2nd QUARTER 2023 GROUNDWATER ASSESSMENT MONITORING REPORT
MAY 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

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CEC PROJECT 181-364

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EXECUTIVE SUMMARY

This report documents the 2nd quarter 2023 assessment-monitoring event, which was performed at the former Environmental Waste Solutions, LLC (EWS) Camden Class II Landfill on May 25, 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 2nd quarter 2023 sampling event at the facility included the following sampling activities:

Groundwater samples were collected by CEC on May 25, 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 May 25, 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 2nd quarter 2023 groundwater analyses were prepared by Pace and reported to CEC on June 16, 2023 for the groundwater samples and June 14, 2023 for the IWC leachate sample.

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.

Turbidity values measured at MW-1 (15.2 NTU), MW-3 (14.0 NTU), and MW-5 (15.4 NTU) were only slightly above the recommended value of 10 NTU. During previous monitoring events, dissolved metals samples have been collected (in addition to total metals) at locations where observed turbidity values are greater than 10 NTU. According to the current database, each of these monitoring wells has been sampled for dissolved metals analysis (in addition to total metals analysis) at least 10 separate monitoring events. 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, dissolved metals samples were not collected at these locations (in addition to total metals) during this monitoring event.

Nine SSIs were identified over background during this event. SSIs included cadmium (MW-3), chloride (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), zinc (MW-3), and sulfate (MW-3). The observed SSIs during this event were indicated as SSIs during the previous monitoring event. The current cadmium, chloride, zinc, and sulfate detections observed in the 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 is based on the statistical analyses and plots with supporting data as presented within the summary letter report

submitted to TDEC in August 2023. Therefore, CEC requests a change in the former EWS landfill groundwater-assessment monitoring frequency from quarterly to semi-annual monitoring. It is also CEC's opinion that future analysis is no longer necessary for Appendix I VOCs as part of assessment monitoring at this site. The request to reduce the list of constituents for analysis is based on the lack of detections for the given constituents in the historical groundwater database for the landfill.

Glossary of Terms

Appendix I	Refers to the required regulatory sample list of groundwater parameters
CEC	Civil & Environmental Consultants, Inc.
Class I Landfill	Municipal Solid Waste Landfill
Class II Landfill	Industrial Waste Landfill
Class IV Landfill	Construction/Demolition Waste Landfill
Class III/IV Landfill	Landscaping and Construction/Demolition Waste Landfill
DML	Construction Demolition Landfill
US EPA	United States Environmental Protection Agency
Pace	Pace Analytical
EWS	Environmental Waste Solutions
GW	Groundwater
HDPE	High Density Polyethylene
HI	Hydrogeologic Investigation
MCL	Maximum Contaminant Level
microomhos•cm-1	micro-Siemens per centimeter
mg/l	milligrams per Liter
MW	Monitor Well
NPPL	Non-Parametric Prediction Limit Analysis
ORP	Oxidation Reduction Potential
POTW	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. During this May 25, 2023 monitoring event, CEC noted that the 1" diameter PVC casing stick-up at TMW-3 appears to have been cut off to the ground surface. Prior to this monitoring event, the PVC casing at TMW-3 extended approximately 3.5 ft. above the ground surface. The top of the well casing at TMW-3 used as the reference point for collecting DTW measurements is currently near the ground surface and was updated in Table 1 and for potentiometric interpretation. Although the PVC casing appeared to have been cut, the watertight seal (well cap) was functioning as intended to prevent surface water from entering TMW-3. It is unclear how this occurred and should be investigated further to determine if there may be an issue with site security or the integrity of the groundwater sampling.

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

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

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

Top of casing elevation has been determined by a licensed land surveyor and is referenced to the current Tennessee State Plane Coordinate System. The top of casing elevations for all site-

monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3) were updated by a licensed land surveyor on May 12, 2016. Since the top of the PVC well casing at TMW-3 is currently near the ground surface, the top of casing elevation at TMW-3 was updated to reflect the ground surface elevation at TMW-3 recorded by the licensed land surveyor on May 12, 2016. Groundwater elevations and current top of casing elevations are listed in **Appendix A – Table 1 – Field Parameters & Potentiometric Data** and reflect the most recent survey.

2.3 GROUNDWATER FLOW DIRECTION

Groundwater at the landfill appears to generally flow in a southern direction towards Charlie Creek and Cane Creek. Groundwater flow in the vicinity of the former EWS Class II Landfill generally flows from a topographic high north of the landfill towards monitoring wells MW-2, MW-3, MW-4, and MW-5 and temporary monitoring wells TMW-1, TMW-2, and TMW-3, which are all down-gradient of the waste cells.

2.4 POTENTIOMETRIC GRADIENT

The potentiometric surface of the unconfined aquifer occurring beneath the former EWS Class II Landfill occurs at approximately 22 feet below the top of casing at the up-gradient monitor well MW-1 to approximately 11feet below the top of casing at monitor well MW-4. The potentiometric gradient calculated from groundwater elevation data collected on May 25, 2023 is approximately 0.0127 ft./ft.

The potentiometric gradient is calculated according to the following formula:

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

$$\frac{(394.57') - (370.40')}{1{,}910'} = 0.0127 \text{ ft./ft.}$$

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 May 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 at MW-1 (15.2 NTU), MW-3 (14.0 NTU), and MW-5 (15.4 NTU) were slightly above the recommended value of 10 NTU. During previous monitoring events, dissolved metals samples have been collected (in addition to total metals) at locations where observed turbidity values are greater than 10 NTU. According to the current database, each of these monitoring wells has been sampled for dissolved metals analysis (in addition to total metals analysis) at least 10 separate monitoring events. 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, dissolved metals samples were not collected at these locations (in addition to total metals) during this monitoring event.

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

3.3 GROUNDWATER SAMPLE COLLECTION & PRESERVATION

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

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

3.4 LEACHATE SAMPLING PROCEDURES

The amount of leachate produced from the "Industrial Waste Cell (IWC)" and "Aluminum Processing Waste Cell (APWC)" has been minimal since the landfill was capped, and the leachate being pumped from the IWC 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 May 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.

3.5 QUALITY ASSURANCE AND QUALITY CONTROL

3.5.1 Field Quality Assurance and Quality Control

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

A field blank and a duplicate sample were collected during this groundwater-monitoring event. CEC collected a field blank near monitoring well TMW-1 and a duplicate sample was collected from MW-3. The field blank was collected by pouring deionized water into a set of sample bottles provided by the laboratory, thereby allowing any airborne contaminants a chance to enter the field blank sample. The duplicate sample was collected by taking separate samples at MW-3 at the same time.

Pace reported the groundwater QA/QC laboratory analytical results to CEC on June 16, 2023. Laboratory analytical testing of the field blank presented in the analytical report showed that no inorganic constituents were detected above the laboratory PQLs during this May 2023 event. However, two volatile organic compounds (VOCs) were detected above the laboratory PQL in the field blank sample, including bromodichloromethane and chlorodibromomethane. These two VOCs were not detected in any of the groundwater monitoring samples.

The results for the duplicate sample collected from MW-3 were similar to the original MW-3 sample results. The relative percent difference (RPD) between all detected constituent values reported in MW-3 and the duplicate sample were within the acceptable 20% RPD control limit.

3.5.2 Laboratory Quality Assurance and Quality Control

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

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

The 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 2nd 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 not detected above the MCL (0.01 mg/l) at up-gradient MW-1 (0.00456 mg/l) during this second Quarter 2023 event. Arsenic was not detected above the laboratory PQL (<0.002 mg/l) in any of the down-gradient monitoring wells during this May 2023 event, which is consistent with previous sampling events. For this site, the presence of arsenic in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden since there is no immediate development up-gradient of MW-1.

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 May 2023 monitoring event. During the previous quarterly event in January 2023, cadmium (total or dissolved) was not detected at any of the locations, including MW-3. 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)
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

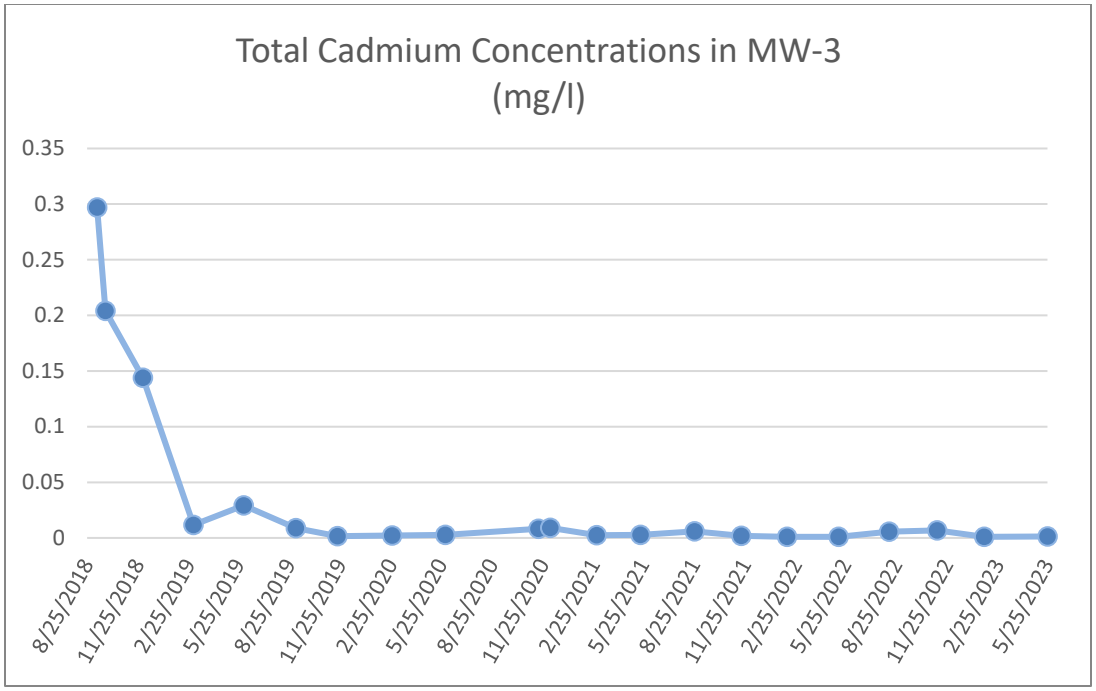


Figure – Cadmium Concentrations in MW-3

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 29 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 or dissolved) was not detected above the laboratory PQL during the previous January 2023 monitoring event, and total cadmium was below the MCL during this May 2023 monitoring event.

Total Cobalt was detected in up-gradient well MW-1 (0.0397 mg/l) and down-gradient MW-3 (0.003 mg/l) and the duplicate sample collected at MW-3 (0.00269 mg/l) during this May 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 May 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, the cobalt concentration observed in down-gradient MW-3 was much lower in concentration. Cobalt was not detected at any of the other down-gradient monitoring well locations during this monitoring event.

Total Chromium was detected in MW-5 (0.00232 mg/l) during the second quarter 2023 sampling event, which was well below the MCL of 0.1 mg/l. Chromium was not detected in any of the other monitoring well locations during this monitoring event.

Total Mercury was detected in up-gradient well MW-1 (0.00188 mg/l) during this May 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 May 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 down-gradient MW-3; and **manganese** in up-gradient well MW-1 and down-gradient wells MW-3 and MW-5. **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** concentration observed in down-gradient well MW-3 (0.351 mg/l) was above the 2DWS (0.2 mg/l). Aluminum was also detected above the PQL but was below the 2DWS in wells MW-5, TMW-2, and TMW-3 during the second quarter 2023 sampling event.

The **Chloride** concentrations reported at MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 during this May 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 at MW-3 (0.176 mg/l) during the second quarter 2023 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 (11.1 mg/l) during this May 2023 monitoring event. Total iron was also detected above the laboratory PQL (<0.100 mg/l) in MW-3 (0.911 mg/l) and MW-5 (0.119mg/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 May 2023 event (6.80 mg/l) is similar to the previous January 2023 (7.17 mg/l) and November 2022 (6.48 mg/l) events. 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 May 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 (0.745 mg/l) and down-gradient wells MW-3 (0.624 mg/l) and MW-5 (0.207 mg/l) during this May 2023 monitoring event. A total manganese concentration below the 2DWS was also detected in MW-4 and TMW-3. 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 (0.00609 mg/l) and down-gradient wells MW-3 (0.0086 mg/l) and MW-5 (0.006616 mg/l) during the May 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 (40.1 mg/l) during this May 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 well MW-5 (17.7 mg/l) during this January 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 (0.0754 mg/l) during the May 2023 event. All reported concentrations of zinc were below the 2DWS for this constituent. Similar zinc concentrations have been reported during previous events, and a no trend in zinc concentrations was 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. Six (6) QC qualifier codes (J, J3, J4, J6, Q, and V) were indicated during the laboratory analysis of groundwater samples collected during the May 2023 event. Specific information concerning each laboratory QC qualifier code can be found on page 50 of 52 in the June 16, 2023 Groundwater Laboratory Analytical Report. No QC qualifier codes were indicated for any of the detected constituents during this monitoring event and did not affect the usability of the data as reported. Six (6) QC qualifier codes (E, J4, J6, P1, Q, and V) were indicated during the laboratory analysis of the leachate samples collected during this May 2023 event. Specific information concerning each laboratory QC qualifier code can be found on page 21 of 23 in the June 14, 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 May 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, 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. With the exception of cobalt, the data distribution tests using the background data set (from MW-1) for all detected constituents in the downgradient wells (aluminum, barium, cadmium, chloride, fluoride, lead, nickel, zinc and sulfate data) indicated that the background data for each constituent are not normally distributed and were evaluated for SSIs using inter-well non-parametric statistical methods. However, the cobalt data at up-gradient 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.

If the background data from up-gradient MW-1 are normally distributed (using normal or log-transformed data), parametric statistical procedures may be used to evaluate SSIs. If the data are normally distributed, the percentage of non-detects in background well MW-1 for each parameter determined the primary statistical method utilized for inter-well analysis. If the background data are normally distributed and < 50% non-detects exist for the given parameter, parametric inter-well prediction limit analysis may be conducted on the data. If the percentage of non-detects in the background samples was less than 50%, Shewart-CUSUM control charts may also be utilized as a secondary statistical method utilized for inter-well analysis. However, since the aluminum, barium, cadmium, chloride, fluoride, lead, 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). For cobalt, inter-well PPL analysis was performed for the transformed cobalt data. 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 ten most recent sets of data (n=10) 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

No statistically significant increases (SSI) were identified in upgradient well MW-1 during the first quarter 2023 sampling event. When considering data since the November 10, 2016 sampling event, a statistically significant upward trend in the barium data from MW-1 was 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, cobalt, nickel, and sulfate concentrations at MW-1. When considering data since the March 2, 2023 sampling event, no statistically significant trends were observed for any of the constituents detected in MW-1, including barium.

SSIs over background identified for the current monitoring event include cadmium at MW-3; chloride at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3; zinc at MW-3; and sulfate at MW-3. No SSIs were identified for the aluminum at MW-3, MW-5, TMW-2, and TMW-3; barium at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3; cobalt at MW-3; lead at MW-3; nickel at MW-3 and MW-5; fluoride at MW-3; 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, MW-5, TMW-1, TMW-2, and TMW-3; and sulfate at MW-5. Trend analysis revealed a downward trend in aluminum concentrations at MW-5 and 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 ten most recent sampling events (n=10) 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 two statistically significant upward trends were observed for the chloride data at MW-4 and TMW-1 using data since March 2, 2021. In addition, two downward trends were indicated for the aluminum concentrations observed in MW-5 and TMW-2. 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 (14.7 mg/l), MW-4 (11.8 mg/l), MW-5 (76.1 mg/l), TMW-1 (47.7 mg/l), TMW-2 (38.3 mg/l), and TMW-3 (63.0 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, TMW-2, and TMW-3 and an upward trend in chloride concentrations at MW-4 and TMW-1.

The zinc concentration observed at MW-3 (0.0754 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 (40.1 mg/l) was lower than the previous January 2023 event and remains below the 2DWS of 250 mg/l. Sulfate was also detected in MW-5 (17.7 mg/l) during this May 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 second quarter assessment-monitoring event of 2023 are summarized as follows:

- SSIs during this May 2023 event included total cadmium (MW-3), chloride (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), zinc (MW-3), and sulfate (MW-3). No SSIs were identified 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 six 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.

- Trend analyses revealed a statistically significant upward trend in barium at MW-4, MW-5, and TMW-3; chloride at MW-4, MW-5, TMW-1, TMW-2, and TMW-3; and sulfate at MW-5. Trend analysis revealed a downward trend in barium concentrations at MW-3; and chloride concentrations at MW-3. There were no distinct statistically significant trends in concentrations for any of the other detected constituents.

- An SSI was identified for the reported sulfate concentration at MW-3. However, the sulfate concentrations at MW-3 do not exhibit a statistically significant increasing or decreasing trend when considering data from MW-3 since November 10, 2016 or 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.

The third quarter 2023 assessment-monitoring event is tentatively scheduled for August 2023 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. 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 third quarter 2023 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 will be performed in conjunction with the monitoring event in November 2023, 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. In addition, semi-annual groundwater samples will continue to be collected from temporary monitoring wells down-gradient from MW-3. However, if the observed constituent of concern concentrations have no significant variation in the overall constituent mean, the assessment monitoring frequency may be re-evaluated. According to the DSWM guidance manual, "At minimum, eight consecutive quarters of groundwater monitoring data should be provided to demonstrate that there has been no significant variation in the overall mean value for any constituent at any sampling location."

2. 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.

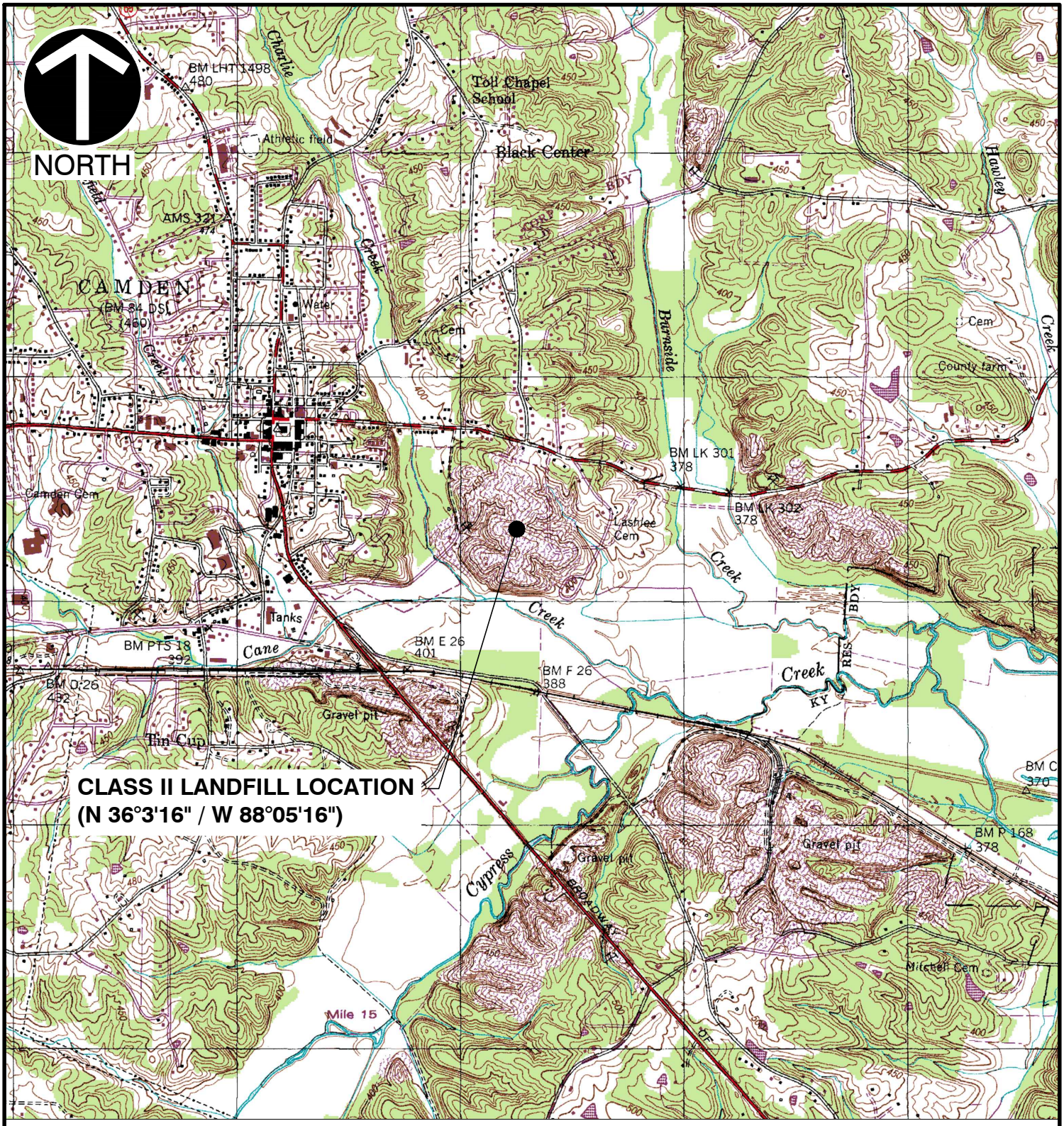
3. Based on a historical review of constituents detected since 2016, it is recommended that certain constituents may be removed from the sampling and monitoring requirements for the groundwater monitoring program. Specifically, it is recommended that bromide and Appendix I VOC analysis may be removed from the periodic monitoring requirements, as described below:

    a. There have been no confirmed bromide detections observed above the PQL (<1.0 mg/l) at any of the up-gradient or down-gradient monitoring wells across the site since 2014. Based on this, bromide is not expected to be observed in groundwater samples during future monitoring events.
    b. There have been no confirmed VOC detections observed at any of the up-gradient or down-gradient monitoring wells across the site since December 2013, when VOC monitoring was added to the monitoring requirements at the Former EWS

Landfill. VOCs are not reasonably expected to be in or derived from the waste contained in the IWC or APWC. Further, VOC constituents have rarely been detected at measurable concentrations in the leachate samples collected from the IWC and the APWC during previous and recent events. During this May 2023 event, only acetone (2.2 mg/l) and MEK (0.289 mg/l) were reported as detections in the IWC leachate sample collected from the IWC-L during this May 2023 event, which are relatively low in concentration. Also, both VOC constituents have been known to be common laboratory contaminants. Therefore, it is recommended that VOC monitoring be removed from the periodic monitoring requirements. Alternatively, VOCs may be monitored on a reduced annual frequency at all monitoring well and leachate sampling locations.

4. 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 is based on the statistical analyses and plots with supporting data as presented within the summary letter report submitted to TDEC in August 2023. Therefore, CEC requests a change in the former EWS landfill groundwater-assessment monitoring frequency from quarterly to semi-annual monitoring. It is also CEC's opinion that future analysis is no longer necessary for Appendix I VOCs as part of assessment monitoring at this site. The request to reduce the list of constituents for analysis is based on the lack of detections for the given constituents in the historical groundwater database for the landfill.

APPENDIX A
MAPS & TABLES



REFERENCE

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

SCALE IN FEET

0 2000' 4000'

* HAND SIGNATURE ON FILE

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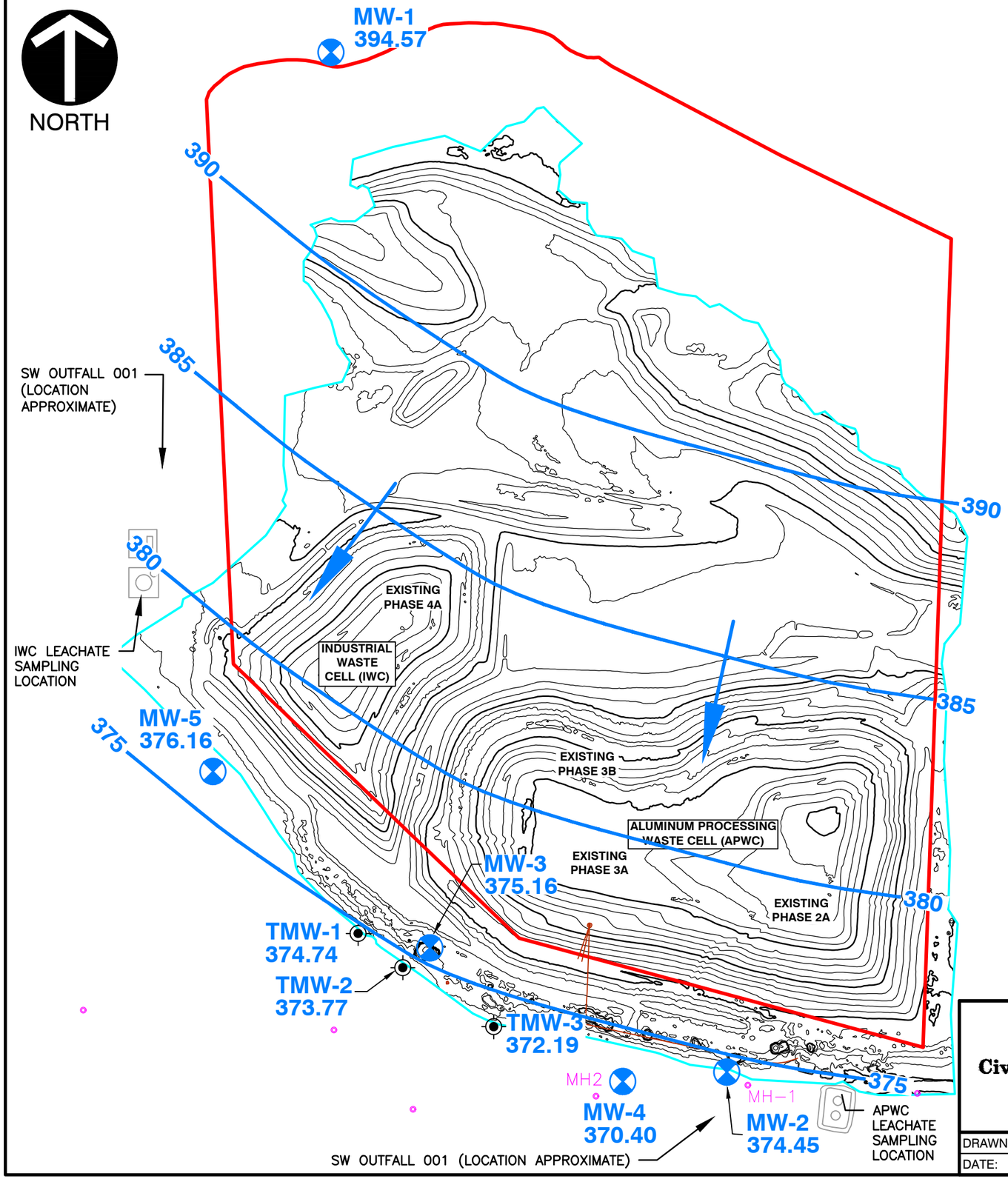
FORMER EWS SITE
CLASS II CAMDEN LANDFILL
CAMDEN, TENNESSEE

SITE LOCATION MAP 2Q2023

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

P:\2018\181-364\-CADD\Dwg\181-364_ FIGURE 1 - SITE LOCATION MAP.dwg[LAYOUT1] LS:(7/19/2023 - pcampbell) - LP: 7/19/2023 9:12 AM



LEGEND

- MW1 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.

$$i = \frac{394.57' \text{ (MW–1)} - 370.40' \text{ (MW–4)}}{1{,}910'} = 0.0127 \text{ ft/ft}$$

GROUNDWATER CONDITIONS

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

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

SCALE IN FEET
0 200 400

*HAND SIGNATURE ON FILE

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FORMER ENVIRONMENTAL WASTE SOLUTIONS
CAMDEN CLASS II LANDFILL
CAMDEN, TENNESSEE

MAY 2023
POTENTIOMETRIC SURFACE MAP

DRAWN BY:	PJC	CHECKED BY:	PJC	APPROVED BY:	*KBW	FIGURE NO.:	2
DATE:	JULY 2023	DWG SCALE:	1"=200'	PROJECT NO:	181-364.0005		

Table 1

Former Environmental Waste Solutions Camden Class II Landfill

Field Parameters and Potentiometric Data - 2nd Quarter 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)	5/25/2023	16:15	416.47	385.97	0.17	1.5	21.90	394.57	16.8	5.3	71.7	84.8	1.4	121.8	15.2
MW-2*	5/25/2023	13:39	380.35	367.70	0.17	1.1	5.90	374.45	19.7	5.7	188.9	210.2	5.57	171.0	5.2
MW-3	5/25/2023	12:15	392.90	365.10	0.17	1.7	17.74	375.16	19.3	6.17	204.5	229.5	0.19	40.3	14.0
MW-4	5/25/2023	14:20	381.47	358.37	0.17	2.0	11.07	370.40	16.8	5.67	77.9	92.1	2.53	164.7	0.83
MW-5	5/25/2023	10:35	385.25	351.40	0.17	4.2	9.09	376.16	12.0	5.06	290.4	343.2	0.53	78.9	15.4
TMW-1	5/25/2023	13:00	381.19	348.99	0.085	1.1	6.45	374.74	17.8	5.29	144.9	226.3	3.21	164.1	7.75
TMW-2	5/25/2023	11:55	384.27	356.77	0.085	0.7	10.50	373.77	17.2	5.27	168.3	197.7	5.05	168.8	9.7
TMW-3**	5/25/2023	10:30	378.14	353.64	0.085	0.8	5.95	372.19	18.3	5.0	289.9	332.6	0.67	130.8	9.4
Leachate (IWC-L)	5/25/2023	14:20	NA	NA	NA	NA	NA	NA	22.7	3.2	>200,000	>200,000	2.3	289.3	134.0
***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 May 25, 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 - 2nd Quarter 2023

Parameter	MCL/GWPS (mg/l)	(upgradient) MW-1	Qualifier	MW-3	Qualifier	Duplicate (MW-3)		MW-4	Qualifier	MW-5	Qualifier	TMW-1	Qualifier	TMW-2	Qualifier	TMW-3	Qualifier	IWC-Leachate*	Qualifier	APWC-Leachate**	Qualifier	Field Blank	Qualifier
		5/25/2023		5/25/2023		5/25/2023		5/25/2023		5/25/2023		5/25/2023		5/25/2023		5/25/2023		5/25/2023		5/25/2023		5/25/2023	
		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	-	**18.8**		**84**		**82.5**		**30.8**		**98.3**		**71.3**		**59.2**		**84.3**		**42,500**		NS**		<2.50	
Alkalinity	-	**36.8**		**42.2**		**42**		**25.3**		**23.8**		<20.0		<20.0		<20.0		<20.0		NS**		<20.0	
Ammonia Nitrogen	-	<0.250		**0.254**		**0.263**		<0.250		<0.250		<0.250		<0.250		<0.250		**1,570**		NS**		<0.250	
COD	-	<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		**13,400**		NS**		<20.0	
Boron	-	<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<1.00		NS**		<0.200	
Bromide	-	<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<100		NS**		<1.00	
Chloride	250 [2]	**2.17**		**14.7**		**14.5**		**11.8**		**76.1**		**47.7**		**38.3**		**63**		**95,600**		NS**		<1.00	
Fluoride	2 [2]	<0.150		**0.176**		**0.168**		<0.150		<0.150		<0.150		<0.150		<0.150		<15.0		NS**		<0.150	
Nitrate	10 [1]	**0.104**		<0.100		<0.100	**Q**	**1.06**		**0.956**		**1.39**		**0.653**		**7.52**		<10.0	**Q**	NS**		<0.100	
Sulfate	250 [2]	<5.00		**40.1**		**39.5**		<5.00		**17.7**		<5.00		<5.00		<5.00		**830**		NS**		<5.00	
Aluminum	0.2 [2]	<0.100		**0.351**		**0.323**		<0.100		**0.12**		<0.100		**0.107**		**0.106**		**275**		NS**		<0.100	
Arsenic	0.01	**0.00456**		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		**0.220**		NS**		<0.00200	
Barium	2	**0.019**		**0.0419**		**0.0421**		**0.00919**		**0.0604**		**0.0141**		**0.0332**		**0.0491**		**2.64**		NS**		<0.00200	
Total Cadmium	0.005	<0.00100		**0.0012**		**0.0012**		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		**11**		NS**		<0.00200	
Calcium	-	**3.36**		**22.4**		**22**		**6.6**		**18.2**		**19.5**		**14.7**		**21.8**		**14,900**		NS**		<0.00100	
Chromium	0.1	<0.00200		<0.00200		<0.00200		<0.00200		**0.00232**		<0.00200		<0.00200		<0.00200		<0.200		NS**		<1.00	
Cobalt	0.006 [3]	**0.0397**		**0.003**		**0.00269**		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		**0.342**		NS**		<0.00200	
Copper	1.3																	**1.69**					
Iron	0.3 [2]	**11.1**		**0.911**		**0.898**		<0.100		**0.119**		<0.100		<0.100		<0.100		**369**		NS**		<0.00500	
Lead	0.015	<0.00200		<0.00200		<0.00200		<0.00200		**0.00297**		<0.00200		<0.00200		<0.00200		**0.794**		NS**		<0.00200	
Magnesium	-	**2.53**		**6.8**		**6.67**		**3.49**		**12.8**		**5.46**		**5.44**		**7.26**		**1,300**		NS**		<1.00	
Manganese	0.05 [2]	**0.745**		**0.625**		**0.631**		**0.014**		**0.344**		<0.00500		<0.00500		**0.0109**		**38.5**		NS**		<0.00500	
Mercury	0.002	**0.00188**		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		NS**		<0.000200	
Nickel	0.10 [1]	**0.00609**		**0.0086**		**0.00846**		<0.00200		**0.00616**		<0.00200		<0.00200		<0.00200		**0.512**		NS**		<0.00200	
Potassium	-	<2.00		**4.35**		**4.31**		<2.00		<2.00		<2.00		<2.00		<2.00		**15,200**		NS**		<2.00	
Sodium	-	**2.47**		**5.79**		**5.64**		**3.62**		**20.6**		**4.44**		**5.54**		**15.9**		**25,100**		NS**		<2.00	
Zinc	5 [2]	<0.0250		**0.0754**		**0.0795**		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		**138**		NS**		<0.0250	
Bromodichloromethane	-	<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.0250		NS**		**0.00129**	
Chlorodibromomethane		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.0250		NS**		**0.00136**	
Acetone	-	<0.0500		<0.0500				<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		**2.2**		NS**		<0.0500	
2-Butanone (MEK)		<0.0100		<0.0100				<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		**0.289**		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:
J1: Surrogate recovery limits have been exceeded; values are outside upper control limits.
B: The same analyte is found in the associated blank

Table 3
Intra-Well and Inter-Well Statistical Summary
Environmental Waste Solutions Camden Class II Landfill IDL 03-0212 (Terminated)
Inorganic Analytical Data - 2nd 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	7.32	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	--	Pass	No	No Trend	No Trend
Nickel	MW-1	26.83	non-parametric	Pass	--	No	No Trend	No Trend
Sulfate	MW-1	56.41	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	60.98	non-parametric	Pass	--	No	No Trend	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend	**Downward Trend**
	TMW-2		non-parametric	Pass	--	No	**Downward Trend**	**Downward Trend**
	TMW-3		non-parametric	Pass	--	No	**Downward Trend**	No Trend
Barium	MW-3	7.32	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**	**Upward Trend**	No Trend
	TMW-1		non-parametric	**Fail**	--	**Yes**	**Upward Trend**	**Upward Trend**
	TMW-2		non-parametric	**Fail**	--	**Yes**	**Upward Trend**	No Trend
	TMW-3		non-parametric	**Fail**	--	**Yes**	**Upward Trend**	No Trend
Cobalt	MW-3	0.00	log-normal	--	Pass	No	No Trend	No Trend
Lead	MW-5	95.12	non-parametric	Pass	--	No	No Trend	No Trend
Flouride	MW-3	96.77	non-parametric	Pass	--	No	No Trend	No Trend
Nickel	MW-3	26.83	non-parametric	Pass	--	No	No Trend	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend	No Trend
Sulfate	MW-3	56.41	non-parametric	**Fail**	--	**Yes**	No Trend	No Trend
	MW-5		non-parametric	Pass	--	No	**Upward Trend**	No Trend
Zinc	MW-3	73.17	non-parametric	**Fail**	--	**Yes**	No Trend	No Trend

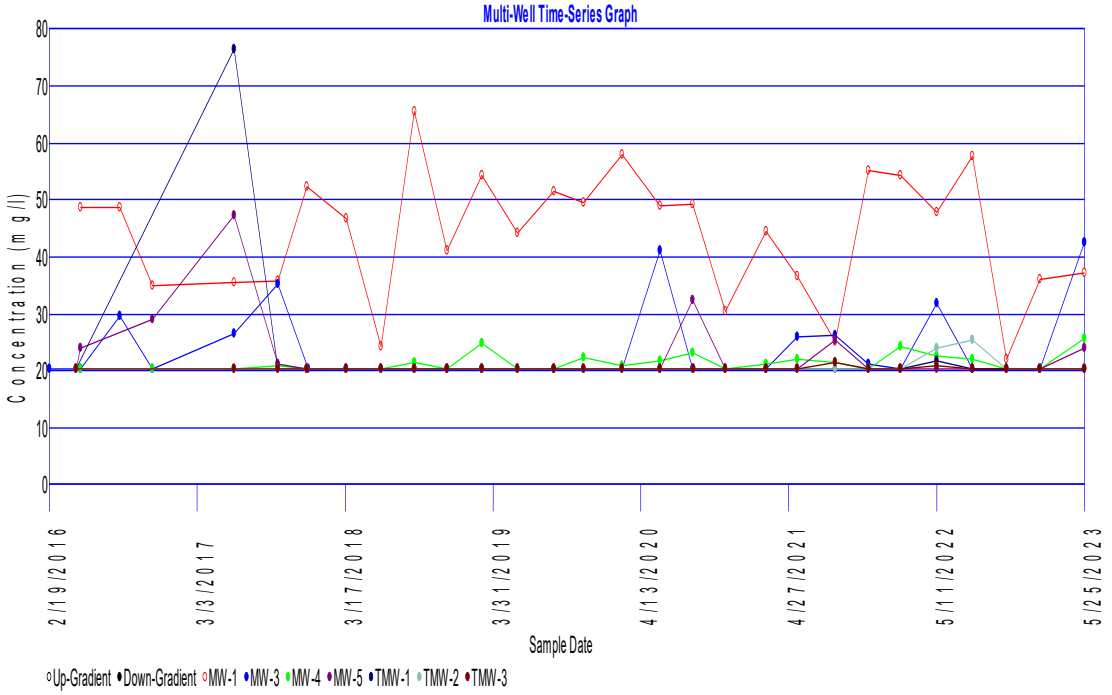
[1] **Mann-Kendall Trend Analysis was completed using recent data since the November 10, 2016 sampling event.**

[2] **Mann-Kendall Trend Analysis was completed using recent data since the March 2, 2021 (n=10)**

APPENDIX B
STATISTICAL EVALUATIONS & TIME SERIES PLOTS

Alkalinity

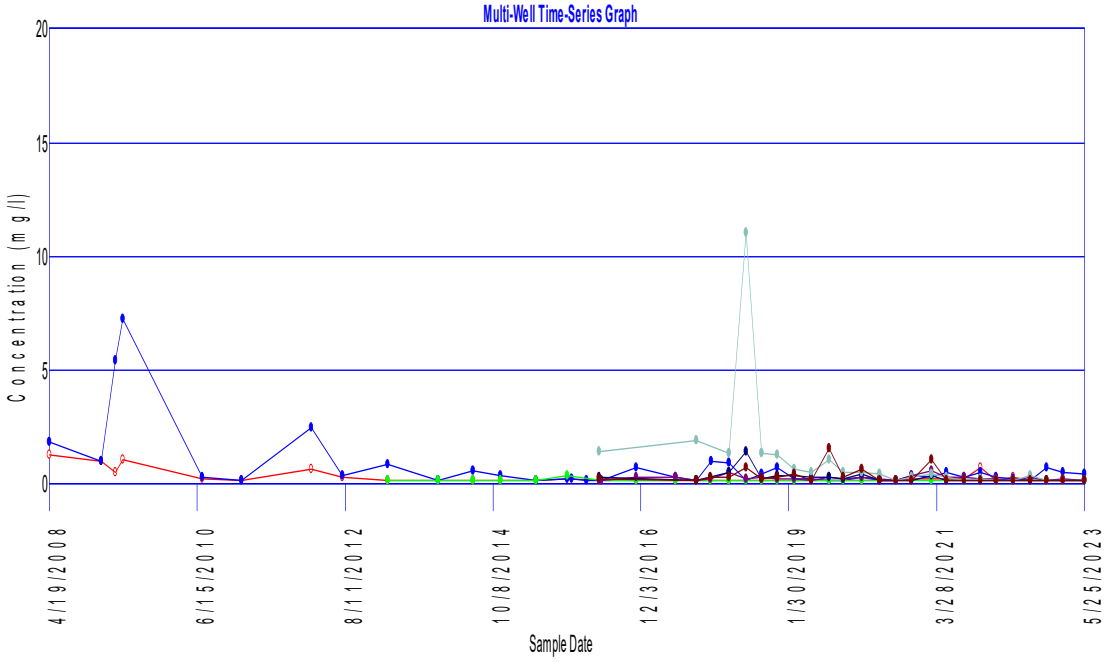
Multi-Well Time-Series Graph



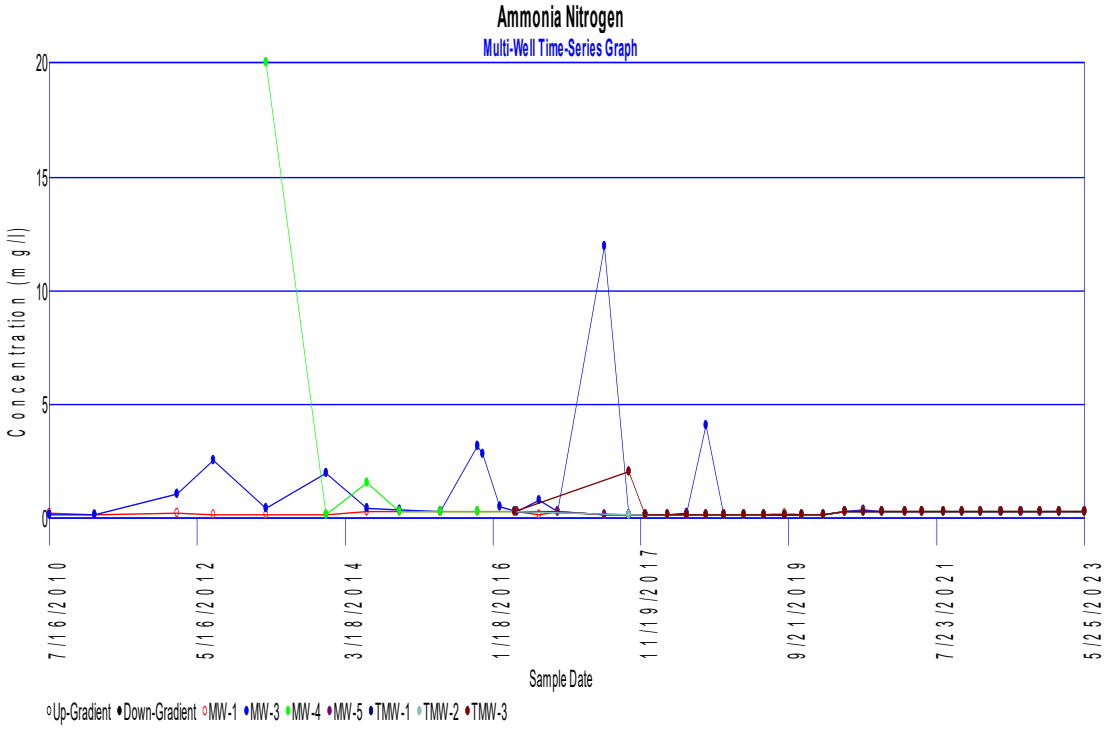
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

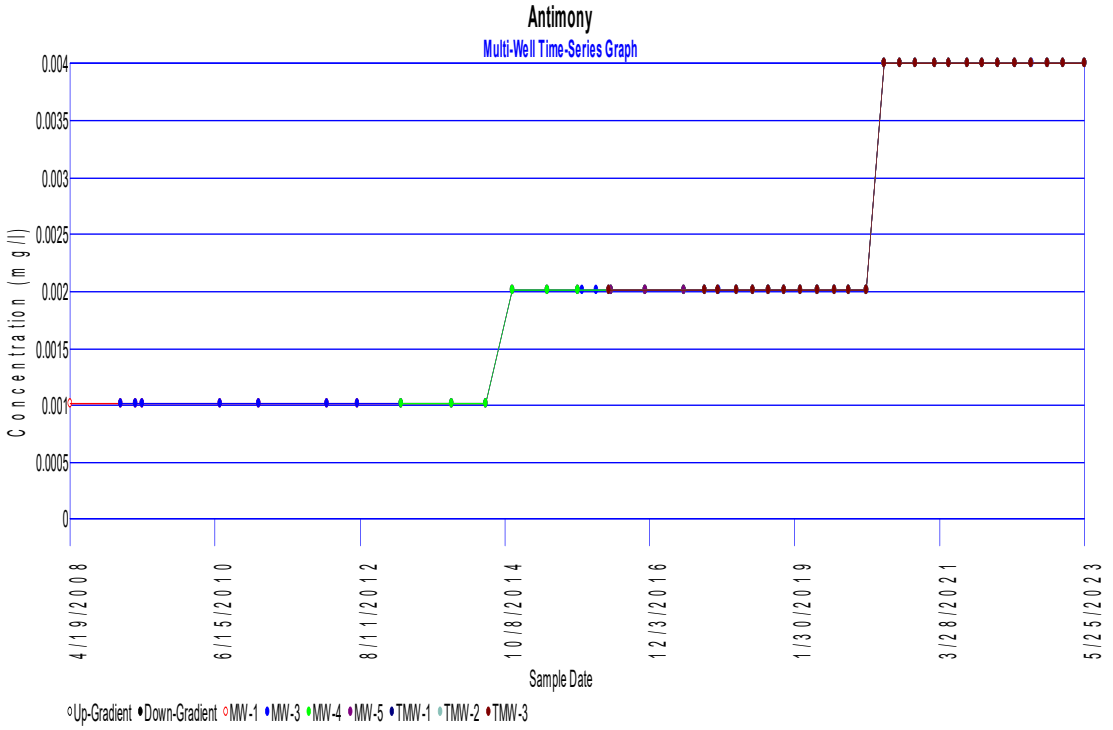
Aluminum

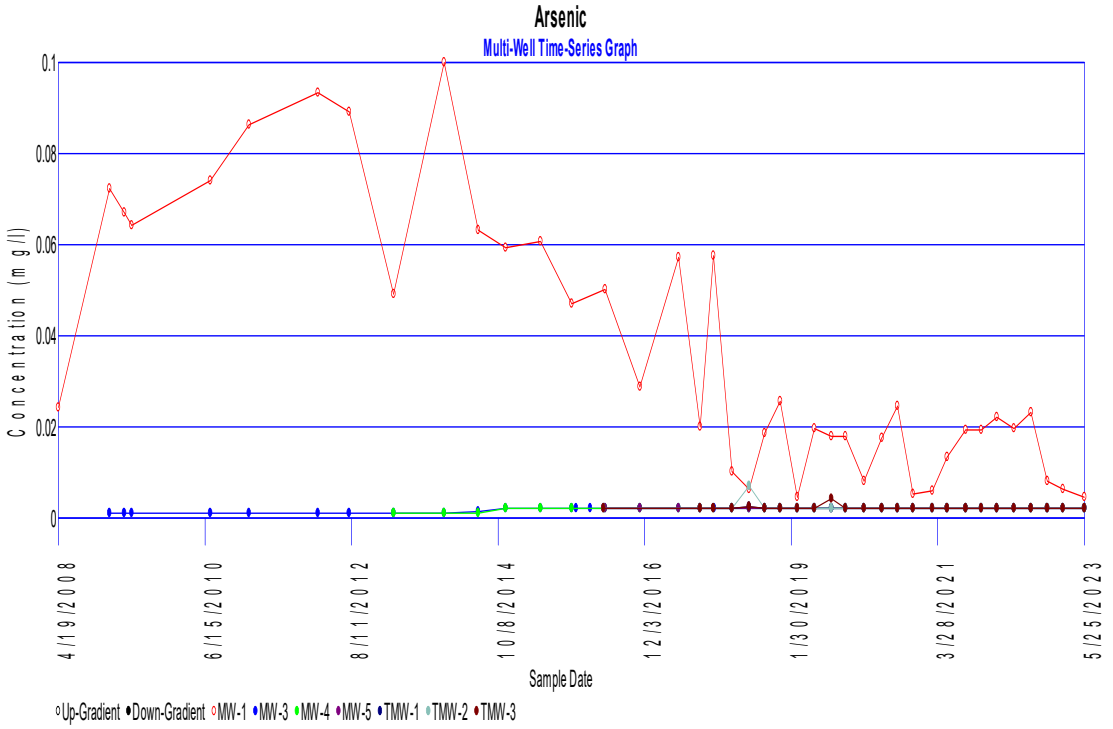
Multi-Well Time-Series Graph

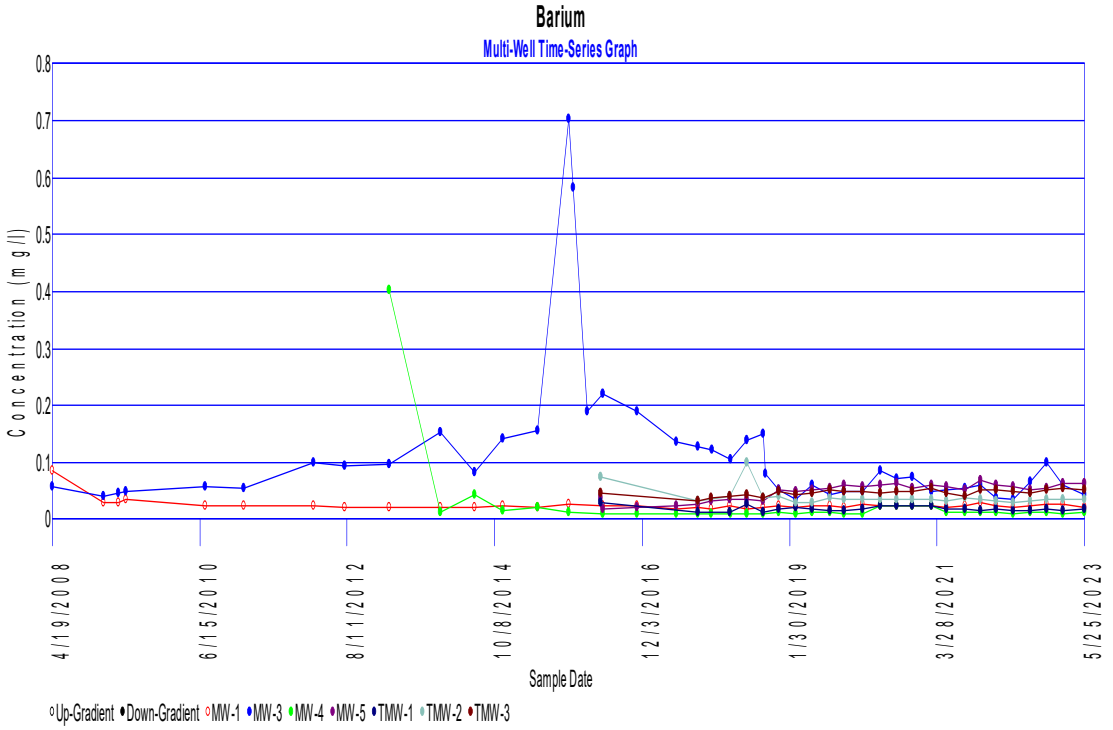


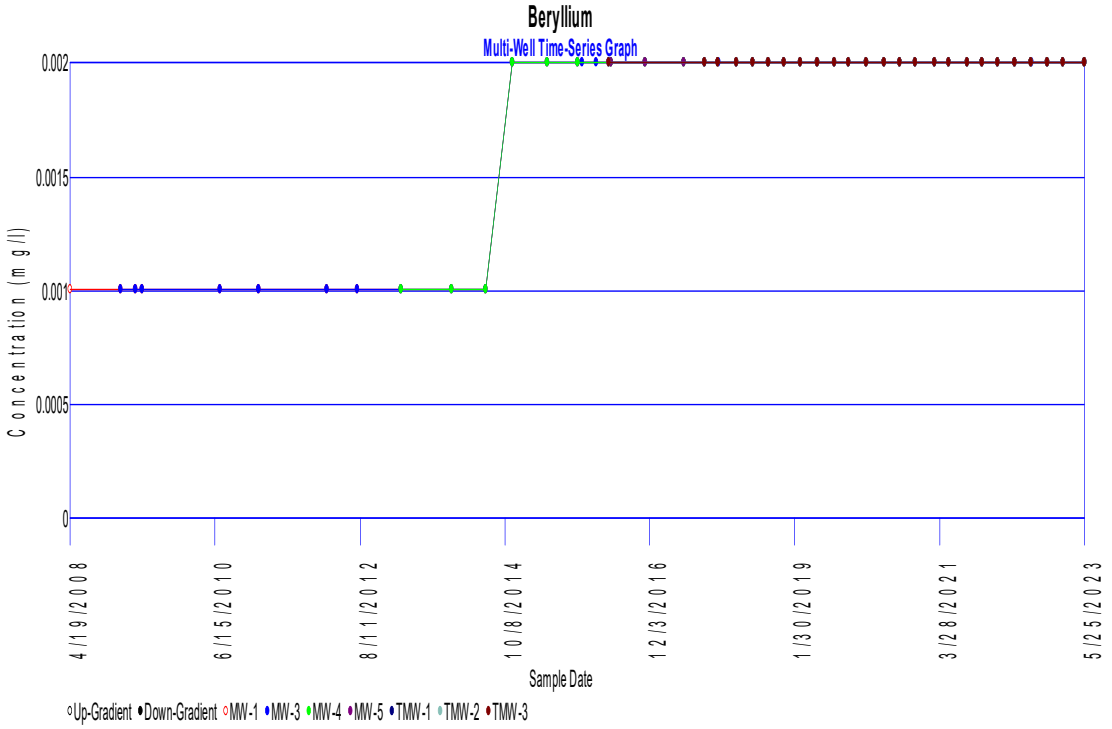
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

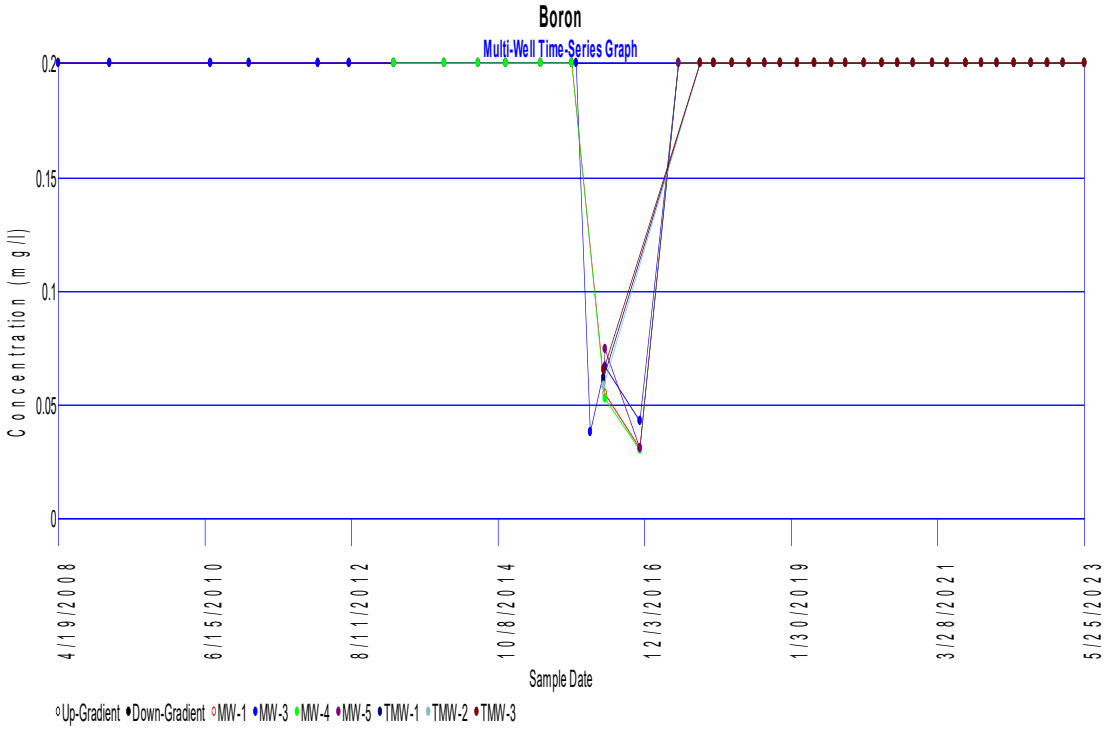

Ammonia Nitrogen
Multi-Well Time-Series Graph
20
15
10
5
0
Concentration (mg/l)
7/16/2010
5/16/2012
3/18/2014
1/18/2016
11/19/2017
9/21/2019
7/23/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

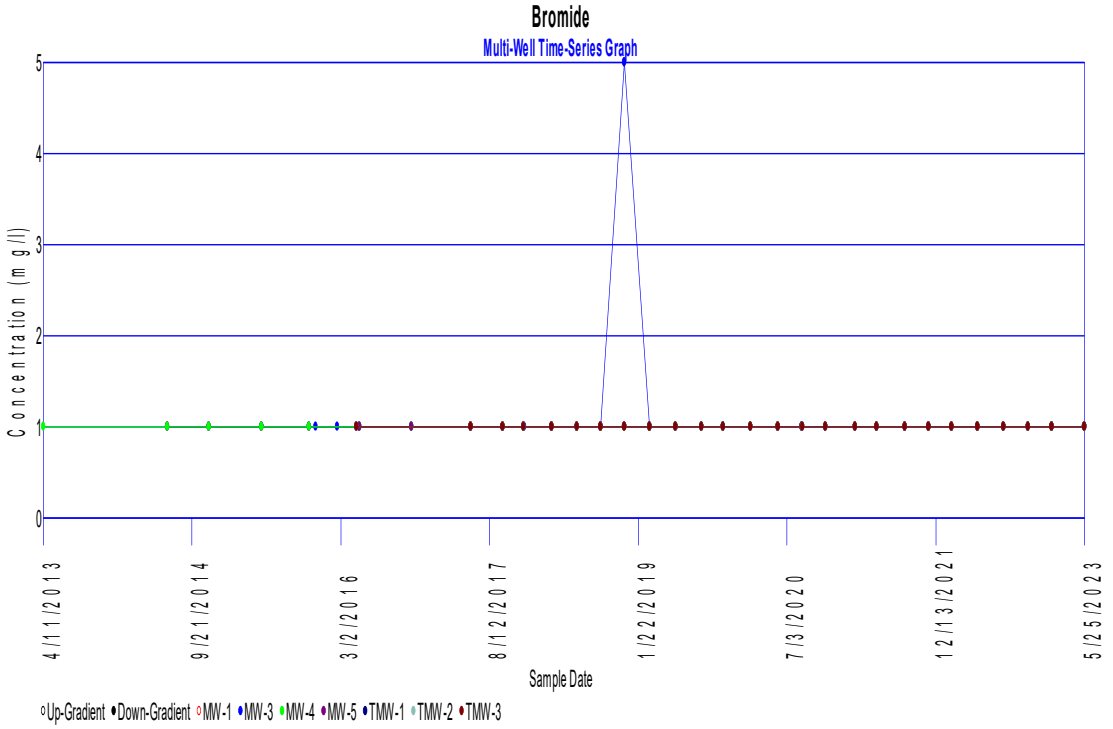

Antimony
Multi-Well Time-Series Graph
0.004
0.0035
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

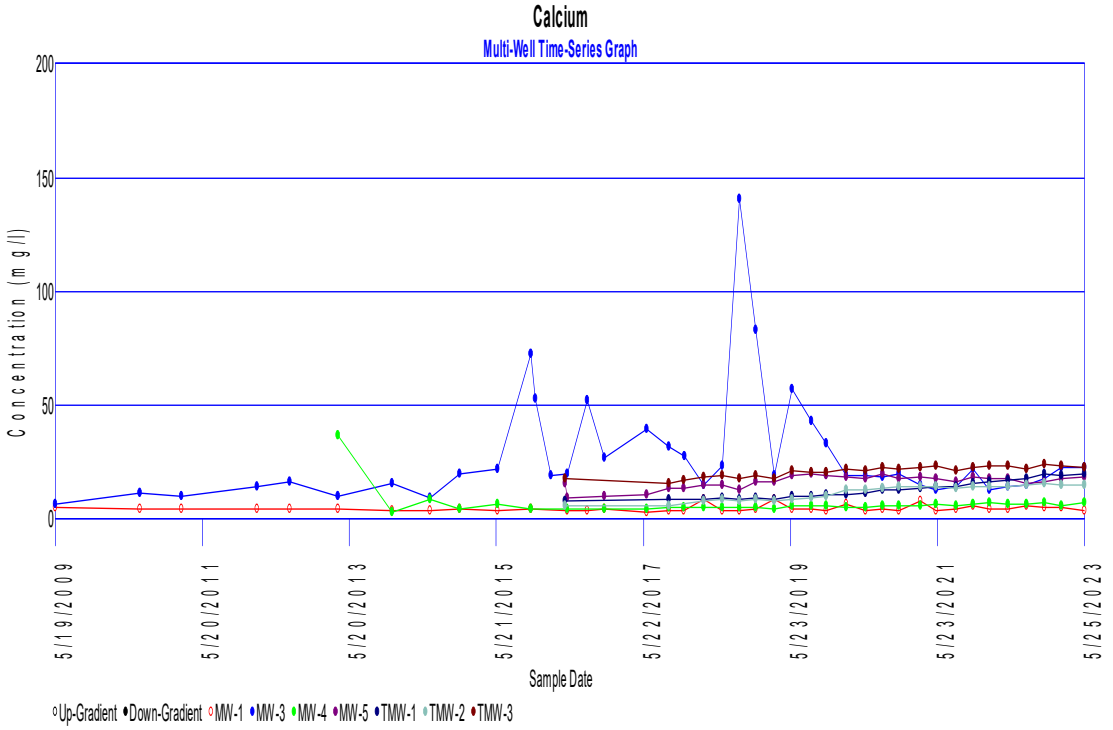

Arsenic
Multi-Well Time-Series Graph
0.1
0.08
0.06
0.04
0.02
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

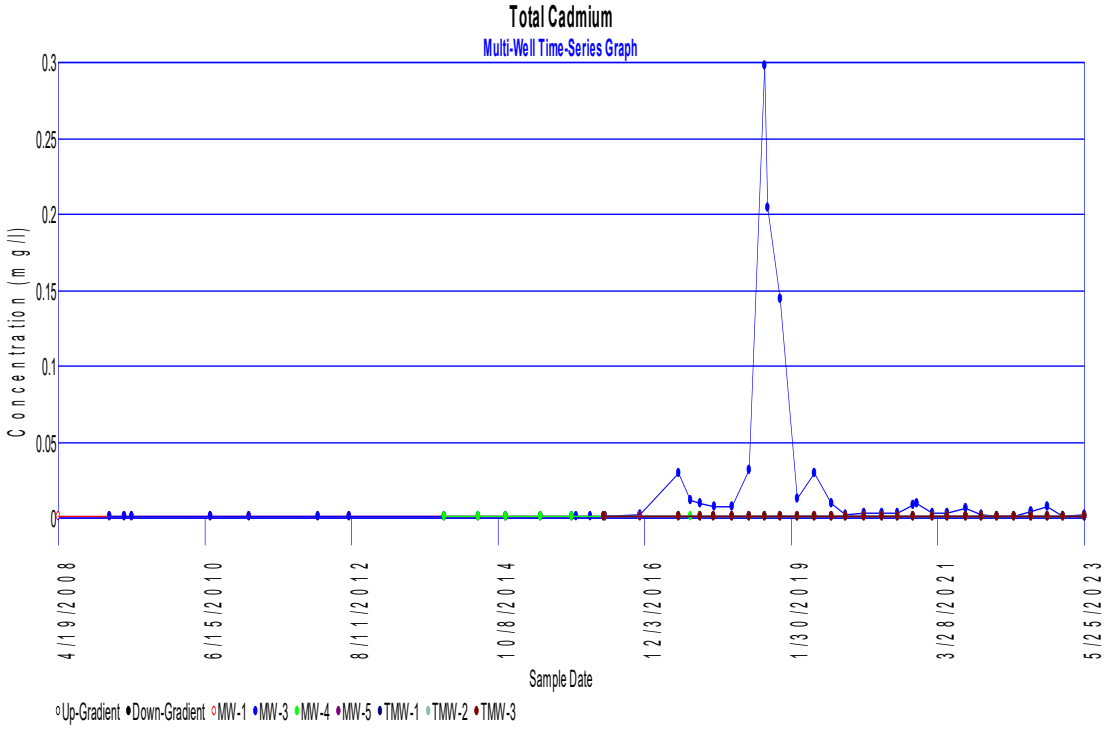

Barium
Multi-Well Time-Series Graph
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

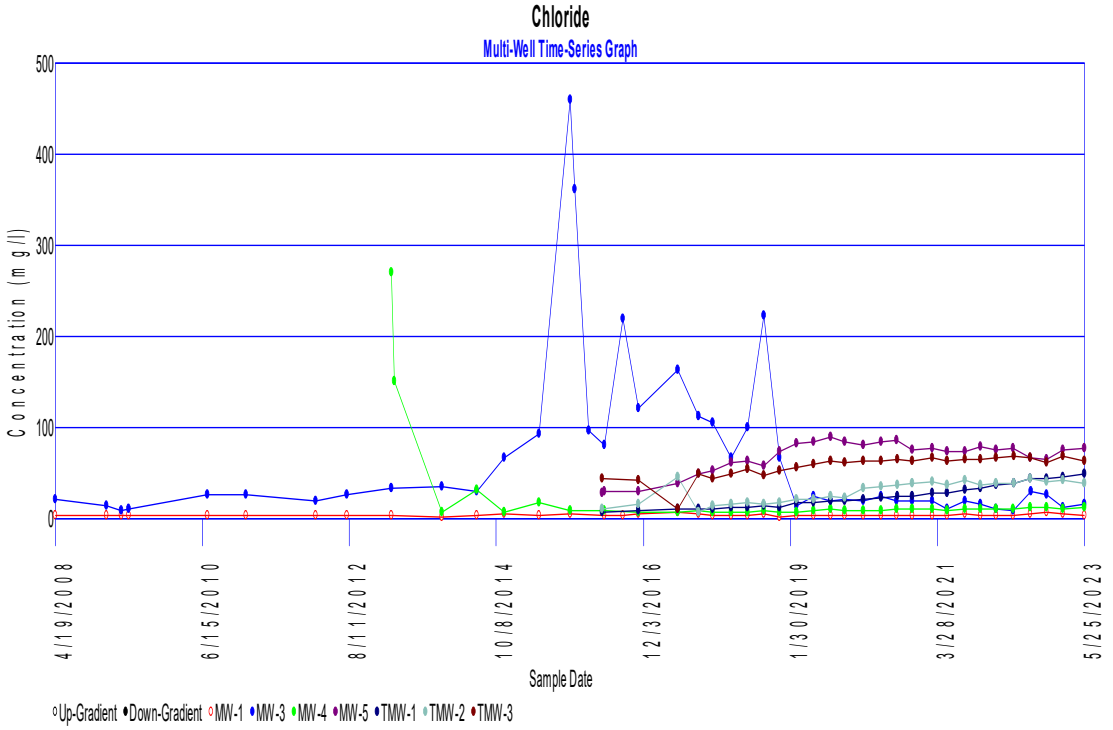

Beryllium
Multi-Well Time-Series Graph
0.002
0.0015
0.001
0.0005
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

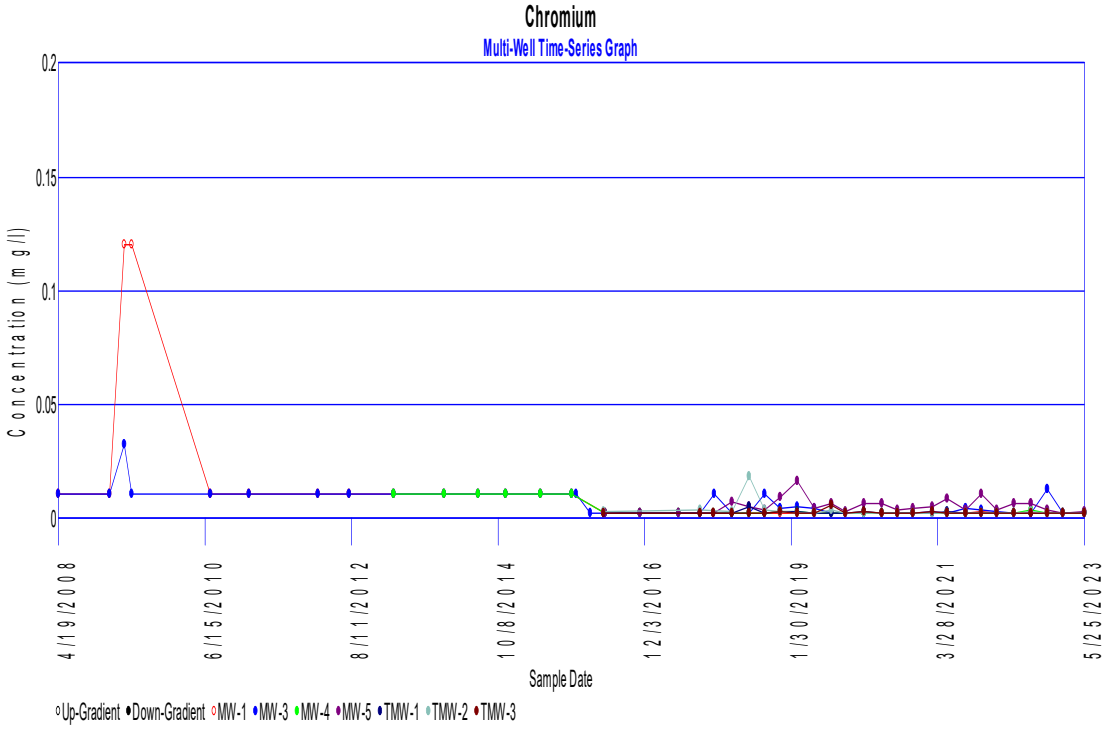

Boron
Multi-Well Time-Series Graph
0.2
0.15
0.1
0.05
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

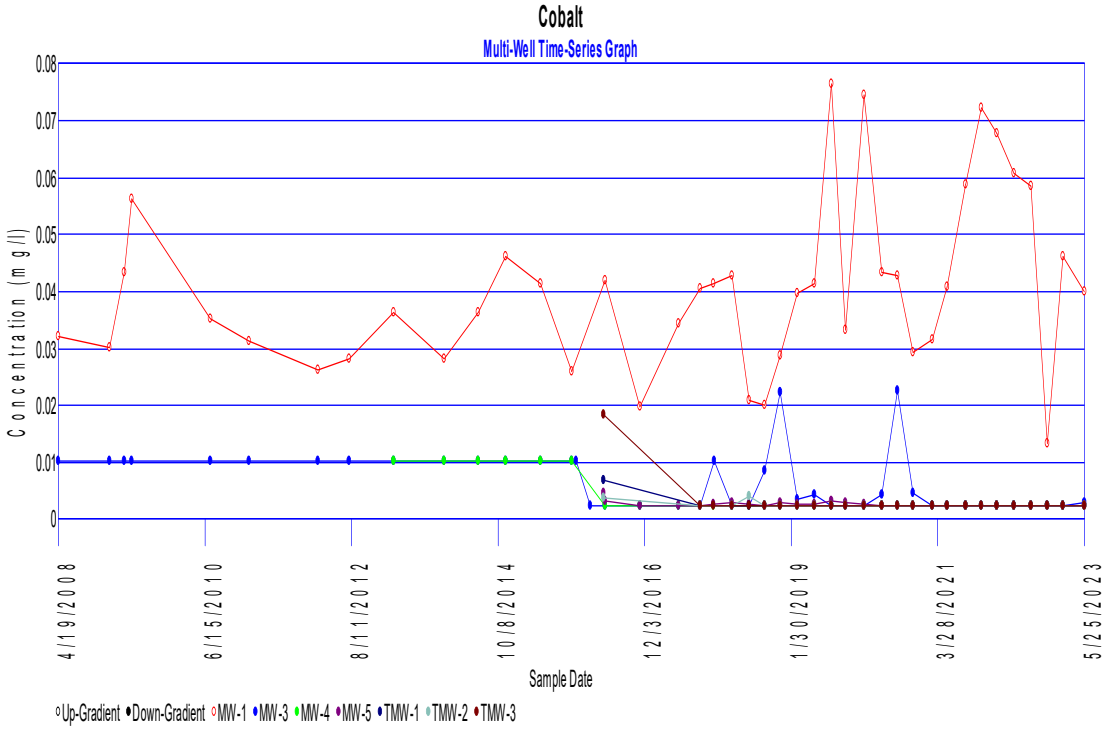

Bromide
Multi-Well Time-Series Graph
5
4
3
2
1
0
Concentration (mg/l)
4/11/2013
9/21/2014
3/2/2016
8/12/2017
1/22/2019
7/3/2020
12/13/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

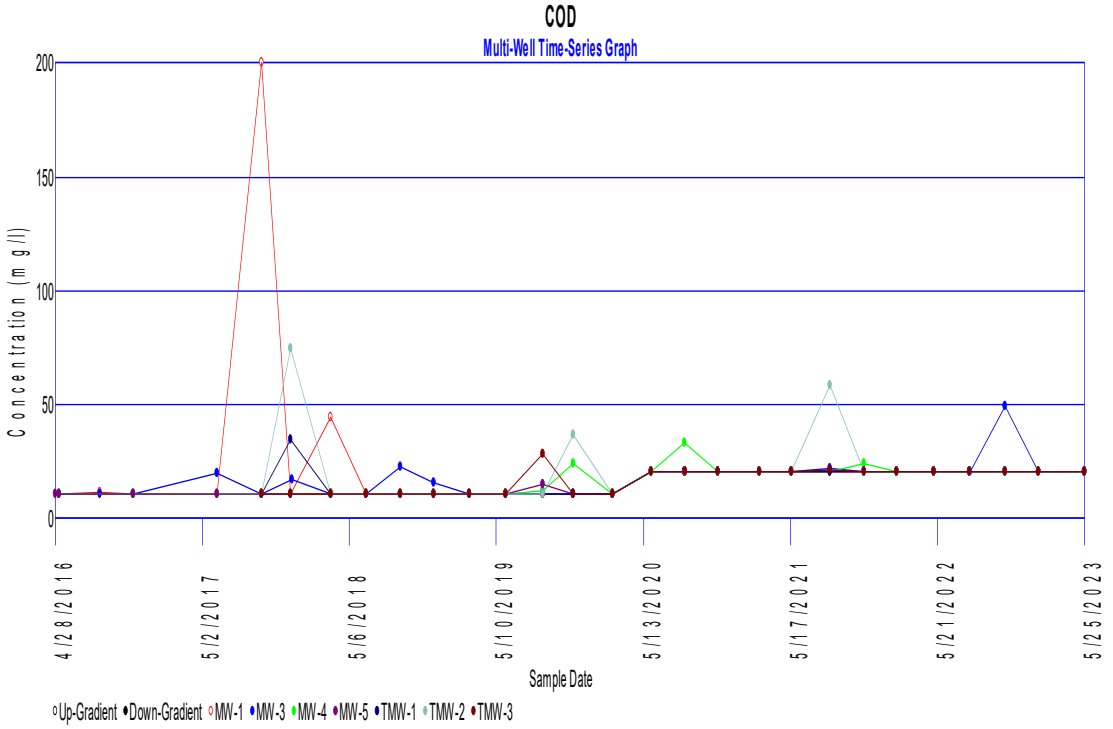

Calcium
Multi-Well Time-Series Graph
200
150
100
50
0
Concentration (mg/l)
5/19/2009
5/20/2011
5/20/2013
5/21/2015
5/22/2017
5/23/2019
5/23/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

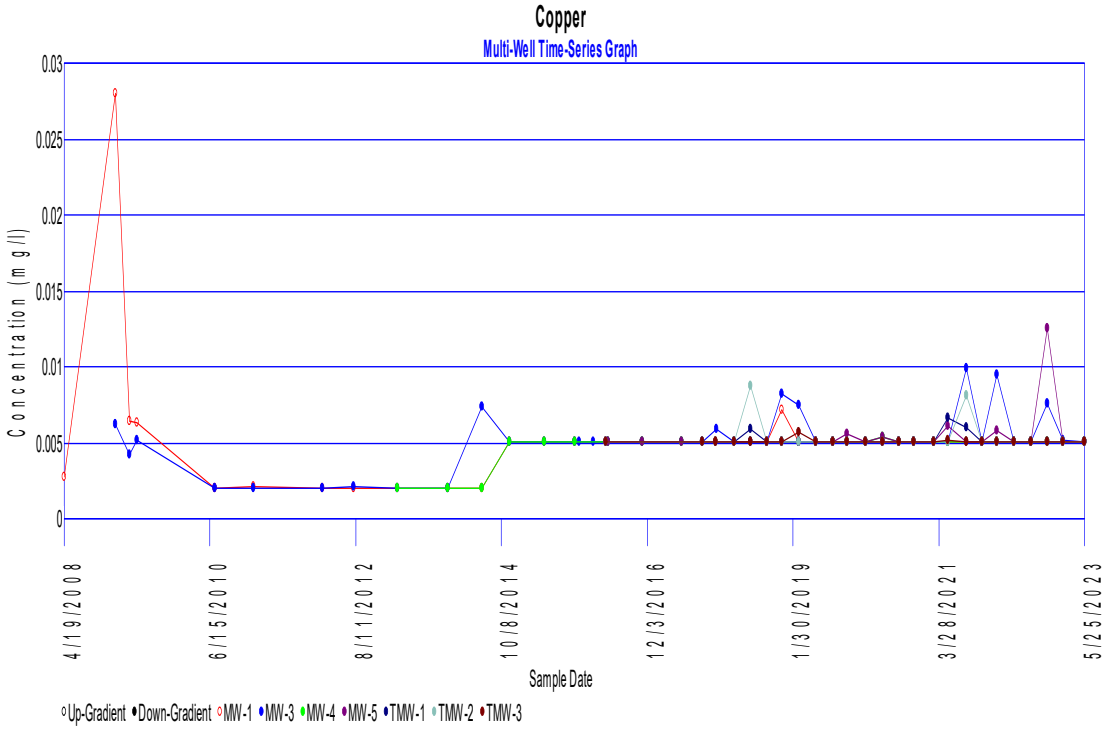

Total Cadmium
Multi-Well Time-Series Graph
0.3
0.25
0.2
0.15
0.1
0.05
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

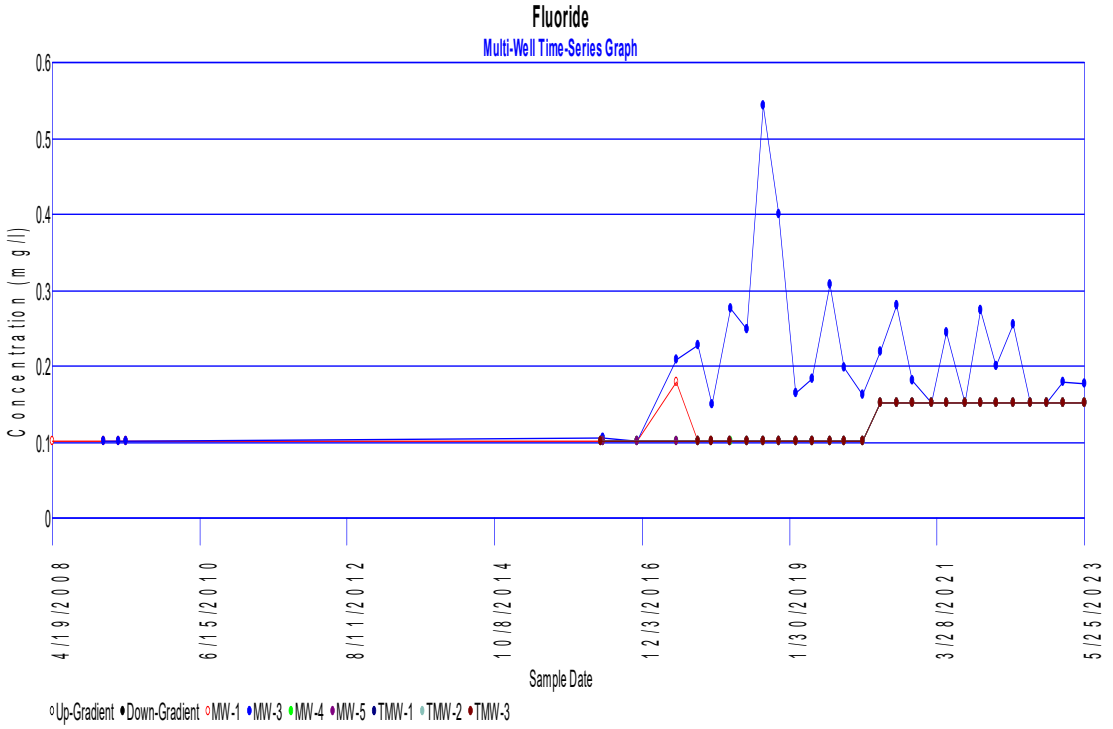

Chloride
Multi-Well Time-Series Graph
500
400
300
200
100
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

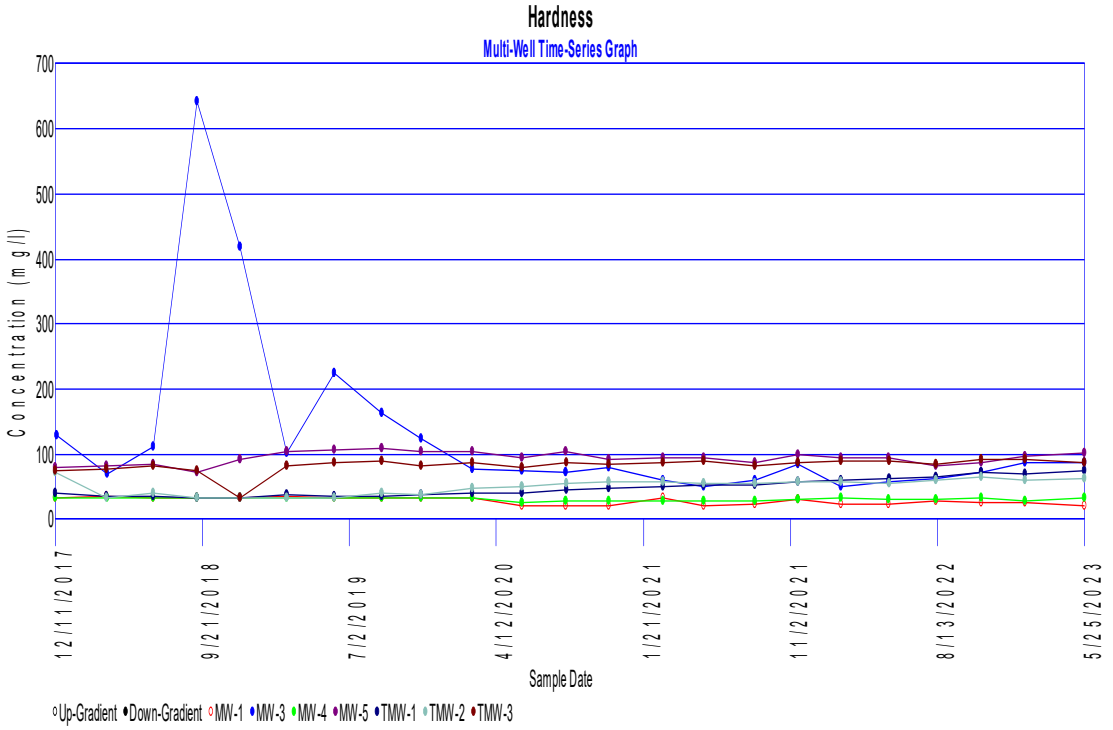

Chromium
Multi-Well Time-Series Graph
0.2
0.15
0.1
0.05
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

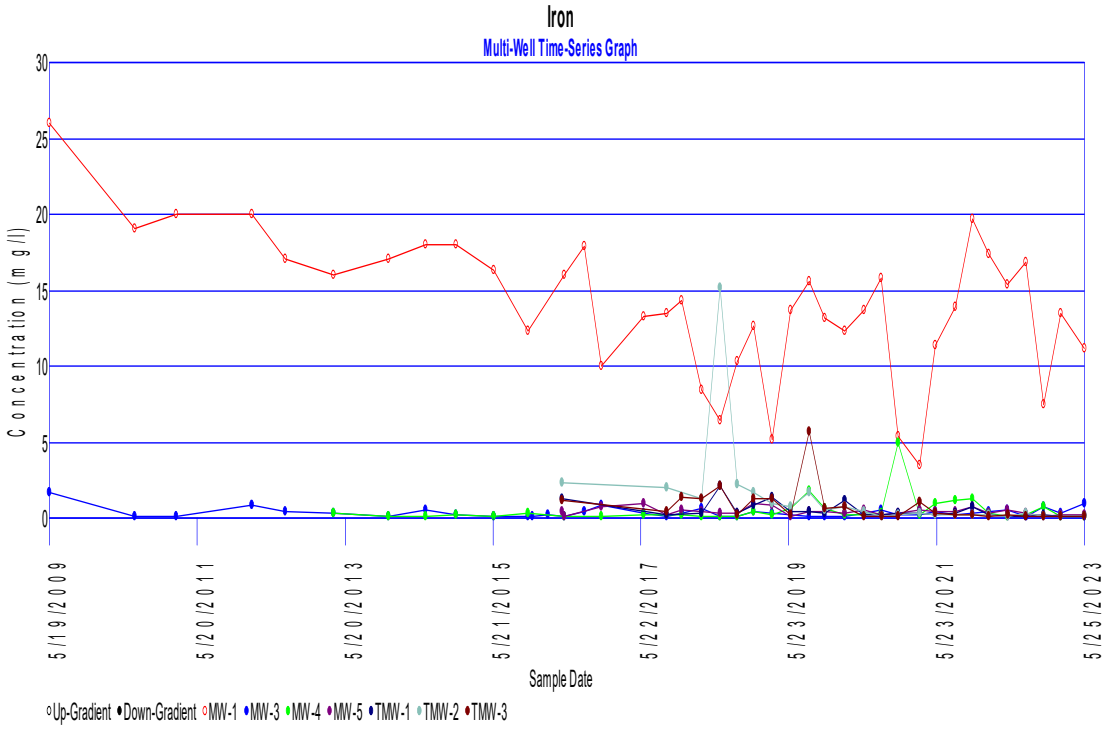

Cobalt
Multi-Well Time-Series Graph
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

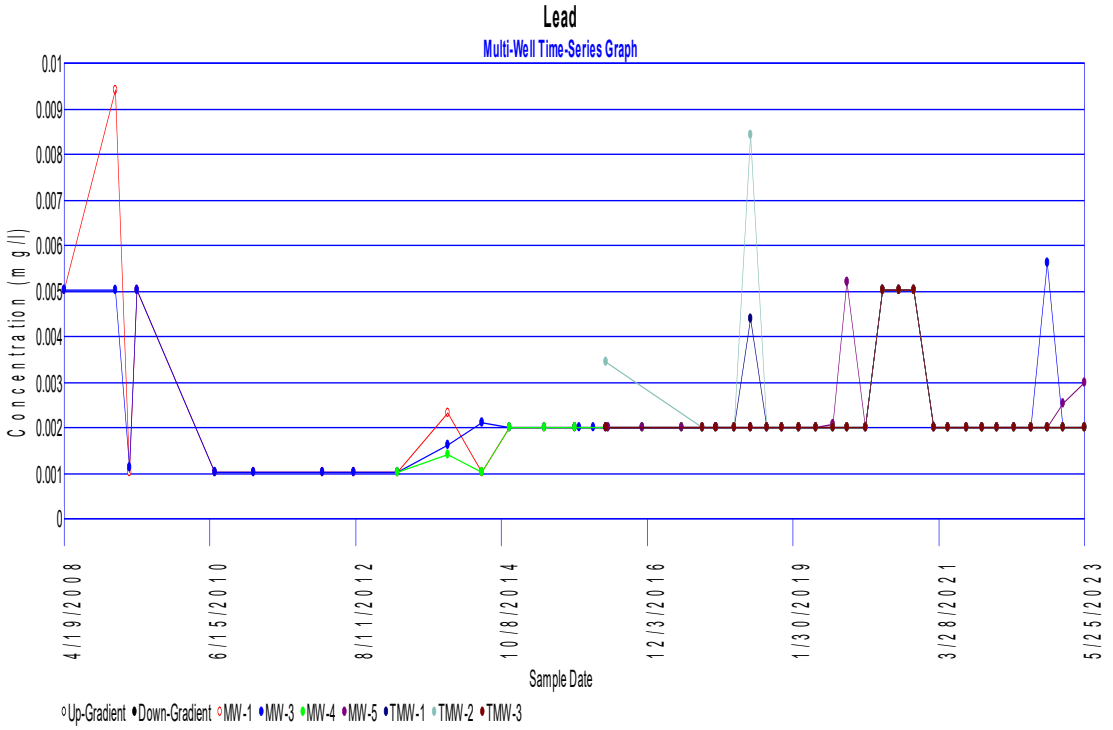

COD
Multi-Well Time-Series Graph
200
150
100
50
0
Concentration (mg/l)
4/28/2016
5/2/2017
5/6/2018
5/10/2019
5/13/2020
5/17/2021
5/21/2022
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

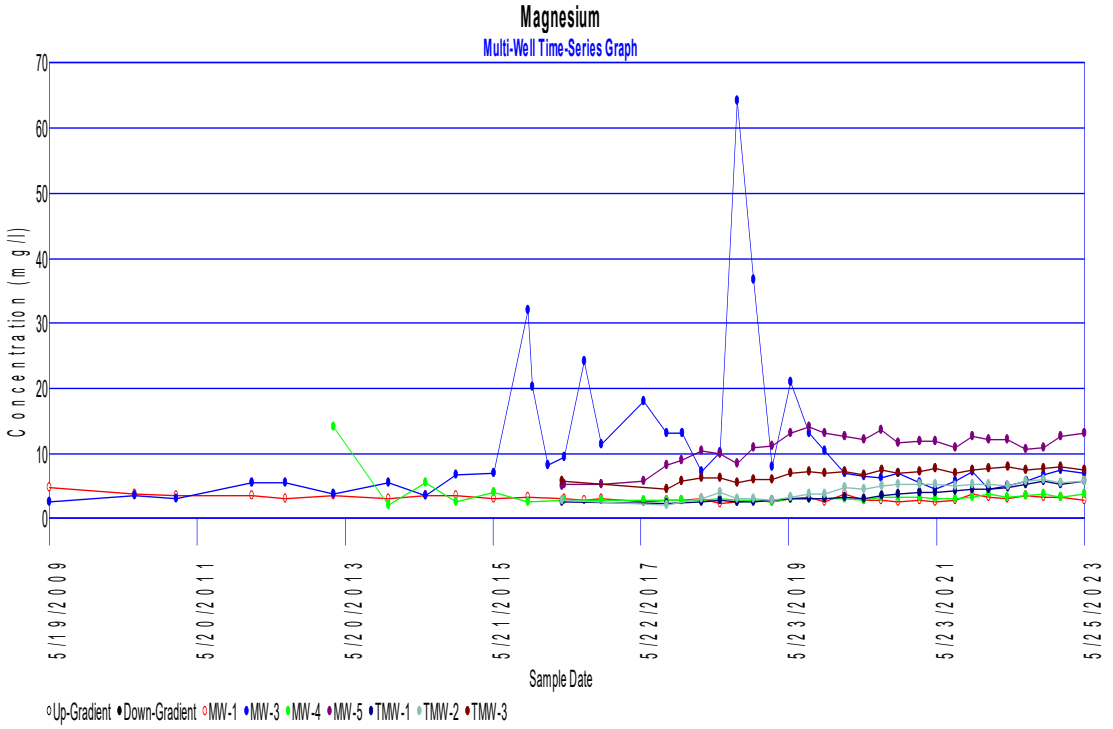

Copper
Multi-Well Time-Series Graph
0.03
0.025
0.02
0.015
0.01
0.005
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

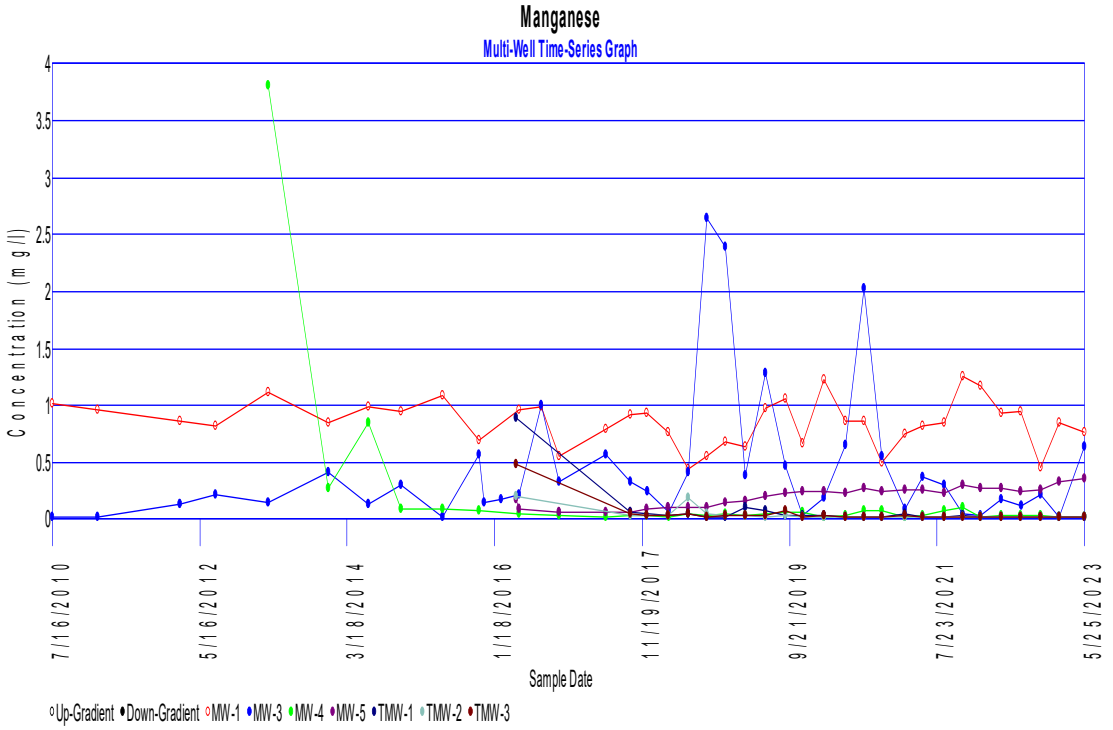

Fluoride
Multi-Well Time-Series Graph
0.6
0.5
0.4
0.3
0.2
0.1
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

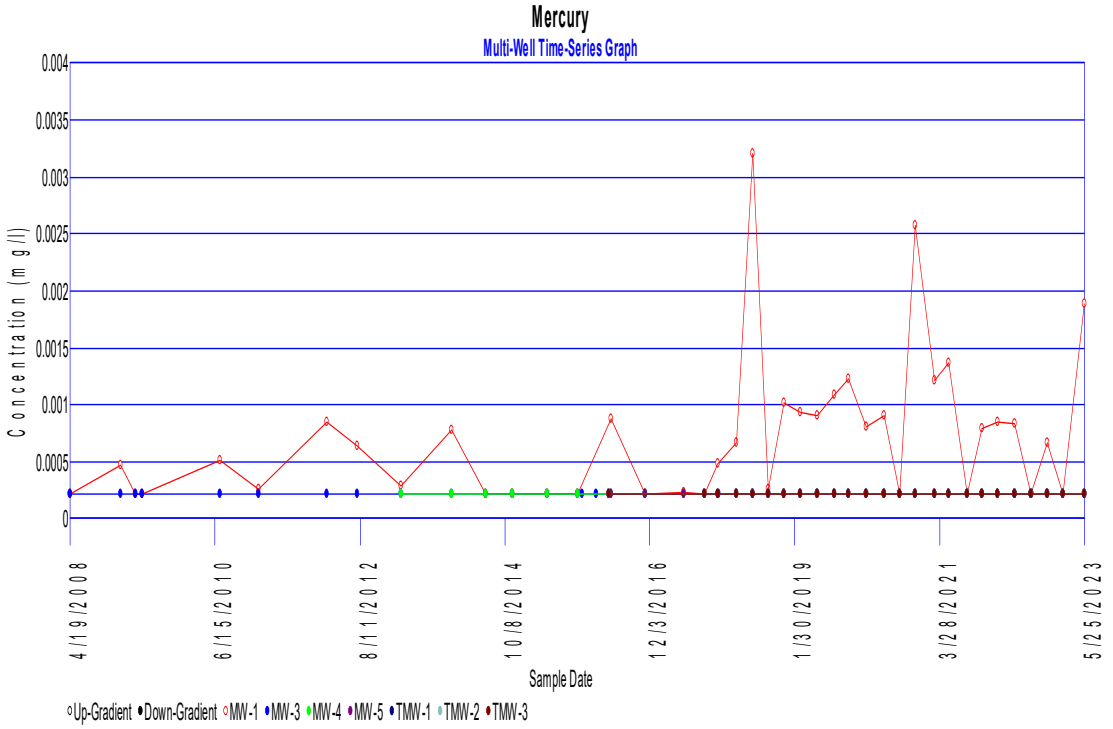

Hardness
Multi-Well Time-Series Graph
700
600
500
400
300
200
100
0
Concentration (mg/l)
12/11/2017
9/21/2018
7/2/2019
4/12/2020
1/21/2021
11/2/2021
8/13/2022
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

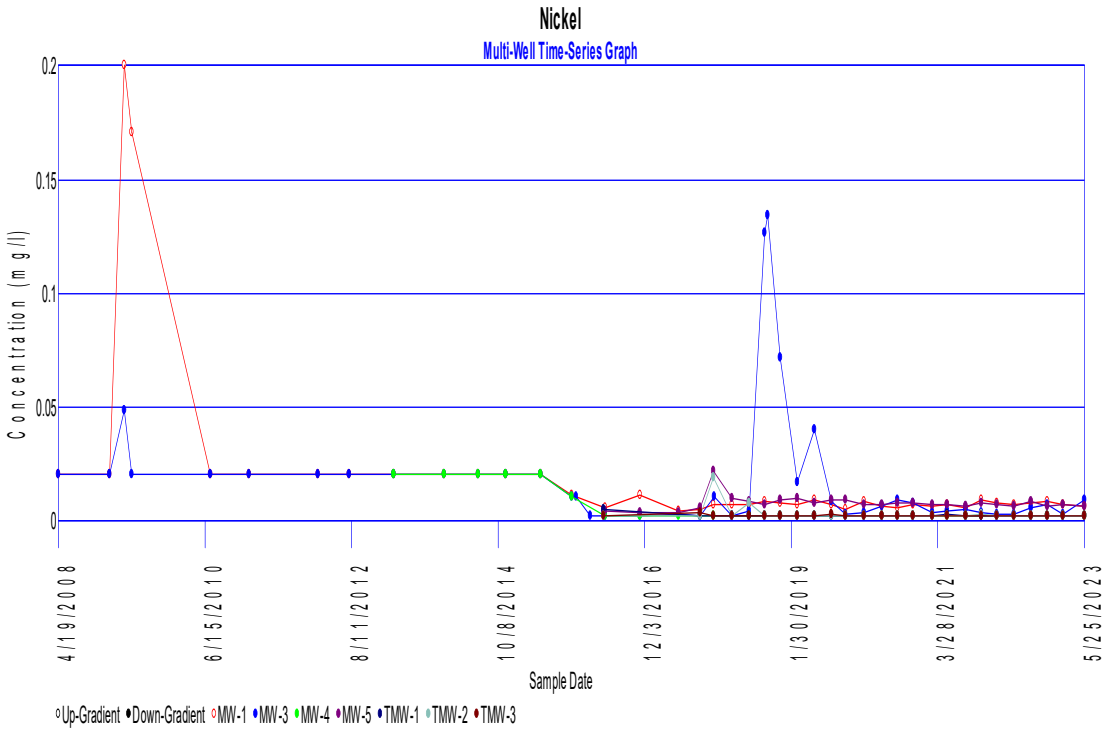

Iron
Multi-Well Time-Series Graph
30
25
20
15
10
5
0
Concentration (mg/l)
5/19/2009
5/20/2011
5/20/2013
5/21/2015
5/22/2017
5/23/2019
5/23/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

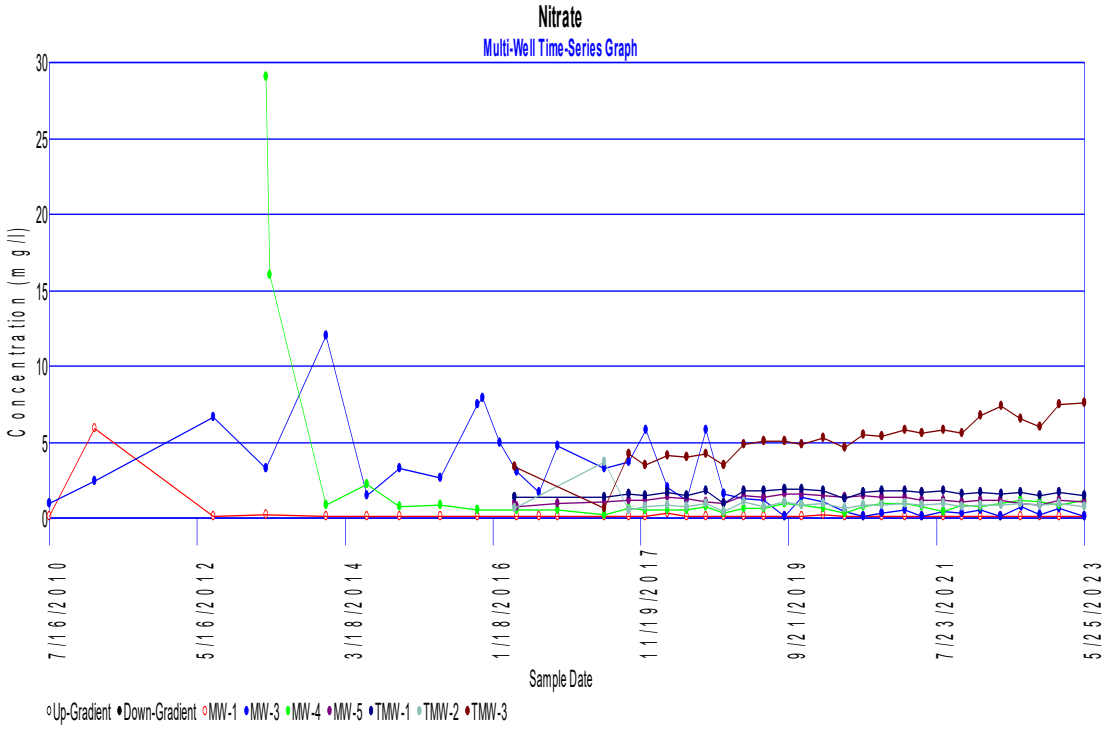

Lead
Multi-Well Time-Series Graph
0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

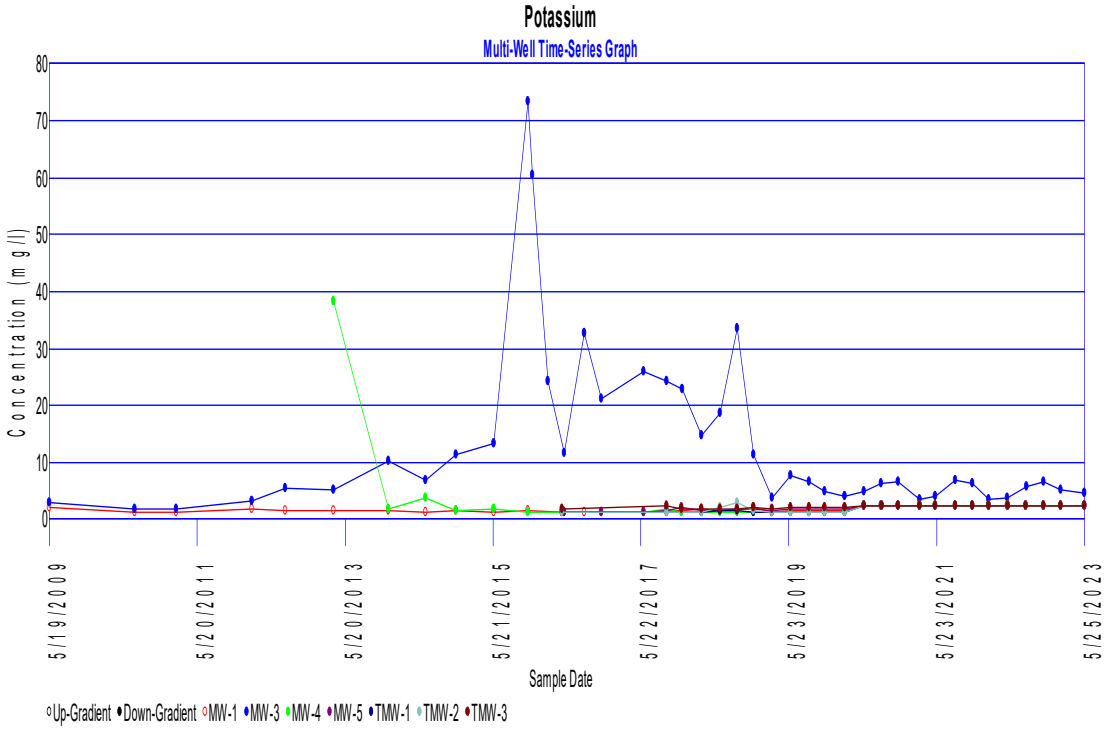

Magnesium
Multi-Well Time-Series Graph
Concentration (mg/l)
70
60
50
40
30
20
10
0
5/19/2009
5/20/2011
5/20/2013
5/21/2015
5/22/2017
5/23/2019
5/23/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

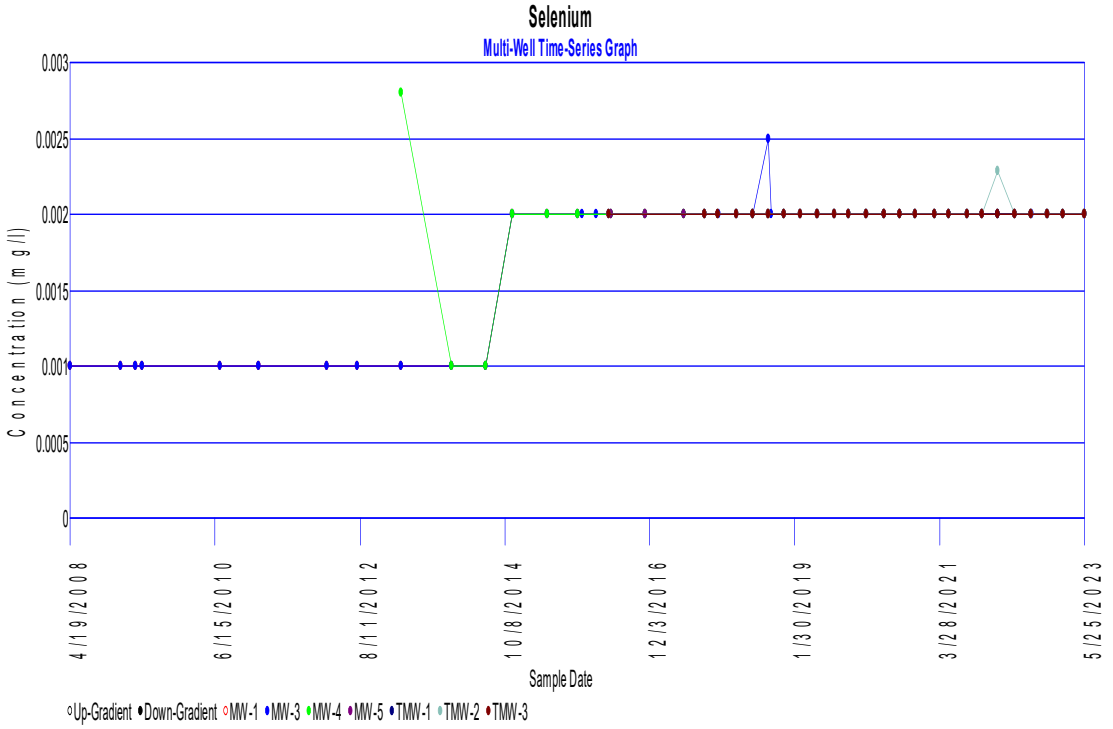

Manganese
Multi-Well Time-Series Graph
Concentration (mg/l)
4
3.5
3
2.5
2
1.5
1
0.5
0
7/16/2010
5/16/2012
3/18/2014
1/18/2016
11/19/2017
9/21/2019
7/23/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

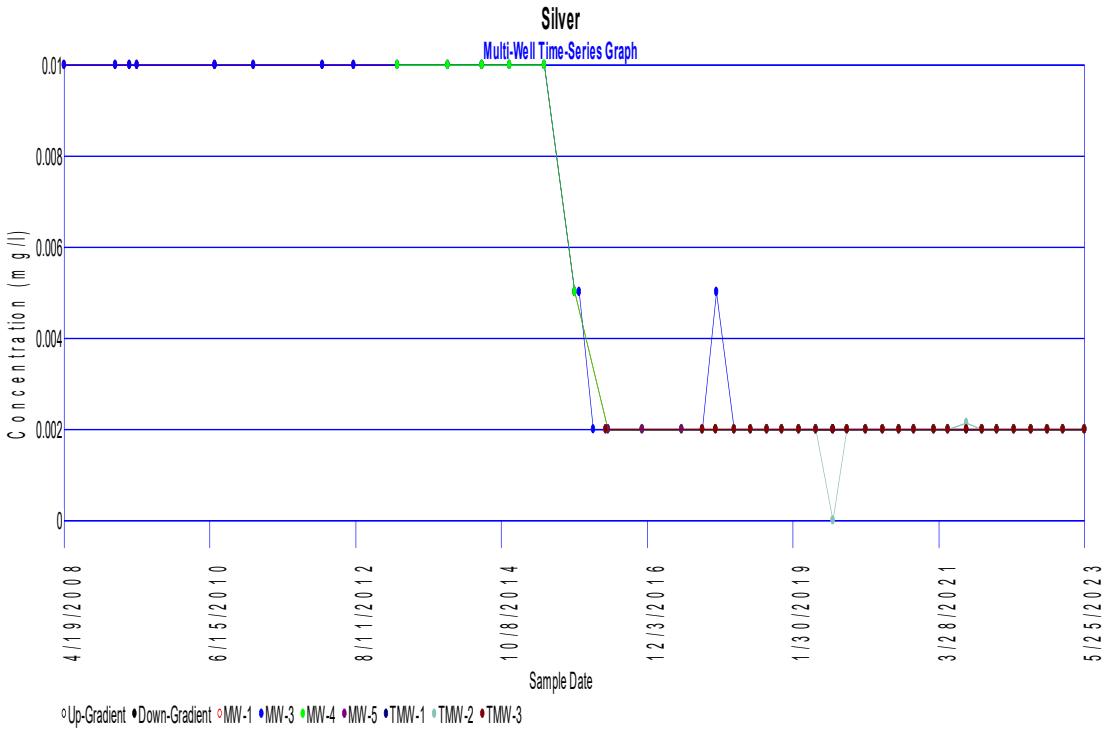

Mercury
Multi-Well Time-Series Graph
0.004
0.0035
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

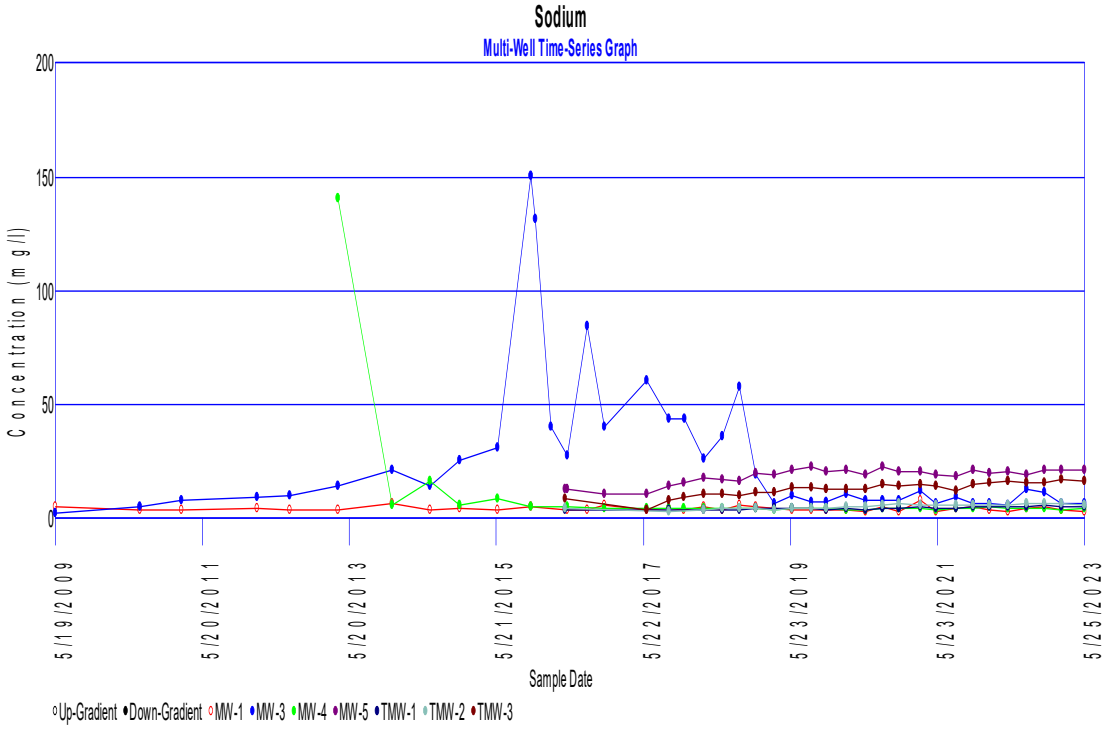

Nickel
Multi-Well Time-Series Graph
0.2
0.15
0.1
0.05
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

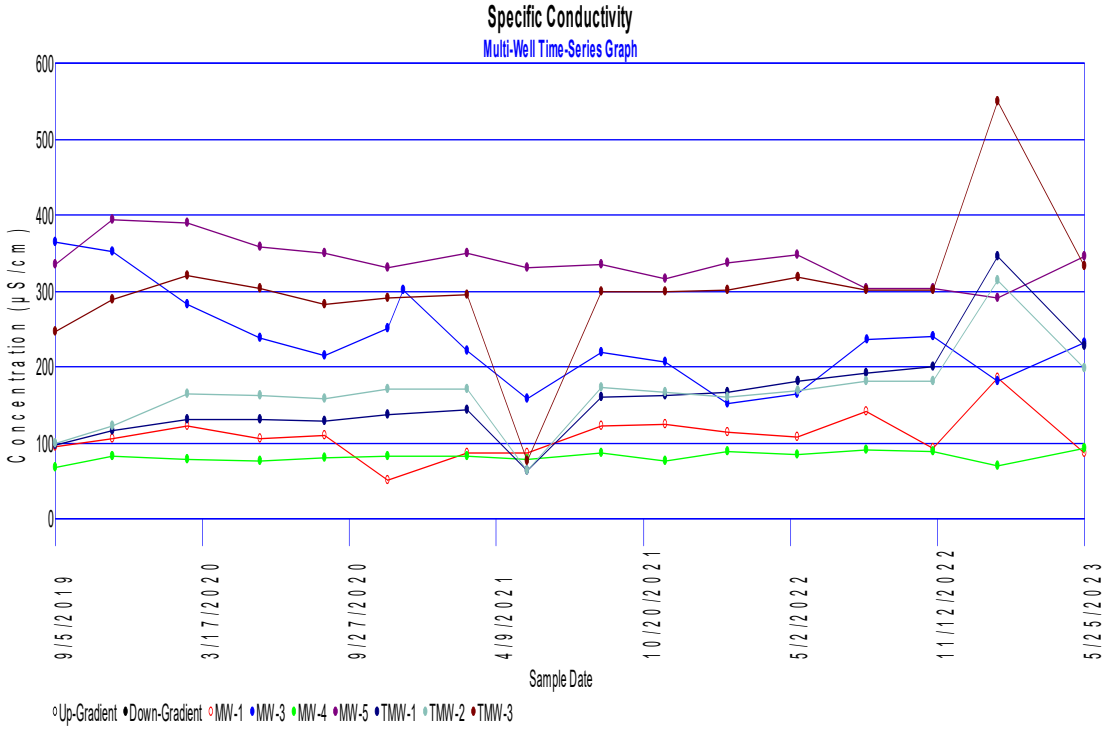

Nitrate
Multi-Well Time-Series Graph
30
25
20
15
10
5
0
Concentration (mg/l)
7/16/2010
5/16/2012
3/18/2014
1/18/2016
11/19/2017
9/21/2019
7/23/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

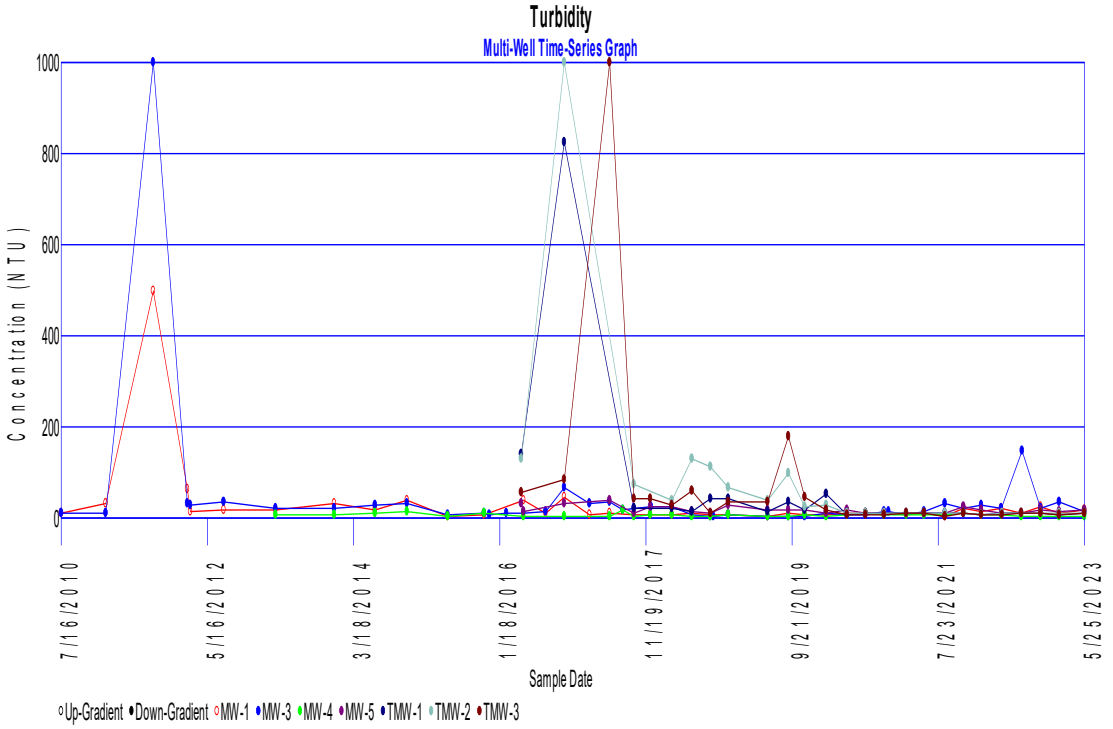

Potassium
Multi-Well Time-Series Graph
80
70
60
50
40
30
20
10
0
Concentration (mg/l)
5/19/2009
5/20/2011
5/20/2013
5/21/2015
5/22/2017
5/23/2019
5/23/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

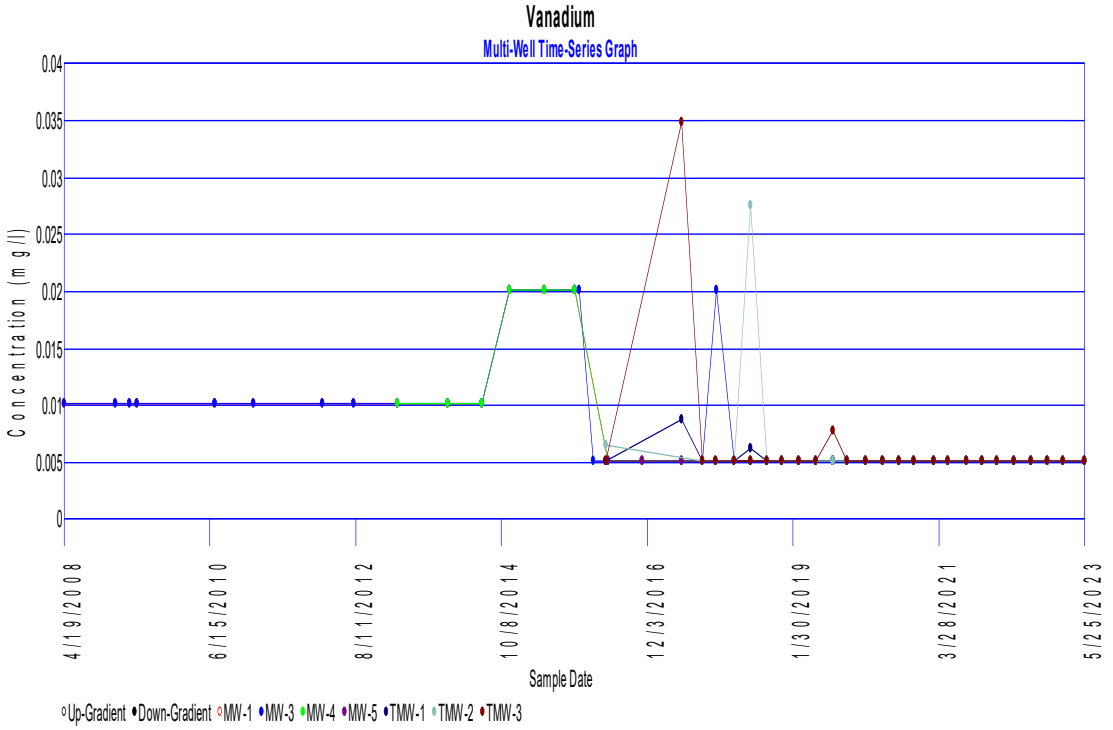

Selenium
Multi-Well Time-Series Graph
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

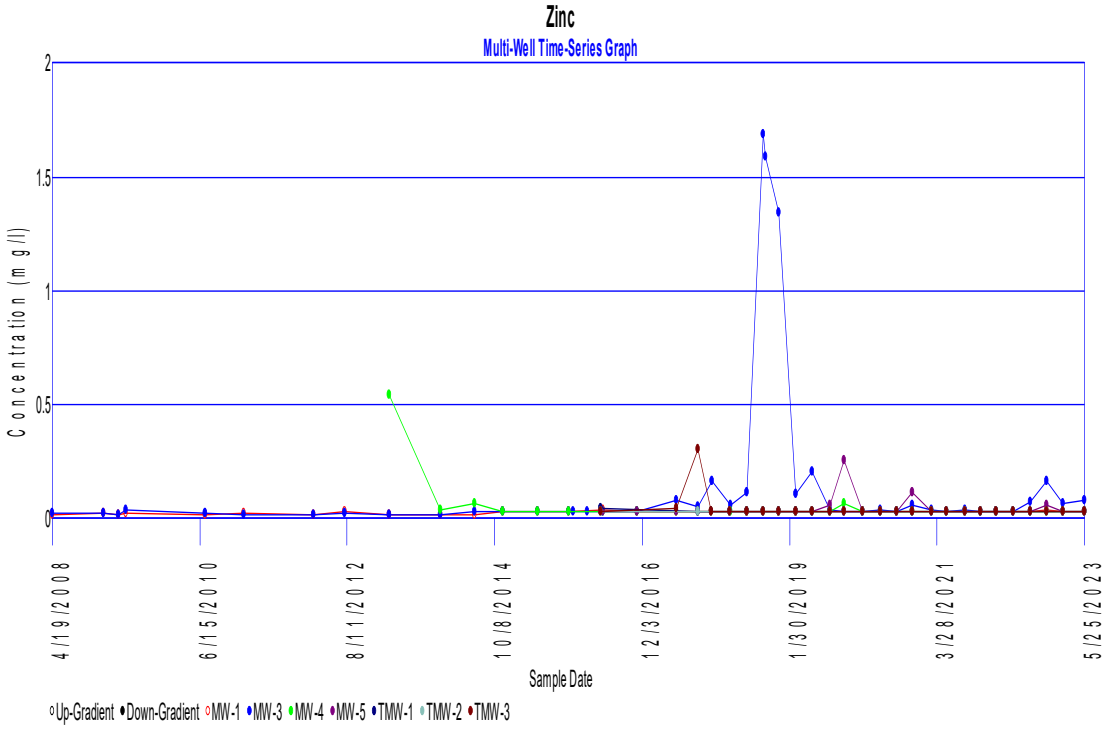

Silver
Multi-Well Time-Series Graph
0.01
0.008
0.006
0.004
0.002
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3


Sodium
Multi-Well Time-Series Graph
200
150
100
50
0
Concentration (mg/l)
5/19/2009
5/20/2011
5/20/2013
5/21/2015
5/22/2017
5/23/2019
5/23/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3


Specific Conductivity
Multi-Well Time-Series Graph
600
500
400
300
200
100
0
Concentration (µS/cm)
9/5/2019
3/17/2020
9/27/2020
4/9/2021
10/20/2021
5/2/2022
11/12/2022
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3


Turbidity
Multi-Well Time-Series Graph
1000
800
600
400
200
0
Concentration (NTU)
7/16/2010
5/16/2012
3/18/2014
1/18/2016
11/19/2017
9/21/2019
7/23/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3


Vanadium
Multi-Well Time-Series Graph
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3


Zinc
Multi-Well Time-Series Graph
2
1.5
1
0.5
0
Concentration (mg/l)
4/19/2008
6/15/2010
8/11/2012
10/8/2014
12/3/2016
1/30/2019
3/28/2021
5/25/2023
Sample Date
Up-Gradient
Down-Gradient
MW-1
MW-3
MW-4
MW-5
TMW-1
TMW-2
TMW-3

Basic Statistics

Parameter: Aluminum

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	218
Total Non-Detects	94 (43.1193%)
Pooled Mean	0.384096
Pooled Std Dev	0.989813
Compliance Meas.	177
Compliance Mean	0.421718
Compliance Std Dev	1.08829
Background Meas.	41
Background Mean	0.221683
Background Std Dev	0.265408

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	41	25	60.9756	9.089

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.221683	0.265408	0	3625.5	88.4268

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	43	9	20.9302	29.55
MW-4	33	31	93.9394	3.545
MW-5	28	6	21.4286	5.593
TMW-1	24	9	37.5	5.548
TMW-2	24	2	8.33333	23.432
TMW-3	25	12	48	6.976

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.687209	1.34791	0.465526	0.209753	6091.5	141.663
MW-4	0.107424	0.0361447	-0.114259	0.22473	1756.5	53.2273
MW-5	0.19975	0.099823	-0.0219329	0.235585	3398	121.357
TMW-1	0.231167	0.260188	0.00948374	0.246975	2634.5	109.771
TMW-2	0.976333	2.1967	0.75465	0.246975	3741	155.875
TMW-3	0.27904	0.344923	0.0573571	0.243839	2624	104.96

Analysis of Variance Statistics

SS Wells	17.7649
SS Total	212.601

Kruskal-Wallis Statistics

Non-Detect Rank	47.5
Background Rank Sum	3625.5
Background Rank Mean	88.4268

H Statistic	56.1156
H Adjusted for Ties	61.006

Basic Statistics

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	217
Total Non-Detects	170 (78.341%)
Pooled Mean	0.00839175
Pooled Std Dev	0.0180995
Compliance Meas.	176
Compliance Mean	0.00196795
Compliance Std Dev	0.000472848
Background Meas.	41
Background Mean	0.0359671
Background Std Dev	0.0284085

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	41	0	0	1.47465

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0359671	0.0284085	0	8071	196.854

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	42	40	95.2381	0.0742
MW-4	33	33	100	0.063
MW-5	28	28	100	0.056
TMW-1	24	23	95.8333	0.04817
TMW-2	24	23	95.8333	0.0528
TMW-3	25	23	92	0.05219

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.00176667	0.000423497	-0.0342004	0.00272352	3763	89.5952
MW-4	0.00190909	0.000291937	-0.034058	0.00290118	2821.5	85.5
MW-5	0.002	1.32492e-018	-0.0339671	0.00304131	2394	85.5
TMW-1	0.00200708	3.47011e-005	-0.03396	0.00318836	2139.5	89.1458
TMW-2	0.0022	0.000979796	-0.0337671	0.00318836	2148.5	89.5208
TMW-3	0.0020876	0.000376799	-0.0338795	0.00314788	2315.5	92.62

Analysis of Variance Statistics

SS Wells	0.0384425
SS Total	0.0707598

Kruskal-Wallis Statistics

Non-Detect Rank	85.5
Background Rank Sum	8071
Background Rank Mean	196.854

H Statistic	99.2413
H Adjusted for Ties	191.142

Basic Statistics

Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	219
Total Non-Detects	11 (5.02283%)
Pooled Mean	0.0462743
Pooled Std Dev	0.0709939
Compliance Meas.	178
Compliance Mean	0.0517842
Compliance Std Dev	0.0775865
Background Meas.	41
Background Mean	0.0223537
Background Std Dev	0.0104959

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	41	3	7.31707	0.9165

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0223537	0.0104959	0	3091	75.3902

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	44	0	0	4.8298
MW-4	33	4	12.1212	0.76064
MW-5	28	0	0	1.2792
TMW-1	24	4	16.6667	0.37724
TMW-2	24	0	0	0.8688
TMW-3	25	0	0	1.1019

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.109768	0.126729	0.0874145	0.013786	8036	182.636
MW-4	0.0230497	0.0679919	0.000696038	0.014853	1086	32.9091
MW-5	0.0456857	0.0145517	0.0233321	0.0155705	4217	150.607
TMW-1	0.0157183	0.00418337	-0.00663533	0.0163233	1054	43.9167
TMW-2	0.0362	0.0152153	0.0138463	0.0163233	2912	121.333
TMW-3	0.044076	0.00559727	0.0217223	0.016116	3694	147.76

Analysis of Variance Statistics

SS Wells	0.243619
SS Total	1.09875

Kruskal-Wallis Statistics

Non-Detect Rank	6
Background Rank Sum	3091
Background Rank Mean	75.3902

H Statistic	166.148
H Adjusted for Ties	166.169

Basic Statistics

Parameter: Total Cadmium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	219
Total Non-Detects	193 (88.1279%)
Pooled Mean	0.0047221
Pooled Std Dev	0.0261715
Compliance Meas.	179
Compliance Mean	0.00555385
Compliance Std Dev	0.0288974
Background Meas.	40
Background Mean	0.001
Background Std Dev	6.58809e-019

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	40	40	100	0.04

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.001	6.58809e-019	0	3880	97

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	44	18	40.9091	0.85914
MW-4	33	33	100	0.033
MW-5	28	28	100	0.028
TMW-1	24	24	100	0.024
TMW-2	24	24	100	0.024
TMW-3	26	26	100	0.026

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.0195259	0.0564969	0.0185259	0.00555871	7115	161.705
MW-4	0.001	6.60608e-019	0	0.00598364	3201	97
MW-5	0.001	6.62458e-019	0	0.00626955	2716	97
TMW-1	0.001	6.64513e-019	0	0.0065697	2328	97
TMW-2	0.001	6.64513e-019	0	0.0065697	2328	97
TMW-3	0.001	6.63404e-019	0	0.00640983	2522	97

Analysis of Variance Statistics

SS Wells	0.0120672
SS Total	0.149319

Kruskal-Wallis Statistics

Non-Detect Rank	97
Background Rank Sum	3880
Background Rank Mean	97

H Statistic	36.6632
H Adjusted for Ties	116.186

Basic Statistics

Parameter: Chloride

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

Total Measurements	229
Total Non-Detects	0 (0%)
Pooled Mean	37.0822
Pooled Std Dev	51.7755
Compliance Meas.	187
Compliance Mean	44.7867
Compliance Std Dev	54.4093
Background Meas.	42
Background Mean	2.77857
Background Std Dev	1.08987

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	42	0	0	116.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	2.77857	1.08987	0	905	21.5476

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	44	0	0	2873.91
MW-4	34	0	0	721.18
MW-5	28	0	0	1869.5
TMW-1	27	0	0	620.5
TMW-2	27	0	0	763.73
TMW-3	27	0	0	1526.3

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	65.3161	92.9715	62.5376	9.98692	6324	143.727
MW-4	21.2112	50.323	18.4326	10.6801	2573	75.6765
MW-5	66.7679	17.9534	63.9893	11.2948	5327	190.25
TMW-1	22.9815	12.6123	20.2029	11.4196	3055	113.148
TMW-2	28.2863	12.0965	25.5077	11.4196	3413	126.407
TMW-3	56.5296	12.1759	53.7511	11.4196	4738	175.481

Analysis of Variance Statistics

SS Wells	135406
SS Total	611200

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	905
Background Rank Mean	21.5476

H Statistic	163.268
H Adjusted for Ties	163.268

Basic Statistics

Parameter: Cobalt

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

Total Measurements	218
Total Non-Detects	146 (66.9725%)
Pooled Mean	0.0103938
Pooled Std Dev	0.0160809
Compliance Meas.	177
Compliance Mean	0.00348955
Compliance Std Dev	0.00351389
Background Meas.	41
Background Mean	0.0402
Background Std Dev	0.0150664

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	41	0	0	1.6482

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0402	0.0150664	0	8109	197.78

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	43	34	79.0698	0.26874
MW-4	33	33	100	0.114
MW-5	28	11	39.2857	0.06477
TMW-1	24	23	95.8333	0.0526
TMW-2	24	22	91.6667	0.05124
TMW-3	25	23	92	0.0663

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.00624977	0.00514155	-0.0339502	0.00156054	4022	93.5349
MW-4	0.00345455	0.0031334	-0.0367455	0.00167197	2425.5	73.5
MW-5	0.00231321	0.000489164	-0.0378868	0.00175273	3480.5	124.304
TMW-1	0.00219167	0.000938971	-0.0380083	0.00183747	1863.5	77.6458
TMW-2	0.002135	0.000462376	-0.038065	0.00183747	1952	81.3333
TMW-3	0.002652	0.00321858	-0.037548	0.00181414	2018.5	80.74

Analysis of Variance Statistics

SS Wells	0.0453305
SS Total	0.0561151

Kruskal-Wallis Statistics

Non-Detect Rank	73.5
Background Rank Sum	8109
Background Rank Mean	197.78

H Statistic	111.466
H Adjusted for Ties	159.325

Basic Statistics

Parameter: Lead

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

Total Measurements	218
Total Non-Detects	203 (93.1193%)
Pooled Mean	0.00240537
Pooled Std Dev	0.0012538
Compliance Meas.	177
Compliance Mean	0.00241056
Compliance Std Dev	0.00116839
Background Meas.	41
Background Mean	0.00238293
Background Std Dev	0.00158775

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	41	39	95.122	0.0977

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.00238293	0.00158775	0	4406	107.463

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	43	38	88.3721	0.10141
MW-4	33	32	96.9697	0.0724
MW-5	28	24	85.7143	0.06968
TMW-1	24	23	95.8333	0.05938
TMW-2	24	22	91.6667	0.0648
TMW-3	25	25	100	0.059

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.00235837	0.00126763	-2.45547e-005	0.000275897	4917	114.349
MW-4	0.00219394	0.000937396	-0.000188987	0.000295597	3470	105.152
MW-5	0.00248857	0.00108111	0.000105645	0.000309875	3294	117.643
TMW-1	0.00247417	0.00108884	9.12398e-005	0.000324857	2560	106.667
TMW-2	0.0027	0.00158882	0.000317073	0.000324857	2674	111.417
TMW-3	0.00236	0.000994987	-2.29268e-005	0.000320733	2550	102

Analysis of Variance Statistics

SS Wells	4.03307e-006
SS Total	0.000341126

Kruskal-Wallis Statistics

Non-Detect Rank	102
Background Rank Sum	4406
Background Rank Mean	107.463

H Statistic	1.3444
H Adjusted for Ties	6.9822

Basic Statistics

Parameter: Fluoride

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

Total Measurements	189
Total Non-Detects	166 (87.8307%)
Pooled Mean	0.137772
Pooled Std Dev	0.0527818
Compliance Meas.	158
Compliance Mean	0.140576
Compliance Std Dev	0.0561331
Background Meas.	31
Background Mean	0.123484
Background Std Dev	0.026763

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	31	30	96.7742	3.828

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.123484	0.026763	0	2677	86.3548

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	30	8	26.6667	6.161
MW-4	27	27	100	3.35
MW-5	28	28	100	3.45
TMW-1	24	24	100	3.05
TMW-2	24	24	100	3.05
TMW-3	25	25	100	3.15

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.205367	0.0945521	0.0818828	0.0113968	4590	153
MW-4	0.124074	0.0254588	0.000590203	0.0117142	2254.5	83.5
MW-5	0.123214	0.0253937	-0.000269585	0.0116018	2338	83.5
TMW-1	0.127083	0.0254489	0.00359946	0.0120991	2004	83.5
TMW-2	0.127083	0.0254489	0.00359946	0.0120991	2004	83.5
TMW-3	0.126	0.0254951	0.00251613	0.011962	2087.5	83.5

Analysis of Variance Statistics

SS Wells	0.163348
SS Total	0.523753

Kruskal-Wallis Statistics

Non-Detect Rank	83.5
Background Rank Sum	2677
Background Rank Mean	86.3548

H Statistic	40.1554
H Adjusted for Ties	124.528

Basic Statistics

Parameter: Nickel

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

Total Measurements	220
Total Non-Detects	127 (57.7273%)
Pooled Mean	0.00964336
Pooled Std Dev	0.0221625
Compliance Meas.	179
Compliance Mean	0.00747961
Compliance Std Dev	0.0155978
Background Meas.	41
Background Mean	0.01909
Background Std Dev	0.0386539

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	41	11	26.8293	0.78269

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.01909	0.0386539	0	6124	149.366

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	44	19	43.1818	0.79908
MW-4	33	32	96.9697	0.16409
MW-5	28	0	0	0.20116
TMW-1	24	21	87.5	0.05081
TMW-2	25	22	88	0.07246
TMW-3	25	22	88	0.05125

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.0181609	0.0281847	-0.000929091	0.00460559	5473	124.386
MW-4	0.00497242	0.0065965	-0.0141176	0.00496205	2178	66
MW-5	0.00718429	0.00317985	-0.0119057	0.00520173	5021	179.321
TMW-1	0.00211708	0.000507856	-0.0169729	0.00545323	1760	73.3333
TMW-2	0.0028984	0.00349756	-0.0161916	0.00538399	1942	77.68
TMW-3	0.00205	0.000187705	-0.01704	0.00538399	1812	72.48

Analysis of Variance Statistics

SS Wells	0.0116786
SS Total	0.107567

Kruskal-Wallis Statistics

Non-Detect Rank	64
Background Rank Sum	6124
Background Rank Mean	149.366

H Statistic	89.9886
H Adjusted for Ties	111.422

Basic Statistics

Parameter: Sulfate

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

Total Measurements	219
Total Non-Detects	141 (64.3836%)
Pooled Mean	16.7618
Pooled Std Dev	44.7137
Compliance Meas.	180
Compliance Mean	18.9845
Compliance Std Dev	49.0396
Background Meas.	39
Background Mean	6.50333
Background Std Dev	3.17361

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	39	22	56.4103	253.63

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	6.50333	3.17361	0	4247	108.897

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	41	2	4.87805	2577.79
MW-4	33	32	96.9697	183
MW-5	28	7	25	266.42
TMW-1	26	26	100	130
TMW-2	26	26	100	130
TMW-3	26	26	100	130

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	62.8729	90.4099	56.3696	8.80024	7829	190.951
MW-4	5.54545	3.1334	-0.957879	9.30573	2463	74.6364
MW-5	9.515	4.3156	3.01167	9.7454	4013	143.321
TMW-1	5	0	-1.50333	9.96119	1846	71
TMW-2	5	0	-1.50333	9.96119	1846	71
TMW-3	5	0	-1.50333	9.96119	1846	71

Analysis of Variance Statistics

SS Wells	107692
SS Total	435850

Kruskal-Wallis Statistics

Non-Detect Rank	71
Background Rank Sum	4247
Background Rank Mean	108.897

H Statistic	114.501
H Adjusted for Ties	156.182

Basic Statistics

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	220
Total Non-Detects	163 (74.0909%)
Pooled Mean	0.0542668
Pooled Std Dev	0.181206
Compliance Meas.	179
Compliance Mean	0.0616307
Compliance Std Dev	0.200246
Background Meas.	41
Background Mean	0.0221171
Background Std Dev	0.00573485

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	41	30	73.1707	0.9068

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0221171	0.00573485	0	4380	106.829

Compliance Locations

There are 6 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-3	44	14	31.8182	6.3967
MW-4	33	29	87.8788	1.4159
MW-5	28	22	78.5714	1.0635
TMW-1	24	23	95.8333	0.6131
TMW-2	24	22	91.6667	0.6007
TMW-3	26	23	88.4615	0.942

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-3	0.14538	0.383921	0.123262	0.0385637	6994	158.955
MW-4	0.0429061	0.0896402	0.020789	0.0415484	3196	96.8485
MW-5	0.0379821	0.0443595	0.0158651	0.0435553	3005	107.321
TMW-1	0.0255458	0.00267403	0.00342876	0.0456611	2082	86.75
TMW-2	0.0250292	9.99094e-005	0.00291209	0.0456611	2169	90.375
TMW-3	0.0362308	0.0540814	0.0141137	0.0445396	2484	95.5385

Analysis of Variance Statistics

SS Wells	0.468101
SS Total	7.19096

Kruskal-Wallis Statistics

Non-Detect Rank	82
Background Rank Sum	4380
Background Rank Mean	106.829

H Statistic	34.3978
H Adjusted for Ties	57.9783

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 = 20 for 41 measurements

Sum of b values = 0.167378
Sample Standard Deviation = 0.0284085
W Statistic = 0.867846

5% Critical value of 0.941 exceeds 0.867846
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 exceeds 0.867846
Evidence of non-normality at 99% level of significance

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 = 20 for 41 measurements

Sum of b values = 1.22337
Sample Standard Deviation = 0.265408
W Statistic = 0.531161

5% Critical value of 0.941 exceeds 0.531161
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 exceeds 0.531161
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 = 20 for 41 measurements

Sum of b values = 0.0439615
Sample Standard Deviation = 0.0104959
W Statistic = 0.438574

5% Critical value of 0.941 exceeds 0.438574
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 exceeds 0.438574
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 40 measurements

Sum of b values = 0
Sample Standard Deviation = 6.58809e-019
W Statistic = 0

5% Critical value of 0.94 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.919 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 42 measurements

Sum of b values = 6.30044
Sample Standard Deviation = 1.08987
W Statistic = 0.815101

5% Critical value of 0.942 exceeds 0.815101
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.815101
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 = 20 for 41 measurements

Sum of b values = 0.0918673
Sample Standard Deviation = 0.0150664
W Statistic = 0.929488

5% Critical value of 0.941 exceeds 0.929488
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 is less than 0.929488
Data is normally distributed 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 = 15 for 31 measurements

Sum of b values = 0.121641
Sample Standard Deviation = 0.026763
W Statistic = 0.688603

5% Critical value of 0.929 exceeds 0.688603
Evidence of non-normality at 95% level of significance

1% Critical value of 0.902 exceeds 0.688603
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Lead
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 = 0.00780303
Sample Standard Deviation = 0.00158775
W Statistic = 0.603813

5% Critical value of 0.941 exceeds 0.603813
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 exceeds 0.603813
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 = 20 for 41 measurements

Sum of b values = 0.145961
Sample Standard Deviation = 0.0386539
W Statistic = 0.356475

5% Critical value of 0.941 exceeds 0.356475
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 exceeds 0.356475
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 = 19 for 39 measurements

Sum of b values = 15.2256
Sample Standard Deviation = 3.17361
W Statistic = 0.605702

5% Critical value of 0.939 exceeds 0.605702
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.605702
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 = 20 for 41 measurements

Sum of b values = 0.0288971
Sample Standard Deviation = 0.00573485
W Statistic = 0.634753

5% Critical value of 0.941 exceeds 0.634753
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 exceeds 0.634753
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 = 20 for 41 measurements

Sum of b values = 5.38219
Sample Standard Deviation = 0.997676
W Statistic = 0.727578

5% Critical value of 0.941 exceeds 0.727578
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 exceeds 0.727578
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 = 20 for 41 measurements

Sum of b values = 5.68425
Sample Standard Deviation = 0.936106
W Statistic = 0.921799

5% Critical value of 0.941 exceeds 0.921799
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 is less than 0.921799
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 = 20 for 41 measurements

Sum of b values = 1.93813
Sample Standard Deviation = 0.337282
W Statistic = 0.825503

5% Critical value of 0.941 exceeds 0.825503
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 exceeds 0.825503
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chloride
Background Locations
Normality Test of Parameter Concentrations
Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 21 for 42 measurements

Sum of b values = 2.06802
Sample Standard Deviation = 0.340606
W Statistic = 0.899124

5% Critical value of 0.942 exceeds 0.899124
Evidence of non-normality at 95% level of significance

1% Critical value of 0.922 exceeds 0.899124
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 40 measurements

Sum of b values = 0
Sample Standard Deviation = 3.59797e-015
W Statistic = 0

5% Critical value of 0.94 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.919 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 = 20 for 41 measurements

Sum of b values = 2.3734
Sample Standard Deviation = 0.381136
W Statistic = 0.969445

5% Critical value of 0.941 is less than 0.969445
Data is normally distributed at 95% level of significance

1% Critical value of 0.92 is less than 0.969445
Data is normally distributed at 99% level of significance

Shapiro-Wilks Test of Normality
Parameter: Lead
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 = 3.11747
Sample Standard Deviation = 0.571927
W Statistic = 0.742787

5% Critical value of 0.941 exceeds 0.742787
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 exceeds 0.742787
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 = 15 for 31 measurements

Sum of b values = 1.25534
Sample Standard Deviation = 0.281037
W Statistic = 0.665079

5% Critical value of 0.929 exceeds 0.665079
Evidence of non-normality at 95% level of significance

1% Critical value of 0.902 exceeds 0.665079
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 = 20 for 41 measurements

Sum of b values = 3.5782
Sample Standard Deviation = 0.748167
W Statistic = 0.571837

5% Critical value of 0.941 exceeds 0.571837
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 exceeds 0.571837
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 = 19 for 39 measurements

Sum of b values = 3.38968
Sample Standard Deviation = 0.631365
W Statistic = 0.758531

5% Critical value of 0.939 exceeds 0.758531
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.758531
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 = 20 for 41 measurements

Sum of b values = 1.91037
Sample Standard Deviation = 0.357752
W Statistic = 0.712872

5% Critical value of 0.941 exceeds 0.712872
Evidence of non-normality at 95% level of significance

1% Critical value of 0.92 exceeds 0.712872
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

From 40 baseline samples
Baseline mean = -3.28379
Baseline std Dev = 0.385884

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 = 40 (background observations) - 1
t(0.95, 40) = 1.68488

Date	Samples	Mean	Interval	Significant
5/25/2023	1	-3.2264	[0, -2.62554]	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 0%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 42
Maximum Baseline Concentration = 0.1
Confidence Level = 97.7%
False Positive Rate = 2.3%

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

Date	Count	Mean	Significant
5/25/2023	1	0.00456	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 = 7.14286%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 42
Maximum Baseline Concentration = 0.084
Confidence Level = 97.7%
False Positive Rate = 2.3%

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

Date	Count	Mean	Significant
5/25/2023	1	0.019	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) = 42
Maximum Baseline Concentration = 5.98
Confidence Level = 97.7%
False Positive Rate = 2.3%

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

Date	Count	Mean	Significant
5/25/2023	1	2.17	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Cobalt

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) = 42
Maximum Baseline Concentration = 0.0763
Confidence Level = 97.7%
False Positive Rate = 2.3%

Baseline Measurements	Date	Value
	4/19/2008	0.032
	1/21/2009	0.03
	4/9/2009	0.043
	5/19/2009	0.056
	7/16/2010	0.035
	2/8/2011	0.031
	2/17/2012	0.026
	7/31/2012	0.028
	3/27/2013	0.036
	12/23/2013	0.028
	6/26/2014	0.036
	11/21/2014	0.046
	5/28/2015	0.041
	11/11/2015	0.0257
	5/9/2016	0.0417
	11/10/2016	0.0196
	6/8/2017	0.0342
	9/28/2017	0.0403
	12/11/2017	0.0411
	3/21/2018	0.0425
	6/19/2018	0.0206
	9/12/2018	0.0198
	12/4/2018	0.0284
	3/5/2019	0.0395
	6/4/2019	0.0411
	9/5/2019	0.0763
	11/20/2019	0.0329
	2/27/2020	0.0743
	6/2/2020	0.0432
	8/26/2020	0.0424
	11/17/2020	0.0291
	3/2/2021	0.0313
	5/20/2021	0.0407
	8/26/2021	0.0585
	11/18/2021	0.0721
	2/9/2022	0.0676
	5/12/2022	0.0606
	8/11/2022	0.0582
	11/7/2022	0.013
	1/31/2023	0.0458
	5/25/2023	0.0397

Date	Count	Mean	Significant
5/25/2023	1	0.0397	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 = 26.1905%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 42
Maximum Baseline Concentration = 0.2
Confidence Level = 97.7%
False Positive Rate = 2.3%

Baseline Measurements	Date	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

Date	Count	Mean	Significant
5/25/2023	1	0.00609	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 = 52.381%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 42
Maximum Baseline Concentration = 18.8
Confidence Level = 97.7%
False Positive Rate = 2.3%

Baseline Measurements	Date	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

Date	Count	Mean	Significant
5/25/2023	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 = 43.1193%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 41
Maximum Background Value = 1.2
Confidence Level = 87.2%
False Positive Rate = 12.8%

Location	Date	Count	Mean	Significant
MW-3	5/25/2023	1	0.351	FALSE
MW-4	5/25/2023	1	0.1	FALSE
MW-5	5/25/2023	1	0.12	FALSE
TMW-1	5/25/2023	1	0.1	FALSE
TMW-2	5/25/2023	1	0.107	FALSE
TMW-3	5/25/2023	1	0.106	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 5.02283%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 41
Maximum Background Value = 0.084
Confidence Level = 87.2%
False Positive Rate = 12.8%

Location	Date	Count	Mean	Significant
MW-3	5/25/2023	1	0.0419	FALSE
MW-4	5/25/2023	1	0.00919	FALSE
MW-5	5/25/2023	1	0.0604	FALSE
TMW-1	5/25/2023	1	0.0141	FALSE
TMW-2	5/25/2023	1	0.0332	FALSE
TMW-3	5/25/2023	1	0.0491	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 = 88.1279%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 40
Maximum Background Value = 0.001
Confidence Level = 87%
False Positive Rate = 13%

Location	Date	Count	Mean	Significant
MW-3	**5/25/2023**	**1**	**0.0012**	**TRUE**
MW-4	5/25/2023	1	0.001	FALSE
MW-5	5/25/2023	1	0.001	FALSE
TMW-1	5/25/2023	1	0.001	FALSE
TMW-2	5/25/2023	1	0.001	FALSE
TMW-3	5/25/2023	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 = 41
Background Mean = -3.28239
Background Std Dev = 0.381136

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 = 41 (background observations) - 1
t(0.991667, 41) = 2.51699

Well MW-3

Date	Samples	Mean	Interval	Significant
5/25/2023	1	-5.92568	[0, -2.31144]	FALSE

Well MW-4

Date	Samples	Mean	Interval	Significant
5/25/2023	1	-6.90776	[0, -2.31144]	FALSE

Well MW-5

Date	Samples	Mean	Interval	Significant
5/25/2023	1	-6.90776	[0, -2.31144]	FALSE

Well TMW-1

Date	Samples	Mean	Interval	Significant
5/25/2023	1	-6.90776	[0, -2.31144]	FALSE

Well TMW-2

Date	Samples	Mean	Interval	Significant
5/25/2023	1	-6.90776	[0, -2.31144]	FALSE

Well TMW-3

Date	Samples	Mean	Interval	Significant
5/25/2023	1	-6.90776	[0, -2.31144]	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) = 42
Maximum Background Value = 5.98
Confidence Level = 87.5%
False Positive Rate = 12.5%

Location	Date	Count	Mean	Significant
MW-3	5/25/2023	1	14.7	TRUE
MW-4	5/25/2023	1	11.8	TRUE
MW-5	5/25/2023	1	76.1	TRUE
TMW-1	5/25/2023	1	47.7	TRUE
TMW-2	5/25/2023	1	38.3	TRUE
TMW-3	5/25/2023	1	63	TRUE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Fluoride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.8307%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 31
Maximum Background Value = 0.178
Confidence Level = 83.8%
False Positive Rate = 16.2%

Location	Date	Count	Mean	Significant
MW-3	5/25/2023	1	0.176	FALSE
MW-4	5/25/2023	1	0.15	FALSE
MW-5	5/25/2023	1	0.15	FALSE
TMW-1	5/25/2023	1	0.15	FALSE
TMW-2	5/25/2023	1	0.15	FALSE
TMW-3	5/25/2023	1	0.15	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Lead

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 93.1193%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 41
Maximum Background Value = 0.0094
Confidence Level = 87.2%
False Positive Rate = 12.8%

Location	Date	Count	Mean	Significant
MW-3	5/25/2023	1	0.002	FALSE
MW-4	5/25/2023	1	0.002	FALSE
MW-5	5/25/2023	1	0.00297	FALSE
TMW-1	5/25/2023	1	0.002	FALSE
TMW-2	5/25/2023	1	0.002	FALSE
TMW-3	5/25/2023	1	0.002	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 57.7273%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 41
Maximum Background Value = 0.2
Confidence Level = 87.2%
False Positive Rate = 12.8%

Location	Date	Count	Mean	Significant
MW-3	5/25/2023	1	0.0086	FALSE
MW-4	5/25/2023	1	0.002	FALSE
MW-5	5/25/2023	1	0.00616	FALSE
TMW-1	5/25/2023	1	0.002	FALSE
TMW-2	5/25/2023	1	0.002	FALSE
TMW-3	5/25/2023	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 = 64.3836%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 39
Maximum Background Value = 18.8
Confidence Level = 86.7%
False Positive Rate = 13.3%

Location	Date	Count	Mean	Significant
MW-3	**5/25/2023**	**1**	**40.1**	**TRUE**
MW-4	5/25/2023	1	5	FALSE
MW-5	5/25/2023	1	17.7	FALSE
TMW-1	5/25/2023	1	5	FALSE
TMW-2	5/25/2023	1	5	FALSE
TMW-3	5/25/2023	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 = 74.0909%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 41
Maximum Background Value = 0.0287
Confidence Level = 87.2%
False Positive Rate = 12.8%

Location	Date	Count	Mean	Significant
MW-3	**5/25/2023**	**1**	**0.0754**	**TRUE**
MW-4	5/25/2023	1	0.025	FALSE
MW-5	5/25/2023	1	0.025	FALSE
TMW-1	5/25/2023	1	0.025	FALSE
TMW-2	5/25/2023	1	0.025	FALSE
TMW-3	5/25/2023	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 = 122 - 201 = -79

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

There are 0 time periods with multiple data

A = 36
B = 0
C = 0
D = 0
E = 4
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2056.33
Z-Score = -1.72008
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.72008| <= 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 = 216 - 105 = 111

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

There are 0 time periods with multiple data

A = 84
B = 0
C = 6
D = 0
E = 8
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2053.67
Z-Score = 2.42732
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.42732 > 1.65463 indicating an upward 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 = 145 - 176 = -31

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

There are 0 time periods with multiple data

A = 84
B = 0
C = 6
D = 0
E = 8
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2053.67
Z-Score = -0.661997
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.661997| <= 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 = 202 - 122 = 80

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2057.33
Z-Score = 1.74171
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.74171| <= 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 = 171 - 154 = 17

Tied Group	Value	Members

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2058.33
Z-Score = 0.352665
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.352665| <= 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 - 77 = 35

Tied Group	Value	Members
1	5	17

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

There are 0 time periods with multiple data

A = 10608
B = 0
C = 4080
D = 0
E = 272
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 1469
Z-Score = 0.887091
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.887091| <= 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 = 153 - 157 = -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

There are 0 time periods with multiple data

A = 510
B = 0
C = 120
D = 0
E = 30
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2030
Z-Score = -0.0665845
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.0665845| <= 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 = 133 - 182 = -49

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

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2041.67
Z-Score = -1.0623
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.0623| <= 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 = 29 - 221 = -192

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

There are 0 time periods with multiple data

A = 54
B = 0
C = 0
D = 0
E = 6
F = 0
a = 25806
b = 95634
c = 1012
Group Variance = 1430.67
Z-Score = -5.04968
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-5.04968 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: TMW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 59 - 151 = -92

Tied Group	Value	Members
1	0.1	12

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

There are 0 time periods with multiple data

A = 3828
B = 0
C = 1320
D = 0
E = 132
F = 0
a = 29256
b = 109296
c = 1104
Group Variance = 1412.67
Z-Score = -2.42115
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-2.42115 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Barium
Location: MW-3
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 107 - 244 = -137

Tied Group	Value	Members

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
9/27/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
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 = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 2301
Z-Score = -2.83518
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-2.83518 < -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 = 207 - 110 = 97

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

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

There are 0 time periods with multiple data

A = 192
B = 0
C = 24
D = 0
E = 16
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2047.67
Z-Score = 2.12149
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.12149 > 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 = 262 - 63 = 199

Tied Group	Value	Members

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2058.33
Z-Score = 4.36423
Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.36423 > 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 = 127 - 120 = 7

Tied Group	Value	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

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 25806
b = 95634
c = 1012
Group Variance = 1425
Z-Score = 0.158944
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.158944| <= 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 = 103 - 149 = -46

Tied Group	Value	Members
1	0.033	2

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 25806
b = 95634
c = 1012
Group Variance = 1432.67
Z-Score = -1.18889
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.18889| <= 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 = 207 - 68 = 139

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 29256
b = 109296
c = 1104
Group Variance = 1624.33
Z-Score = 3.42406
Comparison Level at 95% confidence level = 1.65463 (upward trend)
3.42406 > 1.65463 indicating an upward 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 = 73 - 250 = -177

Tied Group	Value	Members
1	23.9	2
2	18.4	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
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 = 36
B = 0
C = 0
D = 0
E = 4
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2056.33
Z-Score = -3.8812
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-3.8812 < -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 = 290 - 35 = 255

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2058.33
Z-Score = 5.59855
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.59855 > 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 = 205 - 119 = 86

Tied Group	Value	Members
1	83.5	2

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2057.33
Z-Score = 1.87399
Comparison Level at 95% confidence level = 1.65463 (upward trend)
1.87399 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chloride
Location: TMW-1
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 321 - 4 = 317

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2058.33
Z-Score = 6.96513
Comparison Level at 95% confidence level = 1.65463 (upward trend)
6.96513 > 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 = 276 - 49 = 227

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2058.33
Z-Score = 4.98139
Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.98139 > 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 = 289 - 35 = 254

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2057.33
Z-Score = 5.57787
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.57787 > 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
8/26/2021	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

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: Cobalt
Location: MW-3
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 78 - 127 = -49

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

There are 0 time periods with multiple data

A = 8880
B = 0
C = 3360
D = 0
E = 240
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 1565
Z-Score = -1.21334
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.21334| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Lead
Location: MW-3
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 62 - 29 = 33

Tied Group	Value	Members
1	0.002	22
2	0.005	3

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

There are 0 time periods with multiple data

A = 22704
B = 0
C = 9246
D = 0
E = 468
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 797
Z-Score = 1.1335
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.1335| <= 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 = 138 - 181 = -43

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

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2049.67
Z-Score = -0.9277
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.9277| <= 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 = 166 - 182 = -16

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

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 2297.33
Z-Score = -0.312953
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.312953| <= 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 = 127 - 197 = -70

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2057.33
Z-Score = -1.52124
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.52124| <= 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 - 189 = -54

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2057.33
Z-Score = -1.16849
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.16849| <= 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 = 301 - 14 = 287

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

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2041.67
Z-Score = 6.32956
Comparison Level at 95% confidence level = 1.65463 (upward trend)
6.32956 > 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 = 134 - 201 = -67

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

There are 0 time periods with multiple data

A = 528
B = 0
C = 120
D = 0
E = 32
F = 0
a = 41418
b = 157950
c = 1404
Group Variance = 2271.67
Z-Score = -1.38475
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.38475| <= 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 = 22 - 23 = -1
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-1| is 1
1 >= 0.025 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 = 9 - 35 = -26
Comparing at 95% confidence level (downward trend)
Probability of obtaining S >= 26 is 0.01115
S < 0 and 0.01115 < 0.05 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: ALUMINUM
Location: TMW-2
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 10 - 33 = -23
Comparing at 95% confidence level (downward trend)
Probability of obtaining S >= 23 is 0.023
S < 0 and 0.023 < 0.05 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: ALUMINUM
Location: TMW-3
Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 8 - 9 = -1
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-1| is 1
1 >= 0.025 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 = 22 - 23 = -1
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-1| is 1
1 >= 0.025 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 = 24 - 21 = 3
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |3| is 0.862
0.862 >= 0.025 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 = 27 - 18 = 9
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |9| is 0.484
0.484 >= 0.025 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 = 15 - 29 = -14
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-14| is 0.254
0.254 >= 0.025 indicating no evidence of a 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 = 23 - 22 = 1
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |1| is 1
1 >= 0.025 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 = 14 - 31 = -17
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-17| is 0.156
0.156 >= 0.025 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 = 22 - 23 = -1
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-1| is 1
1 >= 0.025 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 = 27 - 18 = 9
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |9| is 0.484
0.484 >= 0.025 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 - 17 = 10
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |10| is 0.432
0.432 >= 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 = 23 - 21 = 2
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |2| is 0.931
0.931 >= 0.025 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 = 37 - 8 = 29
Comparing at 95% confidence level (upward trend)
Probability of obtaining S >= 29 is 0.0046
S > 0 and 0.0046 < 0.05 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 = 21 - 24 = -3
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-3| is 0.862
0.862 >= 0.025 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 = 43 - 2 = 41
Comparing at 95% confidence level (upward trend)
Probability of obtaining S >= 41 is 1.5e-005
S > 0 and 1.5e-005 < 0.05 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 = 30 - 15 = 15
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |15| is 0.216
0.216 >= 0.025 indicating no evidence of a 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 - 20 = 4
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |4| is 0.795
0.795 >= 0.025 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 = 19 - 26 = -7
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-7| is 0.6
0.6 >= 0.025 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 = 9 - 0 = 9
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |9| is 0.484
0.484 >= 0.025 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 = 18 - 21 = -3
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-3| is 0.862
0.862 >= 0.025 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 = 26 - 19 = 7
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |7| is 0.6
0.6 >= 0.025 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 = 26 - 19 = 7
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |7| is 0.6
0.6 >= 0.025 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 - 26 = -7
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-7| is 0.6
0.6 >= 0.025 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 - 24 = -9
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-9| is 0.484
0.484 >= 0.025 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 - 18 = 9
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |9| is 0.484
0.484 >= 0.025 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 = 34 - 11 = 23
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |23| is 0.046
0.046 >= 0.025 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: ZINC

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 29 - 10 = 19
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |19| is 0.108
0.108 >= 0.025 indicating no evidence of a trend

APPENDIX C
LABORATORY ANALYTICAL REPORTS & FIELD INFORMATION LOGS

ANALYTICAL REPORT

June 16, 2023

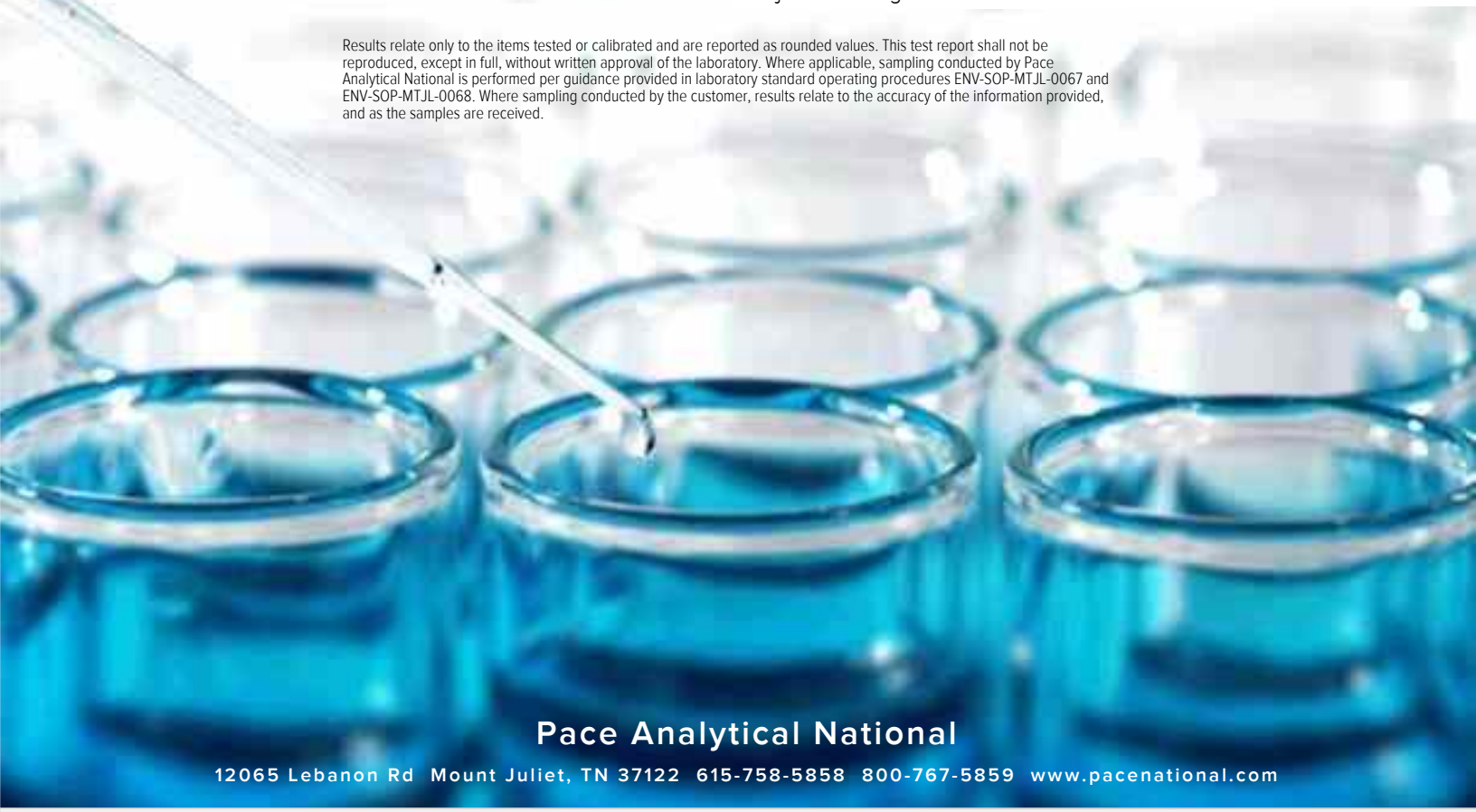
Civil & Environmental Consultants - TN

Sample Delivery Group:	L1620426
Samples Received:	05/26/2023
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 National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

MW-1 L1620426-01 GW

Collected by: Joseph Daugherty | Collected date/time: 05/25/23 16:15 | Received date/time: 05/26/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2068796	1	06/02/23 16:11	06/02/23 16:11	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2071588	1	06/05/23 09:36	06/05/23 09:36	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2067922	1	05/29/23 10:06	05/29/23 10:06	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2067840	1	05/28/23 09:35	05/28/23 12:11	RTW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2067499	1	05/27/23 06:12	05/27/23 06:12	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2072081	1	06/13/23 13:03	06/14/23 00:51	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2068775	1	06/01/23 07:29	06/01/23 13:32	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2068796	1	06/02/23 08:53	06/02/23 16:11	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2069732	1	06/01/23 12:33	06/01/23 12:33	JAH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2068951	1.02	05/31/23 12:15	06/01/23 00:30	HMH	Mt. Juliet, TN

MW-3 L1620426-02 GW

Collected by: Joseph Daugherty | Collected date/time: 05/25/23 12:15 | Received date/time: 05/26/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2068796	1	06/02/23 16:14	06/02/23 16:14	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2071588	1	06/05/23 09:41	06/05/23 09:41	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2067922	1	05/29/23 10:08	05/29/23 10:08	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2067840	1	05/28/23 09:35	05/28/23 12:11	RTW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2067499	1	05/27/23 06:26	05/27/23 06:26	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2072081	1	06/13/23 13:03	06/14/23 00:53	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2068775	1	06/01/23 07:29	06/01/23 13:35	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2068796	1	06/02/23 08:53	06/02/23 16:14	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2069732	1	06/01/23 12:52	06/01/23 12:52	JAH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2068951	1.07	05/31/23 12:15	06/01/23 00:42	HMH	Mt. Juliet, TN

MW-4 L1620426-03 GW

Collected by: Joseph Daugherty | Collected date/time: 05/25/23 14:20 | Received date/time: 05/26/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2068796	1	06/02/23 16:17	06/02/23 16:17	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2071588	1	06/05/23 10:00	06/05/23 10:00	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2067922	1	05/29/23 10:09	05/29/23 10:09	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2067840	1	05/28/23 09:35	05/28/23 12:11	RTW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2067499	1	05/27/23 07:07	05/27/23 07:07	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2072081	1	06/13/23 13:03	06/14/23 00:55	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2068775	1	06/01/23 07:29	06/01/23 13:38	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2068796	1	06/02/23 08:53	06/02/23 16:17	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2069732	1	06/01/23 13:11	06/01/23 13:11	JAH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2068951	1	05/31/23 12:15	06/01/23 00:05	HMH	Mt. Juliet, TN

MW-5 L1620426-04 GW

Collected by: Joseph Daugherty | Collected date/time: 05/25/23 10:35 | Received date/time: 05/26/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2068796	1	06/02/23 16:21	06/02/23 16:21	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2071588	1	06/05/23 10:03	06/05/23 10:03	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2067922	1	05/29/23 10:11	05/29/23 10:11	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2067840	1	05/28/23 09:35	05/28/23 12:12	RTW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2067499	1	05/27/23 03:45	05/27/23 03:45	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2072081	1	06/13/23 13:03	06/14/23 00:57	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2068775	1	06/01/23 07:29	06/01/23 13:46	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2068796	1	06/02/23 08:53	06/02/23 16:21	JPD	Mt. Juliet, TN

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

MW-5 L1620426-04 GW

Collected by: Joseph Daugherty | Collected date/time: 05/25/23 10:35 | Received date/time: 05/26/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2069732	1	06/01/23 13:30	06/01/23 13:30	JAH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2068951	1.05	05/31/23 12:15	05/31/23 23:41	HMH	Mt. Juliet, TN

TMW-1 L1620426-05 GW

Collected by: Joseph Daugherty | Collected date/time: 05/25/23 13:00 | Received date/time: 05/26/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2068796	1	06/02/23 16:31	06/02/23 16:31	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2071589	1	06/05/23 09:17	06/05/23 09:17	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2067922	1	05/29/23 10:12	05/29/23 10:12	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2067840	1	05/28/23 09:35	05/28/23 12:12	RTW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2067499	1	05/27/23 06:40	05/27/23 06:40	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2072081	1	06/13/23 13:03	06/14/23 00:59	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2068775	1	06/01/23 07:29	06/01/23 13:49	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2068796	1	06/02/23 08:53	06/02/23 16:31	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2069732	1	06/01/23 13:49	06/01/23 13:49	JAH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2068951	1.03	05/31/23 12:15	06/01/23 00:54	HMH	Mt. Juliet, TN

TMW-2 L1620426-06 GW

Collected by: Joseph Daugherty | Collected date/time: 05/25/23 11:55 | Received date/time: 05/26/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2068796	1	06/02/23 16:34	06/02/23 16:34	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2071589	1	06/05/23 09:20	06/05/23 09:20	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2067922	1	05/29/23 10:14	05/29/23 10:14	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2067840	1	05/28/23 09:35	05/28/23 12:12	RTW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2067499	1	05/27/23 05:04	05/27/23 05:04	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2072081	1	06/13/23 13:03	06/14/23 01:01	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2068775	1	06/01/23 07:29	06/01/23 13:51	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2068796	1	06/02/23 08:53	06/02/23 16:34	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2069732	1	06/01/23 14:08	06/01/23 14:08	JAH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2068951	1.06	05/31/23 12:15	06/01/23 01:07	HMH	Mt. Juliet, TN

TMW-3 L1620426-07 GW

Collected by: Joseph Daugherty | Collected date/time: 05/25/23 10:30 | Received date/time: 05/26/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2068796	1	06/02/23 16:37	06/02/23 16:37	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2071589	1	06/05/23 09:24	06/05/23 09:24	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2067922	1	05/29/23 10:15	05/29/23 10:15	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2067840	1	05/28/23 09:35	05/28/23 12:14	RTW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2067499	1	05/27/23 03:57	05/27/23 03:57	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2072081	1	06/13/23 13:03	06/14/23 01:03	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2068775	1	06/01/23 07:29	06/01/23 12:43	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2068796	1	06/02/23 08:53	06/02/23 16:37	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2069732	1	06/01/23 14:27	06/01/23 14:27	JAH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2068951	1.03	05/31/23 12:15	06/01/23 01:19	HMH	Mt. Juliet, TN

DUPLICATE L1620426-08 GW

Collected by: Joseph Daugherty | Collected date/time: 05/25/23 00:00 | Received date/time: 05/26/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2068796	1	06/02/23 16:41	06/02/23 16:41	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2071589	1	06/05/23 09:27	06/05/23 09:27	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2067922	1	05/29/23 10:22	05/29/23 10:22	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2067840	1	05/28/23 09:35	05/28/23 12:14	RTW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2067499	1	05/27/23 04:10	05/27/23 04:10	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2072081	1	06/13/23 13:03	06/14/23 11:10	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2068775	1	06/01/23 07:29	06/01/23 13:54	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2068796	1	06/02/23 08:53	06/02/23 16:41	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2069732	1	06/01/23 14:46	06/01/23 14:46	JAH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2068951	1	05/31/23 12:15	06/01/23 01:31	HMH	Mt. Juliet, TN

FIELD BLANK L1620426-09 GW

Collected by: Joseph Daugherty | Collected date/time: 05/25/23 13:10 | Received date/time: 05/26/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2068796	1	06/02/23 16:44	06/02/23 16:44	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2071589	1	06/05/23 09:32	06/05/23 09:32	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2067922	1	05/29/23 10:23	05/29/23 10:23	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2067840	1	05/28/23 09:35	05/28/23 12:14	RTW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2067499	1	05/27/23 06:53	05/27/23 06:53	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2072514	1	06/14/23 12:15	06/15/23 10:47	LAS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2068775	1	06/01/23 07:29	06/01/23 13:57	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2068796	1	06/02/23 08:53	06/02/23 16:44	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2069732	1	06/01/23 10:20	06/01/23 10:20	JAH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2068951	1.03	05/31/23 12:15	06/01/23 01:43	HMH	Mt. Juliet, TN

TRIP BLANK L1620426-10 GW

Collected by: Joseph Daugherty | Collected date/time: 05/25/23 00:00 | Received date/time: 05/26/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2069732	1	06/01/23 10:39	06/01/23 10:39	JAH	Mt. Juliet, TN

CASE NARRATIVE

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

Chris McCord
Project Manager

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	18.8		2.50	1	06/02/2023 16:11	WG2068796

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	36.8		20.0	1	06/05/2023 09:36	WG2071588

Sample Narrative:
L1620426-01 WG2071588: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	05/29/2023 10:06	WG2067922

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/28/2023 12:11	WG2067840

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/27/2023 06:12	WG2067499
Chloride	2.17		1.00	1	05/27/2023 06:12	WG2067499
Fluoride	ND		0.150	1	05/27/2023 06:12	WG2067499
Nitrate	0.104		0.100	1	05/27/2023 06:12	WG2067499
Sulfate	ND		5.00	1	05/27/2023 06:12	WG2067499

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	0.00188		0.000200	1	06/14/2023 00:51	WG2072081

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/01/2023 13:32	WG2068775

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	06/02/2023 16:11	WG2068796
Antimony	ND		0.00400	1	06/02/2023 16:11	WG2068796
Arsenic	0.00456		0.00200	1	06/02/2023 16:11	WG2068796
Barium	0.0190		0.00200	1	06/02/2023 16:11	WG2068796
Beryllium	ND		0.00200	1	06/02/2023 16:11	WG2068796
Cadmium	ND		0.00100	1	06/02/2023 16:11	WG2068796
Calcium	3.36		1.00	1	06/02/2023 16:11	WG2068796
Chromium	ND		0.00200	1	06/02/2023 16:11	WG2068796
Cobalt	0.0397		0.00200	1	06/02/2023 16:11	WG2068796
Copper	ND		0.00500	1	06/02/2023 16:11	WG2068796

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	11.1		0.100	1	06/02/2023 16:11	WG2068796
Lead	ND		0.00200	1	06/02/2023 16:11	WG2068796
Magnesium	2.53		1.00	1	06/02/2023 16:11	WG2068796
Manganese	0.745		0.00500	1	06/02/2023 16:11	WG2068796
Nickel	0.00609		0.00200	1	06/02/2023 16:11	WG2068796
Potassium	ND		2.00	1	06/02/2023 16:11	WG2068796
Selenium	ND		0.00200	1	06/02/2023 16:11	WG2068796
Silver	ND		0.00200	1	06/02/2023 16:11	WG2068796
Sodium	2.47		2.00	1	06/02/2023 16:11	WG2068796
Thallium	ND		0.00200	1	06/02/2023 16:11	WG2068796
Vanadium	ND		0.00500	1	06/02/2023 16:11	WG2068796
Zinc	ND		0.0250	1	06/02/2023 16:11	WG2068796

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	06/01/2023 12:33	WG2069732
Acrylonitrile	ND		0.0100	1	06/01/2023 12:33	WG2069732
Benzene	ND		0.00100	1	06/01/2023 12:33	WG2069732
Bromochloromethane	ND		0.00100	1	06/01/2023 12:33	WG2069732
Bromodichloromethane	ND		0.00100	1	06/01/2023 12:33	WG2069732
Bromoform	ND		0.00100	1	06/01/2023 12:33	WG2069732
Bromomethane	ND		0.00500	1	06/01/2023 12:33	WG2069732
Carbon disulfide	ND		0.00100	1	06/01/2023 12:33	WG2069732
Carbon tetrachloride	ND		0.00100	1	06/01/2023 12:33	WG2069732
Chlorobenzene	ND		0.00100	1	06/01/2023 12:33	WG2069732
Chlorodibromomethane	ND		0.00100	1	06/01/2023 12:33	WG2069732
Chloroethane	ND		0.00500	1	06/01/2023 12:33	WG2069732
Chloroform	ND		0.00500	1	06/01/2023 12:33	WG2069732
Chloromethane	ND		0.00250	1	06/01/2023 12:33	WG2069732
Dibromomethane	ND		0.00100	1	06/01/2023 12:33	WG2069732
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/01/2023 12:33	WG2069732
1,2-Dibromoethane	ND		0.00100	1	06/01/2023 12:33	WG2069732
1,2-Dichlorobenzene	ND		0.00100	1	06/01/2023 12:33	WG2069732
1,4-Dichlorobenzene	ND		0.00100	1	06/01/2023 12:33	WG2069732
trans-1,4-Dichloro-2-butene	ND		0.00250	1	06/01/2023 12:33	WG2069732
1,1-Dichloroethane	ND		0.00100	1	06/01/2023 12:33	WG2069732
1,2-Dichloroethane	ND		0.00100	1	06/01/2023 12:33	WG2069732
1,1-Dichloroethene	ND		0.00100	1	06/01/2023 12:33	WG2069732
cis-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 12:33	WG2069732
trans-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 12:33	WG2069732
1,2-Dichloropropane	ND		0.00100	1	06/01/2023 12:33	WG2069732
cis-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 12:33	WG2069732
trans-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 12:33	WG2069732
Ethylbenzene	ND		0.00100	1	06/01/2023 12:33	WG2069732
2-Hexanone	ND		0.0100	1	06/01/2023 12:33	WG2069732
Iodomethane	ND		0.0100	1	06/01/2023 12:33	WG2069732
2-Butanone (MEK)	ND		0.0100	1	06/01/2023 12:33	WG2069732
Methylene Chloride	ND		0.00500	1	06/01/2023 12:33	WG2069732
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/01/2023 12:33	WG2069732
Styrene	ND	J4	0.00100	1	06/01/2023 12:33	WG2069732
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 12:33	WG2069732
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 12:33	WG2069732
Tetrachloroethene	ND		0.00100	1	06/01/2023 12:33	WG2069732
Toluene	ND		0.00100	1	06/01/2023 12:33	WG2069732
1,1,1-Trichloroethane	ND		0.00100	1	06/01/2023 12:33	WG2069732

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	06/01/2023 12:33	WG2069732
Trichloroethene	ND		0.00100	1	06/01/2023 12:33	WG2069732
Trichlorofluoromethane	ND		0.00500	1	06/01/2023 12:33	WG2069732
1,2,3-Trichloropropane	ND		0.00250	1	06/01/2023 12:33	WG2069732
Vinyl acetate	ND		0.0100	1	06/01/2023 12:33	WG2069732
Vinyl chloride	ND		0.00100	1	06/01/2023 12:33	WG2069732
Xylenes, Total	ND		0.00300	1	06/01/2023 12:33	WG2069732
(S) Toluene-d8	*100*		*80.0-120*		*06/01/2023 12:33*	WG2069732
(S) 4-Bromofluorobenzene	*94.7*		*77.0-126*		*06/01/2023 12:33*	WG2069732
(S) 1,2-Dichloroethane-d4	*96.9*		*70.0-130*		*06/01/2023 12:33*	WG2069732

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	06/01/2023 00:30	WG2068951
1,2-Dibromo-3-Chloropropane	ND		0.0000204	1.02	06/01/2023 00:30	WG2068951

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	84.0		2.50	1	06/02/2023 16:14	WG2068796

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	42.2		20.0	1	06/05/2023 09:41	WG2071588

Sample Narrative:

L1620426-02 WG2071588: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	0.254		0.250	1	05/29/2023 10:08	WG2067922

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/28/2023 12:11	WG2067840

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/27/2023 06:26	WG2067499
Chloride	14.7		1.00	1	05/27/2023 06:26	WG2067499
Fluoride	0.176		0.150	1	05/27/2023 06:26	WG2067499
Nitrate	ND		0.100	1	05/27/2023 06:26	WG2067499
Sulfate	40.1		5.00	1	05/27/2023 06:26	WG2067499

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/14/2023 00:53	WG2072081

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/01/2023 13:35	WG2068775

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.351		0.100	1	06/02/2023 16:14	WG2068796
Antimony	ND		0.00400	1	06/02/2023 16:14	WG2068796
Arsenic	ND		0.00200	1	06/02/2023 16:14	WG2068796
Barium	0.0419		0.00200	1	06/02/2023 16:14	WG2068796
Beryllium	ND		0.00200	1	06/02/2023 16:14	WG2068796
Cadmium	0.00120		0.00100	1	06/02/2023 16:14	WG2068796
Calcium	22.4		1.00	1	06/02/2023 16:14	WG2068796
Chromium	ND		0.00200	1	06/02/2023 16:14	WG2068796
Cobalt	0.00267		0.00200	1	06/02/2023 16:14	WG2068796
Copper	ND		0.00500	1	06/02/2023 16:14	WG2068796

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.911		0.100	1	06/02/2023 16:14	WG2068796
Lead	ND		0.00200	1	06/02/2023 16:14	WG2068796
Magnesium	6.80		1.00	1	06/02/2023 16:14	WG2068796
Manganese	0.625		0.00500	1	06/02/2023 16:14	WG2068796
Nickel	0.00860		0.00200	1	06/02/2023 16:14	WG2068796
Potassium	4.35		2.00	1	06/02/2023 16:14	WG2068796
Selenium	ND		0.00200	1	06/02/2023 16:14	WG2068796
Silver	ND		0.00200	1	06/02/2023 16:14	WG2068796
Sodium	5.79		2.00	1	06/02/2023 16:14	WG2068796
Thallium	ND		0.00200	1	06/02/2023 16:14	WG2068796
Vanadium	ND		0.00500	1	06/02/2023 16:14	WG2068796
Zinc	0.0754		0.0250	1	06/02/2023 16:14	WG2068796

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	06/01/2023 12:52	WG2069732
Acrylonitrile	ND		0.0100	1	06/01/2023 12:52	WG2069732
Benzene	ND		0.00100	1	06/01/2023 12:52	WG2069732
Bromochloromethane	ND		0.00100	1	06/01/2023 12:52	WG2069732
Bromodichloromethane	ND		0.00100	1	06/01/2023 12:52	WG2069732
Bromoform	ND		0.00100	1	06/01/2023 12:52	WG2069732
Bromomethane	ND		0.00500	1	06/01/2023 12:52	WG2069732
Carbon disulfide	ND		0.00100	1	06/01/2023 12:52	WG2069732
Carbon tetrachloride	ND		0.00100	1	06/01/2023 12:52	WG2069732
Chlorobenzene	ND		0.00100	1	06/01/2023 12:52	WG2069732
Chlorodibromomethane	ND		0.00100	1	06/01/2023 12:52	WG2069732
Chloroethane	ND		0.00500	1	06/01/2023 12:52	WG2069732
Chloroform	ND		0.00500	1	06/01/2023 12:52	WG2069732
Chloromethane	ND		0.00250	1	06/01/2023 12:52	WG2069732
Dibromomethane	ND		0.00100	1	06/01/2023 12:52	WG2069732
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/01/2023 12:52	WG2069732
1,2-Dibromoethane	ND		0.00100	1	06/01/2023 12:52	WG2069732
1,2-Dichlorobenzene	ND		0.00100	1	06/01/2023 12:52	WG2069732
1,4-Dichlorobenzene	ND		0.00100	1	06/01/2023 12:52	WG2069732
trans-1,4-Dichloro-2-butene	ND		0.00250	1	06/01/2023 12:52	WG2069732
1,1-Dichloroethane	ND		0.00100	1	06/01/2023 12:52	WG2069732
1,2-Dichloroethane	ND		0.00100	1	06/01/2023 12:52	WG2069732
1,1-Dichloroethene	ND		0.00100	1	06/01/2023 12:52	WG2069732
cis-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 12:52	WG2069732
trans-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 12:52	WG2069732
1,2-Dichloropropane	ND		0.00100	1	06/01/2023 12:52	WG2069732
cis-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 12:52	WG2069732
trans-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 12:52	WG2069732
Ethylbenzene	ND		0.00100	1	06/01/2023 12:52	WG2069732
2-Hexanone	ND		0.0100	1	06/01/2023 12:52	WG2069732
Iodomethane	ND		0.0100	1	06/01/2023 12:52	WG2069732
2-Butanone (MEK)	ND		0.0100	1	06/01/2023 12:52	WG2069732
Methylene Chloride	ND		0.00500	1	06/01/2023 12:52	WG2069732
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/01/2023 12:52	WG2069732
Styrene	ND	J4	0.00100	1	06/01/2023 12:52	WG2069732
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 12:52	WG2069732
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 12:52	WG2069732
Tetrachloroethene	ND		0.00100	1	06/01/2023 12:52	WG2069732
Toluene	ND		0.00100	1	06/01/2023 12:52	WG2069732
1,1,1-Trichloroethane	ND		0.00100	1	06/01/2023 12:52	WG2069732

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	06/01/2023 12:52	WG2069732
Trichloroethene	ND		0.00100	1	06/01/2023 12:52	WG2069732
Trichlorofluoromethane	ND		0.00500	1	06/01/2023 12:52	WG2069732
1,2,3-Trichloropropane	ND		0.00250	1	06/01/2023 12:52	WG2069732
Vinyl acetate	ND		0.0100	1	06/01/2023 12:52	WG2069732
Vinyl chloride	ND		0.00100	1	06/01/2023 12:52	WG2069732
Xylenes, Total	ND		0.00300	1	06/01/2023 12:52	WG2069732
(S) Toluene-d8	*101*		*80.0-120*		*06/01/2023 12:52*	WG2069732
(S) 4-Bromofluorobenzene	*97.1*		*77.0-126*		*06/01/2023 12:52*	WG2069732
(S) 1,2-Dichloroethane-d4	*95.1*		*70.0-130*		*06/01/2023 12:52*	WG2069732

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000214	1.07	06/01/2023 00:42	WG2068951
1,2-Dibromo-3-Chloropropane	ND		0.0000214	1.07	06/01/2023 00:42	WG2068951

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	30.8		2.50	1	06/02/2023 16:17	WG2068796

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	25.3		20.0	1	06/05/2023 10:00	WG2071588

Sample Narrative:

L1620426-03 WG2071588: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	05/29/2023 10:09	WG2067922

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/28/2023 12:11	WG2067840

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/27/2023 07:07	WG2067499
Chloride	11.8		1.00	1	05/27/2023 07:07	WG2067499
Fluoride	ND		0.150	1	05/27/2023 07:07	WG2067499
Nitrate	1.06		0.100	1	05/27/2023 07:07	WG2067499
Sulfate	ND		5.00	1	05/27/2023 07:07	WG2067499

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/14/2023 00:55	WG2072081

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/01/2023 13:38	WG2068775

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	06/02/2023 16:17	WG2068796
Antimony	ND		0.00400	1	06/02/2023 16:17	WG2068796
Arsenic	ND		0.00200	1	06/02/2023 16:17	WG2068796
Barium	0.00919		0.00200	1	06/02/2023 16:17	WG2068796
Beryllium	ND		0.00200	1	06/02/2023 16:17	WG2068796
Cadmium	ND		0.00100	1	06/02/2023 16:17	WG2068796
Calcium	6.60		1.00	1	06/02/2023 16:17	WG2068796
Chromium	ND		0.00200	1	06/02/2023 16:17	WG2068796
Cobalt	ND		0.00200	1	06/02/2023 16:17	WG2068796
Copper	ND		0.00500	1	06/02/2023 16:17	WG2068796

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	06/02/2023 16:17	WG2068796
Lead	ND		0.00200	1	06/02/2023 16:17	WG2068796
Magnesium	3.49		1.00	1	06/02/2023 16:17	WG2068796
Manganese	0.0140		0.00500	1	06/02/2023 16:17	WG2068796
Nickel	ND		0.00200	1	06/02/2023 16:17	WG2068796
Potassium	ND		2.00	1	06/02/2023 16:17	WG2068796
Selenium	ND		0.00200	1	06/02/2023 16:17	WG2068796
Silver	ND		0.00200	1	06/02/2023 16:17	WG2068796
Sodium	3.62		2.00	1	06/02/2023 16:17	WG2068796
Thallium	ND		0.00200	1	06/02/2023 16:17	WG2068796
Vanadium	ND		0.00500	1	06/02/2023 16:17	WG2068796
Zinc	ND		0.0250	1	06/02/2023 16:17	WG2068796

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	06/01/2023 13:11	WG2069732
Acrylonitrile	ND		0.0100	1	06/01/2023 13:11	WG2069732
Benzene	ND		0.00100	1	06/01/2023 13:11	WG2069732
Bromochloromethane	ND		0.00100	1	06/01/2023 13:11	WG2069732
Bromodichloromethane	ND		0.00100	1	06/01/2023 13:11	WG2069732
Bromoform	ND		0.00100	1	06/01/2023 13:11	WG2069732
Bromomethane	ND		0.00500	1	06/01/2023 13:11	WG2069732
Carbon disulfide	ND		0.00100	1	06/01/2023 13:11	WG2069732
Carbon tetrachloride	ND		0.00100	1	06/01/2023 13:11	WG2069732
Chlorobenzene	ND		0.00100	1	06/01/2023 13:11	WG2069732
Chlorodibromomethane	ND		0.00100	1	06/01/2023 13:11	WG2069732
Chloroethane	ND		0.00500	1	06/01/2023 13:11	WG2069732
Chloroform	ND		0.00500	1	06/01/2023 13:11	WG2069732
Chloromethane	ND		0.00250	1	06/01/2023 13:11	WG2069732
Dibromomethane	ND		0.00100	1	06/01/2023 13:11	WG2069732
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/01/2023 13:11	WG2069732
1,2-Dibromoethane	ND		0.00100	1	06/01/2023 13:11	WG2069732
1,2-Dichlorobenzene	ND		0.00100	1	06/01/2023 13:11	WG2069732
1,4-Dichlorobenzene	ND		0.00100	1	06/01/2023 13:11	WG2069732
trans-1,4-Dichloro-2-butene	ND		0.00250	1	06/01/2023 13:11	WG2069732
1,1-Dichloroethane	ND		0.00100	1	06/01/2023 13:11	WG2069732
1,2-Dichloroethane	ND		0.00100	1	06/01/2023 13:11	WG2069732
1,1-Dichloroethene	ND		0.00100	1	06/01/2023 13:11	WG2069732
cis-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 13:11	WG2069732
trans-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 13:11	WG2069732
1,2-Dichloropropane	ND		0.00100	1	06/01/2023 13:11	WG2069732
cis-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 13:11	WG2069732
trans-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 13:11	WG2069732
Ethylbenzene	ND		0.00100	1	06/01/2023 13:11	WG2069732
2-Hexanone	ND		0.0100	1	06/01/2023 13:11	WG2069732
Iodomethane	ND		0.0100	1	06/01/2023 13:11	WG2069732
2-Butanone (MEK)	ND		0.0100	1	06/01/2023 13:11	WG2069732
Methylene Chloride	ND		0.00500	1	06/01/2023 13:11	WG2069732
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/01/2023 13:11	WG2069732
Styrene	ND	J4	0.00100	1	06/01/2023 13:11	WG2069732
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 13:11	WG2069732
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 13:11	WG2069732
Tetrachloroethene	ND		0.00100	1	06/01/2023 13:11	WG2069732
Toluene	ND		0.00100	1	06/01/2023 13:11	WG2069732
1,1,1-Trichloroethane	ND		0.00100	1	06/01/2023 13:11	WG2069732

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	06/01/2023 13:11	WG2069732
Trichloroethene	ND		0.00100	1	06/01/2023 13:11	WG2069732
Trichlorofluoromethane	ND		0.00500	1	06/01/2023 13:11	WG2069732
1,2,3-Trichloropropane	ND		0.00250	1	06/01/2023 13:11	WG2069732
Vinyl acetate	ND		0.0100	1	06/01/2023 13:11	WG2069732
Vinyl chloride	ND		0.00100	1	06/01/2023 13:11	WG2069732
Xylenes, Total	ND		0.00300	1	06/01/2023 13:11	WG2069732
(S) Toluene-d8	*99.9*		*80.0-120*		*06/01/2023 13:11*	WG2069732
(S) 4-Bromofluorobenzene	*96.2*		*77.0-126*		*06/01/2023 13:11*	WG2069732
(S) 1,2-Dichloroethane-d4	*93.8*		*70.0-130*		*06/01/2023 13:11*	WG2069732

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	06/01/2023 00:05	WG2068951
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	06/01/2023 00:05	WG2068951

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	98.3		2.50	1	06/02/2023 16:21	WG2068796

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	23.8		20.0	1	06/05/2023 10:03	WG2071588

Sample Narrative:
L1620426-04 WG2071588: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	05/29/2023 10:11	WG2067922

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/28/2023 12:12	WG2067840

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/27/2023 03:45	WG2067499
Chloride	76.1		1.00	1	05/27/2023 03:45	WG2067499
Fluoride	ND		0.150	1	05/27/2023 03:45	WG2067499
Nitrate	0.956		0.100	1	05/27/2023 03:45	WG2067499
Sulfate	17.7		5.00	1	05/27/2023 03:45	WG2067499

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/14/2023 00:57	WG2072081

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/01/2023 13:46	WG2068775

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.120		0.100	1	06/02/2023 16:21	WG2068796
Antimony	ND		0.00400	1	06/02/2023 16:21	WG2068796
Arsenic	ND		0.00200	1	06/02/2023 16:21	WG2068796
Barium	0.0604		0.00200	1	06/02/2023 16:21	WG2068796
Beryllium	ND		0.00200	1	06/02/2023 16:21	WG2068796
Cadmium	ND		0.00100	1	06/02/2023 16:21	WG2068796
Calcium	18.2		1.00	1	06/02/2023 16:21	WG2068796
Chromium	0.00232		0.00200	1	06/02/2023 16:21	WG2068796
Cobalt	ND		0.00200	1	06/02/2023 16:21	WG2068796
Copper	ND		0.00500	1	06/02/2023 16:21	WG2068796

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.119		0.100	1	06/02/2023 16:21	WG2068796
Lead	0.00297		0.00200	1	06/02/2023 16:21	WG2068796
Magnesium	12.8		1.00	1	06/02/2023 16:21	WG2068796
Manganese	0.344		0.00500	1	06/02/2023 16:21	WG2068796
Nickel	0.00616		0.00200	1	06/02/2023 16:21	WG2068796
Potassium	ND		2.00	1	06/02/2023 16:21	WG2068796
Selenium	ND		0.00200	1	06/02/2023 16:21	WG2068796
Silver	ND		0.00200	1	06/02/2023 16:21	WG2068796
Sodium	20.6		2.00	1	06/02/2023 16:21	WG2068796
Thallium	ND		0.00200	1	06/02/2023 16:21	WG2068796
Vanadium	ND		0.00500	1	06/02/2023 16:21	WG2068796
Zinc	ND		0.0250	1	06/02/2023 16:21	WG2068796

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	06/01/2023 13:30	WG2069732
Acrylonitrile	ND		0.0100	1	06/01/2023 13:30	WG2069732
Benzene	ND		0.00100	1	06/01/2023 13:30	WG2069732
Bromochloromethane	ND		0.00100	1	06/01/2023 13:30	WG2069732
Bromodichloromethane	ND		0.00100	1	06/01/2023 13:30	WG2069732
Bromoform	ND		0.00100	1	06/01/2023 13:30	WG2069732
Bromomethane	ND		0.00500	1	06/01/2023 13:30	WG2069732
Carbon disulfide	ND		0.00100	1	06/01/2023 13:30	WG2069732
Carbon tetrachloride	ND		0.00100	1	06/01/2023 13:30	WG2069732
Chlorobenzene	ND		0.00100	1	06/01/2023 13:30	WG2069732
Chlorodibromomethane	ND		0.00100	1	06/01/2023 13:30	WG2069732
Chloroethane	ND		0.00500	1	06/01/2023 13:30	WG2069732
Chloroform	ND		0.00500	1	06/01/2023 13:30	WG2069732
Chloromethane	ND		0.00250	1	06/01/2023 13:30	WG2069732
Dibromomethane	ND		0.00100	1	06/01/2023 13:30	WG2069732
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/01/2023 13:30	WG2069732
1,2-Dibromoethane	ND		0.00100	1	06/01/2023 13:30	WG2069732
1,2-Dichlorobenzene	ND		0.00100	1	06/01/2023 13:30	WG2069732
1,4-Dichlorobenzene	ND		0.00100	1	06/01/2023 13:30	WG2069732
trans-1,4-Dichloro-2-butene	ND		0.00250	1	06/01/2023 13:30	WG2069732
1,1-Dichloroethane	ND		0.00100	1	06/01/2023 13:30	WG2069732
1,2-Dichloroethane	ND		0.00100	1	06/01/2023 13:30	WG2069732
1,1-Dichloroethene	ND		0.00100	1	06/01/2023 13:30	WG2069732
cis-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 13:30	WG2069732
trans-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 13:30	WG2069732
1,2-Dichloropropane	ND		0.00100	1	06/01/2023 13:30	WG2069732
cis-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 13:30	WG2069732
trans-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 13:30	WG2069732
Ethylbenzene	ND		0.00100	1	06/01/2023 13:30	WG2069732
2-Hexanone	ND		0.0100	1	06/01/2023 13:30	WG2069732
Iodomethane	ND		0.0100	1	06/01/2023 13:30	WG2069732
2-Butanone (MEK)	ND		0.0100	1	06/01/2023 13:30	WG2069732
Methylene Chloride	ND		0.00500	1	06/01/2023 13:30	WG2069732
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/01/2023 13:30	WG2069732
Styrene	ND	J4	0.00100	1	06/01/2023 13:30	WG2069732
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 13:30	WG2069732
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 13:30	WG2069732
Tetrachloroethene	ND		0.00100	1	06/01/2023 13:30	WG2069732
Toluene	ND		0.00100	1	06/01/2023 13:30	WG2069732
1,1,1-Trichloroethane	ND		0.00100	1	06/01/2023 13:30	WG2069732

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	06/01/2023 13:30	WG2069732
Trichloroethene	ND		0.00100	1	06/01/2023 13:30	WG2069732
Trichlorofluoromethane	ND		0.00500	1	06/01/2023 13:30	WG2069732
1,2,3-Trichloropropane	ND		0.00250	1	06/01/2023 13:30	WG2069732
Vinyl acetate	ND		0.0100	1	06/01/2023 13:30	WG2069732
Vinyl chloride	ND		0.00100	1	06/01/2023 13:30	WG2069732
Xylenes, Total	ND		0.00300	1	06/01/2023 13:30	WG2069732
(S) Toluene-d8	*101*		*80.0-120*		*06/01/2023 13:30*	WG2069732
(S) 4-Bromofluorobenzene	*95.2*		*77.0-126*		*06/01/2023 13:30*	WG2069732
(S) 1,2-Dichloroethane-d4	*96.3*		*70.0-130*		*06/01/2023 13:30*	WG2069732

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000210	1.05	05/31/2023 23:41	WG2068951
1,2-Dibromo-3-Chloropropane	ND		0.0000210	1.05	05/31/2023 23:41	WG2068951

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	71.3		2.50	1	06/02/2023 16:31	WG2068796

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	06/05/2023 09:17	WG2071589

Sample Narrative:
L1620426-05 WG2071589: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	05/29/2023 10:12	WG2067922

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/28/2023 12:12	WG2067840

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/27/2023 06:40	WG2067499
Chloride	47.7		1.00	1	05/27/2023 06:40	WG2067499
Fluoride	ND		0.150	1	05/27/2023 06:40	WG2067499
Nitrate	1.39		0.100	1	05/27/2023 06:40	WG2067499
Sulfate	ND		5.00	1	05/27/2023 06:40	WG2067499

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/14/2023 00:59	WG2072081

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/01/2023 13:49	WG2068775

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	06/02/2023 16:31	WG2068796
Antimony	ND		0.00400	1	06/02/2023 16:31	WG2068796
Arsenic	ND		0.00200	1	06/02/2023 16:31	WG2068796
Barium	0.0141		0.00200	1	06/02/2023 16:31	WG2068796
Beryllium	ND		0.00200	1	06/02/2023 16:31	WG2068796
Cadmium	ND		0.00100	1	06/02/2023 16:31	WG2068796
Calcium	19.5		1.00	1	06/02/2023 16:31	WG2068796
Chromium	ND		0.00200	1	06/02/2023 16:31	WG2068796
Cobalt	ND		0.00200	1	06/02/2023 16:31	WG2068796
Copper	ND		0.00500	1	06/02/2023 16:31	WG2068796

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	06/02/2023 16:31	WG2068796
Lead	ND		0.00200	1	06/02/2023 16:31	WG2068796
Magnesium	5.46		1.00	1	06/02/2023 16:31	WG2068796
Manganese	ND		0.00500	1	06/02/2023 16:31	WG2068796
Nickel	ND		0.00200	1	06/02/2023 16:31	WG2068796
Potassium	ND		2.00	1	06/02/2023 16:31	WG2068796
Selenium	ND		0.00200	1	06/02/2023 16:31	WG2068796
Silver	ND		0.00200	1	06/02/2023 16:31	WG2068796
Sodium	4.44		2.00	1	06/02/2023 16:31	WG2068796
Thallium	ND		0.00200	1	06/02/2023 16:31	WG2068796
Vanadium	ND		0.00500	1	06/02/2023 16:31	WG2068796
Zinc	ND		0.0250	1	06/02/2023 16:31	WG2068796

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	06/01/2023 13:49	WG2069732
Acrylonitrile	ND		0.0100	1	06/01/2023 13:49	WG2069732
Benzene	ND		0.00100	1	06/01/2023 13:49	WG2069732
Bromochloromethane	ND		0.00100	1	06/01/2023 13:49	WG2069732
Bromodichloromethane	ND		0.00100	1	06/01/2023 13:49	WG2069732
Bromoform	ND		0.00100	1	06/01/2023 13:49	WG2069732
Bromomethane	ND		0.00500	1	06/01/2023 13:49	WG2069732
Carbon disulfide	ND		0.00100	1	06/01/2023 13:49	WG2069732
Carbon tetrachloride	ND		0.00100	1	06/01/2023 13:49	WG2069732
Chlorobenzene	ND		0.00100	1	06/01/2023 13:49	WG2069732
Chlorodibromomethane	ND		0.00100	1	06/01/2023 13:49	WG2069732
Chloroethane	ND		0.00500	1	06/01/2023 13:49	WG2069732
Chloroform	ND		0.00500	1	06/01/2023 13:49	WG2069732
Chloromethane	ND		0.00250	1	06/01/2023 13:49	WG2069732
Dibromomethane	ND		0.00100	1	06/01/2023 13:49	WG2069732
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/01/2023 13:49	WG2069732
1,2-Dibromoethane	ND		0.00100	1	06/01/2023 13:49	WG2069732
1,2-Dichlorobenzene	ND		0.00100	1	06/01/2023 13:49	WG2069732
1,4-Dichlorobenzene	ND		0.00100	1	06/01/2023 13:49	WG2069732
trans-1,4-Dichloro-2-butene	ND		0.00250	1	06/01/2023 13:49	WG2069732
1,1-Dichloroethane	ND		0.00100	1	06/01/2023 13:49	WG2069732
1,2-Dichloroethane	ND		0.00100	1	06/01/2023 13:49	WG2069732
1,1-Dichloroethene	ND		0.00100	1	06/01/2023 13:49	WG2069732
cis-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 13:49	WG2069732
trans-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 13:49	WG2069732
1,2-Dichloropropane	ND		0.00100	1	06/01/2023 13:49	WG2069732
cis-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 13:49	WG2069732
trans-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 13:49	WG2069732
Ethylbenzene	ND		0.00100	1	06/01/2023 13:49	WG2069732
2-Hexanone	ND		0.0100	1	06/01/2023 13:49	WG2069732
Iodomethane	ND		0.0100	1	06/01/2023 13:49	WG2069732
2-Butanone (MEK)	ND		0.0100	1	06/01/2023 13:49	WG2069732
Methylene Chloride	ND		0.00500	1	06/01/2023 13:49	WG2069732
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/01/2023 13:49	WG2069732
Styrene	ND	J4	0.00100	1	06/01/2023 13:49	WG2069732
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 13:49	WG2069732
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 13:49	WG2069732
Tetrachloroethene	ND		0.00100	1	06/01/2023 13:49	WG2069732
Toluene	ND		0.00100	1	06/01/2023 13:49	WG2069732
1,1,1-Trichloroethane	ND		0.00100	1	06/01/2023 13:49	WG2069732

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

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	06/01/2023 13:49	WG2069732
Trichloroethene	ND		0.00100	1	06/01/2023 13:49	WG2069732
Trichlorofluoromethane	ND		0.00500	1	06/01/2023 13:49	WG2069732
1,2,3-Trichloropropane	ND		0.00250	1	06/01/2023 13:49	WG2069732
Vinyl acetate	ND		0.0100	1	06/01/2023 13:49	WG2069732
Vinyl chloride	ND		0.00100	1	06/01/2023 13:49	WG2069732
Xylenes, Total	ND		0.00300	1	06/01/2023 13:49	WG2069732
(S) Toluene-d8	*99.9*		*80.0-120*		*06/01/2023 13:49*	WG2069732
(S) 4-Bromofluorobenzene	*95.4*		*77.0-126*		*06/01/2023 13:49*	WG2069732
(S) 1,2-Dichloroethane-d4	*98.0*		*70.0-130*		*06/01/2023 13:49*	WG2069732

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	06/01/2023 00:54	WG2068951
1,2-Dibromo-3-Chloropropane	ND		0.0000206	1.03	06/01/2023 00:54	WG2068951

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	59.2		2.50	1	06/02/2023 16:34	WG2068796

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	06/05/2023 09:20	WG2071589

Sample Narrative:
L1620426-06 WG2071589: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	05/29/2023 10:14	WG2067922

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/28/2023 12:12	WG2067840

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/27/2023 05:04	WG2067499
Chloride	38.3		1.00	1	05/27/2023 05:04	WG2067499
Fluoride	ND		0.150	1	05/27/2023 05:04	WG2067499
Nitrate	0.653		0.100	1	05/27/2023 05:04	WG2067499
Sulfate	ND		5.00	1	05/27/2023 05:04	WG2067499

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/14/2023 01:01	WG2072081

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/01/2023 13:51	WG2068775

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.107		0.100	1	06/02/2023 16:34	WG2068796
Antimony	ND		0.00400	1	06/02/2023 16:34	WG2068796
Arsenic	ND		0.00200	1	06/02/2023 16:34	WG2068796
Barium	0.0332		0.00200	1	06/02/2023 16:34	WG2068796
Beryllium	ND		0.00200	1	06/02/2023 16:34	WG2068796
Cadmium	ND		0.00100	1	06/02/2023 16:34	WG2068796
Calcium	14.7		1.00	1	06/02/2023 16:34	WG2068796
Chromium	ND		0.00200	1	06/02/2023 16:34	WG2068796
Cobalt	ND		0.00200	1	06/02/2023 16:34	WG2068796
Copper	ND		0.00500	1	06/02/2023 16:34	WG2068796

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	06/02/2023 16:34	WG2068796
Lead	ND		0.00200	1	06/02/2023 16:34	WG2068796
Magnesium	5.44		1.00	1	06/02/2023 16:34	WG2068796
Manganese	ND		0.00500	1	06/02/2023 16:34	WG2068796
Nickel	ND		0.00200	1	06/02/2023 16:34	WG2068796
Potassium	ND		2.00	1	06/02/2023 16:34	WG2068796
Selenium	ND		0.00200	1	06/02/2023 16:34	WG2068796
Silver	ND		0.00200	1	06/02/2023 16:34	WG2068796
Sodium	5.54		2.00	1	06/02/2023 16:34	WG2068796
Thallium	ND		0.00200	1	06/02/2023 16:34	WG2068796
Vanadium	ND		0.00500	1	06/02/2023 16:34	WG2068796
Zinc	ND		0.0250	1	06/02/2023 16:34	WG2068796

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	06/01/2023 14:08	WG2069732
Acrylonitrile	ND		0.0100	1	06/01/2023 14:08	WG2069732
Benzene	ND		0.00100	1	06/01/2023 14:08	WG2069732
Bromochloromethane	ND		0.00100	1	06/01/2023 14:08	WG2069732
Bromodichloromethane	ND		0.00100	1	06/01/2023 14:08	WG2069732
Bromoform	ND		0.00100	1	06/01/2023 14:08	WG2069732
Bromomethane	ND		0.00500	1	06/01/2023 14:08	WG2069732
Carbon disulfide	ND		0.00100	1	06/01/2023 14:08	WG2069732
Carbon tetrachloride	ND		0.00100	1	06/01/2023 14:08	WG2069732
Chlorobenzene	ND		0.00100	1	06/01/2023 14:08	WG2069732
Chlorodibromomethane	ND		0.00100	1	06/01/2023 14:08	WG2069732
Chloroethane	ND		0.00500	1	06/01/2023 14:08	WG2069732
Chloroform	ND		0.00500	1	06/01/2023 14:08	WG2069732
Chloromethane	ND		0.00250	1	06/01/2023 14:08	WG2069732
Dibromomethane	ND		0.00100	1	06/01/2023 14:08	WG2069732
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/01/2023 14:08	WG2069732
1,2-Dibromoethane	ND		0.00100	1	06/01/2023 14:08	WG2069732
1,2-Dichlorobenzene	ND		0.00100	1	06/01/2023 14:08	WG2069732
1,4-Dichlorobenzene	ND		0.00100	1	06/01/2023 14:08	WG2069732
trans-1,4-Dichloro-2-butene	ND		0.00250	1	06/01/2023 14:08	WG2069732
1,1-Dichloroethane	ND		0.00100	1	06/01/2023 14:08	WG2069732
1,2-Dichloroethane	ND		0.00100	1	06/01/2023 14:08	WG2069732
1,1-Dichloroethene	ND		0.00100	1	06/01/2023 14:08	WG2069732
cis-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 14:08	WG2069732
trans-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 14:08	WG2069732
1,2-Dichloropropane	ND		0.00100	1	06/01/2023 14:08	WG2069732
cis-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 14:08	WG2069732
trans-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 14:08	WG2069732
Ethylbenzene	ND		0.00100	1	06/01/2023 14:08	WG2069732
2-Hexanone	ND		0.0100	1	06/01/2023 14:08	WG2069732
Iodomethane	ND		0.0100	1	06/01/2023 14:08	WG2069732
2-Butanone (MEK)	ND		0.0100	1	06/01/2023 14:08	WG2069732
Methylene Chloride	ND		0.00500	1	06/01/2023 14:08	WG2069732
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/01/2023 14:08	WG2069732
Styrene	ND	J4	0.00100	1	06/01/2023 14:08	WG2069732
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 14:08	WG2069732
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 14:08	WG2069732
Tetrachloroethene	ND		0.00100	1	06/01/2023 14:08	WG2069732
Toluene	ND		0.00100	1	06/01/2023 14:08	WG2069732
1,1,1-Trichloroethane	ND		0.00100	1	06/01/2023 14:08	WG2069732

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

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	06/01/2023 14:08	WG2069732
Trichloroethene	ND		0.00100	1	06/01/2023 14:08	WG2069732
Trichlorofluoromethane	ND		0.00500	1	06/01/2023 14:08	WG2069732
1,2,3-Trichloropropane	ND		0.00250	1	06/01/2023 14:08	WG2069732
Vinyl acetate	ND		0.0100	1	06/01/2023 14:08	WG2069732
Vinyl chloride	ND		0.00100	1	06/01/2023 14:08	WG2069732
Xylenes, Total	ND		0.00300	1	06/01/2023 14:08	WG2069732
(S) Toluene-d8	*102*		*80.0-120*		*06/01/2023 14:08*	WG2069732
(S) 4-Bromofluorobenzene	*97.0*		*77.0-126*		*06/01/2023 14:08*	WG2069732
(S) 1,2-Dichloroethane-d4	*93.9*		*70.0-130*		*06/01/2023 14:08*	WG2069732

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000212	1.06	06/01/2023 01:07	WG2068951
1,2-Dibromo-3-Chloropropane	ND		0.0000212	1.06	06/01/2023 01:07	WG2068951

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	84.3		2.50	1	06/02/2023 16:37	WG2068796

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	06/05/2023 09:24	WG2071589

Sample Narrative:
L1620426-07 WG2071589: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	05/29/2023 10:15	WG2067922

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/28/2023 12:14	WG2067840

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/27/2023 03:57	WG2067499
Chloride	63.0		1.00	1	05/27/2023 03:57	WG2067499
Fluoride	ND		0.150	1	05/27/2023 03:57	WG2067499
Nitrate	7.52		0.100	1	05/27/2023 03:57	WG2067499
Sulfate	ND		5.00	1	05/27/2023 03:57	WG2067499

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/14/2023 01:03	WG2072081

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/01/2023 12:43	WG2068775

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.106		0.100	1	06/02/2023 16:37	WG2068796
Antimony	ND		0.00400	1	06/02/2023 16:37	WG2068796
Arsenic	ND		0.00200	1	06/02/2023 16:37	WG2068796
Barium	0.0491		0.00200	1	06/02/2023 16:37	WG2068796
Beryllium	ND		0.00200	1	06/02/2023 16:37	WG2068796
Cadmium	ND		0.00100	1	06/02/2023 16:37	WG2068796
Calcium	21.8		1.00	1	06/02/2023 16:37	WG2068796
Chromium	ND		0.00200	1	06/02/2023 16:37	WG2068796
Cobalt	ND		0.00200	1	06/02/2023 16:37	WG2068796
Copper	ND		0.00500	1	06/02/2023 16:37	WG2068796

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	06/02/2023 16:37	WG2068796
Lead	ND		0.00200	1	06/02/2023 16:37	WG2068796
Magnesium	7.26		1.00	1	06/02/2023 16:37	WG2068796
Manganese	0.0109		0.00500	1	06/02/2023 16:37	WG2068796
Nickel	ND		0.00200	1	06/02/2023 16:37	WG2068796
Potassium	ND		2.00	1	06/02/2023 16:37	WG2068796
Selenium	ND		0.00200	1	06/02/2023 16:37	WG2068796
Silver	ND		0.00200	1	06/02/2023 16:37	WG2068796
Sodium	15.9		2.00	1	06/02/2023 16:37	WG2068796
Thallium	ND		0.00200	1	06/02/2023 16:37	WG2068796
Vanadium	ND		0.00500	1	06/02/2023 16:37	WG2068796
Zinc	ND		0.0250	1	06/02/2023 16:37	WG2068796

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	06/01/2023 14:27	WG2069732
Acrylonitrile	ND		0.0100	1	06/01/2023 14:27	WG2069732
Benzene	ND		0.00100	1	06/01/2023 14:27	WG2069732
Bromochloromethane	ND		0.00100	1	06/01/2023 14:27	WG2069732
Bromodichloromethane	ND		0.00100	1	06/01/2023 14:27	WG2069732
Bromoform	ND		0.00100	1	06/01/2023 14:27	WG2069732
Bromomethane	ND		0.00500	1	06/01/2023 14:27	WG2069732
Carbon disulfide	ND		0.00100	1	06/01/2023 14:27	WG2069732
Carbon tetrachloride	ND		0.00100	1	06/01/2023 14:27	WG2069732
Chlorobenzene	ND		0.00100	1	06/01/2023 14:27	WG2069732
Chlorodibromomethane	ND		0.00100	1	06/01/2023 14:27	WG2069732
Chloroethane	ND		0.00500	1	06/01/2023 14:27	WG2069732
Chloroform	ND		0.00500	1	06/01/2023 14:27	WG2069732
Chloromethane	ND		0.00250	1	06/01/2023 14:27	WG2069732
Dibromomethane	ND		0.00100	1	06/01/2023 14:27	WG2069732
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/01/2023 14:27	WG2069732
1,2-Dibromoethane	ND		0.00100	1	06/01/2023 14:27	WG2069732
1,2-Dichlorobenzene	ND		0.00100	1	06/01/2023 14:27	WG2069732
1,4-Dichlorobenzene	ND		0.00100	1	06/01/2023 14:27	WG2069732
trans-1,4-Dichloro-2-butene	ND		0.00250	1	06/01/2023 14:27	WG2069732
1,1-Dichloroethane	ND		0.00100	1	06/01/2023 14:27	WG2069732
1,2-Dichloroethane	ND		0.00100	1	06/01/2023 14:27	WG2069732
1,1-Dichloroethene	ND		0.00100	1	06/01/2023 14:27	WG2069732
cis-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 14:27	WG2069732
trans-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 14:27	WG2069732
1,2-Dichloropropane	ND		0.00100	1	06/01/2023 14:27	WG2069732
cis-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 14:27	WG2069732
trans-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 14:27	WG2069732
Ethylbenzene	ND		0.00100	1	06/01/2023 14:27	WG2069732
2-Hexanone	ND		0.0100	1	06/01/2023 14:27	WG2069732
Iodomethane	ND		0.0100	1	06/01/2023 14:27	WG2069732
2-Butanone (MEK)	ND		0.0100	1	06/01/2023 14:27	WG2069732
Methylene Chloride	ND		0.00500	1	06/01/2023 14:27	WG2069732
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/01/2023 14:27	WG2069732
Styrene	ND	J4	0.00100	1	06/01/2023 14:27	WG2069732
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 14:27	WG2069732
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 14:27	WG2069732
Tetrachloroethene	ND		0.00100	1	06/01/2023 14:27	WG2069732
Toluene	ND		0.00100	1	06/01/2023 14:27	WG2069732
1,1,1-Trichloroethane	ND		0.00100	1	06/01/2023 14:27	WG2069732

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	06/01/2023 14:27	WG2069732
Trichloroethene	ND		0.00100	1	06/01/2023 14:27	WG2069732
Trichlorofluoromethane	ND		0.00500	1	06/01/2023 14:27	WG2069732
1,2,3-Trichloropropane	ND		0.00250	1	06/01/2023 14:27	WG2069732
Vinyl acetate	ND		0.0100	1	06/01/2023 14:27	WG2069732
Vinyl chloride	ND		0.00100	1	06/01/2023 14:27	WG2069732
Xylenes, Total	ND		0.00300	1	06/01/2023 14:27	WG2069732
(S) Toluene-d8	*101*		*80.0-120*		*06/01/2023 14:27*	WG2069732
(S) 4-Bromofluorobenzene	*93.2*		*77.0-126*		*06/01/2023 14:27*	WG2069732
(S) 1,2-Dichloroethane-d4	*94.7*		*70.0-130*		*06/01/2023 14:27*	WG2069732

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	06/01/2023 01:19	WG2068951
1,2-Dibromo-3-Chloropropane	ND		0.0000206	1.03	06/01/2023 01:19	WG2068951

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	82.5		2.50	1	06/02/2023 16:41	WG2068796

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	42.0		20.0	1	06/05/2023 09:27	WG2071589

Sample Narrative:

L1620426-08 WG2071589: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	0.263		0.250	1	05/29/2023 10:22	WG2067922

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/28/2023 12:14	WG2067840

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/27/2023 04:10	WG2067499
Chloride	14.5		1.00	1	05/27/2023 04:10	WG2067499
Fluoride	0.168		0.150	1	05/27/2023 04:10	WG2067499
Nitrate	ND	Q	0.100	1	05/27/2023 04:10	WG2067499
Sulfate	39.5		5.00	1	05/27/2023 04:10	WG2067499

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/14/2023 11:10	WG2072081

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/01/2023 13:54	WG2068775

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.323		0.100	1	06/02/2023 16:41	WG2068796
Antimony	ND		0.00400	1	06/02/2023 16:41	WG2068796
Arsenic	ND		0.00200	1	06/02/2023 16:41	WG2068796
Barium	0.0421		0.00200	1	06/02/2023 16:41	WG2068796
Beryllium	ND		0.00200	1	06/02/2023 16:41	WG2068796
Cadmium	0.00120		0.00100	1	06/02/2023 16:41	WG2068796
Calcium	22.0		1.00	1	06/02/2023 16:41	WG2068796
Chromium	ND		0.00200	1	06/02/2023 16:41	WG2068796
Cobalt	0.00269		0.00200	1	06/02/2023 16:41	WG2068796
Copper	ND		0.00500	1	06/02/2023 16:41	WG2068796

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.898		0.100	1	06/02/2023 16:41	WG2068796
Lead	ND		0.00200	1	06/02/2023 16:41	WG2068796
Magnesium	6.67		1.00	1	06/02/2023 16:41	WG2068796
Manganese	0.631		0.00500	1	06/02/2023 16:41	WG2068796
Nickel	0.00846		0.00200	1	06/02/2023 16:41	WG2068796
Potassium	4.31		2.00	1	06/02/2023 16:41	WG2068796
Selenium	ND		0.00200	1	06/02/2023 16:41	WG2068796
Silver	ND		0.00200	1	06/02/2023 16:41	WG2068796
Sodium	5.64		2.00	1	06/02/2023 16:41	WG2068796
Thallium	ND		0.00200	1	06/02/2023 16:41	WG2068796
Vanadium	ND		0.00500	1	06/02/2023 16:41	WG2068796
Zinc	0.0795		0.0250	1	06/02/2023 16:41	WG2068796

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	06/01/2023 14:46	WG2069732
Acrylonitrile	ND		0.0100	1	06/01/2023 14:46	WG2069732
Benzene	ND		0.00100	1	06/01/2023 14:46	WG2069732
Bromochloromethane	ND		0.00100	1	06/01/2023 14:46	WG2069732
Bromodichloromethane	ND		0.00100	1	06/01/2023 14:46	WG2069732
Bromoform	ND		0.00100	1	06/01/2023 14:46	WG2069732
Bromomethane	ND		0.00500	1	06/01/2023 14:46	WG2069732
Carbon disulfide	ND		0.00100	1	06/01/2023 14:46	WG2069732
Carbon tetrachloride	ND		0.00100	1	06/01/2023 14:46	WG2069732
Chlorobenzene	ND		0.00100	1	06/01/2023 14:46	WG2069732
Chlorodibromomethane	ND		0.00100	1	06/01/2023 14:46	WG2069732
Chloroethane	ND		0.00500	1	06/01/2023 14:46	WG2069732
Chloroform	ND		0.00500	1	06/01/2023 14:46	WG2069732
Chloromethane	ND		0.00250	1	06/01/2023 14:46	WG2069732
Dibromomethane	ND		0.00100	1	06/01/2023 14:46	WG2069732
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/01/2023 14:46	WG2069732
1,2-Dibromoethane	ND		0.00100	1	06/01/2023 14:46	WG2069732
1,2-Dichlorobenzene	ND		0.00100	1	06/01/2023 14:46	WG2069732
1,4-Dichlorobenzene	ND		0.00100	1	06/01/2023 14:46	WG2069732
trans-1,4-Dichloro-2-butene	ND		0.00250	1	06/01/2023 14:46	WG2069732
1,1-Dichloroethane	ND		0.00100	1	06/01/2023 14:46	WG2069732
1,2-Dichloroethane	ND		0.00100	1	06/01/2023 14:46	WG2069732
1,1-Dichloroethene	ND		0.00100	1	06/01/2023 14:46	WG2069732
cis-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 14:46	WG2069732
trans-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 14:46	WG2069732
1,2-Dichloropropane	ND		0.00100	1	06/01/2023 14:46	WG2069732
cis-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 14:46	WG2069732
trans-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 14:46	WG2069732
Ethylbenzene	ND		0.00100	1	06/01/2023 14:46	WG2069732
2-Hexanone	ND		0.0100	1	06/01/2023 14:46	WG2069732
Iodomethane	ND		0.0100	1	06/01/2023 14:46	WG2069732
2-Butanone (MEK)	ND		0.0100	1	06/01/2023 14:46	WG2069732
Methylene Chloride	ND		0.00500	1	06/01/2023 14:46	WG2069732
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/01/2023 14:46	WG2069732
Styrene	ND	J4	0.00100	1	06/01/2023 14:46	WG2069732
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 14:46	WG2069732
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 14:46	WG2069732
Tetrachloroethene	ND		0.00100	1	06/01/2023 14:46	WG2069732
Toluene	ND		0.00100	1	06/01/2023 14:46	WG2069732
1,1,1-Trichloroethane	ND		0.00100	1	06/01/2023 14:46	WG2069732

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	06/01/2023 14:46	WG2069732
Trichloroethene	ND		0.00100	1	06/01/2023 14:46	WG2069732
Trichlorofluoromethane	ND		0.00500	1	06/01/2023 14:46	WG2069732
1,2,3-Trichloropropane	ND		0.00250	1	06/01/2023 14:46	WG2069732
Vinyl acetate	ND		0.0100	1	06/01/2023 14:46	WG2069732
Vinyl chloride	ND		0.00100	1	06/01/2023 14:46	WG2069732
Xylenes, Total	ND		0.00300	1	06/01/2023 14:46	WG2069732
(S) Toluene-d8	*98.8*		*80.0-120*		*06/01/2023 14:46*	WG2069732
(S) 4-Bromofluorobenzene	*96.3*		*77.0-126*		*06/01/2023 14:46*	WG2069732
(S) 1,2-Dichloroethane-d4	*94.1*		*70.0-130*		*06/01/2023 14:46*	WG2069732

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	06/01/2023 01:31	WG2068951
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	06/01/2023 01:31	WG2068951

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	ND		2.50	1	06/02/2023 16:44	WG2068796

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	06/05/2023 09:32	WG2071589

Sample Narrative:
L1620426-09 WG2071589: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	05/29/2023 10:23	WG2067922

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/28/2023 12:14	WG2067840

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/27/2023 06:53	WG2067499
Chloride	ND		1.00	1	05/27/2023 06:53	WG2067499
Fluoride	ND		0.150	1	05/27/2023 06:53	WG2067499
Nitrate	ND		0.100	1	05/27/2023 06:53	WG2067499
Sulfate	ND		5.00	1	05/27/2023 06:53	WG2067499

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/15/2023 10:47	WG2072514

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/01/2023 13:57	WG2068775

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	06/02/2023 16:44	WG2068796
Antimony	ND		0.00400	1	06/02/2023 16:44	WG2068796
Arsenic	ND		0.00200	1	06/02/2023 16:44	WG2068796
Barium	ND		0.00200	1	06/02/2023 16:44	WG2068796
Beryllium	ND		0.00200	1	06/02/2023 16:44	WG2068796
Cadmium	ND		0.00100	1	06/02/2023 16:44	WG2068796
Calcium	ND		1.00	1	06/02/2023 16:44	WG2068796
Chromium	ND		0.00200	1	06/02/2023 16:44	WG2068796
Cobalt	ND		0.00200	1	06/02/2023 16:44	WG2068796
Copper	ND		0.00500	1	06/02/2023 16:44	WG2068796

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	06/02/2023 16:44	WG2068796
Lead	ND		0.00200	1	06/02/2023 16:44	WG2068796
Magnesium	ND		1.00	1	06/02/2023 16:44	WG2068796
Manganese	ND		0.00500	1	06/02/2023 16:44	WG2068796
Nickel	ND		0.00200	1	06/02/2023 16:44	WG2068796
Potassium	ND		2.00	1	06/02/2023 16:44	WG2068796
Selenium	ND		0.00200	1	06/02/2023 16:44	WG2068796
Silver	ND		0.00200	1	06/02/2023 16:44	WG2068796
Sodium	ND		2.00	1	06/02/2023 16:44	WG2068796
Thallium	ND		0.00200	1	06/02/2023 16:44	WG2068796
Vanadium	ND		0.00500	1	06/02/2023 16:44	WG2068796
Zinc	ND		0.0250	1	06/02/2023 16:44	WG2068796

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	06/01/2023 10:20	WG2069732
Acrylonitrile	ND		0.0100	1	06/01/2023 10:20	WG2069732
Benzene	ND		0.00100	1	06/01/2023 10:20	WG2069732
Bromochloromethane	ND		0.00100	1	06/01/2023 10:20	WG2069732
Bromodichloromethane	0.00129		0.00100	1	06/01/2023 10:20	WG2069732
Bromoform	ND		0.00100	1	06/01/2023 10:20	WG2069732
Bromomethane	ND		0.00500	1	06/01/2023 10:20	WG2069732
Carbon disulfide	ND		0.00100	1	06/01/2023 10:20	WG2069732
Carbon tetrachloride	ND		0.00100	1	06/01/2023 10:20	WG2069732
Chlorobenzene	ND		0.00100	1	06/01/2023 10:20	WG2069732
Chlorodibromomethane	0.00136		0.00100	1	06/01/2023 10:20	WG2069732
Chloroethane	ND		0.00500	1	06/01/2023 10:20	WG2069732
Chloroform	ND		0.00500	1	06/01/2023 10:20	WG2069732
Chloromethane	ND		0.00250	1	06/01/2023 10:20	WG2069732
Dibromomethane	ND		0.00100	1	06/01/2023 10:20	WG2069732
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/01/2023 10:20	WG2069732
1,2-Dibromoethane	ND		0.00100	1	06/01/2023 10:20	WG2069732
1,2-Dichlorobenzene	ND		0.00100	1	06/01/2023 10:20	WG2069732
1,4-Dichlorobenzene	ND		0.00100	1	06/01/2023 10:20	WG2069732
trans-1,4-Dichloro-2-butene	ND		0.00250	1	06/01/2023 10:20	WG2069732
1,1-Dichloroethane	ND		0.00100	1	06/01/2023 10:20	WG2069732
1,2-Dichloroethane	ND		0.00100	1	06/01/2023 10:20	WG2069732
1,1-Dichloroethene	ND		0.00100	1	06/01/2023 10:20	WG2069732
cis-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 10:20	WG2069732
trans-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 10:20	WG2069732
1,2-Dichloropropane	ND		0.00100	1	06/01/2023 10:20	WG2069732
cis-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 10:20	WG2069732
trans-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 10:20	WG2069732
Ethylbenzene	ND		0.00100	1	06/01/2023 10:20	WG2069732
2-Hexanone	ND		0.0100	1	06/01/2023 10:20	WG2069732
Iodomethane	ND		0.0100	1	06/01/2023 10:20	WG2069732
2-Butanone (MEK)	ND		0.0100	1	06/01/2023 10:20	WG2069732
Methylene Chloride	ND		0.00500	1	06/01/2023 10:20	WG2069732
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/01/2023 10:20	WG2069732
Styrene	ND	J4	0.00100	1	06/01/2023 10:20	WG2069732
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 10:20	WG2069732
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 10:20	WG2069732
Tetrachloroethene	ND		0.00100	1	06/01/2023 10:20	WG2069732
Toluene	ND		0.00100	1	06/01/2023 10:20	WG2069732
1,1,1-Trichloroethane	ND		0.00100	1	06/01/2023 10:20	WG2069732

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

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	06/01/2023 10:20	WG2069732
Trichloroethene	ND		0.00100	1	06/01/2023 10:20	WG2069732
Trichlorofluoromethane	ND		0.00500	1	06/01/2023 10:20	WG2069732
1,2,3-Trichloropropane	ND		0.00250	1	06/01/2023 10:20	WG2069732
Vinyl acetate	ND		0.0100	1	06/01/2023 10:20	WG2069732
Vinyl chloride	ND		0.00100	1	06/01/2023 10:20	WG2069732
Xylenes, Total	ND		0.00300	1	06/01/2023 10:20	WG2069732
(S) Toluene-d8	*99.6*		*80.0-120*		*06/01/2023 10:20*	WG2069732
(S) 4-Bromofluorobenzene	*95.3*		*77.0-126*		*06/01/2023 10:20*	WG2069732
(S) 1,2-Dichloroethane-d4	*94.4*		*70.0-130*		*06/01/2023 10:20*	WG2069732

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	06/01/2023 01:43	WG2068951
1,2-Dibromo-3-Chloropropane	ND		0.0000206	1.03	06/01/2023 01:43	WG2068951

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	06/01/2023 10:39	WG2069732
Acrylonitrile	ND		0.0100	1	06/01/2023 10:39	WG2069732
Benzene	ND		0.00100	1	06/01/2023 10:39	WG2069732
Bromochloromethane	ND		0.00100	1	06/01/2023 10:39	WG2069732
Bromodichloromethane	ND		0.00100	1	06/01/2023 10:39	WG2069732
Bromoform	ND		0.00100	1	06/01/2023 10:39	WG2069732
Bromomethane	ND		0.00500	1	06/01/2023 10:39	WG2069732
Carbon disulfide	ND		0.00100	1	06/01/2023 10:39	WG2069732
Carbon tetrachloride	ND		0.00100	1	06/01/2023 10:39	WG2069732
Chlorobenzene	ND		0.00100	1	06/01/2023 10:39	WG2069732
Chlorodibromomethane	ND		0.00100	1	06/01/2023 10:39	WG2069732
Chloroethane	ND		0.00500	1	06/01/2023 10:39	WG2069732
Chloroform	ND		0.00500	1	06/01/2023 10:39	WG2069732
Chloromethane	ND		0.00250	1	06/01/2023 10:39	WG2069732
Dibromomethane	ND		0.00100	1	06/01/2023 10:39	WG2069732
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/01/2023 10:39	WG2069732
1,2-Dibromoethane	ND		0.00100	1	06/01/2023 10:39	WG2069732
1,2-Dichlorobenzene	ND		0.00100	1	06/01/2023 10:39	WG2069732
1,4-Dichlorobenzene	ND		0.00100	1	06/01/2023 10:39	WG2069732
trans-1,4-Dichloro-2-butene	ND		0.00250	1	06/01/2023 10:39	WG2069732
1,1-Dichloroethane	ND		0.00100	1	06/01/2023 10:39	WG2069732
1,2-Dichloroethane	ND		0.00100	1	06/01/2023 10:39	WG2069732
1,1-Dichloroethene	ND		0.00100	1	06/01/2023 10:39	WG2069732
cis-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 10:39	WG2069732
trans-1,2-Dichloroethene	ND		0.00100	1	06/01/2023 10:39	WG2069732
1,2-Dichloropropane	ND		0.00100	1	06/01/2023 10:39	WG2069732
cis-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 10:39	WG2069732
trans-1,3-Dichloropropene	ND		0.00100	1	06/01/2023 10:39	WG2069732
Ethylbenzene	ND		0.00100	1	06/01/2023 10:39	WG2069732
2-Hexanone	ND		0.0100	1	06/01/2023 10:39	WG2069732
Iodomethane	ND		0.0100	1	06/01/2023 10:39	WG2069732
2-Butanone (MEK)	ND		0.0100	1	06/01/2023 10:39	WG2069732
Methylene Chloride	ND		0.00500	1	06/01/2023 10:39	WG2069732
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/01/2023 10:39	WG2069732
Styrene	ND	J4	0.00100	1	06/01/2023 10:39	WG2069732
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 10:39	WG2069732
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/01/2023 10:39	WG2069732
Tetrachloroethene	ND		0.00100	1	06/01/2023 10:39	WG2069732
Toluene	ND		0.00100	1	06/01/2023 10:39	WG2069732
1,1,1-Trichloroethane	ND		0.00100	1	06/01/2023 10:39	WG2069732
1,1,2-Trichloroethane	ND		0.00100	1	06/01/2023 10:39	WG2069732
Trichloroethene	ND		0.00100	1	06/01/2023 10:39	WG2069732
Trichlorofluoromethane	ND		0.00500	1	06/01/2023 10:39	WG2069732
1,2,3-Trichloropropane	ND		0.00250	1	06/01/2023 10:39	WG2069732
Vinyl acetate	ND		0.0100	1	06/01/2023 10:39	WG2069732
Vinyl chloride	ND		0.00100	1	06/01/2023 10:39	WG2069732
Xylenes, Total	ND		0.00300	1	06/01/2023 10:39	WG2069732
(S) Toluene-d8	*99.4*		*80.0-120*		*06/01/2023 10:39*	WG2069732
(S) 4-Bromofluorobenzene	*94.1*		*77.0-126*		*06/01/2023 10:39*	WG2069732
(S) 1,2-Dichloroethane-d4	*94.1*		*70.0-130*		*06/01/2023 10:39*	WG2069732

Method Blank (MB)

(MB) R3932872-2 06/05/23 08:57

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

Sample Narrative:

BLANK: Endpoint pH 4.5

L1619432-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1619432-08 06/05/23 09:07 • (DUP) R3932872-4 06/05/23 09:11

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	659	653	1	0.977		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1620384-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1620384-01 06/05/23 10:25 • (DUP) R3932872-6 06/05/23 10:32

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	83.3	82.9	1	0.475		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3932872-1 06/05/23 08:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	102	102	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

QUALITY CONTROL SUMMARY

Method Blank (MB)

(MB) R3932875-1 06/05/23 08:47

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

Sample Narrative:

BLANK: Endpoint pH 4.5

L1620453-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1620453-01 06/05/23 09:37 • (DUP) R3932875-3 06/05/23 09:42

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	201	199	1	0.658		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1620453-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1620453-07 06/05/23 10:13 • (DUP) R3932875-4 06/05/23 10:18

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	173	177	1	2.16		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3932875-2 06/05/23 09:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	102	102	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

Method Blank (MB)

(MB) R3930257-1 05/29/23 09:37

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

L1620401-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1620401-02 05/29/23 09:50 • (DUP) R3930257-5 05/29/23 09:51

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	1.66	1.68	1	1.32		10

L1620489-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1620489-01 05/29/23 10:26 • (DUP) R3930257-7 05/29/23 10:28

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	0.379	0.353	1	7.10		10

Laboratory Control Sample (LCS)

(LCS) R3930257-2 05/29/23 09:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ammonia Nitrogen	7.50	7.76	103	90.0-110	

L1620401-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620401-01 05/29/23 09:45 • (MS) R3930257-3 05/29/23 09:47 • (MSD) R3930257-4 05/29/23 09:48

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	5.00	0.584	5.50	5.54	98.4	99.1	1	90.0-110			0.652	10

L1620426-09 Original Sample (OS) • Matrix Spike (MS)

(OS) L1620426-09 05/29/23 10:23 • (MS) R3930257-6 05/29/23 10:25

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ammonia Nitrogen	5.00	ND	5.25	105	1	90.0-110	

Method Blank (MB)

(MB) R3930153-1 05/28/23 12:09

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

L1620362-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1620362-02 05/28/23 12:10 • (DUP) R3930153-3 05/28/23 12:10

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	424	422	1	0.347		20

L1620426-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1620426-06 05/28/23 12:12 • (DUP) R3930153-6 05/28/23 12:13

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

Laboratory Control Sample (LCS)

(LCS) R3930153-2 05/28/23 12:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	500	517	103	90.0-110	

L1620426-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620426-04 05/28/23 12:12 • (MS) R3930153-4 05/28/23 12:12 • (MSD) R3930153-5 05/28/23 12:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
COD	500	ND	475	467	95.0	93.5	1	80.0-120			1.64	20

Method Blank (MB)

(MB) R3933229-1 05/26/23 23:32

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

L1620453-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1620453-04 05/27/23 01:58 • (DUP) R3933229-3 05/27/23 02:11

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	0.447		15
Chloride	13.0	13.0	1	0.256		15
Fluoride	ND	ND	1	0.000		15
Nitrate	ND	ND	1	0.000		15
Sulfate	69.6	69.8	1	0.287		15

L1620426-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1620426-03 05/27/23 07:07 • (DUP) R3933229-5 05/27/23 07:20

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	0.418		15
Chloride	11.8	11.9	1	0.605		15
Fluoride	ND	ND	1	0.000		15
Nitrate	1.06	1.06	1	0.670		15
Sulfate	ND	ND	1	2.30		15

Laboratory Control Sample (LCS)

(LCS) R3933229-2 05/26/23 23:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	41.0	103	80.0-120	
Chloride	40.0	40.0	100	80.0-120	
Fluoride	8.00	8.44	106	80.0-120	
Nitrate	8.00	7.92	99.0	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3933229-2 05/26/23 23:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sulfate	40.0	38.8	97.1	80.0-120	

L1620453-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1620453-04 05/27/23 01:58 • (MS) R3933229-4 05/27/23 02:25

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	ND	49.7	98.4	1	80.0-120	
Chloride	50.0	13.0	63.0	99.9	1	80.0-120	
Fluoride	5.00	ND	5.02	100	1	80.0-120	
Nitrate	5.00	ND	4.77	95.3	1	80.0-120	
Sulfate	50.0	69.6	116	93.3	1	80.0-120	

L1620426-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620426-03 05/27/23 07:07 • (MS) R3933229-6 05/27/23 07:33 • (MSD) R3933229-7 05/27/23 07:47

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	ND	51.6	51.8	102	103	1	80.0-120			0.387	15
Chloride	50.0	11.8	62.7	63.1	102	103	1	80.0-120			0.599	15
Fluoride	5.00	ND	5.10	5.30	102	106	1	80.0-120			3.71	15
Nitrate	5.00	1.06	6.09	6.11	101	101	1	80.0-120			0.328	15
Sulfate	50.0	ND	49.1	49.6	96.6	97.6	1	80.0-120			0.932	15

Method Blank (MB)

(MB) R3936584-1 06/14/23 00:11

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

Laboratory Control Sample (LCS)

(LCS) R3936584-2 06/14/23 00:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00347	116	80.0-120	

L1620360-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620360-01 06/14/23 00:15 • (MS) R3936584-3 06/14/23 00:21 • (MSD) R3936584-4 06/14/23 00:23

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	0.00282	0.00237	94.0	79.0	1	75.0-125			17.3	20

Method Blank (MB)

(MB) R3937155-1 06/15/23 10:38

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

Laboratory Control Sample (LCS)

(LCS) R3937155-2 06/15/23 10:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00240	80.1	80.0-120	

L1620441-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620441-04 06/15/23 10:42 • (MS) R3937155-3 06/15/23 10:44 • (MSD) R3937155-4 06/15/23 10:45

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.00300	ND	0.00119	0.000918	39.6	30.6	1	75.0-125	J6	J3 J6	25.6	20

Method Blank (MB)

(MB) R3931754-1 06/01/23 12:38

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

Laboratory Control Sample (LCS)

(LCS) R3931754-2 06/01/23 12:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	1.01	101	80.0-120	

L1620426-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620426-07 06/01/23 12:43 • (MS) R3931754-4 06/01/23 12:49 • (MSD) R3931754-5 06/01/23 12:51

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	0.994	0.983	99.4	98.3	1	75.0-125			1.16	20

Method Blank (MB)

(MB) R3932372-1 06/02/23 15:51

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	0.00186	J	0.00151	0.00500
Iron	U		0.0281	0.100
Lead	U		0.000849	0.00200
Magnesium	U		0.0735	1.00
Manganese	0.00165	J	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	0.00379	J	0.00302	0.0250

Laboratory Control Sample (LCS)

(LCS) R3932372-2 06/02/23 15:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	1.00	1.02	102	80.0-120	
Antimony	0.0500	0.0509	102	80.0-120	
Arsenic	0.0500	0.0529	106	80.0-120	
Barium	0.0500	0.0501	100	80.0-120	
Beryllium	0.0500	0.0491	98.3	80.0-120	
Cadmium	0.0500	0.0520	104	80.0-120	
Calcium	5.00	5.22	104	80.0-120	
Chromium	0.0500	0.0531	106	80.0-120	
Cobalt	0.0500	0.0529	106	80.0-120	
Copper	0.0500	0.0523	105	80.0-120	
Iron	1.00	1.07	107	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3932372-2 06/02/23 15:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lead	0.0500	0.0513	103	80.0-120	
Magnesium	5.00	5.11	102	80.0-120	
Manganese	0.0500	0.0540	108	80.0-120	
Nickel	0.0500	0.0538	108	80.0-120	
Potassium	5.00	5.10	102	80.0-120	
Selenium	0.0500	0.0519	104	80.0-120	
Silver	0.0500	0.0494	98.8	80.0-120	
Sodium	5.00	4.99	99.8	80.0-120	
Thallium	0.0500	0.0512	102	80.0-120	
Vanadium	0.0500	0.0533	107	80.0-120	
Zinc	0.0500	0.0578	116	80.0-120	

L1620565-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620565-21 06/02/23 15:58 • (MS) R3932372-4 06/02/23 16:04 • (MSD) R3932372-5 06/02/23 16:07

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum	1.00	ND	1.01	0.999	101	99.9	1	75.0-125			0.697	20
Antimony	0.0500	ND	0.0514	0.0509	103	102	1	75.0-125			1.05	20
Arsenic	0.0500	0.0334	0.0856	0.0857	104	105	1	75.0-125			0.0574	20
Barium	0.0500	0.133	0.179	0.179	91.8	92.8	1	75.0-125			0.260	20
Beryllium	0.0500	ND	0.0489	0.0495	97.8	99.1	1	75.0-125			1.27	20
Cadmium	0.0500	ND	0.0521	0.0526	103	104	1	75.0-125			0.921	20
Calcium	5.00	132	138	137	117	87.5	1	75.0-125			1.09	20
Chromium	0.0500	ND	0.0513	0.0518	103	104	1	75.0-125			1.02	20
Cobalt	0.0500	ND	0.0518	0.0519	103	103	1	75.0-125			0.278	20
Copper	0.0500	ND	0.0496	0.0486	95.5	93.6	1	75.0-125			1.95	20
Iron	1.00	19.1	19.8	20.0	70.6	92.7	1	75.0-125	V		1.11	20
Lead	0.0500	ND	0.0519	0.0516	104	103	1	75.0-125			0.576	20
Magnesium	5.00	40.2	44.5	45.5	87.6	107	1	75.0-125			2.13	20
Manganese	0.0500	0.159	0.210	0.214	102	110	1	75.0-125			1.92	20
Nickel	0.0500	ND	0.0515	0.0521	99.5	101	1	75.0-125			1.29	20
Potassium	5.00	2.03	6.96	6.81	98.7	95.7	1	75.0-125			2.19	20
Selenium	0.0500	ND	0.0544	0.0541	109	108	1	75.0-125			0.663	20
Silver	0.0500	ND	0.0486	0.0481	97.3	96.3	1	75.0-125			1.04	20
Sodium	5.00	98.0	103	104	90.5	112	1	75.0-125			1.02	20
Thallium	0.0500	ND	0.0511	0.0518	102	104	1	75.0-125			1.30	20
Vanadium	0.0500	ND	0.0516	0.0525	101	103	1	75.0-125			1.65	20
Zinc	0.0500	ND	0.0659	0.0650	99.9	98.1	1	75.0-125			1.39	20

Method Blank (MB)

(MB) R3931976-2 06/01/23 07:21

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

Method Blank (MB)

(MB) R3931976-2 06/01/23 07:21

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	*102*			*80.0-120*
(S) 4-Bromofluorobenzene	*95.4*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*93.8*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3931976-1 06/01/23 06:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.0250	0.0220	88.0	19.0-160	
Acrylonitrile	0.0250	0.0282	113	55.0-149	
Benzene	0.00500	0.00460	92.0	70.0-123	
Bromochloromethane	0.00500	0.00420	84.0	76.0-122	
Bromodichloromethane	0.00500	0.00471	94.2	75.0-120	
Bromoform	0.00500	0.00383	76.6	68.0-132	
Bromomethane	0.00500	0.00507	101	10.0-160	
Carbon disulfide	0.00500	0.00392	78.4	61.0-128	
Carbon tetrachloride	0.00500	0.00440	88.0	68.0-126	
Chlorobenzene	0.00500	0.00425	85.0	80.0-121	
Chlorodibromomethane	0.00500	0.00388	77.6	77.0-125	
Chloroethane	0.00500	0.00560	112	47.0-150	
Chloroform	0.00500	0.00432	86.4	73.0-120	
Chloromethane	0.00500	0.00547	109	41.0-142	
Dibromomethane	0.00500	0.00436	87.2	80.0-120	
1,2-Dibromo-3-Chloropropane	0.00500	0.00349	69.8	58.0-134	
1,2-Dibromoethane	0.00500	0.00425	85.0	80.0-122	
1,2-Dichlorobenzene	0.00500	0.00400	80.0	79.0-121	
1,4-Dichlorobenzene	0.00500	0.00402	80.4	79.0-120	
trans-1,4-Dichloro-2-butene	0.00500	0.00259	51.8	33.0-144	
1,1-Dichloroethane	0.00500	0.00439	87.8	70.0-126	
1,2-Dichloroethane	0.00500	0.00460	92.0	70.0-128	
1,1-Dichloroethene	0.00500	0.00449	89.8	71.0-124	

Laboratory Control Sample (LCS)

(LCS) R3931976-1 06/01/23 06:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
cis-1,2-Dichloroethene	0.00500	0.00442	88.4	73.0-120	
trans-1,2-Dichloroethene	0.00500	0.00450	90.0	73.0-120	
1,2-Dichloropropane	0.00500	0.00452	90.4	77.0-125	
cis-1,3-Dichloropropene	0.00500	0.00446	89.2	80.0-123	
trans-1,3-Dichloropropene	0.00500	0.00423	84.6	78.0-124	
Ethylbenzene	0.00500	0.00424	84.8	79.0-123	
2-Hexanone	0.0250	0.0257	103	67.0-149	
Iodomethane	0.0250	0.0195	78.0	33.0-147	
2-Butanone (MEK)	0.0250	0.0247	98.8	44.0-160	
Methylene Chloride	0.00500	0.00447	89.4	67.0-120	
4-Methyl-2-pentanone (MIBK)	0.0250	0.0247	98.8	68.0-142	
Styrene	0.00500	0.00361	72.2	73.0-130	J4
1,1,1,2-Tetrachloroethane	0.00500	0.00387	77.4	75.0-125	
1,1,2,2-Tetrachloroethane	0.00500	0.00402	80.4	65.0-130	
Tetrachloroethene	0.00500	0.00457	91.4	72.0-132	
Toluene	0.00500	0.00428	85.6	79.0-120	
1,1,1-Trichloroethane	0.00500	0.00433	86.6	73.0-124	
1,1,2-Trichloroethane	0.00500	0.00456	91.2	80.0-120	
Trichloroethene	0.00500	0.00489	97.8	78.0-124	
Trichlorofluoromethane	0.00500	0.00512	102	59.0-147	
1,2,3-Trichloropropane	0.00500	0.00424	84.8	73.0-130	
Vinyl acetate	0.0250	0.0178	71.2	11.0-160	
Vinyl chloride	0.00500	0.00550	110	67.0-131	
Xylenes, Total	0.0150	0.0123	82.0	79.0-123	
(S) Toluene-d8			*100*	*80.0-120*	
(S) 4-Bromofluorobenzene			*96.8*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*93.1*	*70.0-130*	

Method Blank (MB)

(MB) R3931593-1 05/31/23 23:17

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

L1620426-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1620426-03 06/01/23 00:05 • (DUP) R3931593-3 05/31/23 23:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ethylene Dibromide	ND	ND	1.01	0.000		20
1,2-Dibromo-3-Chloropropane	ND	ND	1.01	0.000		20

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

(LCS) R3931593-4 06/01/23 01:56 • (LCSD) R3931593-5 06/01/23 04:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethylene Dibromide	0.000250	0.000204	0.000213	81.6	85.2	60.0-140			4.32	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000220	0.000226	88.0	90.4	60.0-140			2.69	20

L1620426-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1620426-04 05/31/23 23:41 • (MS) R3931593-2 05/31/23 23:29

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ethylene Dibromide	0.0000989	ND	0.000100	101	1	64.0-159	
1,2-Dibromo-3-Chloropropane	0.0000989	ND	0.0000927	93.7	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
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

Company Name/Address:
Civil & Environmental Consultants - TN

117 Seaboard Ln.
Suite E100
Franklin. TN 37067

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

Report to: **Philip Campbell**

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

Project Description: **Former EWS Camden Class 2 Landfill**

City/State Collected: Camden, TN

Please Circle: PT MT CT ET

Phone: **615-333-7797**

Client Project # **181-364**

Lab Project # **CEC-EWS CAMDEN LF**

Collected by (print): Joseph Dougherty

Site/Facility ID # **CAMDEN, TN**

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

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

Quote #

Date Results Needed

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
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/hubfs/pas-standard-terms.pdf

SDG # L1620426

Table # E108

Acctnum: **CEC**
Template: **T133579**
Prelogin: **P1000480**
PM: **526 - Chris McCord**
PB: CR 5/19/23
Shipped Via: **Courier**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	**WetChem** 250mlHDPE-NoPres	ALK 100ml Amb-NoPres	COD,NH3 250mlHDPE-H2SO4	SV8011 40mlClr-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl	V8260AP1-Trip Blank 40mlAmb-HCl-Blk	Remarks	Sample # (lab only)
MW-1	Grab	GW	—	5/25/23	1615	10	X	X	X	X	X	X			-01
MW-3		GW	—		1215	10	X	X	X	X	X	X			-02
MW-4		GW	—		1420	10	X	X	X	X	X	X			-03
MW-5		GW	—		1035	10	X	X	X	X	X	X			-04
TMW-1		GW	—		1300	10	X	X	X	X	X	X			-05
TMW-2		GW	—		11:55	10	X	X	X	X	X	X			-06
TMW-3		GW	—		10:30	10	X	X	X	X	X	X			-07
DUPLICATE		GW	—		—	10	X	X	X	X	X	X			-08
FIELD BLANK		GW	—		13:10	10	X	X	X	X	X	X			-09
TRIP BLANK	—	GW	—		—	1							X		-10

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

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

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	5/26/23	08:00		2
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
	5/26/23	09:30		1.9+0=1.9 9 1
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:
			Hana Nwanna	5.26.23 0850

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

PH-10BDH4321 TRC-2144141
CR6-220221V

ANALYTICAL REPORT

June 14, 2023

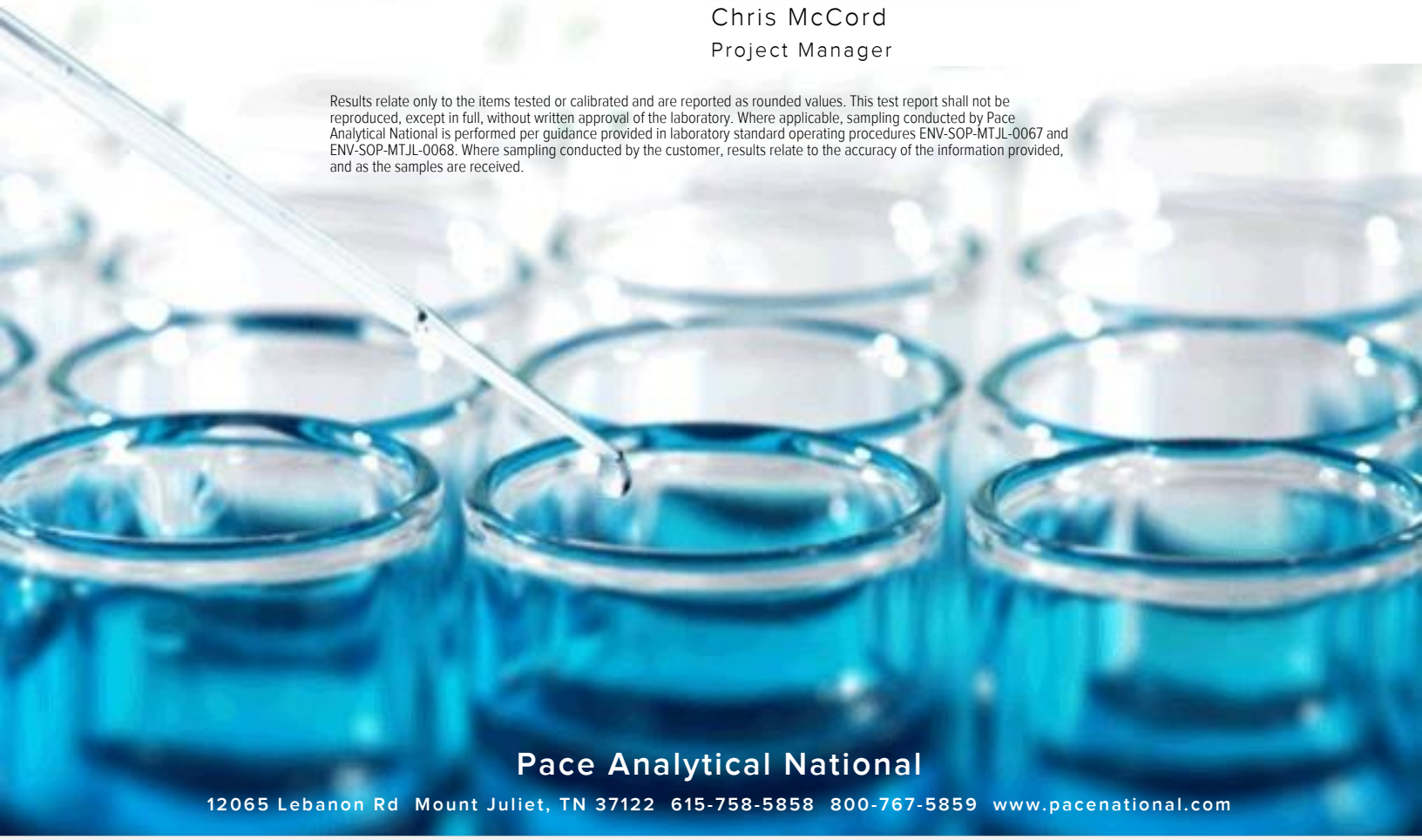
Civil & Environmental Consultants - TN

Sample Delivery Group:	L1620379
Samples Received:	05/26/2023
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.



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SAMPLE SUMMARY

IWC-L L1620379-01 GW

Collected by: Joseph Daugherty
Collected date/time: 05/25/23 14:20
Received date/time: 05/26/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2068783	1	05/31/23 14:35	05/31/23 14:35	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2072151	1	06/06/23 11:16	06/06/23 11:16	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG2067846	200	05/28/23 14:43	05/28/23 14:43	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG2067840	20	05/28/23 09:35	05/28/23 12:10	RTW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2067662	100	05/27/23 16:13	05/27/23 16:13	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2067662	1000	05/27/23 18:48	05/27/23 18:48	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2072081	1	06/13/23 13:03	06/14/23 00:49	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2068775	5	06/01/23 07:29	06/01/23 12:58	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG2068783	100	05/31/23 09:41	05/31/23 14:35	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2069732	25	06/01/23 16:02	06/01/23 16:02	JAH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2068573	1	05/31/23 07:01	05/31/23 16:28	HMH	Mt. Juliet, TN

CASE NARRATIVE

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

Chris McCord
Project Manager

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	42500		250	1	05/31/2023 14:35	WG2068783

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	06/06/2023 11:16	WG2072151

Sample Narrative:
L1620379-01 WG2072151: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	1570		50.0	200	05/28/2023 14:43	WG2067846

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	13400		400	20	05/28/2023 12:10	WG2067840

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	05/27/2023 16:13	WG2067662
Chloride	95600		1000	1000	05/27/2023 18:48	WG2067662
Fluoride	ND		15.0	100	05/27/2023 16:13	WG2067662
Nitrate	ND	Q	10.0	100	05/27/2023 16:13	WG2067662
Sulfate	830		500	100	05/27/2023 16:13	WG2067662

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/14/2023 00:49	WG2072081

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		1.00	5	06/01/2023 12:58	WG2068775

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	275		10.0	100	05/31/2023 14:35	WG2068783
Antimony	ND		0.400	100	05/31/2023 14:35	WG2068783
Arsenic	0.220		0.200	100	05/31/2023 14:35	WG2068783
Barium	2.64		0.200	100	05/31/2023 14:35	WG2068783
Beryllium	ND		0.200	100	05/31/2023 14:35	WG2068783
Cadmium	11.0		0.100	100	05/31/2023 14:35	WG2068783
Calcium	14900		100	100	05/31/2023 14:35	WG2068783
Chromium	ND		0.200	100	05/31/2023 14:35	WG2068783
Cobalt	0.409		0.200	100	05/31/2023 14:35	WG2068783
Copper	1.69		0.500	100	05/31/2023 14:35	WG2068783

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	369		10.0	100	05/31/2023 14:35	WG2068783
Lead	0.794		0.200	100	05/31/2023 14:35	WG2068783
Magnesium	1300		100	100	05/31/2023 14:35	WG2068783
Manganese	38.5		0.500	100	05/31/2023 14:35	WG2068783
Nickel	0.512		0.200	100	05/31/2023 14:35	WG2068783
Potassium	15200		200	100	05/31/2023 14:35	WG2068783
Selenium	ND		0.200	100	05/31/2023 14:35	WG2068783
Silver	ND		0.200	100	05/31/2023 14:35	WG2068783
Sodium	25100		200	100	05/31/2023 14:35	WG2068783
Thallium	ND		0.200	100	05/31/2023 14:35	WG2068783
Vanadium	ND		0.500	100	05/31/2023 14:35	WG2068783
Zinc	138		2.50	100	05/31/2023 14:35	WG2068783

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	2.20		1.25	25	06/01/2023 16:02	WG2069732
Acrylonitrile	ND		0.250	25	06/01/2023 16:02	WG2069732
Benzene	ND		0.0250	25	06/01/2023 16:02	WG2069732
Bromochloromethane	ND		0.0250	25	06/01/2023 16:02	WG2069732
Bromodichloromethane	ND		0.0250	25	06/01/2023 16:02	WG2069732
Bromoform	ND		0.0250	25	06/01/2023 16:02	WG2069732
Bromomethane	ND		0.125	25	06/01/2023 16:02	WG2069732
Carbon disulfide	ND		0.0250	25	06/01/2023 16:02	WG2069732
Carbon tetrachloride	ND		0.0250	25	06/01/2023 16:02	WG2069732
Chlorobenzene	ND		0.0250	25	06/01/2023 16:02	WG2069732
Chlorodibromomethane	ND		0.0250	25	06/01/2023 16:02	WG2069732
Chloroethane	ND		0.125	25	06/01/2023 16:02	WG2069732
Chloroform	ND		0.125	25	06/01/2023 16:02	WG2069732
Chloromethane	ND		0.0625	25	06/01/2023 16:02	WG2069732
Dibromomethane	ND		0.0250	25	06/01/2023 16:02	WG2069732
1,2-Dibromo-3-Chloropropane	ND		0.125	25	06/01/2023 16:02	WG2069732
1,2-Dibromoethane	ND		0.0250	25	06/01/2023 16:02	WG2069732
1,2-Dichlorobenzene	ND		0.0250	25	06/01/2023 16:02	WG2069732
1,4-Dichlorobenzene	ND		0.0250	25	06/01/2023 16:02	WG2069732
trans-1,4-Dichloro-2-butene	ND		0.0625	25	06/01/2023 16:02	WG2069732
1,1-Dichloroethane	ND		0.0250	25	06/01/2023 16:02	WG2069732
1,2-Dichloroethane	ND		0.0250	25	06/01/2023 16:02	WG2069732
1,1-Dichloroethene	ND		0.0250	25	06/01/2023 16:02	WG2069732
cis-1,2-Dichloroethene	ND		0.0250	25	06/01/2023 16:02	WG2069732
trans-1,2-Dichloroethene	ND		0.0250	25	06/01/2023 16:02	WG2069732
1,2-Dichloropropane	ND		0.0250	25	06/01/2023 16:02	WG2069732
cis-1,3-Dichloropropene	ND		0.0250	25	06/01/2023 16:02	WG2069732
trans-1,3-Dichloropropene	ND		0.0250	25	06/01/2023 16:02	WG2069732
Ethylbenzene	ND		0.0250	25	06/01/2023 16:02	WG2069732
2-Hexanone	ND		0.250	25	06/01/2023 16:02	WG2069732
Iodomethane	ND		0.250	25	06/01/2023 16:02	WG2069732
2-Butanone (MEK)	0.289		0.250	25	06/01/2023 16:02	WG2069732
Methylene Chloride	ND		0.125	25	06/01/2023 16:02	WG2069732
4-Methyl-2-pentanone (MIBK)	ND		0.250	25	06/01/2023 16:02	WG2069732
Styrene	ND	J4	0.0250	25	06/01/2023 16:02	WG2069732
1,1,1,2-Tetrachloroethane	ND		0.0250	25	06/01/2023 16:02	WG2069732
1,1,2,2-Tetrachloroethane	ND		0.0250	25	06/01/2023 16:02	WG2069732
Tetrachloroethene	ND		0.0250	25	06/01/2023 16:02	WG2069732
Toluene	ND		0.0250	25	06/01/2023 16:02	WG2069732
1,1,1-Trichloroethane	ND		0.0250	25	06/01/2023 16:02	WG2069732

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		0.0250	25	06/01/2023 16:02	WG2069732
Trichloroethene	ND		0.0250	25	06/01/2023 16:02	WG2069732
Trichlorofluoromethane	ND		0.125	25	06/01/2023 16:02	WG2069732
1,2,3-Trichloropropane	ND		0.0625	25	06/01/2023 16:02	WG2069732
Vinyl acetate	ND		0.250	25	06/01/2023 16:02	WG2069732
Vinyl chloride	ND		0.0250	25	06/01/2023 16:02	WG2069732
Xylenes, Total	ND		0.0750	25	06/01/2023 16:02	WG2069732
(S) Toluene-d8	*99.9*		*80.0-120*		*06/01/2023 16:02*	WG2069732
(S) 4-Bromofluorobenzene	*95.5*		*77.0-126*		*06/01/2023 16:02*	WG2069732
(S) 1,2-Dichloroethane-d4	*94.4*		*70.0-130*		*06/01/2023 16:02*	WG2069732

Sample Narrative:

L1620379-01 WG2069732: Non-target compounds too high to run at a lower dilution.

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	05/31/2023 16:28	WG2068573
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/31/2023 16:28	WG2068573

Method Blank (MB)

(MB) R3933361-2 06/06/23 11:08

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

Sample Narrative:

BLANK: Endpoint pH 4.5

L1621708-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1621708-01 06/06/23 11:21 • (DUP) R3933361-4 06/06/23 11:26

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	206	225	1	8.80		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1621826-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1621826-01 06/06/23 12:19 • (DUP) R3933361-6 06/06/23 12:22

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

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3933361-1 06/06/23 11:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	102	102	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

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

Method Blank (MB)

(MB) R3930185-1 05/28/23 14:13

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

L1620288-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1620288-06 05/28/23 14:22 • (DUP) R3930185-5 05/28/23 14:23

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	4.95	4.96	1	0.283		10

L1620386-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1620386-02 05/28/23 14:52 • (DUP) R3930185-7 05/28/23 14:54

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

Laboratory Control Sample (LCS)

(LCS) R3930185-2 05/28/23 14:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ammonia Nitrogen	7.50	7.33	97.7	90.0-110	

L1620288-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620288-05 05/28/23 14:17 • (MS) R3930185-3 05/28/23 14:19 • (MSD) R3930185-4 05/28/23 14:20

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	5.00	4.92	9.97	10.0	101	102	1	90.0-110		E	0.610	10

L1620386-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1620386-01 05/28/23 14:45 • (MS) R3930185-6 05/28/23 14:46

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ammonia Nitrogen	5.00	ND	5.17	103	1	90.0-110	

Method Blank (MB)

(MB) R3930153-1 05/28/23 12:09

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

L1620362-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1620362-02 05/28/23 12:10 • (DUP) R3930153-3 05/28/23 12:10

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	424	422	1	0.347		20

L1620426-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1620426-06 05/28/23 12:12 • (DUP) R3930153-6 05/28/23 12:13

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

Laboratory Control Sample (LCS)

(LCS) R3930153-2 05/28/23 12:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	500	517	103	90.0-110	

L1620426-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620426-04 05/28/23 12:12 • (MS) R3930153-4 05/28/23 12:12 • (MSD) R3930153-5 05/28/23 12:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
COD	500	ND	475	467	95.0	93.5	1	80.0-120			1.64	20

Method Blank (MB)

(MB) R3936305-1 05/27/23 10:36

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

L1620349-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1620349-05 05/27/23 17:04 • (DUP) R3936305-3 05/27/23 17:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	11.5		15
Fluoride	0.334	0.406	1	19.7	P1	15
Nitrate	10.5	10.8	1	3.21		15

L1620349-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1620349-05 05/27/23 18:09 • (DUP) R3936305-4 05/27/23 17:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	596	594	10	0.245		15
Sulfate	236	235	10	0.707		15

L1620810-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1620810-02 05/27/23 19:39 • (DUP) R3936305-7 05/27/23 19:51

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	2.94		15
Chloride	23.9	23.8	1	0.328		15
Fluoride	0.234	0.280	1	17.9	P1	15
Nitrate	0.182	0.163	1	11.3		15
Sulfate	15.9	15.5	1	2.44		15

Laboratory Control Sample (LCS)

(LCS) R3936305-2 05/27/23 10:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	40.4	101	80.0-120	
Chloride	40.0	39.4	98.6	80.0-120	
Fluoride	8.00	8.10	101	80.0-120	
Nitrate	8.00	7.80	97.5	80.0-120	
Sulfate	40.0	38.2	95.4	80.0-120	

L1620349-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620349-05 05/27/23 17:04 • (MS) R3936305-5 05/27/23 17:43 • (MSD) R3936305-6 05/27/23 17:56

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	ND	38.6	39.9	75.7	78.4	1	80.0-120	J6	J6	3.42	15
Chloride	50.0	595	620	625	49.7	58.6	1	80.0-120	E V	E V	0.714	15
Fluoride	5.00	0.334	5.26	5.46	98.6	103	1	80.0-120			3.68	15
Nitrate	5.00	10.5	15.9	16.2	108	114	1	80.0-120			1.80	15
Sulfate	50.0	242	294	298	105	113	1	80.0-120	E	E	1.40	15

L1620810-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1620810-02 05/27/23 19:39 • (MS) R3936305-8 05/27/23 20:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	ND	49.7	98.3	1	80.0-120	
Chloride	50.0	23.9	73.8	99.8	1	80.0-120	
Fluoride	5.00	0.234	5.46	104	1	80.0-120	
Nitrate	5.00	0.182	4.82	92.8	1	80.0-120	
Sulfate	50.0	15.9	64.3	96.9	1	80.0-120	

Method Blank (MB)

(MB) R3936584-1 06/14/23 00:11

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

Laboratory Control Sample (LCS)

(LCS) R3936584-2 06/14/23 00:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00347	116	80.0-120	

L1620360-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620360-01 06/14/23 00:15 • (MS) R3936584-3 06/14/23 00:21 • (MSD) R3936584-4 06/14/23 00:23

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	0.00282	0.00237	94.0	79.0	1	75.0-125			17.3	20

Method Blank (MB)

(MB) R3931754-1 06/01/23 12:38

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

Laboratory Control Sample (LCS)

(LCS) R3931754-2 06/01/23 12:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	1.01	101	80.0-120	

L1620426-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620426-07 06/01/23 12:43 • (MS) R3931754-4 06/01/23 12:49 • (MSD) R3931754-5 06/01/23 12:51

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	0.994	0.983	99.4	98.3	1	75.0-125			1.16	20

Method Blank (MB)

(MB) R3931127-1 05/31/23 13:00

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

Laboratory Control Sample (LCS)

(LCS) R3931127-2 05/31/23 13:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	1.00	0.953	95.3	80.0-120	
Antimony	0.0500	0.0485	97.1	80.0-120	
Arsenic	0.0500	0.0500	100	80.0-120	
Barium	0.0500	0.0479	95.7	80.0-120	
Beryllium	0.0500	0.0484	96.7	80.0-120	
Cadmium	0.0500	0.0520	104	80.0-120	
Calcium	5.00	4.93	98.7	80.0-120	
Chromium	0.0500	0.0499	99.9	80.0-120	
Cobalt	0.0500	0.0507	101	80.0-120	
Copper	0.0500	0.0479	95.7	80.0-120	
Iron	1.00	1.04	104	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3931127-2 05/31/23 13:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lead	0.0500	0.0471	94.2	80.0-120	
Magnesium	5.00	4.93	98.6	80.0-120	
Manganese	0.0500	0.0501	100	80.0-120	
Nickel	0.0500	0.0509	102	80.0-120	
Potassium	5.00	5.57	111	80.0-120	
Selenium	0.0500	0.0527	105	80.0-120	
Silver	0.0500	0.0496	99.2	80.0-120	
Sodium	5.00	5.28	106	80.0-120	
Thallium	0.0500	0.0495	98.9	80.0-120	
Vanadium	0.0500	0.0512	102	80.0-120	
Zinc	0.0500	0.0469	93.8	80.0-120	

L1620025-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620025-01 05/31/23 15:53 • (MS) R3931127-6 05/31/23 15:59 • (MSD) R3931127-7 05/31/23 16:03

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum	1.00	ND	2.15	2.28	89.9	102	20	75.0-125			5.54	20
Antimony	0.0500	ND	ND	ND	103	96.1	20	75.0-125			7.17	20
Arsenic	0.0500	ND	0.0514	0.0501	103	100	20	75.0-125			2.64	20
Barium	0.0500	1310	1350	1310	90300	5810	20	75.0-125	E V	E V	3.17	20
Beryllium	0.0500	ND	0.0447	0.0446	89.5	89.3	20	75.0-125			0.204	20
Cadmium	0.0500	ND	0.0462	0.0462	92.3	92.4	20	75.0-125			0.0509	20
Calcium	5.00	11400	11800	11500	9950	3070	20	75.0-125	V	V	2.95	20
Chromium	0.0500	ND	0.0526	0.0509	0.000	0.000	20	75.0-125			0.000	20
Cobalt	0.0500	ND	0.0485	0.0465	97.0	93.0	20	75.0-125			4.24	20
Copper	0.0500	ND	ND	ND	111	108	20	75.0-125			3.24	20
Iron	1.00	3.66	4.79	4.62	112	95.9	20	75.0-125			3.53	20
Lead	0.0500	ND	0.0542	0.0506	108	101	20	75.0-125			6.77	20
Magnesium	5.00	ND	ND	ND	91.7	88.2	20	75.0-125			2.63	20
Manganese	0.0500	ND	0.113	0.108	101	91.6	20	75.0-125			4.35	20
Nickel	0.0500	ND	0.0435	0.0408	87.1	81.7	20	75.0-125			6.39	20
Potassium	5.00	159	170	167	211	155	20	75.0-125	V	V	1.68	20
Selenium	0.0500	ND	0.0550	0.0547	110	109	20	75.0-125			0.616	20
Silver	0.0500	ND	0.0472	0.0455	94.5	90.9	20	75.0-125			3.85	20
Sodium	5.00	13600	13600	13300	0.000	0.000	20	75.0-125	V	V	2.42	20
Thallium	0.0500	ND	0.0472	0.0455	94.3	91.0	20	75.0-125			3.66	20
Vanadium	0.0500	ND	ND	ND	97.4	96.1	20	75.0-125			1.38	20
Zinc	0.0500	ND	ND	ND	113	97.8	20	75.0-125			2.44	20

Method Blank (MB)

(MB) R3931976-2 06/01/23 07:21

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

Method Blank (MB)

(MB) R3931976-2 06/01/23 07:21

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	*102*			*80.0-120*
(S) 4-Bromofluorobenzene	*95.4*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*93.8*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3931976-1 06/01/23 06:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.0250	0.0220	88.0	19.0-160	
Acrylonitrile	0.0250	0.0282	113	55.0-149	
Benzene	0.00500	0.00460	92.0	70.0-123	
Bromochloromethane	0.00500	0.00420	84.0	76.0-122	
Bromodichloromethane	0.00500	0.00471	94.2	75.0-120	
Bromoform	0.00500	0.00383	76.6	68.0-132	
Bromomethane	0.00500	0.00507	101	10.0-160	
Carbon disulfide	0.00500	0.00392	78.4	61.0-128	
Carbon tetrachloride	0.00500	0.00440	88.0	68.0-126	
Chlorobenzene	0.00500	0.00425	85.0	80.0-121	
Chlorodibromomethane	0.00500	0.00388	77.6	77.0-125	
Chloroethane	0.00500	0.00560	112	47.0-150	
Chloroform	0.00500	0.00432	86.4	73.0-120	
Chloromethane	0.00500	0.00547	109	41.0-142	
Dibromomethane	0.00500	0.00436	87.2	80.0-120	
1,2-Dibromo-3-Chloropropane	0.00500	0.00349	69.8	58.0-134	
1,2-Dibromoethane	0.00500	0.00425	85.0	80.0-122	
1,2-Dichlorobenzene	0.00500	0.00400	80.0	79.0-121	
1,4-Dichlorobenzene	0.00500	0.00402	80.4	79.0-120	
trans-1,4-Dichloro-2-butene	0.00500	0.00259	51.8	33.0-144	
1,1-Dichloroethane	0.00500	0.00439	87.8	70.0-126	
1,2-Dichloroethane	0.00500	0.00460	92.0	70.0-128	
1,1-Dichloroethene	0.00500	0.00449	89.8	71.0-124	

Laboratory Control Sample (LCS)

(LCS) R3931976-1 06/01/23 06:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
cis-1,2-Dichloroethene	0.00500	0.00442	88.4	73.0-120	
trans-1,2-Dichloroethene	0.00500	0.00450	90.0	73.0-120	
1,2-Dichloropropane	0.00500	0.00452	90.4	77.0-125	
cis-1,3-Dichloropropene	0.00500	0.00446	89.2	80.0-123	
trans-1,3-Dichloropropene	0.00500	0.00423	84.6	78.0-124	
Ethylbenzene	0.00500	0.00424	84.8	79.0-123	
2-Hexanone	0.0250	0.0257	103	67.0-149	
Iodomethane	0.0250	0.0195	78.0	33.0-147	
2-Butanone (MEK)	0.0250	0.0247	98.8	44.0-160	
Methylene Chloride	0.00500	0.00447	89.4	67.0-120	
4-Methyl-2-pentanone (MIBK)	0.0250	0.0247	98.8	68.0-142	
Styrene	0.00500	0.00361	72.2	73.0-130	J4
1,1,1,2-Tetrachloroethane	0.00500	0.00387	77.4	75.0-125	
1,1,2,2-Tetrachloroethane	0.00500	0.00402	80.4	65.0-130	
Tetrachloroethene	0.00500	0.00457	91.4	72.0-132	
Toluene	0.00500	0.00428	85.6	79.0-120	
1,1,1-Trichloroethane	0.00500	0.00433	86.6	73.0-124	
1,1,2-Trichloroethane	0.00500	0.00456	91.2	80.0-120	
Trichloroethene	0.00500	0.00489	97.8	78.0-124	
Trichlorofluoromethane	0.00500	0.00512	102	59.0-147	
1,2,3-Trichloropropane	0.00500	0.00424	84.8	73.0-130	
Vinyl acetate	0.0250	0.0178	71.2	11.0-160	
Vinyl chloride	0.00500	0.00550	110	67.0-131	
Xylenes, Total	0.0150	0.0123	82.0	79.0-123	
(S) Toluene-d8			*100*	*80.0-120*	
(S) 4-Bromofluorobenzene			*96.8*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*93.1*	*70.0-130*	

Method Blank (MB)

(MB) R3931592-1 05/31/23 12:57

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

L1619145-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1619145-05 05/31/23 13:47 • (DUP) R3931592-3 05/31/23 13:34

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ethylene Dibromide	ND	ND	1.02	0.000		20
1,2-Dibromo-3-Chloropropane	ND	ND	1.02	0.000		20

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

(LCS) R3931592-4 05/31/23 15:38 • (LCSD) R3931592-5 05/31/23 17:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethylene Dibromide	0.000250	0.000219	0.000201	87.6	80.4	60.0-140			8.57	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000221	0.000208	88.4	83.2	60.0-140			6.06	20

L1619404-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1619404-01 05/31/23 13:22 • (MS) R3931592-2 05/31/23 13:10

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ethylene Dibromide	0.000101	ND	0.000107	106	1.01	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000101	ND	0.0000997	98.7	1.01	72.0-148	

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

Company Name/Address:
Civil & Environmental Consultants - TN

117 Seaboard Ln.
Suite E100
Franklin, TN 37067

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

Report to: Philip Campbell

Email To: pcampbell@cecinc.com

Project Description: 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 Daugherty

Site/Facility ID # CAMDEN, TN

P.O. #

Collected by (signature): Joseph Daugherty

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

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	**WetChem** 250mlHDPE-NoPres	ALK 100ml Amb-NoPres	COD,NH3 250mlHDPE-H2SO4	SV8011 40mlClr-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl					Remarks	Sample # (lab only)
							L2		L2									
IWC-L	Grab	GW	—	5/25/23	1420	10	X	X	X	X	X	X						-01

Chain of Custody Page ___ of ___

Pace
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/hubfs/pas-standard-terms.pdf

SDG # L1620379

H229

Ta

Acctnum: CEC

Template: T133582

Prelogin: P1000481

PM: 526 - Chris McCord

PB: CS 5/19/23

Shipped Via: Courier

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

Remarks:**WetChem** = *NITRATE*,CHLORIDE,BROMIDE,SULFATE,FLUORIDE
Total Metals=M6020AP1 + Al,Ca,Fe,K,Mg,Mn,Na,B(6010)

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Joseph Daugherty	5/26/23	08:40	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	5/26/23	09:30	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCl / MeoH
TBR

Temp: 1.5+0.1°C Bottles Received: 10

0.6+0.1=0.6

Date: 5/26/23 Time: 0800

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

EQUIPMENT CALIBRATION LOG

Civil & Environmental Consultants, Inc. 117 Seaboard Lane Suite E-100 Franklin, Tennessee 37067 - 800-763-2326 - www.ceciinc.com

EQUIPMENT CALIBRATION FORM

NAME OF REPRESENTATIVE	JACKSON ROBBINS
LOCATION	CEC
DATE AND TIME	13:10 6·24·23
Equipment and Model # (ex. YSI Pro Plus 556)	YSI #1 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	6·21·24	4.08	158.8	160 to 180	Y	4.00	Y
7	1·24·25	7.05	-12.5	+/-50	Y	7.00	Y
10	12·22·24	9.93	-177.9	-160 to -180	Y	10.02	Y

Temperature Calibration Check

Cert. Thermometer Value (deg C)	Meter Value (deg C)
23.4	23.7

DO Calibration

Actual Barometric Pressure	Barometric Pressure (mm Hg)	D.O. Value (% Saturated)	Unit reading (%)	% DO accepted?
762.1	743.5	100	97.6	~~Y~~ Y

Specific Conductivity Calibration

Sp. Conductivity Calibration Standard buffer solution	Buffer solution exp. date	Pre Cal Reading (umhos)	Post Cal Reading (umhos)
1409	9·9·24	1470	1409

ORP Calibration

ORP Calibration (mV)	Buffer solution exp. date	Pre Cal Reading (mV)	Post Cal Reading (mV)
220	11.23	210.9	220

Hach Model 2100P Turbidimeter Calibration

Calibration verification Test performed and passed?	NTU Standard	Within Range? (Yes/No)	Measured Value	Stored?	Final Verification test passed? (Yes/No)
Yes	20				✓
No	100				✓
Note: if verification passed, calibration not required	800				

GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-1
LOCATION	Camden, TN	TEMPERATURE & WEATHER	80°F SUNNY
DATE & TIME	5.25.23 1455	EVENT FREQUENCY	Quarterly
PURGE METHOD	Peristaltic Pump	FIELD REPRESENTATIVE	JROBBINS
TOTAL WELL DEPTH (feet)	30.5	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	21.90	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	8.60	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
0.25	21.90	1520	21.0	5.40	68.0	62.9	5.23	216.7	66.6
0.5	21.90	1525	20.8	5.33	62.2	56.8	3.44	209.2	93.4
0.75	21.90	1530	20.0	5.12	44.2	44.9	2.97	202.5	116
1	21.90	1535	17.4	5.15	49.3	42.1	3.15	216.5	48.3
1.25	21.90	1540	17.2	5.15	50.5	43.1	2.92	207.0	27.3
1.50	21.90	1545	17.0	5.17	57.3	48.6	2.48	196.0	18.4
1.75	21.90	1550	17.0	5.21	62.0	52.9	2.34	172.9	18.4
2	21.90	1555	17.1	5.22	64.7	55.0	2.18	160.3	19.7
2.25	21.90	1600	16.9	5.25	70.5	59.8	1.94	147.2	16.3
2.5	21.90	1605	17.0	5.27	74.6	63.1	1.87	138.4	24.2
2.75	21.90	1610	17.0	5.30	80.4	68.1	1.50	126	18.9
3	21.90	1615	16.8	5.32	83.9	71.0	1.43	121.8	15.2

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
	21.9	1615	16.4	5.32	84.8	71.7	1.43	121.8	

Preservatives Used	SEE COC	Sample Charateristics (Odor, Color)	
Number of Containers	SEE COC	Sampler Signature	

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	Y
Lock Condition	OK	Fittings/Well Head Condition	OK
Pad/Casing Quality	OK	Well Clear of Weeds/Accessible?	Y

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	
DATE & TIME	1339	EVENT FREQUENCY	Quarterly
PURGE METHOD	NA, parameters only	FIELD REPRESENTATIVE	
TOTAL WELL DEPTH (feet)	10	SAMPLING EQUIPMENT	Bailer
DEPTH TO WATER (feet)	5.90	IS SAMPLE EQUIPMENT DEDICATED?	No
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	
WATER COLUMN (feet)		FIELD BLANK COLLECTED?	
PURGE VOLUME (gallons)		EQUIPMENT BLANK COLLECTED?	

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
	5.90	1339	19.7	5.70	20.2	1089	5.57	171.0	

Preservatives Used		Sample Charateristics (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?	

GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-3
LOCATION	Camden, TN	TEMPERATURE & WEATHER	75 °F SUNNY
DATE & TIME	5.25.23 1110	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	J. ROBBINS
TOTAL WELL DEPTH (feet)	27	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	17.74	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	Yes
WATER COLUMN (feet)		FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	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	17.83	1120	20.00	5.96	246.1	221.5	3.25	129.9	~~77.5~~
0.5	17.77	1125	18.8	6.07	222.2	195.8	0.79	85.2	26.9
0.75	17.77	1130	18.9	6.11	225.0	199.6	0.51	84.4	14.9
1	17.77	1135	19.2	6.12	227.1	202.1	0.40	78.8	16.8
1.25	17.77	1140	19.3	6.13	228.3	203.5	0.42	70.7	15.1
1.5	17.77	1145	19.4	6.14	229.4	204.3	0.28	56.6	14.7
1.75	17.77	1150	19.4	6.15	229.4	204.9	0.25	52.4	14.4
2	17.77	1155	19.4	6.15	229.4	204.4	0.26	51.3	14.4
2.25	17.77	1200	19.4	6.16	229.3	204.8	0.24	45.1	14.3
2.5	17.77	1205	19.4	6.16	229.3	205.3	0.21	45.2	14.3
2.75	17.77	1210	19.4	6.16	229.5	204.8	0.20	42.2	13.9
3.00	17.77	1215	19.3	6.17	229.5	204.5	0.19	~~40.3~~ 40.3	14.0

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
	17.77	1215	19.3	6.17	229.5	204.5	0.19	40.3	14.0

Preservatives Used	SEE COC	Sample Charateristics (Odor, Color)	NONE CLEAR
Number of Containers	SEE COC	Sampler Signature	

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	Y
Lock Condition	OK	Fittings/Well Head Condition	OK
Pad/Casing Quality	OK	Well Clear of Weeds/Accessible?	Y

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-4
LOCATION	Camden, TN	TEMPERATURE & WEATHER	60 °F SUNNY
DATE & TIME	5.25.23 1354	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	J. ROBBINS
TOTAL WELL DEPTH (feet)	23.1	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	11.07	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)		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	11.24	1400	19.0	6.16	100.6	69.0	4.24	164.8	2.87
0.25	11.24	1405	17.0	5.75	93.8	79.5	2.79	156.2	0.92
0.5	11.24	1410	17.1	5.71	93.4	79.3	2.77	159.7	0.83
1	11.24	1415	16.9	5.69	92.8	78.5	2.62	163.0	0.55
1.5	11.24	1420	16.8	5.67	92.1	77.9	2.53	164.7	0.83

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.5	11.24	1420	16.8	5.67	92.1	77.9	2.53	164.7	0.83

Preservatives Used	SEE COC	Sample Charateristics (Odor, Color)	NONE CLEAR
Number of Containers	SEE COC	Sampler Signature	

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	Y
Lock Condition	OK	Fittings/Well Head Condition	OK
Pad/Casing Quality	OK	Well Clear of Weeds/Accessible?	Y

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-5
LOCATION	Camden, TN	TEMPERATURE & WEATHER	75°F SUNNY
DATE & TIME	5.25.23 0910	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	J. ROBBINS
TOTAL WELL DEPTH (feet)	33.85	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	9.09	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)		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	9.14	0935	15.9	5.32	384.2	337.6	1.79	189.2	24.6
0.1	9.14	0940	19.0	5.09	355.4	315.0	1.13	204.9	32.9
0.25	9.14	0945	19.2	5.08	357.6	316.3	0.98	206.7	36.9
0.5	9.14	0950	16.7	5.06	357.2	300.9	0.44	206.1	20.4
0.75	9.14	0955	16.6	5.09	356.2	299.4	0.44	205.2	19.2
1.00	9.14	1000	16.8	5.08	350.2	295.5	0.48	205.3	20.3
1.25	9.15	1005	16.9	5.08	347.5	293.5	0.45	204.9	20.5
1.5	9.15	1010	16.8	5.07	346.0	291.7	0.48	217.4	17.2
1.75	9.15	1015	16.8	5.07	345.0	291.4	0.52	221.4	15.4
2.00	9.15	1020	16.9	5.04	344.4	290.9	0.49	223.4	15.8
2.25	9.15	1025	16.8	5.07	343.4	290.9	0.48	223.9	15.7
2.5	9.15	1030	12.0	5.06	343.2	290.4	0.53	218.9	15.4

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
2.5	9.15	1030	12.0	5.06	343.2	290.4	0.53	218.9	15.4

Preservatives Used		Sample Charateristics (Odor, Color)	
Number of Containers		Sampler Signature	

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	Y
Lock Condition	GOOD	Fittings/Well Head Condition	OK
Pad/Casing Quality	OK	Well Clear of Weeds/Accessible?	Y

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-1
LOCATION	Camden, TN	TEMPERATURE & WEATHER	80 Sunny
DATE & TIME	5/25/23 12:25	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	J. Daugherty
TOTAL WELL DEPTH (feet)	32.50	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	6.45	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	26.05	FIELD BLANK COLLECTED?	Yes 13:10
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
0	6.45	12:30	17.6	5.50	192.0	164.3	5.42	152.6	110
.25	8.60	12:35	17.1	5.32	221.2	188.5	3.87	161.7	71.3
.50	8.70	12:40	17.0	5.29	228.2	193.2	3.44	164.0	55.1
1.0	8.70	12:45	17.2	5.27	227.4	193.5	3.28	166.1	25.7
1.25	8.70	12:50	17.1	5.27	227.3	193.0	3.28	165.9	15.6
1.50	8.70	12:55	17.2	5.27	226.7	193.1	3.25	165.6	13.6
2.0	8.70	13:00	17.8	5.29	226.3	194.9	3.21	164.1	7.75

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
2.0	8.70	13:00	17.8	5.29	226.3	194.9	3.21	164.1	7.75

Preservatives Used	See COC	Sample Charateristics (Odor, Color)	Clear / No Smell
Number of Containers	See COC	Sampler Signature	

WELL DATA

Number of Baffles	Concrete Block	Well Cap Dedicated/In Place?	Yes
Lock Condition	Good	Fittings/Well Head Condition	Good
Pad/Casing Quality		Well Clear of Weeds/Accessible?	No, Weedeater

Needs 1" well cap (Bring Next event) temporary seal over top

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-2
LOCATION	Camden, TN	TEMPERATURE & WEATHER	75 Sunny
DATE & TIME	5/25/23 10:45	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	J. Daugherty
TOTAL WELL DEPTH (feet)	27.50	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	10.5	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	17.0	FIELD BLANK COLLECTED?	No
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
0	10.5	11:00	17.7	5.24	121.7	104.4	6.87	176.1	43.0
.5	12.55	11:05	16.3	5.24	204.8	170.9	5.46	159.2	561
.75	12.70	11:10	16.3	5.28	190.2	158.8	5.32	159.7	568
1.0	12.75	11:15	16.2	5.26	195.4	163.1	5.27	162.3	243
1.5	12.75	11:20	16.4	5.25	196.7	164.5	5.14	163.6	126
1.75	12.75	11:25	16.4	5.27	193.4	161.9	5.43	164.0	81.5
2.0	12.75	11:30	16.6	5.28	195.1	163.5	5.22	164.0	57.7
2.25	12.70	11:35	16.7	5.29	196.1	165.0	5.15	163.8	31.4
2.5	12.70	11:40	16.8	5.29	197.4	166.6	5.10	164.6	21.1
2.75	12.70	11:45	16.9	5.28	198.3	167.6	5.08	165.0	16.0
3.0	12.76	11:50	17.1	5.27	198.1	168.2	5.04	166.2	15.4
3.25	12.50	11:55	17.2	5.27	197.7	168.3	5.05	168.8	9.7

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.25	12.50	11:55	17.2	5.27	197.7	168.3	5.05	168.8	9.7

Preservatives Used	See COC	Sample Charateristics (Odor, Color)	Clear / No odor
Number of Containers	See COC	Sampler Signature	[signature]

WELL DATA

Number of Baffles	Concrete block	Well Cap Dedicated/In Place?	No
Lock Condition	No lock	Fittings/Well Head Condition	None
Pad/Casing Quality	NA	Well Clear of Weeds/Accessible?	No, Weed eated

* Pipe cut down to ground elevation TD=24.5 (Cond this way)

GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-3
LOCATION	Camden, TN	TEMPERATURE & WEATHER	75 Sunny
DATE & TIME	5/25/23 9:30	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	J. Daughtry
TOTAL WELL DEPTH (feet)	~~28.00~~ 24.5	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	5.95	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	18.55	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
0	5.95	9:50	18.6	6.91	70.2	60.0	3.46	63.0	12.9
.25	7.30	9:55	16.8	5.23	305.9	259.4	0.81	86.3	196
.5	7.10	10:00	17.8	5.19	333.9	288.2	0.71	87.5	169
.65	7.10	10:05	17.7	4.98	337.0	290.4	0.72	114.0	81.3
1.0	7.10	10:10	18.0	4.97	335.5	290.5	0.68	121.8	38.5
1.5	7.10	10:15	18.0	4.97	335.4	290.7	0.67	124.4	27.3
1.75	7.10	10:20	17.9	4.97	333.6	288.9	0.66	127.8	17.8
2.0	7.10	10:25	18.0	4.97	334.2	289.9	0.66	128.9	15.4
2.25	7.1	10:30	18.3	4.97	332.6	289.9	0.67	130.8	9.4
		~~bottle~~							

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	7.1	10:30	18.3	4.97	332.6	289.9	0.67	130.8	9.4

Preservatives Used	See COC	Sample Charateristics (Odor, Color)	Clear / No odor
Number of Containers	See COC	Sampler Signature	Jason Waylon

WELL DATA

Number of Baffles	Concrete block	Well Cap Dedicated/In Place?	No
Lock Condition	No lock	Fittings/Well Head Condition	NA
Pad/Casing Quality	NA	Well Clear of Weeds/Accessible?	No, weedeated

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	**MONITORING WELL I.D.**	Leachate (IWC)
LOCATION	Camden, TN	**TEMPERATURE & WEATHER**	50 Sunny
DATE & TIME	5/25/23 13:50	**EVENT FREQUENCY**	Quarterly
PURGE METHOD	Grab	**FIELD REPRESENTATIVE**	J. Daughtry
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
—	-	14:20	22.7	7.18	20K+	20K+	2.30	289.3	
Preservatives Used	See COC			**Sample Charateristics (Odor, Color)**			Dark, Trashy Smell		
Number of Containers	See COC			**Sampler Signature**			[signature]		

WELL DATA

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

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	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 Charateristics (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?	

☆ No Leachate