

**3rd QUARTER 2023 GROUNDWATER
ASSESSMENT MONITORING REPORT
AUGUST 2023 MONITORING EVENT**

**FORMER ENVIRONMENTAL WASTE SOLUTIONS (EWS)
CAMDEN CLASS II LANDFILL**


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

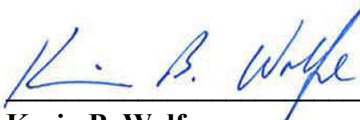
**Prepared for:
THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND
CONSERVATION**

**Prepared by:
CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
117 SEABOARD LANE, SUITE E-100
FRANKLIN, TENNESSEE 37067**

CEC PROJECT 181-364

AUGUST 2023


Philip Campbell, P.G.
Project Manager


Kevin B. Wolfe
Vice-President



Civil & Environmental Consultants, Inc.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	iii
GLOSSARY OF TERMS.....	vi
1.0 INTRODUCTION.....	1
1.1 Site Location	1
1.2 Current Activities.....	1
2.0 AQUIFER CHARACTERISTICS	2
2.1 Geologic and Aquifer Characteristics.....	2
2.1.1 Camden and Harriman Formations.....	2
2.2 Monitor Well Integrity & Static Water Levels	2
2.3 Groundwater Flow Direction	3
2.4 Potentiometric Gradient.....	4
2.5 Hydraulic Conductivity.....	4
3.0 GROUNDWATER SAMPLING PROCEDURES.....	5
3.1 Instrumentation	5
3.2 Groundwater Purging and Collection of Field Parameter Values	5
3.3 Groundwater Sample Collection & Preservation.....	7
3.4 Leachate Sampling Procedures.....	7
3.5 Quality Assurance and Quality Control.....	8
3.5.1 Field Quality Assurance and Quality Control.....	8
3.5.2 Laboratory Quality Assurance and Quality Control	8
3.6 Sample Chain-of-Custody.....	9
4.0 LABORATORY ANALYTICAL PROCEDURES	10
4.1 Analytical Methods.....	10
4.2 Laboratory Analytical Results	10
4.2.1 EWS Groundwater Quality Relative to the EPA Primary Drinking Water Standards.....	10
4.2.2 EWS Groundwater Quality Relative to the National Secondary Drinking Water Standards.....	13
4.3 Quality Control Qualifier Codes.....	15
5.0 STATISTICAL ANALYSIS	16
5.1 Applicable Methods	16
5.2 Statistical Results	18
6.0 CONCLUSIONS	20
7.0 RECOMMENDATIONS.....	22

APPENDICES

- Appendix A Maps & Tables
- Appendix B Statistical Evaluations & Time Series Plots
- Appendix C Laboratory Analytical Report & Field Information Logs

EXECUTIVE SUMMARY

This report documents the 3rd quarter 2023 assessment-monitoring event, which was performed at the former Environmental Waste Solutions, LLC (EWS) Camden Class II Landfill on August 17-18, 2023.

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 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 January 2023 event (11.5 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. Cadmium was not detected above the PQL at any wells sampled during the first quarter 2023.

The 3rd quarter 2023 sampling event at the facility included the following sampling activities:

Groundwater samples were collected by CEC on August 17-18, 2023, from MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3. A leachate sample was collected from the "Industrial Waste Cell (IWC)" on August 17, 2023. No leachate samples were collected from the "Aluminum Processing Waste Cell (APWC)" during this sampling event since leachate was not currently being generated from the APWC. The amount of leachate produced from the IWC and APWC has been minimal since the landfill was capped, and the leachate flows being pumped from the IWC cell

have been intermittent. In addition, the amount of leachate produced from the APWC appears to have halted since the landfill was capped.

Pace Analytical (Pace) is the laboratory sub-contracted to perform the chemical analyses. Laboratory reports for the 3rd quarter 2023 groundwater and IWC leachate sample analyses were prepared by Pace and reported to CEC on September 1, 2023.

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.

During this August 2023 sampling event, the turbidity values observed at all monitoring wells were less than the recommended 10 NTU. Dissolved metals analysis was not necessary during this monitoring events since the observed turbidity values were less than the recommended 10 NTU.

One unconfirmed SSI for cobalt was identified over background during this event in the up-gradient background monitoring well MW-1. Ten SSIs were identified over background during this event in the downgradient compliance monitoring wells. SSIs included cadmium (MW-3), chloride (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), fluoride (MW-3), zinc (MW-3), and sulfate (MW-3). Most of the observed SSIs during this event were indicated as SSIs during the previous 2nd Quarter 2023 monitoring event. Fluoride was not indicated as an SSI during the previous monitoring event. The current cadmium, chloride, fluoride, zinc, and sulfate detections observed in the downgradient site monitoring wells were all below their associated MCLs or 2DWS.

A detailed review and statistical analyses of historical groundwater data was performed in August 2023 to assess the variability of the mean values for the assessment monitoring constituents of concern, specifically total cadmium and chloride at MW-3. In summary, for the past 13 quarterly sampling events at assessment well MW-3, there has been no significant variation in the overall mean concentrations for total cadmium and chloride (i.e., the constituents of concern for assessment monitoring at the former EWS Class II Landfill). This conclusion was based on the statistical analyses and plots with supporting data as presented within the summary letter report submitted to the TDEC DSWM on September 5, 2023. This summary letter formally requested a change in the former EWS landfill groundwater-assessment monitoring frequency from quarterly to semi-annual monitoring. In addition, the letter formally requested that Appendix I VOCs no longer be included as part of assessment monitoring at this site. The request to reduce the list of

constituents for analysis was based on the lack of detections for the given VOC constituents in the historical groundwater database for the landfill. The September 5, 2023 letter request for the reduced sampling frequency was subsequently reviewed and approved by the TDEC DSWM. Therefore, the next semi-annual monitoring event will tentatively be scheduled for February 2024.

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
microohms•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	Publicly 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' 12" and west longitude -88° 05' 12" 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, stormwater 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 (up-gradient), 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 26.00 feet below the top of casing at the up-gradient monitor well MW-1 to approximately 11.45 feet below the top of casing at monitor well MW-4. The potentiometric gradient calculated from groundwater elevation data collected on August 18, 2023 is approximately 0.0120 ft./ft.

The potentiometric gradient is calculated according to the following formula:

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

$$\frac{(394.37') - (371.29')}{1,910'} = 0.0121 \text{ ft./ft.}$$

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

2.5 HYDRAULIC CONDUCTIVITY

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

3.0 GROUNDWATER SAMPLING PROCEDURES

3.1 INSTRUMENTATION

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

3.2 GROUNDWATER PURGING AND COLLECTION OF FIELD PARAMETER VALUES

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

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

The start time of purging, the parameter measurements at intervals during purging, estimated pumped volumes, depths to water for low-flow sampling, and any notes of unusual conditions were recorded during purging activities. Field parameter measurements (temperature, pH, conductivity, DO, ORP, and turbidity) were collected periodically until proper field stabilization goals had been met, which are defined by the USEPA SESD as: "for at least three consecutive measurements, the pH remains constant within 0.1 Standard Unit (SU), conductivity varies no

more than 5 percent, and the turbidity has either stabilized or is below 10 Nephelometric Turbidity Units (NTUs)”. Other parameters such as DO were also measured as a purge-adequacy parameter. Normal goals for DO are 0.2 mg/l or 10% saturation, whichever is greater. Temperature and ORP were measured during purging to obtain measurements of record for these parameters for each sampling event.

During the August 2023 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.

Turbidity values measured all monitoring wells during this August 2023 event were below the recommended value of 10 NTU.

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 cell has been intermittent. In addition, it appears that the leachate generation in the APWC cell has halted since the landfill was capped. During this August 2023 groundwater-sampling event, a leachate sample was collected from the IWC cell. However, no leachate was being pumped from the APWC. Therefore, no APWC leachate sample was collected for analysis during this monitoring event, which is consistent with previous quarterly groundwater monitoring events. Attempts will be made to sample the IWC leachate during each groundwater-monitoring event in the future. The approximate APWC and IWC leachate sample locations are shown on **Figure 2 – Potentiometric Surface Map located in Appendix A**.

The IWC leachate sample was collected directly from the associated leachate collection hose within the secondary containment area before the leachate entered the IWC leachate collection tank. A dedicated sample port has been installed on the IWC-leachate line, which was used for collecting the leachate sample. An air pump was utilized to pump leachate from the sump to the IWC leachate tank through associated hoses within the secondary containment area. To ensure the hoses were clear of stagnant water or leachate, the leachate was pumped for approximately 10 minutes prior to sample collection. After pumping for 10 minutes, the leachate sample was collected by opening the dedicated sample port valve and filling the sample containers appropriately.

It is worth noting that CEC and the TDEC-DSWM are currently working to remove and effectively treat the remaining leachate from within the IWC.

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 TMW-2. 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 at TMW-2 at the same time.

Pace reported the groundwater QA/QC laboratory analytical results to CEC on September 01, 2023. Laboratory analytical testing of the field blank presented in the analytical report showed that no constituents were detected above the laboratory PQLs during this August 2023 event.

The results for the duplicate sample collected from TMW-2 were similar to the original TMW-2 sample results. The relative percent difference (RPD) between all detected constituent values reported in TMW-2 and the duplicate sample were within the acceptable 20% RPD control limit.

3.5.2 Laboratory Quality Assurance and Quality Control

In order to demonstrate that a laboratory is producing data of adequate precision, accuracy and sensitivity, it is necessary to assess all laboratory procedures at all stages from sampling to

reporting. The laboratory completed specific control and assessment procedures designed to monitor, quantitatively, the accuracy and precision of specific assays. Laboratory Internal Quality Assurance (IQA) refers to the full range of practices employed to ensure that laboratory results are reliable. Internal Laboratory Quality Control (IQC) consists of the operational techniques used by the laboratory staff for continuous assessment of the quality of the results of individual analytical procedures. The specific quality-control procedures utilized by the analytical laboratory are summarized in the following table:

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

The internal laboratory IQA and IQC results are included in the laboratory analytical reports located in **Appendix C – Laboratory Analytical Reports & Field Information Logs**. All qualifier codes and their descriptions can be found on page 55 of 58 in the laboratory report found in **Appendix C**.

3.6 SAMPLE CHAIN-OF-CUSTODY

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

4.0 LABORATORY ANALYTICAL PROCEDURES

4.1 ANALYTICAL METHODS

All laboratory analyses for the 3rd quarter 2023 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 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 2 – 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 has been detected at concentrations that exceed the MCL during previous monitoring events at up-gradient well MW-1, only. Arsenic was detected above the MCL (0.01 mg/l) at up-gradient MW-1 (0.0159 mg/l) during the third quarter 2023 event. In addition, arsenic was detected slightly above the laboratory PQL (<0.002 mg/l) in down-gradient well MW-4 (0.00221 mg/l) during this August 2023 event. 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.

Cadmium (Total) was detected **below** the MCL (0.005 mg/l) at MW-3 and was below the MCL for the duplicate sample collected from MW-3, during this August 2023 monitoring event. Based on a review of the historical data, the differences between total metals concentrations and dissolved metals concentrations have historically been negligible when observed turbidity values were within a reasonable range (i.e. <50 NTU). Therefore, no dissolved cadmium sample was collected for analysis (in addition to total cadmium) at MW-3 during this monitoring event. A summary of cadmium concentrations (total cadmium and dissolved cadmium), turbidity values, and groundwater elevations observed at MW-3 during each sampling event since May 9, 2016 is referenced in the table and figure below:

MW-3				
Summary of Cadmium Concentrations, Turbidity Measurements, and Groundwater Elevations				
Date	Total Cadmium (mg/l)	Cadmium Dissolved (mg/l)	Turbidity (NTU)	Groundwater Elevations (ft. MSL)
8/18/2023	0.00160	NA	9.9	378.10
5/25/2023	0.00120	NA	14.0	375.16
01/31/2023	<0.00100	<0.00100	33.1	381.50
11/7/22	0.00686	0.00559	18.6	371.30
8/12/22	0.00555	0.00387	146	372.96
5/13/2022	<0.00100	NA	18.9	374.80
2/9/2022	<0.00100	NA	27.5	379.40
11/18/2021	0.00188	NA	18.5	374.10
8/26/21	0.00595	0.00589	28.7	373.10
5/20/2021	0.00265	NA	12.5	374.45
3/2/2021	0.00249	NA	5.38	384.27
12/8/2020	0.00906	0.00787	10.8	373.35
11/17/2020	0.00816	NA	14.0	373.24
8/26/2020	0.00242	NA	6.66	375.87
6/2/2020	0.00278	NA	5.38	374.31
2/27/2020	0.00214	NA	7.63	373.97
11/20/2019	0.00157	NA	2.11	378.22
9/6/2019	0.0088	NA	2.98	373.25
6/4/2019	0.0292	0.0297	2.98	374.29
3/5/2019	0.0117	0.0133	6.27	374.40
12/4/2018	0.144	0.139	4.77	377.73
9/27/2018	0.204	0.204	1.05	384.61
9/12/2018	0.297	0.320	1.12	375.02
6/19/2018	0.0312	0.0292	4.90	373.47
3/22/2018	0.00671	0.00637	24.3	377.25
12/14/2017	0.00659	0.00733	23.0	373.03
9/28/2017	0.00926	0.0102	18.9	373.25
8/8/2017	0.0113	NA	16.6	373.42
6/8/2017	0.0286	NA	34.8	372.92
11/10/2016	0.00177	NA	64.5	372.91
5/9/2016	<0.001	NA	8.39	379.50

NA-Not Analyzed

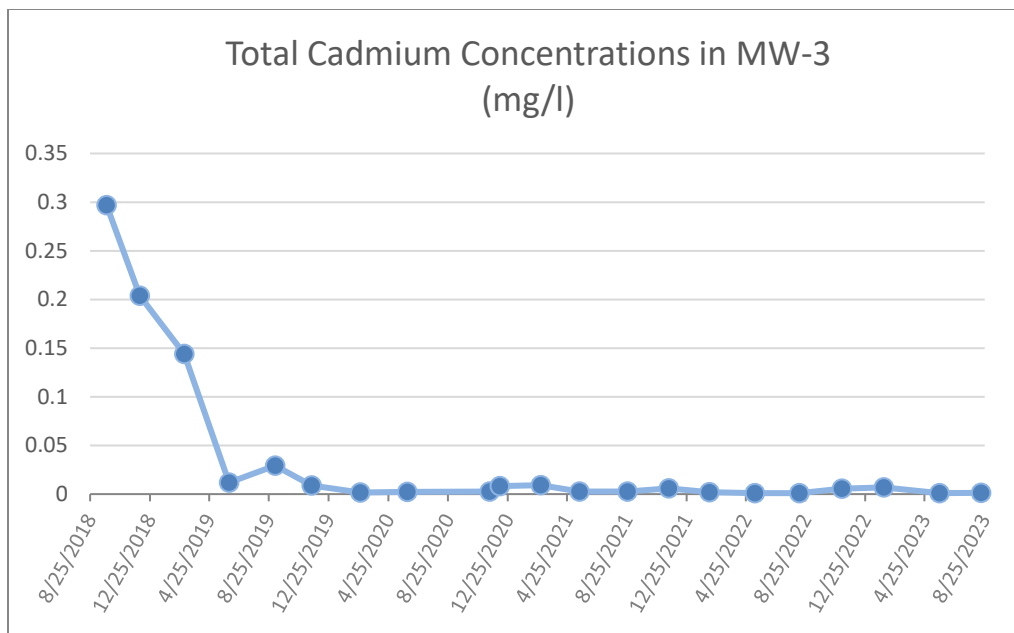


Figure – Cadmium Concentrations in MW-3

Since the fall of 2018, the total cadmium observed in MW-3 has shown an overall decrease in concentration. In addition, Mann-Kendall identified a statistically significant decreasing trend for total cadmium concentrations at MW-3 when considering data from the past 28 sampling events since November 10, 2016. During the four consecutive sampling events from November 2019 to August 2020, the cadmium concentrations at MW-3 were below the MCL. Since August 2020, the total cadmium detections at MW-3 have been intermittent during recent events at concentrations just above the MCL (November 2020, December 2020, and August 2021) and below the MCL (March 2020 and May 2021). During the November 2021 sample event, the total cadmium concentrations reported in MW-3 and the duplicate sample collected from MW-3 were below the MCL. Total cadmium was not detected over the laboratory PQL (<0.001 mg/l) at MW-3 or the duplicate sample collected from MW-3 during the previous May 2022 and February 2022 sampling events, but exceeded the MCL during the remainder of 2022. However, cadmium (total and dissolved) was not detected above the laboratory PQL during the previous January 2023 monitoring event, and total cadmium was detected below the MCL during the two most recent monitoring events in May 2023 and August 2023.

Total Cobalt was detected in up-gradient well MW-1 (0.105 mg/l) and down-gradient MW-3 (0.004 mg/l) during this August 2023 event. Cobalt does not have an MCL; however, the TDEC-DSWM uses the EPA regional screening level (RSL) of 0.006 mg/l as the groundwater protection standard for this constituent. The reported cobalt detection at up-gradient well MW-1 was above the RSL for cobalt during this August 2023 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. In addition, cobalt was not detected above the PQL at any of the down-gradient monitoring well locations during this monitoring event.

Total Copper was detected in MW-5 (0.00832 mg/l) during the third quarter 2023 sampling event, which was well below the MCL of 1.3 mg/l. Copper was not detected in any of the other monitoring well locations during this event.

Total Mercury was detected in up-gradient well MW-1 (0.000814 mg/l) during this August 2023 monitoring event, which was below the MCL of 0.002 mg/l for mercury. Concentrations of total mercury have fluctuated above and below the PQL at up-gradient MW-1 since January 2009. However, total mercury has not been detected above the laboratory PQL in any of the down-gradient monitoring wells since monitoring began at the site in 2008. The presence of mercury in the local groundwater near up-gradient monitoring well MW-1 may be attributable to naturally occurring deposits in the soil overburden since there is no development immediately up-gradient of MW-1.

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

Laboratory analytical results for the groundwater samples collected during the August 2023 sampling event from the former EWS Class II Landfill groundwater monitoring well network indicated that three of the site-specific groundwater-monitoring lists of compounds were detected at concentrations that exceeded the National Secondary Drinking Water Standards (2DWS). Those parameters include total **aluminum** in down-gradient well MW-3; total **iron** in up-gradient well MW-1; and **manganese** in up-gradient well MW-1 and down-gradient well MW-5. Note dissolved aluminum was not detected above the laboratory PQL in MW-3 during this event. **Chloride, sulfate, nickel, and zinc** detections were below the 2DWS in all monitoring wells during this event. The observed concentrations for the constituents given below are discussed relative to the 2DWS.

The **Total Aluminum** concentrations observed in down-gradient well MW-3 (0.357 mg/l), MW-5 (0.207 mg/l), and TMW-2 (0.201 mg/l) were just above the 2DWS (0.2 mg/l).

The **Chloride** concentrations reported at MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 during this August 2023 event were below the 2DWS for chloride (250 mg/l) and are similar to concentrations reported during previous sampling events with the exception of MW-3, which continues its overall decreasing trend.

Fluoride was detected above its PQL at MW-3 (0.219 mg/L) during the third quarter 2023 sampling event, which was well below the 2DWS of 2.0 mg/l. Fluoride was not detected above the PQL at the remaining locations sampled during this monitoring event, consistent with historical results.

Total Iron was detected above the 2DWS (0.3 mg/l) in up-gradient well MW-1 (19.7 mg/l) during this August 2023 monitoring event. Total iron was also detected above the laboratory PQL (<0.100 mg/l) in MW-3 (0.955 mg/l), MW-4 (6.91 mg/l) and MW-5 (0.279 mg/l) but was below the 2DWS in both wells. 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 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 Magnesium does not currently have an established MCL, 2DWS, EPA RSL, or an approved alternate groundwater protection standard (GWPS). The total magnesium concentration at MW-3 during this August 2023 event (3.19 mg/l) is lower than the previous May 2023 event (6.80 mg/l). In general, the total magnesium levels reported in MW-3 have been decreasing since 2018. Magnesium was also detected above the laboratory PQL (1.00 mg/l) during the August 2023 event in MW-1, MW-4, MW-5, TMW-1, TMW-2, and TMW-3.

Total Manganese detections were observed above the 2DWS (0.05 mg/l) in up-gradient MW-1 (1.43 mg/l) and down-gradient wells MW-3 (0.57 mg/l), MW-4 (0.0852 mg/l), MW-5 (0.305 mg/l), TMW-1 (0.00571 mg/l), and TMW-3 (0.00953 mg/l) during this August 2023 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.

Total Nickel was detected in up-gradient well MW-1 (0.00793 mg/l) and down-gradient wells MW-3 (0.00854mg/l) and MW-5 (0.00557 mg/l) during the August 2023 sampling event. All reported nickel concentrations were below the MCL value (0.10 mg/l) obtained from the Tennessee Division of Water Resources (TN DWR) Public Water Systems chapter rule 0400-45-01-.06 (0.10 mg/l). Total nickel was not detected above the PQL (<0.00200 mg/l) in MW-4, TMW-1, TMW-2, and TMW-3 during this monitoring event. 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 (20.6 mg/l) during this August 2023 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 down-gradient well MW-5 (15.4 mg/l) during this August 2023 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 Zinc was reported at down-gradient well MW-3 (0.0.0625 mg/l) during the August 2023 event. All reported concentrations of zinc were below the 2DWS for this constituent. Similar zinc

concentrations have been reported during previous events, and no increasing or decreasing trends in zinc concentrations were observed when considering total zinc concentrations at MW-3 since November 2016.

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 (E, J3, J6, P1, and T8) were indicated during the laboratory analysis of groundwater samples collected during the August 2023 event. Specific information concerning each laboratory QC qualifier code can be found on page 52 of 55 in the September 1, 2023 Groundwater Laboratory Analytical Report. One (1) qualifier code (T8) was indicated for the detected nitrate results reported in TMW-1, TMW-2, and TMW-3. As indicated by laboratory qualifier “T8”, these samples were received past/too close to the holding time expiration. Nitrate has a 48-hour holding time according to the laboratory method, and these samples were prepared for analysis by the laboratory just past 48 hours. The reported nitrate results at these locations during this event are similar to previous nitrate concentrations reported.

Four (4) QC qualifier codes (E, J3, J6, and Q) were indicated during the laboratory analysis of the leachate samples collected during this August 2023 event. Specific information concerning each laboratory QC qualifier code can be found on page 21 of 23 in the September 1, 2023 Leachate Analytical Report. It should be noted that due to the nature of the leachate sample, laboratory dilutions were necessary to report the concentrations of constituents more accurately within the leachate. Most of the QC qualifier codes indicated in the Leachate Analytical Report were not associated with any of the detected constituents during this monitoring event and did not affect the usability of the data as reported.

Based on the overall review of the QC qualifiers identified in the August 2023 groundwater and leachate laboratory analytical reports, the data as reported appears to be usable for quantitative purposes. The groundwater and leachate laboratory analytical reports are included 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 accordingly, 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 were 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

transformed cobalt data set that passed normality testing. However, all other data sets (arsenic, barium, chloride, mercury, nickel, zinc, and sulfate data) for MW-1 were not normally distributed and were evaluated using intra-well non-parametric statistical methods.

Inter-well analyses compared the concentrations observed at the down-gradient monitoring locations (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3) to the concentrations observed at the up-gradient monitoring location (MW-1) during this monitoring event. Cobalt data in the up-gradient background 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 the corresponding PQL. Therefore, inter-well parametric prediction limit (PPL) analysis was performed for the transformed cobalt data set that passed normality testing. However, the data distribution tests using the background data set (from MW-1) for all other detected constituents (aluminum, arsenic, barium, total cadmium, chloride, copper, fluoride, nickel, zinc, and sulfate data) indicated that the background data for each constituent were not normally distributed and the inter-well comparisons were evaluated for SSIs using inter-well 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, arsenic, barium, total cadmium, chloride, copper, fluoride, nickel, zinc, and sulfate background data are not normally distributed, non-parametric inter-well prediction limit analysis was conducted for the background data from up-gradient well MW-1 compared to down-gradient monitoring wells (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3). Additional statistical procedures performed included Mann-Kendall trend analyses. Although the Mann-Kendall trend analyses are not used to determine SSIs relative to background, they provide a non-parametric intra-well statistical procedure to identify statistical trends (increasing, decreasing, or no trend) in data at a single well over a given period. For this monitoring event, the Mann-Kendall trend analysis was completed using recent data since the November 10, 2016 sampling event. For comparative purposes, the Mann-Kendall trend analysis was also completed using the eleven most recent sampling results (n=11) since March 2, 2021.

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

One statistically significant increase (SSI) was identified for the cobalt concentrations in upgradient well MW-1 during the third quarter 2023 sampling event. Based on a review of the cobalt data at MW-1, the current cobalt concentration appeared to be higher compared to previous events at MW-1. Also, cobalt has not been indicated as an SSI during previous recent events at MW-1. Therefore, the cobalt SSI at MW-1 is unconfirmed and should be confirmed or discredited during the next monitoring event. When considering data since the November 10, 2016 sampling event, statistically significant upward trends in the barium and cobalt data from MW-1 were observed using the Mann-Kendall trend analyses at the 95% confidence level. There were no distinct statistically significant trends in concentrations for the detected arsenic, chloride, mercury, nickel, zinc, and sulfate concentrations at MW-1.

SSIs over background identified for the current monitoring event include total cadmium at MW-3; chloride at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3; fluoride at MW-3; zinc at MW-3; and sulfate at MW-3. No SSIs were identified for the aluminum at MW-3, MW-5, and TMW-2; barium at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3; cobalt at MW-3; copper at MW-3; nickel at MW-3 and MW-5; or sulfate at MW-5 concentrations reported during this monitoring event.

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, 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; cadmium concentrations at MW-3; and chloride concentrations at MW-3. There were no distinct statistically significant trends in concentrations for any of the other detected constituents. When considering the eleven most recent sampling events (n=11) since March 2, 2021, fewer statistically significant trends in data were observed using the Mann-Kendall trend analysis at the 95% confidence level. For instance, only four statistically significant upward trends were observed for the chloride data at MW-4, TMW-1, and TMW-2; the cobalt data at MW-3; and the sulfate data at MW-5 using data since March 2, 2021. There were no other statistically significant trends in concentration for any of the other detected constituents, including cadmium at MW-3.

The chloride concentrations observed at MW-3 (11.5 mg/l), MW-4 (11.3 mg/l), MW-5 (64.1 mg/l), TMW-1 (49.1 mg/l), TMW-2 (44.2 mg/l), and TMW-3 (59.9 mg/l) produced SSIs over background during this event. The chloride detections at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 are consistent with previous data and are below the 2DWS for chloride concentrations (250 mg/l). When considering data from the monitoring events since November 2016, the data showed a downward trend in chloride concentrations at MW-3 and an upward trend in chloride concentrations at MW-4, MW-5, TMW-1, TMW-2, and TMW-3 using the Mann-Kendall trend analyses at the 95% confidence level. When considering data from the monitoring events since March 2, 2021, the data showed no significant trend in chloride concentrations at

MW-3, MW-5, and TMW-3 and an upward trend in chloride concentrations at MW-4, TMW-1, and TMW-2.

An SSI for the fluoride concentrations at MW-3 was identified during this sampling event. The fluoride concentration at MW-3 (0.219 mg/l) was slightly above the laboratory PQL of 0.15 mg/l and less than the MCL (4.0 mg/l) during this event. The fluoride concentration at MW-3 is consistent with previous data from June 2017 to May 2022. In addition, no distinct statistically significant trends were identified by Mann-Kendall for fluoride concentrations at MW-3 when considering data since November 10, 2016, and for data from March 2, 2021.

The zinc concentration observed at MW-3 (0.0625 mg/l) during this event exceeded the non-parametric prediction limit of 0.0287 mg/l. However, the observed zinc concentration at MW-3 was well below the 2DWS for zinc (5 mg/l). Similar zinc concentrations have been observed in MW-3 during previous monitoring events. When considering zinc data from MW-3 November 2016, the data did not show a trend in the zinc concentrations at MW-3 using the Mann-Kendall trend analysis at the 95% confidence level. In addition, the zinc data from MW-3 since March 2, 2021 did not show a trend in zinc concentrations at MW-3 using the Mann-Kendall trend analysis at the 95% confidence level.

An 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 (20.6 mg/l) was lower than the previous January 2023 (69.2 mg/l) and May 2023 (40.1 mg/l) events and remains below the 2DWS of 250 mg/l. Sulfate was also detected in MW-5 (15.4 mg/l) during this August 2023 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 in the sulfate concentration. 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 third quarter assessment-monitoring event of 2023 are summarized as follows:

- SSIs during this August 2023 event included total cadmium (MW-3), chloride (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), fluoride (MW-3), zinc (MW-3), and sulfate (MW-3). One unconfirmed SSI was identified for cobalt in upgradient well MW-1 during this event.
- The cadmium concentration at MW-3 during this monitoring event was below the MCL. Also, the cadmium has been reported below the PQL in three out of the past seven sampling events. In addition, the cadmium data at MW-3 do not indicate a statistical trend in concentrations when considering data from the ten most recent quarterly monitoring events since March 2, 2021. Cadmium continues to be reported below the PQL (<0.001 mg/l) at downgradient temporary monitoring wells TMW-2 and TMW-3.
- Using data since November 1016, trend analyses revealed a statistically significant upward trend in barium at MW-4, MW-5, and TMW-3; chloride at MW-4, TMW-1, TMW-2, and TMW-3; and sulfate at MW-5. Trend analysis revealed a downward trend in aluminum concentrations in TMW-2; barium concentrations at MW-3; cadmium concentrations in MW-3; and chloride concentrations at MW-3. There were no distinct statistically significant trends in concentrations for any of the other detected constituents.
- An SSI was identified for the reported fluoride and sulfate concentrations at MW-3. However, the fluoride and sulfate concentrations at MW-3 do not exhibit a statistically significant increasing or decreasing trends when considering data from MW-3 since November 10, 2016 and for data since March 2, 2021.
- 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 zinc concentration reported at MW-3 was indicated as an SSI using all available data since 2008, the concentrations remain well below the 2DWS of 5 mg/l. In addition, the zinc concentrations at MW-3 do not exhibit a statistically significant increasing or decreasing trend when considering data from MW-3 since November 10, 2016 or since March 2, 2021.
- No VOCs were detected above their respective laboratory PQL in any of the groundwater monitoring wells during the monitoring event.

A detailed review and statistical analyses of historical groundwater data was performed in August 2023 to assess the variability of the mean values for the assessment monitoring constituents of concern, specifically total cadmium and chloride at MW-3. In summary, for the past 13 quarterly sampling events at assessment well MW-3, there has been no significant variation in the overall mean concentrations for total cadmium and chloride (i.e., the constituents of concern for assessment monitoring at the former EWS Class II Landfill). This conclusion was based on the statistical analyses and plots with supporting data as presented within the summary letter report submitted to the TDEC DSWM on September 5, 2023. This summary letter formally requested a change in the former EWS landfill groundwater-assessment monitoring frequency from quarterly to semi-annual monitoring. In addition, the letter formally requested future analysis longer include Appendix I VOCs as part of assessment monitoring at this site. The request to reduce the list of constituents for analysis was based on the lack of detections for the given constituents in the historical groundwater database for the landfill. The September 5, 2023 letter request for the reduced sampling frequency was subsequently reviewed and approved by the TDEC DSWM. Therefore, the next semi-annual assessment monitoring event (1st Semi-Annual Assessment Monitoring Event) will tentatively be scheduled for February 2024.

The first semi-annual 2024 assessment-monitoring event is tentatively scheduled for February 2024 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. During this next February 2024 event, VOCs will be removed from the sampling and analytical requirements. No leachate samples have been collected from the APWC for the past several years since no leachate has been generated from the APWC. Therefore, it is unlikely that leachate samples will be collected from the APWC during future quarterly monitoring events. The APWC leachate levels will be checked annually, and if leachate is available, samples will be collected for leachate analysis. If no leachate is observed from the APWC, no APWC leachate samples will be collected for analysis. However, the amount of leachate produced from the IWC has been minimal since the landfill was capped, and the leachate being pumped from the IWC cells has been intermittent. If possible, leachate samples will be collected from the IWC during the 1st Semi-Annual 2024 assessment-monitoring event.

Since the former EWS Class II Landfill site remains in assessment monitoring, a private water use survey update is required annually. The next water use survey update is currently being prepared, and will be submitted as a separate report.

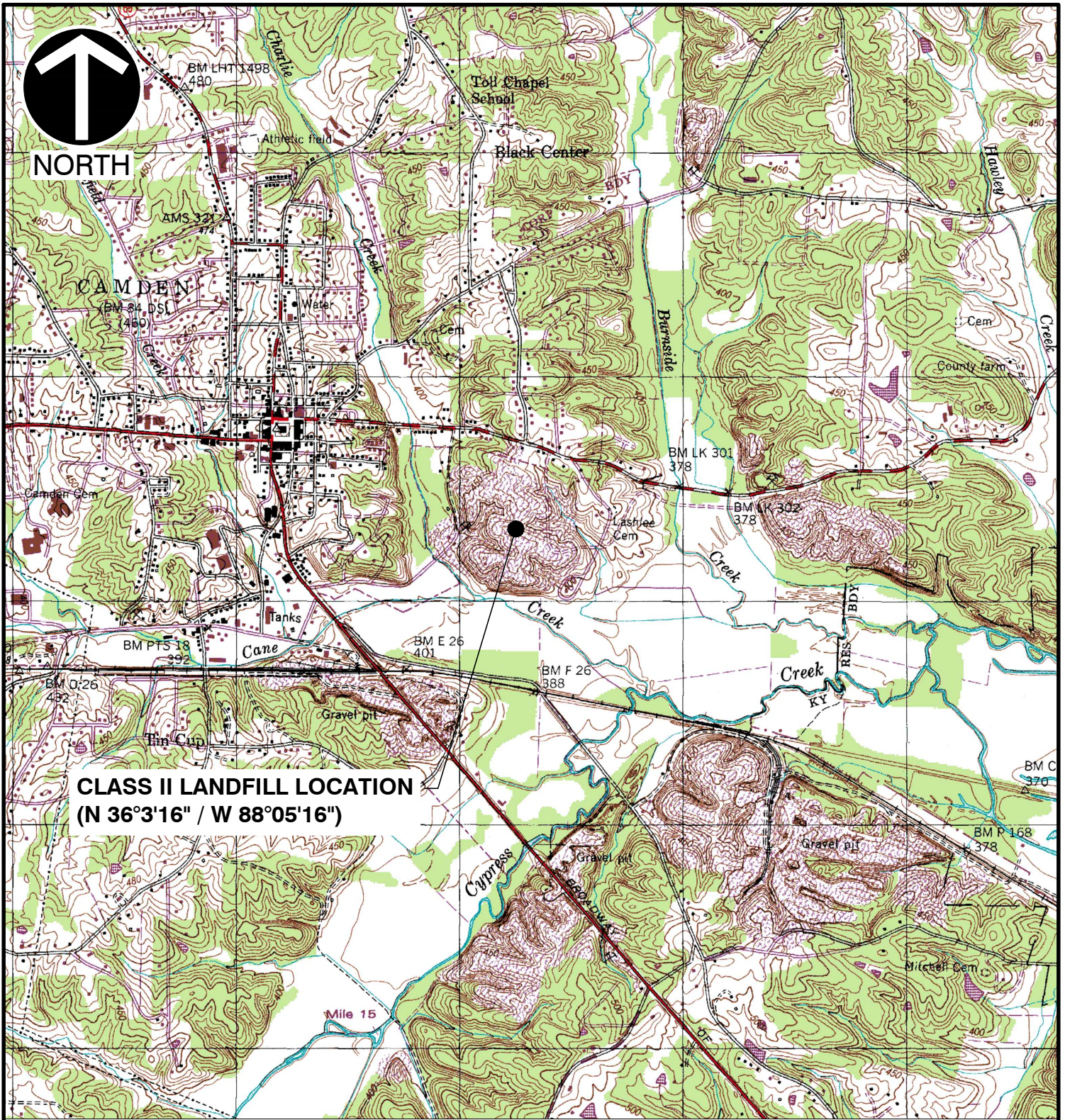
7.0 RECOMMENDATIONS

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

1. It is recommended that all permanent monitoring wells on the site be monitored on a semi-annual basis during future monitoring events based on reasons as previously discussed in this report.
2. It is recommended that an annual water use survey update continue to be completed as part of ongoing assessment monitoring requirements. The next annual water use survey will be submitted in a separate report in December 2023.
3. Based on a review of the total metals analysis vs. dissolved metals analysis since 2017, the reported metals concentrations were similar in concentrations and were not greatly affected by turbidity considering most turbidity measurements at each sample location have been less than 50 NTU. Therefore, it may not be necessary to sample for dissolved metals analysis in addition to total metals analysis if the turbidity values remain less than 50 NTU. It is recommended that efforts continue to be made during purging and sampling procedures to reduce the turbidity values to below the EPA recommended 10 NTU during each sampling event. However, if the observed turbidity values during sample collection are stable at turbidity values up to 50 NTU, additional dissolved metals samples will not be collected for analysis. If the turbidity values observed are above 50 NTU, samples will be collected for dissolved metals analysis in addition to total metals analysis for comparable and statistical purposes.

APPENDIX A
MAPS & TABLES

P:\2018\181-364\CADD\DWG\181-364-FIGURE 1 - SITE LOCATION MAP.dwg[FIGURE 1 - SITE LOCATION MAP.dwg] LS:(10/11/2023 9:25 AM) LP: 10/11/2023 9:25 AM

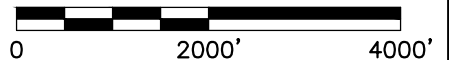


**CLASS II LANDFILL LOCATION
(N 36°3'16" / W 88°05'16")**

REFERENCE

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

SCALE IN FEET



* HAND SIGNATURE ON FILE



Civil & Environmental Consultants, Inc.

117 Seaboard Lane · Suite E-100 · Franklin, TN 37067

615-333-7797 · 800-763-2326

www.cecinc.com

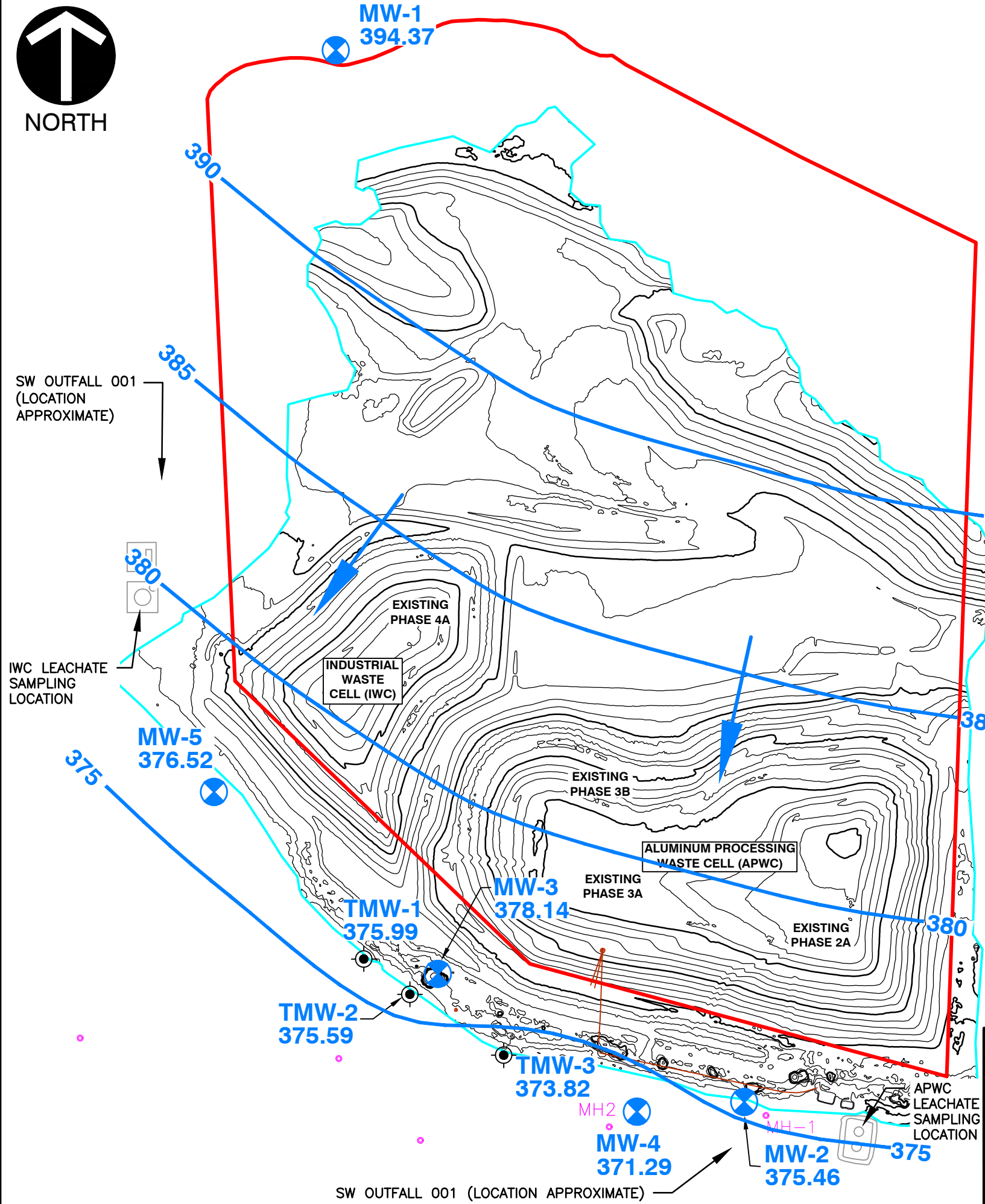
FORMER EWS SITE
CLASS II CAMDEN LANDFILL
CAMDEN, TENNESSEE

SITE LOCATION MAP 3Q2023

DRAWN BY:	AAB	CHECKED BY:	PJC	APPROVED BY:	KBW*	FIGURE NO.:	1
DATE:	OCTOBER 2023	DWG SCALE:	1"=2000'	PROJECT NO.:	181-364		



P:\2018\181-364\CADD\DWG\181-364_GROUNDWATER MAP AUGUST 2023.DWG(FIG 2 (2))\S:\PC\CAMPBELL - 10/11/2023 - LP: 10/11/2023_9:23:59_AM



LEGEND	
	MW-1 395.06 GROUND WATER MONITORING WELL GROUND WATER ELEVATION (FMSL)
	TMW-1 374.79 TEMPORARY GROUND WATER MONITORING WELL GROUND WATER ELEVATION (FMSL)
	390 ————— POTENTIOMETRIC SURFACE CONTOUR (FMSL)
	—————> GROUND WATER FLOW DIRECTION
	• MH1 MANHOLE
	————— APPROXIMATE FILL LIMITS

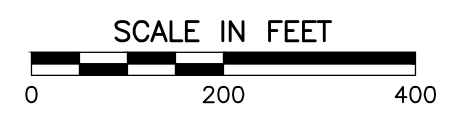
NOTE:
Hydraulic gradient calculation between MW-1 and MW-4 locations.

$$i = \frac{394.37' (MW-1) - 371.29' (MW-4)}{1,910'} = 0.0121 \text{ ft/ft}$$

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	
		AUGUST 2023 POTENTIOMETRIC SURFACE MAP	
DRAWN BY: PJC DATE: OCTOBER 2023	CHECKED BY: PJC DWG SCALE: 1"=200'	APPROVED BY: *KBW PROJECT NO: 181-364.0005	FIGURE NO.: <div style="font-size: 2em; font-weight: bold; text-align: center;">2</div>

Table 1
Former Environmental Waste Solutions Camden Class II Landfill
Field Parameters and Potentiometric Data - 3rd Quarter 2023

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)	pH (SU)	Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/l)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
MW-1 (up-gradient)	8/18/2023	11:35	416.47	385.97	0.17	1.4	22.10	394.37	16.9	5.8	114.2	135.2	0.8	-15.6	9.9
MW-2*	8/17/2023	10:50	380.35	367.70	0.17	1.3	4.89	375.46	25.2	6.2	229.5	229.9	4.92	40.2	8.4
MW-3	8/18/2023	13:15	392.90	365.10	0.17	2.2	14.76	378.14	24.3	6.19	162.6	164.9	0.31	-88.4	9.9
MW-4	8/18/2023	12:20	381.47	358.37	0.17	2.2	10.18	371.29	17.0	5.75	76.8	90.7	2.71	127.2	2.66
MW-5	8/18/2023	14:20	385.25	351.40	0.17	4.3	8.73	376.52	16.8	5.19	267.3	317.0	1.11	139.9	9.0
TMW-1	8/17/2023	13:25	381.19	348.99	0.085	1.1	5.20	375.99	18.0	5.48	188.4	217.6	2.93	127.5	5.81
TMW-2	8/17/2023	12:35	384.27	356.77	0.085	0.8	8.68	375.59	17.2	5.41	168.5	194.2	4.76	146.7	9.9
TMW-3**	8/17/2023	11:30	378.14	356.87	0.085	0.7	4.32	373.82	18.1	5.0	268.2	308.8	0.72	161.4	6.1
Leachate (IWC-L)	8/17/2023	14:00	NA	NA	NA	NA	NA	NA	30.1	3.3	199,097	181,314	2.9	272.9	9.9
***Leachate (APWC-L)	NS	NS	NA	NA	NA	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS

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

² Depth to water measurements collected by Civil & Environmental Consultants, Inc. on August 17, 2023.

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

** TMW-3 Top of Casing found cut to ground surface on May 25, 2023. New TOC elevation obtained from ground surface elevation at TMW-3 collected by CEC on May 12, 2016.

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

NS= Not Sampled

Table 2
Former EWS Camden Class II Landfill IDL 03-0212 (Terminated)
Groundwater and Leachate Analytical Data - 3rd Quarter 2023

Parameter	MCL/GWPS (mg/l)	(upgradient)	Qualifier	MW-3	Qualifier	MW-4	Qualifier	MW-5	Qualifier	TMW-1	Qualifier	TMW-2	Qualifier	Duplicate (TMW-2)	Qualifier	TMW-3	Qualifier	IWC-Leachate*	Qualifier	APWC-Leachate**	Qualifier	Field Blank	Qualifier
		8/18/2023		8/18/2023		8/18/2023		8/18/2023		8/17/2023		8/17/2023		8/17/2023		8/17/2023		8/17/2023		8/17/2023		8/17/2023	
		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	-	24.3		51.7		28.1		86.2		71.0		58.9		58.7		78.0		39,900		NS**		<2.50	
Alkalinity	-	55.8		31.7		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		NS**		<20.0	
Ammonia Nitrogen	-	0.293		<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		1,760		NS**		<0.250	
COD	-	<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		4,120		NS**		<20.0	
Boron	-	<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		NS**		<0.200	
Bromide	-	<1.00		<1.00		<1.00		1.34		<1.00		<1.00		<1.00		<1.00		<100		NS**		<1.00	
Chloride	250 ²	1.87		11.5		11.3		64.1		49.1		44.2		44.2		59.9		67,000		NS**		<1.00	
Fluoride	2 ²	<0.150	P1	0.219		<0.150		<0.150		<0.150		<0.150		<0.150		<0.150		<15.0		NS**		<0.150	
Nitrate	10 ¹	<0.100		<0.100		0.788		0.908		1.35	T8	0.769	T8	0.771	T8	6.91	T8	<10.0	Q	NS**		<0.100	T8
Sulfate	250 ²	<5.00		20.6		<5.00		15.4		<5.00		<5.00		<5.00		<5.00		864		NS**		<5.00	
Aluminum	0.2 ²	<0.100		0.357		<0.100		0.207		<0.100		0.201		0.217		<0.100		191		NS**		<0.100	
Arsenic	0.01	0.0159		<0.00200		0.00221		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		0.236		NS**		<0.00200	
Barium	2	0.0224		0.0335		0.0102		0.0544		0.0157		0.0332		0.0335		0.0471		2.16		NS**		<0.00200	
Total Cadmium	0.005	<0.00100		0.0016		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		14.9		NS**		<0.00100	
Calcium	-	4.47		13.8		6.05		16.8		19.4		14.8		14.6		20.3		13,900		NS**		<1.00	
Chromium	0.1	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.200		NS**		<0.00200	
Cobalt	0.006 ³	0.105		0.004		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		0.39		NS**		<0.00200	
Copper	1.3	<0.00500		<0.00500		<0.00500		0.00832		<0.00500		<0.00500		<0.00500		<0.00500		1.42		NS**		<0.00500	
Iron	0.3 ²	19.7		0.955		6.91		0.278		<0.100		0.192		0.189		<0.100		261		NS**		<0.100	
Lead	0.015	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		0.683		NS**		<0.00200	
Magnesium	-	3.19		4.17		3.16		10.7		5.47		5.36		5.37		6.65		1,260		NS**		<1.00	
Manganese	0.05 ²	1.43		0.57		0.0852		0.305		0.00571		<0.00500		<0.00500		0.00953		62.9		NS**		<0.00500	
Mercury	0.002	0.000814		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.000200		NS**		<0.00200	
Nickel	0.10 ¹	0.00793		0.00854		<0.00200		0.00557		<0.000200		<0.000200		<0.000200		<0.000200		0.474		NS**		<0.000200	
Potassium	-	<2.00		4.65		<2.00		<2.00		<2.00		<2.00		<2.00		<2.00		13,900		NS**		<2.00	
Sodium	-	2.70		4.33		3.54		17.7		4.71		5.86		5.78		15.1		23,300		NS**		<2.00	
Zinc	5 ²	<0.0250		0.0625		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		204		NS**		<0.0250	
Acetone	-	<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		1.34		NS**		<0.0500	
Carbon Disulfide		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		0.311		NS**		<0.00100	
2-Butanone (MEK)		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		0.148		NS**		<0.0100	

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

--Not Sampled for analysis.

NS**- Not Sampled for analysis. APWC Leachate levels were minimal during the groundwater sampling event and no APWC Leachate sample was 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 or EPA RSL for tapwater.

Qualifiers: P1: RPD value not applicable for sample concentrations less than 5 times the reporting limit.

T8: Sample(s) received past/too close to holding time expiration.

Table 3
Intra-Well and Inter-Well Statistical Summary
Environmental Waste Solutions Camden Class II Landfill IDL 03-0212 (Terminated)
Inorganic Analytical Data - 3rd Quarter 2023

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	Mann-Kendall Trend Analysis ²
Arsenic	MW-1	0	non-parametric	Pass	--	No	No Trend	No Trend
Barium	MW-1	7.14	non-parametric	Pass	--	No	Upward Trend	No Trend
Chloride	MW-1	0.00	non-parametric	Pass	--	No	No Trend	No Trend
Cobalt	MW-1	0.00	log-normal	--	Fail	Yes	Upward Trend	No Trend
Mercury	MW-1	30.95	non-parametric	Pass	--	No	No Trend	No Trend
Nickel	MW-1	26.19	non-parametric	Pass	--	No	No Trend	No Trend
Sulfate	MW-1	57.50	non-parametric	Pass	--	No	No Trend	No Trend

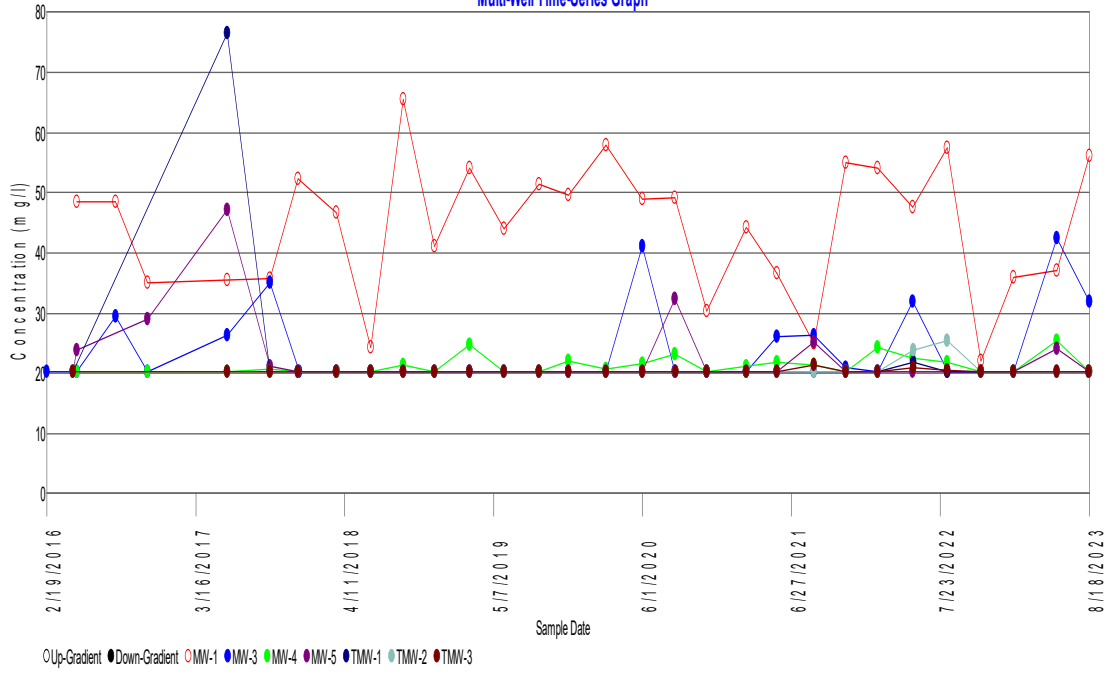
Inter-Well Statistical Summary (Downgradient Compliance Wells)								
Constituent	Well	% Non Detects in Background well MW-1	Normality (background MW-1)	Inter-well NPPL	Inter-well PPL	SSI	Mann-Kendall Trend Analysis ¹	Mann-Kendall Trend Analysis ²
Aluminum	MW-3	61.9	non-parametric	Pass	--	No	No Trend	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend	No Trend
	TMW-2		non-parametric	Pass	--	No	Downward Trend	No Trend
Arsenic	MW-4	0	Non-parametric	Pass	--	No	No Trend	No Trend
Barium	MW-3	7.14	non-parametric	Pass	--	No	Downward Trend	No Trend
	MW-4		non-parametric	Pass	--	No	Upward Trend	No Trend
	MW-5		non-parametric	Pass	--	No	Upward Trend	No Trend
	TMW-1		non-parametric	Pass	--	No	No Trend	No Trend
	TMW-2		non-parametric	Pass	--	No	No Trend	No Trend
	TMW-3		non-parametric	Pass	--	No	Upward Trend	No Trend
Cadmium	MW-3	100.00	non-parametric	Fail	--	Yes	Downward Trend	No Trend
Chloride	MW-3	0.00	non-parametric	Fail	--	Yes	Downward Trend	No Trend
	MW-4		non-parametric	Fail	--	Yes	Upward Trend	Upward Trend
	MW-5		non-parametric	Fail	--	Yes	No Trend	No Trend
	TMW-1		non-parametric	Fail	--	Yes	Upward Trend	Upward Trend
	TMW-2		non-parametric	Fail	--	Yes	Upward Trend	Upward Trend
	TMW-3		non-parametric	Fail	--	Yes	Upward Trend	No Trend
Cobalt	MW-3	0.00	log-normal	--	Pass	No	No Trend	Upward Trend
Copper	MW-5	85.71	non-parametric	Pass	--	No	No Trend	No Trend
Fluoride	MW-3	96.88	non-parametric	Fail	--	Yes	No Trend	No Trend
Nickel	MW-3	26.19	non-parametric	Pass	--	No	No Trend	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend	No Trend
Sulfate	MW-3	57.50	non-parametric	Fail	--	Yes	No Trend	No Trend
	MW-5		non-parametric	Pass	--	No	Upward Trend	Upward Trend
Zinc	MW-3	73.81	non-parametric	Fail	--	Yes	No Trend	No Trend

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

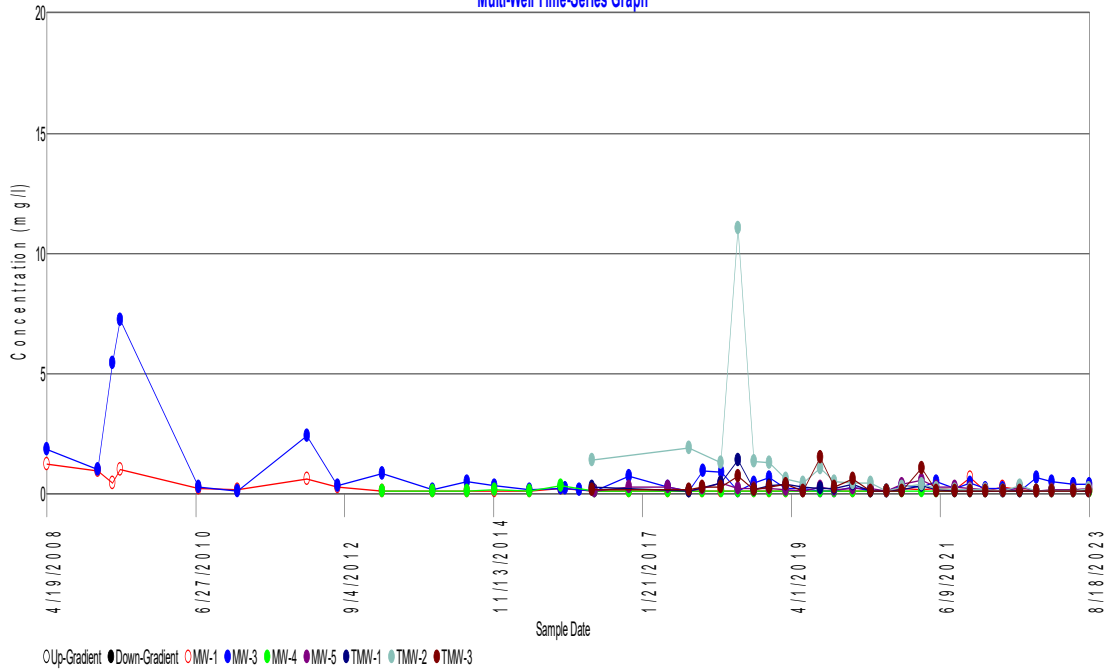
² Mann-Kendall Trend Analysis was completed using recent data since the March 2, 2021 (n=11)

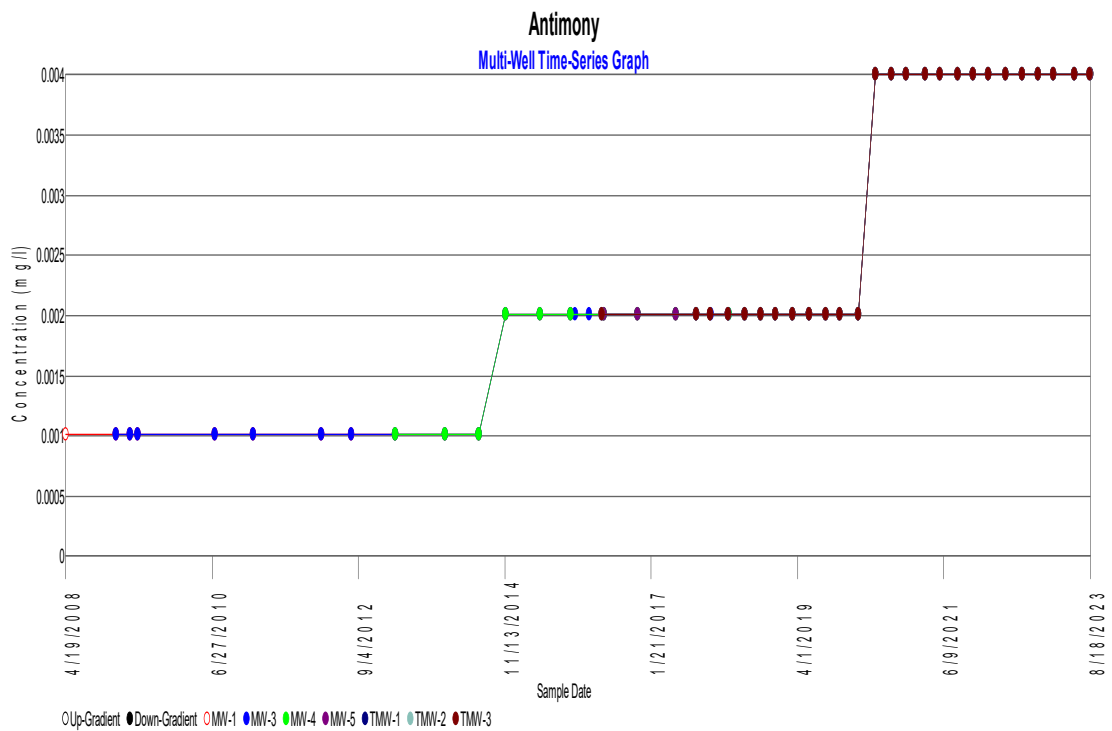
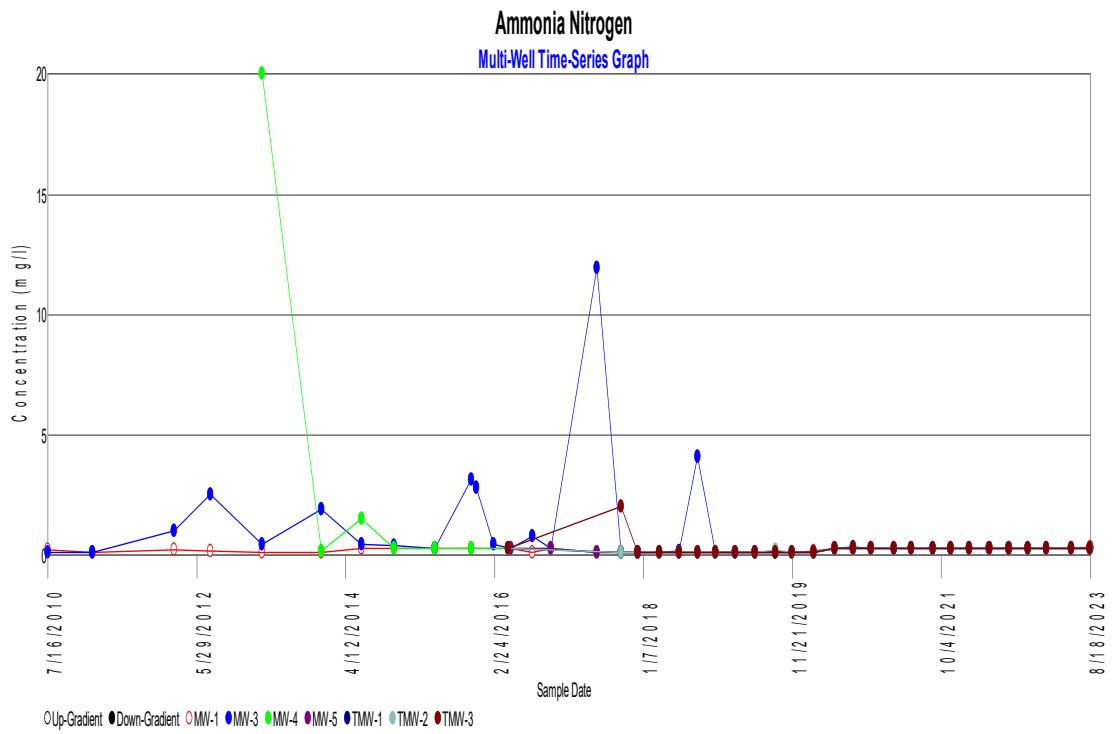
APPENDIX B
STATISTICAL EVALUATIONS & TIME SERIES PLOTS

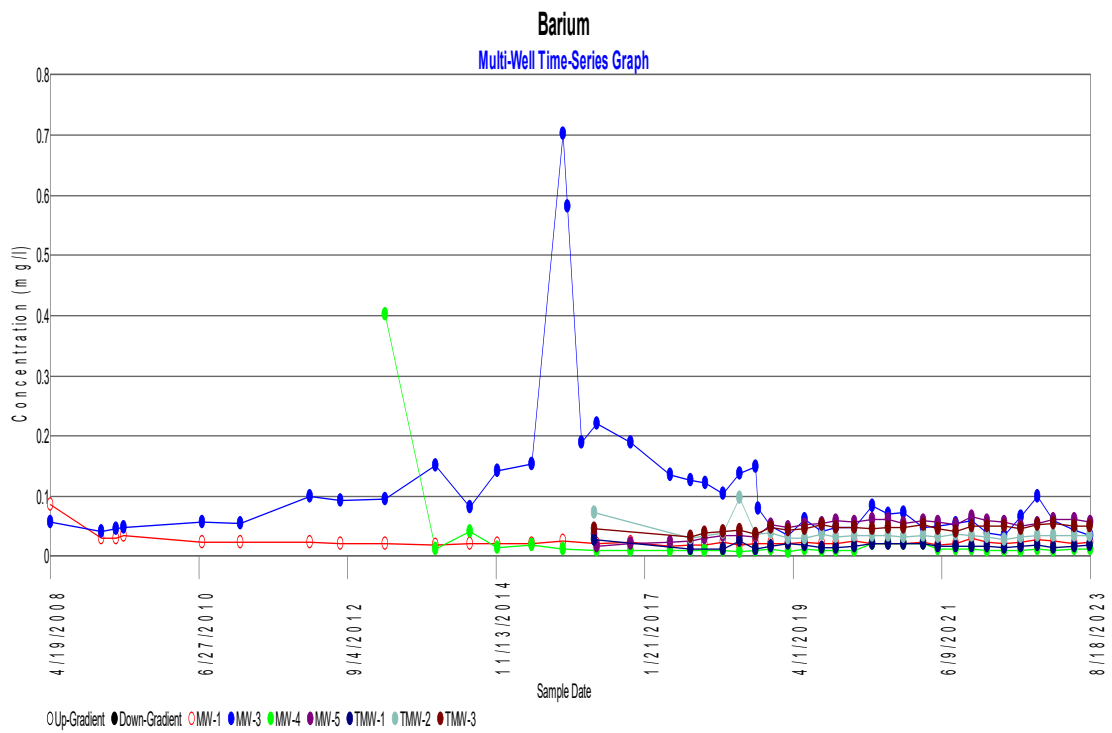
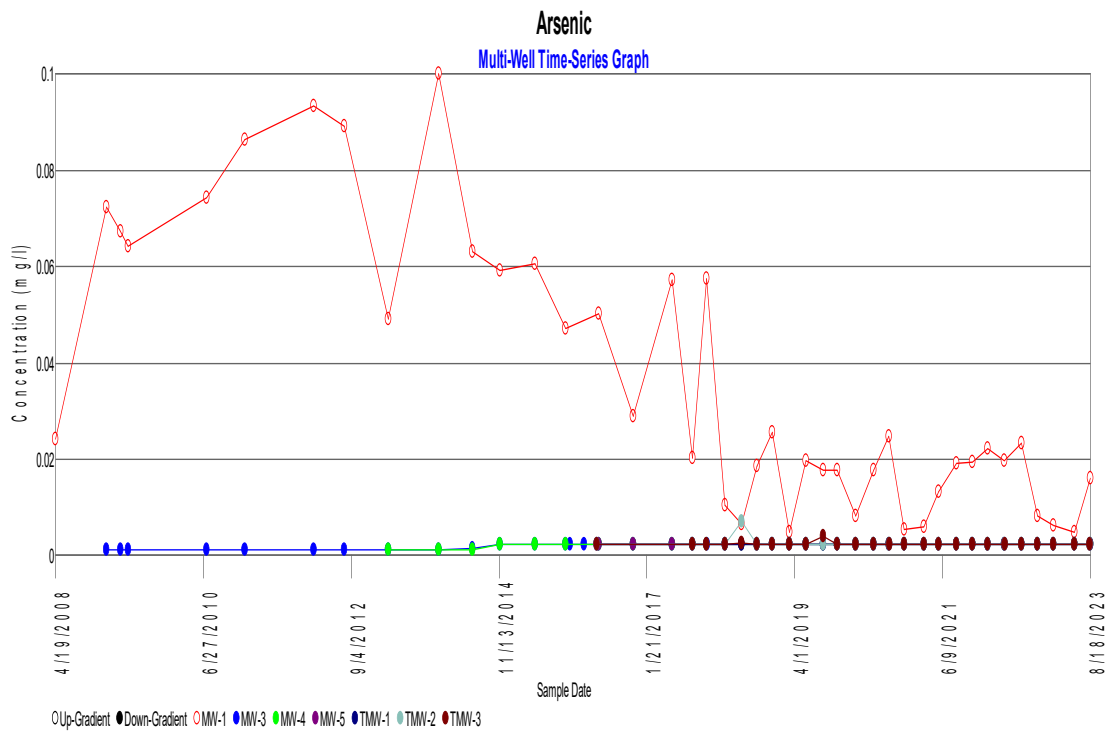
Alkalinity Multi-Well Time-Series Graph

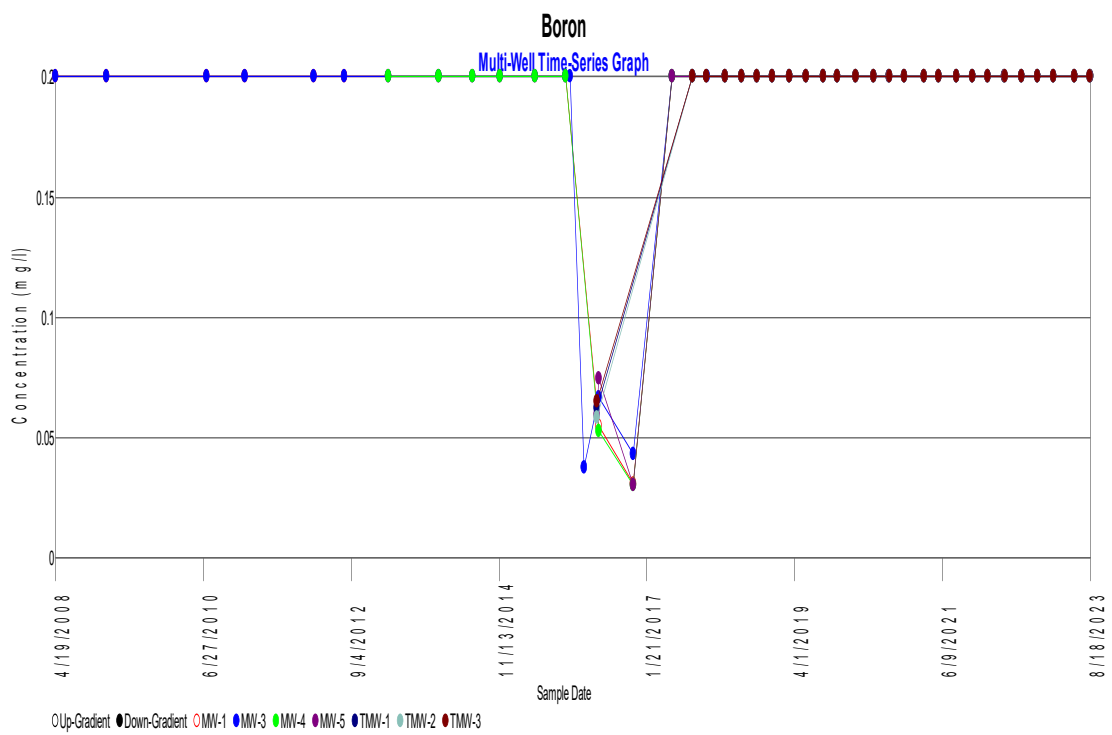
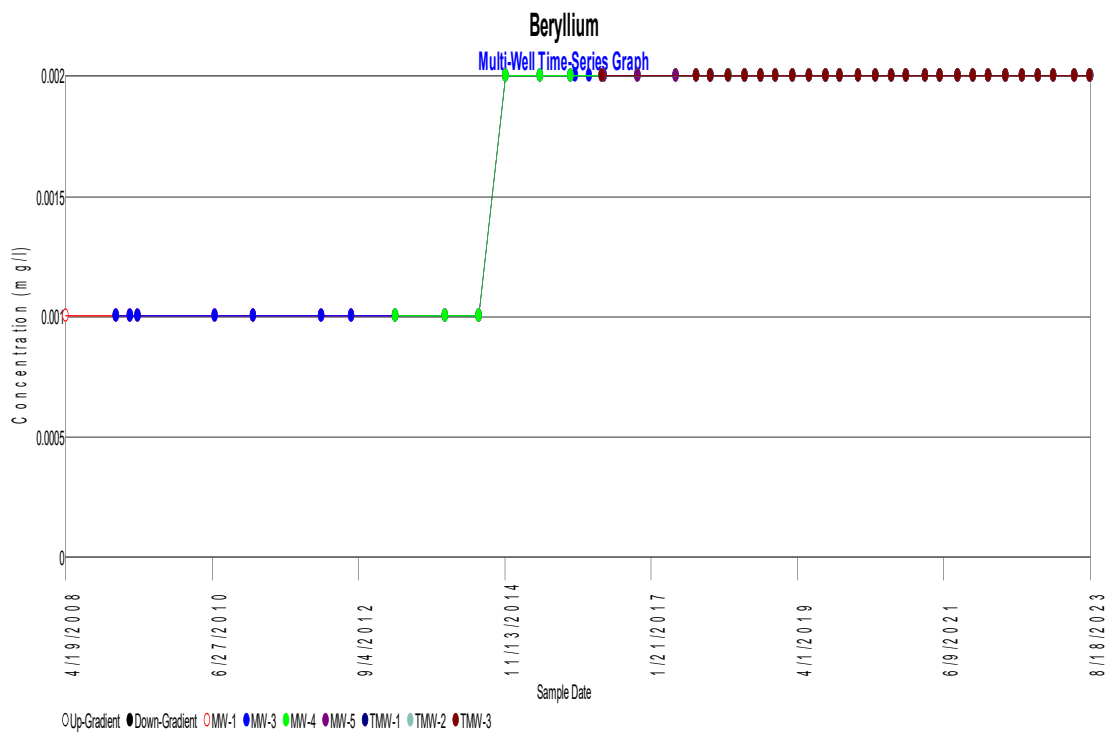


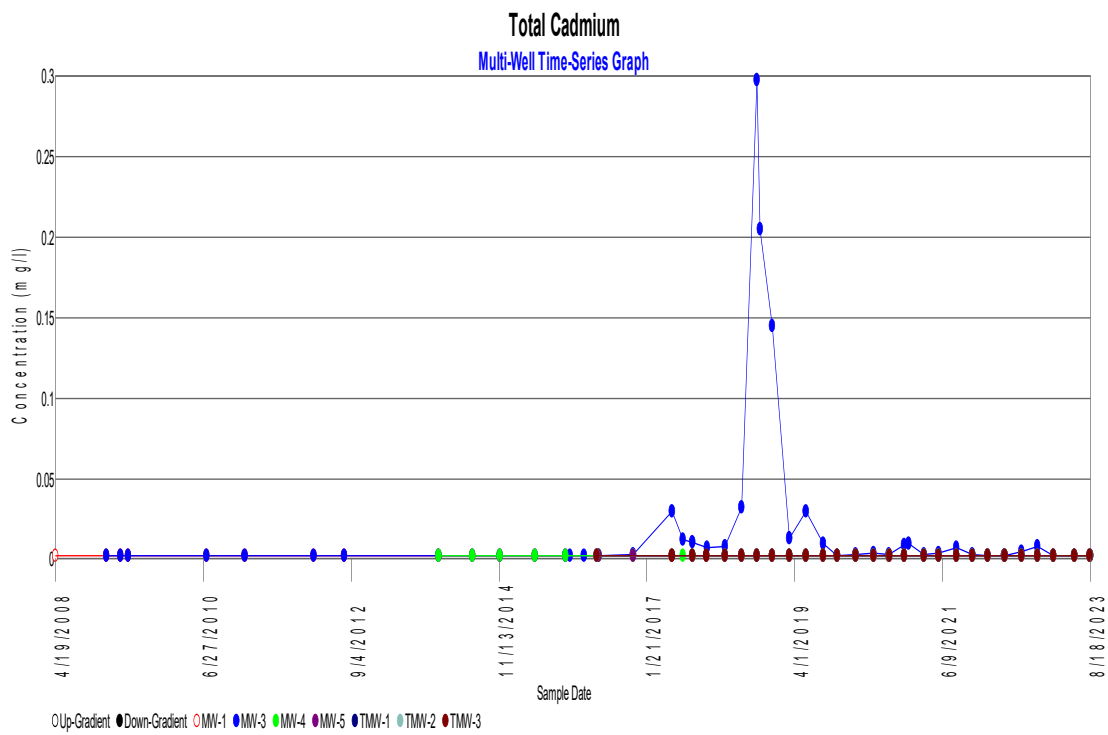
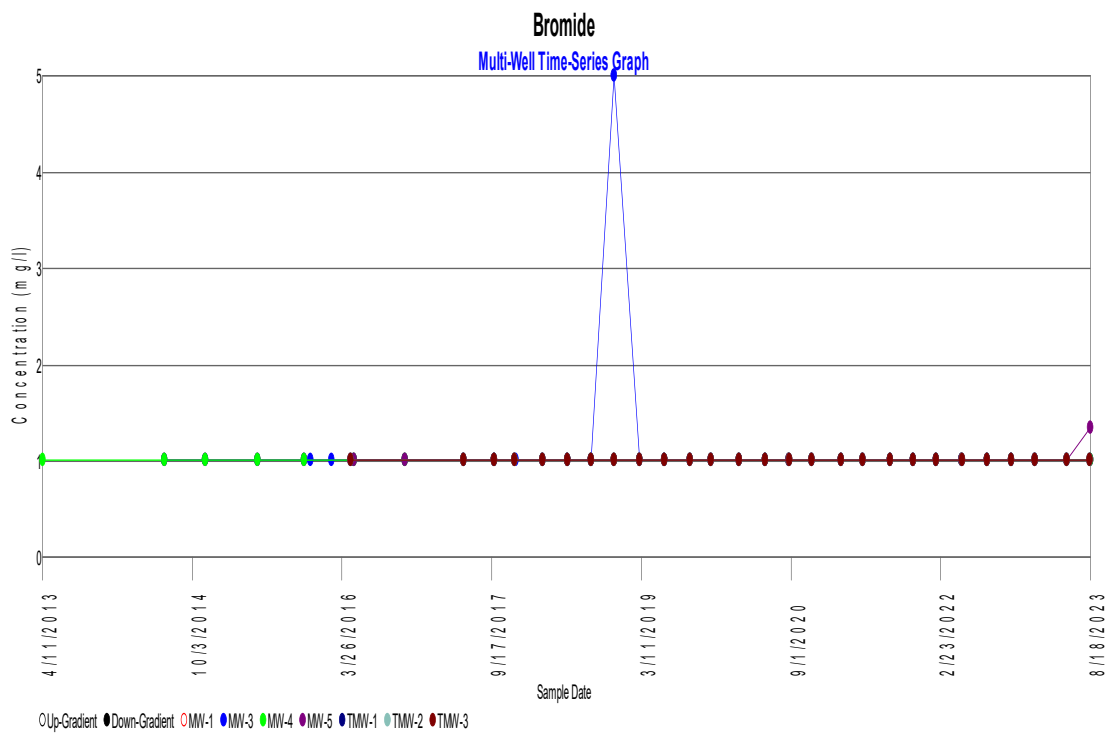
Aluminum Multi-Well Time-Series Graph

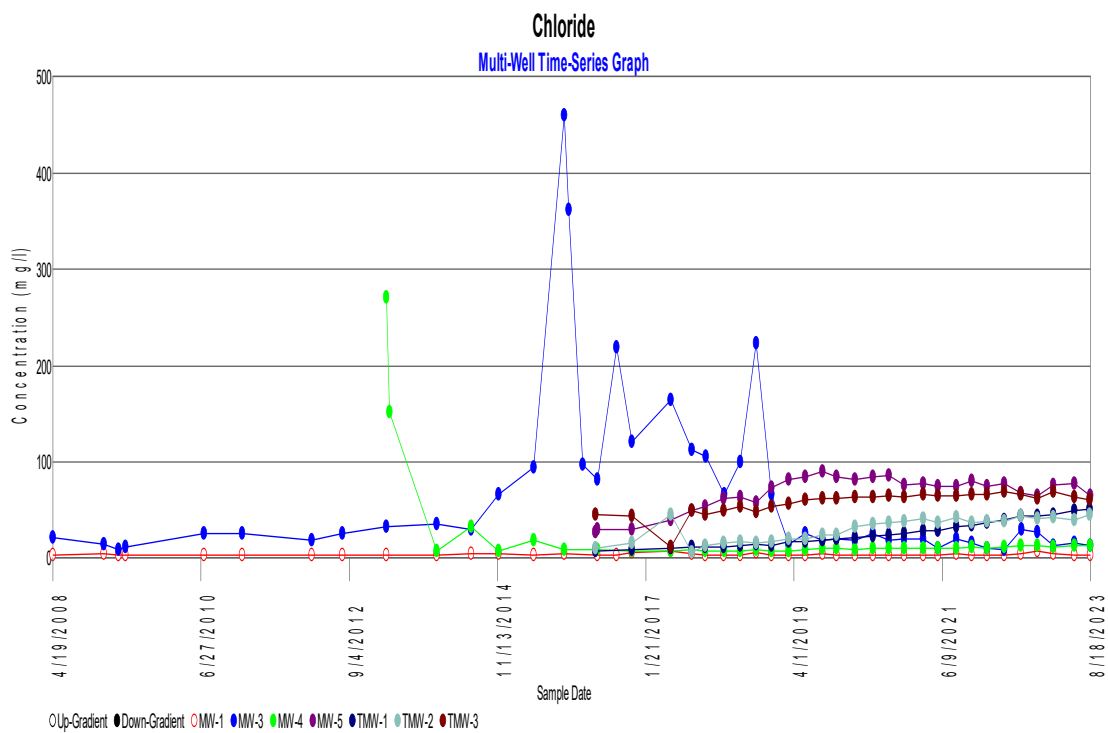
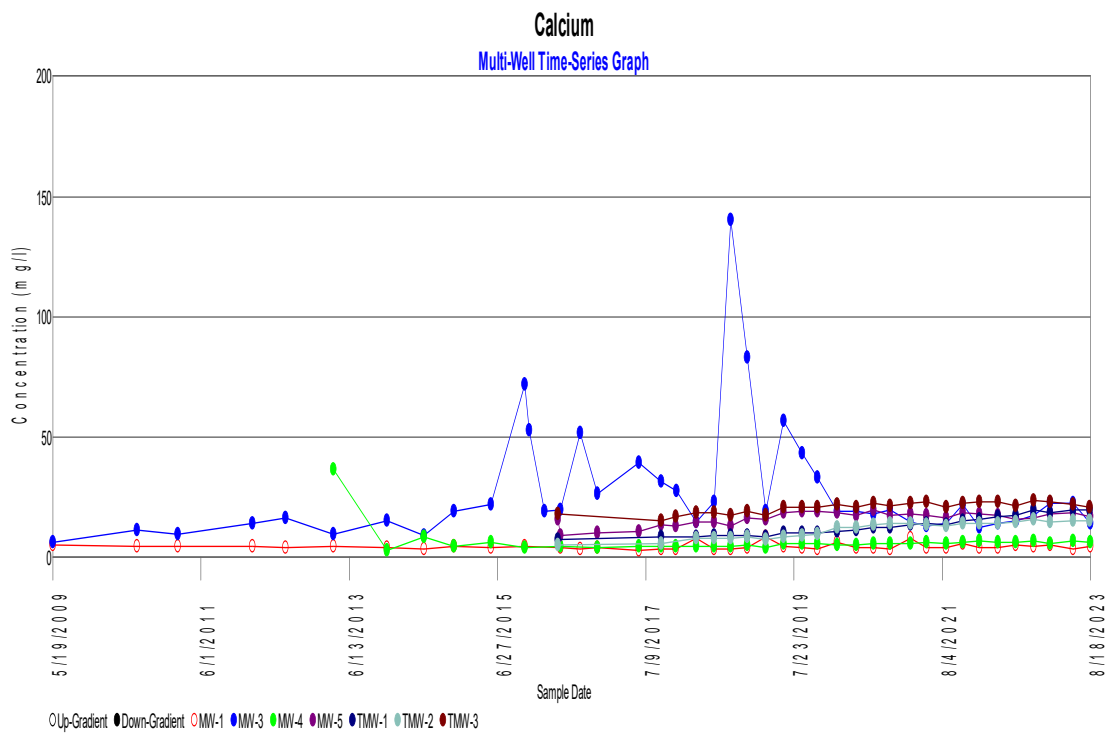






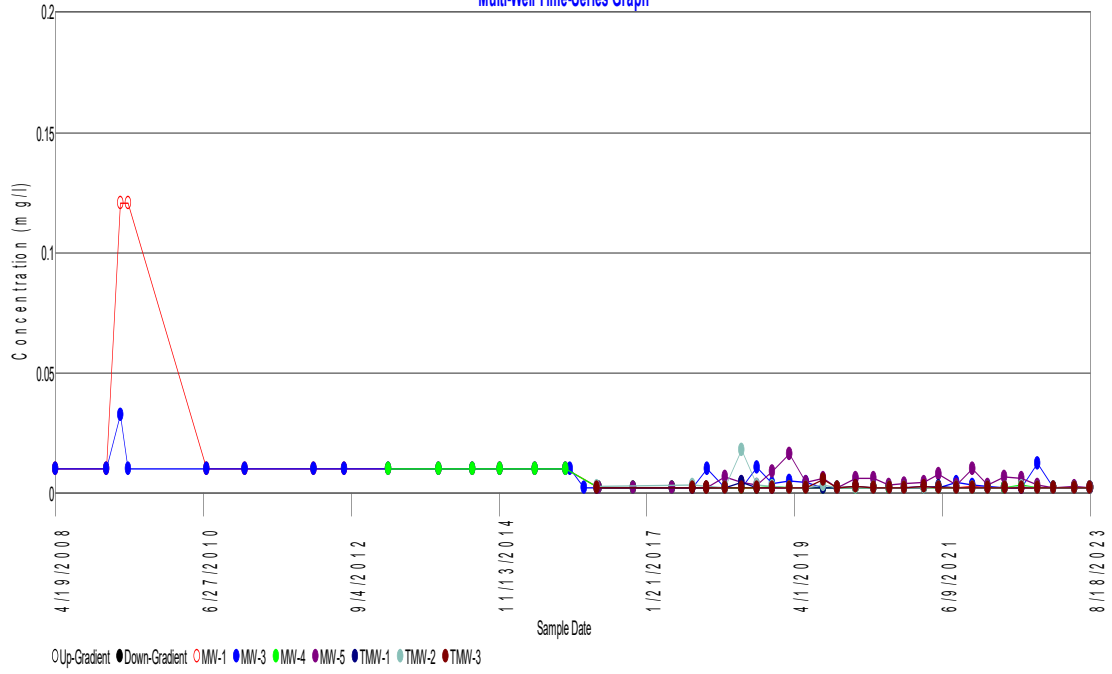






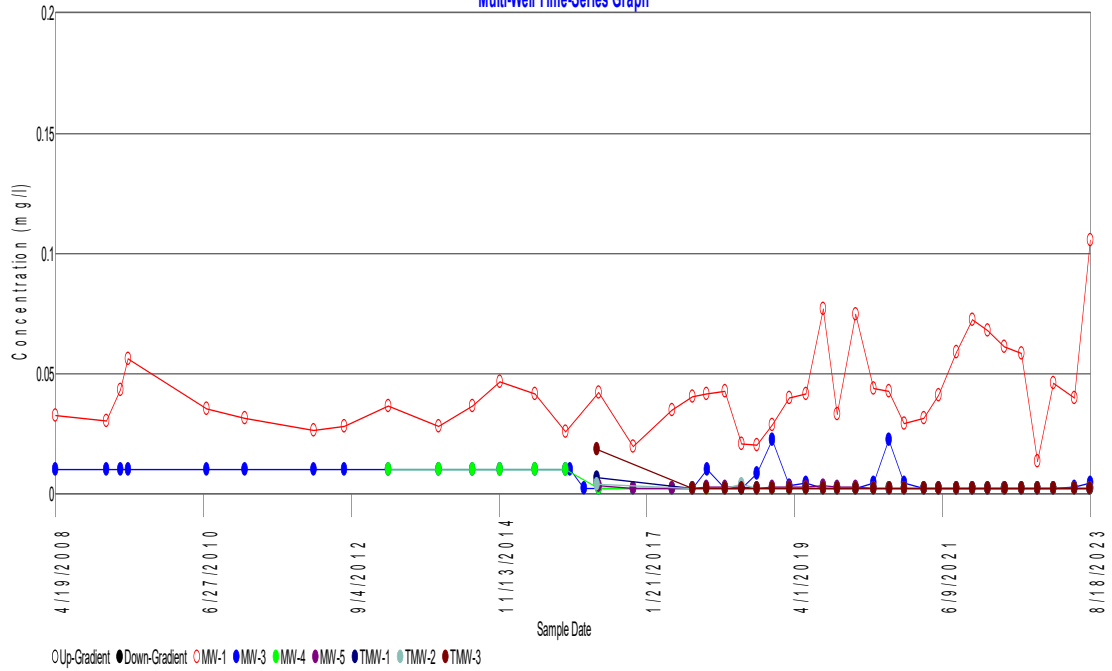
Chromium

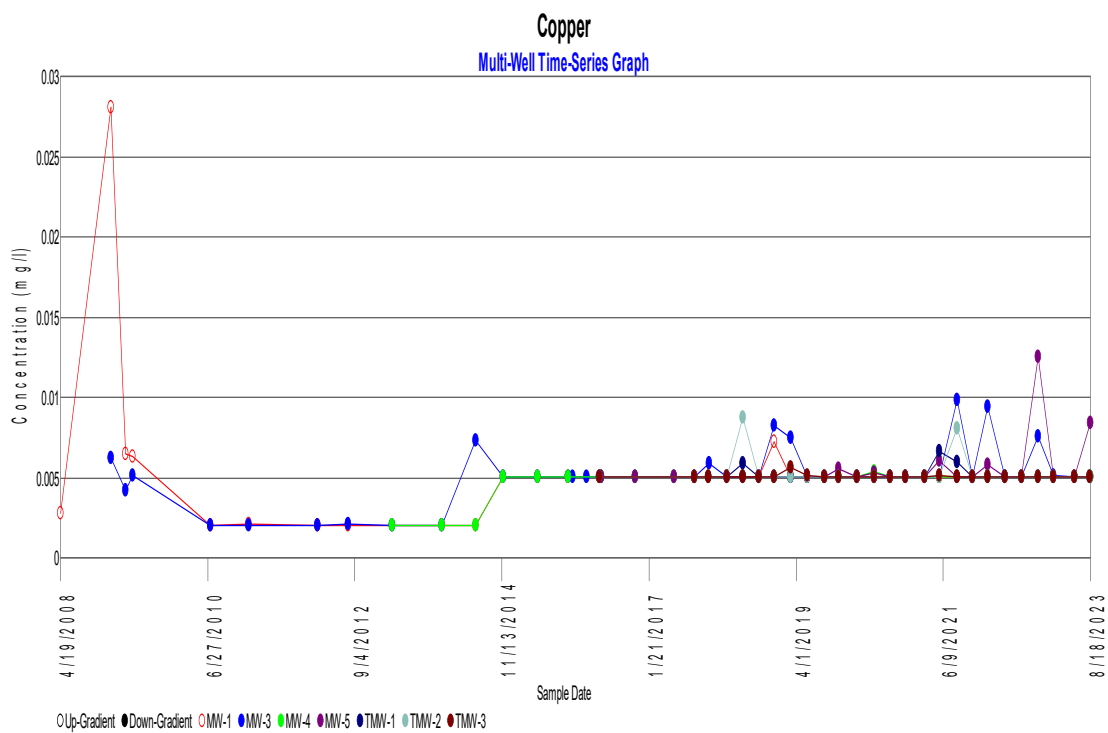
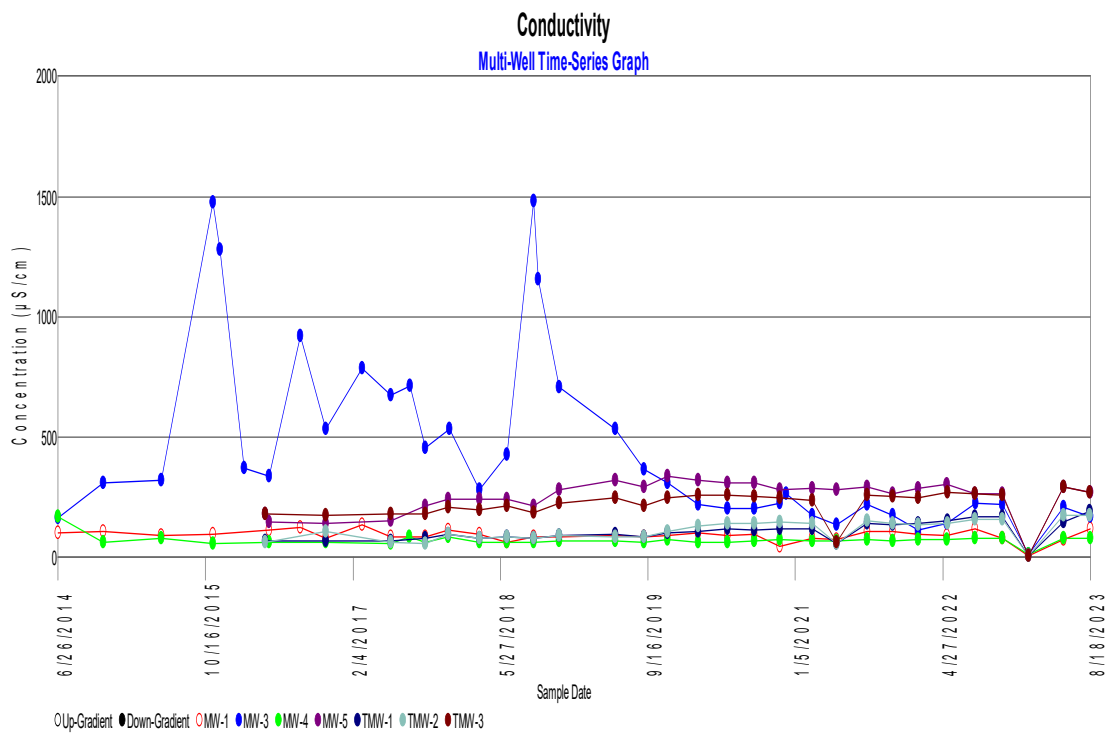
Multi-Well Time-Series Graph



Cobalt

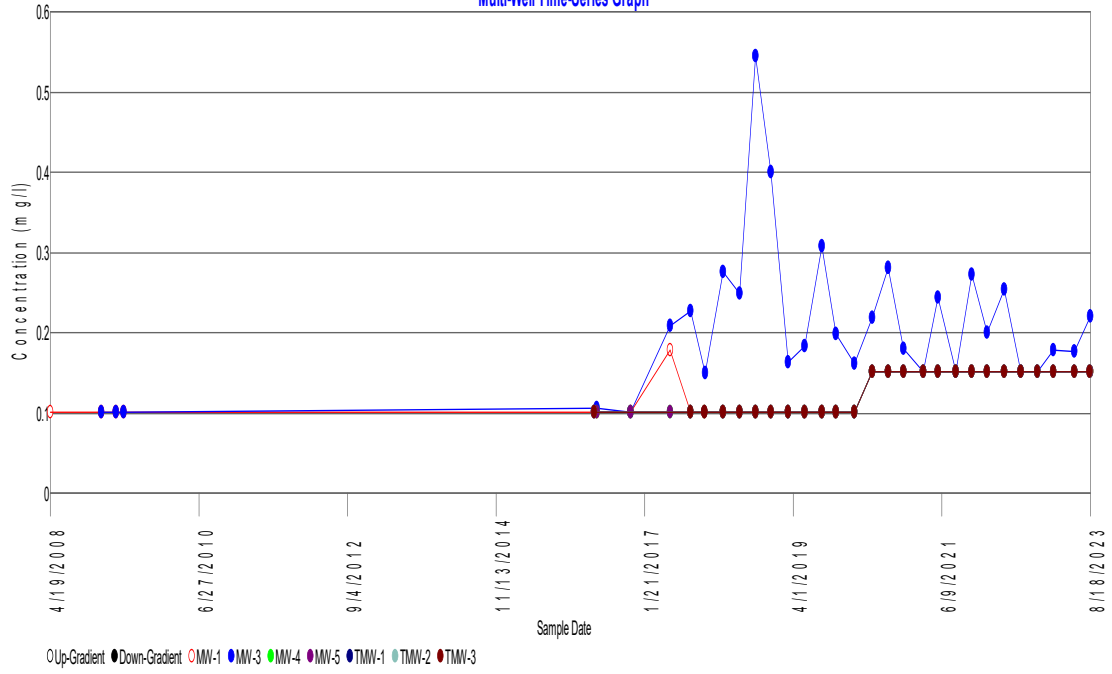
Multi-Well Time-Series Graph





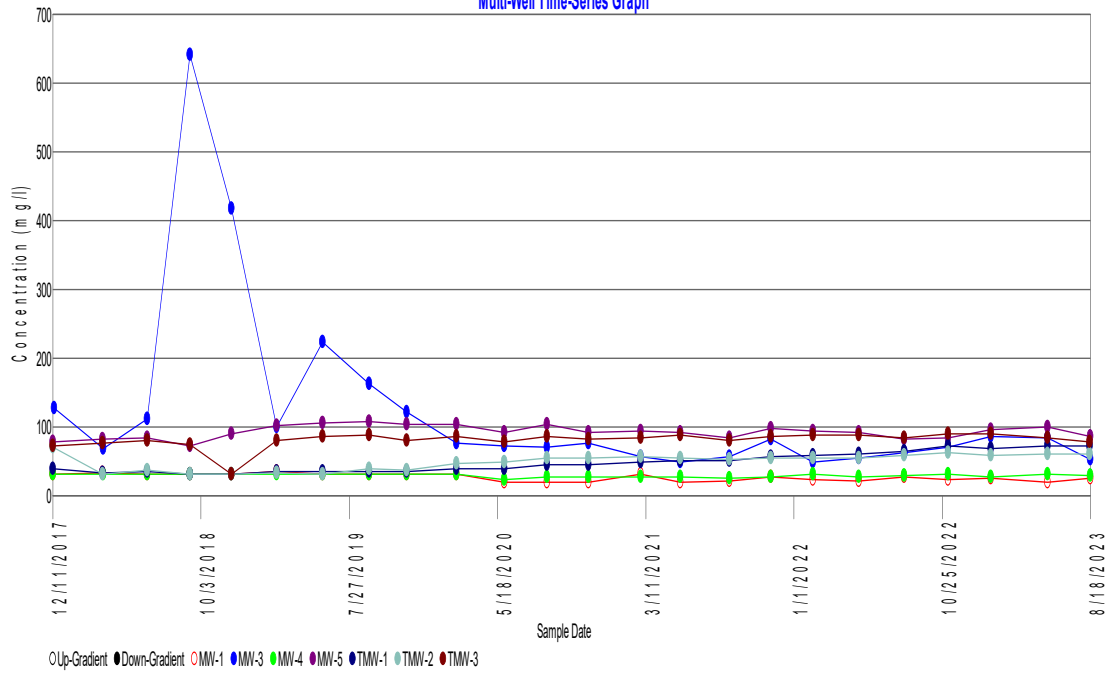
Fluoride

Multi-Well Time-Series Graph



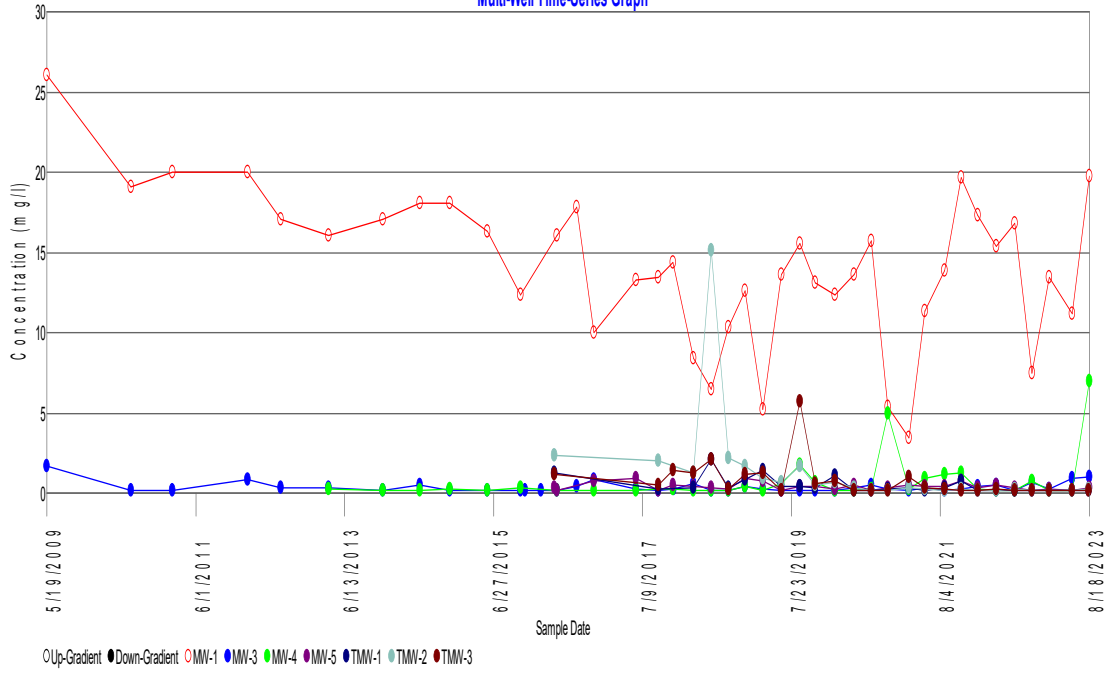
Hardness

Multi-Well Time-Series Graph



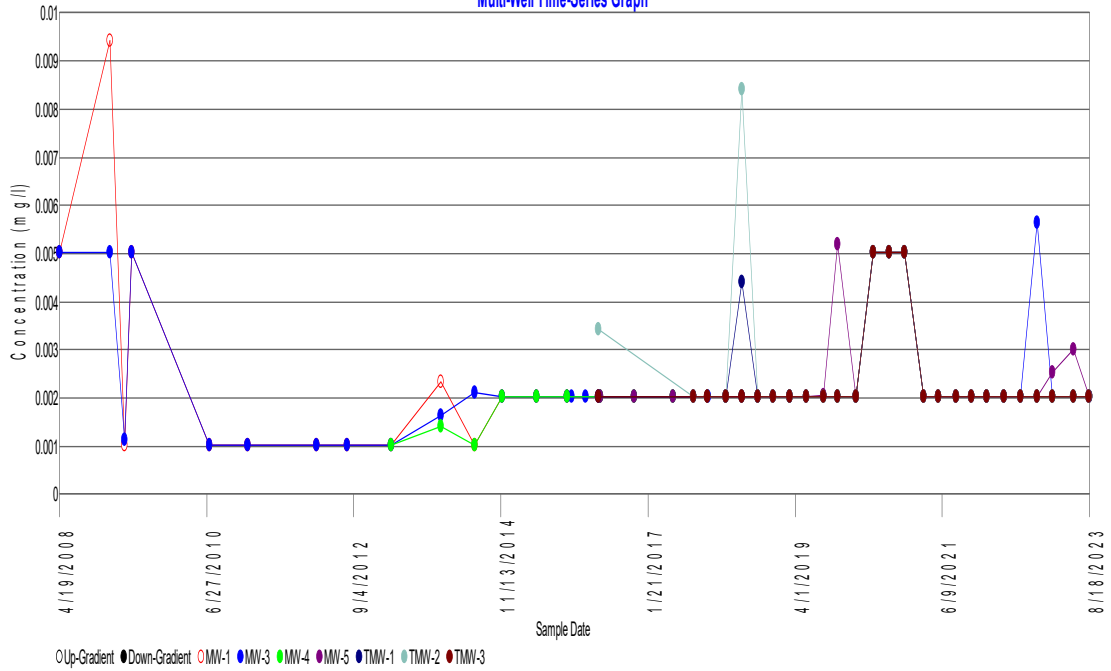
Iron

Multi-Well Time-Series Graph



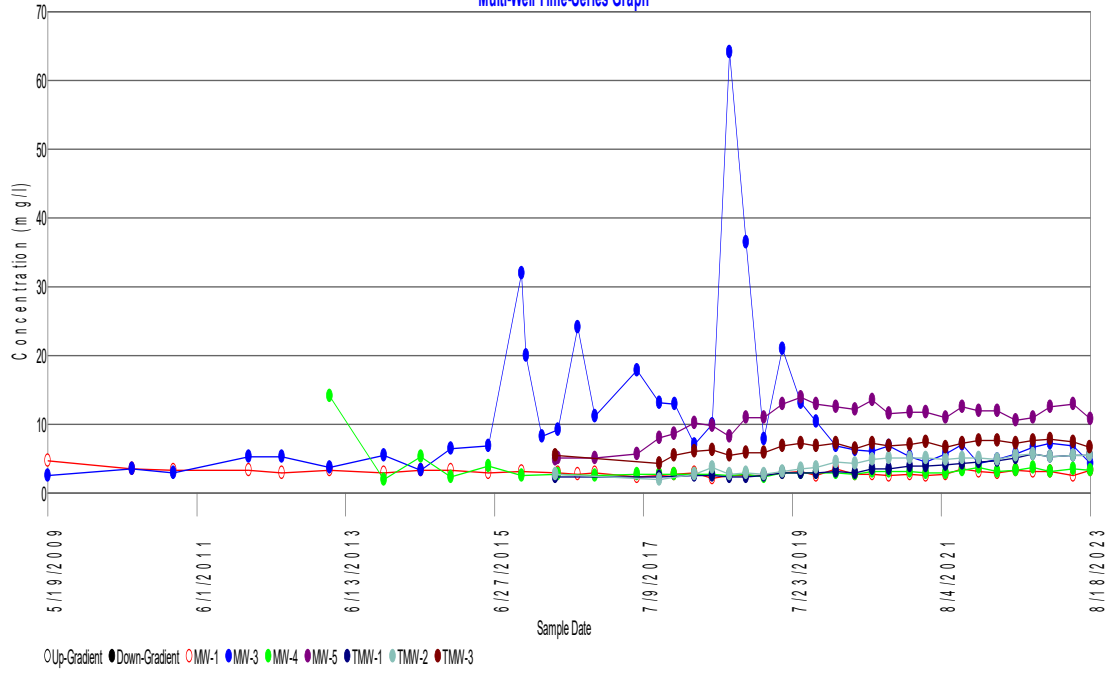
Lead

Multi-Well Time-Series Graph



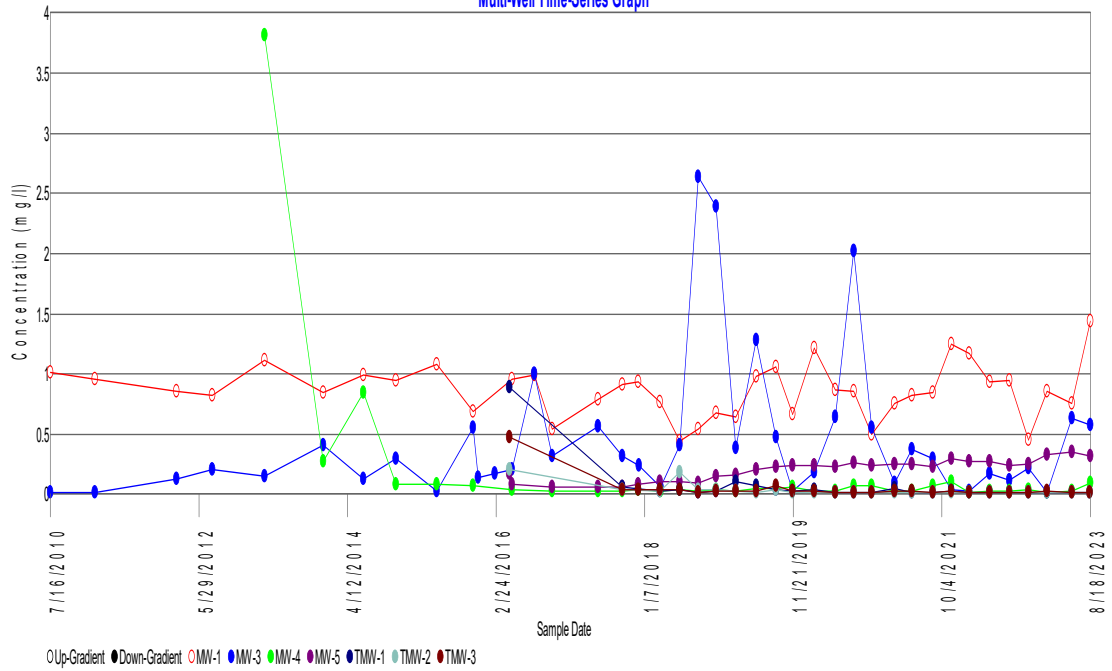
Magnesium

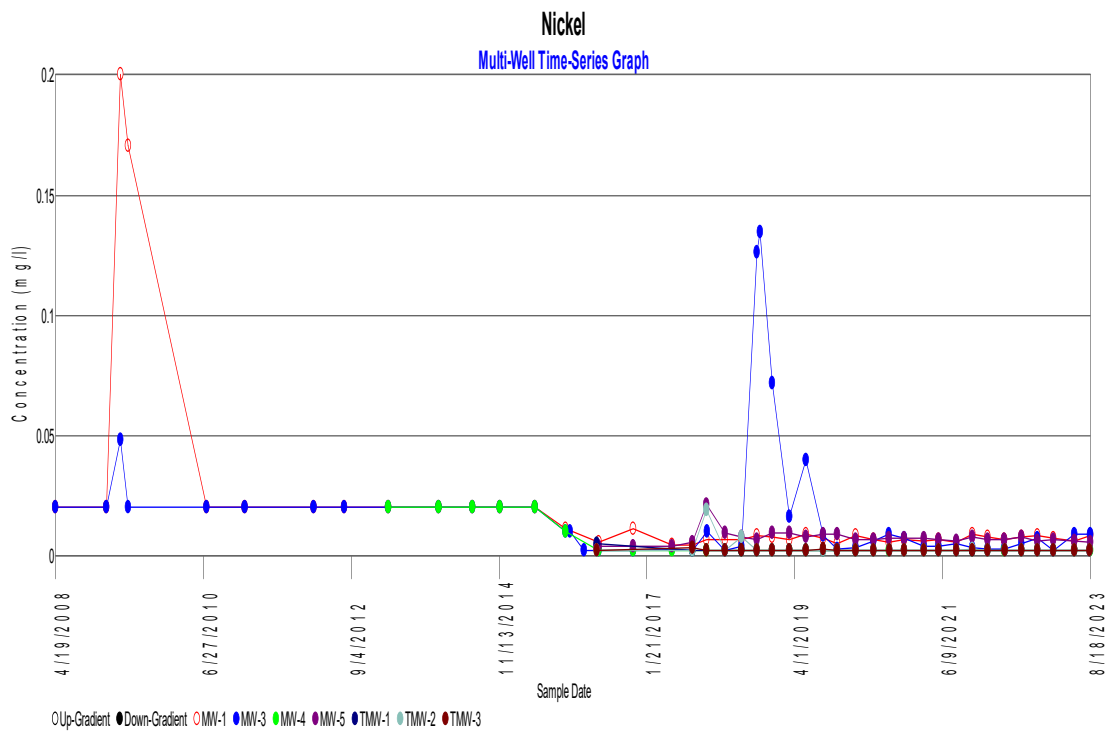
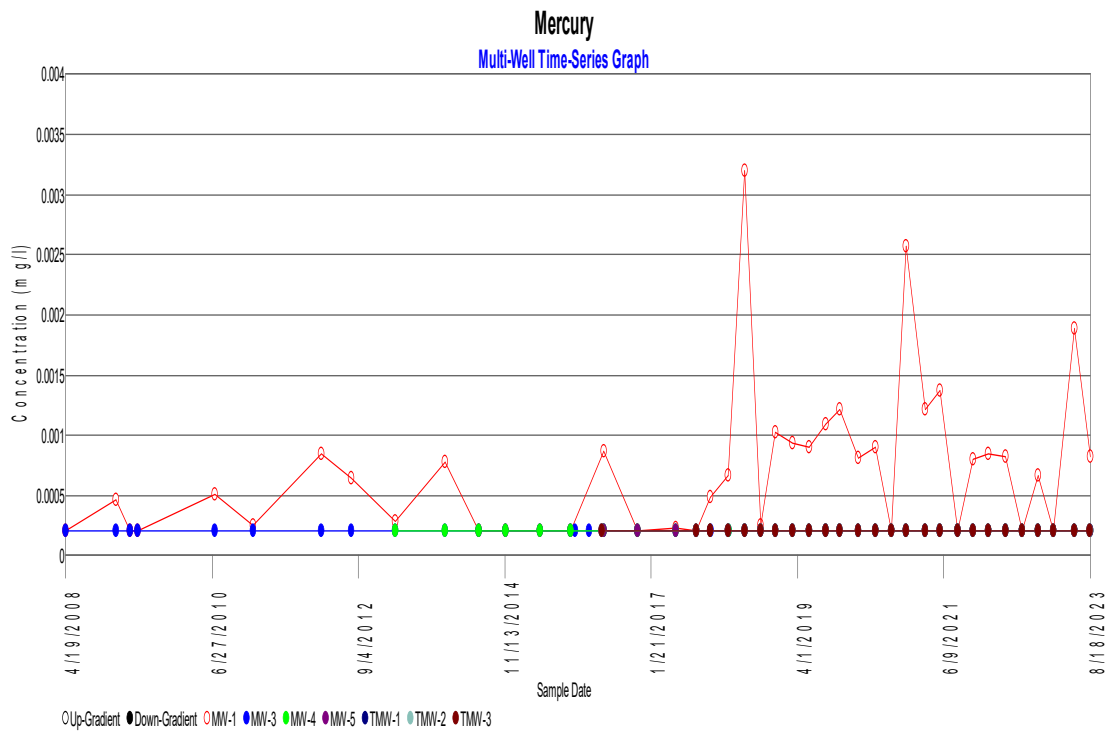
Multi-Well Time-Series Graph



Manganese

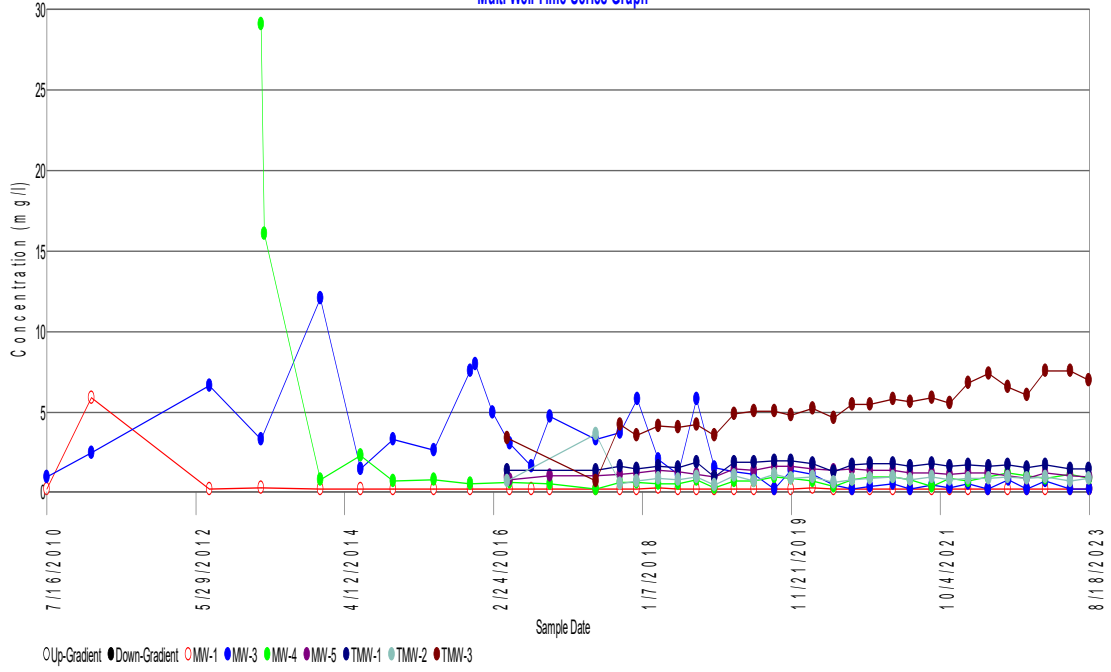
Multi-Well Time-Series Graph





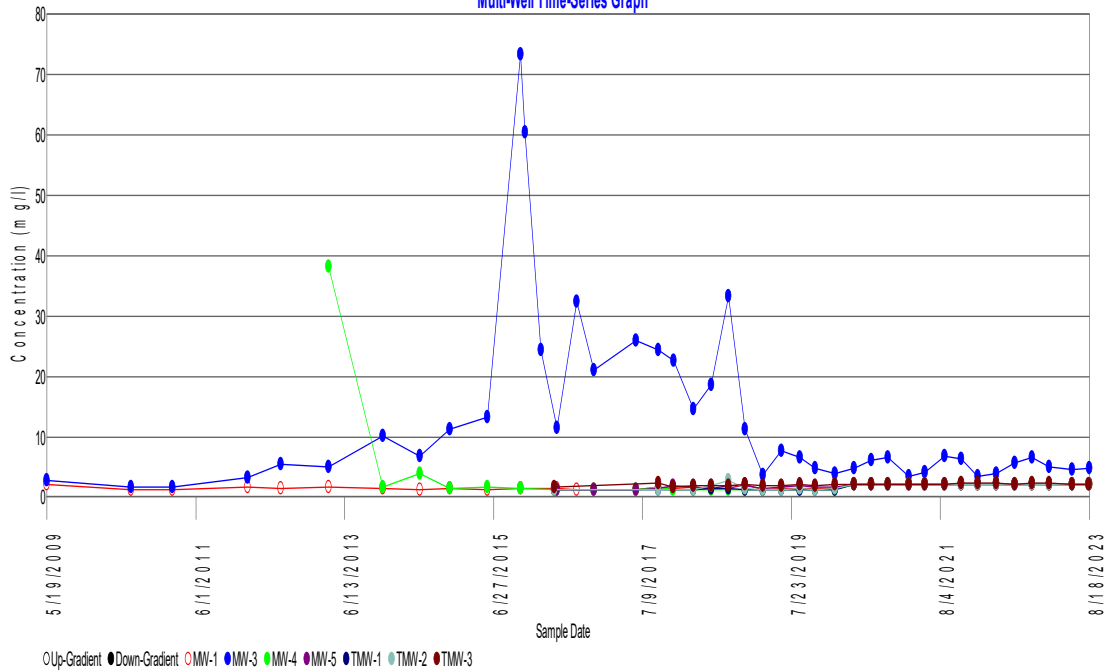
Nitrate

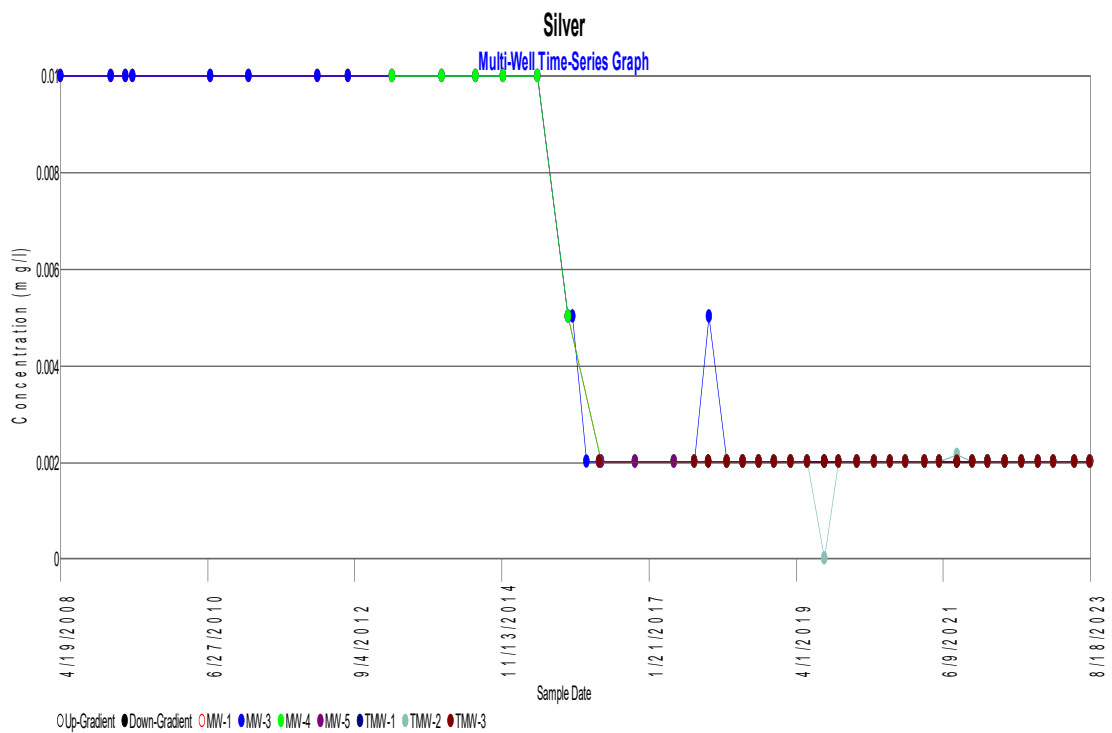
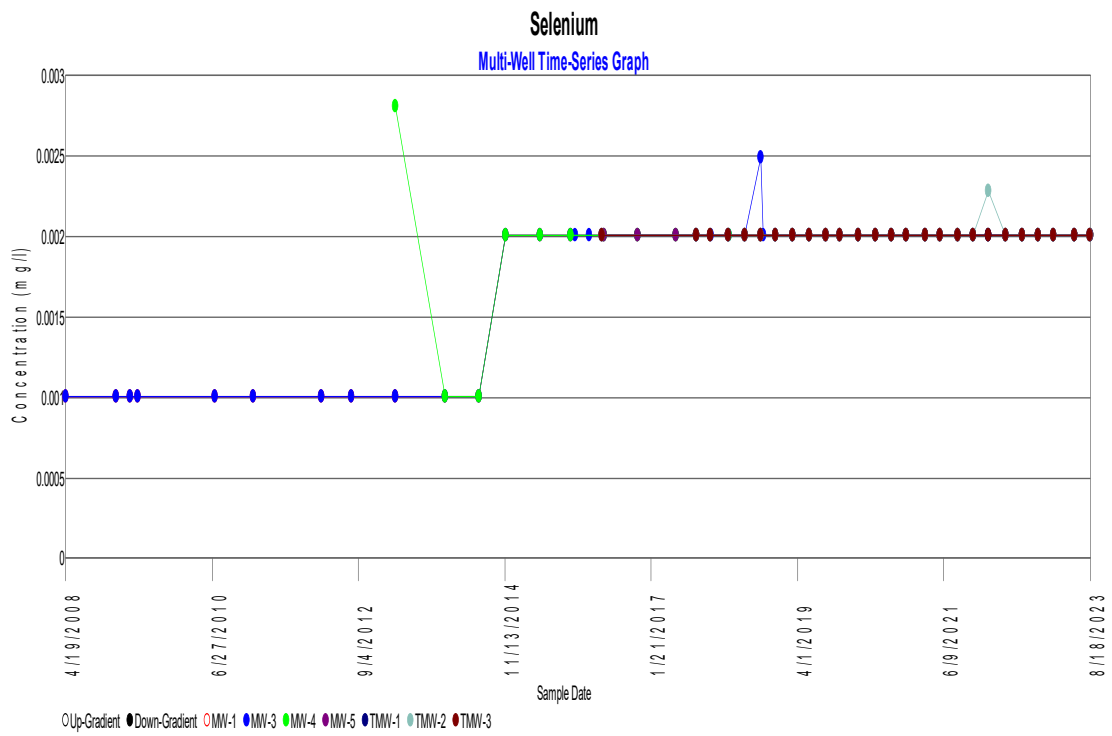
Multi-Well Time-Series Graph

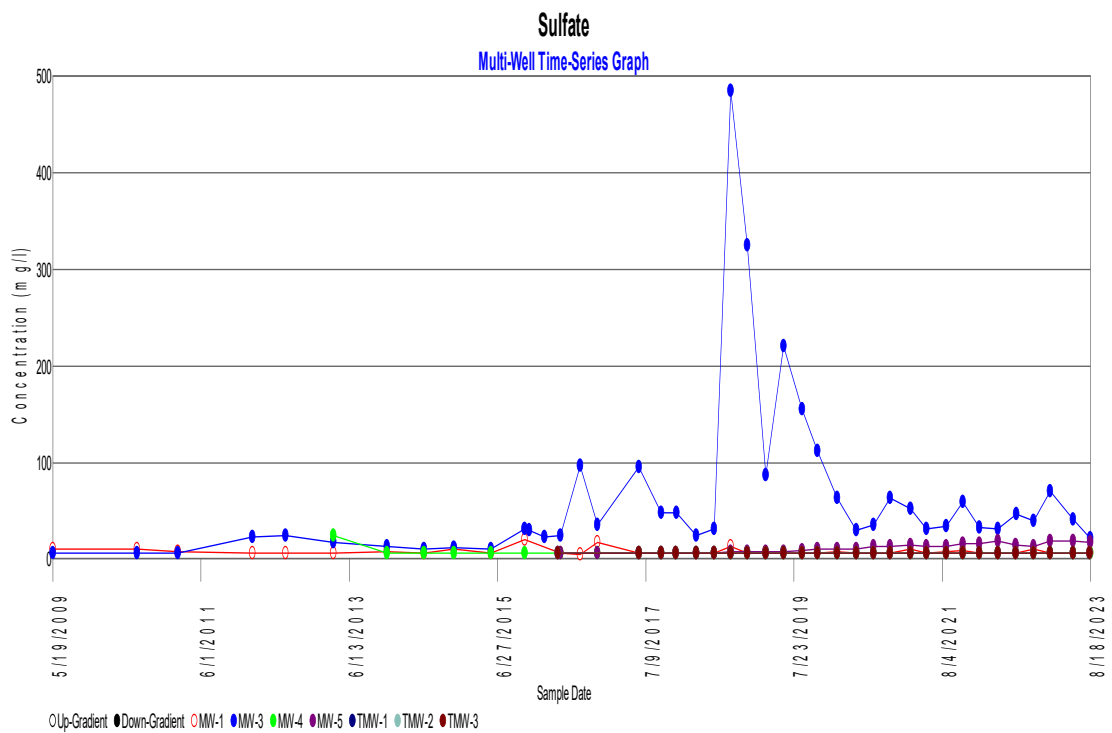
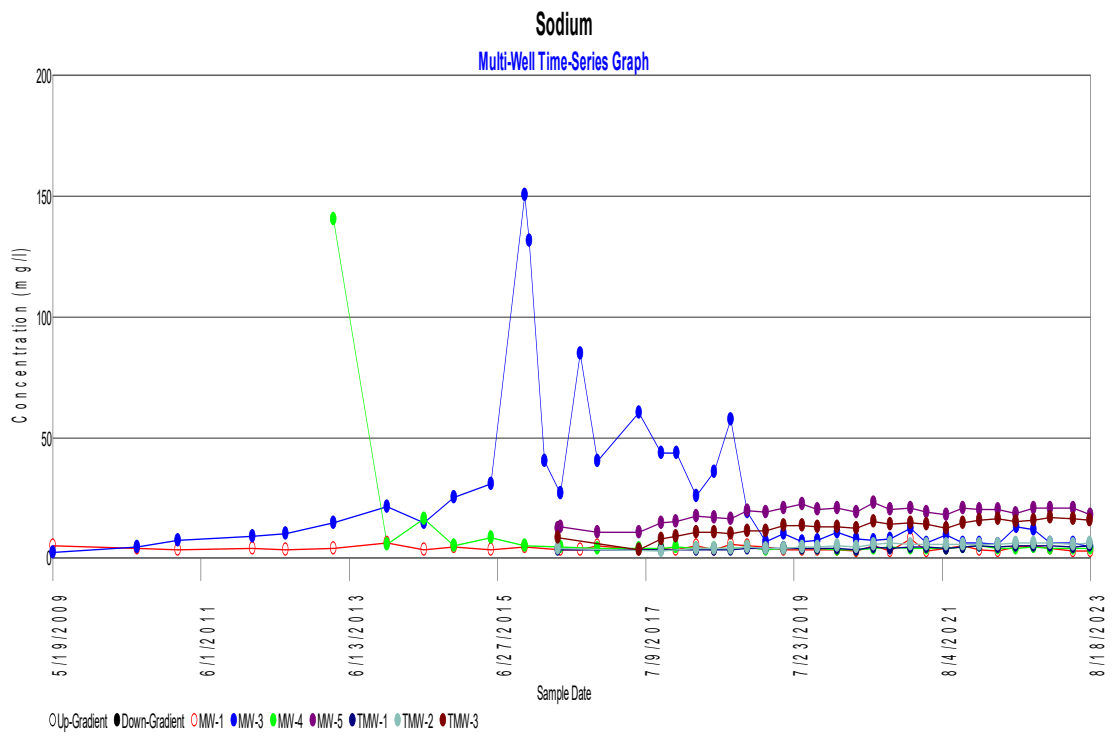


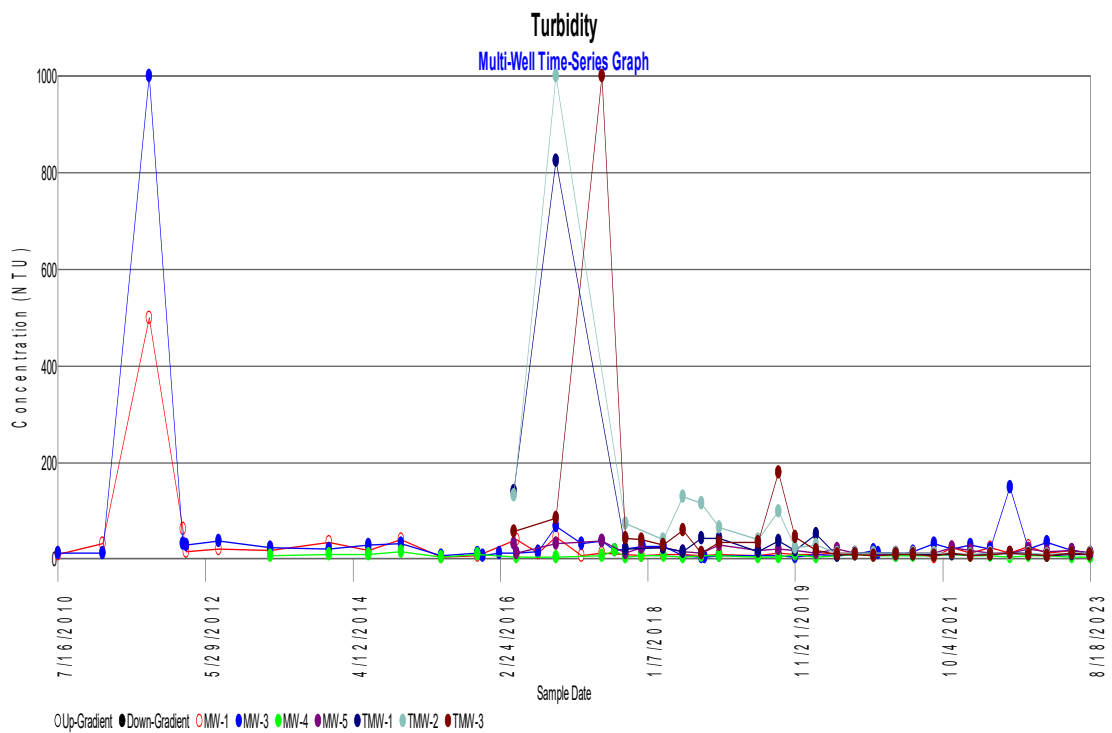
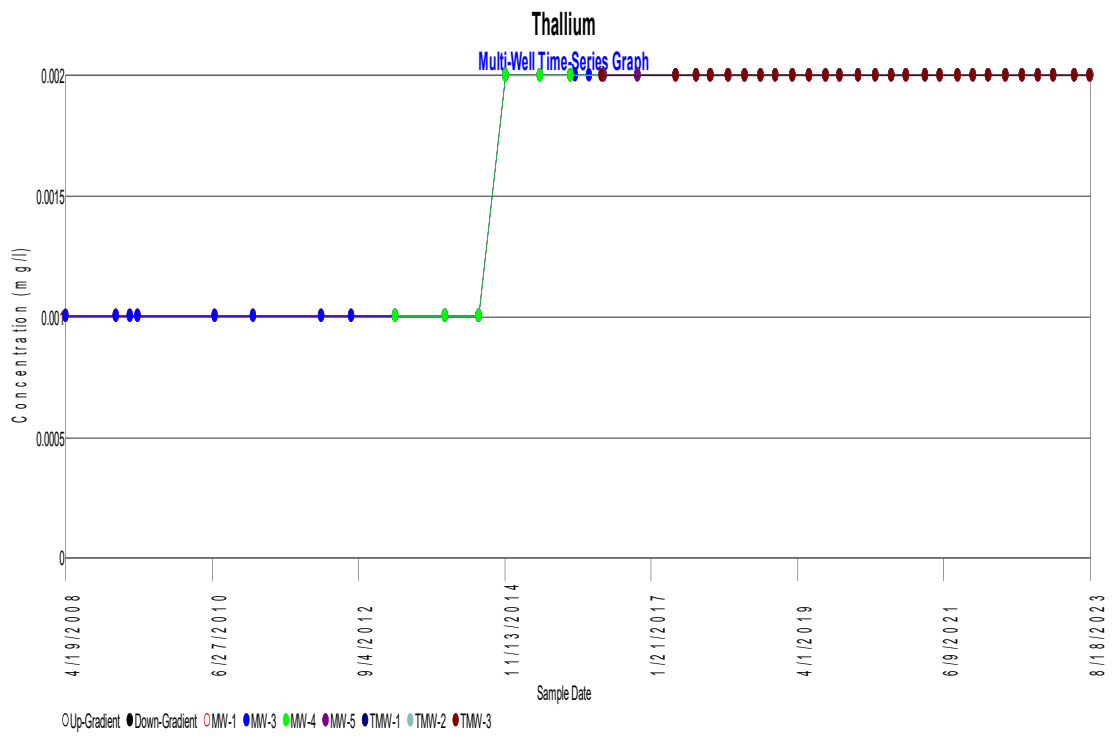
Potassium

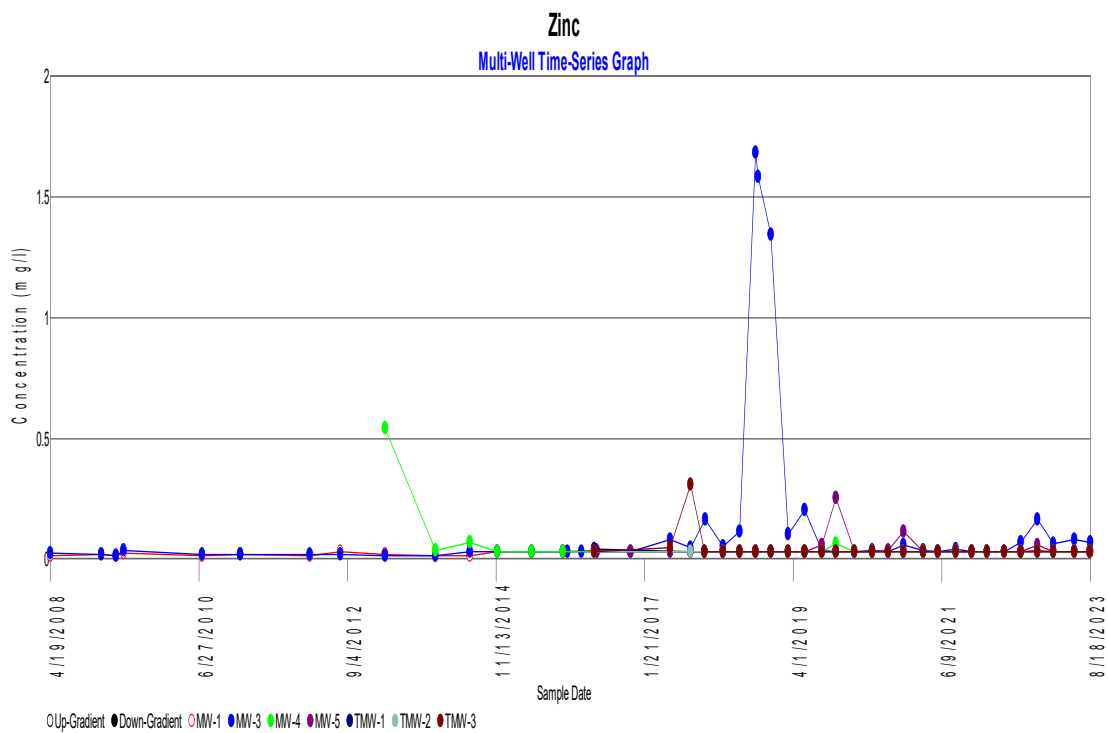
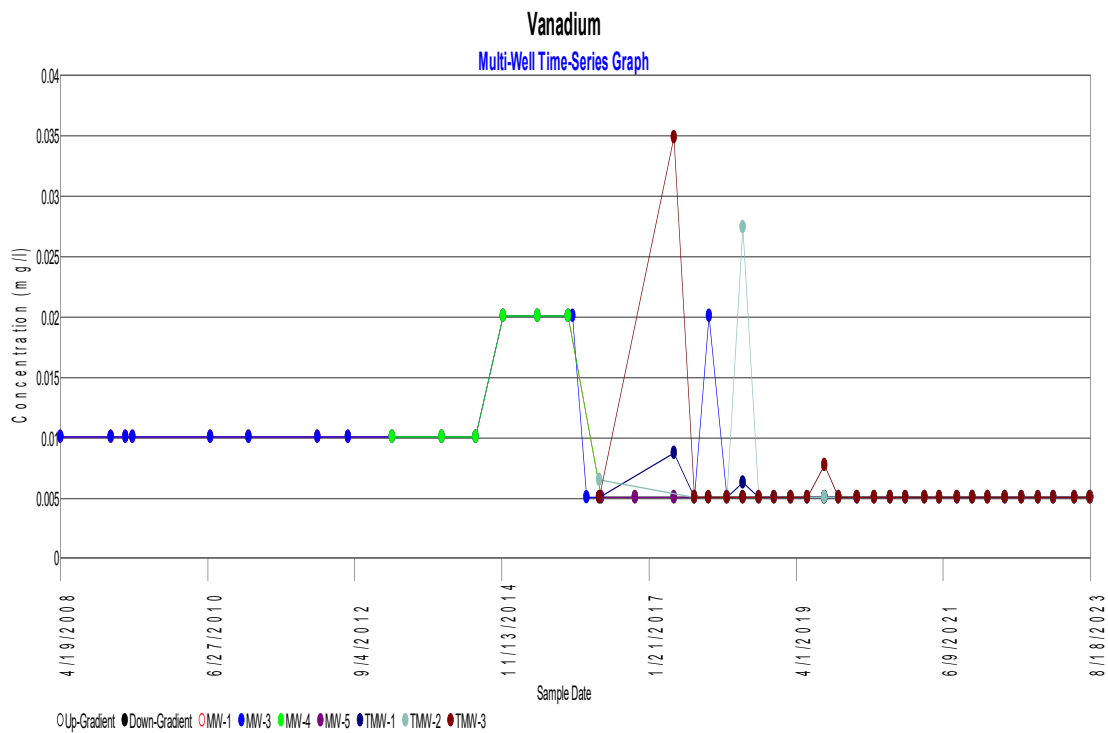
Multi-Well Time-Series Graph











Basic Statistics

Parameter: Aluminum

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 225
Total Non-Detects 98 (43.5556%)
Pooled Mean 0.377324
Pooled Std Dev 0.97509

Compliance Meas. 183
Compliance Mean 0.41371
Compliance Std Dev 1.07123

Background Meas. 42
Background Mean 0.218786
Background Std Dev 0.262823

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	42	26	61.9048	9.189

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.218786	0.262823	0	3811	90.7381

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	44	9	20.4545	29.907
MW-4	34	32	94.1176	3.645
MW-5	29	6	20.6897	5.8
TMW-1	25	10	40	5.648
TMW-2	25	2	8	23.633
TMW-3	26	13	50	7.076

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.679705	1.33308	0.460919	0.204331	6493.5	147.58
MW-4	0.107206	0.0356156	-0.11158	0.218514	1878	55.2353
MW-5	0.2	0.0980335	-0.0187857	0.228687	3667	126.448
TMW-1	0.22592	0.256057	0.00713429	0.239265	2783	111.32
TMW-2	0.94532	2.15604	0.726534	0.239265	4020	160.8
TMW-3	0.272154	0.339773	0.0533681	0.236363	2772.5	106.635

Analysis of Variance Statistics

SS Wells 17.3975
SS Total 212.979

Kruskal-Wallis Statistics

Non-Detect Rank 49.5
Background Rank Sum 3811
Background Rank Mean 90.7381
H Statistic 59.0838
H Adjusted for Ties 64.405

Basic Statistics

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 224
Total Non-Detects 175 (78.125%)
Pooled Mean 0.008255
Pooled Std Dev 0.0178502

Compliance Meas. 182
Compliance Mean 0.00197016
Compliance Std Dev 0.000465318

Background Meas. 42
Background Mean 0.0354893
Background Std Dev 0.0282302

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	42	0	0	1.49055

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0354893	0.0282302	0	8541	203.357

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	43	41	95.3488	0.0762
MW-4	34	33	97.0588	0.06521
MW-5	29	29	100	0.058
TMW-1	25	24	96	0.05017
TMW-2	25	24	96	0.0548
TMW-3	26	24	92.3077	0.05419

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.00177209	0.000419935	-0.0337172	0.00266357	3961	92.1163
MW-4	0.00191794	0.000292075	-0.0335713	0.00283241	3083	90.6765
MW-5	0.002	1.32407e-018	-0.0334893	0.00296428	2552	88
TMW-1	0.0020068	3.4e-005	-0.0334825	0.00310139	2290	91.6
TMW-2	0.002192	0.00096	-0.0332973	0.00310139	2300	92
TMW-3	0.00208423	0.000369585	-0.0334051	0.00306378	2473	95.1154

Analysis of Variance Statistics

SS Wells 0.0383439
SS Total 0.0710545

Kruskal-Wallis Statistics

Non-Detect Rank 88
Background Rank Sum 8541
Background Rank Mean 203.357
H Statistic 101.777
H Adjusted for Ties 194.539

Basic Statistics

Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 226
Total Non-Detects 11 (4.86726%)
Pooled Mean 0.045799
Pooled Std Dev 0.0699811

Compliance Meas. 184
Compliance Mean 0.0511504
Compliance Std Dev 0.0764351

Background Meas. 42
Background Mean 0.0223548
Background Std Dev 0.0103671

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	42	3	7.14286	0.9389

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0223548	0.0103671	0	3269	77.8333

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	45	0	0	4.8633
MW-4	34	4	11.7647	0.77084
MW-5	29	0	0	1.3336
TMW-1	25	4	16	0.39294
TMW-2	25	0	0	0.902
TMW-3	26	0	0	1.149

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.108073	0.125796	0.0857186	0.0134532	8442	187.6
MW-4	0.0226718	0.06699	0.000317003	0.0144657	1139	33.5
MW-5	0.0459862	0.0143808	0.0236314	0.0151392	4549	156.862
TMW-1	0.0157176	0.00409529	-0.00663716	0.0158394	1136	45.44
TMW-2	0.03608	0.014907	0.0137252	0.0158394	3129	125.16
TMW-3	0.0441923	0.00551615	0.0218375	0.0156473	3987	153.346

Analysis of Variance Statistics

SS Wells 0.240836
SS Total 1.10191

Kruskal-Wallis Statistics

Non-Detect Rank 6
Background Rank Sum 3269
Background Rank Mean 77.8333
H Statistic 171.485
H Adjusted for Ties 171.505

Basic Statistics

Parameter: Total Cadmium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 226
Total Non-Detects 199 (88.0531%)
Pooled Mean 0.00460947
Pooled Std Dev 0.025769

Compliance Meas. 185
Compliance Mean 0.00540941
Compliance Std Dev 0.0284334

Background Meas. 41
Background Mean 0.001
Background Std Dev 6.58603e-019

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	41	41	100	0.041

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.001	6.58603e-019	0	4100	100

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	45	18	40	0.86074
MW-4	34	34	100	0.034
MW-5	29	29	100	0.029
TMW-1	25	25	100	0.025
TMW-2	25	25	100	0.025
TMW-3	27	27	100	0.027

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.0191276	0.0559151	0.0181276	0.00541109	7551	167.8
MW-4	0.001	6.60304e-019	0	0.00581343	3400	100
MW-5	0.001	6.62036e-019	0	0.00608123	2900	100
TMW-1	0.001	6.63936e-019	0	0.0063598	2500	100
TMW-2	0.001	6.63936e-019	0	0.0063598	2500	100
TMW-3	0.001	6.62913e-019	0	0.00621175	2700	100

Analysis of Variance Statistics

SS Wells 0.011843
SS Total 0.149409

Kruskal-Wallis Statistics

Non-Detect Rank 100
Background Rank Sum 4100
Background Rank Mean 100
H Statistic 38.7515
H Adjusted for Ties 122.13

Basic Statistics

Parameter: Chloride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 236
Total Non-Detects 0 (0%)
Pooled Mean 37.0076
Pooled Std Dev 51.1653

Compliance Meas. 193
Compliance Mean 44.6384
Compliance Std Dev 53.6906

Background Meas. 43
Background Mean 2.75744
Background Std Dev 1.08569

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	43	0	0	118.57

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	2.75744	1.08569	0	948	22.0465

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	45	0	0	2885.41
MW-4	35	0	0	732.48
MW-5	29	0	0	1933.6
TMW-1	28	0	0	669.6
TMW-2	28	0	0	807.93
TMW-3	28	0	0	1586.2

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	64.1202	92.2584	61.3628	9.75983	6593	146.511
MW-4	20.928	49.6057	18.1706	10.4189	2713	77.5143
MW-5	66.6759	17.6368	63.9184	10.997	5691	196.241
TMW-1	23.9143	13.3245	21.1568	11.1137	3300	117.857
TMW-2	28.8546	12.2454	26.0972	11.1137	3657	130.607
TMW-3	56.65	11.9652	53.8926	11.1137	5064	180.857

Analysis of Variance Statistics

SS Wells 135561
SS Total 615204

Kruskal-Wallis Statistics

Non-Detect Rank 0
Background Rank Sum 948
Background Rank Mean 22.0465
H Statistic 167.861
H Adjusted for Ties 167.861

Basic Statistics

Parameter: Cobalt

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 225
Total Non-Detects 151 (67.1111%)
Pooled Mean 0.0105991
Pooled Std Dev 0.0170935

Compliance Meas. 183
Compliance Mean 0.00345137
Compliance Std Dev 0.00346425

Background Meas. 42
Background Mean 0.0417429
Background Std Dev 0.0179287

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	42	0	0	1.7532

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0417429	0.0179287	0	8580	204.286

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	44	34	77.2727	0.27269
MW-4	34	34	100	0.116
MW-5	29	12	41.3793	0.06677
TMW-1	25	24	96	0.0546
TMW-2	25	23	92	0.05324
TMW-3	26	24	92.3077	0.0683

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.0061975	0.00509323	-0.0355454	0.00178295	4332	98.4545
MW-4	0.00341176	0.00309562	-0.0383311	0.0019067	2584	76
MW-5	0.00230241	0.000483858	-0.0394404	0.00199547	3670	126.552
TMW-1	0.002184	0.00092	-0.0395589	0.00208777	2003	80.12
TMW-2	0.0021296	0.000453445	-0.0396133	0.00208777	2093	83.72
TMW-3	0.00262692	0.00315614	-0.0391159	0.00206245	2163	83.1923

Analysis of Variance Statistics

SS Wells 0.0505584
SS Total 0.0654498

Kruskal-Wallis Statistics

Non-Detect Rank 76
Background Rank Sum 8580
Background Rank Mean 204.286
H Statistic 113.919
H Adjusted for Ties 163.267

Basic Statistics

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 224
 Total Non-Detects 191 (85.2679%)
 Pooled Mean 0.0051042
 Pooled Std Dev 0.00195513

Compliance Meas. 182
 Compliance Mean 0.00510269
 Compliance Std Dev 0.00117047

Background Meas. 42
 Background Mean 0.00511071
 Background Std Dev 0.00383964

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	42	36	85.7143	0.21465

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.00511071	0.00383964	0	4700	111.905

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	43	31	72.093	0.21821
MW-4	34	33	97.0588	0.16136
MW-5	29	23	79.3103	0.15839
TMW-1	25	22	88	0.12834
TMW-2	25	23	92	0.13168
TMW-3	26	23	88.4615	0.13071

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.00507465	0.00173467	-3.60631e-005	0.000427718	5481	127.465
MW-4	0.00474588	0.000869239	-0.000364832	0.00045483	3369	99.0882
MW-5	0.00546172	0.00150038	0.00035101	0.000476006	3464	119.448
TMW-1	0.0051336	0.000387415	2.28857e-005	0.000498023	2737	109.48
TMW-2	0.0052672	0.000929698	0.000156486	0.000498023	2645	105.8
TMW-3	0.00502731	0.000114177	-8.34066e-005	0.000491983	2804	107.846

Analysis of Variance Statistics

SS Wells 8.95108e-006
 SS Total 0.000852428

Kruskal-Wallis Statistics

Non-Detect Rank 96
 Background Rank Sum 4700
 Background Rank Mean 111.905
 H Statistic 4.54146
 H Adjusted for Ties 11.9495

Basic Statistics

Parameter: Fluoride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 196
 Total Non-Detects 172 (87.7551%)
 Pooled Mean 0.138561
 Pooled Std Dev 0.0521893

Compliance Meas. 164
 Compliance Mean 0.141341
 Compliance Std Dev 0.0554509

Background Meas. 32
 Background Mean 0.124312
 Background Std Dev 0.0267418

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	32	31	96.875	3.978

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.124312	0.0267418	0	2859.5	89.3594

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	31	8	25.8065	6.38
MW-4	28	28	100	3.5
MW-5	29	29	100	3.6
TMW-1	25	25	100	3.2
TMW-2	25	25	100	3.2
TMW-3	26	26	100	3.3

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.205806	0.0929951	0.081494	0.011062	4942	159.419
MW-4	0.125	0.0254588	0.0006875	0.0113591	2422	86.5
MW-5	0.124138	0.0254274	-0.000174569	0.0112541	2508.5	86.5
TMW-1	0.128	0.0253311	0.0036875	0.0117169	2162.5	86.5
TMW-2	0.128	0.0253311	0.0036875	0.0117169	2162.5	86.5
TMW-3	0.126923	0.0254196	0.00261058	0.0115897	2249	86.5

Analysis of Variance Statistics

SS Wells 0.168957
 SS Total 0.531126

Kruskal-Wallis Statistics

Non-Detect Rank 86.5
 Background Rank Sum 2859.5
 Background Rank Mean 89.3594
 H Statistic 42.5376
 H Adjusted for Ties 131.205

Basic Statistics

Parameter: Mercury

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 225
Total Non-Detects 196 (87.1111%)
Pooled Mean 0.000294404
Pooled Std Dev 0.000337009

Compliance Meas. 183
Compliance Mean 0.0002
Compliance Std Dev 6.25127e-019

Background Meas. 42
Background Mean 0.000705738
Background Std Dev 0.000638285

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	42	13	30.9524	0.029641

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.000705738	0.000638285	0	7399.5	176.179

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	44	44	100	0.0088
MW-4	34	34	100	0.0068
MW-5	29	29	100	0.0058
TMW-1	25	25	100	0.005
TMW-2	25	25	100	0.005
TMW-3	26	26	100	0.0052

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.0002	8.22553e-020	-0.000505738	5.9714e-005	4334	98.5
MW-4	0.0002	1.37563e-019	-0.000505738	6.38588e-005	3349	98.5
MW-5	0.0002	8.27545e-020	-0.000505738	6.68319e-005	2856.5	98.5
TMW-1	0.0002	2.7664e-020	-0.000505738	6.99231e-005	2462.5	98.5
TMW-2	0.0002	2.7664e-020	-0.000505738	6.99231e-005	2462.5	98.5
TMW-3	0.0002	5.52837e-020	-0.000505738	6.90751e-005	2561	98.5

Analysis of Variance Statistics

SS Wells 8.73714e-006
SS Total 2.54408e-005

Kruskal-Wallis Statistics

Non-Detect Rank 98.5
Background Rank Sum 7399.5
Background Rank Mean 176.179
H Statistic 48.6419
H Adjusted for Ties 143.497

Basic Statistics

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 227
Total Non-Detects 131 (57.7093%)
Pooled Mean 0.00947833
Pooled Std Dev 0.0218417

Compliance Meas. 185
Compliance Mean 0.00735654
Compliance Std Dev 0.015363

Background Meas. 42
Background Mean 0.0188243
Background Std Dev 0.0382184

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	42	11	26.1905	0.79062

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0188243	0.0382184	0	6507	154.929

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	45	19	42.2222	0.80762
MW-4	34	33	97.0588	0.16609
MW-5	29	0	0	0.20673
TMW-1	25	22	88	0.05281
TMW-2	26	23	88.4615	0.07446
TMW-3	26	23	88.4615	0.05325

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.0179471	0.0278995	-0.000877175	0.00448444	5846	129.911
MW-4	0.004885	0.00651576	-0.0139393	0.00482194	2312	68
MW-5	0.00712862	0.00313691	-0.016957	0.00504644	5331	183.828
TMW-1	0.0021124	0.000497714	-0.0167119	0.00527986	1880	75.2
TMW-2	0.00286385	0.00343142	-0.0159604	0.00521582	2068	79.5385
TMW-3	0.00204808	0.000184174	-0.0167762	0.00521582	1934	74.3846

Analysis of Variance Statistics

SS Wells 0.0117028
SS Total 0.107816

Kruskal-Wallis Statistics

Non-Detect Rank 66
Background Rank Sum 6507
Background Rank Mean 154.929
H Statistic 93.7655
H Adjusted for Ties 116.073

Basic Statistics

Parameter: Sulfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 226
Total Non-Detects 146 (64.6018%)
Pooled Mean 16.5126
Pooled Std Dev 44.0477

Compliance Meas. 186
Compliance Mean 18.6732
Compliance Std Dev 48.2815

Background Meas. 40
Background Mean 6.46575
Background Std Dev 3.14167

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	40	23	57.5	258.63

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	6.46575	3.14167	0	4462.5	111.563

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	42	2	4.7619	2598.39
MW-4	34	33	97.0588	188
MW-5	29	7	24.1379	281.82
TMW-1	27	27	100	135
TMW-2	27	27	100	135
TMW-3	27	27	100	135

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	61.8664	89.5385	55.4007	8.57525	8288	197.333
MW-4	5.52941	3.08697	-0.936338	9.05401	2623.5	77.1618
MW-5	9.71793	4.37647	3.25218	9.46651	4323.5	149.086
TMW-1	5	0	-1.46575	9.66763	1984.5	73.5
TMW-2	5	0	-1.46575	9.66763	1984.5	73.5
TMW-3	5	0	-1.46575	9.66763	1984.5	73.5

Analysis of Variance Statistics

SS Wells 106606
SS Total 436545

Kruskal-Wallis Statistics

Non-Detect Rank 73.5
Background Rank Sum 4462.5
Background Rank Mean 111.563
H Statistic 118.486
H Adjusted for Ties 162.221

Basic Statistics

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements 227
Total Non-Detects 169 (74.4493%)
Pooled Mean 0.0535295
Pooled Std Dev 0.17844

Compliance Meas. 185
Compliance Mean 0.0606454
Compliance Std Dev 0.197045

Background Meas. 42
Background Mean 0.0221857
Background Std Dev 0.00568192

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	42	31	73.8095	0.9318

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0221857	0.00568192	0	4621	110.024

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	45	14	31.1111	6.4592
MW-4	34	30	88.2353	1.4409
MW-5	29	23	79.3103	1.0885
TMW-1	25	24	96	0.6381
TMW-2	25	23	92	0.6257
TMW-3	27	24	88.8889	0.967

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.143538	0.379734	0.121352	0.0375259	7439	165.311
MW-4	0.0423794	0.088325	0.0201937	0.0403501	3393	99.7941
MW-5	0.0375345	0.0436268	0.0153488	0.0422287	3194	110.138
TMW-1	0.025524	0.00262	0.00333829	0.0441819	2242	89.68
TMW-2	0.025028	9.79796e-005	0.00284229	0.0441819	2332	93.28
TMW-3	0.0358148	0.0530752	0.0136291	0.043144	2657	98.4074

Analysis of Variance Statistics

SS Wells 0.465865
SS Total 7.19604

Kruskal-Wallis Statistics

Non-Detect Rank 85
Background Rank Sum 4621
Background Rank Mean 110.024
H Statistic 36.7539
H Adjusted for Ties 62.5751

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 = 21 for 42 measurements

Sum of b values = 1.21893

Sample Standard Deviation = 0.262823

W Statistic = 0.524621

5% Critical value of 0.942 exceeds 0.524621
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.524621
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 = 21 for 42 measurements

Sum of b values = 0.167894

Sample Standard Deviation = 0.0282302

W Statistic = 0.862694

5% Critical value of 0.942 exceeds 0.862694
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.862694
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 = 21 for 42 measurements

Sum of b values = 0.0439513

Sample Standard Deviation = 0.0103671

W Statistic = 0.438371

5% Critical value of 0.942 exceeds 0.438371
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.438371
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Total Cadmium

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 20 for 41 measurements

Sum of b values = 0

Sample Standard Deviation = 6.58603e-019

W Statistic = 0

5% Critical value of 0.941 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 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

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 21 for 43 measurements

Sum of b values = 6.33558

Sample Standard Deviation = 1.08569

W Statistic = 0.810794

5% Critical value of 0.943 exceeds 0.810794
Evidence of non-normality at 95% level of significance

1% Critical value of 0.923 exceeds 0.810794
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 = 21 for 42 measurements

Sum of b values = 0.108757

Sample Standard Deviation = 0.0179287

W Statistic = 0.897498

5% Critical value of 0.942 exceeds 0.897498
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.897498
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 = 21 for 42 measurements

Sum of b values = 0.0153393

Sample Standard Deviation = 0.00383964

W Statistic = 0.389264

5% Critical value of 0.942 exceeds 0.389264
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.389264
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Fluoride

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 = 0.123716

Sample Standard Deviation = 0.0267418

W Statistic = 0.690416

5% Critical value of 0.93 exceeds 0.690416
Evidence of non-normality at 95% level of significance

1% Critical value of 0.904 exceeds 0.690416
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 = 21 for 42 measurements

Sum of b values = 0.00354832

Sample Standard Deviation = 0.000638285

W Statistic = 0.75376

5% Critical value of 0.942 exceeds 0.75376
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.75376
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 = 21 for 42 measurements

Sum of b values = 0.145359

Sample Standard Deviation = 0.0382184

W Statistic = 0.352824

5% Critical value of 0.942 exceeds 0.352824
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.352824
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 = 20 for 40 measurements

Sum of b values = 15.1746

Sample Standard Deviation = 3.14167

W Statistic = 0.598208

5% Critical value of 0.94 exceeds 0.598208
Evidence of non-normality at 95% level of significance

1% Critical value of 0.919 exceeds 0.598208
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Zinc

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 21 for 42 measurements

Sum of b values = 0.0288243

Sample Standard Deviation = 0.00568192

W Statistic = 0.627688

5% Critical value of 0.942 exceeds 0.627688
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.627688
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 = 21 for 42 measurements

Sum of b values = 5.38494

Sample Standard Deviation = 0.99142

W Statistic = 0.719551

5% Critical value of 0.942 exceeds 0.719551
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.719551
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 = 21 for 42 measurements

Sum of b values = 5.70874

Sample Standard Deviation = 0.92718

W Statistic = 0.924631

5% Critical value of 0.942 exceeds 0.924631
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 is less than 0.924631
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 = 21 for 42 measurements

Sum of b values = 1.93971

Sample Standard Deviation = 0.333525

W Statistic = 0.824961

5% Critical value of 0.942 exceeds 0.824961
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.824961
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 = 20 for 41 measurements

Sum of b values = 0

Sample Standard Deviation = 4.49606e-015

W Statistic = 0

5% Critical value of 0.941 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 exceeds 0
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 = 21 for 42 measurements

Sum of b values = 2.59201

Sample Standard Deviation = 0.408548

W Statistic = 0.981752

5% Critical value of 0.942 is less than 0.981752
Data is normally distributed at 95% level of significance

1% Critical value of 0.922 is less than 0.981752
Data is normally distributed 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 = 21 for 43 measurements

Sum of b values = 2.08801

Sample Standard Deviation = 0.340363

W Statistic = 0.896045

5% Critical value of 0.943 exceeds 0.896045
Evidence of non-normality at 95% level of significance

1% Critical value of 0.923 exceeds 0.896045
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 = 21 for 42 measurements

Sum of b values = 3.02372

Sample Standard Deviation = 0.579127

W Statistic = 0.66489

5% Critical value of 0.942 exceeds 0.66489
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.66489
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Fluoride

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 = 1.27013

Sample Standard Deviation = 0.278596

W Statistic = 0.670477

5% Critical value of 0.93 exceeds 0.670477
Evidence of non-normality at 95% level of significance

1% Critical value of 0.904 exceeds 0.670477
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 = 21 for 42 measurements

Sum of b values = 6.45915

Sample Standard Deviation = 1.08932

W Statistic = 0.857542

5% Critical value of 0.942 exceeds 0.857542
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.857542
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 = 21 for 42 measurements

Sum of b values = 3.57103

Sample Standard Deviation = 0.739145

W Statistic = 0.569305

5% Critical value of 0.942 exceeds 0.569305
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.569305
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 = 20 for 40 measurements

Sum of b values = 3.39736

Sample Standard Deviation = 0.628007

W Statistic = 0.750396

5% Critical value of 0.94 exceeds 0.750396
Evidence of non-normality at 95% level of significance

1% Critical value of 0.919 exceeds 0.750396
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Zinc

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 21 for 42 measurements

Sum of b values = 1.90087

Sample Standard Deviation = 0.353372

W Statistic = 0.705756

5% Critical value of 0.942 exceeds 0.705756
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.705756
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 95% One-Sided Comparison

Baseline Samples	Date	Result
	4/19/2008	-3.44202
	1/21/2009	-3.50656
	4/9/2009	-3.14656
	5/19/2009	-2.8824
	7/16/2010	-3.35241
	2/8/2011	-3.47377
	2/17/2012	-3.64966
	7/31/2012	-3.57555
	3/27/2013	-3.32424
	12/23/2013	-3.57555
	6/26/2014	-3.32424
	11/21/2014	-3.07911
	5/28/2015	-3.19418
	11/11/2015	-3.66126
	5/9/2016	-3.17725
	11/10/2016	-3.93223
	6/8/2017	-3.37553
	9/28/2017	-3.2114
	12/11/2017	-3.19175
	3/21/2018	-3.15825
	6/19/2018	-3.88246
	9/12/2018	-3.92207
	12/4/2018	-3.56137
	3/5/2019	-3.23145
	6/4/2019	-3.19175
	9/5/2019	-2.57308
	11/20/2019	-3.41428
	2/27/2020	-2.59964
	6/2/2020	-3.14191
	8/26/2020	-3.16061
	11/17/2020	-3.53702
	3/2/2021	-3.46414
	5/20/2021	-3.20153
	8/26/2021	-2.83873
	11/18/2021	-2.6297
	2/9/2022	-2.69415
	5/12/2022	-2.80346
	8/11/2022	-2.84387
	11/7/2022	-4.34281
	1/31/2023	-3.08347
	5/25/2023	-3.2264

From 41 baseline samples

Baseline mean = -3.28239
Baseline std Dev = 0.381136

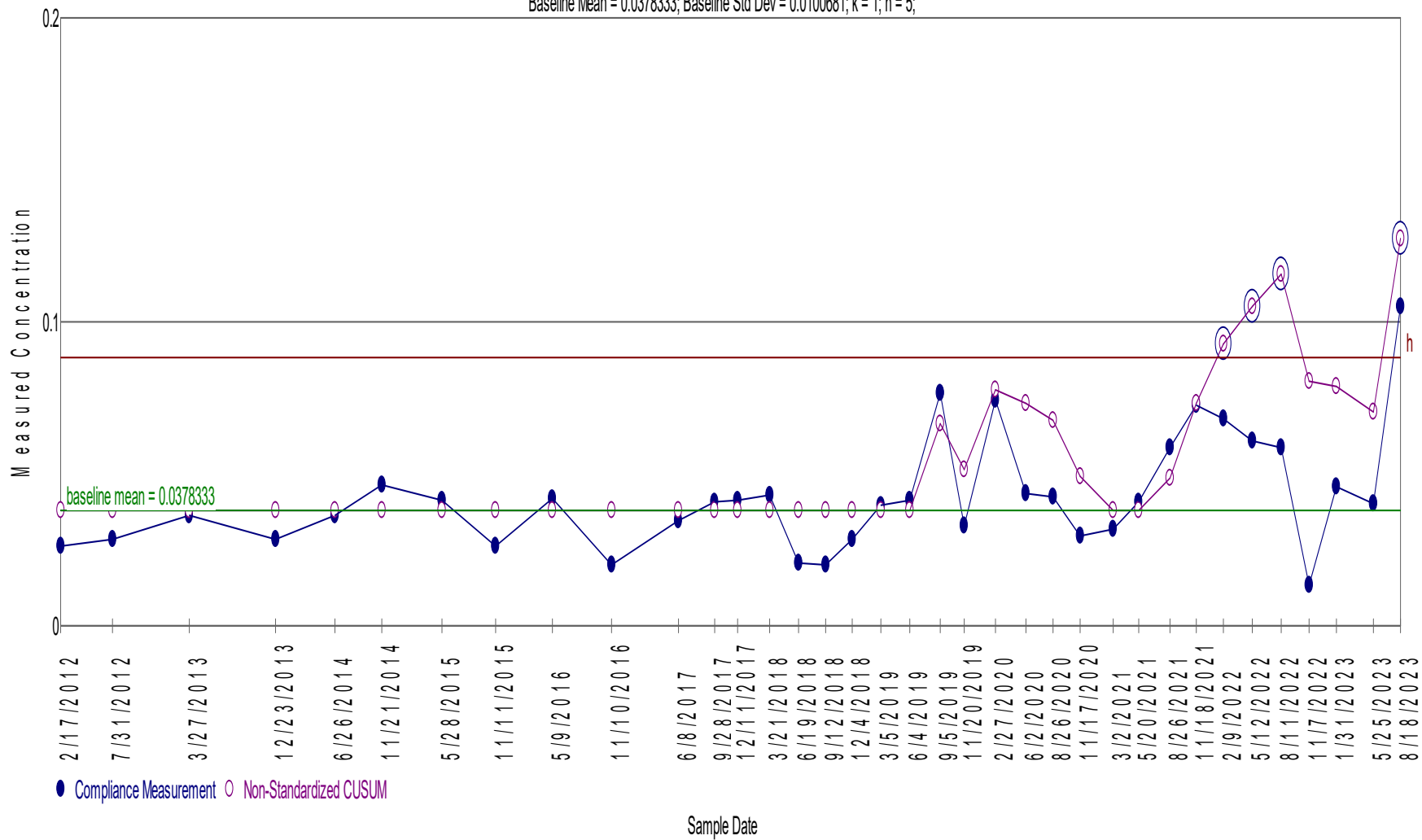
For 1 recent sampling event(s)
Actual confidence level is $1.0 - (0.05/1) = 95\%$
t is Percentile of Student's T-Test $(0.95/1) = 0.95$
Degrees of Freedom = 41 (background observations) - 1
 $t(0.95, 41) = 1.68385$

Date	Samples	Mean	Interval	Significant
8/18/2023	1	-2.25379	[0, -2.63283]	TRUE

Cobalt

Intra-Well Shewhart-CUSUM Control Chart (Unified Guidance) of MW-1

Baseline Mean = 0.0378333; Baseline Std Dev = 0.0100681; k = 1; h = 5;



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) = 43

Maximum Baseline Concentration = 0.1

Confidence Level = 97.7%

False Positive Rate = 2.3%

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
8/26/2021	0.019
11/18/2021	0.0192
2/9/2022	0.0219

5/12/2022	0.0195
8/11/2022	0.023
11/7/2022	0.00807
1/31/2023	0.00607
5/25/2023	0.00456
8/18/2023	0.0159

Date	Count	Mean	Significant
8/18/2023	1	0.0159	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 = 6.97674%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 43

Maximum Baseline Concentration = 0.084

Confidence Level = 97.7%

False Positive Rate = 2.3%

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	ND<0.02
8/26/2020	ND<0.02
11/17/2020	ND<0.02
3/2/2021	0.0222
5/20/2021	0.0177
8/26/2021	0.0198
11/18/2021	0.0276
2/9/2022	0.0213

5/12/2022	0.0188
8/11/2022	0.0204
11/7/2022	0.0247
1/31/2023	0.0244
5/25/2023	0.019
8/18/2023	0.0224

Date	Count	Mean	Significant
8/18/2023	1	0.0224	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) = 43

Maximum Baseline Concentration = 5.98

Confidence Level = 97.7%

False Positive Rate = 2.3%

Baseline MeasuremDate	Value
4/19/2008	2
1/21/2009	2.9
4/9/2009	1.9
5/19/2009	2.8
7/16/2010	2.8
2/8/2011	2.6
2/17/2012	2.1
7/31/2012	2.2
3/27/2013	1.8
12/23/2013	1.5
6/26/2014	2.9
11/21/2014	3.9
5/28/2015	2.01
11/11/2015	3.97
5/9/2016	2.12
8/18/2016	2.4
11/10/2016	4.59
6/8/2017	5.68
9/28/2017	4.11
12/11/2017	2.31
3/21/2018	2.1
6/19/2018	2.24
9/12/2018	4.94
12/4/2018	1.67
3/5/2019	2.11
6/4/2019	2.15
9/5/2019	2.84
11/20/2019	2.52
2/27/2020	1.95
6/2/2020	2.27
8/26/2020	2.61
11/17/2020	2.48
3/2/2021	2.15
5/20/2021	2.15
8/26/2021	4.1
11/18/2021	1.95

2/9/2022	1.93
5/12/2022	2.05
8/11/2022	4.2
11/7/2022	5.98
1/31/2023	3.55
5/25/2023	2.17
8/18/2023	1.87

Date	Count	Mean	Significant
8/18/2023	1	1.87	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 = 30.2326%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 43

Maximum Baseline Concentration = 0.00319

Confidence Level = 97.7%

False Positive Rate = 2.3%

Baseline MeasuremDate	Value
4/19/2008	ND<0.0002
1/21/2009	0.00045
4/9/2009	ND<0.0002
5/19/2009	ND<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	ND<0.0002
11/21/2014	ND<0.0002
5/28/2015	ND<0.0002
11/11/2015	ND<0.0002
5/9/2016	0.000858
11/10/2016	ND<0.0002
6/8/2017	0.000222
9/28/2017	ND<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	ND<0.0002
11/17/2020	0.00256
3/2/2021	0.0012
5/20/2021	0.00136
8/26/2021	ND<0.0002
11/18/2021	0.000785
2/9/2022	0.000837

5/12/2022	0.000817
8/11/2022	ND<0.0002
11/7/2022	0.000655
1/31/2023	ND<0.0002
5/25/2023	0.00188
8/18/2023	0.000814

Date	Count	Mean	Significant
8/18/2023	1	0.000814	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 = 25.5814%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 43

Maximum Baseline Concentration = 0.2

Confidence Level = 97.7%

False Positive Rate = 2.3%

Baseline MeasuremDate	Value
4/19/2008	ND<0.02
1/21/2009	ND<0.02
4/9/2009	0.2
5/19/2009	0.17
7/16/2010	ND<0.02
2/8/2011	ND<0.02
2/17/2012	ND<0.02
7/31/2012	ND<0.02
3/27/2013	ND<0.02
12/23/2013	ND<0.02
6/26/2014	ND<0.02
11/21/2014	ND<0.02
5/28/2015	ND<0.02
11/11/2015	0.0112
5/9/2016	0.00512
11/10/2016	0.0112
6/8/2017	0.00418
9/28/2017	0.00445
12/11/2017	0.00652
3/21/2018	0.00658
6/19/2018	0.00637
9/12/2018	0.00839
12/4/2018	0.00744
3/5/2019	0.00638
6/4/2019	0.0088
9/5/2019	0.00686
11/20/2019	0.00468
2/27/2020	0.00803
6/2/2020	0.0063
8/26/2020	0.00512
11/17/2020	0.00632
3/2/2021	0.0057
5/20/2021	0.0064
8/26/2021	0.00559
11/18/2021	0.00859
2/9/2022	0.00739

5/12/2022	0.00644
8/11/2022	0.00737
11/7/2022	0.0084
1/31/2023	0.00678
5/25/2023	0.00609
8/18/2023	0.00793

Date	Count	Mean	Significant
8/18/2023	1	0.00793	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Sulfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 53.4884%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 43

Maximum Baseline Concentration = 18.8

Confidence Level = 97.7%

False Positive Rate = 2.3%

Baseline MeasuremDate	Value
5/19/2009	8.9
7/16/2010	9.4
2/8/2011	5.8
2/17/2012	ND<5
7/31/2012	ND<5
3/27/2013	5.1
12/23/2013	6.1
6/26/2014	ND<5
11/21/2014	9.1
5/28/2015	ND<5
11/11/2015	18.8
5/9/2016	ND<5
8/18/2016	3.51
11/10/2016	16.5
6/8/2017	ND<5
9/28/2017	ND<5
12/11/2017	ND<5
3/21/2018	ND<5
6/19/2018	ND<5
9/12/2018	12.3
12/4/2018	ND<5
3/5/2019	ND<5
6/4/2019	ND<5
9/5/2019	ND<5
11/20/2019	ND<5
2/27/2020	5.72
6/2/2020	ND<5
8/26/2020	ND<5
11/17/2020	ND<5
3/2/2021	8.91
5/20/2021	ND<5
8/26/2021	6.63
11/18/2021	7.59
2/9/2022	ND<5
5/12/2022	ND<5
8/11/2022	5.52

11/7/2022	8.74
1/31/2023	5.01
5/25/2023	ND<5
8/18/2023	ND<5

Date	Count	Mean	Significant
8/18/2023	1	5	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Aluminum

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 43.5556%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 42

Maximum Background Value = 1.2

Confidence Level = 87.5%

False Positive Rate = 12.5%

Location	Date	Count	Mean	Significant
MW-3	8/18/2023	1	0.357	FALSE
MW-4	8/18/2023	1	0.1	FALSE
MW-5	8/18/2023	1	0.207	FALSE
TMW-1	8/17/2023	1	0.1	FALSE
TMW-2	8/17/2023	1	0.201	FALSE
TMW-3	8/17/2023	1	0.1	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 78.125%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 42

Maximum Background Value = 0.1

Confidence Level = 87.5%

False Positive Rate = 12.5%

Location	Date	Count	Mean	Significant
MW-3	8/18/2023	1	0.002	FALSE
MW-4	8/18/2023	1	0.00221	FALSE
MW-5	8/18/2023	1	0.002	FALSE
TMW-1	8/17/2023	1	0.002	FALSE
TMW-2	8/17/2023	1	0.002	FALSE
TMW-3	8/17/2023	1	0.002	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 4.86726%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 42

Maximum Background Value = 0.084

Confidence Level = 87.5%

False Positive Rate = 12.5%

Location	Date	Count	Mean	Significant
MW-3	8/18/2023	1	0.0335	FALSE
MW-4	8/18/2023	1	0.0102	FALSE
MW-5	8/18/2023	1	0.0544	FALSE
TMW-1	8/17/2023	1	0.0157	FALSE
TMW-2	8/17/2023	1	0.0332	FALSE
TMW-3	8/17/2023	1	0.0471	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 = 88.0531%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 41

Maximum Background Value = 0.001

Confidence Level = 87.2%

False Positive Rate = 12.8%

Location	Date	Count	Mean	Significant
MW-3	8/18/2023	1	0.0016	TRUE
MW-4	8/18/2023	1	0.001	FALSE
MW-5	8/18/2023	1	0.001	FALSE
TMW-1	8/17/2023	1	0.001	FALSE
TMW-2	8/17/2023	1	0.001	FALSE
TMW-3	8/17/2023	1	0.001	FALSE

Parametric Prediction Interval Analysis

Inter-Well Comparison

Parameter: Cobalt

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

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

Background Samples = 42
Background Mean = -3.2579
Background Std Dev = 0.408548

Number of comparisons = 6
Future Samples (k) = 6
Actual confidence level is $1.0 - (0.05/6) = 99.1667\%$
t is Percentile of Student's T-Test $(0.95/6) = 0.991667$
Degrees of Freedom = 42 (background observations) - 1
 $t(0.991667, 42) = 2.51426$

Well MW-3

Date	Samples	Mean	Interval	Significant
8/18/2023	1	-5.53404	[0, -2.21854]	FALSE

Well MW-4

Date	Samples	Mean	Interval	Significant
8/18/2023	1	-6.90776	[0, -2.21854]	FALSE

Well MW-5

Date	Samples	Mean	Interval	Significant
8/18/2023	1	-6.90776	[0, -2.21854]	FALSE

Well TMW-1

Date	Samples	Mean	Interval	Significant
8/17/2023	1	-6.90776	[0, -2.21854]	FALSE

Well TMW-2

Date	Samples	Mean	Interval	Significant
8/17/2023	1	-6.90776	[0, -2.21854]	FALSE

Well TMW-3

Date	Samples	Mean	Interval	Significant
------	---------	------	----------	-------------

8/17/2023 1 -6.90776 [0, -2.21854] 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) = 43

Maximum Background Value = 5.98

Confidence Level = 87.8%

False Positive Rate = 12.2%

Location	Date	Count	Mean	Significant
MW-3	8/18/2023	1	11.5	TRUE
MW-4	8/18/2023	1	11.3	TRUE
MW-5	8/18/2023	1	64.1	TRUE
TMW-1	8/17/2023	1	49.1	TRUE
TMW-2	8/17/2023	1	44.2	TRUE
TMW-3	8/17/2023	1	59.9	TRUE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 85.2679%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 42

Maximum Background Value = 0.028

Confidence Level = 87.5%

False Positive Rate = 12.5%

Location	Date	Count	Mean	Significant
MW-3	8/18/2023	1	0.005	FALSE
MW-4	8/18/2023	1	0.005	FALSE
MW-5	8/18/2023	1	0.00832	FALSE
TMW-1	8/17/2023	1	0.005	FALSE
TMW-2	8/17/2023	1	0.005	FALSE
TMW-3	8/17/2023	1	0.005	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Fluoride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.7551%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 32

Maximum Background Value = 0.178

Confidence Level = 84.2%

False Positive Rate = 15.8%

Location	Date	Count	Mean	Significant
MW-3	8/18/2023	1	0.219	TRUE
MW-4	8/18/2023	1	0.15	FALSE
MW-5	8/18/2023	1	0.15	FALSE
TMW-1	8/17/2023	1	0.15	FALSE
TMW-2	8/17/2023	1	0.15	FALSE
TMW-3	8/17/2023	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 = 57.7093%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 42

Maximum Background Value = 0.2

Confidence Level = 87.5%

False Positive Rate = 12.5%

Location	Date	Count	Mean	Significant
MW-3	8/18/2023	1	0.00854	FALSE
MW-4	8/18/2023	1	0.002	FALSE
MW-5	8/18/2023	1	0.00557	FALSE
TMW-1	8/17/2023	1	0.002	FALSE
TMW-2	8/17/2023	1	0.002	FALSE
TMW-3	8/17/2023	1	0.002	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Sulfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 64.6018%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 40

Maximum Background Value = 18.8

Confidence Level = 87%

False Positive Rate = 13%

Location	Date	Count	Mean	Significant
MW-3	8/18/2023	1	20.6	TRUE
MW-4	8/18/2023	1	5	FALSE
MW-5	8/18/2023	1	15.4	FALSE
TMW-1	8/17/2023	1	5	FALSE
TMW-2	8/17/2023	1	5	FALSE
TMW-3	8/17/2023	1	5	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 74.4493%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 42

Maximum Background Value = 0.0287

Confidence Level = 87.5%

False Positive Rate = 12.5%

Location	Date	Count	Mean	Significant
MW-3	8/18/2023	1	0.0625	TRUE
MW-4	8/18/2023	1	0.025	FALSE
MW-5	8/18/2023	1	0.025	FALSE
TMW-1	8/17/2023	1	0.025	FALSE
TMW-2	8/17/2023	1	0.025	FALSE
TMW-3	8/17/2023	1	0.025	FALSE

Mann-Kendall Trend Analysis

Parameter: Arsenic

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 132 - 217 = -85

Tied Group	Value	Members
1	0.0176	2
2	0.00807	2

Time Period Observations

11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 36
B = 0
C = 0
D = 0
E = 4
F = 0
a = 41418

Page 1

b = 157950

c = 1404

Group Variance = 2299

Z-Score = -1.7519

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

$|-1.7519| \leq 1.97737$ indicating no evidence of a trend

Page 2

Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 238 - 109 = 129

Tied Group	Value	Members
1	0.0199	2
2	0.02	3

Time Period Observations

11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 84
B = 0
C = 6
D = 0
E = 8
F = 0
a = 41418

Page 3

b = 157950

c = 1404

Group Variance = 2296.33

Z-Score = 2.67111

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

$2.67111 > 1.65463$ indicating an upward trend

Page 4

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 146 - 201 = -55

Tied Group	Value	Members
1	2.15	3
2	1.95	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 84
 B = 0
 C = 6
 D = 0
 E = 8
 F = 0
 a = 41418

b = 157950
 c = 1404
 Group Variance = 2296.33
 Z-Score = -1.12688
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-1.12688| <= 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 = 228 - 122 = 106

Tied Group	Value	Members
1	0.0411	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 41418
 b = 157950

c = 1404
 Group Variance = 2300
 Z-Score = 2.1894
 Comparison Level at 95% confidence level = 1.65463 (upward trend)
 2.1894 > 1.65463 indicating an upward 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 = 181 - 155 = 26

Tied Group	Value	Members
1	0.0002	6

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 510
 B = 0
 C = 120
 D = 0
 E = 30
 F = 0
 a = 41418
 b = 157950

c = 1404
 Group Variance = 2272.67
 Z-Score = 0.524411
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 [0.524411] <= 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 = 191 - 160 = 31

Tied Group	Value	Members
1		6

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 41418
 b = 157950
 c = 1404

Group Variance = 2301
 Z-Score = 0.625407
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 [0.625407] <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 112 - 86 = 26

Tied Group	Value	Members
1	5	18

Time Period Observations

11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 12546
B = 0
C = 4896
D = 0
E = 306
F = 0
a = 41418
b = 157950

c = 1404
Group Variance = 1604
Z-Score = 0.62422
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.62422| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 170 - 166 = 4

Tied Group	Value	Members
1	0.1	6

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 510

B = 0

C = 120

D = 0

E = 30

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 2272.67

Z-Score = 0.0629294

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

|0.0629294| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 148 - 193 = -45

Tied Group	Value	Members
1	0.1	5

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 300

B = 0

C = 60

D = 0

E = 20

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 2284.33

Z-Score = -0.920604

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

|-0.920604| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: TMW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 37 - 236 = -199

Tied Group	Value	Members
1	0.1	2
2	0.115	2
3	0.107	2

Time Period	Observations
9/28/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

A = 54
 B = 0
 C = 0
 D = 0
 E = 6
 F = 0
 a = 29256
 b = 109296
 c = 1104

Group Variance = 1622.33
 Z-Score = -4.91581
 Comparison Level at 95% confidence level = -1.65463 (downward trend)
-4.91581 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Arsenic

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 26 - 0 = 26

Tied Group	Value	Members
1	0.002	26

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 37050
 B = 0
 C = 15600
 D = 0
 E = 650
 F = 0
 a = 41418
 b = 157950

c = 1404
 Group Variance = 242.667
 Z-Score = 1.60485
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 [1.60485] <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 109 - 269 = -160

Tied Group	Value	Members
1	0.00749	2
2	0.02	4
3	0.0102	3

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
9/27/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 46116
 b = 176904

c = 1512
 Group Variance = 2562
 Z-Score = -3.14129
 Comparison Level at 95% confidence level = -1.65463 (downward trend)
-3.14129 < -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 = 227 - 114 = 113

Tied Group	Value	Members
1	0.00749	2
2	0.02	4
3	0.0102	3

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 240
 B = 0
 C = 30
 D = 0
 E = 20
 F = 0

a = 41418
 b = 157950
 c = 1404
 Group Variance = 2287.67
 Z-Score = 2.34165
 Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.34165 > 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 = 277 - 74 = 203

Tied GrouValue	Members
----------------	---------

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

11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 41418
 b = 157950
 c = 1404

Group Variance = 2301

Z-Score = 4.21108

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

4.21108 > 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 = 142 - 128 = 14

Tied GrouValue	Members
----------------	---------

1	0.02	4
---	------	---

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

9/28/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

A = 156
 B = 0
 C = 24
 D = 0
 E = 12
 F = 0
 a = 29256
 b = 109296
 c = 1104
 Group Variance = 1616.67
 Z-Score = 0.32332

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

[0.32332] <= 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 = 119 - 155 = -36

Tied Group	Value	Members
1	0.033	2
2	0.0332	2

Time Period Observations

9/28/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

A = 36
 B = 0
 C = 0
 D = 0
 E = 4
 F = 0
 a = 29256
 b = 109296
 c = 1104
 Group Variance = 1623.33

Z-Score = -0.868689

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

$|-0.868689| \leq 1.97737$ 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 = 223 - 76 = 147

Tied Group	Value	Members
1	0.0451	2

Time Period Observations

9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 33000
 b = 124200
 c = 1200
 Group Variance = 1832.33

Z-Score = 3.41076

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

$3.41076 > 1.65463$ 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 = 117 - 286 = -169

Tied Group	Value	Members
1	0.001	3

Time Period	Observations
11/10/2016	1
6/8/2017	1
8/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
9/27/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
12/8/2020	1
3/2/2021	1
5/20/2021	1
8/28/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0

a = 51156
b = 197316
c = 1624
Group Variance = 2838.33
Z-Score = -3.15339
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-3.15339 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 76 - 272 = -196

Tied Group	Value	Members
1	23.9	2
2	18.4	2
3	11.5	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 54
B = 0
C = 0
D = 0
E = 6
F = 0

a = 41418
b = 157950
c = 1404
Group Variance = 2298
Z-Score = -4.0678
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-4.0678 < -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 = 313 - 38 = 275

Tied Group Value	Members

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 41418
 b = 157950
 c = 1404

Group Variance = 2301

Z-Score = 5.71205

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

5.71205 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 213 - 137 = 76

Tied Group Value	Members
1	83.5
2	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 41418
 b = 157950

c = 1404

Group Variance = 2300

Z-Score = 1.56386

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

|1.56386| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: TMW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 347 - 4 = 343

Tied Group Value Members

Time Period Observations

11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 41418
b = 157950
c = 1404

Page 29

Group Variance = 2301

Z-Score = 7.12964

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

7.12964 > 1.65463 indicating an upward trend

Page 30

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: TMW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 301 - 50 = 251

Tied Group Value Members

Time Period Observations

11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 41418
b = 157950
c = 1404

Page 31

Group Variance = 2301

Z-Score = 5.21173

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

5.21173 > 1.65463 indicating an upward trend

Page 32

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: TMW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 299 - 51 = 248

Tied Group	Value	Members
1	67.8	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
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 41418
 b = 157950

c = 1404
 Group Variance = 2300
 Z-Score = 5.15031
 Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.15031 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Cobalt

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 97 - 134 = -37

Tied Group	Value	Members
1	0.002	16

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 8880
 B = 0
 C = 3360
 D = 0
 E = 240
 F = 0
 a = 41418
 b = 157950

c = 1404
 Group Variance = 1807.67
 Z-Score = -0.846727
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
| -0.846727 | <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Copper

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 92 - 69 = 23

Tied Group	Value	Members
1	0.005	20

Time Period Observations

11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 17100
 B = 0
 C = 6840
 D = 0
 E = 380
 F = 0
 a = 41418
 b = 157950

c = 1404
 Group Variance = 1351
 Z-Score = 0.598543
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 [0.598543] <= 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 = 154 - 191 = -37

Tied Group	Value	Members
1	0.15	4

Time Period Observations

11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 156
 B = 0
 C = 24
 D = 0
 E = 12
 F = 0
 a = 41418
 b = 157950

c = 1404
 Group Variance = 2292.33
 Z-Score = -0.751906
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 [-0.751906] <= 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 = 185 - 190 = -5

Tied Group	Value	Members
1	0.002	3

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
9/27/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 66
 B = 0
 C = 6
 D = 0
 E = 6
 F = 0
 a = 46116

b = 176904
 c = 1512
 Group Variance = 2558.33
 Z-Score = -0.0790827
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-0.0790827| <= 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 = 130 - 220 = -90

Tied Group	Value	Members
1	0.00651	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 41418
 b = 157950

c = 1404
 Group Variance = 2300
 Z-Score = -1.85578
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-1.85578| <= 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 = 135 - 215 = -80

Tied Group	Value	Members
1	46.2	2

Time Period Observations

11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 41418
 b = 157950

c = 1404
 Group Variance = 2300
 Z-Score = -1.64726
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 [-1.64726] <= 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 = 324 - 17 = 307

Tied Group	Value	Members
1	5	5

Time Period Observations

11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 300
 B = 0
 C = 60
 D = 0
 E = 20
 F = 0
 a = 41418
 b = 157950

c = 1404
 Group Variance = 2284.33
 Z-Score = 6.40238
 Comparison Level at 95% confidence level = 1.65463 (upward trend)
 6.40238 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Zinc

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 150 - 212 = -62

Tied Group	Value	Members
1	0.025	6
2	0.159	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
9/27/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 528
B = 0
C = 120
D = 0
E = 32
F = 0

a = 46116
b = 176904
c = 1512
Group Variance = 2532.67
Z-Score = -1.21211
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.21211| <= 1.97737 indicating no evidence of a 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 = 27 - 28 = -1

Tied Group	Value	Members
------------	-------	---------

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

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

a = 2970
b = 8910
c = 220

Group Variance = 165

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: BARIUM

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 31 - 24 = 7

Tied Group	Value	Members
------------	-------	---------

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

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

a = 2970
b = 8910
c = 220

Group Variance = 165

Z-Score = 0.467099

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

|0.467099| <= 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 = 27 - 27 = 0

Tied Group	Value	Members
------------	-------	---------

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

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

a = 2970
b = 8910
c = 220

Group Variance = 164

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: COBALT

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 29 - 26 = 3

Tied Group	Value	Members
------------	-------	---------

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

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

a = 2970
b = 8910
c = 220

Group Variance = 165

Z-Score = 0.1557

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

|0.1557| <= 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 = 22 - 30 = -8

Tied Group	Value	Members
1	0.0002	3

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0

a = 2970
b = 8910
c = 220

Group Variance = 161.333

Z-Score = -0.551107

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.551107| <= 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 = 34 - 21 = 13

Tied Group	Value	Members
------------	-------	---------

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

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

a = 2970
b = 8910
c = 220

Group Variance = 165

Z-Score = 0.934199

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.934199| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: SULFATE

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 15 - 30 = -15

Tied Group	Value	Members
1	5	5

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0

a = 2970
b = 8910
c = 220

Group Variance = 148.333

Z-Score = -1.1495

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.1495| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: ALUMINUM

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 28 - 27 = 1

Tied Group	Value	Members
------------	-------	---------

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

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

a = 2970
b = 8910
c = 220

Group Variance = 165

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: ALUMINUM

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 15 - 39 = -24

Tied Group	Value	Members
1	0.1	2

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 2970
b = 8910
c = 220
Group Variance = 164
Z-Score = -1.796
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.796| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: ALUMINUM

Location: TMW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 17 - 36 = -19

Tied Group	Value	Members
1	0.115	2
2	0.107	2

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

A = 36
B = 0
C = 0
D = 0
E = 4
F = 0
a = 2970
b = 8910
c = 220
Group Variance = 163
Z-Score = -1.40987
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.40987| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: ARSENIC

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 10 - 0 = 10

Tied Group	Value	Members
1	0.002	10

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 2250
B = 0
C = 720
D = 0
E = 90
F = 0
a = 2970
b = 8910
c = 220
Group Variance = 40
Z-Score = 1.42302
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.42302| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: BARIUM

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 28 - 27 = 1

Tied Group	Value	Members
1	0.115	2
2	0.107	2

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 2970
b = 8910
c = 220
Group Variance = 165
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: BARIUM

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 22 - 30 = -8

Tied Group	Value	Members
1	0.0102	3

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0

a = 2970
b = 8910
c = 220

Group Variance = 161.333

Z-Score = -0.551107

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

|0.551107| <= 1.97737 indicating no evidence of a 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 = 22 - 33 = -11

Tied Group	Value	Members
------------	-------	---------

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

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

a = 2970
b = 8910
c = 220

Group Variance = 165

Z-Score = -0.778499

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

|0.778499| <= 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 = 30 - 24 = 6

Tied Group	Value	Members
1	0.0332	2

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

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

a = 2970
b = 8910
c = 220

Group Variance = 164

Z-Score = 0.390434

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

|0.390434| <= 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 = 30 - 25 = 5

Tied Group	Value	Members
------------	-------	---------

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

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

a = 2970
b = 8910
c = 220

Group Variance = 165

Z-Score = 0.3114

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

|0.3114| <= 1.97737 indicating no evidence of a 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 = 18 - 24 = -6
 Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
 Probability of obtaining S >= |-6| is 0.664
 0.664 >= 0.025 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: CHLORIDE

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 26 - 27 = -1

Tied Group	Value	Members
1	18.4	2
2	11.5	2

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 36
 B = 0
 C = 0
 D = 0
 E = 4
 F = 0
 a = 2970
 b = 8910
 c = 220
 Group Variance = 163
 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: CHLORIDE

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 44 - 11 = 33

Tied Group	Value	Members
------------	-------	---------

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 2970
 b = 8910
 c = 220
 Group Variance = 165
 Z-Score = 2.4912
 Comparison Level at 95% confidence level = 1.65463 (upward trend)
 2.4912 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: CHLORIDE

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 22 - 33 = -11

Tied Group	Value	Members
------------	-------	---------

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 2970
 b = 8910
 c = 220
 Group Variance = 165
 Z-Score = -0.778499
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-0.778499| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: CHLORIDE

Location: TMW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 53 - 2 = 51

Tied Group	Value	Members
1		

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 2970
 b = 8910
 c = 220
 Group Variance = 165
 Z-Score = 3.89249
 Comparison Level at 95% confidence level = 1.65463 (upward trend)
3.89249 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: CHLORIDE

Location: TMW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 40 - 15 = 25

Tied Group	Value	Members
1		

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

A = 0
 B = 0
 C = 0
 D = 0
 E = 0
 F = 0
 a = 2970
 b = 8910
 c = 220
 Group Variance = 165
 Z-Score = 1.8684
 Comparison Level at 95% confidence level = 1.65463 (upward trend)
1.8684 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: CHLORIDE

Location: TMW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 24 - 30 = -6

Tied Group	Value	Members
1	67.8	2

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/17/2023	1

There are 0 time periods with multiple data

A = 18
 B = 0
 C = 0
 D = 0
 E = 2
 F = 0
 a = 2970
 b = 8910
 c = 220
 Group Variance = 164
 Z-Score = -0.390434
 Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
 |-0.390434| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: COBALT

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 19 - 0 = 19

Tied Group	Value	Members
1	0.002	9

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 1656
 B = 0
 C = 504
 D = 0
 E = 72
 F = 0
 a = 2970
 b = 8910
 c = 220
 Group Variance = 73
 Z-Score = 2.10674
 Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.10674 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: COPPER

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 15 - 19 = -4

Tied Group	Value	Members
1	0.005	7

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 798
B = 0
C = 210
D = 0
E = 42
F = 0
a = 2970
b = 8910
c = 220
Group Variance = 120.667
Z-Score = -0.273104
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.273104| <= 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 = 25 - 24 = 1

Tied Group	Value	Members
1	0.15	4

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 2970
b = 8910
c = 220
Group Variance = 156.333
Z-Score = 0
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: NICKEL

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 35 - 20 = 15

Tied Group	Value	Members
1		

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 2970
b = 8910
c = 220
Group Variance = 165
Z-Score = 1.0899
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.0899| <= 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 = 19 - 36 = -17

Tied Group	Value	Members
1		

Time Period	Observations
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 2970
b = 8910
c = 220
Group Variance = 165
Z-Score = -1.2456
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.2456| <= 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 = 27 - 28 = -1

Tied Group Value	Members
------------------	---------

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

3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

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

a = 2970
b = 8910
c = 220

Group Variance = 165

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: SULFATE

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 41 - 14 = 27

Tied Group Value	Members
------------------	---------

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

3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

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

a = 2970
b = 8910
c = 220

Group Variance = 165

Z-Score = 2.0241

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

2.0241 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: ZINC

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 36 - 13 = 23

Tied Group Value	Members
1	0.025
	4

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

3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1
1/31/2023	1
5/25/2023	1
8/18/2023	1

There are 0 time periods with multiple data

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

a = 2970
b = 8910
c = 220

Group Variance = 156.333

Z-Score = 1.75953

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

|1.75953| <= 1.97737 indicating no evidence of a trend

APPENDIX C
LABORATORY ANALYTICAL REPORTS &
FIELD INFORMATION LOGS

Civil & Environmental Consultants - TN

Sample Delivery Group: L1648028
Samples Received: 08/19/2023
Project Number: 181-364
Description: Former EWS Camden Class 2 Landfill
Site: CAMDEN, TN
Report To: Philip Campbell
117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Entire Report Reviewed By:



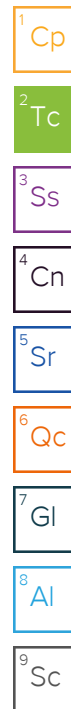
Chris McCord
Project Manager

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

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	6
Sr: Sample Results	7
MW-1 L1648028-01	7
MW-3 L1648028-02	10
MW-4 L1648028-03	13
MW-5 L1648028-04	16
TMW-1 L1648028-05	19
TMW-2 L1648028-06	22
TMW-3 L1648028-07	25
DUPLICATE L1648028-08	28
FIELD BLANK L1648028-09	31
TRIP BLANK L1648028-10	34
Qc: Quality Control Summary	35
Wet Chemistry by Method 2320 B-2011	35
Wet Chemistry by Method 350.1	37
Wet Chemistry by Method 410.4	38
Wet Chemistry by Method 9056A	40
Mercury by Method 7470A	43
Metals (ICP) by Method 6010B	45
Metals (ICPMS) by Method 6020A	46
Volatile Organic Compounds (GC/MS) by Method 8260B	48
EDB / DBCP by Method 8011	51
Gl: Glossary of Terms	52
Al: Accreditations & Locations	53
Sc: Sample Chain of Custody	54

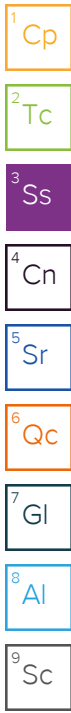


SAMPLE SUMMARY

MW-1 L1648028-01 GW

Collected by: Josph D. Collected date/time: 08/18/23 11:35 Received date/time: 08/19/23 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2117793	1	08/28/23 23:34	08/28/23 23:34	SJM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2119660	1	08/24/23 11:35	08/24/23 11:35	BJM	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2117621	1	08/21/23 15:19	08/21/23 15:19	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2117708	1	08/20/23 20:00	08/21/23 01:56	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2117356	1	08/19/23 22:04	08/19/23 22:04	ASM	Mt. Juliet, TN
Mercury by Method 7470A	WG2120740	1	08/29/23 20:25	08/30/23 15:26	LAS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2117778	1	08/24/23 18:51	08/28/23 18:52	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2117793	1	08/27/23 11:15	08/28/23 23:34	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2117589	1	08/20/23 16:04	08/20/23 16:04	DYW	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2118334	1.1	08/22/23 11:56	08/23/23 04:17	AMM	Mt. Juliet, TN



MW-3 L1648028-02 GW

Collected by: Josph D. Collected date/time: 08/18/23 13:15 Received date/time: 08/19/23 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2117793	1	08/28/23 23:38	08/28/23 23:38	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2119660	1	08/24/23 11:40	08/24/23 11:40	BJM	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2117621	1	08/21/23 15:20	08/21/23 15:20	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2117708	1	08/20/23 20:00	08/21/23 01:57	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2117356	1	08/19/23 22:54	08/19/23 22:54	ASM	Mt. Juliet, TN
Mercury by Method 7470A	WG2120740	1	08/29/23 20:25	08/30/23 15:28	LAS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2117778	1	08/24/23 18:51	08/28/23 18:55	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2117793	1	08/27/23 11:15	08/28/23 23:38	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2117589	1	08/20/23 16:28	08/20/23 16:28	DYW	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2118334	1.16	08/22/23 11:56	08/23/23 04:30	AMM	Mt. Juliet, TN

MW-4 L1648028-03 GW

Collected by: Josph D. Collected date/time: 08/18/23 12:20 Received date/time: 08/19/23 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2117793	1	08/28/23 23:21	08/28/23 23:21	SJM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2119660	1	08/24/23 11:44	08/24/23 11:44	BJM	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2117621	1	08/21/23 15:25	08/21/23 15:25	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2117708	1	08/20/23 20:00	08/21/23 01:57	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2117356	1	08/19/23 23:07	08/19/23 23:07	ASM	Mt. Juliet, TN
Mercury by Method 7470A	WG2119567	1	08/29/23 20:46	08/31/23 12:00	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2117778	1	08/24/23 18:51	08/28/23 18:58	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2117793	1	08/27/23 11:15	08/28/23 23:21	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2117589	1	08/20/23 16:51	08/20/23 16:51	DYW	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2118334	1.01	08/22/23 11:56	08/23/23 04:43	AMM	Mt. Juliet, TN

MW-5 L1648028-04 GW

Collected by: Josph D. Collected date/time: 08/18/23 14:20 Received date/time: 08/19/23 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2117793	1	08/28/23 23:41	08/28/23 23:41	SJM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2119660	1	08/24/23 11:48	08/24/23 11:48	BJM	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2117621	1	08/21/23 15:28	08/21/23 15:28	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2117708	1	08/20/23 20:00	08/21/23 01:58	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2117356	1	08/19/23 23:20	08/19/23 23:20	ASM	Mt. Juliet, TN
Mercury by Method 7470A	WG2119567	1	08/29/23 20:46	08/31/23 12:02	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2117778	1	08/24/23 18:51	08/28/23 19:01	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2117793	1	08/27/23 11:15	08/28/23 23:41	SJM	Mt. Juliet, TN

SAMPLE SUMMARY

MW-5 L1648028-04 GW

Collected by: Josph D. Collected date/time: 08/18/23 14:20 Received date/time: 08/19/23 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2117589	1	08/20/23 17:14	08/20/23 17:14	DYW	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2118334	1.03	08/22/23 11:56	08/23/23 04:55	AMM	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

TMW-1 L1648028-05 GW

Collected by: Josph D. Collected date/time: 08/17/23 13:25 Received date/time: 08/19/23 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2117793	1	08/28/23 23:52	08/28/23 23:52	SJM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2119660	1	08/24/23 12:00	08/24/23 12:00	BJM	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2117621	1	08/21/23 15:34	08/21/23 15:34	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2117708	1	08/20/23 20:00	08/21/23 01:58	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2118554	1	08/22/23 16:17	08/22/23 16:17	ASM	Mt. Juliet, TN
Mercury by Method 7470A	WG2119567	1	08/29/23 20:46	08/31/23 12:04	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2117778	1	08/24/23 18:51	08/28/23 19:03	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2117793	1	08/27/23 11:15	08/28/23 23:52	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2117589	1	08/20/23 17:37	08/20/23 17:37	DYW	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2118334	1.02	08/22/23 11:56	08/23/23 05:08	AMM	Mt. Juliet, TN

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

TMW-2 L1648028-06 GW

Collected by: Josph D. Collected date/time: 08/17/23 12:35 Received date/time: 08/19/23 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2117793	1	08/28/23 23:55	08/28/23 23:55	SJM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2119664	1	08/23/23 16:29	08/23/23 16:29	BJM	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2117621	1	08/21/23 15:35	08/21/23 15:35	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2117708	1	08/20/23 20:00	08/21/23 01:58	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2118554	1	08/22/23 16:30	08/22/23 16:30	ASM	Mt. Juliet, TN
Mercury by Method 7470A	WG2119567	1	08/29/23 20:46	08/31/23 12:06	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2117778	1	08/24/23 18:51	08/28/23 19:06	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2117793	1	08/27/23 11:15	08/28/23 23:55	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2117589	1	08/20/23 18:01	08/20/23 18:01	DYW	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2118334	1	08/22/23 11:56	08/23/23 05:59	AMM	Mt. Juliet, TN

TMW-3 L1648028-07 GW

Collected by: Josph D. Collected date/time: 08/17/23 11:30 Received date/time: 08/19/23 08:00

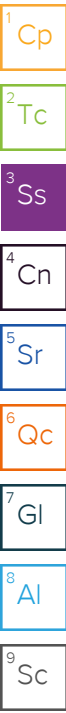
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2117793	1	08/28/23 23:58	08/28/23 23:58	SJM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2119664	1	08/23/23 16:32	08/23/23 16:32	BJM	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2117621	1	08/21/23 15:37	08/21/23 15:37	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2117708	1	08/20/23 20:00	08/21/23 01:59	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2118554	1	08/22/23 16:44	08/22/23 16:44	ASM	Mt. Juliet, TN
Mercury by Method 7470A	WG2119567	1	08/29/23 20:46	08/31/23 12:08	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2117778	1	08/24/23 18:51	08/28/23 19:09	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2117793	1	08/27/23 11:15	08/28/23 23:58	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2117589	1	08/20/23 18:24	08/20/23 18:24	DYW	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2118334	1.04	08/22/23 11:56	08/23/23 06:11	AMM	Mt. Juliet, TN

SAMPLE SUMMARY

DUPLICATE L1648028-08 GW

Collected by: Joseph D. Collected date/time: 08/17/23 00:00 Received date/time: 08/19/23 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2117793	1	08/29/23 00:02	08/29/23 00:02	SJM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2119664	1	08/23/23 16:34	08/23/23 16:34	BJM	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2117621	1	08/21/23 15:38	08/21/23 15:38	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2119753	1	08/23/23 17:30	08/23/23 23:18	CAH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2118554	1	08/22/23 16:58	08/22/23 16:58	ASM	Mt. Juliet, TN
Mercury by Method 7470A	WG2119567	1	08/29/23 20:46	08/31/23 12:14	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2117778	1	08/24/23 18:51	08/28/23 16:52	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2117793	1	08/27/23 11:15	08/29/23 00:02	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2117589	1	08/20/23 18:47	08/20/23 18:47	DYW	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2118334	1.02	08/22/23 11:56	08/23/23 06:24	AMM	Mt. Juliet, TN



FIELD BLANK L1648028-09 GW

Collected by: Joseph D. Collected date/time: 08/17/23 13:25 Received date/time: 08/19/23 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2117793	1	08/29/23 00:05	08/29/23 00:05	SJM	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2119664	1	08/23/23 16:37	08/23/23 16:37	BJM	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2117621	1	08/21/23 15:41	08/21/23 15:41	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2119753	1	08/23/23 17:30	08/23/23 23:18	CAH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2118554	1	08/22/23 17:12	08/22/23 17:12	ASM	Mt. Juliet, TN
Mercury by Method 7470A	WG2119567	1	08/29/23 20:46	08/31/23 12:16	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2117778	1	08/24/23 18:51	08/28/23 16:55	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2117793	1	08/27/23 11:15	08/29/23 00:05	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2117589	1	08/20/23 19:10	08/20/23 19:10	DYW	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2118334	1	08/22/23 11:56	08/23/23 06:37	AMM	Mt. Juliet, TN

TRIP BLANK L1648028-10 GW

Collected by: Joseph D. Collected date/time: 08/17/23 00:00 Received date/time: 08/19/23 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2117589	1	08/20/23 14:32	08/20/23 14:32	DYW	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	24.3		2.50	1	08/28/2023 23:34	WG2117793

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	55.8		20.0	1	08/24/2023 11:35	WG2119660

Sample Narrative:

L1648028-01 WG2119660: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	0.293		0.250	1	08/21/2023 15:19	WG2117621

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	08/21/2023 01:56	WG2117708

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/19/2023 22:04	WG2117356
Chloride	1.87		1.00	1	08/19/2023 22:04	WG2117356
Fluoride	ND	P1	0.150	1	08/19/2023 22:04	WG2117356
Nitrate	ND		0.100	1	08/19/2023 22:04	WG2117356
Sulfate	ND		5.00	1	08/19/2023 22:04	WG2117356

Mercury by Method 7470A

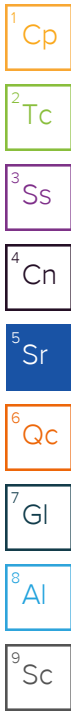
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.000814		0.000200	1	08/30/2023 15:26	WG2120740

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	08/28/2023 18:52	WG2117778

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	08/28/2023 23:34	WG2117793
Antimony	ND		0.00400	1	08/28/2023 23:34	WG2117793
Arsenic	0.0159		0.00200	1	08/28/2023 23:34	WG2117793
Barium	0.0224		0.00200	1	08/28/2023 23:34	WG2117793
Beryllium	ND		0.00200	1	08/28/2023 23:34	WG2117793
Cadmium	ND		0.00100	1	08/28/2023 23:34	WG2117793
Calcium	4.47		1.00	1	08/28/2023 23:34	WG2117793
Chromium	ND		0.00200	1	08/28/2023 23:34	WG2117793
Cobalt	0.105		0.00200	1	08/28/2023 23:34	WG2117793
Copper	ND		0.00500	1	08/28/2023 23:34	WG2117793



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	19.7		0.100	1	08/28/2023 23:34	WG2117793
Lead	ND		0.00200	1	08/28/2023 23:34	WG2117793
Magnesium	3.19		1.00	1	08/28/2023 23:34	WG2117793
Manganese	1.43		0.00500	1	08/28/2023 23:34	WG2117793
Nickel	0.00793		0.00200	1	08/28/2023 23:34	WG2117793
Potassium	ND		2.00	1	08/28/2023 23:34	WG2117793
Selenium	ND		0.00200	1	08/28/2023 23:34	WG2117793
Silver	ND		0.00200	1	08/28/2023 23:34	WG2117793
Sodium	2.70		2.00	1	08/28/2023 23:34	WG2117793
Thallium	ND		0.00200	1	08/28/2023 23:34	WG2117793
Vanadium	ND		0.00500	1	08/28/2023 23:34	WG2117793
Zinc	ND		0.0250	1	08/28/2023 23:34	WG2117793

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

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	08/20/2023 16:04	WG2117589
Acrylonitrile	ND		0.0100	1	08/20/2023 16:04	WG2117589
Benzene	ND		0.00100	1	08/20/2023 16:04	WG2117589
Bromochloromethane	ND		0.00100	1	08/20/2023 16:04	WG2117589
Bromodichloromethane	ND		0.00100	1	08/20/2023 16:04	WG2117589
Bromoform	ND		0.00100	1	08/20/2023 16:04	WG2117589
Bromomethane	ND		0.00500	1	08/20/2023 16:04	WG2117589
Carbon disulfide	ND		0.00100	1	08/20/2023 16:04	WG2117589
Carbon tetrachloride	ND		0.00100	1	08/20/2023 16:04	WG2117589
Chlorobenzene	ND		0.00100	1	08/20/2023 16:04	WG2117589
Chlorodibromomethane	ND		0.00100	1	08/20/2023 16:04	WG2117589
Chloroethane	ND		0.00500	1	08/20/2023 16:04	WG2117589
Chloroform	ND		0.00500	1	08/20/2023 16:04	WG2117589
Chloromethane	ND		0.00250	1	08/20/2023 16:04	WG2117589
Dibromomethane	ND		0.00100	1	08/20/2023 16:04	WG2117589
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/20/2023 16:04	WG2117589
1,2-Dibromoethane	ND		0.00100	1	08/20/2023 16:04	WG2117589
1,2-Dichlorobenzene	ND		0.00100	1	08/20/2023 16:04	WG2117589
1,4-Dichlorobenzene	ND		0.00100	1	08/20/2023 16:04	WG2117589
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/20/2023 16:04	WG2117589
1,1-Dichloroethane	ND		0.00100	1	08/20/2023 16:04	WG2117589
1,2-Dichloroethane	ND		0.00100	1	08/20/2023 16:04	WG2117589
1,1-Dichloroethene	ND		0.00100	1	08/20/2023 16:04	WG2117589
cis-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 16:04	WG2117589
trans-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 16:04	WG2117589
1,2-Dichloropropane	ND		0.00100	1	08/20/2023 16:04	WG2117589
cis-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 16:04	WG2117589
trans-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 16:04	WG2117589
Ethylbenzene	ND		0.00100	1	08/20/2023 16:04	WG2117589
2-Hexanone	ND		0.0100	1	08/20/2023 16:04	WG2117589
Iodomethane	ND		0.0100	1	08/20/2023 16:04	WG2117589
2-Butanone (MEK)	ND		0.0100	1	08/20/2023 16:04	WG2117589
Methylene Chloride	ND		0.00500	1	08/20/2023 16:04	WG2117589
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/20/2023 16:04	WG2117589
Styrene	ND		0.00100	1	08/20/2023 16:04	WG2117589
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 16:04	WG2117589
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 16:04	WG2117589
Tetrachloroethene	ND		0.00100	1	08/20/2023 16:04	WG2117589
Toluene	ND		0.00100	1	08/20/2023 16:04	WG2117589
1,1,1-Trichloroethane	ND		0.00100	1	08/20/2023 16:04	WG2117589

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	08/20/2023 16:04	WG2117589
Trichloroethene	ND		0.00100	1	08/20/2023 16:04	WG2117589
Trichlorofluoromethane	ND		0.00500	1	08/20/2023 16:04	WG2117589
1,2,3-Trichloropropane	ND		0.00250	1	08/20/2023 16:04	WG2117589
Vinyl acetate	ND	<u>J3</u>	0.0100	1	08/20/2023 16:04	WG2117589
Vinyl chloride	ND		0.00100	1	08/20/2023 16:04	WG2117589
Xylenes, Total	ND		0.00300	1	08/20/2023 16:04	WG2117589
<i>(S) Toluene-d8</i>	114		80.0-120		08/20/2023 16:04	WG2117589
<i>(S) 4-Bromofluorobenzene</i>	97.8		77.0-126		08/20/2023 16:04	WG2117589
<i>(S) 1,2-Dichloroethane-d4</i>	105		70.0-130		08/20/2023 16:04	WG2117589

- 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		0.0000220	1.1	08/23/2023 04:17	WG2118334
1,2-Dibromo-3-Chloropropane	ND		0.0000220	1.1	08/23/2023 04:17	WG2118334

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	51.7		2.50	1	08/28/2023 23:38	WG2117793

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	31.7		20.0	1	08/24/2023 11:40	WG2119660

Sample Narrative:

L1648028-02 WG2119660: 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	08/21/2023 15:20	WG2117621

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	08/21/2023 01:57	WG2117708

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/19/2023 22:54	WG2117356
Chloride	11.5		1.00	1	08/19/2023 22:54	WG2117356
Fluoride	0.219		0.150	1	08/19/2023 22:54	WG2117356
Nitrate	ND		0.100	1	08/19/2023 22:54	WG2117356
Sulfate	20.6		5.00	1	08/19/2023 22:54	WG2117356

Mercury by Method 7470A

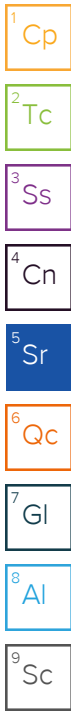
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/30/2023 15:28	WG2120740

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	08/28/2023 18:55	WG2117778

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.357		0.100	1	08/28/2023 23:38	WG2117793
Antimony	ND		0.00400	1	08/28/2023 23:38	WG2117793
Arsenic	ND		0.00200	1	08/28/2023 23:38	WG2117793
Barium	0.0335		0.00200	1	08/28/2023 23:38	WG2117793
Beryllium	ND		0.00200	1	08/28/2023 23:38	WG2117793
Cadmium	0.00160		0.00100	1	08/28/2023 23:38	WG2117793
Calcium	13.8		1.00	1	08/28/2023 23:38	WG2117793
Chromium	ND		0.00200	1	08/28/2023 23:38	WG2117793
Cobalt	0.00395		0.00200	1	08/28/2023 23:38	WG2117793
Copper	ND		0.00500	1	08/28/2023 23:38	WG2117793



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.955		0.100	1	08/28/2023 23:38	WG2117793
Lead	ND		0.00200	1	08/28/2023 23:38	WG2117793
Magnesium	4.17		1.00	1	08/28/2023 23:38	WG2117793
Manganese	0.570		0.00500	1	08/28/2023 23:38	WG2117793
Nickel	0.00854		0.00200	1	08/28/2023 23:38	WG2117793
Potassium	4.65		2.00	1	08/28/2023 23:38	WG2117793
Selenium	ND		0.00200	1	08/28/2023 23:38	WG2117793
Silver	ND		0.00200	1	08/28/2023 23:38	WG2117793
Sodium	4.33		2.00	1	08/28/2023 23:38	WG2117793
Thallium	ND		0.00200	1	08/28/2023 23:38	WG2117793
Vanadium	ND		0.00500	1	08/28/2023 23:38	WG2117793
Zinc	0.0625		0.0250	1	08/28/2023 23:38	WG2117793

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	08/20/2023 16:28	WG2117589
Acrylonitrile	ND		0.0100	1	08/20/2023 16:28	WG2117589
Benzene	ND		0.00100	1	08/20/2023 16:28	WG2117589
Bromochloromethane	ND		0.00100	1	08/20/2023 16:28	WG2117589
Bromodichloromethane	ND		0.00100	1	08/20/2023 16:28	WG2117589
Bromoform	ND		0.00100	1	08/20/2023 16:28	WG2117589
Bromomethane	ND		0.00500	1	08/20/2023 16:28	WG2117589
Carbon disulfide	ND		0.00100	1	08/20/2023 16:28	WG2117589
Carbon tetrachloride	ND		0.00100	1	08/20/2023 16:28	WG2117589
Chlorobenzene	ND		0.00100	1	08/20/2023 16:28	WG2117589
Chlorodibromomethane	ND		0.00100	1	08/20/2023 16:28	WG2117589
Chloroethane	ND		0.00500	1	08/20/2023 16:28	WG2117589
Chloroform	ND		0.00500	1	08/20/2023 16:28	WG2117589
Chloromethane	ND		0.00250	1	08/20/2023 16:28	WG2117589
Dibromomethane	ND		0.00100	1	08/20/2023 16:28	WG2117589
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/20/2023 16:28	WG2117589
1,2-Dibromoethane	ND		0.00100	1	08/20/2023 16:28	WG2117589
1,2-Dichlorobenzene	ND		0.00100	1	08/20/2023 16:28	WG2117589
1,4-Dichlorobenzene	ND		0.00100	1	08/20/2023 16:28	WG2117589
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/20/2023 16:28	WG2117589
1,1-Dichloroethane	ND		0.00100	1	08/20/2023 16:28	WG2117589
1,2-Dichloroethane	ND		0.00100	1	08/20/2023 16:28	WG2117589
1,1-Dichloroethene	ND		0.00100	1	08/20/2023 16:28	WG2117589
cis-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 16:28	WG2117589
trans-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 16:28	WG2117589
1,2-Dichloropropane	ND		0.00100	1	08/20/2023 16:28	WG2117589
cis-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 16:28	WG2117589
trans-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 16:28	WG2117589
Ethylbenzene	ND		0.00100	1	08/20/2023 16:28	WG2117589
2-Hexanone	ND		0.0100	1	08/20/2023 16:28	WG2117589
Iodomethane	ND		0.0100	1	08/20/2023 16:28	WG2117589
2-Butanone (MEK)	ND		0.0100	1	08/20/2023 16:28	WG2117589
Methylene Chloride	ND		0.00500	1	08/20/2023 16:28	WG2117589
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/20/2023 16:28	WG2117589
Styrene	ND		0.00100	1	08/20/2023 16:28	WG2117589
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 16:28	WG2117589
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 16:28	WG2117589
Tetrachloroethene	ND		0.00100	1	08/20/2023 16:28	WG2117589
Toluene	ND		0.00100	1	08/20/2023 16:28	WG2117589
1,1,1-Trichloroethane	ND		0.00100	1	08/20/2023 16:28	WG2117589

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	08/20/2023 16:28	WG2117589
Trichloroethene	ND		0.00100	1	08/20/2023 16:28	WG2117589
Trichlorofluoromethane	ND		0.00500	1	08/20/2023 16:28	WG2117589
1,2,3-Trichloropropane	ND		0.00250	1	08/20/2023 16:28	WG2117589
Vinyl acetate	ND	<u>J3</u>	0.0100	1	08/20/2023 16:28	WG2117589
Vinyl chloride	ND		0.00100	1	08/20/2023 16:28	WG2117589
Xylenes, Total	ND		0.00300	1	08/20/2023 16:28	WG2117589
<i>(S) Toluene-d8</i>	114		80.0-120		08/20/2023 16:28	WG2117589
<i>(S) 4-Bromofluorobenzene</i>	99.0		77.0-126		08/20/2023 16:28	WG2117589
<i>(S) 1,2-Dichloroethane-d4</i>	103		70.0-130		08/20/2023 16:28	WG2117589

- 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		0.0000232	1.16	08/23/2023 04:30	WG2118334
1,2-Dibromo-3-Chloropropane	ND		0.0000232	1.16	08/23/2023 04:30	WG2118334

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	28.1		2.50	1	08/28/2023 23:21	WG2117793

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	08/24/2023 11:44	WG2119660

Sample Narrative:

L1648028-03 WG2119660: 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	08/21/2023 15:25	WG2117621

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	08/21/2023 01:57	WG2117708

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/19/2023 23:07	WG2117356
Chloride	11.3		1.00	1	08/19/2023 23:07	WG2117356
Fluoride	ND		0.150	1	08/19/2023 23:07	WG2117356
Nitrate	0.788		0.100	1	08/19/2023 23:07	WG2117356
Sulfate	ND		5.00	1	08/19/2023 23:07	WG2117356

Mercury by Method 7470A

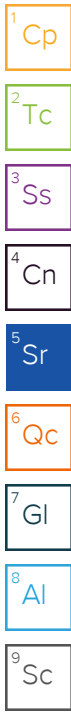
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2023 12:00	WG2119567

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	08/28/2023 18:58	WG2117778

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	08/28/2023 23:21	WG2117793
Antimony	ND		0.00400	1	08/28/2023 23:21	WG2117793
Arsenic	0.00221		0.00200	1	08/28/2023 23:21	WG2117793
Barium	0.0102		0.00200	1	08/28/2023 23:21	WG2117793
Beryllium	ND		0.00200	1	08/28/2023 23:21	WG2117793
Cadmium	ND		0.00100	1	08/28/2023 23:21	WG2117793
Calcium	6.05		1.00	1	08/28/2023 23:21	WG2117793
Chromium	ND		0.00200	1	08/28/2023 23:21	WG2117793
Cobalt	ND		0.00200	1	08/28/2023 23:21	WG2117793
Copper	ND		0.00500	1	08/28/2023 23:21	WG2117793



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	6.91		0.100	1	08/28/2023 23:21	WG2117793
Lead	ND		0.00200	1	08/28/2023 23:21	WG2117793
Magnesium	3.16		1.00	1	08/28/2023 23:21	WG2117793
Manganese	0.0852		0.00500	1	08/28/2023 23:21	WG2117793
Nickel	ND		0.00200	1	08/28/2023 23:21	WG2117793
Potassium	ND		2.00	1	08/28/2023 23:21	WG2117793
Selenium	ND		0.00200	1	08/28/2023 23:21	WG2117793
Silver	ND		0.00200	1	08/28/2023 23:21	WG2117793
Sodium	3.54		2.00	1	08/28/2023 23:21	WG2117793
Thallium	ND		0.00200	1	08/28/2023 23:21	WG2117793
Vanadium	ND		0.00500	1	08/28/2023 23:21	WG2117793
Zinc	ND		0.0250	1	08/28/2023 23:21	WG2117793

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	08/20/2023 16:51	WG2117589
Acrylonitrile	ND		0.0100	1	08/20/2023 16:51	WG2117589
Benzene	ND		0.00100	1	08/20/2023 16:51	WG2117589
Bromochloromethane	ND		0.00100	1	08/20/2023 16:51	WG2117589
Bromodichloromethane	ND		0.00100	1	08/20/2023 16:51	WG2117589
Bromoform	ND		0.00100	1	08/20/2023 16:51	WG2117589
Bromomethane	ND		0.00500	1	08/20/2023 16:51	WG2117589
Carbon disulfide	ND		0.00100	1	08/20/2023 16:51	WG2117589
Carbon tetrachloride	ND		0.00100	1	08/20/2023 16:51	WG2117589
Chlorobenzene	ND		0.00100	1	08/20/2023 16:51	WG2117589
Chlorodibromomethane	ND		0.00100	1	08/20/2023 16:51	WG2117589
Chloroethane	ND		0.00500	1	08/20/2023 16:51	WG2117589
Chloroform	ND		0.00500	1	08/20/2023 16:51	WG2117589
Chloromethane	ND		0.00250	1	08/20/2023 16:51	WG2117589
Dibromomethane	ND		0.00100	1	08/20/2023 16:51	WG2117589
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/20/2023 16:51	WG2117589
1,2-Dibromoethane	ND		0.00100	1	08/20/2023 16:51	WG2117589
1,2-Dichlorobenzene	ND		0.00100	1	08/20/2023 16:51	WG2117589
1,4-Dichlorobenzene	ND		0.00100	1	08/20/2023 16:51	WG2117589
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/20/2023 16:51	WG2117589
1,1-Dichloroethane	ND		0.00100	1	08/20/2023 16:51	WG2117589
1,2-Dichloroethane	ND		0.00100	1	08/20/2023 16:51	WG2117589
1,1-Dichloroethene	ND		0.00100	1	08/20/2023 16:51	WG2117589
cis-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 16:51	WG2117589
trans-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 16:51	WG2117589
1,2-Dichloropropane	ND		0.00100	1	08/20/2023 16:51	WG2117589
cis-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 16:51	WG2117589
trans-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 16:51	WG2117589
Ethylbenzene	ND		0.00100	1	08/20/2023 16:51	WG2117589
2-Hexanone	ND		0.0100	1	08/20/2023 16:51	WG2117589
Iodomethane	ND		0.0100	1	08/20/2023 16:51	WG2117589
2-Butanone (MEK)	ND		0.0100	1	08/20/2023 16:51	WG2117589
Methylene Chloride	ND		0.00500	1	08/20/2023 16:51	WG2117589
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/20/2023 16:51	WG2117589
Styrene	ND		0.00100	1	08/20/2023 16:51	WG2117589
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 16:51	WG2117589
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 16:51	WG2117589
Tetrachloroethene	ND		0.00100	1	08/20/2023 16:51	WG2117589
Toluene	ND		0.00100	1	08/20/2023 16:51	WG2117589
1,1,1-Trichloroethane	ND		0.00100	1	08/20/2023 16:51	WG2117589

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	08/20/2023 16:51	WG2117589
Trichloroethene	ND		0.00100	1	08/20/2023 16:51	WG2117589
Trichlorofluoromethane	ND		0.00500	1	08/20/2023 16:51	WG2117589
1,2,3-Trichloropropane	ND		0.00250	1	08/20/2023 16:51	WG2117589
Vinyl acetate	ND	<u>J3</u>	0.0100	1	08/20/2023 16:51	WG2117589
Vinyl chloride	ND		0.00100	1	08/20/2023 16:51	WG2117589
Xylenes, Total	ND		0.00300	1	08/20/2023 16:51	WG2117589
<i>(S) Toluene-d8</i>	113		80.0-120		08/20/2023 16:51	WG2117589
<i>(S) 4-Bromofluorobenzene</i>	96.9		77.0-126		08/20/2023 16:51	WG2117589
<i>(S) 1,2-Dichloroethane-d4</i>	104		70.0-130		08/20/2023 16:51	WG2117589

- 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		0.0000202	1.01	08/23/2023 04:43	WG2118334
1,2-Dibromo-3-Chloropropane	ND		0.0000202	1.01	08/23/2023 04:43	WG2118334

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	86.2		2.50	1	08/28/2023 23:41	WG2117793

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	08/24/2023 11:48	WG2119660

Sample Narrative:

L1648028-04 WG2119660: 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	08/21/2023 15:28	WG2117621

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	08/21/2023 01:58	WG2117708

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	1.34		1.00	1	08/19/2023 23:20	WG2117356
Chloride	64.1		1.00	1	08/19/2023 23:20	WG2117356
Fluoride	ND		0.150	1	08/19/2023 23:20	WG2117356
Nitrate	0.908		0.100	1	08/19/2023 23:20	WG2117356
Sulfate	15.4		5.00	1	08/19/2023 23:20	WG2117356

Mercury by Method 7470A

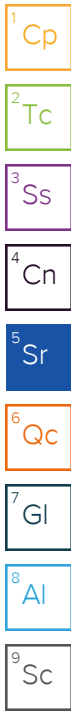
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2023 12:02	WG2119567

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	08/28/2023 19:01	WG2117778

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.207		0.100	1	08/28/2023 23:41	WG2117793
Antimony	ND		0.00400	1	08/28/2023 23:41	WG2117793
Arsenic	ND		0.00200	1	08/28/2023 23:41	WG2117793
Barium	0.0544		0.00200	1	08/28/2023 23:41	WG2117793
Beryllium	ND		0.00200	1	08/28/2023 23:41	WG2117793
Cadmium	ND		0.00100	1	08/28/2023 23:41	WG2117793
Calcium	16.8		1.00	1	08/28/2023 23:41	WG2117793
Chromium	ND		0.00200	1	08/28/2023 23:41	WG2117793
Cobalt	ND		0.00200	1	08/28/2023 23:41	WG2117793
Copper	0.00832		0.00500	1	08/28/2023 23:41	WG2117793



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.278		0.100	1	08/28/2023 23:41	WG2117793
Lead	ND		0.00200	1	08/28/2023 23:41	WG2117793
Magnesium	10.7		1.00	1	08/28/2023 23:41	WG2117793
Manganese	0.305		0.00500	1	08/28/2023 23:41	WG2117793
Nickel	0.00557		0.00200	1	08/28/2023 23:41	WG2117793
Potassium	ND		2.00	1	08/28/2023 23:41	WG2117793
Selenium	ND		0.00200	1	08/28/2023 23:41	WG2117793
Silver	ND		0.00200	1	08/28/2023 23:41	WG2117793
Sodium	17.7		2.00	1	08/28/2023 23:41	WG2117793
Thallium	ND		0.00200	1	08/28/2023 23:41	WG2117793
Vanadium	ND		0.00500	1	08/28/2023 23:41	WG2117793
Zinc	ND		0.0250	1	08/28/2023 23:41	WG2117793

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	08/20/2023 17:14	WG2117589
Acrylonitrile	ND		0.0100	1	08/20/2023 17:14	WG2117589
Benzene	ND		0.00100	1	08/20/2023 17:14	WG2117589
Bromochloromethane	ND		0.00100	1	08/20/2023 17:14	WG2117589
Bromodichloromethane	ND		0.00100	1	08/20/2023 17:14	WG2117589
Bromoform	ND		0.00100	1	08/20/2023 17:14	WG2117589
Bromomethane	ND		0.00500	1	08/20/2023 17:14	WG2117589
Carbon disulfide	ND		0.00100	1	08/20/2023 17:14	WG2117589
Carbon tetrachloride	ND		0.00100	1	08/20/2023 17:14	WG2117589
Chlorobenzene	ND		0.00100	1	08/20/2023 17:14	WG2117589
Chlorodibromomethane	ND		0.00100	1	08/20/2023 17:14	WG2117589
Chloroethane	ND		0.00500	1	08/20/2023 17:14	WG2117589
Chloroform	ND		0.00500	1	08/20/2023 17:14	WG2117589
Chloromethane	ND		0.00250	1	08/20/2023 17:14	WG2117589
Dibromomethane	ND		0.00100	1	08/20/2023 17:14	WG2117589
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/20/2023 17:14	WG2117589
1,2-Dibromoethane	ND		0.00100	1	08/20/2023 17:14	WG2117589
1,2-Dichlorobenzene	ND		0.00100	1	08/20/2023 17:14	WG2117589
1,4-Dichlorobenzene	ND		0.00100	1	08/20/2023 17:14	WG2117589
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/20/2023 17:14	WG2117589
1,1-Dichloroethane	ND		0.00100	1	08/20/2023 17:14	WG2117589
1,2-Dichloroethane	ND		0.00100	1	08/20/2023 17:14	WG2117589
1,1-Dichloroethene	ND		0.00100	1	08/20/2023 17:14	WG2117589
cis-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 17:14	WG2117589
trans-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 17:14	WG2117589
1,2-Dichloropropane	ND		0.00100	1	08/20/2023 17:14	WG2117589
cis-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 17:14	WG2117589
trans-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 17:14	WG2117589
Ethylbenzene	ND		0.00100	1	08/20/2023 17:14	WG2117589
2-Hexanone	ND		0.0100	1	08/20/2023 17:14	WG2117589
Iodomethane	ND		0.0100	1	08/20/2023 17:14	WG2117589
2-Butanone (MEK)	ND		0.0100	1	08/20/2023 17:14	WG2117589
Methylene Chloride	ND		0.00500	1	08/20/2023 17:14	WG2117589
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/20/2023 17:14	WG2117589
Styrene	ND		0.00100	1	08/20/2023 17:14	WG2117589
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 17:14	WG2117589
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 17:14	WG2117589
Tetrachloroethene	ND		0.00100	1	08/20/2023 17:14	WG2117589
Toluene	ND		0.00100	1	08/20/2023 17:14	WG2117589
1,1,1-Trichloroethane	ND		0.00100	1	08/20/2023 17:14	WG2117589

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	08/20/2023 17:14	WG2117589
Trichloroethene	ND		0.00100	1	08/20/2023 17:14	WG2117589
Trichlorofluoromethane	ND		0.00500	1	08/20/2023 17:14	WG2117589
1,2,3-Trichloropropane	ND		0.00250	1	08/20/2023 17:14	WG2117589
Vinyl acetate	ND	<u>J3</u>	0.0100	1	08/20/2023 17:14	WG2117589
Vinyl chloride	ND		0.00100	1	08/20/2023 17:14	WG2117589
Xylenes, Total	ND		0.00300	1	08/20/2023 17:14	WG2117589
<i>(S) Toluene-d8</i>	112		80.0-120		08/20/2023 17:14	WG2117589
<i>(S) 4-Bromofluorobenzene</i>	96.6		77.0-126		08/20/2023 17:14	WG2117589
<i>(S) 1,2-Dichloroethane-d4</i>	106		70.0-130		08/20/2023 17:14	WG2117589

- 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		0.0000206	1.03	08/23/2023 04:55	WG2118334
1,2-Dibromo-3-Chloropropane	ND		0.0000206	1.03	08/23/2023 04:55	WG2118334

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	71.0		2.50	1	08/28/2023 23:52	WG2117793

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	08/24/2023 12:00	WG2119660

Sample Narrative:

L1648028-05 WG2119660: 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	08/21/2023 15:34	WG2117621

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	08/21/2023 01:58	WG2117708

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/22/2023 16:17	WG2118554
Chloride	49.1		1.00	1	08/22/2023 16:17	WG2118554
Fluoride	ND		0.150	1	08/22/2023 16:17	WG2118554
Nitrate	1.35	T8	0.100	1	08/22/2023 16:17	WG2118554
Sulfate	ND		5.00	1	08/22/2023 16:17	WG2118554

Mercury by Method 7470A

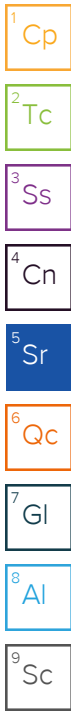
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2023 12:04	WG2119567

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	08/28/2023 19:03	WG2117778

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	08/28/2023 23:52	WG2117793
Antimony	ND		0.00400	1	08/28/2023 23:52	WG2117793
Arsenic	ND		0.00200	1	08/28/2023 23:52	WG2117793
Barium	0.0157		0.00200	1	08/28/2023 23:52	WG2117793
Beryllium	ND		0.00200	1	08/28/2023 23:52	WG2117793
Cadmium	ND		0.00100	1	08/28/2023 23:52	WG2117793
Calcium	19.4		1.00	1	08/28/2023 23:52	WG2117793
Chromium	ND		0.00200	1	08/28/2023 23:52	WG2117793
Cobalt	ND		0.00200	1	08/28/2023 23:52	WG2117793
Copper	ND		0.00500	1	08/28/2023 23:52	WG2117793



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	08/28/2023 23:52	WG2117793
Lead	ND		0.00200	1	08/28/2023 23:52	WG2117793
Magnesium	5.47		1.00	1	08/28/2023 23:52	WG2117793
Manganese	0.00571		0.00500	1	08/28/2023 23:52	WG2117793
Nickel	ND		0.00200	1	08/28/2023 23:52	WG2117793
Potassium	ND		2.00	1	08/28/2023 23:52	WG2117793
Selenium	ND		0.00200	1	08/28/2023 23:52	WG2117793
Silver	ND		0.00200	1	08/28/2023 23:52	WG2117793
Sodium	4.71		2.00	1	08/28/2023 23:52	WG2117793
Thallium	ND		0.00200	1	08/28/2023 23:52	WG2117793
Vanadium	ND		0.00500	1	08/28/2023 23:52	WG2117793
Zinc	ND		0.0250	1	08/28/2023 23:52	WG2117793

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	08/20/2023 17:37	WG2117589
Acrylonitrile	ND		0.0100	1	08/20/2023 17:37	WG2117589
Benzene	ND		0.00100	1	08/20/2023 17:37	WG2117589
Bromochloromethane	ND		0.00100	1	08/20/2023 17:37	WG2117589
Bromodichloromethane	ND		0.00100	1	08/20/2023 17:37	WG2117589
Bromoform	ND		0.00100	1	08/20/2023 17:37	WG2117589
Bromomethane	ND		0.00500	1	08/20/2023 17:37	WG2117589
Carbon disulfide	ND		0.00100	1	08/20/2023 17:37	WG2117589
Carbon tetrachloride	ND		0.00100	1	08/20/2023 17:37	WG2117589
Chlorobenzene	ND		0.00100	1	08/20/2023 17:37	WG2117589
Chlorodibromomethane	ND		0.00100	1	08/20/2023 17:37	WG2117589
Chloroethane	ND		0.00500	1	08/20/2023 17:37	WG2117589
Chloroform	ND		0.00500	1	08/20/2023 17:37	WG2117589
Chloromethane	ND		0.00250	1	08/20/2023 17:37	WG2117589
Dibromomethane	ND		0.00100	1	08/20/2023 17:37	WG2117589
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/20/2023 17:37	WG2117589
1,2-Dibromoethane	ND		0.00100	1	08/20/2023 17:37	WG2117589
1,2-Dichlorobenzene	ND		0.00100	1	08/20/2023 17:37	WG2117589
1,4-Dichlorobenzene	ND		0.00100	1	08/20/2023 17:37	WG2117589
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/20/2023 17:37	WG2117589
1,1-Dichloroethane	ND		0.00100	1	08/20/2023 17:37	WG2117589
1,2-Dichloroethane	ND		0.00100	1	08/20/2023 17:37	WG2117589
1,1-Dichloroethene	ND		0.00100	1	08/20/2023 17:37	WG2117589
cis-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 17:37	WG2117589
trans-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 17:37	WG2117589
1,2-Dichloropropane	ND		0.00100	1	08/20/2023 17:37	WG2117589
cis-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 17:37	WG2117589
trans-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 17:37	WG2117589
Ethylbenzene	ND		0.00100	1	08/20/2023 17:37	WG2117589
2-Hexanone	ND		0.0100	1	08/20/2023 17:37	WG2117589
Iodomethane	ND		0.0100	1	08/20/2023 17:37	WG2117589
2-Butanone (MEK)	ND		0.0100	1	08/20/2023 17:37	WG2117589
Methylene Chloride	ND		0.00500	1	08/20/2023 17:37	WG2117589
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/20/2023 17:37	WG2117589
Styrene	ND		0.00100	1	08/20/2023 17:37	WG2117589
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 17:37	WG2117589
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 17:37	WG2117589
Tetrachloroethene	ND		0.00100	1	08/20/2023 17:37	WG2117589
Toluene	ND		0.00100	1	08/20/2023 17:37	WG2117589
1,1,1-Trichloroethane	ND		0.00100	1	08/20/2023 17:37	WG2117589

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	08/20/2023 17:37	WG2117589
Trichloroethene	ND		0.00100	1	08/20/2023 17:37	WG2117589
Trichlorofluoromethane	ND		0.00500	1	08/20/2023 17:37	WG2117589
1,2,3-Trichloropropane	ND		0.00250	1	08/20/2023 17:37	WG2117589
Vinyl acetate	ND	<u>J3</u>	0.0100	1	08/20/2023 17:37	WG2117589
Vinyl chloride	ND		0.00100	1	08/20/2023 17:37	WG2117589
Xylenes, Total	ND		0.00300	1	08/20/2023 17:37	WG2117589
<i>(S) Toluene-d8</i>	116		80.0-120		08/20/2023 17:37	WG2117589
<i>(S) 4-Bromofluorobenzene</i>	97.6		77.0-126		08/20/2023 17:37	WG2117589
<i>(S) 1,2-Dichloroethane-d4</i>	101		70.0-130		08/20/2023 17:37	WG2117589

- 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		0.0000204	1.02	08/23/2023 05:08	WG2118334
1,2-Dibromo-3-Chloropropane	ND		0.0000204	1.02	08/23/2023 05:08	WG2118334

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	58.9		2.50	1	08/28/2023 23:55	WG2117793

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	08/23/2023 16:29	WG2119664

Sample Narrative:

L1648028-06 WG2119664: 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	08/21/2023 15:35	WG2117621

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	08/21/2023 01:58	WG2117708

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/22/2023 16:30	WG2118554
Chloride	44.2		1.00	1	08/22/2023 16:30	WG2118554
Fluoride	ND		0.150	1	08/22/2023 16:30	WG2118554
Nitrate	0.769	T8	0.100	1	08/22/2023 16:30	WG2118554
Sulfate	ND		5.00	1	08/22/2023 16:30	WG2118554

Mercury by Method 7470A

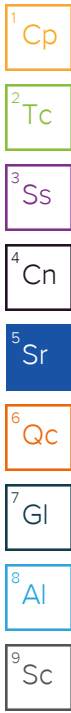
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2023 12:06	WG2119567

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	08/28/2023 19:06	WG2117778

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.201		0.100	1	08/28/2023 23:55	WG2117793
Antimony	ND		0.00400	1	08/28/2023 23:55	WG2117793
Arsenic	ND		0.00200	1	08/28/2023 23:55	WG2117793
Barium	0.0332		0.00200	1	08/28/2023 23:55	WG2117793
Beryllium	ND		0.00200	1	08/28/2023 23:55	WG2117793
Cadmium	ND		0.00100	1	08/28/2023 23:55	WG2117793
Calcium	14.8		1.00	1	08/28/2023 23:55	WG2117793
Chromium	ND		0.00200	1	08/28/2023 23:55	WG2117793
Cobalt	ND		0.00200	1	08/28/2023 23:55	WG2117793
Copper	ND		0.00500	1	08/28/2023 23:55	WG2117793



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.192		0.100	1	08/28/2023 23:55	WG2117793
Lead	ND		0.00200	1	08/28/2023 23:55	WG2117793
Magnesium	5.36		1.00	1	08/28/2023 23:55	WG2117793
Manganese	ND		0.00500	1	08/28/2023 23:55	WG2117793
Nickel	ND		0.00200	1	08/28/2023 23:55	WG2117793
Potassium	ND		2.00	1	08/28/2023 23:55	WG2117793
Selenium	ND		0.00200	1	08/28/2023 23:55	WG2117793
Silver	ND		0.00200	1	08/28/2023 23:55	WG2117793
Sodium	5.86		2.00	1	08/28/2023 23:55	WG2117793
Thallium	ND		0.00200	1	08/28/2023 23:55	WG2117793
Vanadium	ND		0.00500	1	08/28/2023 23:55	WG2117793
Zinc	ND		0.0250	1	08/28/2023 23:55	WG2117793

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	08/20/2023 18:01	WG2117589
Acrylonitrile	ND		0.0100	1	08/20/2023 18:01	WG2117589
Benzene	ND		0.00100	1	08/20/2023 18:01	WG2117589
Bromochloromethane	ND		0.00100	1	08/20/2023 18:01	WG2117589
Bromodichloromethane	ND		0.00100	1	08/20/2023 18:01	WG2117589
Bromoform	ND		0.00100	1	08/20/2023 18:01	WG2117589
Bromomethane	ND		0.00500	1	08/20/2023 18:01	WG2117589
Carbon disulfide	ND		0.00100	1	08/20/2023 18:01	WG2117589
Carbon tetrachloride	ND		0.00100	1	08/20/2023 18:01	WG2117589
Chlorobenzene	ND		0.00100	1	08/20/2023 18:01	WG2117589
Chlorodibromomethane	ND		0.00100	1	08/20/2023 18:01	WG2117589
Chloroethane	ND		0.00500	1	08/20/2023 18:01	WG2117589
Chloroform	ND		0.00500	1	08/20/2023 18:01	WG2117589
Chloromethane	ND		0.00250	1	08/20/2023 18:01	WG2117589
Dibromomethane	ND		0.00100	1	08/20/2023 18:01	WG2117589
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/20/2023 18:01	WG2117589
1,2-Dibromoethane	ND		0.00100	1	08/20/2023 18:01	WG2117589
1,2-Dichlorobenzene	ND		0.00100	1	08/20/2023 18:01	WG2117589
1,4-Dichlorobenzene	ND		0.00100	1	08/20/2023 18:01	WG2117589
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/20/2023 18:01	WG2117589
1,1-Dichloroethane	ND		0.00100	1	08/20/2023 18:01	WG2117589
1,2-Dichloroethane	ND		0.00100	1	08/20/2023 18:01	WG2117589
1,1-Dichloroethene	ND		0.00100	1	08/20/2023 18:01	WG2117589
cis-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 18:01	WG2117589
trans-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 18:01	WG2117589
1,2-Dichloropropane	ND		0.00100	1	08/20/2023 18:01	WG2117589
cis-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 18:01	WG2117589
trans-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 18:01	WG2117589
Ethylbenzene	ND		0.00100	1	08/20/2023 18:01	WG2117589
2-Hexanone	ND		0.0100	1	08/20/2023 18:01	WG2117589
Iodomethane	ND		0.0100	1	08/20/2023 18:01	WG2117589
2-Butanone (MEK)	ND		0.0100	1	08/20/2023 18:01	WG2117589
Methylene Chloride	ND		0.00500	1	08/20/2023 18:01	WG2117589
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/20/2023 18:01	WG2117589
Styrene	ND		0.00100	1	08/20/2023 18:01	WG2117589
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 18:01	WG2117589
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 18:01	WG2117589
Tetrachloroethene	ND		0.00100	1	08/20/2023 18:01	WG2117589
Toluene	ND		0.00100	1	08/20/2023 18:01	WG2117589
1,1,1-Trichloroethane	ND		0.00100	1	08/20/2023 18:01	WG2117589

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	08/20/2023 18:01	WG2117589
Trichloroethene	ND		0.00100	1	08/20/2023 18:01	WG2117589
Trichlorofluoromethane	ND		0.00500	1	08/20/2023 18:01	WG2117589
1,2,3-Trichloropropane	ND		0.00250	1	08/20/2023 18:01	WG2117589
Vinyl acetate	ND	<u>J3</u>	0.0100	1	08/20/2023 18:01	WG2117589
Vinyl chloride	ND		0.00100	1	08/20/2023 18:01	WG2117589
Xylenes, Total	ND		0.00300	1	08/20/2023 18:01	WG2117589
<i>(S) Toluene-d8</i>	115		80.0-120		08/20/2023 18:01	WG2117589
<i>(S) 4-Bromofluorobenzene</i>	98.7		77.0-126		08/20/2023 18:01	WG2117589
<i>(S) 1,2-Dichloroethane-d4</i>	106		70.0-130		08/20/2023 18:01	WG2117589

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

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	08/23/2023 05:59	WG2118334
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/23/2023 05:59	WG2118334

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	78.0		2.50	1	08/28/2023 23:58	WG2117793

1 Cp

2 Tc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	08/23/2023 16:32	WG2119664

3 Ss

4 Cn

Sample Narrative:

L1648028-07 WG2119664: Endpoint pH 4.5 Headspace

5 Sr

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	08/21/2023 15:37	WG2117621

6 Qc

7 Gl

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	08/21/2023 01:59	WG2117708

8 Al

9 Sc

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/22/2023 16:44	WG2118554
Chloride	59.9		1.00	1	08/22/2023 16:44	WG2118554
Fluoride	ND		0.150	1	08/22/2023 16:44	WG2118554
Nitrate	6.91	T8	0.100	1	08/22/2023 16:44	WG2118554
Sulfate	ND		5.00	1	08/22/2023 16:44	WG2118554

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2023 12:08	WG2119567

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	08/28/2023 19:09	WG2117778

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	08/28/2023 23:58	WG2117793
Antimony	ND		0.00400	1	08/28/2023 23:58	WG2117793
Arsenic	ND		0.00200	1	08/28/2023 23:58	WG2117793
Barium	0.0471		0.00200	1	08/28/2023 23:58	WG2117793
Beryllium	ND		0.00200	1	08/28/2023 23:58	WG2117793
Cadmium	ND		0.00100	1	08/28/2023 23:58	WG2117793
Calcium	20.3		1.00	1	08/28/2023 23:58	WG2117793
Chromium	ND		0.00200	1	08/28/2023 23:58	WG2117793
Cobalt	ND		0.00200	1	08/28/2023 23:58	WG2117793
Copper	ND		0.00500	1	08/28/2023 23:58	WG2117793

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	08/28/2023 23:58	WG2117793
Lead	ND		0.00200	1	08/28/2023 23:58	WG2117793
Magnesium	6.65		1.00	1	08/28/2023 23:58	WG2117793
Manganese	0.00953		0.00500	1	08/28/2023 23:58	WG2117793
Nickel	ND		0.00200	1	08/28/2023 23:58	WG2117793
Potassium	ND		2.00	1	08/28/2023 23:58	WG2117793
Selenium	ND		0.00200	1	08/28/2023 23:58	WG2117793
Silver	ND		0.00200	1	08/28/2023 23:58	WG2117793
Sodium	15.1		2.00	1	08/28/2023 23:58	WG2117793
Thallium	ND		0.00200	1	08/28/2023 23:58	WG2117793
Vanadium	ND		0.00500	1	08/28/2023 23:58	WG2117793
Zinc	ND		0.0250	1	08/28/2023 23:58	WG2117793

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	08/20/2023 18:24	WG2117589
Acrylonitrile	ND		0.0100	1	08/20/2023 18:24	WG2117589
Benzene	ND		0.00100	1	08/20/2023 18:24	WG2117589
Bromochloromethane	ND		0.00100	1	08/20/2023 18:24	WG2117589
Bromodichloromethane	ND		0.00100	1	08/20/2023 18:24	WG2117589
Bromoform	ND		0.00100	1	08/20/2023 18:24	WG2117589
Bromomethane	ND		0.00500	1	08/20/2023 18:24	WG2117589
Carbon disulfide	ND		0.00100	1	08/20/2023 18:24	WG2117589
Carbon tetrachloride	ND		0.00100	1	08/20/2023 18:24	WG2117589
Chlorobenzene	ND		0.00100	1	08/20/2023 18:24	WG2117589
Chlorodibromomethane	ND		0.00100	1	08/20/2023 18:24	WG2117589
Chloroethane	ND		0.00500	1	08/20/2023 18:24	WG2117589
Chloroform	ND		0.00500	1	08/20/2023 18:24	WG2117589
Chloromethane	ND		0.00250	1	08/20/2023 18:24	WG2117589
Dibromomethane	ND		0.00100	1	08/20/2023 18:24	WG2117589
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/20/2023 18:24	WG2117589
1,2-Dibromoethane	ND		0.00100	1	08/20/2023 18:24	WG2117589
1,2-Dichlorobenzene	ND		0.00100	1	08/20/2023 18:24	WG2117589
1,4-Dichlorobenzene	ND		0.00100	1	08/20/2023 18:24	WG2117589
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/20/2023 18:24	WG2117589
1,1-Dichloroethane	ND		0.00100	1	08/20/2023 18:24	WG2117589
1,2-Dichloroethane	ND		0.00100	1	08/20/2023 18:24	WG2117589
1,1-Dichloroethene	ND		0.00100	1	08/20/2023 18:24	WG2117589
cis-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 18:24	WG2117589
trans-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 18:24	WG2117589
1,2-Dichloropropane	ND		0.00100	1	08/20/2023 18:24	WG2117589
cis-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 18:24	WG2117589
trans-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 18:24	WG2117589
Ethylbenzene	ND		0.00100	1	08/20/2023 18:24	WG2117589
2-Hexanone	ND		0.0100	1	08/20/2023 18:24	WG2117589
Iodomethane	ND		0.0100	1	08/20/2023 18:24	WG2117589
2-Butanone (MEK)	ND		0.0100	1	08/20/2023 18:24	WG2117589
Methylene Chloride	ND		0.00500	1	08/20/2023 18:24	WG2117589
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/20/2023 18:24	WG2117589
Styrene	ND		0.00100	1	08/20/2023 18:24	WG2117589
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 18:24	WG2117589
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 18:24	WG2117589
Tetrachloroethene	ND		0.00100	1	08/20/2023 18:24	WG2117589
Toluene	ND		0.00100	1	08/20/2023 18:24	WG2117589
1,1,1-Trichloroethane	ND		0.00100	1	08/20/2023 18:24	WG2117589

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	08/20/2023 18:24	WG2117589
Trichloroethene	ND		0.00100	1	08/20/2023 18:24	WG2117589
Trichlorofluoromethane	ND		0.00500	1	08/20/2023 18:24	WG2117589
1,2,3-Trichloropropane	ND		0.00250	1	08/20/2023 18:24	WG2117589
Vinyl acetate	ND	<u>J3</u>	0.0100	1	08/20/2023 18:24	WG2117589
Vinyl chloride	ND		0.00100	1	08/20/2023 18:24	WG2117589
Xylenes, Total	ND		0.00300	1	08/20/2023 18:24	WG2117589
<i>(S) Toluene-d8</i>	114		80.0-120		08/20/2023 18:24	WG2117589
<i>(S) 4-Bromofluorobenzene</i>	99.4		77.0-126		08/20/2023 18:24	WG2117589
<i>(S) 1,2-Dichloroethane-d4</i>	104		70.0-130		08/20/2023 18:24	WG2117589

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	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000208	1.04	08/23/2023 06:11	WG2118334
1,2-Dibromo-3-Chloropropane	ND		0.0000208	1.04	08/23/2023 06:11	WG2118334

DUPLICATE

SAMPLE RESULTS - 08

Collected date/time: 08/17/23 00:00

L1648028

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	58.7		2.50	1	08/29/2023 00:02	WG2117793

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	08/23/2023 16:34	WG2119664

Sample Narrative:

L1648028-08 WG2119664: 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	08/21/2023 15:38	WG2117621

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	08/23/2023 23:18	WG2119753

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/22/2023 16:58	WG2118554
Chloride	44.2		1.00	1	08/22/2023 16:58	WG2118554
Fluoride	ND		0.150	1	08/22/2023 16:58	WG2118554
Nitrate	0.771	T8	0.100	1	08/22/2023 16:58	WG2118554
Sulfate	ND		5.00	1	08/22/2023 16:58	WG2118554

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2023 12:14	WG2119567

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	08/28/2023 16:52	WG2117778

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.217		0.100	1	08/29/2023 00:02	WG2117793
Antimony	ND		0.00400	1	08/29/2023 00:02	WG2117793
Arsenic	ND		0.00200	1	08/29/2023 00:02	WG2117793
Barium	0.0335		0.00200	1	08/29/2023 00:02	WG2117793
Beryllium	ND		0.00200	1	08/29/2023 00:02	WG2117793
Cadmium	ND		0.00100	1	08/29/2023 00:02	WG2117793
Calcium	14.6		1.00	1	08/29/2023 00:02	WG2117793
Chromium	ND		0.00200	1	08/29/2023 00:02	WG2117793
Cobalt	ND		0.00200	1	08/29/2023 00:02	WG2117793
Copper	ND		0.00500	1	08/29/2023 00:02	WG2117793

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

DUPLICATE

SAMPLE RESULTS - 08

Collected date/time: 08/17/23 00:00

L1648028

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.189		0.100	1	08/29/2023 00:02	WG2117793
Lead	ND		0.00200	1	08/29/2023 00:02	WG2117793
Magnesium	5.37		1.00	1	08/29/2023 00:02	WG2117793
Manganese	ND		0.00500	1	08/29/2023 00:02	WG2117793
Nickel	ND		0.00200	1	08/29/2023 00:02	WG2117793
Potassium	ND		2.00	1	08/29/2023 00:02	WG2117793
Selenium	ND		0.00200	1	08/29/2023 00:02	WG2117793
Silver	ND		0.00200	1	08/29/2023 00:02	WG2117793
Sodium	5.78		2.00	1	08/29/2023 00:02	WG2117793
Thallium	ND		0.00200	1	08/29/2023 00:02	WG2117793
Vanadium	ND		0.00500	1	08/29/2023 00:02	WG2117793
Zinc	ND		0.0250	1	08/29/2023 00:02	WG2117793

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

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	08/20/2023 18:47	WG2117589
Acrylonitrile	ND		0.0100	1	08/20/2023 18:47	WG2117589
Benzene	ND		0.00100	1	08/20/2023 18:47	WG2117589
Bromochloromethane	ND		0.00100	1	08/20/2023 18:47	WG2117589
Bromodichloromethane	ND		0.00100	1	08/20/2023 18:47	WG2117589
Bromoform	ND		0.00100	1	08/20/2023 18:47	WG2117589
Bromomethane	ND		0.00500	1	08/20/2023 18:47	WG2117589
Carbon disulfide	ND		0.00100	1	08/20/2023 18:47	WG2117589
Carbon tetrachloride	ND		0.00100	1	08/20/2023 18:47	WG2117589
Chlorobenzene	ND		0.00100	1	08/20/2023 18:47	WG2117589
Chlorodibromomethane	ND		0.00100	1	08/20/2023 18:47	WG2117589
Chloroethane	ND		0.00500	1	08/20/2023 18:47	WG2117589
Chloroform	ND		0.00500	1	08/20/2023 18:47	WG2117589
Chloromethane	ND		0.00250	1	08/20/2023 18:47	WG2117589
Dibromomethane	ND		0.00100	1	08/20/2023 18:47	WG2117589
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/20/2023 18:47	WG2117589
1,2-Dibromoethane	ND		0.00100	1	08/20/2023 18:47	WG2117589
1,2-Dichlorobenzene	ND		0.00100	1	08/20/2023 18:47	WG2117589
1,4-Dichlorobenzene	ND		0.00100	1	08/20/2023 18:47	WG2117589
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/20/2023 18:47	WG2117589
1,1-Dichloroethane	ND		0.00100	1	08/20/2023 18:47	WG2117589
1,2-Dichloroethane	ND		0.00100	1	08/20/2023 18:47	WG2117589
1,1-Dichloroethene	ND		0.00100	1	08/20/2023 18:47	WG2117589
cis-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 18:47	WG2117589
trans-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 18:47	WG2117589
1,2-Dichloropropane	ND		0.00100	1	08/20/2023 18:47	WG2117589
cis-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 18:47	WG2117589
trans-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 18:47	WG2117589
Ethylbenzene	ND		0.00100	1	08/20/2023 18:47	WG2117589
2-Hexanone	ND		0.0100	1	08/20/2023 18:47	WG2117589
Iodomethane	ND		0.0100	1	08/20/2023 18:47	WG2117589
2-Butanone (MEK)	ND		0.0100	1	08/20/2023 18:47	WG2117589
Methylene Chloride	ND		0.00500	1	08/20/2023 18:47	WG2117589
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/20/2023 18:47	WG2117589
Styrene	ND		0.00100	1	08/20/2023 18:47	WG2117589
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 18:47	WG2117589
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 18:47	WG2117589
Tetrachloroethene	ND		0.00100	1	08/20/2023 18:47	WG2117589
Toluene	ND		0.00100	1	08/20/2023 18:47	WG2117589
1,1,1-Trichloroethane	ND		0.00100	1	08/20/2023 18:47	WG2117589

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	08/20/2023 18:47	WG2117589
Trichloroethene	ND		0.00100	1	08/20/2023 18:47	WG2117589
Trichlorofluoromethane	ND		0.00500	1	08/20/2023 18:47	WG2117589
1,2,3-Trichloropropane	ND		0.00250	1	08/20/2023 18:47	WG2117589
Vinyl acetate	ND	<u>J3</u>	0.0100	1	08/20/2023 18:47	WG2117589
Vinyl chloride	ND		0.00100	1	08/20/2023 18:47	WG2117589
Xylenes, Total	ND		0.00300	1	08/20/2023 18:47	WG2117589
<i>(S) Toluene-d8</i>	114		80.0-120		08/20/2023 18:47	WG2117589
<i>(S) 4-Bromofluorobenzene</i>	96.4		77.0-126		08/20/2023 18:47	WG2117589
<i>(S) 1,2-Dichloroethane-d4</i>	103		70.0-130		08/20/2023 18:47	WG2117589

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		0.0000204	1.02	08/23/2023 06:24	WG2118334
1,2-Dibromo-3-Chloropropane	ND		0.0000204	1.02	08/23/2023 06:24	WG2118334

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	ND		2.50	1	08/29/2023 00:05	WG2117793

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	08/23/2023 16:37	WG2119664

Sample Narrative:

L1648028-09 WG2119664: 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	08/21/2023 15:41	WG2117621

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	08/23/2023 23:18	WG2119753

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	08/22/2023 17:12	WG2118554
Chloride	ND		1.00	1	08/22/2023 17:12	WG2118554
Fluoride	ND		0.150	1	08/22/2023 17:12	WG2118554
Nitrate	ND	T8	0.100	1	08/22/2023 17:12	WG2118554
Sulfate	ND		5.00	1	08/22/2023 17:12	WG2118554

Mercury by Method 7470A

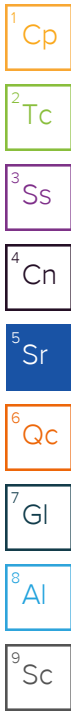
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/31/2023 12:16	WG2119567

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	08/28/2023 16:55	WG2117778

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	08/29/2023 00:05	WG2117793
Antimony	ND		0.00400	1	08/29/2023 00:05	WG2117793
Arsenic	ND		0.00200	1	08/29/2023 00:05	WG2117793
Barium	ND		0.00200	1	08/29/2023 00:05	WG2117793
Beryllium	ND		0.00200	1	08/29/2023 00:05	WG2117793
Cadmium	ND		0.00100	1	08/29/2023 00:05	WG2117793
Calcium	ND		1.00	1	08/29/2023 00:05	WG2117793
Chromium	ND		0.00200	1	08/29/2023 00:05	WG2117793
Cobalt	ND		0.00200	1	08/29/2023 00:05	WG2117793
Copper	ND		0.00500	1	08/29/2023 00:05	WG2117793



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	08/29/2023 00:05	WG2117793
Lead	ND		0.00200	1	08/29/2023 00:05	WG2117793
Magnesium	ND		1.00	1	08/29/2023 00:05	WG2117793
Manganese	ND		0.00500	1	08/29/2023 00:05	WG2117793
Nickel	ND		0.00200	1	08/29/2023 00:05	WG2117793
Potassium	ND		2.00	1	08/29/2023 00:05	WG2117793
Selenium	ND		0.00200	1	08/29/2023 00:05	WG2117793
Silver	ND		0.00200	1	08/29/2023 00:05	WG2117793
Sodium	ND		2.00	1	08/29/2023 00:05	WG2117793
Thallium	ND		0.00200	1	08/29/2023 00:05	WG2117793
Vanadium	ND		0.00500	1	08/29/2023 00:05	WG2117793
Zinc	ND		0.0250	1	08/29/2023 00:05	WG2117793

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

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	08/20/2023 19:10	WG2117589
Acrylonitrile	ND		0.0100	1	08/20/2023 19:10	WG2117589
Benzene	ND		0.00100	1	08/20/2023 19:10	WG2117589
Bromochloromethane	ND		0.00100	1	08/20/2023 19:10	WG2117589
Bromodichloromethane	ND		0.00100	1	08/20/2023 19:10	WG2117589
Bromoform	ND		0.00100	1	08/20/2023 19:10	WG2117589
Bromomethane	ND		0.00500	1	08/20/2023 19:10	WG2117589
Carbon disulfide	ND		0.00100	1	08/20/2023 19:10	WG2117589
Carbon tetrachloride	ND		0.00100	1	08/20/2023 19:10	WG2117589
Chlorobenzene	ND		0.00100	1	08/20/2023 19:10	WG2117589
Chlorodibromomethane	ND		0.00100	1	08/20/2023 19:10	WG2117589
Chloroethane	ND		0.00500	1	08/20/2023 19:10	WG2117589
Chloroform	ND		0.00500	1	08/20/2023 19:10	WG2117589
Chloromethane	ND		0.00250	1	08/20/2023 19:10	WG2117589
Dibromomethane	ND		0.00100	1	08/20/2023 19:10	WG2117589
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/20/2023 19:10	WG2117589
1,2-Dibromoethane	ND		0.00100	1	08/20/2023 19:10	WG2117589
1,2-Dichlorobenzene	ND		0.00100	1	08/20/2023 19:10	WG2117589
1,4-Dichlorobenzene	ND		0.00100	1	08/20/2023 19:10	WG2117589
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/20/2023 19:10	WG2117589
1,1-Dichloroethane	ND		0.00100	1	08/20/2023 19:10	WG2117589
1,2-Dichloroethane	ND		0.00100	1	08/20/2023 19:10	WG2117589
1,1-Dichloroethene	ND		0.00100	1	08/20/2023 19:10	WG2117589
cis-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 19:10	WG2117589
trans-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 19:10	WG2117589
1,2-Dichloropropane	ND		0.00100	1	08/20/2023 19:10	WG2117589
cis-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 19:10	WG2117589
trans-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 19:10	WG2117589
Ethylbenzene	ND		0.00100	1	08/20/2023 19:10	WG2117589
2-Hexanone	ND		0.0100	1	08/20/2023 19:10	WG2117589
Iodomethane	ND		0.0100	1	08/20/2023 19:10	WG2117589
2-Butanone (MEK)	ND		0.0100	1	08/20/2023 19:10	WG2117589
Methylene Chloride	ND		0.00500	1	08/20/2023 19:10	WG2117589
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/20/2023 19:10	WG2117589
Styrene	ND		0.00100	1	08/20/2023 19:10	WG2117589
1,1,1,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 19:10	WG2117589
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 19:10	WG2117589
Tetrachloroethene	ND		0.00100	1	08/20/2023 19:10	WG2117589
Toluene	ND		0.00100	1	08/20/2023 19:10	WG2117589
1,1,1-Trichloroethane	ND		0.00100	1	08/20/2023 19:10	WG2117589

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	08/20/2023 19:10	WG2117589
Trichloroethene	ND		0.00100	1	08/20/2023 19:10	WG2117589
Trichlorofluoromethane	ND		0.00500	1	08/20/2023 19:10	WG2117589
1,2,3-Trichloropropane	ND		0.00250	1	08/20/2023 19:10	WG2117589
Vinyl acetate	ND	<u>J3</u>	0.0100	1	08/20/2023 19:10	WG2117589
Vinyl chloride	ND		0.00100	1	08/20/2023 19:10	WG2117589
Xylenes, Total	ND		0.00300	1	08/20/2023 19:10	WG2117589
<i>(S) Toluene-d8</i>	115		80.0-120		08/20/2023 19:10	WG2117589
<i>(S) 4-Bromofluorobenzene</i>	95.4		77.0-126		08/20/2023 19:10	WG2117589
<i>(S) 1,2-Dichloroethane-d4</i>	104		70.0-130		08/20/2023 19:10	WG2117589

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	08/23/2023 06:37	WG2118334
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/23/2023 06:37	WG2118334

7 Gl

8 Al

9 Sc

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	08/20/2023 14:32	WG2117589
Acrylonitrile	ND		0.0100	1	08/20/2023 14:32	WG2117589
Benzene	ND		0.00100	1	08/20/2023 14:32	WG2117589
Bromochloromethane	ND		0.00100	1	08/20/2023 14:32	WG2117589
Bromodichloromethane	ND		0.00100	1	08/20/2023 14:32	WG2117589
Bromoform	ND		0.00100	1	08/20/2023 14:32	WG2117589
Bromomethane	ND		0.00500	1	08/20/2023 14:32	WG2117589
Carbon disulfide	ND		0.00100	1	08/20/2023 14:32	WG2117589
Carbon tetrachloride	ND		0.00100	1	08/20/2023 14:32	WG2117589
Chlorobenzene	ND		0.00100	1	08/20/2023 14:32	WG2117589
Chlorodibromomethane	ND		0.00100	1	08/20/2023 14:32	WG2117589
Chloroethane	ND		0.00500	1	08/20/2023 14:32	WG2117589
Chloroform	ND		0.00500	1	08/20/2023 14:32	WG2117589
Chloromethane	ND		0.00250	1	08/20/2023 14:32	WG2117589
Dibromomethane	ND		0.00100	1	08/20/2023 14:32	WG2117589
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	08/20/2023 14:32	WG2117589
1,2-Dibromoethane	ND		0.00100	1	08/20/2023 14:32	WG2117589
1,2-Dichlorobenzene	ND		0.00100	1	08/20/2023 14:32	WG2117589
1,4-Dichlorobenzene	ND		0.00100	1	08/20/2023 14:32	WG2117589
trans-1,4-Dichloro-2-butene	ND		0.00250	1	08/20/2023 14:32	WG2117589
1,1-Dichloroethane	ND		0.00100	1	08/20/2023 14:32	WG2117589
1,2-Dichloroethane	ND		0.00100	1	08/20/2023 14:32	WG2117589
1,1-Dichloroethene	ND		0.00100	1	08/20/2023 14:32	WG2117589
cis-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 14:32	WG2117589
trans-1,2-Dichloroethene	ND		0.00100	1	08/20/2023 14:32	WG2117589
1,2-Dichloropropane	ND		0.00100	1	08/20/2023 14:32	WG2117589
cis-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 14:32	WG2117589
trans-1,3-Dichloropropene	ND		0.00100	1	08/20/2023 14:32	WG2117589
Ethylbenzene	ND		0.00100	1	08/20/2023 14:32	WG2117589
2-Hexanone	ND		0.0100	1	08/20/2023 14:32	WG2117589
Iodomethane	ND		0.0100	1	08/20/2023 14:32	WG2117589
2-Butanone (MEK)	ND		0.0100	1	08/20/2023 14:32	WG2117589
Methylene Chloride	ND		0.00500	1	08/20/2023 14:32	WG2117589
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	08/20/2023 14:32	WG2117589
Styrene	ND		0.00100	1	08/20/2023 14:32	WG2117589
1,1,1-Tetrachloroethane	ND		0.00100	1	08/20/2023 14:32	WG2117589
1,1,2,2-Tetrachloroethane	ND		0.00100	1	08/20/2023 14:32	WG2117589
Tetrachloroethene	ND		0.00100	1	08/20/2023 14:32	WG2117589
Toluene	ND		0.00100	1	08/20/2023 14:32	WG2117589
1,1,1-Trichloroethane	ND		0.00100	1	08/20/2023 14:32	WG2117589
1,1,2-Trichloroethane	ND		0.00100	1	08/20/2023 14:32	WG2117589
Trichloroethene	ND		0.00100	1	08/20/2023 14:32	WG2117589
Trichlorofluoromethane	ND		0.00500	1	08/20/2023 14:32	WG2117589
1,2,3-Trichloropropane	ND		0.00250	1	08/20/2023 14:32	WG2117589
Vinyl acetate	ND	J3	0.0100	1	08/20/2023 14:32	WG2117589
Vinyl chloride	ND		0.00100	1	08/20/2023 14:32	WG2117589
Xylenes, Total	ND		0.00300	1	08/20/2023 14:32	WG2117589
(S) Toluene-d8	115		80.0-120		08/20/2023 14:32	WG2117589
(S) 4-Bromofluorobenzene	97.3		77.0-126		08/20/2023 14:32	WG2117589
(S) 1,2-Dichloroethane-d4	102		70.0-130		08/20/2023 14:32	WG2117589

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3964928-2 08/24/23 09:46

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

Sample Narrative:

BLANK: Endpoint pH 4.5

L1647772-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1647772-06 08/24/23 10:26 • (DUP) R3964928-3 08/24/23 10:29

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	62.5	62.6	1	0.185		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1648913-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1648913-11 08/24/23 12:09 • (DUP) R3964928-4 08/24/23 12:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	94.4	97.4	1	3.10		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3964928-1 08/24/23 09:39

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	102	102	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5



Method Blank (MB)

(MB) R3964744-2 08/23/23 16:15

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

Sample Narrative:

BLANK: Endpoint pH 4.5

L1648056-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1648056-01 08/23/23 16:41 • (DUP) R3964744-3 08/23/23 16:46

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	30.5	31.1	1	2.03		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1648356-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1648356-04 08/23/23 17:51 • (DUP) R3964744-4 08/23/23 17:56

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

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3964744-1 08/23/23 16:10

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

Sample Narrative:

LCS: Endpoint pH 4.5



Method Blank (MB)

(MB) R3963444-1 08/21/23 14:55

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1648028-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1648028-03 08/21/23 15:25 • (DUP) R3963444-5 08/21/23 15:26

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

L1648028-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1648028-09 08/21/23 15:41 • (DUP) R3963444-7 08/21/23 15:43

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) R3963444-2 08/21/23 14:56

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Ammonia Nitrogen	7.50	7.23	96.3	90.0-110	

L1648028-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1648028-02 08/21/23 15:20 • (MS) R3963444-3 08/21/23 15:22 • (MSD) R3963444-4 08/21/23 15:23

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Ammonia Nitrogen	5.00	ND	5.25	5.23	105	105	1	90.0-110			0.363	10

L1648028-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1648028-08 08/21/23 15:38 • (MS) R3963444-6 08/21/23 15:40

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Ammonia Nitrogen	5.00	ND	5.16	103	1	90.0-110	

Method Blank (MB)

(MB) R3963130-1 08/21/23 01:50

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

L1647158-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1647158-01 08/21/23 01:51 • (DUP) R3963130-3 08/21/23 01:51

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	37.7	36.8	1	2.46		20

L1648028-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1648028-01 08/21/23 01:56 • (DUP) R3963130-6 08/21/23 01:56

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) R3963130-2 08/21/23 01:50

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
COD	500	470	94.0	90.0-110	

L1647162-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1647162-01 08/21/23 01:51 • (MS) R3963130-4 08/21/23 01:51 • (MSD) R3963130-5 08/21/23 01:51

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	527	532	105	106	1	90.0-110			1.09	20

Method Blank (MB)

(MB) R3964704-1 08/23/23 23:17

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1648423-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1648423-01 08/23/23 23:19 • (DUP) R3964704-3 08/23/23 23:19

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	485	485	1	0.128		20

L1648562-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1648562-01 08/23/23 23:20 • (DUP) R3964704-6 08/23/23 23:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	ND	ND	1	1.48		20

Laboratory Control Sample (LCS)

(LCS) R3964704-2 08/23/23 23:17

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
COD	500	478	95.6	90.0-110	

L1648446-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1648446-02 08/23/23 23:20 • (MS) R3964704-4 08/23/23 23:20 • (MSD) R3964704-5 08/23/23 23:20

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	523	522	101	101	1	90.0-110			0.341	20

Method Blank (MB)

(MB) R3963933-1 08/19/23 10:09

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1648028-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1648028-01 08/19/23 22:04 • (DUP) R3963933-3 08/19/23 22:17

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	1.87	1.90	1	1.45		15
Fluoride	ND	ND	1	200	P1	15
Nitrate	ND	ND	1	0.000		15
Sulfate	ND	ND	1	11.0		15

Laboratory Control Sample (LCS)

(LCS) R3963933-2 08/19/23 10:22

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	39.1	97.7	80.0-120	
Chloride	40.0	39.2	98.1	80.0-120	
Fluoride	8.00	7.68	96.0	80.0-120	
Nitrate	8.00	7.73	96.7	80.0-120	
Sulfate	40.0	39.0	97.4	80.0-120	

L1648028-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1648028-01 08/19/23 22:04 • (MS) R3963933-4 08/19/23 22:29 • (MSD) R3963933-5 08/19/23 22:42

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Bromide	50.0	ND	48.0	49.8	96.1	99.7	1	80.0-120			3.68	15
Chloride	50.0	1.87	50.4	50.8	97.1	97.9	1	80.0-120			0.823	15
Fluoride	5.00	ND	4.90	5.03	98.0	101	1	80.0-120			2.60	15
Nitrate	5.00	ND	4.69	4.89	93.7	97.9	1	80.0-120			4.32	15
Sulfate	50.0	ND	51.5	51.6	97.7	98.1	1	80.0-120			0.345	15

Method Blank (MB)

(MB) R3963903-1 08/22/23 09:52

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

L1647981-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1647981-01 08/22/23 13:12 • (DUP) R3963903-3 08/22/23 15:08

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	181	182	1	0.344		15
Fluoride	0.979	0.997	1	1.91		15
Nitrate	16.6	16.6	1	0.234		15
Sulfate	123	123	1	0.0997		15

L1648309-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1648309-01 08/22/23 19:56 • (DUP) R3963903-6 08/22/23 20:38

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	44.4	44.3	1	0.119		15
Fluoride	0.399	0.398	1	0.226		15
Nitrate	ND	ND	1	0.000		15
Sulfate	42.0	42.1	1	0.200		15

Laboratory Control Sample (LCS)

(LCS) R3963903-2 08/22/23 10:05

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	39.0	97.6	80.0-120	
Chloride	40.0	38.3	95.8	80.0-120	
Fluoride	8.00	7.82	97.7	80.0-120	
Nitrate	8.00	7.44	93.0	80.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3963903-2 08/22/23 10:05

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Sulfate	40.0	38.7	96.8	80.0-120	

L1647981-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1647981-01 08/22/23 13:12 • (MS) R3963903-4 08/22/23 15:22 • (MSD) R3963903-5 08/22/23 15:35

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	43.5	43.6	87.0	87.2	1	80.0-120			0.251	15
Chloride	50.0	181	221	222	79.9	80.5	1	80.0-120	<u>E J6</u>	<u>E</u>	0.122	15
Fluoride	5.00	0.979	5.80	5.81	96.3	96.6	1	80.0-120			0.205	15
Nitrate	5.00	16.6	20.4	20.5	76.8	76.9	1	80.0-120	<u>E J6</u>	<u>E J6</u>	0.0288	15
Sulfate	50.0	123	163	163	80.4	81.3	1	80.0-120			0.273	15

L1648309-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1648309-01 08/22/23 19:56 • (MS) R3963903-7 08/22/23 20:51

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	44.5	89.0	1	80.0-120	
Chloride	50.0	44.4	90.3	91.8	1	80.0-120	
Fluoride	5.00	0.399	5.94	111	1	80.0-120	
Nitrate	5.00	ND	4.23	84.5	1	80.0-120	
Sulfate	50.0	42.0	86.4	88.8	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) R3967928-1 08/31/23 11:51

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Mercury	U		0.000100	0.000200

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3967928-2 08/31/23 11:53

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Mercury	0.00300	0.00295	98.3	80.0-120	

4 Cn

5 Sr

6 Qc

L1648198-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1648198-03 08/31/23 11:55 • (MS) R3967928-3 08/31/23 11:57 • (MSD) R3967928-4 08/31/23 11:58

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Mercury	0.00300	ND	0.00303	0.00300	101	99.9	1	75.0-125			1.01	20

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3967617-1 08/30/23 13:27

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3967617-5 08/30/23 15:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00260	86.7	80.0-120	

4 Cn

5 Sr

L1647956-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1647956-01 08/30/23 13:31 • (MS) R3967617-3 08/30/23 13:33 • (MSD) R3967617-4 08/30/23 13:35

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	0.00277	0.00159	92.3	53.1	1	75.0-125		J3 J6	54.0	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3966500-1 08/28/23 18:11

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3966500-2 08/28/23 18:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.947	94.7	80.0-120	

4 Cn

5 Sr

L1647871-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1647871-01 08/28/23 18:16 • (MS) R3966500-4 08/28/23 18:22 • (MSD) R3966500-5 08/28/23 18:24

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	1.03	1.03	96.5	96.4	1	75.0-125			0.0730	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3966570-1 08/28/23 23:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum	U		0.0185	0.100
Antimony	U		0.00103	0.00400
Arsenic	U		0.000180	0.00200
Barium	U		0.000381	0.00200
Beryllium	U		0.000190	0.00200
Cadmium	U		0.000150	0.00100
Calcium	U		0.0936	1.00
Chromium	U		0.00124	0.00200
Cobalt	U		0.0000596	0.00200
Copper	U		0.00151	0.00500
Iron	U		0.0281	0.100
Lead	U		0.000849	0.00200
Magnesium	U		0.0735	1.00
Manganese	U		0.000704	0.00500
Nickel	U		0.000816	0.00200
Potassium	U		0.108	2.00
Selenium	U		0.000300	0.00200
Silver	U		0.0000700	0.00200
Sodium	U		0.376	2.00
Thallium	U		0.000121	0.00200
Vanadium	U		0.000664	0.00500
Zinc	U		0.00302	0.0250

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3966570-2 08/28/23 23:17

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	1.00	0.994	99.4	80.0-120	
Antimony	0.0500	0.0498	99.6	80.0-120	
Arsenic	0.0500	0.0505	101	80.0-120	
Barium	0.0500	0.0493	98.6	80.0-120	
Beryllium	0.0500	0.0502	100	80.0-120	
Cadmium	0.0500	0.0514	103	80.0-120	
Calcium	5.00	4.99	99.9	80.0-120	
Chromium	0.0500	0.0491	98.2	80.0-120	
Cobalt	0.0500	0.0498	99.5	80.0-120	
Copper	0.0500	0.0487	97.4	80.0-120	
Iron	1.00	1.00	100	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3966570-2 08/28/23 23:17

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Lead	0.0500	0.0509	102	80.0-120	
Magnesium	5.00	4.86	97.3	80.0-120	
Manganese	0.0500	0.0512	102	80.0-120	
Nickel	0.0500	0.0491	98.1	80.0-120	
Potassium	5.00	4.99	99.8	80.0-120	
Selenium	0.0500	0.0530	106	80.0-120	
Silver	0.0500	0.0505	101	80.0-120	
Sodium	5.00	5.01	100	80.0-120	
Thallium	0.0500	0.0494	98.8	80.0-120	
Vanadium	0.0500	0.0502	100	80.0-120	
Zinc	0.0500	0.0479	95.8	80.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1648028-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1648028-03 08/28/23 23:21 • (MS) R3966570-4 08/28/23 23:28 • (MSD) R3966570-5 08/28/23 23:31

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	1.00	ND	1.13	1.06	103	96.8	1	75.0-125			6.02	20
Antimony	0.0500	ND	0.0505	0.0506	101	101	1	75.0-125			0.0954	20
Arsenic	0.0500	0.00221	0.0541	0.0532	104	102	1	75.0-125			1.65	20
Barium	0.0500	0.0102	0.0603	0.0582	100	95.9	1	75.0-125			3.64	20
Beryllium	0.0500	ND	0.0535	0.0519	107	104	1	75.0-125			2.99	20
Cadmium	0.0500	ND	0.0522	0.0514	104	103	1	75.0-125			1.44	20
Calcium	5.00	6.05	11.3	11.0	105	99.5	1	75.0-125			2.41	20
Chromium	0.0500	ND	0.0510	0.0507	102	101	1	75.0-125			0.533	20
Cobalt	0.0500	ND	0.0513	0.0514	100	100	1	75.0-125			0.0369	20
Copper	0.0500	ND	0.0513	0.0503	103	101	1	75.0-125			1.91	20
Iron	1.00	6.91	8.08	7.71	117	80.2	1	75.0-125			4.72	20
Lead	0.0500	ND	0.0522	0.0511	101	98.4	1	75.0-125			2.21	20
Magnesium	5.00	3.16	8.18	8.01	100	96.9	1	75.0-125			2.07	20
Manganese	0.0500	0.0852	0.137	0.135	104	99.0	1	75.0-125			1.92	20
Nickel	0.0500	ND	0.0499	0.0505	99.7	101	1	75.0-125			1.18	20
Potassium	5.00	ND	5.89	5.73	102	98.4	1	75.0-125			2.72	20
Selenium	0.0500	ND	0.0546	0.0527	109	105	1	75.0-125			3.60	20
Silver	0.0500	ND	0.0523	0.0516	101	99.7	1	75.0-125			1.39	20
Sodium	5.00	3.54	8.76	8.62	104	102	1	75.0-125			1.51	20
Thallium	0.0500	ND	0.0497	0.0484	99.3	96.7	1	75.0-125			2.64	20
Vanadium	0.0500	ND	0.0518	0.0514	101	100	1	75.0-125			0.788	20
Zinc	0.0500	ND	0.0591	0.0735	92.4	121	1	75.0-125		J3	21.7	20

Method Blank (MB)

(MB) R3965443-3 08/20/23 10:54

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
Bromochloromethane	U		0.000128	0.00100
Bromodichloromethane	U		0.000136	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
Dibromomethane	U		0.000122	0.00100
1,2-Dibromo-3-Chloropropane	U		0.000276	0.00500
1,2-Dibromoethane	U		0.000126	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) R3965443-3 08/20/23 10:54

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	116			80.0-120
(S) 4-Bromofluorobenzene	101			77.0-126
(S) 1,2-Dichloroethane-d4	102			70.0-130

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

(LCS) R3965443-1 08/20/23 09:45 • (LCSD) R3965443-2 08/20/23 10:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.0250	0.0293	0.0273	117	109	19.0-160			7.07	27
Acrylonitrile	0.0250	0.0288	0.0264	115	106	55.0-149			8.70	20
Benzene	0.00500	0.00544	0.00516	109	103	70.0-123			5.28	20
Bromochloromethane	0.00500	0.00604	0.00574	121	115	76.0-122			5.09	20
Bromodichloromethane	0.00500	0.00554	0.00486	111	97.2	75.0-120			13.1	20
Bromoform	0.00500	0.00461	0.00432	92.2	86.4	68.0-132			6.49	20
Bromomethane	0.00500	0.00232	0.00233	46.4	46.6	10.0-160			0.430	25
Carbon disulfide	0.00500	0.00500	0.00459	100	91.8	61.0-128			8.55	20
Carbon tetrachloride	0.00500	0.00499	0.00495	99.8	99.0	68.0-126			0.805	20
Chlorobenzene	0.00500	0.00515	0.00497	103	99.4	80.0-121			3.56	20
Chlorodibromomethane	0.00500	0.00507	0.00469	101	93.8	77.0-125			7.79	20
Chloroethane	0.00500	0.00576	0.00540	115	108	47.0-150			6.45	20
Chloroform	0.00500	0.00553	0.00502	111	100	73.0-120			9.67	20
Chloromethane	0.00500	0.00518	0.00479	104	95.8	41.0-142			7.82	20
Dibromomethane	0.00500	0.00535	0.00504	107	101	80.0-120			5.97	20
1,2-Dibromo-3-Chloropropane	0.00500	0.00381	0.00427	76.2	85.4	58.0-134			11.4	20
1,2-Dibromoethane	0.00500	0.00512	0.00488	102	97.6	80.0-122			4.80	20
1,2-Dichlorobenzene	0.00500	0.00501	0.00460	100	92.0	79.0-121			8.53	20
1,4-Dichlorobenzene	0.00500	0.00495	0.00482	99.0	96.4	79.0-120			2.66	20
trans-1,4-Dichloro-2-butene	0.00500	0.00343	0.00349	68.6	69.8	33.0-144			1.73	20
1,1-Dichloroethane	0.00500	0.00558	0.00543	112	109	70.0-126			2.72	20
1,2-Dichloroethane	0.00500	0.00569	0.00516	114	103	70.0-128			9.77	20
1,1-Dichloroethene	0.00500	0.00477	0.00471	95.4	94.2	71.0-124			1.27	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

(LCS) R3965443-1 08/20/23 09:45 • (LCSD) R3965443-2 08/20/23 10:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
cis-1,2-Dichloroethene	0.00500	0.00534	0.00497	107	99.4	73.0-120			7.18	20
trans-1,2-Dichloroethene	0.00500	0.00516	0.00516	103	103	73.0-120			0.000	20
1,2-Dichloropropane	0.00500	0.00528	0.00493	106	98.6	77.0-125			6.86	20
cis-1,3-Dichloropropene	0.00500	0.00533	0.00488	107	97.6	80.0-123			8.81	20
trans-1,3-Dichloropropene	0.00500	0.00507	0.00465	101	93.0	78.0-124			8.64	20
Ethylbenzene	0.00500	0.00512	0.00462	102	92.4	79.0-123			10.3	20
2-Hexanone	0.0250	0.0264	0.0242	106	96.8	67.0-149			8.70	20
Iodomethane	0.0250	0.0199	0.0211	79.6	84.4	33.0-147			5.85	26
2-Butanone (MEK)	0.0250	0.0289	0.0291	116	116	44.0-160			0.690	20
Methylene Chloride	0.00500	0.00561	0.00566	112	113	67.0-120			0.887	20
4-Methyl-2-pentanone (MIBK)	0.0250	0.0269	0.0252	108	101	68.0-142			6.53	20
Styrene	0.00500	0.00476	0.00420	95.2	84.0	73.0-130			12.5	20
1,1,1,2-Tetrachloroethane	0.00500	0.00520	0.00496	104	99.2	75.0-125			4.72	20
1,1,2,2-Tetrachloroethane	0.00500	0.00550	0.00492	110	98.4	65.0-130			11.1	20
Tetrachloroethene	0.00500	0.00496	0.00477	99.2	95.4	72.0-132			3.91	20
Toluene	0.00500	0.00533	0.00508	107	102	79.0-120			4.80	20
1,1,1-Trichloroethane	0.00500	0.00522	0.00496	104	99.2	73.0-124			5.11	20
1,1,2-Trichloroethane	0.00500	0.00590	0.00546	118	109	80.0-120			7.75	20
Trichloroethene	0.00500	0.00521	0.00523	104	105	78.0-124			0.383	20
Trichlorofluoromethane	0.00500	0.00473	0.00484	94.6	96.8	59.0-147			2.30	20
1,2,3-Trichloropropane	0.00500	0.00510	0.00482	102	96.4	73.0-130			5.65	20
Vinyl acetate	0.0250	0.0301	0.0173	120	69.2	11.0-160		J3	54.0	20
Vinyl chloride	0.00500	0.00567	0.00553	113	111	67.0-131			2.50	20
Xylenes, Total	0.0150	0.0154	0.0140	103	93.3	79.0-123			9.52	20
(S) Toluene-d8				113	112	80.0-120				
(S) 4-Bromofluorobenzene				104	103	77.0-126				
(S) 1,2-Dichloroethane-d4				99.6	99.9	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3964336-1 08/23/23 02:35

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

L1648022-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1648022-01 08/23/23 03:27 • (DUP) R3964336-3 08/23/23 03:14

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l	%	%		%
Ethylene Dibromide	ND	ND	1.05	0.000		20
1,2-Dibromo-3-Chloropropane	ND	ND	1.05	0.000		20

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

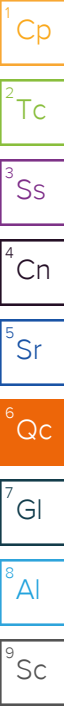
(LCS) R3964336-4 08/23/23 05:33 • (LCSD) R3964336-5 08/23/23 08:23

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	0.000222	0.000241	88.8	96.4	60.0-140			8.21	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000229	0.000223	91.6	89.2	60.0-140			2.65	20

L1648022-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1648022-02 08/23/23 03:01 • (MS) R3964336-2 08/23/23 02:48

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	0.000111	111	1	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000100	ND	0.000106	106	1	72.0-148	



GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

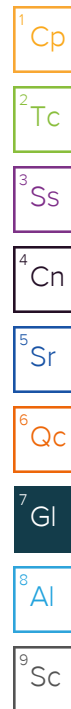
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

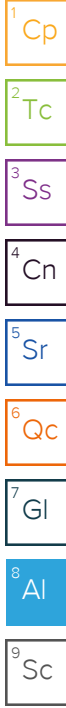
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

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

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



Company Name/Address:
Civil & Environmental Consultants - TN
 117 Seaboard Ln.
 Suite E100
 Franklin, TN 37067

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

Email To: pcampbell@cecinc.com

Report to:
Philip Campbell

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-EWS CAMDEN LF

Collected by (print):
Joseph Dougherty

Site/Facility ID #
CAMDEN, TN

P.O. #


Collected by (signature):
Joseph Dougherty
 Immediately Packed on Ice N ___ Y

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

Quote #
 Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	**WetChem** 250mlHDPE-NoPres	ALK 100ml Amb-NoPres	COD,NH3 250mlHDPE-H2SO4	SV8011 40mlCir-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl	V8260AP1-Trip Blank 40mlAmb-HCl-Blk
MW-1	8048 G	GW	—	8/18/23	11:35	10	X	X	X	X	X	X	
MW-3		GW	—		13:15	10	X	X	X	X	X	X	
MW-4		GW	—		12:20	10	X	X	X	X	X	X	
MW-5		GW	—		14:20	10	X	X	X	X	X	X	
TMW-1		GW	—	8/17/23	13:25	10	X	X	X	X	X	X	
TMW-2		GW	—		12:35	10	X	X	X	X	X	X	
TMW-3		GW	—		11:30	10	X	X	X	X	X	X	
DUPLICATE		GW	—		—	10	X	X	X	X	X	X	
FIELD BLANK		GW	—		13:25	10	X	X	X	X	X	X	
TRIP BLANK		GW	—		—	4							X

Analysis / Container / Preservative	Pres Chk
WetChem 250mlHDPE-NoPres	
ALK 100ml Amb-NoPres	
COD,NH3 250mlHDPE-H2SO4	22
SV8011 40mlCir-NaThio	22
Total Metals,HARD 250mlHDPE-HNO3	
V8260AP1 40mlAmb-HCl	
V8260AP1-Trip Blank 40mlAmb-HCl-Blk	

Chain of Custody Page ___ of ___

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

SDG # **L1648028**
C159
 Acctnum: **CEC**
 Template: **T133579**
 Prelogin: **P1017631**
 PM: **526 - Chris McCord**
 PB: **BF 8/14/23**
 Shipped Via: **Courier**

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

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

Samples returned via:
 UPS ___ FedEx ___ Courier ___
 Tracking #

Sample Receipt Checklist
 COC Seal Present/Intact: 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) <i>Joseph Dougherty</i>	Date: 8/18/23	Time: 17:00	Received by: (Signature) <i>M. [Signature]</i>	Trip Blank Received: <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No HCl/ MeOH TBR
Relinquished by: (Signature) <i>M. [Signature]</i>	Date: 8/19/23	Time: 7:08	Received by: (Signature) <i>[Signature]</i>	Temp: ___ °C Bottles Received: 97
Relinquished by: (Signature) <i>[Signature]</i>	Date: 08.19.23	Time: 0800	Received for lab by: (Signature) <i>[Signature]</i>	Hold: ___ Condition: OK

L1648028

Tracking SWA / Numbers	Temperature
N/A	3.1
	2.8

Civil & Environmental Consultants - TN

Sample Delivery Group: L1647695
Samples Received: 08/18/2023
Project Number: 181-364
Description: EWS Camden Class 2 Landfill
Site: CAMDEN, TN
Report To: Philip Campbell
117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Entire Report Reviewed By:












Chris McCord
Project Manager

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

Pace Analytical National

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

TABLE OF CONTENTS

Cp: Cover Page	1	
Tc: Table of Contents	2	
Ss: Sample Summary	3	
Cn: Case Narrative	4	
Sr: Sample Results	5	
IWC-L L1647695-01	5	
Qc: Quality Control Summary	8	
Wet Chemistry by Method 2320 B-2011	8	
Wet Chemistry by Method 350.1	9	
Wet Chemistry by Method 410.4	10	
Wet Chemistry by Method 9056A	11	
Mercury by Method 7470A	13	
Metals (ICP) by Method 6010B	14	
Metals (ICPMS) by Method 6020A	15	
Volatile Organic Compounds (GC/MS) by Method 8260B	17	
EDB / DBCP by Method 8011	20	
Gl: Glossary of Terms	21	
Al: Accreditations & Locations	22	
Sc: Sample Chain of Custody	23	

SAMPLE SUMMARY

IWC-L L1647695-01 GW

Collected by: Marc Dublin
 Collected date/time: 08/11/23 14:00
 Received date/time: 08/18/23 12:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2117787	1	08/27/23 22:51	08/27/23 22:51	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2118966	1	08/23/23 15:09	08/23/23 15:09	BJM	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2117619	200	08/21/23 12:45	08/21/23 12:45	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2117707	20	08/20/23 20:00	08/21/23 01:45	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2117248	100	08/20/23 00:38	08/20/23 00:38	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2117248	1000	08/20/23 01:22	08/20/23 01:22	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2121945	1	08/28/23 12:03	08/28/23 23:13	AKB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2117774	1	08/23/23 20:28	08/29/23 19:53	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2117787	100	08/23/23 23:26	08/27/23 22:51	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2117787	100	08/23/23 23:26	08/28/23 23:11	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2118221	5	08/22/23 05:20	08/22/23 05:20	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2117298	1	08/19/23 15:37	08/22/23 02:22	AMM	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

CASE NARRATIVE

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



Chris McCord
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	39900		250	1	08/27/2023 22:51	WG2117787

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	08/23/2023 15:09	WG2118966

Sample Narrative:

L1647695-01 WG2118966: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	1760		50.0	200	08/21/2023 12:45	WG2117619

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	4120		400	20	08/21/2023 01:45	WG2117707

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	08/20/2023 00:38	WG2117248
Chloride	67000		1000	1000	08/20/2023 01:22	WG2117248
Fluoride	ND		15.0	100	08/20/2023 00:38	WG2117248
Nitrate	ND	Q	10.0	100	08/20/2023 00:38	WG2117248
Sulfate	864		500	100	08/20/2023 00:38	WG2117248

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	08/28/2023 23:13	WG2121945

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	08/29/2023 19:53	WG2117774

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	191		10.0	100	08/27/2023 22:51	WG2117787
Antimony	ND		0.400	100	08/27/2023 22:51	WG2117787
Arsenic	0.236		0.200	100	08/27/2023 22:51	WG2117787
Barium	2.16		0.200	100	08/27/2023 22:51	WG2117787
Beryllium	ND		0.200	100	08/27/2023 22:51	WG2117787
Cadmium	14.9		0.100	100	08/27/2023 22:51	WG2117787
Calcium	13900		100	100	08/27/2023 22:51	WG2117787
Chromium	ND		0.200	100	08/27/2023 22:51	WG2117787
Cobalt	0.390		0.200	100	08/27/2023 22:51	WG2117787
Copper	1.42		0.500	100	08/27/2023 22:51	WG2117787

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	261		10.0	100	08/27/2023 22:51	WG2117787
Lead	0.683		0.200	100	08/27/2023 22:51	WG2117787
Magnesium	1260		100	100	08/27/2023 22:51	WG2117787
Manganese	62.9		0.500	100	08/27/2023 22:51	WG2117787
Nickel	0.474		0.200	100	08/27/2023 22:51	WG2117787
Potassium	13900		200	100	08/27/2023 22:51	WG2117787
Selenium	ND		0.200	100	08/28/2023 23:11	WG2117787
Silver	ND		0.200	100	08/27/2023 22:51	WG2117787
Sodium	23300		200	100	08/27/2023 22:51	WG2117787
Thallium	ND		0.200	100	08/27/2023 22:51	WG2117787
Vanadium	ND		0.500	100	08/27/2023 22:51	WG2117787
Zinc	204		2.50	100	08/27/2023 22:51	WG2117787

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	1.34		0.250	5	08/22/2023 05:20	WG2118221
Acrylonitrile	ND		0.0500	5	08/22/2023 05:20	WG2118221
Benzene	ND		0.00500	5	08/22/2023 05:20	WG2118221
Bromochloromethane	ND		0.00500	5	08/22/2023 05:20	WG2118221
Bromodichloromethane	ND		0.00500	5	08/22/2023 05:20	WG2118221
Bromoform	ND		0.00500	5	08/22/2023 05:20	WG2118221
Bromomethane	ND		0.0250	5	08/22/2023 05:20	WG2118221
Carbon disulfide	0.311		0.00500	5	08/22/2023 05:20	WG2118221
Carbon tetrachloride	ND		0.00500	5	08/22/2023 05:20	WG2118221
Chlorobenzene	ND		0.00500	5	08/22/2023 05:20	WG2118221
Chlorodibromomethane	ND		0.00500	5	08/22/2023 05:20	WG2118221
Chloroethane	ND		0.0250	5	08/22/2023 05:20	WG2118221
Chloroform	ND		0.0250	5	08/22/2023 05:20	WG2118221
Chloromethane	ND		0.0125	5	08/22/2023 05:20	WG2118221
Dibromomethane	ND		0.00500	5	08/22/2023 05:20	WG2118221
1,2-Dibromo-3-Chloropropane	ND		0.0250	5	08/22/2023 05:20	WG2118221
1,2-Dibromoethane	ND		0.00500	5	08/22/2023 05:20	WG2118221
1,2-Dichlorobenzene	ND		0.00500	5	08/22/2023 05:20	WG2118221
1,4-Dichlorobenzene	ND		0.00500	5	08/22/2023 05:20	WG2118221
trans-1,4-Dichloro-2-butene	ND		0.0125	5	08/22/2023 05:20	WG2118221
1,1-Dichloroethane	ND		0.00500	5	08/22/2023 05:20	WG2118221
1,2-Dichloroethane	ND		0.00500	5	08/22/2023 05:20	WG2118221
1,1-Dichloroethene	ND		0.00500	5	08/22/2023 05:20	WG2118221
cis-1,2-Dichloroethene	ND		0.00500	5	08/22/2023 05:20	WG2118221
trans-1,2-Dichloroethene	ND		0.00500	5	08/22/2023 05:20	WG2118221
1,2-Dichloropropane	ND		0.00500	5	08/22/2023 05:20	WG2118221
cis-1,3-Dichloropropene	ND		0.00500	5	08/22/2023 05:20	WG2118221
trans-1,3-Dichloropropene	ND		0.00500	5	08/22/2023 05:20	WG2118221
Ethylbenzene	ND		0.00500	5	08/22/2023 05:20	WG2118221
2-Hexanone	ND		0.0500	5	08/22/2023 05:20	WG2118221
Iodomethane	ND		0.0500	5	08/22/2023 05:20	WG2118221
2-Butanone (MEK)	0.148		0.0500	5	08/22/2023 05:20	WG2118221
Methylene Chloride	ND		0.0250	5	08/22/2023 05:20	WG2118221
4-Methyl-2-pentanone (MIBK)	ND		0.0500	5	08/22/2023 05:20	WG2118221
Styrene	ND		0.00500	5	08/22/2023 05:20	WG2118221
1,1,1,2-Tetrachloroethane	ND		0.00500	5	08/22/2023 05:20	WG2118221
1,1,2,2-Tetrachloroethane	ND		0.00500	5	08/22/2023 05:20	WG2118221
Tetrachloroethene	ND		0.00500	5	08/22/2023 05:20	WG2118221
Toluene	ND		0.00500	5	08/22/2023 05:20	WG2118221
1,1,1-Trichloroethane	ND		0.00500	5	08/22/2023 05:20	WG2118221

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		0.00500	5	08/22/2023 05:20	WG2118221
Trichloroethene	ND		0.00500	5	08/22/2023 05:20	WG2118221
Trichlorofluoromethane	ND		0.0250	5	08/22/2023 05:20	WG2118221
1,2,3-Trichloropropane	ND		0.0125	5	08/22/2023 05:20	WG2118221
Vinyl acetate	ND		0.0500	5	08/22/2023 05:20	WG2118221
Vinyl chloride	ND		0.00500	5	08/22/2023 05:20	WG2118221
Xylenes, Total	ND		0.0150	5	08/22/2023 05:20	WG2118221
(S) Toluene-d8	106		80.0-120		08/22/2023 05:20	WG2118221
(S) 4-Bromofluorobenzene	87.4		77.0-126		08/22/2023 05:20	WG2118221
(S) 1,2-Dichloroethane-d4	111		70.0-130		08/22/2023 05:20	WG2118221

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	08/22/2023 02:22	WG2117298
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	08/22/2023 02:22	WG2117298

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3964620-2 08/23/23 13:32

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

Sample Narrative:

BLANK: Endpoint pH 4.5

L1647772-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1647772-02 08/23/23 14:09 • (DUP) R3964620-3 08/23/23 14:11

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	39.5	38.7	1	2.00		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1647772-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1647772-03 08/23/23 15:35 • (DUP) R3964620-4 08/23/23 15:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	ND	ND	1	2.61		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3964620-1 08/23/23 13:26

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	98.2	98.2	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5



Method Blank (MB)

(MB) R3963311-1 08/21/23 12:15

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1647544-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1647544-06 08/21/23 12:27 • (DUP) R3963311-5 08/21/23 12:28

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	0.984	0.986	1	0.203		10

L1647971-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1647971-02 08/21/23 13:06 • (DUP) R3963311-7 08/21/23 13:08

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	2.13	2.13	1	0.235		10

Laboratory Control Sample (LCS)

(LCS) R3963311-2 08/21/23 12:16

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Ammonia Nitrogen	7.50	7.25	96.7	90.0-110	

L1647544-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1647544-05 08/21/23 12:22 • (MS) R3963311-3 08/21/23 12:24 • (MSD) R3963311-4 08/21/23 12:25

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	0.314	5.45	5.42	103	102	1	90.0-110			0.552	10

L1647971-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1647971-01 08/21/23 13:03 • (MS) R3963311-6 08/21/23 13:05

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Ammonia Nitrogen	5.00	1.69	6.81	102	1	90.0-110	

Method Blank (MB)

(MB) R3963129-1 08/21/23 01:40

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1647284-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1647284-01 08/21/23 01:42 • (DUP) R3963129-3 08/21/23 01:42

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	180	178	1	0.642		20

L1647864-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1647864-01 08/21/23 01:45 • (DUP) R3963129-6 08/21/23 01:46

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	45.3	48.1	1	5.98		20

Laboratory Control Sample (LCS)

(LCS) R3963129-2 08/21/23 01:40

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
COD	500	471	94.2	90.0-110	

L1647497-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

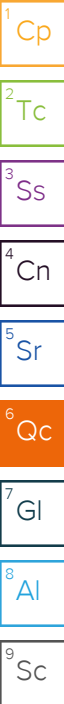
(OS) L1647497-01 08/21/23 01:43 • (MS) R3963129-4 08/21/23 01:43 • (MSD) R3963129-5 08/21/23 01:43

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	549	1050	1050	100	100	1	90.0-110	<u>E</u>	<u>E</u>	0.0381	20

Method Blank (MB)

(MB) R3963739-1 08/19/23 09:58

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



L1647220-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1647220-01 08/19/23 18:40 • (DUP) R3963739-5 08/19/23 19:54

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	22.5	22.4	1	0.495		15
Fluoride	5.77	5.78	1	0.194		15
Nitrate	1.17	1.22	1	4.16		15
Sulfate	84.0	84.0	1	0.0579		15

L1647275-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1647275-03 08/19/23 21:39 • (DUP) R3963739-8 08/19/23 22:53

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	2.32	2.20	1	5.15		15
Chloride	173	174	1	0.0542		15
Fluoride	ND	0.168	1	12.7		15
Nitrate	ND	ND	1	0.000		15
Sulfate	60.1	59.8	1	0.549		15

Laboratory Control Sample (LCS)

(LCS) R3963739-2 08/19/23 10:13

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	42.0	105	80.0-120	
Chloride	40.0	40.3	101	80.0-120	
Fluoride	8.00	8.35	104	80.0-120	
Nitrate	8.00	7.85	98.1	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3963739-2 08/19/23 10:13

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

L1647220-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1647220-01 08/19/23 18:40 • (MS) R3963739-3 08/19/23 19:25 • (MSD) R3963739-4 08/19/23 19:40

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	43.4	43.4	86.8	86.7	1	80.0-120			0.0795	15
Chloride	50.0	22.5	72.6	72.8	100	101	1	80.0-120			0.316	15
Fluoride	5.00	5.77	10.6	10.7	97.6	98.6	1	80.0-120			0.496	15
Nitrate	5.00	1.17	5.52	5.51	87.0	86.8	1	80.0-120			0.205	15
Sulfate	50.0	84.0	129	130	90.6	91.2	1	80.0-120			0.235	15

L1647275-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1647275-03 08/19/23 21:39 • (MS) R3963739-6 08/19/23 22:23 • (MSD) R3963739-7 08/19/23 22:38

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	2.32	43.0	42.7	81.4	80.8	1	80.0-120			0.709	15
Chloride	50.0	173	219	214	91.7	81.3	1	80.0-120	<u>E</u>	<u>E</u>	2.41	15
Fluoride	5.00	ND	5.56	5.55	108	108	1	80.0-120			0.200	15
Nitrate	5.00	ND	4.43	4.39	88.5	87.9	1	80.0-120			0.782	15
Sulfate	50.0	60.1	99.3	99.1	78.4	78.0	1	80.0-120	<u>J6</u>	<u>J6</u>	0.246	15

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3966448-1 08/28/23 22:21

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Mercury	U		0.000100	0.000200

Laboratory Control Sample (LCS)

(LCS) R3966448-5 08/29/23 00:08

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Mercury	0.00300	0.00353	118	80.0-120	

L1647820-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1647820-02 08/28/23 22:26 • (MS) R3966448-3 08/28/23 22:28 • (MSD) R3966448-4 08/28/23 22:30

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Mercury	0.00300	ND	0.000848	0.00104	28.3	34.6	1	75.0-125	<u>J6</u>	<u>J3 J6</u>	20.3	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3965994-1 08/27/23 11:23

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) R3965994-2 08/27/23 11:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.974	97.4	80.0-120	

⁴Cn

⁵Sr

L1647426-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1647426-06 08/27/23 11:28 • (MS) R3965994-4 08/27/23 11:33 • (MSD) R3965994-5 08/27/23 11:36

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	1.01	1.01	96.7	97.2	1	75.0-125			0.446	20

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3965976-1 08/27/23 22:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum	U		0.0185	0.100
Antimony	U		0.00103	0.00400
Arsenic	U		0.000180	0.00200
Barium	U		0.000381	0.00200
Beryllium	U		0.000190	0.00200
Cadmium	U		0.000150	0.00100
Calcium	U		0.0936	1.00
Chromium	U		0.00124	0.00200
Cobalt	U		0.0000596	0.00200
Copper	U		0.00151	0.00500
Iron	U		0.0281	0.100
Lead	U		0.000849	0.00200
Magnesium	U		0.0735	1.00
Manganese	U		0.000704	0.00500
Nickel	U		0.000816	0.00200
Potassium	U		0.108	2.00
Selenium	U		0.000300	0.00200
Silver	U		0.0000700	0.00200
Sodium	U		0.376	2.00
Thallium	U		0.000121	0.00200
Vanadium	U		0.000664	0.00500
Zinc	U		0.00302	0.0250

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3965976-2 08/27/23 22:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	1.00	1.05	105	80.0-120	
Antimony	0.0500	0.0499	99.8	80.0-120	
Arsenic	0.0500	0.0543	109	80.0-120	
Barium	0.0500	0.0509	102	80.0-120	
Beryllium	0.0500	0.0517	103	80.0-120	
Cadmium	0.0500	0.0535	107	80.0-120	
Calcium	5.00	5.31	106	80.0-120	
Chromium	0.0500	0.0533	107	80.0-120	
Cobalt	0.0500	0.0536	107	80.0-120	
Copper	0.0500	0.0495	98.9	80.0-120	
Iron	1.00	1.07	107	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3965976-2 08/27/23 22:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Lead	0.0500	0.0522	104	80.0-120	
Magnesium	5.00	5.25	105	80.0-120	
Manganese	0.0500	0.0545	109	80.0-120	
Nickel	0.0500	0.0537	107	80.0-120	
Potassium	5.00	5.18	104	80.0-120	
Selenium	0.0500	0.0546	109	80.0-120	
Silver	0.0500	0.0512	102	80.0-120	
Sodium	5.00	5.22	104	80.0-120	
Thallium	0.0500	0.0500	99.9	80.0-120	
Vanadium	0.0500	0.0524	105	80.0-120	
Zinc	0.0500	0.0492	98.3	80.0-120	

L1647117-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1647117-24 08/27/23 22:18 • (MS) R3965976-4 08/27/23 22:24 • (MSD) R3965976-5 08/27/23 22:28

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Aluminum	1.00	ND	1.00	1.02	100	102	1	75.0-125			1.78	20
Antimony	0.0500	ND	0.0486	0.0500	97.1	100	1	75.0-125			2.98	20
Arsenic	0.0500	ND	0.0530	0.0527	104	104	1	75.0-125			0.629	20
Barium	0.0500	ND	0.0505	0.0511	97.2	98.4	1	75.0-125			1.12	20
Beryllium	0.0500	ND	0.0529	0.0523	106	105	1	75.0-125			1.05	20
Cadmium	0.0500	ND	0.0527	0.0529	105	106	1	75.0-125			0.422	20
Calcium	5.00	6.29	11.6	11.3	105	100	1	75.0-125			2.36	20
Chromium	0.0500	ND	0.0513	0.0521	103	104	1	75.0-125			1.52	20
Cobalt	0.0500	ND	0.0523	0.0515	105	103	1	75.0-125			1.49	20
Copper	0.0500	ND	0.0502	0.0497	100	99.4	1	75.0-125			0.959	20
Iron	1.00	ND	1.04	1.04	104	104	1	75.0-125			0.731	20
Lead	0.0500	ND	0.0519	0.0510	104	102	1	75.0-125			1.85	20
Magnesium	5.00	2.85	8.16	8.05	106	104	1	75.0-125			1.39	20
Manganese	0.0500	ND	0.0547	0.0526	109	105	1	75.0-125			3.90	20
Nickel	0.0500	ND	0.0510	0.0522	102	104	1	75.0-125			2.49	20
Potassium	5.00	ND	6.60	6.63	102	102	1	75.0-125			0.511	20
Selenium	0.0500	ND	0.0535	0.0528	107	106	1	75.0-125			1.48	20
Silver	0.0500	ND	0.0500	0.0510	100	102	1	75.0-125			1.95	20
Sodium	5.00	9.94	15.9	15.1	119	103	1	75.0-125			5.13	20
Thallium	0.0500	ND	0.0493	0.0489	98.2	97.4	1	75.0-125			0.788	20
Vanadium	0.0500	0.0302	0.0808	0.0798	101	99.2	1	75.0-125			1.25	20
Zinc	0.0500	ND	0.0509	0.0505	102	101	1	75.0-125			0.945	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3964009-2 08/21/23 19:52

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
Bromochloromethane	U		0.000128	0.00100
Bromodichloromethane	U		0.000136	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
Dibromomethane	U		0.000122	0.00100
1,2-Dibromo-3-Chloropropane	U		0.000276	0.00500
1,2-Dibromoethane	U		0.000126	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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3964009-2 08/21/23 19:52

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	107			80.0-120
(S) 4-Bromofluorobenzene	90.8			77.0-126
(S) 1,2-Dichloroethane-d4	118			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3964009-1 08/21/23 19:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.0250	0.0318	127	19.0-160	
Acrylonitrile	0.0250	0.0273	109	55.0-149	
Benzene	0.00500	0.00521	104	70.0-123	
Bromochloromethane	0.00500	0.00490	98.0	76.0-122	
Bromodichloromethane	0.00500	0.00531	106	75.0-120	
Bromoform	0.00500	0.00425	85.0	68.0-132	
Bromomethane	0.00500	0.00238	47.6	10.0-160	
Carbon disulfide	0.00500	0.00556	111	61.0-128	
Carbon tetrachloride	0.00500	0.00495	99.0	68.0-126	
Chlorobenzene	0.00500	0.00477	95.4	80.0-121	
Chlorodibromomethane	0.00500	0.00467	93.4	77.0-125	
Chloroethane	0.00500	0.00514	103	47.0-150	
Chloroform	0.00500	0.00549	110	73.0-120	
Chloromethane	0.00500	0.00438	87.6	41.0-142	
Dibromomethane	0.00500	0.00476	95.2	80.0-120	
1,2-Dibromo-3-Chloropropane	0.00500	0.00387	77.4	58.0-134	
1,2-Dibromoethane	0.00500	0.00475	95.0	80.0-122	
1,2-Dichlorobenzene	0.00500	0.00512	102	79.0-121	
1,4-Dichlorobenzene	0.00500	0.00507	101	79.0-120	
trans-1,4-Dichloro-2-butene	0.00500	0.00453	90.6	33.0-144	
1,1-Dichloroethane	0.00500	0.00519	104	70.0-126	
1,2-Dichloroethane	0.00500	0.00516	103	70.0-128	
1,1-Dichloroethene	0.00500	0.00517	103	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) R3964009-1 08/21/23 19:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
cis-1,2-Dichloroethene	0.00500	0.00489	97.8	73.0-120	
trans-1,2-Dichloroethene	0.00500	0.00531	106	73.0-120	
1,2-Dichloropropane	0.00500	0.00529	106	77.0-125	
cis-1,3-Dichloropropene	0.00500	0.00479	95.8	80.0-123	
trans-1,3-Dichloropropene	0.00500	0.00486	97.2	78.0-124	
Ethylbenzene	0.00500	0.00471	94.2	79.0-123	
2-Hexanone	0.0250	0.0216	86.4	67.0-149	
Iodomethane	0.0250	0.0146	58.4	33.0-147	
2-Butanone (MEK)	0.0250	0.0309	124	44.0-160	
Methylene Chloride	0.00500	0.00555	111	67.0-120	
4-Methyl-2-pentanone (MIBK)	0.0250	0.0228	91.2	68.0-142	
Styrene	0.00500	0.00390	78.0	73.0-130	
1,1,1,2-Tetrachloroethane	0.00500	0.00463	92.6	75.0-125	
1,1,2,2-Tetrachloroethane	0.00500	0.00527	105	65.0-130	
Tetrachloroethene	0.00500	0.00480	96.0	72.0-132	
Toluene	0.00500	0.00485	97.0	79.0-120	
1,1,1-Trichloroethane	0.00500	0.00540	108	73.0-124	
1,1,2-Trichloroethane	0.00500	0.00509	102	80.0-120	
Trichloroethene	0.00500	0.00487	97.4	78.0-124	
Trichlorofluoromethane	0.00500	0.00621	124	59.0-147	
1,2,3-Trichloropropane	0.00500	0.00506	101	73.0-130	
Vinyl acetate	0.0250	0.0284	114	11.0-160	
Vinyl chloride	0.00500	0.00520	104	67.0-131	
Xylenes, Total	0.0150	0.0138	92.0	79.0-123	
<i>(S) Toluene-d8</i>			104	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			96.1	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			114	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) R3963704-1 08/21/23 21:34

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

L1647249-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1647249-01 08/21/23 22:44 • (DUP) R3963704-3 08/21/23 22:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l	%	%		%
Ethylene Dibromide	ND	ND	1.1	0.000		20
1,2-Dibromo-3-Chloropropane	ND	ND	1.1	0.000		20

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

(LCS) R3963704-4 08/22/23 00:53 • (LCSD) R3963704-5 08/22/23 03:40

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	0.000223	0.000225	89.2	90.0	60.0-140			0.893	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000256	0.000251	102	100	60.0-140			1.97	20

L1647249-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1647249-02 08/21/23 22:19 • (MS) R3963704-2 08/21/23 22:06

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	mg/l	mg/l	mg/l	%		%	
Ethylene Dibromide	0.000107	ND	0.000118	110	1.07	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000107	ND	0.000131	122	1.07	72.0-148	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J3	The associated batch QC was outside the established quality control range for precision.
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.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

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

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



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	80 Sunny
DATE & TIME	8/18/23 11:10	EVENT FREQUENCY	Quarterly
PURGE METHOD	Peristaltic Pump	FIELD REPRESENTATIVE	J. Daugherty
TOTAL WELL DEPTH (feet)	30.5	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	22.1	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	8.4	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)		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
Initial	22.1	11:15	19.6	5.89	146.1	119.3	5.99	77.5	19.81
.25	22.42	11:20	16.8	5.35	62.4	53.0	2.23	81.5	12.04
.5	22.4	11:25	16.9	5.73	116.7	98.7	1.09	1.4	10.44
.75	22.4	11:30	16.9	5.79	127.4	107.8	0.89	-10.0	9.67
1.0	22.4	11:35	16.9	5.83	135.2	114.2	0.80	-15.6	9.90

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.0	22.4	11:35	16.9	5.83	135.2	114.2	0.80	-15.6	9.90
Preservatives Used	See COL			Sample Characteristics (Odor, Color)			Clear / No odor		
Number of Containers	See COL			Sampler Signature			J. Daugherty		

WELL DATA

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



GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-2
LOCATION	Camden, TN	TEMPERATURE & WEATHER	85 Sunny
DATE & TIME	8/18/23 10:45	EVENT FREQUENCY	Quarterly
PURGE METHOD	NA, parameters only	FIELD REPRESENTATIVE	J. Doughty / M. Dublin
TOTAL WELL DEPTH (feet)	10	SAMPLING EQUIPMENT	Bailer
DEPTH TO WATER (feet)	4.89	IS SAMPLE EQUIPMENT DEDICATED?	No
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	5.11	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
-	4.89	10:50	25.2	6.18	229.9	229.5	4.92	40.2	8.41
Preservatives Used	NA			Sample Characteristics (Odor, Color)			Clear / No odor		
Number of Containers	NK			Sampler Signature			J. Doughty		

WELL DATA

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



GROUNDWATER MONITORING FIELD INFORMATION LOG

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	80 Sunny
DATE & TIME	8/18/23 12:35	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	J. Dughey
TOTAL WELL DEPTH (feet)	27	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	14.76	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	12.24	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)		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
Initial	14.76	12:40	22.7	6.14	195.9	184.2	2.43	97.5	13.78
.5	14.73	12:45	24.0	5.91	179.9	170.5	0.72	-3.4	9.29
1.0	14.80	12:50	24.1	6.03	168.8	166.0	0.67	-45.6	9.92
1.5	14.80	12:55	24.2	6.11	166.8	164.2	0.62	-71.4	10.6
2.0	14.80	13:00	24.2	6.15	166.3	163.9	0.54	-79.6	11.7
2.5	14.80	13:05	24.2	6.16	165.5	163.2	0.38	-85.0	12.3
3.0	14.80	13:10	24.3	6.18	165.3	162.9	0.34	-87.7	11.5
3.5	14.80	13:15	24.3	6.19	164.9	162.6	0.31	-87.7	9.85

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.5	14.80	13:15	24.3	6.19	164.9	162.6	0.31	-88.7	9.85
Preservatives Used	See LOC			Sample Characteristics (Odor, Color)			Clear / No odor		
Number of Containers	See LOC			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?	Yes



GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-4
LOCATION	Camden, TN	TEMPERATURE & WEATHER	80 Sunny
DATE & TIME	8/18/23 11:55	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	J. Dougherty
TOTAL WELL DEPTH (feet)	23.1	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	10.18	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	12.92	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)		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
Initial	10.18	12:00	17.9	6.15	96.6	83.0	5.21	75.4	300
.5	10.41	12:05	17.1	5.84	93.1	79.0	3.69	112.2	14.0
1.0	10.40	12:10	17.0	5.80	91.0	77.1	2.87	119.9	7.85
1.5	10.40	12:15	17.0	5.77	90.6	76.9	2.75	125.0	2.48
2.0	10.40	12:20	17.0	5.75	90.7	76.8	2.71	127.2	2.66

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
2.0	10.40	12:20	17.0	5.75	90.7	76.8	2.71	127.2	2.66
Preservatives Used	see COC			Sample Characteristics (Odor, Color)			Cloudy / No odor		
Number of Containers	see COC			Sampler Signature			[Signature]		

WELL DATA

Number of Baffles	0	Well Cap Dedicated/In Place?	Y
Lock Condition	Good	Fittings/Well Head Condition	Good
Pad/Casing Quality	Good	Well Clear of Weeds/Accessible?	Yes



GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-5
LOCATION	Camden, TN	TEMPERATURE & WEATHER	80 Sunny
DATE & TIME	8/18/23	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	J. Dangler
TOTAL WELL DEPTH (feet)	33.85	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	8.73	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	25.12	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)		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
Initial	8.73	13:40	19.0	5.32	375.2	326.4	3.12	197.7	8.12
0.5	9.78	13:45	17.0	5.18	345.1	292.0	0.83	149.2	57.1
1.0	10.01	13:50	17.0	5.18	340.4	288.3	0.93	171.4	41.7
1.5	10.05	13:55	17.0	5.18	338.1	286.3	0.95	142.8	34.9
2.0	10.07	14:00	16.9	5.18	332.7	281.5	1.04	149.0	23.4
2.5	10.10	14:05	16.8	5.16	329.3	277.8	1.05	149.3	20.1
3.0	10.10	14:10	16.9	5.17	328.3	274.6	1.04	145.9	15.9
3.5	10.10	14:15	16.8	5.18	326.0	270.0	1.08	142.0	12.8
4.5	10.10	14:20	16.8	5.19	317.0	267.3	1.11	139.9	9.04

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	10.10	14:20	16.8	5.19	317.0	267.3	1.11	139.9	9.04
Preservatives Used	See COC			Sample Characteristics (Odor, Color)			Clear / No odor		
Number of Containers	See COC			Sampler Signature			JD		

WELL DATA

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



GROUNDWATER MONITORING FIELD INFORMATION LOG

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

FACILITY NAME		SITE AND MONITORING WELL DATA	
LOCATION	EWS	MONITORING WELL I.D.	TMW-1
DATE & TIME	Camden, TN	TEMPERATURE & WEATHER	85 Sunny
PURGE METHOD	8/17/23 12:55	EVENT FREQUENCY	Quarterly
TOTAL WELL DEPTH (feet)	Low-flow	FIELD REPRESENTATIVE	J. Dangleby / M. Dublin
DEPTH TO WATER (feet)	32.50	SAMPLING EQUIPMENT	Bladder Pump
CASING DIAMETER (inches)	5.20	IS SAMPLE EQUIPMENT DEDICATED?	Yes
WATER COLUMN (feet)	2	DUPLICATE COLLECTED?	N
PURGE VOLUME (gallons)	27.30	FIELD BLANK COLLECTED?	Yes 13:25
	w=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
Initial	5.20	13:00	20.3	5.66	170.5	156.6	4.51	111.5	7.81
.25	7.50	13:05	18.9	5.53	175.2	155.0	2.95	125.0	15.62
.50	7.99	13:10	18.4	5.52	204.7	178.7	3.25	126.9	31.8
.75	8.20	13:15	18.0	5.49	215.9	187.1	2.97	128.5	20.2
1.0	8.20	13:20	18.0	5.49	216.7	187.5	2.96	128.3	11.7
1.25	8.20	13:25	18.0	5.48	217.6	188.4	2.93	127.5	5.81

SAMPLE DATA									
Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.25	8.20	13:25	18.0	5.48	217.6	188.4	2.93	127.5	5.81
Preservatives Used	See Col						Sample Characteristics (Odor, Color)		
Number of Containers	See Col						Sampler Signature		
WELL DATA									
Number of Baffles	Concrete Baffle						Well Cap Dedicated/In Place?		
Lock Condition	N/A						Fittings/Well Head Condition		
Pad/Casing Quality	N/A						Well Clear of Weeds/Accessible?		
							Yes		
							Good		
							Yes		



GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-2
LOCATION	Camden, TN	TEMPERATURE & WEATHER	85 Sunny
DATE & TIME	8/17/23 11:45	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	J. Doughty / M. Dublin
TOTAL WELL DEPTH (feet)	27.50	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	8.68	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	Yes
WATER COLUMN (feet)	18.82	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	V = 3.1	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
Initial	8.68	11:50	21.5	6.04	105.5	96.2	7.10	105.7	3.5
.25	11.70	11:55	18.3	5.33	238.2	207.7	4.44	144.2	49.7
.50	11.38	12:00	18.4	5.41	205.5	179.4	4.53	143.7	35.1
.75	11.40	12:05	18.3	5.42	146.3	170.9	4.69	142.7	21.8
1.0	11.40	12:10	18.4	5.43	194.1	169.7	4.68	142.0	15.8
1.25	11.40	12:15	18.1	5.43	193.7	168.4	4.73	143.0	68.8
1.5	11.40	12:20	18.1	5.44	194.2	168.4	4.75	142.3	56.3
1.75	11.40	12:25	18.2	5.40	194.5	169.5	4.74	145.2	21.2
2.0	11.40	12:30	18.1	5.40	194.7	169.1	4.77	146.6	15.2
2.25	11.40	12:35	18.1	5.41	144.2	168.5	4.76	146.7	9.85

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
2.25	11.40	12:35	18.1	5.41	144.2	168.5	4.76	146.7	9.85
Preservatives Used	See COC			Sample Characteristics (Odor, Color)			Clear / No odor		
Number of Containers	See COC			Sampler Signature			J. Doughty		

WELL DATA

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



GROUNDWATER MONITORING FIELD INFORMATION LOG

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.	TMW-3
LOCATION	Camden, TN	TEMPERATURE & WEATHER	85 Sunny
DATE & TIME	8/17/23 11:05	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	J. Daugherty / M. Dublin
TOTAL WELL DEPTH (feet)	28.00	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	4.32	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	Yes No
WATER COLUMN (feet)	23.68	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	1V = 3.9	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
Initial	4.32	11:10	21.7	6.29	255.7	236.0	3.59	77.3	8.53
.25	5.7	11:15	18.5	5.23	303.4	265.7	0.81	144.7	31.9
.50	5.75	11:20	18.2	5.04	311.2	270.6	0.75	158.6	19.77
.75	5.80	11:25	18.2	5.02	310.6	270.4	0.73	161.2	8.65
1.0	5.80	11:30	18.1	5.03	308.8	268.2	0.72	161.4	6.09

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.0	5.80	11:30	18.1	5.03	308.8	268.2	0.72	161.4	6.09
Preservatives Used	See LOC				Sample Characteristics (Odor, Color)		Clear / No odor from water		
Number of Containers	See LOC				Sampler Signature				

WELL DATA

Number of Baffles	Stone Block	Well Cap Dedicated/In Place?	Yes
Lock Condition	N/A	Fittings/Well Head Condition	Good
Pad/Casing Quality	N/A	Well Clear of Weeds/Accessible?	Yes



GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWVS	MONITORING WELL I.D.	Leachate (APWC)
LOCATION	Camden, TN	TEMPERATURE & WEATHER	
DATE & TIME		EVENT FREQUENCY	Quarterly
PURGE METHOD	Grab	FIELD REPRESENTATIVE	
TOTAL WELL DEPTH (feet)	NA	SAMPLING EQUIPMENT	
DEPTH TO WATER (feet)	NA	IS SAMPLE EQUIPMENT DEDICATED?	No
CASING DIAMETER (inches)	NA	DUPLICATE COLLECTED?	
WATER COLUMN (feet)	NA	FIELD BLANK COLLECTED?	
PURGE VOLUME (gallons)	NA	EQUIPMENT BLANK COLLECTED?	

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
Preservatives Used				Sample Characteristics (Odor, Color)					
Number of Containers				Sampler Signature					

WELL DATA

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

★ Dry



GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	Leachate (IWC)
LOCATION	Camden, TN	TEMPERATURE & WEATHER	85 Sunny
DATE & TIME	8/17/23 13:55	EVENT FREQUENCY	Quarterly
PURGE METHOD	Grab	FIELD REPRESENTATIVE	J. Daugherty / M. Dublin
TOTAL WELL DEPTH (feet)	NA	SAMPLING EQUIPMENT	Grab
DEPTH TO WATER (feet)	NA	IS SAMPLE EQUIPMENT DEDICATED?	No
CASING DIAMETER (inches)	NA	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	NA	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	NA	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
-	-	14:00	30.1	3.31	181134	199097	2.94	272.9	9.86
Preservatives Used	See COC			Sample Characteristics (Odor, Color)					
Number of Containers	See COC			Sampler Signature <i>[Signature]</i>					

WELL DATA

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



EQUIPMENT CALIBRATION LOG

Civil & Environmental Consultants, Inc. 117 Seaboard Lane Suite E-100 Franklin, Tennessee 37067 - 800-763-2326 - www.cecinc.com

EQUIPMENT CALIBRATION FORM

NAME OF REPRESENTATIVE	J. Daugherty	
LOCATION	Former EWS	
DATE AND TIME	8/16/23 15:00	
Equipment and Model # (ex. YSI Pro Plus 556)	YSI Pro	HACH #3
Equipment Serial #		

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	5/13/25	3.88	161.0	160 to 180	Y	4.02	Y
7	7/10/25	7.03	-11.4	+/-50	Y	7.01	Y
10	7/10/25	9.48	-160.8	-160 to -180	Y	9.88	Y

Temperature Calibration Check

Cert. Thermometer Value (deg C)	Meter Value (deg C)
26.5	26.3

DO Calibration

Actual Barometric Pressure	Barometric Pressure (mm Hg)	D.O. Value (% Saturated)	Unit reading (%)	% DO accepted?
29.96	29.96	100	99.6	Y

Specific Conductivity Calibration

Sp. Conductivity Calibration Standard buffer solution	Buffer solution exp. date	Pre Cal Reading (umhos)	Post Cal Reading (umhos)
1409	4/20/25	1369	1410

ORP Calibration

ORP Calibration (mV)	Buffer solution exp. date	Pre Cal Reading (mV)	Post Cal Reading (mV)
220	4/24/24	224.9	219.9

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				