

Sum of b values = 1.15973
Sample Standard Deviation = 0.283706
W Statistic = 0.522183

5% Critical value of 0.931 exceeds 0.522183
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.522183
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Arsenic
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 = 0.157884
Sample Standard Deviation = 0.0293564
W Statistic = 0.903905

5% Critical value of 0.931 exceeds 0.903905
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.903905
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Barium
Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit
K = 16 for 33 measurements

Sum of b values = 0.0431843
Sample Standard Deviation = 0.0116375
W Statistic = 0.430312

5% Critical value of 0.931 exceeds 0.430312
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.430312
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chloride
Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit
K = 17 for 34 measurements

Sum of b values = 5.03873
Sample Standard Deviation = 0.975122
W Statistic = 0.809116

5% Critical value of 0.933 exceeds 0.809116
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.809116
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Cobalt

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit
K = 16 for 33 measurements

Sum of b values = 0.0667467
Sample Standard Deviation = 0.0127448
W Statistic = 0.857095

5% Critical value of 0.931 exceeds 0.857095
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.857095
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 = 16 for 33 measurements

Sum of b values = 0.150692
Sample Standard Deviation = 0.0426921
W Statistic = 0.389346

5% Critical value of 0.931 exceeds 0.389346
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.389346
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Mercury

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 = 0.00325702
Sample Standard Deviation = 0.000673314
W Statistic = 0.73123

5% Critical value of 0.931 exceeds 0.73123
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.73123
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 = 16 for 33 measurements

Sum of b values = 4.86801
Sample Standard Deviation = 1.02293
W Statistic = 0.707712

5% Critical value of 0.931 exceeds 0.707712
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.707712
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Arsenic

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 = 5.04058
Sample Standard Deviation = 0.933568
W Statistic = 0.911001

5% Critical value of 0.931 exceeds 0.911001
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 is less than 0.911001
Data is normally distributed 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 = 16 for 33 measurements

Sum of b values = 1.89111
Sample Standard Deviation = 0.368844
W Statistic = 0.821487

5% Critical value of 0.931 exceeds 0.821487
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.821487
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 34 measurements

Sum of b values = 1.7156
Sample Standard Deviation = 0.313608
W Statistic = 0.906871

5% Critical value of 0.933 exceeds 0.906871
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.906871
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Cobalt

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 16 for 33 measurements

Sum of b values = 1.73023
Sample Standard Deviation = 0.314
W Statistic = 0.948851

5% Critical value of 0.931 is less than 0.948851
Data is normally distributed at 95% level of significance

1% Critical value of 0.906 is less than 0.948851
Data is normally distributed 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 = 16 for 33 measurements

Sum of b values = 3.59655
Sample Standard Deviation = 0.824236
W Statistic = 0.591699

5% Critical value of 0.931 exceeds 0.591699
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.591699
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Mercury

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 = 5.79285
Sample Standard Deviation = 1.09333
W Statistic = 0.877272

5% Critical value of 0.931 exceeds 0.877272
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.877272
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

From 32 baseline samples

Baseline mean = -3.34105

Baseline std Dev = 0.318068

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 = 32 (background observations) - 1

$t(0.995, 32) = 2.74404$

Date	Samples	Mean	Interval	Significant
5/20/2021	1	-3.20153	[-4.23, -2.45]	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
5/20/2021	1	0.17	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
5/20/2021	1	0.0131	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
5/20/2021	1	0.0177	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
5/20/2021	1	2.15	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
5/20/2021	1	0.0064	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Mercury

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 30.303%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 33

Maximum Baseline Concentration = 0.00319

Confidence Level = 97.1%

False Positive Rate = 2.9%

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

Date	Count	Mean	Significant
5/20/2021	1	0.00136	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 = 46 - 2 = 44

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

There are 0 time periods with multiple data

A = 7350
 B = 0
 C = 2730
 D = 0
 E = 210
 F = 0
 a = 12546
 b = 44064
 c = 612
 Group Variance = 288.667

Z-Score = 2.53087

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

2.53087 > 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 = 45 - 107 = -62

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

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 12546
 b = 44064
 c = 612
 Group Variance = 696

Z-Score = -2.3122

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

-2.3122 < -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 = 99 - 50 = 49

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

There are 0 time periods with multiple data

A = 84
 B = 0
 C = 6
 D = 0
 E = 8
 F = 0
 a = 12546
 b = 44064
 c = 612
 Group Variance = 692.333

Z-Score = 1.82425

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

[1.82425] <= 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 = 56 - 94 = -38

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

There are 0 time periods with multiple data

A = 66
 B = 0
 C = 6
 D = 0
 E = 6
 F = 0
 a = 12546
 b = 44064
 c = 612
 Group Variance = 693.333

Z-Score = -1.40518

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

[-1.40518] <= 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 = 92 - 60 = 32

Tied GrouValue	Members
1	0.0411
2	

Time Period	Observations
-------------	--------------

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 12546
b = 44064
c = 612

Group Variance = 696

Z-Score = 1.17505

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

|1.17505| <= 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 = 70 - 83 = -13

Tied GrouValue	Members
1	
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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0

a = 12546
b = 44064
c = 612

Group Variance = 697

Z-Score = -0.454532

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

|-0.454532| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Mercury

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 108 - 42 = 66

Tied GrouValue	Members
1	0.0002
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

There are 0 time periods with multiple data

A = 86
B = 0
C = 6
D = 0
E = 6
F = 0

a = 12546
b = 44064
c = 612

Group Variance = 693.333

Z-Score = 2.46855

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

2.46855 > 1.65463 indicating an upward trend

Basic Statistics

Parameter: Aluminum

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 162
 Total Non-Detects 64 (39.5062%)
 Pooled Mean 0.46113
 Pooled Std Dev 1.13665

Compliance Meas. 129
 Compliance Mean 0.520721
 Compliance Std Dev 1.25991

Background Meas. 33
 Background Mean 0.228182
 Background Std Dev 0.283706

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	33	21	63.6364	7.53

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.228182	0.283706	0	1981.5	60.0455

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	35	8	22.8571	26.931
MW-4	25	23	92	2.745
MW-5	20	4	20	4.248
TMW-1	16	2	12.5	4.738
TMW-2	16	1	6.25	22.341
TMW-3	17	5	29.4118	6.17

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.769457	1.48325	0.541275	0.264349	3446	98.4571
MW-4	0.1096	0.0414447	-0.116362	0.286869	941.5	37.66
MW-5	0.2124	0.110313	-0.0157818	0.308731	1704	85.2
TMW-1	0.296125	0.300491	0.0679432	0.331891	1520	95
TMW-2	1.39631	2.61395	1.16813	0.331891	2082.5	130.156
TMW-3	0.362941	0.393805	0.134759	0.32525	1527.5	89.8529

Analysis of Variance Statistics

SS Wells 24.0338
 SS Total 208.009

Kruskal-Wallis Statistics

Non-Detect Rank 32.5
 Background Rank Sum 1981.5
 Background Rank Mean 60.0455
 H Statistic 52.5141

Basic Statistics

Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 163
 Total Non-Detects 11 (6.74847%)
 Pooled Mean 0.0506539
 Pooled Std Dev 0.0810847

Compliance Meas. 130
 Compliance Mean 0.0578161
 Compliance Std Dev 0.089262

Background Meas. 33
 Background Mean 0.0224394
 Background Std Dev 0.0116375

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	33	3	9.09091	0.7405

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0224394	0.0116375	0	1822	55.2121

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	36	0	0	4.3919
MW-4	25	4	16	0.68835
MW-5	20	0	0	0.831
TMW-1	16	4	25	0.26364
TMW-2	16	0	0	0.6177
TMW-3	17	0	0	0.7235

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.121997	0.137123	0.0995578	0.0174563	4941	137.25
MW-4	0.027534	0.0779564	0.00509461	0.0192053	708	28.32
MW-5	0.04155	0.0150548	0.0191106	0.0205258	2065	103.25
TMW-1	0.0164775	0.00494132	-0.00596189	0.0220656	517	32.3125
TMW-2	0.0386063	0.0182756	0.0161669	0.0220656	1494	93.375
TMW-3	0.0425588	0.00653659	0.0201194	0.0216241	1819	107

Analysis of Variance Statistics

SS Wells 0.246651
 SS Total 1.06511

Kruskal-Wallis Statistics

Non-Detect Rank 6
 Background Rank Sum 1822
 Background Rank Mean 55.2121
 H Statistic 119.784

Basic Statistics

Parameter: Total Cadmium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	163
Total Non-Detects	142 (87.1166%)
Pooled Mean	0.00591031
Pooled Std Dev	0.0302617
Compliance Meas.	131
Compliance Mean	0.00710977
Compliance Std Dev	0.0336721
Background Meas.	32
Background Mean	0.001
Background Std Dev	6.6093e-019

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	32	32	100	0.032

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.001	6.6093e-019	0	2288	71.5

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	36	15	41.6667	0.83638
MW-4	25	25	100	0.025
MW-5	20	20	100	0.02
TMW-1	16	16	100	0.016
TMW-2	16	16	100	0.016
TMW-3	18	18	100	0.018

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.0232328	0.0619686	0.0222328	0.00713365	4285.5	119.042
MW-4	0.001	6.53939e-019	0	0.00723747	1767.5	71.5
MW-5	0.001	4.44947e-019	-2.1684e-019	0.00838941	1430	71.5
TMW-1	0.001	4.47904e-019	-2.1684e-019	0.00899019	1144	71.5
TMW-2	0.001	4.47904e-019	-2.1684e-019	0.00899019	1144	71.5
TMW-3	0.001	4.46254e-019	-2.1684e-019	0.00865082	1287	71.5

Analysis of Variance Statistics

SS Wells	0.0138646
SS Total	0.148355

Kruskal-Wallis Statistics

Non-Detect Rank	71.5
Background Rank Sum	2288
Background Rank Mean	71.5
H Statistic	28.4588

Basic Statistics

Parameter: Chloride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	173
Total Non-Detects	0 (0%)
Pooled Mean	37.6784
Pooled Std Dev	57.8341
Compliance Meas.	139
Compliance Mean	46.2417
Compliance Std Dev	61.5858
Background Meas.	34
Background Mean	2.66971
Background Std Dev	0.975122

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	34	0	0	90.77

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	2.66971	0.975122	0	596	17.5294

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	36	0	0	2743.04
MW-4	26	0	0	638.32
MW-5	20	0	0	1286.1
TMW-1	19	0	0	304.7
TMW-2	19	0	0	449.03
TMW-3	19	0	0	1006.4

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	76.1956	99.6929	73.5288	12.3745	4309	119.694
MW-4	24.5508	57.3853	21.8811	13.4809	1597	61.4231
MW-5	64.305	20.6261	61.6353	14.5818	2815	140.75
TMW-1	16.0368	6.66797	13.3671	14.8215	1493	78.5789
TMW-2	23.6332	11.4634	20.9635	14.8215	1763	92.7895
TMW-3	52.9684	12.9221	50.2987	14.8215	2478	130.421

Analysis of Variance Statistics

SS Wells	130828
SS Total	575303

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	596
Background Rank Mean	17.5294
H Statistic	125.64

Basic Statistics

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 162
 Total Non-Detects 119 (73.4568%)
 Pooled Mean 0.00587895
 Pooled Std Dev 0.0134533

Compliance Meas. 129
 Compliance Mean 0.0042976
 Compliance Std Dev 0.00422073

Background Meas. 33
 Background Mean 0.0120606
 Background Std Dev 0.0281046

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	33	31	93.9394	0.398

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0120606	0.0281046	0	2183	66.1515

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	35	29	82.8571	0.23492
MW-4	25	22	88	0.09895
MW-5	20	6	30	0.0938
TMW-1	16	11	68.75	0.03563
TMW-2	16	9	56.25	0.0528
TMW-3	17	11	64.7059	0.03829

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.006712	0.00565249	-0.00534861	0.00321371	2623	74.9429
MW-4	0.003958	0.00346813	-0.00810261	0.0035119	1701	68.04
MW-5	0.00469	0.00336162	-0.00737061	0.00375326	2426	121.3
TMW-1	0.00222688	0.000575589	-0.00983373	0.00403482	1323	82.6875
TMW-2	0.0033	0.0039207	-0.00876061	0.00403482	1513	94.5625
TMW-3	0.00225235	0.000835199	-0.00980825	0.00395409	1434	84.3529

Analysis of Variance Statistics

SS Wells 0.00194924
 SS Total 0.0291398

Kruskal-Wallis Statistics

Non-Detect Rank 60
 Background Rank Sum 2183
 Background Rank Mean 66.1515
 H Statistic 21.9859

Basic Statistics

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 161
 Total Non-Detects 137 (85.0932%)
 Pooled Mean 0.00497491
 Pooled Std Dev 0.00213289

Compliance Meas. 128
 Compliance Mean 0.00493211
 Compliance Std Dev 0.000981779

Background Meas. 33
 Background Mean 0.00514091
 Background Std Dev 0.00434568

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	33	27	81.8182	0.16965

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.00514091	0.00434568	0	2765	83.7879

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	34	26	76.4706	0.16133
MW-4	25	24	96	0.11636
MW-5	20	17	85	0.10182
TMW-1	16	14	87.5	0.08242
TMW-2	16	15	93.75	0.08367
TMW-3	17	14	82.3529	0.08571

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.004745	0.00151025	-0.000395909	0.000528645	2993	88.0294
MW-4	0.0046544	0.00100299	-0.000486509	0.000573602	1802	72.08
MW-5	0.005091	0.000252751	-4.99091e-005	0.000613041	1616	80.8
TMW-1	0.00515125	0.000434816	1.03409e-005	0.000659029	1271	79.4375
TMW-2	0.00522338	0.0009175	8.84659e-005	0.000659029	1195	74.6875
TMW-3	0.00504176	0.000140456	-9.91444e-005	0.000645843	1399	82.2941

Analysis of Variance Statistics

SS Wells 7.15379e-006
 SS Total 0.000727875

Kruskal-Wallis Statistics

Non-Detect Rank 69
 Background Rank Sum 2765
 Background Rank Mean 83.7879
 H Statistic 2.13093

Basic Statistics

Parameter: Fluoride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 133
 Total Non-Detects 115 (86.4662%)
 Pooled Mean 0.13015
 Pooled Std Dev 0.0596807

Compliance Meas. 110
 Compliance Mean 0.133473
 Compliance Std Dev 0.0641978

Background Meas. 23
 Background Mean 0.114261
 Background Std Dev 0.0251418

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	23	22	95.6522	2.628

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.114261	0.0251418	0	1396	60.6957

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	22	5	22.7273	4.632
MW-4	19	19	100	2.15
MW-5	20	20	100	2.25
TMW-1	16	16	100	1.85
TMW-2	16	16	100	1.85
TMW-3	17	17	100	1.95

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.210545	0.107155	0.0962846	0.0145425	2411	109.591
MW-4	0.113158	0.0226207	-0.00110297	0.0151179	1102	58
MW-5	0.1125	0.022131	-0.00176087	0.0149095	1160	59
TMW-1	0.115625	0.0239357	0.00136413	0.0158751	928	58
TMW-2	0.115625	0.0239357	0.00136413	0.0158751	928	58
TMW-3	0.114706	0.0234834	0.000445013	0.0155973	986	58

Analysis of Variance Statistics

SS Wells 0.170525
 SS Total 0.470155

Kruskal-Wallis Statistics

Non-Detect Rank 58
 Background Rank Sum 1396
 Background Rank Mean 60.6957
 H Statistic 32.2858

Basic Statistics

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 164
 Total Non-Detects 97 (59.1463%)
 Pooled Mean 0.0116592
 Pooled Std Dev 0.0253378

Compliance Meas. 131
 Compliance Mean 0.00905397
 Compliance Std Dev 0.0179538

Background Meas. 33
 Background Mean 0.0220012
 Background Std Dev 0.0426921

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	33	11	33.3333	0.72604

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0220012	0.0426921	0	3482	105.515

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	36	19	52.7778	0.76357
MW-4	25	25	100	0.148
MW-5	20	0	0	0.14824
TMW-1	16	13	81.25	0.03481
TMW-2	17	15	88.2353	0.0562
TMW-3	17	14	82.3529	0.03525

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.0212103	0.0303691	-0.000790934	0.00584852	3173	88.1389
MW-4	0.00592	0.00735935	-0.0160812	0.00643453	1225	49
MW-5	0.007412	0.00374526	-0.0145892	0.00687695	2674	133.7
TMW-1	0.00217563	0.000620086	-0.0198296	0.00739283	954	59.625
TMW-2	0.00330598	0.00421833	-0.0186953	0.00724492	1030	60.5882
TMW-3	0.00207353	0.000225858	-0.0199277	0.00724492	992	58.3529

Analysis of Variance Statistics

SS Wells 0.0121851
 SS Total 0.104646

Kruskal-Wallis Statistics

Non-Detect Rank 49
 Background Rank Sum 3482
 Background Rank Mean 105.515
 H Statistic 55.6792

Basic Statistics

Parameter: Sulfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 163
Total Non-Detects 106 (65.0307%)
Pooled Mean 18.4015
Pooled Std Dev 51.1074

Compliance Meas. 132
Compliance Mean 21.169
Compliance Std Dev 56.4507

Background Meas. 31
Background Mean 6.61742
Background Std Dev 3.49356

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	31	19	61.2903	205.14

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	6.61742	3.49356	0	2465.5	79.5323

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	33	2	6.06061	2233.49
MW-4	25	24	96	143
MW-5	20	7	35	147.82
TMW-1	18	18	100	90
TMW-2	18	18	100	90
TMW-3	18	18	100	90

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	67.6815	100.269	61.0641	11.3733	4629	140.273
MW-4	5.72	3.6	-0.897419	12.223	1427	57.08
MW-5	7.391	2.80007	0.773581	13.0414	1955.5	97.775
TMW-1	5	0	-1.61742	13.4746	963	53.5
TMW-2	5	0	-1.61742	13.4746	963	53.5
TMW-3	5	0	-1.61742	13.4746	963	53.5

Analysis of Variance Statistics

SS Wells 100590
SS Total 423138

Kruskal-Wallis Statistics

Non-Detect Rank 53.5
Background Rank Sum 2465.5
Background Rank Mean 79.5323
H Statistic 79.2807

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 = 16 for 33 measurements

Sum of b values = 1.15973
Sample Standard Deviation = 0.283706
W Statistic = 0.522183

5% Critical value of 0.931 exceeds 0.522183
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.522183
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 = 16 for 33 measurements

Sum of b values = 0.0431843
Sample Standard Deviation = 0.0116375
W Statistic = 0.430312

5% Critical value of 0.931 exceeds 0.430312
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.430312
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 32 measurements

Sum of b values = 0
Sample Standard Deviation = 6.6093e-019
W Statistic = 0

5% Critical value of 0.93 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.904 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 34 measurements

Sum of b values = 5.03873
Sample Standard Deviation = 0.975122
W Statistic = 0.809116

5% Critical value of 0.933 exceeds 0.809116
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.809116
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 = 16 for 33 measurements

Sum of b values = 0.0952656
Sample Standard Deviation = 0.0281046
W Statistic = 0.359059

5% Critical value of 0.931 exceeds 0.359059
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.359059
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 = 16 for 33 measurements

Sum of b values = 0.0160657
Sample Standard Deviation = 0.00434568
W Statistic = 0.427104

5% Critical value of 0.931 exceeds 0.427104
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.427104
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 = 16 for 33 measurements

Sum of b values = 0.150692
Sample Standard Deviation = 0.0426921
W Statistic = 0.389346

5% Critical value of 0.931 exceeds 0.389346
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.389346
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 = 15 for 31 measurements

Sum of b values = 14.825
Sample Standard Deviation = 3.49356
W Statistic = 0.600253

5% Critical value of 0.929 exceeds 0.600253
Evidence of non-normality at 95% level of significance

1% Critical value of 0.902 exceeds 0.600253
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 = 16 for 33 measurements

Sum of b values = 4.86901
Sample Standard Deviation = 1.02293
W Statistic = 0.707712

5% Critical value of 0.931 exceeds 0.707712
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.707712
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 = 16 for 33 measurements

Sum of b values = 1.89111
Sample Standard Deviation = 0.368844
W Statistic = 0.821487

5% Critical value of 0.931 exceeds 0.821487
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.821487
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 32 measurements

Sum of b values = 0
Sample Standard Deviation = 9.0239e-016
W Statistic = 0

5% Critical value of 0.93 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.904 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 34 measurements

Sum of b values = 1.7156
Sample Standard Deviation = 0.313608
W Statistic = 0.906871

5% Critical value of 0.933 exceeds 0.906871
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.906871
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chromium

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 16 for 33 measurements

Sum of b values = 5.83986
Sample Standard Deviation = 1.27027
W Statistic = 0.660212

5% Critical value of 0.931 exceeds 0.660212
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.660212
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 = 16 for 33 measurements

Sum of b values = 3.16325
Sample Standard Deviation = 0.655517
W Statistic = 0.727696

5% Critical value of 0.931 exceeds 0.727696
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.727696
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 = 16 for 33 measurements

Sum of b values = 3.58655
Sample Standard Deviation = 0.824236
W Statistic = 0.591699

5% Critical value of 0.931 exceeds 0.591699
Evidence of non-normality at 95% level of significance

1% Critical value of 0.906 exceeds 0.591699
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 = 15 for 31 measurements

Sum of b values = 3.06122
Sample Standard Deviation = 0.659948
W Statistic = 0.717212

5% Critical value of 0.929 exceeds 0.717212
Evidence of non-normality at 95% level of significance

1% Critical value of 0.902 exceeds 0.717212
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 = 39.5062%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 33

Maximum Background Value = 1.2

Confidence Level = 84.6%

False Positive Rate = 15.4%

Location	Date	Count	Mean	Significant
MW-3	5/20/2021	1	0.454	FALSE
MW-4	5/20/2021	1	0.1	FALSE
MW-5	5/20/2021	1	0.273	FALSE
TMW-1	5/20/2021	1	0.139	FALSE
TMW-2	5/20/2021	1	0.222	FALSE
TMW-3	5/20/2021	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 = 6.74847%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 33

Maximum Background Value = 0.084

Confidence Level = 84.6%

False Positive Rate = 15.4%

Location	Date	Count	Mean	Significant
MW-3	5/20/2021	1	0.0483	FALSE
MW-4	5/20/2021	1	0.00898	FALSE
MW-5	5/20/2021	1	0.0551	FALSE
TMW-1	5/20/2021	1	0.0151	FALSE
TMW-2	5/20/2021	1	0.0305	FALSE
TMW-3	5/20/2021	1	0.0442	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 = 87.1166%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 32

Maximum Background Value = 0.001

Confidence Level = 84.2%

False Positive Rate = 15.8%

Location	Date	Count	Mean	Significant
MW-3	5/20/2021	1	0.00265	TRUE
MW-4	5/20/2021	1	0.001	FALSE
MW-5	5/20/2021	1	0.001	FALSE
TMW-1	5/20/2021	1	0.001	FALSE
TMW-2	5/20/2021	1	0.001	FALSE
TMW-3	5/20/2021	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) = 34

Maximum Background Value = 5.68

Confidence Level = 85%

False Positive Rate = 15%

Location	Date	Count	Mean	Significant
MW-3	5/20/2021	1	9.04	TRUE
MW-4	5/20/2021	1	8.58	TRUE
MW-5	5/20/2021	1	73.4	TRUE
TMW-1	5/20/2021	1	27.9	TRUE
TMW-2	5/20/2021	1	35.6	TRUE
TMW-3	5/20/2021	1	63.1	TRUE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 73.4568%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 33

Maximum Background Value = 0.12

Confidence Level = 84.6%

False Positive Rate = 15.4%

Location	Date	Count	Mean	Significant
MW-3	5/20/2021	1	0.002	FALSE
MW-4	5/20/2021	1	0.002	FALSE
MW-5	5/20/2021	1	0.0078	FALSE
TMW-1	5/20/2021	1	0.00253	FALSE
TMW-2	5/20/2021	1	0.002	FALSE
TMW-3	5/20/2021	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 = 85.0932%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 33

Maximum Background Value = 0.028

Confidence Level = 84.6%

False Positive Rate = 15.4%

Location	Date	Count	Mean	Significant
MW-3	5/20/2021	1	0.005	FALSE
MW-4	5/20/2021	1	0.005	FALSE
MW-5	5/20/2021	1	0.00601	FALSE
TMW-1	5/20/2021	1	0.00658	FALSE
TMW-2	5/20/2021	1	0.005	FALSE
TMW-3	5/20/2021	1	0.00508	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Fluoride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 86.4662%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 23

Maximum Background Value = 0.178

Confidence Level = 79.3%

False Positive Rate = 20.7%

Location	Date	Count	Mean	Significant
MW-3	5/20/2021	1	0.243	TRUE
MW-4	5/20/2021	1	0.15	FALSE
MW-5	5/20/2021	1	0.15	FALSE
TMW-1	5/20/2021	1	0.15	FALSE
TMW-2	5/20/2021	1	0.15	FALSE
TMW-3	5/20/2021	1	0.15	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 59.1463%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 33

Maximum Background Value = 0.2

Confidence Level = 84.6%

False Positive Rate = 15.4%

Location	Date	Count	Mean	Significant
MW-3	5/20/2021	1	0.00366	FALSE
MW-4	5/20/2021	1	0.002	FALSE
MW-5	5/20/2021	1	0.00636	FALSE
TMW-1	5/20/2021	1	0.00223	FALSE
TMW-2	5/20/2021	1	0.002	FALSE
TMW-3	5/20/2021	1	0.002	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Sulfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 65.0307%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 31

Maximum Background Value = 18.8

Confidence Level = 83.8%

False Positive Rate = 16.2%

Location	Date	Count	Mean	Significant
MW-3	5/20/2021	1	29.7	TRUE
MW-4	5/20/2021	1	5	FALSE
MW-5	5/20/2021	1	12.1	FALSE
TMW-1	5/20/2021	1	5	FALSE
TMW-2	5/20/2021	1	5	FALSE
TMW-3	5/20/2021	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 = 61 - 82 = -21

Tied GrouValue	Members
1	0.1
	5

Time Period	Observations
-------------	--------------

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

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 12546
b = 44064
c = 612
Group Variance = 690.333

Z-Score = -0.766777

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

$|-0.766777| <= 1.97737$ indicating no evidence of a trend

Page 1

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 78 - 72 = 6

Tied GrouValue	Members
1	0.1
	3

Time Period	Observations
-------------	--------------

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

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0
a = 12546
b = 44064
c = 612
Group Variance = 693.333

Z-Score = 0.189889

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

$|0.189889| <= 1.97737$ indicating no evidence of a trend

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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 - 67 = -30

Tied GrouValue	Members
1	0.1
	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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 7350
b = 24570
c = 420
Group Variance = 407.333

Z-Score = -1.43689

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

$|-1.43689| <= 1.97737$ indicating no evidence of a trend

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Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: TMW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 11 - 94 = -83

Tied GrouValue	Members
1	0.1
	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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 7350
b = 24570
c = 420
Group Variance = 408.333

Z-Score = -4.05795

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

$-4.05795 < -1.65463$ indicating a downward trend

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Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 46 - 125 = -79

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

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 = -2.72887

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

-2.72887 < -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 = 106 - 41 = 65

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

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0

a = 12546
b = 44064
c = 612

Group Variance = 688.333

Z-Score = 2.43939

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

2.43939 > 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 = 137 - 16 = 121

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0

a = 12546
b = 44064
c = 612

Group Variance = 697

Z-Score = 4.54532

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

4.54532 > 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 = 69 - 30 = 39

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

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0

a = 7350
b = 24570
c = 420

Group Variance = 399.667

Z-Score = -1.90079

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

[1.90079] <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: TMW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 40 - 64 = -24

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

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 7350
 b = 24570
 c = 420
 Group Variance = 407.333
 Z-Score = -1.1396
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-1.1396| <= 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 = 91 - 28 = 63

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

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 8880
 b = 30240
 c = 480
 Group Variance = 492.333
 Z-Score = 2.79423
 Comparison Level at 95% confidence level = 1.65463 (upward trend)
 2.79423 > 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 = 81 - 129 = -48

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

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 19740
 b = 71820
 c = 840
 Group Variance = 1096.67
 Z-Score = -1.41926
 Comparison Level at 95% confidence level = -1.65463 (downward trend)
 -1.41926 >= -1.65463 indicating no evidence of a downward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 28 - 124 = -96

Tied GrouValue	Members
1	23.9
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

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 12546
 b = 44064
 c = 612
 Group Variance = 696
 Z-Score = -3.60097
 Comparison Level at 95% confidence level = -1.65463 (downward trend)
 -3.60097 < -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 = 130 - 23 = 107

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0

a = 12546
b = 44064
c = 612
Group Variance = 697

Z-Score = 4.01504

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

4.01504 > 1.65463 indicating an upward trend

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Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 118 - 34 = 84

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0

a = 12546
b = 44064
c = 612
Group Variance = 696

Z-Score = 3.14611

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

3.14611 > 1.65463 indicating an upward trend

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Mann-Kendall Trend Analysis

Parameter: Chloride

Location: TMW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 150 - 3 = 147

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0

a = 12546
b = 44064
c = 612
Group Variance = 697

Z-Score = 5.53014

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

5.53014 > 1.65463 indicating an upward trend

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Mann-Kendall Trend Analysis

Parameter: Chloride

Location: TMW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 128 - 25 = 103

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0

a = 12546
b = 44064
c = 612
Group Variance = 697

Z-Score = 3.86353

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

3.86353 > 1.65463 indicating an upward trend

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Mann-Kendall Trend Analysis

Parameter: Chloride

Location: TMW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 143 - 10 = 133

Tied Group	Value	Members
1	0.002	10

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

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 12546
 b = 44064
 c = 612
 Group Variance = 697
 Z-Score = 4.99986
 Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.99986 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chromium

Location: TMW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 41 - 34 = 7

Tied Group	Value	Members
1	0.002	10

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

There are 0 time periods with multiple data

A = 2250
 B = 0
 C = 720
 D = 0
 E = 90
 F = 0
 a = 8880
 b = 30240
 c = 480
 Group Variance = 368.333
 Z-Score = 0.31263
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |0.31263| <= 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 = 99 - 48 = 51

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
8/29/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1

There are 0 time periods with multiple data

A = 156
 B = 0
 C = 24
 D = 0
 E = 12
 F = 0
 a = 12546
 b = 44064
 c = 612
 Group Variance = 688.333
 Z-Score = 1.90577
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |1.90577| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Copper

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 40 - 8 = 32

Tied Group	Value	Members
1	0.005	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
8/29/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1

There are 0 time periods with multiple data

A = 7350
 B = 0
 C = 2730
 D = 0
 E = 210
 F = 0
 a = 12546
 b = 44064
 c = 612
 Group Variance = 288.667
 Z-Score = 1.82458
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |1.82458| <= 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 = 16 - 11 = 5

Tied GrouValue	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

There are 0 time periods with multiple data

A = 4836
 B = 0
 C = 1716
 D = 0
 E = 156
 F = 0
 a = 7350
 b = 24570
 c = 420
 Group Variance = 139.667
 Z-Score = 0.338465
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |0.338465| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Copper

Location: TMW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 26 - 16 = 10

Tied GrouValue	Members
1	0.005
	13

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

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 = 0.600445
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |0.600445| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Fluoride

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 78 - 75 = 3

Tied GrouValue	Members
1	0.002
	3

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

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 12546
 b = 44064
 c = 612
 Group Variance = 697
 Z-Score = 0.0757554
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |0.0757554| <= 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 = 91 - 77 = 14

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

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 = 0.455836
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |0.455836| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Nickel

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 0 - 0 = 0

Tied GrouValue	Members
1	0.002
	18

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

There are 0 time periods with multiple data

A = 12546
 B = 0
 C = 4896
 D = 0
 E = 306
 F = 0
 a = 12546
 b = 44064
 c = 612
 Group Variance = 0
 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: Nickel

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 70 - 82 = -12

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

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 12546
 b = 44064
 c = 612
 Group Variance = 696
 Z-Score = -0.416954

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-0.416954| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Nickel

Location: TMW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 16 - 11 = 5

Tied GrouValue	Members
1	0.002
	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

There are 0 time periods with multiple data

A = 4836
 B = 0
 C = 1716
 D = 0
 E = 156
 F = 0
 a = 7350
 b = 24570
 c = 420
 Group Variance = 139.667
 Z-Score = 0.338465

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |0.338465| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Nickel

Location: TMW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 7 - 35 = -28

Tied GrouValue	Members
1	0.002
	13

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

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 = -1.80133

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-1.80133| <= 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 = 68 - 84 = -16

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

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 12546
 b = 44064
 c = 612

Group Variance = 696

Z-Score = -0.568574

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

| -0.568574 | <= 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 = 139 - 4 = 135

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

There are 0 time periods with multiple data

A = 300
 B = 0
 C = 60
 D = 0
 E = 20
 F = 0
 a = 12546
 b = 44064
 c = 612

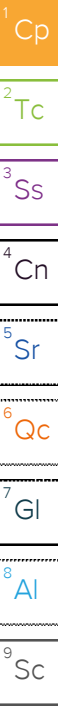
Group Variance = 680.333

Z-Score = 5.13741

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

5.13741 > 1.65463 indicating an upward trend

APPENDIX C
LABORATORY ANALYTICAL REPORTS &
FIELD INFORMATION LOGS



Civil & Environmental Consultants - TN

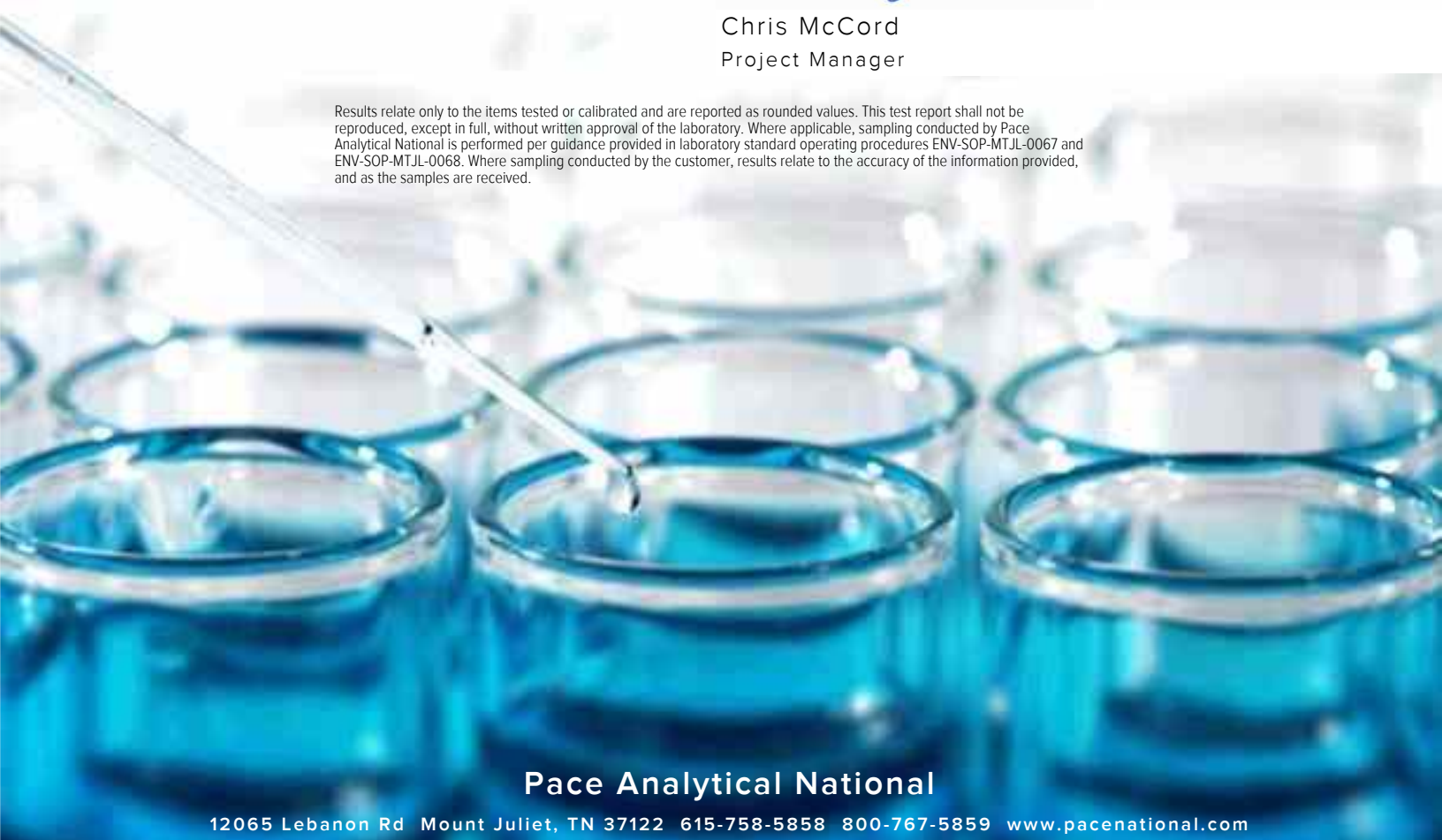
Sample Delivery Group: L1356357
Samples Received: 05/21/2021
Project Number: 181-364
Description: Former EWS Camden Class 2 Landfill
Site: CAMDEN, TN
Report To: Philip Campbell
117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Entire Report Reviewed By:



Chris McCord
Project Manager










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SAMPLE SUMMARY

MW-1 L1356357-01 GW

Collected by: Alex Black
 Collected date/time: 05/20/21 11:10
 Received date/time: 05/21/21 15:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1683959	1	06/08/21 10:21	06/08/21 10:21	TM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1680015	1	05/30/21 09:10	05/30/21 09:10	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1682508	1	06/07/21 14:18	06/07/21 14:18	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1680518	1	05/31/21 20:02	05/31/21 22:36	AFN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1675326	1	05/22/21 01:05	05/22/21 01:05	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1678297	1	05/27/21 10:25	05/27/21 17:25	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1683588	1	06/08/21 13:56	06/09/21 01:00	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1683959	1	06/07/21 23:46	06/08/21 10:21	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1679205	1	05/28/21 21:52	05/28/21 21:52	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1675500	1	05/22/21 07:12	05/22/21 23:38	AMM	Mt. Juliet, TN



MW-3 L1356357-02 GW

Collected by: Alex Black
 Collected date/time: 05/20/21 14:35
 Received date/time: 05/21/21 15:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1683959	1	06/08/21 10:24	06/08/21 10:24	TM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1680015	1	05/30/21 09:18	05/30/21 09:18	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1682508	1	06/07/21 14:19	06/07/21 14:19	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1680518	1	05/31/21 20:02	05/31/21 22:36	AFN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1675326	1	05/22/21 01:22	05/22/21 01:22	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1678297	1	05/27/21 10:25	05/27/21 17:27	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1683588	1	06/08/21 13:56	06/09/21 01:02	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1683959	1	06/07/21 23:46	06/08/21 10:24	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1679205	1	05/28/21 22:12	05/28/21 22:12	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1675500	1	05/22/21 07:12	05/22/21 23:50	AMM	Mt. Juliet, TN

MW-4 L1356357-03 GW

Collected by: Alex Black
 Collected date/time: 05/20/21 13:15
 Received date/time: 05/21/21 15:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1683959	1	06/08/21 10:28	06/08/21 10:28	TM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1680015	1	05/30/21 10:15	05/30/21 10:15	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1682508	1	06/07/21 14:21	06/07/21 14:21	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1680518	1	05/31/21 20:02	05/31/21 22:36	AFN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1675326	1	05/22/21 01:38	05/22/21 01:38	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1678297	1	05/27/21 10:25	05/27/21 17:33	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1683588	1	06/08/21 13:56	06/09/21 01:05	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1683959	1	06/07/21 23:46	06/08/21 10:28	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1679205	1	05/28/21 22:33	05/28/21 22:33	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1676161	1	05/24/21 09:08	05/25/21 07:37	AMM	Mt. Juliet, TN

MW-5 L1356357-04 GW

Collected by: Alex Black
 Collected date/time: 05/20/21 12:25
 Received date/time: 05/21/21 15:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1683959	1	06/08/21 10:31	06/08/21 10:31	TM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1680015	1	05/30/21 10:27	05/30/21 10:27	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1682508	1	06/07/21 14:23	06/07/21 14:23	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1680518	1	05/31/21 20:02	05/31/21 22:37	AFN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1675326	1	05/22/21 01:55	05/22/21 01:55	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1678297	1	05/27/21 10:25	05/27/21 17:35	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1683588	1	06/08/21 13:56	06/09/21 01:08	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1683959	1	06/07/21 23:46	06/08/21 10:31	TM	Mt. Juliet, TN

SAMPLE SUMMARY

MW-5 L1356357-04 GW

Collected by: Alex Black
 Collected date/time: 05/20/21 12:25
 Received date/time: 05/21/21 15:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1679205	1	05/28/21 22:53	05/28/21 22:53	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1675502	1	05/22/21 07:15	05/23/21 05:17	AMM	Mt. Juliet, TN



TMW-1 L1356357-05 GW

Collected by: Alex Black
 Collected date/time: 05/20/21 13:30
 Received date/time: 05/21/21 15:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1683959	1	06/08/21 10:41	06/08/21 10:41	TM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1680015	1	05/30/21 10:35	05/30/21 10:35	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1682508	1	06/07/21 14:24	06/07/21 14:24	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1680518	1	05/31/21 20:02	05/31/21 22:37	AFN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1675326	1	05/22/21 02:11	05/22/21 02:11	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1678297	1	05/27/21 10:25	05/27/21 17:36	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1683588	1	06/08/21 13:56	06/09/21 01:10	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1683959	1	06/07/21 23:46	06/08/21 10:41	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1679205	1	05/28/21 23:13	05/28/21 23:13	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1675502	1	05/22/21 07:15	05/23/21 05:30	AMM	Mt. Juliet, TN

TMW-2 L1356357-06 GW

Collected by: Alex Black
 Collected date/time: 05/20/21 12:00
 Received date/time: 05/21/21 15:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1683959	1	06/08/21 10:45	06/08/21 10:45	TM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1680043	1	05/31/21 04:38	05/31/21 04:38	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1682508	1	06/07/21 14:26	06/07/21 14:26	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1680518	1	05/31/21 20:02	05/31/21 22:39	AFN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1675326	1	05/22/21 03:00	05/22/21 03:00	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1678297	1	05/27/21 10:25	05/27/21 17:38	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1683588	1	06/08/21 13:56	06/09/21 01:13	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1683959	1	06/07/21 23:46	06/08/21 10:45	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1679205	1	05/28/21 23:34	05/28/21 23:34	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1675502	1	05/22/21 07:15	05/23/21 05:42	AMM	Mt. Juliet, TN

TMW-3 L1356357-07 GW

Collected by: Alex Black
 Collected date/time: 05/20/21 10:45
 Received date/time: 05/21/21 15:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1683959	1	06/08/21 10:48	06/08/21 10:48	TM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1680043	1	05/31/21 04:48	05/31/21 04:48	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1682508	1	06/07/21 14:29	06/07/21 14:29	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1680518	1	05/31/21 20:02	05/31/21 22:39	AFN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1675326	1	05/22/21 03:17	05/22/21 03:17	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1678297	1	05/27/21 10:25	05/27/21 17:40	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1683588	1	06/08/21 13:56	06/09/21 01:16	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1683959	1	06/07/21 23:46	06/08/21 10:48	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1679205	1	05/28/21 23:54	05/28/21 23:54	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1676161	1	05/24/21 09:08	05/25/21 07:49	AMM	Mt. Juliet, TN

SAMPLE SUMMARY

DUPLICATE L1356357-08 GW

Collected by
Alex Black

Collected date/time
05/20/21 00:00

Received date/time
05/21/21 15:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1683959	1	06/08/21 10:51	06/08/21 10:51	TM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1680043	1	05/31/21 04:56	05/31/21 04:56	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1682508	1	06/07/21 14:33	06/07/21 14:33	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1680518	1	05/31/21 20:02	05/31/21 22:39	AFN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1675326	1	05/22/21 03:33	05/22/21 03:33	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1678297	1	05/27/21 10:25	05/27/21 17:42	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1683588	1	06/08/21 13:56	06/09/21 01:19	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1683959	1	06/07/21 23:46	06/08/21 10:51	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1679205	1	05/29/21 00:14	05/29/21 00:14	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1676161	1	05/24/21 09:08	05/25/21 08:01	AMM	Mt. Juliet, TN

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

FIELD BLANK L1356357-09 GW

Collected by
Alex Black

Collected date/time
05/20/21 13:45

Received date/time
05/21/21 15:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1683959	1	06/08/21 10:55	06/08/21 10:55	TM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1680043	1	05/31/21 05:06	05/31/21 05:06	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1682508	1	06/07/21 15:15	06/07/21 15:15	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1680518	1	05/31/21 20:02	05/31/21 22:41	AFN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1675326	1	05/22/21 03:50	05/22/21 03:50	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1678297	1	05/27/21 10:25	05/27/21 17:44	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1683588	1	06/08/21 13:56	06/09/21 01:21	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1683959	1	06/07/21 23:46	06/08/21 10:55	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1679205	1	05/28/21 20:50	05/28/21 20:50	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1676161	1	05/24/21 09:08	05/25/21 08:13	AMM	Mt. Juliet, TN

TRIP BLANK L1356357-10 GW

Collected by
Alex Black

Collected date/time
05/20/21 00:00

Received date/time
05/21/21 15:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1679205	1	05/28/21 21:11	05/28/21 21:11	JHH	Mt. Juliet, TN

CASE NARRATIVE

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



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	18.4		2.50	1	06/08/2021 10:21	WG1683959

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	36.4		20.0	1	05/30/2021 09:10	WG1680015

Sample Narrative:

L1356357-01 WG1680015: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	06/07/2021 14:18	WG1682508

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/31/2021 22:36	WG1680518

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/22/2021 01:05	WG1675326
Chloride	2.15		1.00	1	05/22/2021 01:05	WG1675326
Fluoride	ND		0.150	1	05/22/2021 01:05	WG1675326
Nitrate	ND		0.100	1	05/22/2021 01:05	WG1675326
Sulfate	ND		5.00	1	05/22/2021 01:05	WG1675326

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.00136		0.000200	1	05/27/2021 17:25	WG1678297

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/09/2021 01:00	WG1683588

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.170	<u>B</u>	0.100	1	06/08/2021 10:21	WG1683959
Antimony	ND		0.00400	1	06/08/2021 10:21	WG1683959
Arsenic	0.0131		0.00200	1	06/08/2021 10:21	WG1683959
Barium	0.0177		0.00200	1	06/08/2021 10:21	WG1683959
Beryllium	ND		0.00200	1	06/08/2021 10:21	WG1683959
Cadmium	ND		0.00100	1	06/08/2021 10:21	WG1683959
Calcium	3.38		1.00	1	06/08/2021 10:21	WG1683959
Chromium	ND		0.00200	1	06/08/2021 10:21	WG1683959
Cobalt	0.0407		0.00200	1	06/08/2021 10:21	WG1683959
Copper	ND		0.00500	1	06/08/2021 10:21	WG1683959

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	11.3		0.100	1	06/08/2021 10:21	WG1683959
Lead	ND		0.00200	1	06/08/2021 10:21	WG1683959
Magnesium	2.41		1.00	1	06/08/2021 10:21	WG1683959
Manganese	0.808		0.00500	1	06/08/2021 10:21	WG1683959
Nickel	0.00640		0.00200	1	06/08/2021 10:21	WG1683959
Potassium	ND		2.00	1	06/08/2021 10:21	WG1683959
Selenium	ND		0.00200	1	06/08/2021 10:21	WG1683959
Silver	ND		0.00200	1	06/08/2021 10:21	WG1683959
Sodium	2.76		2.00	1	06/08/2021 10:21	WG1683959
Thallium	ND		0.00200	1	06/08/2021 10:21	WG1683959
Vanadium	ND		0.00500	1	06/08/2021 10:21	WG1683959
Zinc	ND		0.0250	1	06/08/2021 10:21	WG1683959

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	05/28/2021 21:52	WG1679205
Acrylonitrile	ND		0.0100	1	05/28/2021 21:52	WG1679205
Benzene	ND		0.00100	1	05/28/2021 21:52	WG1679205
Bromochloromethane	ND		0.00100	1	05/28/2021 21:52	WG1679205
Bromodichloromethane	ND		0.00100	1	05/28/2021 21:52	WG1679205
Bromoform	ND		0.00100	1	05/28/2021 21:52	WG1679205
Bromomethane	ND		0.00500	1	05/28/2021 21:52	WG1679205
Carbon disulfide	ND		0.00100	1	05/28/2021 21:52	WG1679205
Carbon tetrachloride	ND		0.00100	1	05/28/2021 21:52	WG1679205
Chlorobenzene	ND		0.00100	1	05/28/2021 21:52	WG1679205
Chlorodibromomethane	ND		0.00100	1	05/28/2021 21:52	WG1679205
Chloroethane	ND		0.00500	1	05/28/2021 21:52	WG1679205
Chloroform	ND		0.00500	1	05/28/2021 21:52	WG1679205
Chloromethane	ND		0.00250	1	05/28/2021 21:52	WG1679205
Dibromomethane	ND		0.00100	1	05/28/2021 21:52	WG1679205
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/28/2021 21:52	WG1679205
1,2-Dibromoethane	ND		0.00100	1	05/28/2021 21:52	WG1679205
1,2-Dichlorobenzene	ND		0.00100	1	05/28/2021 21:52	WG1679205
1,4-Dichlorobenzene	ND		0.00100	1	05/28/2021 21:52	WG1679205
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/28/2021 21:52	WG1679205
1,1-Dichloroethane	ND		0.00100	1	05/28/2021 21:52	WG1679205
1,2-Dichloroethane	ND		0.00100	1	05/28/2021 21:52	WG1679205
1,1-Dichloroethene	ND		0.00100	1	05/28/2021 21:52	WG1679205
cis-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 21:52	WG1679205
trans-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 21:52	WG1679205
1,2-Dichloropropane	ND		0.00100	1	05/28/2021 21:52	WG1679205
cis-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 21:52	WG1679205
trans-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 21:52	WG1679205
Ethylbenzene	ND		0.00100	1	05/28/2021 21:52	WG1679205
2-Hexanone	ND		0.0100	1	05/28/2021 21:52	WG1679205
Iodomethane	ND		0.0100	1	05/28/2021 21:52	WG1679205
2-Butanone (MEK)	ND		0.0100	1	05/28/2021 21:52	WG1679205
Methylene Chloride	ND		0.00500	1	05/28/2021 21:52	WG1679205
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/28/2021 21:52	WG1679205
Styrene	ND		0.00100	1	05/28/2021 21:52	WG1679205
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 21:52	WG1679205
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 21:52	WG1679205
Tetrachloroethene	ND		0.00100	1	05/28/2021 21:52	WG1679205
Toluene	ND		0.00100	1	05/28/2021 21:52	WG1679205
1,1,1-Trichloroethane	ND		0.00100	1	05/28/2021 21:52	WG1679205

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	05/28/2021 21:52	WG1679205
Trichloroethene	ND		0.00100	1	05/28/2021 21:52	WG1679205
Trichlorofluoromethane	ND		0.00500	1	05/28/2021 21:52	WG1679205
1,2,3-Trichloropropane	ND		0.00250	1	05/28/2021 21:52	WG1679205
Vinyl acetate	ND		0.0100	1	05/28/2021 21:52	WG1679205
Vinyl chloride	ND		0.00100	1	05/28/2021 21:52	WG1679205
Xylenes, Total	ND		0.00300	1	05/28/2021 21:52	WG1679205
<i>(S) Toluene-d8</i>	113		80.0-120		05/28/2021 21:52	WG1679205
<i>(S) 4-Bromofluorobenzene</i>	109		77.0-126		05/28/2021 21:52	WG1679205
<i>(S) 1,2-Dichloroethane-d4</i>	88.3		70.0-130		05/28/2021 21:52	WG1679205

- 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	05/22/2021 23:38	WG1675500
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/22/2021 23:38	WG1675500

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	49.0		2.50	1	06/08/2021 10:24	WG1683959

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	25.8		20.0	1	05/30/2021 09:18	WG1680015

Sample Narrative:

L1356357-02 WG1680015: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	06/07/2021 14:19	WG1682508

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/31/2021 22:36	WG1680518

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/22/2021 01:22	WG1675326
Chloride	9.04		1.00	1	05/22/2021 01:22	WG1675326
Fluoride	0.243		0.150	1	05/22/2021 01:22	WG1675326
Nitrate	ND		0.100	1	05/22/2021 01:22	WG1675326
Sulfate	29.7		5.00	1	05/22/2021 01:22	WG1675326

Mercury by Method 7470A

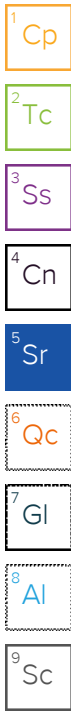
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	05/27/2021 17:27	WG1678297

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/09/2021 01:02	WG1683588

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.454		0.100	1	06/08/2021 10:24	WG1683959
Antimony	ND		0.00400	1	06/08/2021 10:24	WG1683959
Arsenic	ND		0.00200	1	06/08/2021 10:24	WG1683959
Barium	0.0483		0.00200	1	06/08/2021 10:24	WG1683959
Beryllium	ND		0.00200	1	06/08/2021 10:24	WG1683959
Cadmium	0.00265		0.00100	1	06/08/2021 10:24	WG1683959
Calcium	12.4		1.00	1	06/08/2021 10:24	WG1683959
Chromium	ND		0.00200	1	06/08/2021 10:24	WG1683959
Cobalt	ND		0.00200	1	06/08/2021 10:24	WG1683959
Copper	ND		0.00500	1	06/08/2021 10:24	WG1683959



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.321		0.100	1	06/08/2021 10:24	WG1683959
Lead	ND		0.00200	1	06/08/2021 10:24	WG1683959
Magnesium	4.37		1.00	1	06/08/2021 10:24	WG1683959
Manganese	0.361		0.00500	1	06/08/2021 10:24	WG1683959
Nickel	0.00366		0.00200	1	06/08/2021 10:24	WG1683959
Potassium	3.88		2.00	1	06/08/2021 10:24	WG1683959
Selenium	ND		0.00200	1	06/08/2021 10:24	WG1683959
Silver	ND		0.00200	1	06/08/2021 10:24	WG1683959
Sodium	5.92		2.00	1	06/08/2021 10:24	WG1683959
Thallium	ND		0.00200	1	06/08/2021 10:24	WG1683959
Vanadium	ND		0.00500	1	06/08/2021 10:24	WG1683959
Zinc	ND		0.0250	1	06/08/2021 10:24	WG1683959

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	05/28/2021 22:12	WG1679205
Acrylonitrile	ND		0.0100	1	05/28/2021 22:12	WG1679205
Benzene	ND		0.00100	1	05/28/2021 22:12	WG1679205
Bromochloromethane	ND		0.00100	1	05/28/2021 22:12	WG1679205
Bromodichloromethane	ND		0.00100	1	05/28/2021 22:12	WG1679205
Bromoform	ND		0.00100	1	05/28/2021 22:12	WG1679205
Bromomethane	ND		0.00500	1	05/28/2021 22:12	WG1679205
Carbon disulfide	ND		0.00100	1	05/28/2021 22:12	WG1679205
Carbon tetrachloride	ND		0.00100	1	05/28/2021 22:12	WG1679205
Chlorobenzene	ND		0.00100	1	05/28/2021 22:12	WG1679205
Chlorodibromomethane	ND		0.00100	1	05/28/2021 22:12	WG1679205
Chloroethane	ND		0.00500	1	05/28/2021 22:12	WG1679205
Chloroform	ND		0.00500	1	05/28/2021 22:12	WG1679205
Chloromethane	ND		0.00250	1	05/28/2021 22:12	WG1679205
Dibromomethane	ND		0.00100	1	05/28/2021 22:12	WG1679205
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/28/2021 22:12	WG1679205
1,2-Dibromoethane	ND		0.00100	1	05/28/2021 22:12	WG1679205
1,2-Dichlorobenzene	ND		0.00100	1	05/28/2021 22:12	WG1679205
1,4-Dichlorobenzene	ND		0.00100	1	05/28/2021 22:12	WG1679205
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/28/2021 22:12	WG1679205
1,1-Dichloroethane	ND		0.00100	1	05/28/2021 22:12	WG1679205
1,2-Dichloroethane	ND		0.00100	1	05/28/2021 22:12	WG1679205
1,1-Dichloroethene	ND		0.00100	1	05/28/2021 22:12	WG1679205
cis-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 22:12	WG1679205
trans-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 22:12	WG1679205
1,2-Dichloropropane	ND		0.00100	1	05/28/2021 22:12	WG1679205
cis-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 22:12	WG1679205
trans-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 22:12	WG1679205
Ethylbenzene	ND		0.00100	1	05/28/2021 22:12	WG1679205
2-Hexanone	ND		0.0100	1	05/28/2021 22:12	WG1679205
Iodomethane	ND		0.0100	1	05/28/2021 22:12	WG1679205
2-Butanone (MEK)	ND		0.0100	1	05/28/2021 22:12	WG1679205
Methylene Chloride	ND		0.00500	1	05/28/2021 22:12	WG1679205
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/28/2021 22:12	WG1679205
Styrene	ND		0.00100	1	05/28/2021 22:12	WG1679205
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 22:12	WG1679205
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 22:12	WG1679205
Tetrachloroethene	ND		0.00100	1	05/28/2021 22:12	WG1679205
Toluene	ND		0.00100	1	05/28/2021 22:12	WG1679205
1,1,1-Trichloroethane	ND		0.00100	1	05/28/2021 22:12	WG1679205

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	05/28/2021 22:12	WG1679205
Trichloroethene	ND		0.00100	1	05/28/2021 22:12	WG1679205
Trichlorofluoromethane	ND		0.00500	1	05/28/2021 22:12	WG1679205
1,2,3-Trichloropropane	ND		0.00250	1	05/28/2021 22:12	WG1679205
Vinyl acetate	ND		0.0100	1	05/28/2021 22:12	WG1679205
Vinyl chloride	ND		0.00100	1	05/28/2021 22:12	WG1679205
Xylenes, Total	ND		0.00300	1	05/28/2021 22:12	WG1679205
<i>(S) Toluene-d8</i>	113		80.0-120		05/28/2021 22:12	WG1679205
<i>(S) 4-Bromofluorobenzene</i>	110		77.0-126		05/28/2021 22:12	WG1679205
<i>(S) 1,2-Dichloroethane-d4</i>	87.9		70.0-130		05/28/2021 22:12	WG1679205

- 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	05/22/2021 23:50	WG1675500
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/22/2021 23:50	WG1675500

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	26.4		2.50	1	06/08/2021 10:28	WG1683959

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	21.7		20.0	1	05/30/2021 10:15	WG1680015

Sample Narrative:

L1356357-03 WG1680015: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	06/07/2021 14:21	WG1682508

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/31/2021 22:36	WG1680518

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/22/2021 01:38	WG1675326
Chloride	8.58		1.00	1	05/22/2021 01:38	WG1675326
Fluoride	ND		0.150	1	05/22/2021 01:38	WG1675326
Nitrate	0.704		0.100	1	05/22/2021 01:38	WG1675326
Sulfate	ND		5.00	1	05/22/2021 01:38	WG1675326

Mercury by Method 7470A

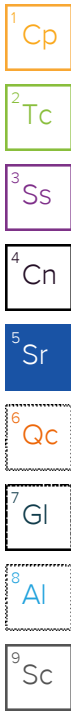
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	05/27/2021 17:33	WG1678297

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/09/2021 01:05	WG1683588

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	06/08/2021 10:28	WG1683959
Antimony	ND		0.00400	1	06/08/2021 10:28	WG1683959
Arsenic	ND		0.00200	1	06/08/2021 10:28	WG1683959
Barium	0.00898		0.00200	1	06/08/2021 10:28	WG1683959
Beryllium	ND		0.00200	1	06/08/2021 10:28	WG1683959
Cadmium	ND		0.00100	1	06/08/2021 10:28	WG1683959
Calcium	5.70		1.00	1	06/08/2021 10:28	WG1683959
Chromium	ND		0.00200	1	06/08/2021 10:28	WG1683959
Cobalt	ND		0.00200	1	06/08/2021 10:28	WG1683959
Copper	ND		0.00500	1	06/08/2021 10:28	WG1683959



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.922		0.100	1	06/08/2021 10:28	WG1683959
Lead	ND		0.00200	1	06/08/2021 10:28	WG1683959
Magnesium	2.94		1.00	1	06/08/2021 10:28	WG1683959
Manganese	0.0212		0.00500	1	06/08/2021 10:28	WG1683959
Nickel	ND		0.00200	1	06/08/2021 10:28	WG1683959
Potassium	ND		2.00	1	06/08/2021 10:28	WG1683959
Selenium	ND		0.00200	1	06/08/2021 10:28	WG1683959
Silver	ND		0.00200	1	06/08/2021 10:28	WG1683959
Sodium	3.50		2.00	1	06/08/2021 10:28	WG1683959
Thallium	ND		0.00200	1	06/08/2021 10:28	WG1683959
Vanadium	ND		0.00500	1	06/08/2021 10:28	WG1683959
Zinc	ND		0.0250	1	06/08/2021 10:28	WG1683959

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	05/28/2021 22:33	WG1679205
Acrylonitrile	ND		0.0100	1	05/28/2021 22:33	WG1679205
Benzene	ND		0.00100	1	05/28/2021 22:33	WG1679205
Bromochloromethane	ND		0.00100	1	05/28/2021 22:33	WG1679205
Bromodichloromethane	ND		0.00100	1	05/28/2021 22:33	WG1679205
Bromoform	ND		0.00100	1	05/28/2021 22:33	WG1679205
Bromomethane	ND		0.00500	1	05/28/2021 22:33	WG1679205
Carbon disulfide	ND		0.00100	1	05/28/2021 22:33	WG1679205
Carbon tetrachloride	ND		0.00100	1	05/28/2021 22:33	WG1679205
Chlorobenzene	ND		0.00100	1	05/28/2021 22:33	WG1679205
Chlorodibromomethane	ND		0.00100	1	05/28/2021 22:33	WG1679205
Chloroethane	ND		0.00500	1	05/28/2021 22:33	WG1679205
Chloroform	ND		0.00500	1	05/28/2021 22:33	WG1679205
Chloromethane	ND		0.00250	1	05/28/2021 22:33	WG1679205
Dibromomethane	ND		0.00100	1	05/28/2021 22:33	WG1679205
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/28/2021 22:33	WG1679205
1,2-Dibromoethane	ND		0.00100	1	05/28/2021 22:33	WG1679205
1,2-Dichlorobenzene	ND		0.00100	1	05/28/2021 22:33	WG1679205
1,4-Dichlorobenzene	ND		0.00100	1	05/28/2021 22:33	WG1679205
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/28/2021 22:33	WG1679205
1,1-Dichloroethane	ND		0.00100	1	05/28/2021 22:33	WG1679205
1,2-Dichloroethane	ND		0.00100	1	05/28/2021 22:33	WG1679205
1,1-Dichloroethene	ND		0.00100	1	05/28/2021 22:33	WG1679205
cis-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 22:33	WG1679205
trans-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 22:33	WG1679205
1,2-Dichloropropane	ND		0.00100	1	05/28/2021 22:33	WG1679205
cis-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 22:33	WG1679205
trans-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 22:33	WG1679205
Ethylbenzene	ND		0.00100	1	05/28/2021 22:33	WG1679205
2-Hexanone	ND		0.0100	1	05/28/2021 22:33	WG1679205
Iodomethane	ND		0.0100	1	05/28/2021 22:33	WG1679205
2-Butanone (MEK)	ND		0.0100	1	05/28/2021 22:33	WG1679205
Methylene Chloride	ND		0.00500	1	05/28/2021 22:33	WG1679205
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/28/2021 22:33	WG1679205
Styrene	ND		0.00100	1	05/28/2021 22:33	WG1679205
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 22:33	WG1679205
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 22:33	WG1679205
Tetrachloroethene	ND		0.00100	1	05/28/2021 22:33	WG1679205
Toluene	ND		0.00100	1	05/28/2021 22:33	WG1679205
1,1,1-Trichloroethane	ND		0.00100	1	05/28/2021 22:33	WG1679205

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	05/28/2021 22:33	WG1679205
Trichloroethene	ND		0.00100	1	05/28/2021 22:33	WG1679205
Trichlorofluoromethane	ND		0.00500	1	05/28/2021 22:33	WG1679205
1,2,3-Trichloropropane	ND		0.00250	1	05/28/2021 22:33	WG1679205
Vinyl acetate	ND		0.0100	1	05/28/2021 22:33	WG1679205
Vinyl chloride	ND		0.00100	1	05/28/2021 22:33	WG1679205
Xylenes, Total	ND		0.00300	1	05/28/2021 22:33	WG1679205
<i>(S) Toluene-d8</i>	112		80.0-120		05/28/2021 22:33	WG1679205
<i>(S) 4-Bromofluorobenzene</i>	110		77.0-126		05/28/2021 22:33	WG1679205
<i>(S) 1,2-Dichloroethane-d4</i>	86.8		70.0-130		05/28/2021 22:33	WG1679205

- 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	05/25/2021 07:37	WG1676161
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/25/2021 07:37	WG1676161

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	91.1		2.50	1	06/08/2021 10:31	WG1683959

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	05/30/2021 10:27	WG1680015

Sample Narrative:

L1356357-04 WG1680015: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	06/07/2021 14:23	WG1682508

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/31/2021 22:37	WG1680518

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/22/2021 01:55	WG1675326
Chloride	73.4		1.00	1	05/22/2021 01:55	WG1675326
Fluoride	ND		0.150	1	05/22/2021 01:55	WG1675326
Nitrate	1.14		0.100	1	05/22/2021 01:55	WG1675326
Sulfate	12.1		5.00	1	05/22/2021 01:55	WG1675326

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	05/27/2021 17:35	WG1678297

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/09/2021 01:08	WG1683588

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.273		0.100	1	06/08/2021 10:31	WG1683959
Antimony	ND		0.00400	1	06/08/2021 10:31	WG1683959
Arsenic	ND		0.00200	1	06/08/2021 10:31	WG1683959
Barium	0.0551		0.00200	1	06/08/2021 10:31	WG1683959
Beryllium	ND		0.00200	1	06/08/2021 10:31	WG1683959
Cadmium	ND		0.00100	1	06/08/2021 10:31	WG1683959
Calcium	17.2		1.00	1	06/08/2021 10:31	WG1683959
Chromium	0.00780		0.00200	1	06/08/2021 10:31	WG1683959
Cobalt	ND		0.00200	1	06/08/2021 10:31	WG1683959
Copper	0.00601		0.00500	1	06/08/2021 10:31	WG1683959

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	0.397		0.100	1	06/08/2021 10:31	WG1683959
Lead	ND		0.00200	1	06/08/2021 10:31	WG1683959
Magnesium	11.7		1.00	1	06/08/2021 10:31	WG1683959
Manganese	0.241		0.00500	1	06/08/2021 10:31	WG1683959
Nickel	0.00636		0.00200	1	06/08/2021 10:31	WG1683959
Potassium	ND		2.00	1	06/08/2021 10:31	WG1683959
Selenium	ND		0.00200	1	06/08/2021 10:31	WG1683959
Silver	ND		0.00200	1	06/08/2021 10:31	WG1683959
Sodium	18.7		2.00	1	06/08/2021 10:31	WG1683959
Thallium	ND		0.00200	1	06/08/2021 10:31	WG1683959
Vanadium	ND		0.00500	1	06/08/2021 10:31	WG1683959
Zinc	ND		0.0250	1	06/08/2021 10:31	WG1683959

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	05/28/2021 22:53	WG1679205
Acrylonitrile	ND		0.0100	1	05/28/2021 22:53	WG1679205
Benzene	ND		0.00100	1	05/28/2021 22:53	WG1679205
Bromochloromethane	ND		0.00100	1	05/28/2021 22:53	WG1679205
Bromodichloromethane	ND		0.00100	1	05/28/2021 22:53	WG1679205
Bromoform	ND		0.00100	1	05/28/2021 22:53	WG1679205
Bromomethane	ND		0.00500	1	05/28/2021 22:53	WG1679205
Carbon disulfide	ND		0.00100	1	05/28/2021 22:53	WG1679205
Carbon tetrachloride	ND		0.00100	1	05/28/2021 22:53	WG1679205
Chlorobenzene	ND		0.00100	1	05/28/2021 22:53	WG1679205
Chlorodibromomethane	ND		0.00100	1	05/28/2021 22:53	WG1679205
Chloroethane	ND		0.00500	1	05/28/2021 22:53	WG1679205
Chloroform	ND		0.00500	1	05/28/2021 22:53	WG1679205
Chloromethane	ND		0.00250	1	05/28/2021 22:53	WG1679205
Dibromomethane	ND		0.00100	1	05/28/2021 22:53	WG1679205
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/28/2021 22:53	WG1679205
1,2-Dibromoethane	ND		0.00100	1	05/28/2021 22:53	WG1679205
1,2-Dichlorobenzene	ND		0.00100	1	05/28/2021 22:53	WG1679205
1,4-Dichlorobenzene	ND		0.00100	1	05/28/2021 22:53	WG1679205
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/28/2021 22:53	WG1679205
1,1-Dichloroethane	ND		0.00100	1	05/28/2021 22:53	WG1679205
1,2-Dichloroethane	ND		0.00100	1	05/28/2021 22:53	WG1679205
1,1-Dichloroethene	ND		0.00100	1	05/28/2021 22:53	WG1679205
cis-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 22:53	WG1679205
trans-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 22:53	WG1679205
1,2-Dichloropropane	ND		0.00100	1	05/28/2021 22:53	WG1679205
cis-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 22:53	WG1679205
trans-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 22:53	WG1679205
Ethylbenzene	ND		0.00100	1	05/28/2021 22:53	WG1679205
2-Hexanone	ND		0.0100	1	05/28/2021 22:53	WG1679205
Iodomethane	ND		0.0100	1	05/28/2021 22:53	WG1679205
2-Butanone (MEK)	ND		0.0100	1	05/28/2021 22:53	WG1679205
Methylene Chloride	ND		0.00500	1	05/28/2021 22:53	WG1679205
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/28/2021 22:53	WG1679205
Styrene	ND		0.00100	1	05/28/2021 22:53	WG1679205
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 22:53	WG1679205
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 22:53	WG1679205
Tetrachloroethene	ND		0.00100	1	05/28/2021 22:53	WG1679205
Toluene	ND		0.00100	1	05/28/2021 22:53	WG1679205
1,1,1-Trichloroethane	ND		0.00100	1	05/28/2021 22:53	WG1679205

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	05/28/2021 22:53	WG1679205
Trichloroethene	ND		0.00100	1	05/28/2021 22:53	WG1679205
Trichlorofluoromethane	ND		0.00500	1	05/28/2021 22:53	WG1679205
1,2,3-Trichloropropane	ND		0.00250	1	05/28/2021 22:53	WG1679205
Vinyl acetate	ND		0.0100	1	05/28/2021 22:53	WG1679205
Vinyl chloride	ND		0.00100	1	05/28/2021 22:53	WG1679205
Xylenes, Total	ND		0.00300	1	05/28/2021 22:53	WG1679205
<i>(S) Toluene-d8</i>	112		80.0-120		05/28/2021 22:53	WG1679205
<i>(S) 4-Bromofluorobenzene</i>	109		77.0-126		05/28/2021 22:53	WG1679205
<i>(S) 1,2-Dichloroethane-d4</i>	88.6		70.0-130		05/28/2021 22:53	WG1679205

- 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	05/23/2021 05:17	WG1675502
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/23/2021 05:17	WG1675502

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	50.0		2.50	1	06/08/2021 10:41	WG1683959

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	05/30/2021 10:35	WG1680015

Sample Narrative:

L1356357-05 WG1680015: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	06/07/2021 14:24	WG1682508

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/31/2021 22:37	WG1680518

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/22/2021 02:11	WG1675326
Chloride	27.9		1.00	1	05/22/2021 02:11	WG1675326
Fluoride	ND		0.150	1	05/22/2021 02:11	WG1675326
Nitrate	1.58		0.100	1	05/22/2021 02:11	WG1675326
Sulfate	ND		5.00	1	05/22/2021 02:11	WG1675326

Mercury by Method 7470A

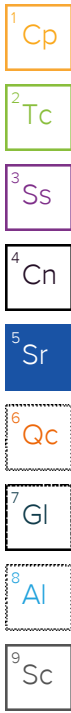
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	05/27/2021 17:36	WG1678297

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/09/2021 01:10	WG1683588

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.139	<u>B</u>	0.100	1	06/08/2021 10:41	WG1683959
Antimony	ND		0.00400	1	06/08/2021 10:41	WG1683959
Arsenic	ND		0.00200	1	06/08/2021 10:41	WG1683959
Barium	0.0151		0.00200	1	06/08/2021 10:41	WG1683959
Beryllium	ND		0.00200	1	06/08/2021 10:41	WG1683959
Cadmium	ND		0.00100	1	06/08/2021 10:41	WG1683959
Calcium	13.7		1.00	1	06/08/2021 10:41	WG1683959
Chromium	0.00253		0.00200	1	06/08/2021 10:41	WG1683959
Cobalt	ND		0.00200	1	06/08/2021 10:41	WG1683959
Copper	0.00658		0.00500	1	06/08/2021 10:41	WG1683959



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.157		0.100	1	06/08/2021 10:41	WG1683959
Lead	ND		0.00200	1	06/08/2021 10:41	WG1683959
Magnesium	3.85		1.00	1	06/08/2021 10:41	WG1683959
Manganese	0.0112		0.00500	1	06/08/2021 10:41	WG1683959
Nickel	0.00223		0.00200	1	06/08/2021 10:41	WG1683959
Potassium	ND		2.00	1	06/08/2021 10:41	WG1683959
Selenium	ND		0.00200	1	06/08/2021 10:41	WG1683959
Silver	ND		0.00200	1	06/08/2021 10:41	WG1683959
Sodium	4.07		2.00	1	06/08/2021 10:41	WG1683959
Thallium	ND		0.00200	1	06/08/2021 10:41	WG1683959
Vanadium	ND		0.00500	1	06/08/2021 10:41	WG1683959
Zinc	ND		0.0250	1	06/08/2021 10:41	WG1683959

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

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	05/28/2021 23:13	WG1679205
Acrylonitrile	ND		0.0100	1	05/28/2021 23:13	WG1679205
Benzene	ND		0.00100	1	05/28/2021 23:13	WG1679205
Bromochloromethane	ND		0.00100	1	05/28/2021 23:13	WG1679205
Bromodichloromethane	ND		0.00100	1	05/28/2021 23:13	WG1679205
Bromoform	ND		0.00100	1	05/28/2021 23:13	WG1679205
Bromomethane	ND		0.00500	1	05/28/2021 23:13	WG1679205
Carbon disulfide	ND		0.00100	1	05/28/2021 23:13	WG1679205
Carbon tetrachloride	ND		0.00100	1	05/28/2021 23:13	WG1679205
Chlorobenzene	ND		0.00100	1	05/28/2021 23:13	WG1679205
Chlorodibromomethane	ND		0.00100	1	05/28/2021 23:13	WG1679205
Chloroethane	ND		0.00500	1	05/28/2021 23:13	WG1679205
Chloroform	ND		0.00500	1	05/28/2021 23:13	WG1679205
Chloromethane	ND		0.00250	1	05/28/2021 23:13	WG1679205
Dibromomethane	ND		0.00100	1	05/28/2021 23:13	WG1679205
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/28/2021 23:13	WG1679205
1,2-Dibromoethane	ND		0.00100	1	05/28/2021 23:13	WG1679205
1,2-Dichlorobenzene	ND		0.00100	1	05/28/2021 23:13	WG1679205
1,4-Dichlorobenzene	ND		0.00100	1	05/28/2021 23:13	WG1679205
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/28/2021 23:13	WG1679205
1,1-Dichloroethane	ND		0.00100	1	05/28/2021 23:13	WG1679205
1,2-Dichloroethane	ND		0.00100	1	05/28/2021 23:13	WG1679205
1,1-Dichloroethene	ND		0.00100	1	05/28/2021 23:13	WG1679205
cis-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 23:13	WG1679205
trans-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 23:13	WG1679205
1,2-Dichloropropane	ND		0.00100	1	05/28/2021 23:13	WG1679205
cis-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 23:13	WG1679205
trans-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 23:13	WG1679205
Ethylbenzene	ND		0.00100	1	05/28/2021 23:13	WG1679205
2-Hexanone	ND		0.0100	1	05/28/2021 23:13	WG1679205
Iodomethane	ND		0.0100	1	05/28/2021 23:13	WG1679205
2-Butanone (MEK)	ND		0.0100	1	05/28/2021 23:13	WG1679205
Methylene Chloride	ND		0.00500	1	05/28/2021 23:13	WG1679205
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/28/2021 23:13	WG1679205
Styrene	ND		0.00100	1	05/28/2021 23:13	WG1679205
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 23:13	WG1679205
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 23:13	WG1679205
Tetrachloroethene	ND		0.00100	1	05/28/2021 23:13	WG1679205
Toluene	ND		0.00100	1	05/28/2021 23:13	WG1679205
1,1,1-Trichloroethane	ND		0.00100	1	05/28/2021 23:13	WG1679205

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	05/28/2021 23:13	WG1679205
Trichloroethene	ND		0.00100	1	05/28/2021 23:13	WG1679205
Trichlorofluoromethane	ND		0.00500	1	05/28/2021 23:13	WG1679205
1,2,3-Trichloropropane	ND		0.00250	1	05/28/2021 23:13	WG1679205
Vinyl acetate	ND		0.0100	1	05/28/2021 23:13	WG1679205
Vinyl chloride	ND		0.00100	1	05/28/2021 23:13	WG1679205
Xylenes, Total	ND		0.00300	1	05/28/2021 23:13	WG1679205
<i>(S) Toluene-d8</i>	109		80.0-120		05/28/2021 23:13	WG1679205
<i>(S) 4-Bromofluorobenzene</i>	108		77.0-126		05/28/2021 23:13	WG1679205
<i>(S) 1,2-Dichloroethane-d4</i>	91.1		70.0-130		05/28/2021 23:13	WG1679205

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	05/23/2021 05:30	WG1675502
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/23/2021 05:30	WG1675502

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	53.8		2.50	1	06/08/2021 10:45	WG1683959

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	05/31/2021 04:38	WG1680043

Sample Narrative:

L1356357-06 WG1680043: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND	<u>J6</u>	0.250	1	06/07/2021 14:26	WG1682508

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/31/2021 22:39	WG1680518

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/22/2021 03:00	WG1675326
Chloride	35.6		1.00	1	05/22/2021 03:00	WG1675326
Fluoride	ND		0.150	1	05/22/2021 03:00	WG1675326
Nitrate	0.751		0.100	1	05/22/2021 03:00	WG1675326
Sulfate	ND		5.00	1	05/22/2021 03:00	WG1675326

Mercury by Method 7470A

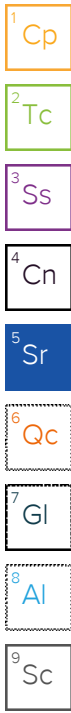
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	05/27/2021 17:38	WG1678297

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/09/2021 01:13	WG1683588

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.222	<u>B</u>	0.100	1	06/08/2021 10:45	WG1683959
Antimony	ND		0.00400	1	06/08/2021 10:45	WG1683959
Arsenic	ND		0.00200	1	06/08/2021 10:45	WG1683959
Barium	0.0305		0.00200	1	06/08/2021 10:45	WG1683959
Beryllium	ND		0.00200	1	06/08/2021 10:45	WG1683959
Cadmium	ND		0.00100	1	06/08/2021 10:45	WG1683959
Calcium	13.4		1.00	1	06/08/2021 10:45	WG1683959
Chromium	ND		0.00200	1	06/08/2021 10:45	WG1683959
Cobalt	ND		0.00200	1	06/08/2021 10:45	WG1683959
Copper	ND		0.00500	1	06/08/2021 10:45	WG1683959



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.189		0.100	1	06/08/2021 10:45	WG1683959
Lead	ND		0.00200	1	06/08/2021 10:45	WG1683959
Magnesium	4.95		1.00	1	06/08/2021 10:45	WG1683959
Manganese	ND		0.00500	1	06/08/2021 10:45	WG1683959
Nickel	ND		0.00200	1	06/08/2021 10:45	WG1683959
Potassium	ND		2.00	1	06/08/2021 10:45	WG1683959
Selenium	ND		0.00200	1	06/08/2021 10:45	WG1683959
Silver	ND		0.00200	1	06/08/2021 10:45	WG1683959
Sodium	5.22		2.00	1	06/08/2021 10:45	WG1683959
Thallium	ND		0.00200	1	06/08/2021 10:45	WG1683959
Vanadium	ND		0.00500	1	06/08/2021 10:45	WG1683959
Zinc	ND		0.0250	1	06/08/2021 10:45	WG1683959

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

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	05/28/2021 23:34	WG1679205
Acrylonitrile	ND		0.0100	1	05/28/2021 23:34	WG1679205
Benzene	ND		0.00100	1	05/28/2021 23:34	WG1679205
Bromochloromethane	ND		0.00100	1	05/28/2021 23:34	WG1679205
Bromodichloromethane	ND		0.00100	1	05/28/2021 23:34	WG1679205
Bromoform	ND		0.00100	1	05/28/2021 23:34	WG1679205
Bromomethane	ND		0.00500	1	05/28/2021 23:34	WG1679205
Carbon disulfide	ND		0.00100	1	05/28/2021 23:34	WG1679205
Carbon tetrachloride	ND		0.00100	1	05/28/2021 23:34	WG1679205
Chlorobenzene	ND		0.00100	1	05/28/2021 23:34	WG1679205
Chlorodibromomethane	ND		0.00100	1	05/28/2021 23:34	WG1679205
Chloroethane	ND		0.00500	1	05/28/2021 23:34	WG1679205
Chloroform	ND		0.00500	1	05/28/2021 23:34	WG1679205
Chloromethane	ND		0.00250	1	05/28/2021 23:34	WG1679205
Dibromomethane	ND		0.00100	1	05/28/2021 23:34	WG1679205
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/28/2021 23:34	WG1679205
1,2-Dibromoethane	ND		0.00100	1	05/28/2021 23:34	WG1679205
1,2-Dichlorobenzene	ND		0.00100	1	05/28/2021 23:34	WG1679205
1,4-Dichlorobenzene	ND		0.00100	1	05/28/2021 23:34	WG1679205
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/28/2021 23:34	WG1679205
1,1-Dichloroethane	ND		0.00100	1	05/28/2021 23:34	WG1679205
1,2-Dichloroethane	ND		0.00100	1	05/28/2021 23:34	WG1679205
1,1-Dichloroethene	ND		0.00100	1	05/28/2021 23:34	WG1679205
cis-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 23:34	WG1679205
trans-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 23:34	WG1679205
1,2-Dichloropropane	ND		0.00100	1	05/28/2021 23:34	WG1679205
cis-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 23:34	WG1679205
trans-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 23:34	WG1679205
Ethylbenzene	ND		0.00100	1	05/28/2021 23:34	WG1679205
2-Hexanone	ND		0.0100	1	05/28/2021 23:34	WG1679205
Iodomethane	ND		0.0100	1	05/28/2021 23:34	WG1679205
2-Butanone (MEK)	ND		0.0100	1	05/28/2021 23:34	WG1679205
Methylene Chloride	ND		0.00500	1	05/28/2021 23:34	WG1679205
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/28/2021 23:34	WG1679205
Styrene	ND		0.00100	1	05/28/2021 23:34	WG1679205
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 23:34	WG1679205
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 23:34	WG1679205
Tetrachloroethene	ND		0.00100	1	05/28/2021 23:34	WG1679205
Toluene	ND		0.00100	1	05/28/2021 23:34	WG1679205
1,1,1-Trichloroethane	ND		0.00100	1	05/28/2021 23:34	WG1679205

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	05/28/2021 23:34	WG1679205
Trichloroethene	ND		0.00100	1	05/28/2021 23:34	WG1679205
Trichlorofluoromethane	ND		0.00500	1	05/28/2021 23:34	WG1679205
1,2,3-Trichloropropane	ND		0.00250	1	05/28/2021 23:34	WG1679205
Vinyl acetate	ND		0.0100	1	05/28/2021 23:34	WG1679205
Vinyl chloride	ND		0.00100	1	05/28/2021 23:34	WG1679205
Xylenes, Total	ND		0.00300	1	05/28/2021 23:34	WG1679205
<i>(S) Toluene-d8</i>	109		80.0-120		05/28/2021 23:34	WG1679205
<i>(S) 4-Bromofluorobenzene</i>	109		77.0-126		05/28/2021 23:34	WG1679205
<i>(S) 1,2-Dichloroethane-d4</i>	88.7		70.0-130		05/28/2021 23:34	WG1679205

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	05/23/2021 05:42	WG1675502
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/23/2021 05:42	WG1675502

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	87.2		2.50	1	06/08/2021 10:48	WG1683959

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	05/31/2021 04:48	WG1680043

Sample Narrative:

L1356357-07 WG1680043: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	06/07/2021 14:29	WG1682508

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/31/2021 22:39	WG1680518

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/22/2021 03:17	WG1675326
Chloride	63.1		1.00	1	05/22/2021 03:17	WG1675326
Fluoride	ND		0.150	1	05/22/2021 03:17	WG1675326
Nitrate	5.54		0.100	1	05/22/2021 03:17	WG1675326
Sulfate	ND		5.00	1	05/22/2021 03:17	WG1675326

Mercury by Method 7470A

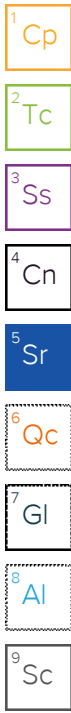
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	05/27/2021 17:40	WG1678297

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/09/2021 01:16	WG1683588

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	06/08/2021 10:48	WG1683959
Antimony	ND		0.00400	1	06/08/2021 10:48	WG1683959
Arsenic	ND		0.00200	1	06/08/2021 10:48	WG1683959
Barium	0.0442		0.00200	1	06/08/2021 10:48	WG1683959
Beryllium	ND		0.00200	1	06/08/2021 10:48	WG1683959
Cadmium	ND		0.00100	1	06/08/2021 10:48	WG1683959
Calcium	22.8		1.00	1	06/08/2021 10:48	WG1683959
Chromium	ND		0.00200	1	06/08/2021 10:48	WG1683959
Cobalt	ND		0.00200	1	06/08/2021 10:48	WG1683959
Copper	0.00508		0.00500	1	06/08/2021 10:48	WG1683959



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.259		0.100	1	06/08/2021 10:48	WG1683959
Lead	ND		0.00200	1	06/08/2021 10:48	WG1683959
Magnesium	7.37		1.00	1	06/08/2021 10:48	WG1683959
Manganese	0.0120		0.00500	1	06/08/2021 10:48	WG1683959
Nickel	ND		0.00200	1	06/08/2021 10:48	WG1683959
Potassium	ND		2.00	1	06/08/2021 10:48	WG1683959
Selenium	ND		0.00200	1	06/08/2021 10:48	WG1683959
Silver	ND		0.00200	1	06/08/2021 10:48	WG1683959
Sodium	13.9		2.00	1	06/08/2021 10:48	WG1683959
Thallium	ND		0.00200	1	06/08/2021 10:48	WG1683959
Vanadium	ND		0.00500	1	06/08/2021 10:48	WG1683959
Zinc	ND		0.0250	1	06/08/2021 10:48	WG1683959

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	05/28/2021 23:54	WG1679205
Acrylonitrile	ND		0.0100	1	05/28/2021 23:54	WG1679205
Benzene	ND		0.00100	1	05/28/2021 23:54	WG1679205
Bromochloromethane	ND		0.00100	1	05/28/2021 23:54	WG1679205
Bromodichloromethane	ND		0.00100	1	05/28/2021 23:54	WG1679205
Bromoform	ND		0.00100	1	05/28/2021 23:54	WG1679205
Bromomethane	ND		0.00500	1	05/28/2021 23:54	WG1679205
Carbon disulfide	ND		0.00100	1	05/28/2021 23:54	WG1679205
Carbon tetrachloride	ND		0.00100	1	05/28/2021 23:54	WG1679205
Chlorobenzene	ND		0.00100	1	05/28/2021 23:54	WG1679205
Chlorodibromomethane	ND		0.00100	1	05/28/2021 23:54	WG1679205
Chloroethane	ND		0.00500	1	05/28/2021 23:54	WG1679205
Chloroform	ND		0.00500	1	05/28/2021 23:54	WG1679205
Chloromethane	ND		0.00250	1	05/28/2021 23:54	WG1679205
Dibromomethane	ND		0.00100	1	05/28/2021 23:54	WG1679205
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/28/2021 23:54	WG1679205
1,2-Dibromoethane	ND		0.00100	1	05/28/2021 23:54	WG1679205
1,2-Dichlorobenzene	ND		0.00100	1	05/28/2021 23:54	WG1679205
1,4-Dichlorobenzene	ND		0.00100	1	05/28/2021 23:54	WG1679205
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/28/2021 23:54	WG1679205
1,1-Dichloroethane	ND		0.00100	1	05/28/2021 23:54	WG1679205
1,2-Dichloroethane	ND		0.00100	1	05/28/2021 23:54	WG1679205
1,1-Dichloroethene	ND		0.00100	1	05/28/2021 23:54	WG1679205
cis-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 23:54	WG1679205
trans-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 23:54	WG1679205
1,2-Dichloropropane	ND		0.00100	1	05/28/2021 23:54	WG1679205
cis-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 23:54	WG1679205
trans-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 23:54	WG1679205
Ethylbenzene	ND		0.00100	1	05/28/2021 23:54	WG1679205
2-Hexanone	ND		0.0100	1	05/28/2021 23:54	WG1679205
Iodomethane	ND		0.0100	1	05/28/2021 23:54	WG1679205
2-Butanone (MEK)	ND		0.0100	1	05/28/2021 23:54	WG1679205
Methylene Chloride	ND		0.00500	1	05/28/2021 23:54	WG1679205
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/28/2021 23:54	WG1679205
Styrene	ND		0.00100	1	05/28/2021 23:54	WG1679205
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 23:54	WG1679205
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 23:54	WG1679205
Tetrachloroethene	ND		0.00100	1	05/28/2021 23:54	WG1679205
Toluene	ND		0.00100	1	05/28/2021 23:54	WG1679205
1,1,1-Trichloroethane	ND		0.00100	1	05/28/2021 23:54	WG1679205

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	05/28/2021 23:54	WG1679205
Trichloroethene	ND		0.00100	1	05/28/2021 23:54	WG1679205
Trichlorofluoromethane	ND		0.00500	1	05/28/2021 23:54	WG1679205
1,2,3-Trichloropropane	ND		0.00250	1	05/28/2021 23:54	WG1679205
Vinyl acetate	ND		0.0100	1	05/28/2021 23:54	WG1679205
Vinyl chloride	ND		0.00100	1	05/28/2021 23:54	WG1679205
Xylenes, Total	ND		0.00300	1	05/28/2021 23:54	WG1679205
<i>(S) Toluene-d8</i>	113		80.0-120		05/28/2021 23:54	WG1679205
<i>(S) 4-Bromofluorobenzene</i>	111		77.0-126		05/28/2021 23:54	WG1679205
<i>(S) 1,2-Dichloroethane-d4</i>	88.9		70.0-130		05/28/2021 23:54	WG1679205

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	05/25/2021 07:49	WG1676161
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/25/2021 07:49	WG1676161

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	49.3		2.50	1	06/08/2021 10:51	WG1683959

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	26.9		20.0	1	05/31/2021 04:56	WG1680043

Sample Narrative:

L1356357-08 WG1680043: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	06/07/2021 14:33	WG1682508

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/31/2021 22:39	WG1680518

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/22/2021 03:33	WG1675326
Chloride	9.08		1.00	1	05/22/2021 03:33	WG1675326
Fluoride	0.241		0.150	1	05/22/2021 03:33	WG1675326
Nitrate	ND	Q	0.100	1	05/22/2021 03:33	WG1675326
Sulfate	29.8		5.00	1	05/22/2021 03:33	WG1675326

Mercury by Method 7470A

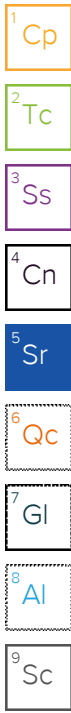
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	05/27/2021 17:42	WG1678297

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/09/2021 01:19	WG1683588

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.446		0.100	1	06/08/2021 10:51	WG1683959
Antimony	ND		0.00400	1	06/08/2021 10:51	WG1683959
Arsenic	ND		0.00200	1	06/08/2021 10:51	WG1683959
Barium	0.0467		0.00200	1	06/08/2021 10:51	WG1683959
Beryllium	ND		0.00200	1	06/08/2021 10:51	WG1683959
Cadmium	0.00274		0.00100	1	06/08/2021 10:51	WG1683959
Calcium	12.6		1.00	1	06/08/2021 10:51	WG1683959
Chromium	ND		0.00200	1	06/08/2021 10:51	WG1683959
Cobalt	ND		0.00200	1	06/08/2021 10:51	WG1683959
Copper	0.00565		0.00500	1	06/08/2021 10:51	WG1683959



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.334		0.100	1	06/08/2021 10:51	WG1683959
Lead	ND		0.00200	1	06/08/2021 10:51	WG1683959
Magnesium	4.30		1.00	1	06/08/2021 10:51	WG1683959
Manganese	0.353		0.00500	1	06/08/2021 10:51	WG1683959
Nickel	0.00389		0.00200	1	06/08/2021 10:51	WG1683959
Potassium	3.87		2.00	1	06/08/2021 10:51	WG1683959
Selenium	ND		0.00200	1	06/08/2021 10:51	WG1683959
Silver	ND		0.00200	1	06/08/2021 10:51	WG1683959
Sodium	5.91		2.00	1	06/08/2021 10:51	WG1683959
Thallium	ND		0.00200	1	06/08/2021 10:51	WG1683959
Vanadium	ND		0.00500	1	06/08/2021 10:51	WG1683959
Zinc	ND		0.0250	1	06/08/2021 10:51	WG1683959

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	05/29/2021 00:14	WG1679205
Acrylonitrile	ND		0.0100	1	05/29/2021 00:14	WG1679205
Benzene	ND		0.00100	1	05/29/2021 00:14	WG1679205
Bromochloromethane	ND		0.00100	1	05/29/2021 00:14	WG1679205
Bromodichloromethane	ND		0.00100	1	05/29/2021 00:14	WG1679205
Bromoform	ND		0.00100	1	05/29/2021 00:14	WG1679205
Bromomethane	ND		0.00500	1	05/29/2021 00:14	WG1679205
Carbon disulfide	ND		0.00100	1	05/29/2021 00:14	WG1679205
Carbon tetrachloride	ND		0.00100	1	05/29/2021 00:14	WG1679205
Chlorobenzene	ND		0.00100	1	05/29/2021 00:14	WG1679205
Chlorodibromomethane	ND		0.00100	1	05/29/2021 00:14	WG1679205
Chloroethane	ND		0.00500	1	05/29/2021 00:14	WG1679205
Chloroform	ND		0.00500	1	05/29/2021 00:14	WG1679205
Chloromethane	ND		0.00250	1	05/29/2021 00:14	WG1679205
Dibromomethane	ND		0.00100	1	05/29/2021 00:14	WG1679205
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/29/2021 00:14	WG1679205
1,2-Dibromoethane	ND		0.00100	1	05/29/2021 00:14	WG1679205
1,2-Dichlorobenzene	ND		0.00100	1	05/29/2021 00:14	WG1679205
1,4-Dichlorobenzene	ND		0.00100	1	05/29/2021 00:14	WG1679205
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/29/2021 00:14	WG1679205
1,1-Dichloroethane	ND		0.00100	1	05/29/2021 00:14	WG1679205
1,2-Dichloroethane	ND		0.00100	1	05/29/2021 00:14	WG1679205
1,1-Dichloroethene	ND		0.00100	1	05/29/2021 00:14	WG1679205
cis-1,2-Dichloroethene	ND		0.00100	1	05/29/2021 00:14	WG1679205
trans-1,2-Dichloroethene	ND		0.00100	1	05/29/2021 00:14	WG1679205
1,2-Dichloropropane	ND		0.00100	1	05/29/2021 00:14	WG1679205
cis-1,3-Dichloropropene	ND		0.00100	1	05/29/2021 00:14	WG1679205
trans-1,3-Dichloropropene	ND		0.00100	1	05/29/2021 00:14	WG1679205
Ethylbenzene	ND		0.00100	1	05/29/2021 00:14	WG1679205
2-Hexanone	ND		0.0100	1	05/29/2021 00:14	WG1679205
Iodomethane	ND		0.0100	1	05/29/2021 00:14	WG1679205
2-Butanone (MEK)	ND		0.0100	1	05/29/2021 00:14	WG1679205
Methylene Chloride	ND		0.00500	1	05/29/2021 00:14	WG1679205
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/29/2021 00:14	WG1679205
Styrene	ND		0.00100	1	05/29/2021 00:14	WG1679205
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/29/2021 00:14	WG1679205
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/29/2021 00:14	WG1679205
Tetrachloroethene	ND		0.00100	1	05/29/2021 00:14	WG1679205
Toluene	ND		0.00100	1	05/29/2021 00:14	WG1679205
1,1,1-Trichloroethane	ND		0.00100	1	05/29/2021 00:14	WG1679205

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	05/29/2021 00:14	WG1679205
Trichloroethene	ND		0.00100	1	05/29/2021 00:14	WG1679205
Trichlorofluoromethane	ND		0.00500	1	05/29/2021 00:14	WG1679205
1,2,3-Trichloropropane	ND		0.00250	1	05/29/2021 00:14	WG1679205
Vinyl acetate	ND		0.0100	1	05/29/2021 00:14	WG1679205
Vinyl chloride	ND		0.00100	1	05/29/2021 00:14	WG1679205
Xylenes, Total	ND		0.00300	1	05/29/2021 00:14	WG1679205
<i>(S) Toluene-d8</i>	109		80.0-120		05/29/2021 00:14	WG1679205
<i>(S) 4-Bromofluorobenzene</i>	112		77.0-126		05/29/2021 00:14	WG1679205
<i>(S) 1,2-Dichloroethane-d4</i>	88.0		70.0-130		05/29/2021 00:14	WG1679205

- 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	05/25/2021 08:01	WG1676161
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/25/2021 08:01	WG1676161

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	ND		2.50	1	06/08/2021 10:55	WG1683959

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	05/31/2021 05:06	WG1680043

Sample Narrative:

L1356357-09 WG1680043: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	06/07/2021 15:15	WG1682508

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/31/2021 22:41	WG1680518

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/22/2021 03:50	WG1675326
Chloride	ND		1.00	1	05/22/2021 03:50	WG1675326
Fluoride	ND		0.150	1	05/22/2021 03:50	WG1675326
Nitrate	ND		0.100	1	05/22/2021 03:50	WG1675326
Sulfate	ND		5.00	1	05/22/2021 03:50	WG1675326

Mercury by Method 7470A

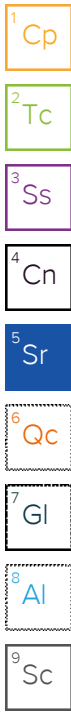
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	05/27/2021 17:44	WG1678297

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/09/2021 01:21	WG1683588

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	06/08/2021 10:55	WG1683959
Antimony	ND		0.00400	1	06/08/2021 10:55	WG1683959
Arsenic	ND		0.00200	1	06/08/2021 10:55	WG1683959
Barium	ND		0.00200	1	06/08/2021 10:55	WG1683959
Beryllium	ND		0.00200	1	06/08/2021 10:55	WG1683959
Cadmium	ND		0.00100	1	06/08/2021 10:55	WG1683959
Calcium	ND		1.00	1	06/08/2021 10:55	WG1683959
Chromium	ND		0.00200	1	06/08/2021 10:55	WG1683959
Cobalt	ND		0.00200	1	06/08/2021 10:55	WG1683959
Copper	ND		0.00500	1	06/08/2021 10:55	WG1683959



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	06/08/2021 10:55	WG1683959
Lead	ND		0.00200	1	06/08/2021 10:55	WG1683959
Magnesium	ND		1.00	1	06/08/2021 10:55	WG1683959
Manganese	ND		0.00500	1	06/08/2021 10:55	WG1683959
Nickel	ND		0.00200	1	06/08/2021 10:55	WG1683959
Potassium	ND		2.00	1	06/08/2021 10:55	WG1683959
Selenium	ND		0.00200	1	06/08/2021 10:55	WG1683959
Silver	ND		0.00200	1	06/08/2021 10:55	WG1683959
Sodium	ND		2.00	1	06/08/2021 10:55	WG1683959
Thallium	ND		0.00200	1	06/08/2021 10:55	WG1683959
Vanadium	ND		0.00500	1	06/08/2021 10:55	WG1683959
Zinc	ND		0.0250	1	06/08/2021 10:55	WG1683959

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	05/28/2021 20:50	WG1679205
Acrylonitrile	ND		0.0100	1	05/28/2021 20:50	WG1679205
Benzene	ND		0.00100	1	05/28/2021 20:50	WG1679205
Bromochloromethane	ND		0.00100	1	05/28/2021 20:50	WG1679205
Bromodichloromethane	ND		0.00100	1	05/28/2021 20:50	WG1679205
Bromoform	ND		0.00100	1	05/28/2021 20:50	WG1679205
Bromomethane	ND		0.00500	1	05/28/2021 20:50	WG1679205
Carbon disulfide	ND		0.00100	1	05/28/2021 20:50	WG1679205
Carbon tetrachloride	ND		0.00100	1	05/28/2021 20:50	WG1679205
Chlorobenzene	ND		0.00100	1	05/28/2021 20:50	WG1679205
Chlorodibromomethane	ND		0.00100	1	05/28/2021 20:50	WG1679205
Chloroethane	ND		0.00500	1	05/28/2021 20:50	WG1679205
Chloroform	ND		0.00500	1	05/28/2021 20:50	WG1679205
Chloromethane	ND		0.00250	1	05/28/2021 20:50	WG1679205
Dibromomethane	ND		0.00100	1	05/28/2021 20:50	WG1679205
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/28/2021 20:50	WG1679205
1,2-Dibromoethane	ND		0.00100	1	05/28/2021 20:50	WG1679205
1,2-Dichlorobenzene	ND		0.00100	1	05/28/2021 20:50	WG1679205
1,4-Dichlorobenzene	ND		0.00100	1	05/28/2021 20:50	WG1679205
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/28/2021 20:50	WG1679205
1,1-Dichloroethane	ND		0.00100	1	05/28/2021 20:50	WG1679205
1,2-Dichloroethane	ND		0.00100	1	05/28/2021 20:50	WG1679205
1,1-Dichloroethene	ND		0.00100	1	05/28/2021 20:50	WG1679205
cis-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 20:50	WG1679205
trans-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 20:50	WG1679205
1,2-Dichloropropane	ND		0.00100	1	05/28/2021 20:50	WG1679205
cis-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 20:50	WG1679205
trans-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 20:50	WG1679205
Ethylbenzene	ND		0.00100	1	05/28/2021 20:50	WG1679205
2-Hexanone	ND		0.0100	1	05/28/2021 20:50	WG1679205
Iodomethane	ND		0.0100	1	05/28/2021 20:50	WG1679205
2-Butanone (MEK)	ND		0.0100	1	05/28/2021 20:50	WG1679205
Methylene Chloride	ND		0.00500	1	05/28/2021 20:50	WG1679205
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/28/2021 20:50	WG1679205
Styrene	ND		0.00100	1	05/28/2021 20:50	WG1679205
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 20:50	WG1679205
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 20:50	WG1679205
Tetrachloroethene	ND		0.00100	1	05/28/2021 20:50	WG1679205
Toluene	ND		0.00100	1	05/28/2021 20:50	WG1679205
1,1,1-Trichloroethane	ND		0.00100	1	05/28/2021 20:50	WG1679205

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	05/28/2021 20:50	WG1679205
Trichloroethene	ND		0.00100	1	05/28/2021 20:50	WG1679205
Trichlorofluoromethane	ND		0.00500	1	05/28/2021 20:50	WG1679205
1,2,3-Trichloropropane	ND		0.00250	1	05/28/2021 20:50	WG1679205
Vinyl acetate	ND		0.0100	1	05/28/2021 20:50	WG1679205
Vinyl chloride	ND		0.00100	1	05/28/2021 20:50	WG1679205
Xylenes, Total	ND		0.00300	1	05/28/2021 20:50	WG1679205
<i>(S) Toluene-d8</i>	113		80.0-120		05/28/2021 20:50	WG1679205
<i>(S) 4-Bromofluorobenzene</i>	113		77.0-126		05/28/2021 20:50	WG1679205
<i>(S) 1,2-Dichloroethane-d4</i>	85.2		70.0-130		05/28/2021 20:50	WG1679205

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	05/25/2021 08:13	WG1676161
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/25/2021 08:13	WG1676161

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	05/28/2021 21:11	WG1679205
Acrylonitrile	ND		0.0100	1	05/28/2021 21:11	WG1679205
Benzene	ND		0.00100	1	05/28/2021 21:11	WG1679205
Bromochloromethane	ND		0.00100	1	05/28/2021 21:11	WG1679205
Bromodichloromethane	ND		0.00100	1	05/28/2021 21:11	WG1679205
Bromoform	ND		0.00100	1	05/28/2021 21:11	WG1679205
Bromomethane	ND		0.00500	1	05/28/2021 21:11	WG1679205
Carbon disulfide	ND		0.00100	1	05/28/2021 21:11	WG1679205
Carbon tetrachloride	ND		0.00100	1	05/28/2021 21:11	WG1679205
Chlorobenzene	ND		0.00100	1	05/28/2021 21:11	WG1679205
Chlorodibromomethane	ND		0.00100	1	05/28/2021 21:11	WG1679205
Chloroethane	ND		0.00500	1	05/28/2021 21:11	WG1679205
Chloroform	ND		0.00500	1	05/28/2021 21:11	WG1679205
Chloromethane	ND		0.00250	1	05/28/2021 21:11	WG1679205
Dibromomethane	ND		0.00100	1	05/28/2021 21:11	WG1679205
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/28/2021 21:11	WG1679205
1,2-Dibromoethane	ND		0.00100	1	05/28/2021 21:11	WG1679205
1,2-Dichlorobenzene	ND		0.00100	1	05/28/2021 21:11	WG1679205
1,4-Dichlorobenzene	ND		0.00100	1	05/28/2021 21:11	WG1679205
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/28/2021 21:11	WG1679205
1,1-Dichloroethane	ND		0.00100	1	05/28/2021 21:11	WG1679205
1,2-Dichloroethane	ND		0.00100	1	05/28/2021 21:11	WG1679205
1,1-Dichloroethene	ND		0.00100	1	05/28/2021 21:11	WG1679205
cis-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 21:11	WG1679205
trans-1,2-Dichloroethene	ND		0.00100	1	05/28/2021 21:11	WG1679205
1,2-Dichloropropane	ND		0.00100	1	05/28/2021 21:11	WG1679205
cis-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 21:11	WG1679205
trans-1,3-Dichloropropene	ND		0.00100	1	05/28/2021 21:11	WG1679205
Ethylbenzene	ND		0.00100	1	05/28/2021 21:11	WG1679205
2-Hexanone	ND		0.0100	1	05/28/2021 21:11	WG1679205
Iodomethane	ND		0.0100	1	05/28/2021 21:11	WG1679205
2-Butanone (MEK)	ND		0.0100	1	05/28/2021 21:11	WG1679205
Methylene Chloride	ND		0.00500	1	05/28/2021 21:11	WG1679205
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/28/2021 21:11	WG1679205
Styrene	ND		0.00100	1	05/28/2021 21:11	WG1679205
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 21:11	WG1679205
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/28/2021 21:11	WG1679205
Tetrachloroethene	ND		0.00100	1	05/28/2021 21:11	WG1679205
Toluene	ND		0.00100	1	05/28/2021 21:11	WG1679205
1,1,1-Trichloroethane	ND		0.00100	1	05/28/2021 21:11	WG1679205
1,1,2-Trichloroethane	ND		0.00100	1	05/28/2021 21:11	WG1679205
Trichloroethene	ND		0.00100	1	05/28/2021 21:11	WG1679205
Trichlorofluoromethane	ND		0.00500	1	05/28/2021 21:11	WG1679205
1,2,3-Trichloropropane	ND		0.00250	1	05/28/2021 21:11	WG1679205
Vinyl acetate	ND		0.0100	1	05/28/2021 21:11	WG1679205
Vinyl chloride	ND		0.00100	1	05/28/2021 21:11	WG1679205
Xylenes, Total	ND		0.00300	1	05/28/2021 21:11	WG1679205
(S) Toluene-d8	110		80.0-120		05/28/2021 21:11	WG1679205
(S) 4-Bromofluorobenzene	107		77.0-126		05/28/2021 21:11	WG1679205
(S) 1,2-Dichloroethane-d4	87.6		70.0-130		05/28/2021 21:11	WG1679205

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

Method Blank (MB)

(MB) R3661113-1 05/30/21 06:15

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

Sample Narrative:

BLANK: Endpoint pH 4.5

L1356268-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1356268-01 05/30/21 07:15 • (DUP) R3661113-2 05/30/21 07:23

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	345	347	1	0.486		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace
DUP: Endpoint pH 4.5

L1356315-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1356315-01 05/30/21 08:31 • (DUP) R3661113-4 05/30/21 08:39

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	322	317	1	1.27		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace
DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3661113-3 05/30/21 07:54

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	106	106	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5



Method Blank (MB)

(MB) R3661142-1 05/31/21 01:14

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

Sample Narrative:

BLANK: Endpoint pH 4.5

L1355819-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1355819-05 05/31/21 02:45 • (DUP) R3661142-2 05/31/21 02:57

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	73.8	73.9	1	0.109		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1356170-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1356170-02 05/31/21 04:18 • (DUP) R3661142-4 05/31/21 04:28

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	143	144	1	0.320		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3661142-3 05/31/21 03:21

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	103	103	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5



Method Blank (MB)

(MB) R3664196-1 06/07/21 13:56

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

L1356161-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1356161-01 06/07/21 14:04 • (DUP) R3664196-5 06/07/21 14:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	26.4	26.9	5	1.85		10

L1356357-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1356357-07 06/07/21 14:29 • (DUP) R3664196-7 06/07/21 14:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	ND	ND	1	0.000		10

Laboratory Control Sample (LCS)

(LCS) R3664196-2 06/07/21 13:58

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Ammonia Nitrogen	7.50	7.20	95.9	90.0-110	

L1356141-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1356141-01 06/07/21 13:59 • (MS) R3664196-3 06/07/21 14:01 • (MSD) R3664196-4 06/07/21 14:03

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	4.48	4.59	89.5	91.9	1	90.0-110	J6		2.60	10

L1356357-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1356357-06 06/07/21 14:26 • (MS) R3664196-6 06/07/21 14:28

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Ammonia Nitrogen	5.00	ND	4.44	88.7	1	90.0-110	J6

Method Blank (MB)

(MB) R3661363-1 05/31/21 22:31

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

L1356311-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1356311-08 05/31/21 22:31 • (DUP) R3661363-3 05/31/21 22:32

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

L1356357-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1356357-09 05/31/21 22:41 • (DUP) R3661363-6 05/31/21 22:41

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

Laboratory Control Sample (LCS)

(LCS) R3661363-2 05/31/21 22:31

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
COD	500	502	100	90.0-110	

L1356311-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1356311-09 05/31/21 22:32 • (MS) R3661363-4 05/31/21 22:32 • (MSD) R3661363-5 05/31/21 22:33

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	532	531	104	104	1	80.0-120			0.277	20

Method Blank (MB)

(MB) R3657950-1 05/21/21 12:39

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
Nitrate	U		0.0480	0.100
Sulfate	U		0.594	5.00

L1356115-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1356115-03 05/21/21 21:16 • (DUP) R3657950-3 05/21/21 21:32

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	ND	ND	1	0.000		15
Fluoride	ND	ND	1	0.000		15
Nitrate	ND	ND	1	0.000		15
Sulfate	ND	ND	1	0.000		15

L1356357-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1356357-09 05/22/21 03:50 • (DUP) R3657950-6 05/22/21 04:06

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	ND	ND	1	0.000		15
Fluoride	ND	ND	1	0.000		15
Nitrate	ND	ND	1	0.000		15
Sulfate	ND	ND	1	0.000		15

Laboratory Control Sample (LCS)

(LCS) R3657950-2 05/21/21 12:56

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	39.0	97.5	80.0-120	
Chloride	40.0	40.1	100	80.0-120	
Fluoride	8.00	8.34	104	80.0-120	
Nitrate	8.00	8.03	100	80.0-120	



Laboratory Control Sample (LCS)

(LCS) R3657950-2 05/21/21 12:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Sulfate	40.0	39.8	99.4	80.0-120	

L1356115-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1356115-03 05/21/21 21:16 • (MS) R3657950-4 05/21/21 21:48 • (MSD) R3657950-5 05/21/21 22:05

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	49.4	49.4	98.8	98.8	1	80.0-120			0.0397	15
Chloride	50.0	ND	49.8	49.8	99.5	99.7	1	80.0-120			0.135	15
Fluoride	5.00	ND	4.96	4.97	99.2	99.4	1	80.0-120			0.119	15
Nitrate	5.00	ND	4.90	4.90	97.9	98.0	1	80.0-120			0.0694	15
Sulfate	50.0	ND	49.7	49.7	99.4	99.5	1	80.0-120			0.0378	15

L1356357-09 Original Sample (OS) • Matrix Spike (MS)

(OS) L1356357-09 05/22/21 03:50 • (MS) R3657950-7 05/22/21 04:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	ND	48.5	97.0	1	80.0-120	
Chloride	50.0	ND	49.0	98.0	1	80.0-120	
Fluoride	5.00	ND	4.87	97.5	1	80.0-120	
Nitrate	5.00	ND	4.79	95.9	1	80.0-120	
Sulfate	50.0	ND	48.9	97.7	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) R3660188-1 05/27/21 16:49

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) R3660188-2 05/27/21 16:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00309	103	80.0-120	

L1356311-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1356311-07 05/27/21 16:53 • (MS) R3660188-3 05/27/21 16:55 • (MSD) R3660188-4 05/27/21 16:57

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	0.00305	0.00313	102	104	1	75.0-125			2.75	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3664898-1 06/09/21 00:25

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

¹Cp

²Tc

³Ss

Laboratory Control Sample (LCS)

(LCS) R3664898-2 06/09/21 00:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.977	97.7	80.0-120	

⁴Cn

⁵Sr

L1356318-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1356318-01 06/09/21 00:31 • (MS) R3664898-4 06/09/21 00:36 • (MSD) R3664898-5 06/09/21 00:38

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		1.03	1.05	97.7	100	1	75.0-125			2.20	20

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3664422-1 06/08/21 09:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum	0.0227	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	U		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	0.128	U	0.108	2.00
Selenium	0.000832	U	0.000300	0.00200
Silver	0.000106	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) R3664422-2 06/08/21 09:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	5.00	5.03	101	80.0-120	
Antimony	0.0500	0.0580	116	80.0-120	
Arsenic	0.0500	0.0480	96.1	80.0-120	
Barium	0.0500	0.0486	97.1	80.0-120	
Beryllium	0.0500	0.0485	96.9	80.0-120	
Cadmium	0.0500	0.0504	101	80.0-120	
Calcium	5.00	4.99	99.9	80.0-120	
Chromium	0.0500	0.0512	102	80.0-120	
Copper	0.0500	0.0493	98.6	80.0-120	
Cobalt	0.0500	0.0506	101	80.0-120	
Iron	5.00	5.09	102	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3664422-2 06/08/21 09:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Lead	0.0500	0.0495	99.0	80.0-120	
Magnesium	5.00	5.03	101	80.0-120	
Manganese	0.0500	0.0496	99.3	80.0-120	
Nickel	0.0500	0.0491	98.3	80.0-120	
Potassium	5.00	5.09	102	80.0-120	
Selenium	0.0500	0.0537	107	80.0-120	
Silver	0.0500	0.0481	96.2	80.0-120	
Sodium	5.00	5.13	103	80.0-120	
Thallium	0.0500	0.0479	95.8	80.0-120	
Vanadium	0.0500	0.0503	101	80.0-120	
Zinc	0.500	0.510	102	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1356311-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1356311-07 06/08/21 09:26 • (MS) R3664422-4 06/08/21 09:33 • (MSD) R3664422-5 06/08/21 09:36

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Aluminum	5.00	0.109	5.00	5.14	97.8	101	1	75.0-125			2.68	20
Antimony	0.0500	ND	0.0581	0.0604	116	121	1	75.0-125			4.03	20
Arsenic	0.0500	0.00872	0.0554	0.0625	93.3	108	1	75.0-125			12.1	20
Barium	0.0500	0.239	0.288	0.300	98.7	121	1	75.0-125			3.87	20
Beryllium	0.0500	ND	0.0494	0.0503	98.8	101	1	75.0-125			1.77	20
Cadmium	0.0500	ND	0.0510	0.0506	102	101	1	75.0-125			0.710	20
Calcium	5.00	121	125	123	79.0	48.9	1	75.0-125		V	1.22	20
Chromium	0.0500	ND	0.0488	0.0529	97.6	106	1	75.0-125			8.07	20
Copper	0.0500	ND	0.0488	0.0517	89.0	94.9	1	75.0-125			5.81	20
Cobalt	0.0500	ND	0.0497	0.0548	96.1	106	1	75.0-125			9.82	20
Potassium	5.00	5.48	10.6	10.6	102	103	1	75.0-125			0.363	20
Iron	5.00	2.66	7.46	8.11	96.0	109	1	75.0-125			8.29	20
Lead	0.0500	ND	0.0497	0.0504	99.5	101	1	75.0-125			1.41	20
Magnesium	5.00	26.3	31.0	30.8	93.2	89.7	1	75.0-125			0.560	20
Manganese	0.0500	0.747	0.775	0.836	56.4	180	1	75.0-125	V	V	7.66	20
Nickel	0.0500	0.00411	0.0527	0.0555	97.1	103	1	75.0-125			5.25	20
Selenium	0.0500	ND	0.0493	0.0512	97.2	101	1	75.0-125			3.84	20
Silver	0.0500	ND	0.0489	0.0496	97.4	98.8	1	75.0-125			1.44	20
Sodium	5.00	7.03	11.9	11.8	98.3	96.1	1	75.0-125			0.911	20
Thallium	0.0500	ND	0.0484	0.0490	96.8	98.0	1	75.0-125			1.22	20
Vanadium	0.0500	ND	0.0495	0.0530	99.0	106	1	75.0-125			6.87	20
Zinc	0.500	ND	0.528	0.549	103	107	1	75.0-125			4.03	20

Method Blank (MB)

(MB) R3662389-2 05/28/21 20:30

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) R3662389-2 05/28/21 20:30

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	112			80.0-120
(S) 4-Bromofluorobenzene	111			77.0-126
(S) 1,2-Dichloroethane-d4	85.2			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3662389-1 05/28/21 19:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.0250	0.0377	151	19.0-160	
Acrylonitrile	0.0250	0.0297	119	55.0-149	
Benzene	0.00500	0.00497	99.4	70.0-123	
Bromodichloromethane	0.00500	0.00445	89.0	75.0-120	
Bromochloromethane	0.00500	0.00519	104	76.0-122	
Bromoform	0.00500	0.00440	88.0	68.0-132	
Bromomethane	0.00500	0.00486	97.2	10.0-160	
Carbon disulfide	0.00500	0.00470	94.0	61.0-128	
Carbon tetrachloride	0.00500	0.00431	86.2	68.0-126	
Chlorobenzene	0.00500	0.00479	95.8	80.0-121	
Chlorodibromomethane	0.00500	0.00470	94.0	77.0-125	
Chloroethane	0.00500	0.00500	100	47.0-150	
Chloroform	0.00500	0.00452	90.4	73.0-120	
Chloromethane	0.00500	0.00545	109	41.0-142	
1,2-Dibromo-3-Chloropropane	0.00500	0.00451	90.2	58.0-134	
1,2-Dibromoethane	0.00500	0.00527	105	80.0-122	
Dibromomethane	0.00500	0.00460	92.0	80.0-120	
1,2-Dichlorobenzene	0.00500	0.00464	92.8	79.0-121	
1,4-Dichlorobenzene	0.00500	0.00472	94.4	79.0-120	
trans-1,4-Dichloro-2-butene	0.00500	0.00435	87.0	33.0-144	
1,1-Dichloroethane	0.00500	0.00526	105	70.0-126	
1,2-Dichloroethane	0.00500	0.00415	83.0	70.0-128	
1,1-Dichloroethene	0.00500	0.00489	97.8	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) R3662389-1 05/28/21 19:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
cis-1,2-Dichloroethene	0.00500	0.00493	98.6	73.0-120	
trans-1,2-Dichloroethene	0.00500	0.00501	100	73.0-120	
1,2-Dichloropropane	0.00500	0.00512	102	77.0-125	
cis-1,3-Dichloropropene	0.00500	0.00464	92.8	80.0-123	
trans-1,3-Dichloropropene	0.00500	0.00469	93.8	78.0-124	
Ethylbenzene	0.00500	0.00494	98.8	79.0-123	
2-Hexanone	0.0250	0.0296	118	67.0-149	
Iodomethane	0.0250	0.0252	101	33.0-147	
2-Butanone (MEK)	0.0250	0.0298	119	44.0-160	
Methylene Chloride	0.00500	0.00503	101	67.0-120	
4-Methyl-2-pentanone (MIBK)	0.0250	0.0309	124	68.0-142	
Styrene	0.00500	0.00500	100	73.0-130	
1,1,1,2-Tetrachloroethane	0.00500	0.00500	100	75.0-125	
1,1,2,2-Tetrachloroethane	0.00500	0.00475	95.0	65.0-130	
Tetrachloroethene	0.00500	0.00459	91.8	72.0-132	
Toluene	0.00500	0.00488	97.6	79.0-120	
1,1,1-Trichloroethane	0.00500	0.00433	86.6	73.0-124	
1,1,2-Trichloroethane	0.00500	0.00513	103	80.0-120	
Trichloroethene	0.00500	0.00483	96.6	78.0-124	
Trichlorofluoromethane	0.00500	0.00397	79.4	59.0-147	
1,2,3-Trichloropropane	0.00500	0.00479	95.8	73.0-130	
Vinyl acetate	0.0250	0.0209	83.6	11.0-160	
Vinyl chloride	0.00500	0.00474	94.8	67.0-131	
Xylenes, Total	0.0150	0.0152	101	79.0-123	
(S) Toluene-d8			111	80.0-120	
(S) 4-Bromofluorobenzene			112	77.0-126	
(S) 1,2-Dichloroethane-d4			84.8	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) R3659564-1 05/22/21 18:46

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

L1355308-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1355308-05 05/22/21 19:34 • (DUP) R3659564-3 05/22/21 19:22

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) R3659564-4 05/22/21 22:13 • (LCSD) R3659564-5 05/23/21 00:14

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	0.000225	0.000230	90.0	92.0	60.0-140			2.20	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000233	0.000237	93.2	94.8	60.0-140			1.70	20

L1353257-18 Original Sample (OS) • Matrix Spike (MS)

(OS) L1353257-18 05/22/21 19:10 • (MS) R3659564-2 05/22/21 18:58

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	0.0000981	98.1	1	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000100	ND	0.0000794	79.4	1	72.0-148	



Method Blank (MB)

(MB) R3659565-1 05/23/21 00:38

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

L1353257-16 Original Sample (OS) • Duplicate (DUP)

(OS) L1353257-16 05/23/21 01:27 • (DUP) R3659565-3 05/23/21 01:15

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) R3659565-4 05/23/21 03:53 • (LCSD) R3659565-5 05/23/21 06:06

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	0.000232	0.000231	92.8	92.4	60.0-140			0.432	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000240	0.000237	96.0	94.8	60.0-140			1.26	20

L1353257-17 Original Sample (OS) • Matrix Spike (MS)

(OS) L1353257-17 05/23/21 01:03 • (MS) R3659565-2 05/23/21 00:51

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	0.000105	105	1	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000100	ND	0.000101	101	1	72.0-148	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3659593-1 05/25/21 05:15

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

L1356221-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1356221-02 05/25/21 06:28 • (DUP) R3659593-4 05/25/21 06:16

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) R3659593-5 05/25/21 08:37 • (LCSD) R3659593-6 05/25/21 11:15

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	0.000234	0.000236	93.6	94.4	60.0-140			0.851	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000236	0.000234	94.4	93.6	60.0-140			0.851	20

L1356221-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1356221-06 05/25/21 05:40 • (MS) R3659593-2 05/25/21 05:27

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	0.000103	103	1	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000100	ND	0.0000931	93.1	1	72.0-148	

L1356419-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1356419-01 05/25/21 06:04 • (MS) R3659593-3 05/25/21 05:51

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	ND	0.000	1	64.0-159	J6
1,2-Dibromo-3-Chloropropane	0.000100	ND	ND	0.000	1	72.0-148	J6



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.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
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.

ACCREDITATIONS & LOCATIONS

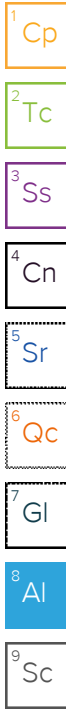
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

Report to:
Philip Campbell

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

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

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	**WetChem** 250mlHDPE-NoPres	ALK 100ml Amb-NoPres	COD,NH3 250mlHDPE-H2SO4	Diss: Metals-FF 250mlHDPE-HNO3	SV8011 40mlClr-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl	V8260AP1-Trip Blank 40mlAmb-HCl-Blk	Remarks	Sample # (lab only)
MW-1	G	GW		5/20/21	1110	10	X	X	X	X	X	X	X			-01
MW-3		GW			1435	10	X	X	X	X	X	X	X			-02
MW-4		GW			1315	10	X	X	X	X	X	X	X			-03
MW-5		GW			1225	10	X	X	X	X	X	X	X			-04
TMW-1		GW			1330	10	X	X	X	X	X	X	X			-05
TMW-2		GW			1200	10	X	X	X	X	X	X	X			-06
TMW-3		GW			1045	10	X	X	X	X	X	X	X			-07
DUPLICATE		GW			-	10	X	X	X	X	X	X	X			-08
FIELD BLANK		GW			1345	10	X	X	X		X	X	X			-09
EQUIPMENT BLANK		GW				10	X	X	X		X	X	X			

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

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

Samples returned via:
 UPS FedEx Courier

Tracking #

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

Relinquished by: (Signature)
[Signature]

Date: 5-21-21
Time: 11:55

Received by: (Signature)
[Signature]

Trip Blank Received: Yes / No
HCL / MeOH TBR

Relinquished by: (Signature)
[Signature]

Date: 5-21-21
Time: 15:10

Received by: (Signature)
[Signature]

Temp: 12.2°C
Bottles Received: 90

If preservation required by Login: Date/Time

Relinquished by: (Signature)
[Signature]

Date: 5/21/21
Time: 1510

Received for lab by: (Signature)
[Signature]

Date: 5/21/21
Time: 1510


Hold: Condition: NCF / OK



13065 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 # **C114**

Acctnum: CEC
 Template: T133579
 Prelogin: P848333
 PM: 526 Chris McCord
 PB: 5/18/21
 Shipped Via: Courier

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		 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/hubfs/pas-standard-terms.pdf			
Report to: Philip Campbell		City/State Collected: <i>Camden, TN</i>							
Project Description: Former EWS Camden Class 2 Landfill		Please Circle: PT MT CT ET		**WetChem** 250mlHDPE-NoPres ALK 100ml Amb-NoPres COD,NH3 250mlHDPE-H2SO4 Diss. Metals-FF 250mlHDPE-HNO3 SV8011 40mlICr-NaThio Total Metals,HARD 250mlHDPE-HNO3 V8260AP1 40mlAmb-HCl V8260AP1-Trip Blank 40mlAmb-HCl-Blk		SDG # <i>W356357</i>			
Phone: 615-333-7797		Client Project # 181-364				Lab Project # CEC-181364		Table #	
Collected by (print): <i>Alec Deek</i>		Site/Facility ID # CAMDEN, TN		P.O. #		Acctnum: CEC			
Collected by (signature): <i>[Signature]</i>		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 #		Template: T133579			
Immediately Packed on Ice N ___ Y <input checked="" type="checkbox"/>		Date Results Needed		No. of Cntrs		Prelogin: P848333			
Sample ID		Comp/Grab	Matrix *	Depth	Date	Time	Remarks		
TRIP BLANK		-	GW	-	5/20/21	-	-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 _____		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 type="checkbox"/> Y <input type="checkbox"/> N Preservation Correct/Checked: <input 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) <i>[Signature]</i>		Date: 5-21-21	Time: 11:55	Received by: (Signature) <i>[Signature]</i>		Trip Blank Received: YES / No <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO HCL / MeOH TBR			
Relinquished by: (Signature) <i>[Signature]</i>		Date: 5-21-21	Time: 15:10	Received by: (Signature) <i>[Signature]</i>		Temp: <i>15.0</i> °C Bottles Received: <i>90</i>			
Relinquished by: (Signature) <i>[Signature]</i>		Date: 5/21/21	Time: 1510	Received for lab by: (Signature) <i>[Signature]</i>		Hold: _____ Condition: NCF / <input checked="" type="checkbox"/> OK			



GROUNDWATER MONITORING FIELD INFORMATION LOG

Civil & Environmental Consultants, Inc. 117 Seaboard Lane, Suite E100 Franklin, Tennessee 37067 - 800-763-2326 - www.cecinc.com

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-1
LOCATION	Camden, TN	TEMPERATURE & WEATHER	70, Sunny
DATE & TIME	5/20/21 950	EVENT FREQUENCY	Quarterly
PURGE METHOD	Peristaltic Pump	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	30.5	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	21.43	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	9.07	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	4.0	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	21.43	1004	17.7	5.46	73.9	67.0	3.52	88.2	39.3
.5	21.49	1008	16.9	5.41	50.2	42.7	2.78	100.3	75.6
1.75	21.52	1002	16.8	5.42	51.8	44.9	2.64	99.4	31.2
1.0	21.52	1016	16.7	5.43	52.2	44.0	2.58	98.8	28.3
1.25	21.52	1020	16.6	5.53	58.9	49.6	2.17	95.2	22.2
1.40	21.52	1024	16.6	5.56	66.1	52.1	2.08	93.6	20.1
1.6	21.52	1028	16.7	5.59	64.8	55.0	1.92	91.8	18.8
2.0	21.52	1032	16.6	5.64	70.5	59.3	1.68	90.5	16.2
2.4	21.52	1038	16.7	5.67	73.2	62.9	1.53	89.9	15.6
2.75	21.52	1042	16.7	5.70	76.9	64.7	1.41	89.1	14.0
3.0	21.52	1046	16.7	5.71	77.8	65.6	1.34	89.0	13.3
3.19	21.52	1050	16.7	5.72	79.7	62.1	1.22	88.9	12.1

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
4.0	21.52	1110	16.7	5.75	85.8	72.1	1.02	89.4	8.81
Preservatives Used	See use			Sample Characteristics (Odor, Color)			Fine tan solids		
Number of Containers	See use			Sampler Signature			Baugh		

WELL DATA

Number of Baffles	4 w/ fence	Well Cap Dedicated/In Place?	Yes
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	good	Well Clear of Weeds/Accessible?	Yes

5/20/21

MW-1 Cont.

2042

gal	Depth	time	°C	pH	Spec	Cond	DO	ORP	NTU
3.25	21.57	1054	16.6	5.72	80.8	62.9	1.20	89.7	11.0
3.5	21.52	1058	16.7	5.73	82.1	68.9	1.08	89.6	11.6
3.75	21.52	1102	16.7	5.74	84.0	70.8	1.12	89.5	12.0
4.0	21.52	1106	16.2	5.75	85.8	72.1	1.02	89.4	8.81



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-2
LOCATION	Camden, TN	TEMPERATURE & WEATHER	70, Sunny
DATE & TIME	4/20/21 1400	EVENT FREQUENCY	Quarterly
PURGE METHOD	NA, parameters only	FIELD REPRESENTATIVE	A-Black
TOTAL WELL DEPTH (feet)	10	SAMPLING EQUIPMENT	Bailer
DEPTH TO WATER (feet)	6.15	IS SAMPLE EQUIPMENT DEDICATED?	No
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	3.85	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
-	6.15	1400	18.5	6.22	66.1	67.9	3.46	377.7	7.57
Preservatives Used	-			Sample Characteristics (Odor, Color)			-		
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/grass	Well Clear of Weeds/Accessible?	fair



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	80s sunny
DATE & TIME	5/20/21 1345	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugly
TOTAL WELL DEPTH (feet)	27	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	18.45	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	yes
WATER COLUMN (feet)	8.55	FIELD BLANK COLLECTED?	no
PURGE VOLUME (gallons)	1.75	EQUIPMENT BLANK COLLECTED?	no

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	18.45	1402	17.5	5.33	232.9	202.5	2.65	133.2	9.29
.5	18.50	1406	16.5	5.43	237.4	198.8	.64	124.8	4.92
.75	18.50	1410	16.4	5.42	239.6	200.1	.60	129.2	3.04
1.0	18.50	1414	16.2	5.45	234.0	194.3	.62	149.2	4.01
1.15	18.55	1418	16.4	5.92	165.1	138.2	.53	139.2	6.81
1.35	18.56	1422	16.3	5.47	159.2	173.0	.45	136.5	11.2
1.5	18.60	1426	16.3	5.49	158.1	131.8	.64	135.1	11.9
1.75	18.6	1430	16.1	6.01	156.6	130.0	.64	133.1	12.5

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.75	18.6	1430	16.1	6.01	156.6	130.0	.64	133.1	12.5
Preservatives Used	1435			Sample Characteristics (Odor, Color)			Slightly tan fine solids		
Number of Containers	see col			Sampler Signature			[Signature]		

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	yes
Lock Condition	good	Fittings/Well Head Condition	sample tube leaks
Pad/Casing Quality	fair	Well Clear of Weeds/Accessible?	covered in weeds



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	5/20/21 1245	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Bary
TOTAL WELL DEPTH (feet)	23.1	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	10.97	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	12.13	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	2.2	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		1258	15.5	5.98	71.4	64.6	10.78	124.9	18.0
1.0	10.87	1302	15.0	5.98	78.2	55.4	9.97	130.3	5.37
1.5	10.89	1306	15.3	5.98	75.0	58.6	8.21	132.3	9.91
2.0	10.96	1316	15.6	5.99	77.6	63.9	6.03	134.0	8.51
2.2	10.96	1314	15.7	5.99	77.2	63.9	6.48	135.2	4.58

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
2.2	10.96	1315	15.7	5.99	77.7	63.9	6.48	135.2	4.58
Preservatives Used	See COL			Sample Characteristics (Odor, Color)			Clear		
Number of Containers	See COL			Sampler Signature			Bary		

WELL DATA

Number of Baffles	0	Well Cap Dedicated/In Place?	Yes
Lock Condition	good	Fittings/Well Head Condition	Small leak in sample tubing
Pad/Casing Quality	good	Well Clear of Weeds/Accessible?	Tree across fence blocking well



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	80s Sunny
DATE & TIME	5/20/21 1130	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	33.85	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	8.78	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	25.07	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	3.4	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	8.78	1142	18.0	5.34	350.6	302.1	1.72	139.2	11.4
.25	9.11	1146	17.3	5.28	366.6	338.0	2.05	141.5	19.4
.75	9.20	1150	16.5	5.28	357.7	299.5	.90	145.1	18.1
1.15	9.38	1154	16.4	5.29	348.8	291.1	.75	146.5	20.1
1.5	9.52	1158	16.6	5.30	343.3	258.1	.81	142.3	21.6
1.9	9.52	1202	16.6	5.21	339.6	284.9	.77	148.0	19.6
2.2	9.52	1206	16.4	5.31	336.8	282.2	.80	148.0	16.1
2.6	9.57	1210	16.6	5.32	334.3	280.2	.82	149.1	15.1
3.0	9.52	1214	16.5	5.32	332.5	278.6	.84	147.3	15.3
3.2	9.52	1218	16.6	5.32	331.8	277.4	.85	149.4	12.9
3.4	9.52	1222	16.6	5.32	330.2	276.9	.85	149.5	9.79

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.4	9.52	1225	16.6	5.32	330.2	276.9	.88	149.5	9.79
Preservatives Used	see COL			Sample Characteristics (Odor, Color)			fine tan solids		
Number of Containers	see COL			Sampler Signature			[Signature]		

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	Yes
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	good	Well Clear of Weeds/Accessible?	some weeds



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	70s Sunny
DATE & TIME	5/20/21 1215	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	A. Black
TOTAL WELL DEPTH (feet)	32.50	SAMPLING EQUIPMENT	Bladder Pump Peristaltic Pump
DEPTH TO WATER (feet)	6.22	IS SAMPLE EQUIPMENT DEDICATED?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	<input checked="" type="checkbox"/>
WATER COLUMN (feet)	26.28	FIELD BLANK COLLECTED?	<input checked="" type="checkbox"/> 134C
PURGE VOLUME (gallons)	6.5	EQUIPMENT BLANK COLLECTED?	<input checked="" type="checkbox"/>

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	6.22	1227	16.2	5.70	58.6	48.9	6.89	394.9	25.9
1.25	10.45	1237	15.8	5.68	61.7	51.0	4.44	381.3	32.7
2.5	11.15	1247	15.9	5.75	61.5	51.0	4.18	379.4	30.0
3.5	11.50	1257	16.1	5.67	61.5	51.0	4.13	380.0	29.2
4.5	11.70	1307	15.7	5.66	61.9	50.9	4.21	381.8	16.1
5.5	11.80	1317	16.0	5.65	61.8	51.1	4.13	383.9	14.5
6.5	11.80	1327	15.7	5.67	61.8	50.7	4.28	392.3	11.1

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
6.5	11.80	1330	15.7	5.67	61.8	50.7	4.28	392.3	9.14 (9.14) <i>ntals</i>
Preservatives Used	5cc 100			Sample Characteristics (Odor, Color)			Clear, no odor		
Number of Containers	10			Sampler Signature			<i>[Signature]</i>		

WELL DATA

Number of Baffles	0	Well Cap Dedicated/In Place?	Yes
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	no pad	Well Clear of Weeds/Accessible?	Yes



GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-2
LOCATION	Camden, TN	TEMPERATURE & WEATHER	70% Sunny
DATE & TIME	5/20/21 1100	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	A. Black
TOTAL WELL DEPTH (feet)	27.50	SAMPLING EQUIPMENT	Bladder Pump Peristaltic Pump
DEPTH TO WATER (feet)	10.65	IS SAMPLE EQUIPMENT DEDICATED?	Yes N
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	16.85	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	4.25	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	10.65	1108	16.1	5.80	58.8	48.9	2.13	349.6	731
1.0	15.90	1118	16.0	5.69	62.8	52.0	5.81	348.7	265
2.0	15.30	1128	16.3	5.65	63.3	52.8	5.32	345.7	27.2
2.75	15.15	1138	16.4	5.66	63.3	52.8	5.32	344.9	25.6
3.5	15.20	1148	16.4	5.65	63.1	52.8	5.27	346.2	14.5
4.25	15.20	1158	16.7	5.65	62.8	52.8	5.11	351.6	10.5

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
4.25	15.20	1200	16.7	5.65	62.8	52.8	5.11	351.6	8.83 @ metals
Preservatives Used	See Log				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	No pad	Well Clear of Weeds/Accessible?	Yes



GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-3
LOCATION	Camden, TN	TEMPERATURE & WEATHER	70s, Sunny
DATE & TIME	6/20/21 0950	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	A. Black
TOTAL WELL DEPTH (feet)	28.00	SAMPLING EQUIPMENT	Bladder Pump Peristaltic Pump
DEPTH TO WATER (feet)	9.12	IS SAMPLE EQUIPMENT DEDICATED?	Yes N
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	18.88	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	4.5	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	9.12	1003	15.4	5.26	74.9	61.2	1.16	241.5	79.0
1.0	11.25	1013	15.7	5.41	75.4	61.9	1.07	239.7	35.4
2.25	11.35	1023	16.5	5.49	75.7	61.9	1.15	235.2	14.2
3.25	11.40	1033	15.5	5.58	75.3	61.6	1.16	234.3	9.68
4.5	11.40	1043	18.6	5.52	75.0	61.5	1.15	238.0	7.04

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
4.5	11.40	1045	19.6	5.52	75.0	61.5	1.15	238.0	7.04
Preservatives Used	see CCL			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	no prob	Well Clear of Weeds/Accessible?	yes



EQUIPMENT CALIBRATION LOG

Civil & Environmental Consultants, Inc. 1.17 Seaboard Lane Suite E100 Franklin, Tennessee 37067 - 800-763-2326 - www.cecinc.com

EQUIPMENT CALIBRATION FORM

NAME OF REPRESENTATIVE	Alex Black
LOCATION	Humphreys co LF / Former EUS
DATE AND TIME	5/17/21 1210
Equipment and Model # (ex. YSI Pro Plus 556)	YSI Pro Plus / HACH 2100Q
Equipment Serial #	YSI # 2 / HACH # 5

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	10/22	4.00	168.7	160 to 180	Y	3.99	Y
7	10/22	7.01	3.1	+/-50	N	6.98	Y
10	10/22	10.02	-173.0	-160 to -180	Y	9.99	Y

Temperature Calibration Check	
Cert. Thermometer Value (deg C)	Meter Value (deg C)
23.5	23.1

DO Calibration				
Actual Barometric Pressure	Barometric Pressure (mm Hg)	D.O. Value (% Saturated)	Unit reading (%)	% DO accepted?
765.9	764.6	101.3	100.1	Y

Specific Spec. Cond. Calibration				ORP Calibration			
Sp. Spec. Cond. 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	11/21	1417	1414	200 220	11/22	234.7	234.7

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

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EQUIPMENT CALIBRATION FORM

NAME OF REPRESENTATIVE	Alex Black
LOCATION	Humphreys Co LF / Former EUS
DATE AND TIME	5/17/21 1210
Equipment and Model # (ex. YSI Pro Plus 556)	YSI Pro Plus / HACH 2100Q
Equipment Serial #	YSI # 1 / 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	10/22	4.00	169.0	160 to 180	Y	4.01	Y
7	10/22	7.01	-3.2	+/-50	Y	7.00	Y
10	10/22	10.03	-74.4	-160 to -180	Y	10.00	Y

Temperature Calibration Check	
Cert. Thermometer Value (deg C)	Meter Value (deg C)
23.5	22.7

DO Calibration				
Actual Barometric Pressure	Barometric Pressure (mm Hg)	D.O. Value (% Saturated)	Unit reading (%)	% DO accepted?
765.9	765.8	94.1	99.8	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	11/21	1386	1413	220	11/22	235.4	235.5

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					