2nd QUARTER 2022 GROUNDWATER ASSESSMENT MONITORING REPORT
MAY 2022 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 2022 assessment-monitoring event, which was performed at the former Environmental Waste Solutions, LLC (EWS) Camden Class II Landfill on May 12-13, 2022.

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

Beginning in 2008, the site entered into the Groundwater Detection-Monitoring Program, and groundwater samples were collected from site monitoring wells on a semi-annual basis. EWS entered the Assessment Monitoring Program because of chloride concentrations reported above the 250 mg/l EPA secondary drinking water standard (2DWS) at monitoring well MW-3 during the November 2015 semi-annual detection-monitoring event. As a result, additional groundwater quality assessment activities were completed which included the installation of a new permanent groundwater monitoring well (MW-5), the installation of three (3) temporary monitoring wells (TMW-1, TMW-2, TMW-3), and completion of a private water-use survey. In addition, the semi-annual detection monitoring frequency was increased from semi-annual to quarterly assessment monitoring. The observed chloride concentration at MW-3 during this May 2022 event (8.02 mg/l) was well below the 2DWS.

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

The 2nd quarter 2022 sampling event at the facility included the following sampling activities:

Groundwater samples were collected by CEC on May 12, 2022, from MW-1, MW-3, MW-4, and MW-5, and May 13, 2022 from TMW-1, TMW-2, and TMW-3. A leachate sample was collected from the "Industrial Waste Cell (IWC) on May 13, 2022. 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 2022 groundwater analyses were prepared by Pace and reported to CEC on June 7, 2022 for the groundwater samples and June 3, 2022 for the IWC leachate samples.

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

Total cadmium was not detected over the laboratory PQL (<0.001 mg/l) at MW-3 or the duplicate sample collected from MW-3 during this May 2022 sampling event. Total cadmium was also not detected over the laboratory PQLs during the previous February 2022 monitoring event. The cadmium detections at MW-3 during previous events from 2016 through 2021 were the only cadmium detections above the Practical Quantification Limit (PQL) at any of the groundwater monitoring locations. Based on the Mann-Kendall trend test, a downward trend was identified for total cadmium concentrations at MW-3, when considering data from the past 25 sampling events at MW-3 since November 2016. Total cadmium was first detected above the PQL during the November 10, 2016 event (0.00177 mg/l) and was first detected above the MCL at MW-3 during the June 8, 2017 event (total cadmium at MW-3 = 0.0286 mg/l). Since the fall of 2018, the total cadmium concentrations observed in MW-3 have shown an overall decrease in concentration. In addition, there have been no cadmium detections from groundwater samples obtained from temporary monitoring wells TMW-2 and TMW-3 that are immediately down-gradient of MW-3.

Eight SSIs were identified over background during this event. SSIs included chloride (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), fluoride (MW-3), and sulfate (MW-3). Total cadmium was not detected and was not indicated as an SSI during this monitoring event at MW-3. The chloride, fluoride, and sulfate detections observed in the site monitoring wells were all below their associated MCLs or 2DWS.

Glossary of Terms

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

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

1.0 INTRODUCTION

1.1 SITE LOCATION

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

1.2 CURRENT ACTIVITIES

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

2.0 AQUIFER CHARACTERISTICS

2.1 GEOLOGIC AND AQUIFER CHARACTERISTICS

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

2.1.1 Camden and Harriman Formations

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

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

2.2 MONITOR WELL INTEGRITY & STATIC WATER LEVELS

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

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

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

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

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

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

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

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

2.3 GROUNDWATER FLOW DIRECTION

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

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

2.4 POTENTIOMETRIC GRADIENT

The potentiometric surface of the unconfined aquifer occurring beneath the former EWS Class II Landfill occurs at approximately 21.41 feet below the top of casing at the up-gradient monitor well MW-1 to approximately 10.98 feet below the top of casing at monitor well MW-4. The potentiometric gradient calculated from groundwater elevation data collected on May 12, 2022 is approximately 1.29%.

The potentiometric gradient is calculated according to the following formula:

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

$$\frac{(395.06) - (370.49')}{1{,}910'} * 100 = 1.29\%$$

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 2022 monitoring event, a peristaltic pump was utilized during purging activities in the temporary monitoring wells (TMW-1, TMW-2, and TMW-3). According to the USEPA SESD groundwater sampling procedures, peristaltic pumps can be utilized as an alternative and acceptable method for low-flow or multiple volume purging and sampling activities.

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

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

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

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

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

3.3 GROUNDWATER SAMPLE COLLECTION & PRESERVATION

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

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

3.4 LEACHATE SAMPLING PROCEDURES

The amount of leachate produced from the "Industrial Waste Cell (IWC)" and "Aluminum Processing Waste Cell (APWC)" has been minimal since the landfill was capped, and the leachate being pumped from the IWC 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 2022 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 with 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 MW-3 and a duplicate sample was collected from MW-3. The field blank was collected by pouring deionized water into a set of sample bottles provided by the laboratory, thereby allowing any airborne contaminants a chance to enter the field blank sample. The duplicate sample was collected by taking separate samples from within MW-3 at the same time. In addition, a laboratory supplied trip blank for VOC analysis was prepared and placed in a cooler, which was present during groundwater sampling activities. Upon the collection of the final groundwater sample, the trip blank was placed in a sample cooler and delivered to Pace for VOC analysis. No VOCs were detected above the laboratory PQL in the trip blank sample.

Pace reported the groundwater QA/QC laboratory analytical results to CEC on June 7, 2022. Laboratory analytical testing of the field blank presented in the analytical report showed no detections above the laboratory PQLs.

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 most 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 56 of 59 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 2022 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** 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 was detected above the MCL (0.01 mg/l) at up-gradient MW-1 (0.0195 mg/l) during this 2nd Quarter 2022 event. Arsenic has been detected at concentrations that exceed the MCL during previous monitoring events only at up-gradient well MW-1. Arsenic was not detected above the laboratory PQL (<0.002 mg/l) in any of the down-gradient monitoring wells during this November 2021 event, which is consistent with previous sampling events. For this site, the presence of arsenic in the local groundwater is considered to be naturally occurring, originating

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

Total Cadmium was detected **below** the laboratory PQL (<0.001 mg/l) at MW-3 and the duplicate sample collected from MW-3 during this May 2022 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)**
5/13/2022	<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

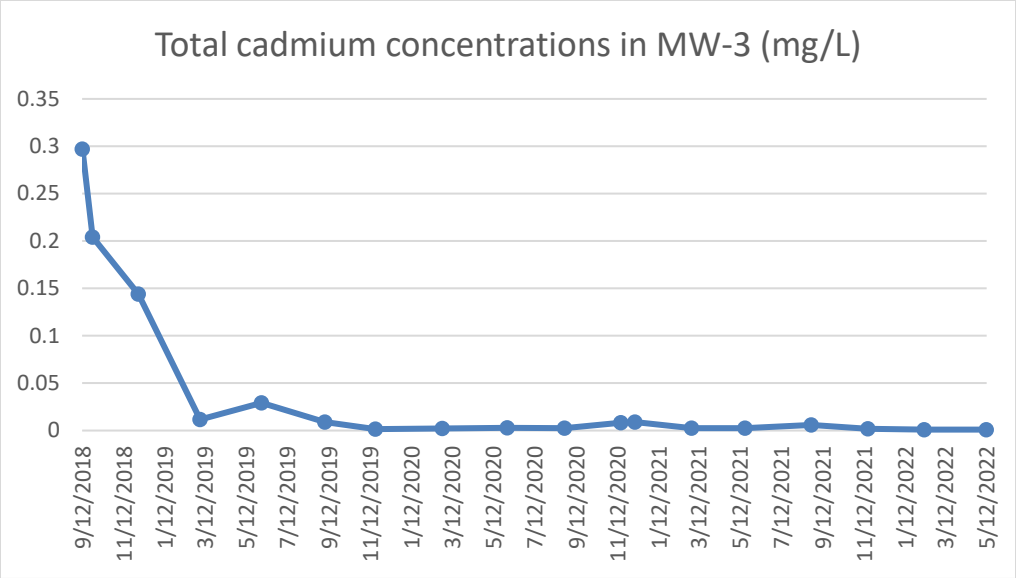


Figure – Cadmium Concentrations in MW-3

Since the fall of 2018, the total cadmium observed in MW-3 has shown an overall decrease in concentration. In addition, a statistically significant decreasing trend was identified by Mann-Kendall for total cadmium concentrations at MW-3 when considering data from the past 25 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 previous 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 this May 2022 sampling event, which is similar to the previous February 2022 sampling event.

Total Cobalt was detected in up-gradient well MW-1 (0.0606 mg/l) during this May 2022 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 2022 event. Cobalt has historically been detected at concentrations that exceed the RSL at MW-1 prior to the disposal of waste in the landfill, and total cobalt was detected in MW-1 at similar concentrations during previous events. For this site, the presence of cobalt in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden, since there is no development immediately up-gradient of MW-1.

Total Chromium was detected in downgradient well MW-5 (0.0063 mg/l), which were not above the MCL of 0.1 mg/l for chromium. Chromium has been detected at similar concentrations in up-gradient well MW-1.

Total Mercury was detected in up-gradient well MW-1 (0.000817 mg/l), which was below the MCL of 0.002 mg/l for mercury concentrations during this May 2022 sample event. Total mercury has consistently been detected above the PQL at MW-1 since January 2009. Total mercury was not detected above the laboratory PQL (0.000200 mg/l) at any of the down-gradient wells during this May 2022 event. Although total mercury has been previously detected above the PQL at up-gradient MW-1, total mercury has not been detected above the laboratory PQL in any of the down-gradient monitoring wells since monitoring began at the site in 2008. The presence of mercury in the local groundwater near up-gradient monitoring well MW-1 may be attributable to naturally occurring deposits in the soil overburden, since there is no development immediately up-gradient of MW-1.

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

Laboratory analytical results for the groundwater samples collected during the May 2022 sampling event from the former EWS Class II Landfill groundwater monitoring well network indicated that three of the site-specific groundwater-monitoring list of compounds were detected at concentrations that exceeded the National Secondary Drinking Water Standards (2DWS). Those parameters include **aluminum** in up-gradient MW-1; **iron** in up-gradient well MW-1 and down-gradient wells MW-3, and MW-5; and **manganese** in up-gradient well MW-1 and down-gradient wells MW-3 and MW-5. **Chloride, sulfate, nickel, silver,** and **zinc** detections were below the 2DWS during this event. The observed concentrations for the constituents given below are discussed relative to the 2DWS.

The **Total Aluminum** concentrations observed in MW-1 (0.231 mg/l) during this May 2022 sampling event was above the 2DWS (0.2 mg/l). Total aluminum was also detected in down-gradient wells MW-3 (0.183 mg/l) and TMW-2 (0.102 mg/l), but both were below the 2DWS (0.2 mg/l). Aluminum was not detected above the PQL (<0.1 mg/l) at MW-4, MW-5, TMW-1, or TMW-3 during this May 2022 event.

The **Chloride** concentrations reported at MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 during this May 2022 event were below the 2DWS for chloride concentrations (250 mg/l). The chloride concentrations for this May 2022 event are similar to the concentrations observed at samples collected from each well during the recent previous events. The chloride concentration at MW-3 during this event (8.02 mg/l) continues to be significantly lower in concentration compared to the previous events in December 2018 (65 mg/l), September 2018 (222 mg/l), November 2015 (458 mg/l), and the supplemental re-sampling in December 2015 (360 mg/l).

Fluoride was detected in MW-3 (0.253 mg/l) during this May 2022 sampling event, which was well below the 2DWS for fluoride (2 mg/l). Fluoride was not detected (<0.150 mg/l) in any other wells during this current sample event.

Total Iron was detected above the 2DWS (0.3 mg/l) in up-gradient well MW-1 (15.3 mg/l) and down-gradient wells MW-3 (0.437 mg/l) and MW-5 (0.447 mg/l) during this May 2022 monitoring event. Iron was detected above the PQLs of the laboratory (0.1 mg/l), but below the 2DWS (0.3 mg/l) during this May 2022 event at well TMW-3. Total iron was not detected above the PQL in MW-4, TMW-1, and TMW-2 during this event. The reported total iron concentrations at each of the groundwater monitoring wells were less than the highest concentrations observed prior to placement of waste and do not exhibit a trend via time-series graphs. The presence of iron in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden, and iron has consistently been detected above the 2DWS in up-gradient well MW-1.

Total Manganese detections were observed above the 2DWS (0.05 mg/l) in up-gradient MW-1 (0.922 mg/l) and down-gradient wells MW-3 (0.168 mg/l), MW-5 (0.263 mg/l) during the May 2022 monitoring event. Total Manganese has been consistently detected at concentrations above the 2DWS (0.05 mg/l) in up-gradient well MW-1. The presence of total manganese in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden. During this May 2022 event, total manganese was also detected below 2DWS (0.05 mg/l) but above the laboratory PQL (<0.005 mg/l) in wells MW-4 and TMW-1. Total manganese was not detected above the PQL in TMW-2 during this event.

Total Nickel was detected in up-gradient well MW-1 (0.00644 mg/l) and down-gradient wells MW-3 (0.00272 mg/l) and MW-5 (0.00624 mg/l) during the May 2022 sampling event, and these values were below the MCL value (0.10 mg/l) obtained from the Tennessee Division of Water Resources (TN DWR) Public Water Systems chapter rule 0400-45-01-.06 (0.10 mg/l). Total nickel 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 (30.4 mg/l) during this May 2022 sampling event was below the 2DWS for sulfate (250 mg/l). In addition, the sulfate concentrations at MW-3 have been consistently decreasing each event since September 2018.

Sulfate was also detected in down-gradient well MW-5 (17.3 mg/l), during the May 2022 event and were also below the 2DWS. Sulfate was not detected above the PQL of 5.00 mg/l in any of the other monitoring wells across the site.

Total Magnesium does not currently have an established MCL, 2DWS, EPA RSL, or an approved alternate groundwater protection standard (GWPS). The total magnesium concentration at MW-3 during this May 2022 event (4.85 mg/l) shows that overall total magnesium levels in MW-3 have been decreasing since 2018.

Magnesium was also detected above the laboratory PQL (1.00 mg/l) during the May 2022 event in MW-1, MW-4, MW-5, TMW-1, TMW-2, and TMW-3.

4.3 QUALITY CONTROL QUALIFIER CODES

The EPA Contract Laboratory Program states that sample and result qualifiers should be utilized as part of a total quality-control process. Pace complies with this directive and reports all qualifiers along with explanations of QC qualifier codes. Seven (7) QC qualifier codes (E, J, J3, J4, J5, J6, and V) were indicated during the laboratory analysis of groundwater samples collected during the May 2022 event. Specific information concerning each laboratory QC qualifier code can be found on page 56 of 59 in the June 7, 2022 Groundwater Laboratory Analytical Report. Three (3) QC qualifier codes (E, J, and V) were indicated during the laboratory analysis of the leachate samples collected during this May 2022 event. Specific information concerning each laboratory QC qualifier code can be found on page 23 of 25 in the June 03, 2022 Leachate Analytical Report. 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, 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 cobalt data set that passed normality testing. However, all other data sets (arsenic, barium, chloride,

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

Inter-well analyses compared the concentrations observed at the down-gradient monitoring locations (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3) to the concentrations observed at the up-gradient monitoring location (MW-1) during this monitoring event. The data distribution tests using the background data set (from MW-1) for all detected constituents in the downgradient wells (aluminum, barium, total cadmium, chloride, chromium, fluoride, nickel, 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.

If the data are normally distributed (using normal or log-transformed data), parametric statistical procedures may be used to evaluate SSIs. If the data are normally distributed, the percentage of non-detects in background well MW-1 for each parameter determined the primary statistical method utilized for inter-well analysis. If the background data are normally distributed and < 50% non-detects exist for the given parameter, parametric inter-well prediction limit analysis may be conducted on the data. If the percentage of non-detects in the background samples was less than 50%, Shewart-CUSUM control charts may also be utilized as a secondary statistical method utilized for inter-well analysis. However, since the aluminum, barium, total cadmium, chloride, chromium, fluoride, nickel, and sulfate background data are not normally distributed, non-parametric inter-well prediction limit analysis was conducted for the background data from up-gradient well MW-1 compared to down-gradient monitoring wells (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3). Additional statistical procedures performed included Mann-Kendall trend analyses. Although the Mann-Kendall trend analyses are not used to determine SSIs relative to background, they provide a non-parametric intra-well statistical procedure to identify statistical trends (increasing, decreasing, or no trend) in data at a single well over a given period of time. For this monitoring event, the Mann-Kendall trend analysis was completed using recent data since the November 10, 2016 sampling event.

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

5.2 STATISTICAL RESULTS

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

significant trends in concentrations for the detected arsenic, mercury, and nickel concentrations at MW-1.

Total cadmium **was not** indicated as an SSI over background during this event at MW-3. SSIs over background identified for the current monitoring event include chloride at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3, fluoride at MW-3, and sulfate at MW-3. When considering data since the November 10, 2016 sampling event, statistically significant trends in data were observed using the Mann-Kendall trend analyses at the 95% confidence level. Trend analyses revealed a statistically significant upward trend in barium at MW-4, MW-5, and TMW-3; chloride at MW-4, MW-5, TMW-1, TMW-2, and TMW-3; chromium at MW-5; and sulfate at MW-5. Trend analysis revealed a downward trend in aluminum concentrations at TMW-2; barium concentrations at MW-3; total cadmium concentrations at MW-3; and chloride concentrations at MW-3. There were no distinct statistically significant trends in concentrations for any of the other detected constituents.

Total cadmium was not detected above the laboratory PQL (<0.00100 mg/l) during this event, and total cadmium at MW-3 **was not** indicated an SSI in reported concentrations using inter-well non-parametric prediction limits by using cadmium concentrations observed at the up-gradient monitoring location (MW-1) as background for comparison. In addition, a statistically significant decreasing trend was identified by Mann-Kendall for total cadmium concentrations at MW-3 when considering data from the past 25 sampling events since November 10, 2016. The total cadmium results during this May 2022 sampling event are similar to the previous February 2022 sampling event. The total cadmium concentration observed at MW-3 during the November 2021 sampling event was **below** the MCL. During the previous August 2021 monitoring event, the total cadmium concentration at MW-3 was above the MCL. However, during the previous monitoring events in March 2021 and May 2021, the total cadmium concentration at MW-3 was below the MCL. During previous sampling events prior to March 2021, the total cadmium concentrations observed at MW-3 were above the MCL of 0.005 mg/l from June 2017 to September 2019, and during the previous two sampling events in November 2020 and December 2020. However, the total cadmium concentrations observed at MW-3 from November 2019 to August 2020 were below the MCL.

The chloride concentrations observed at MW-3 (8.02 mg/l), MW-4 (9.90 mg/l), MW-5 (76.5 mg/l), TMW-1 (38.3 mg/l), TMW-2 (37.7 mg/l), and TMW-3 (67.8 mg/l) produced SSIs over background during this event. The chloride detections at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 are consistent with previous data and are below the 2DWS for chloride concentrations (250 mg/l). When considering data from the monitoring events since November 2016, the data showed a downward trend in chloride concentrations at MW-3 and an upward trend in chloride concentrations at MW-4, MW-5, TMW-1, TMW-2, and TMW-3 using the Mann-Kendall trend analyses at the 95% confidence level.

The chromium concentration observed at MW-5 (0.0063 mg/l) was less than the MCL (0.1 mg/l) and did not produce SSIs in reported concentrations during this event. When considering chromium data from MW-5 since November 2016, the data did not show an upward or downward

trend in chromium concentrations using the Mann-Kendall trend analysis at the 95% confidence level.

An SSI for the fluoride concentrations at MW-3 was identified during this sampling event. The fluoride concentration at MW-3 (0.253 mg/l) was slightly above the laboratory PQL of 0.15 mg/l and less than the MCL (4.0 mg/l) during this event. The fluoride concentration at MW-3 is consistent with previous data from June 2017 to February 2022. In addition, no distinct statistically significant trend was identified by Mann-Kendall for fluoride concentrations at MW-3 when considering data from the past 22 sampling events since November 10, 2016.

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 (30.4 mg/l) remains below the 2DWS of 250 mg/l. Sulfate was also detected in MW-5 (17.3 mg/l) during this May 2022 event, which was well below the 2DWS of 250 mg/l. While there was an upward trend in sulfate concentrations identified in MW-5 during this event, there was no reported SSI and the sulfate concentration during this event was similar to previous events. 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 2022 are summarized as follows:

- Total cadmium **was not** detected above the laboratory PQL (<0.00100 mg/l) in MW-3 during this May 2022 monitoring event, and total cadmium was not indicated as an SSI during this monitoring event. This is the second consecutive event where cadmium was not detected above the PQLs of the laboratory in MW-3. Total cadmium has previously been detected in MW-3 during each of the previous 23 consecutive monitoring events (November 10, 2016 - November 18, 2021). In addition, inter-well prediction limit analysis results have indicated SSIs in total cadmium concentrations at MW-3 during each of the previous 23 monitoring events (November 10, 2016 - November 18, 2021). During many of the events from June 2017- August 2021, the observed cadmium concentrations at MW-3 had been above the EPA MCL of 0.005 mg/l. The current total cadmium non-detect value observed at MW-3 continues to show that the total cadmium levels at MW-3 have generally improved since closure activities have been completed. In addition, there have been no cadmium detections from groundwater samples obtained from temporary monitoring wells TMW-2 and TMW-3 that are immediately down-gradient of MW-3.
- SSIs during this May 2022 event included chloride (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), fluoride (MW-3), and sulfate (MW-3).
- Trend analyses revealed a statistically significant upward trend in barium at MW-4, MW-5, and TMW-3; chloride at MW-4, MW-5, TMW-1, TMW-2, and TMW-3; chromium at MW-5; and sulfate at MW-5. Trend analysis revealed a downward trend in aluminum concentrations at TMW-2; barium concentrations at MW-3; total cadmium concentrations at MW-3; and chloride concentrations at MW-3. There were no distinct statistically significant trends in concentrations for any of the other detected constituents during this event.
- 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.
- The chloride concentrations at MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 remain well below the 250 mg/l 2DWS.
- Although the fluoride concentration reported at MW-3 was indicated as an SSI using all available data since 2008, the concentration remains well below the MCL of 4 mg/l and also below the 2DWS of 2 mg/l. In addition, the fluoride concentrations at MW-3 did not exhibit a statistically significant increasing or decreasing trend when considering data from MW-3 since November 10, 2016.
- No VOCs were detected above their respective laboratory PQL in any of the groundwater monitoring wells during the monitoring event.

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

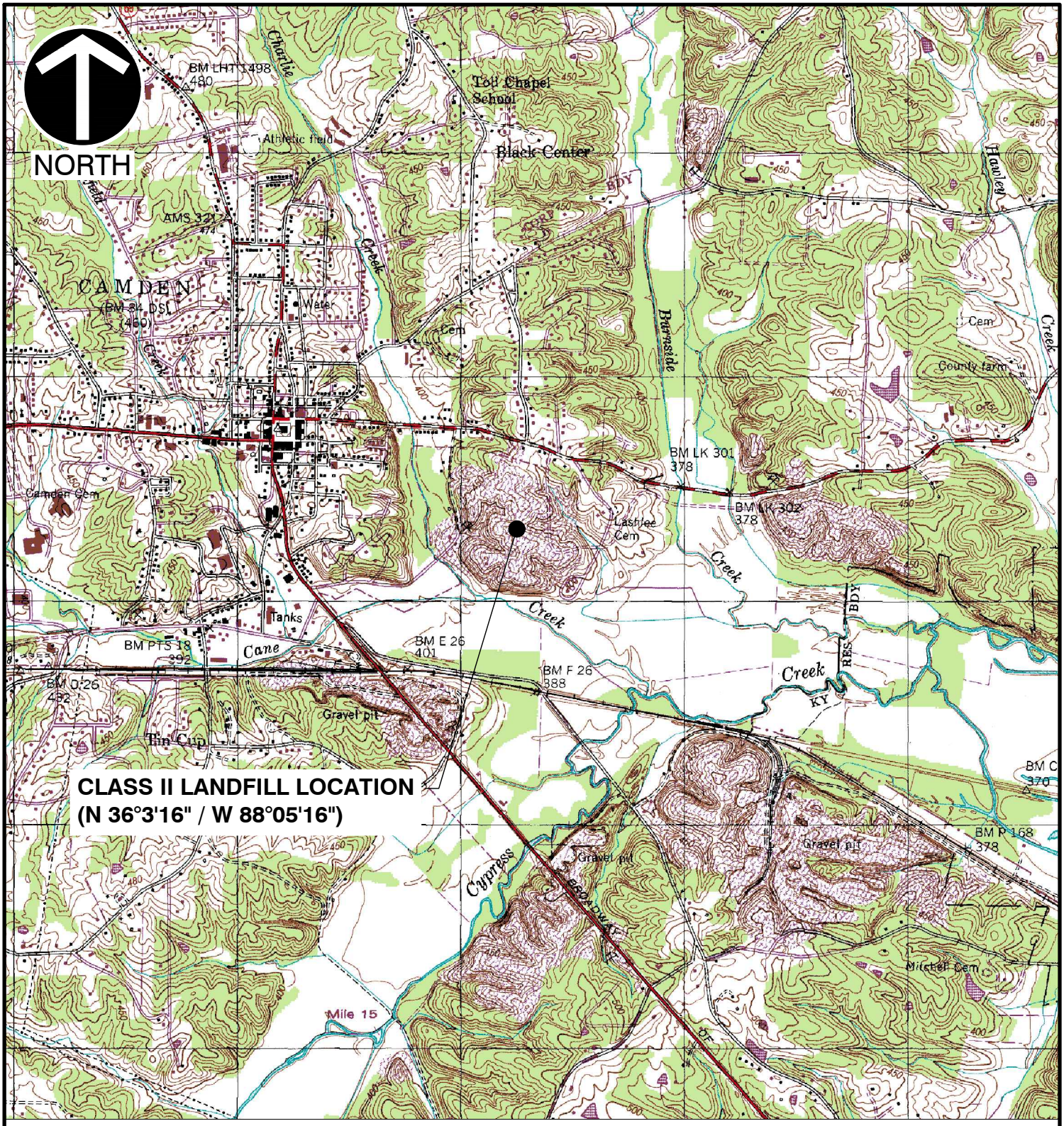
Since the former EWS Class II Landfill site remains in assessment monitoring, a private water use survey update is required annually. An annual water use survey update for the former EWS Class II Landfill site was completed by CEC in November 2021, and no new wells or springs were identified within the required search radius for the site during the November 2021 update. The next scheduled water use survey update is tentatively scheduled for November 2022.

7.0 RECOMMENDATIONS

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

1. It is recommended that all permanent monitoring wells on the site continue to be monitored quarterly. In addition, quarterly groundwater samples will continue to be collected from temporary monitoring wells down-gradient from MW-3. 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."

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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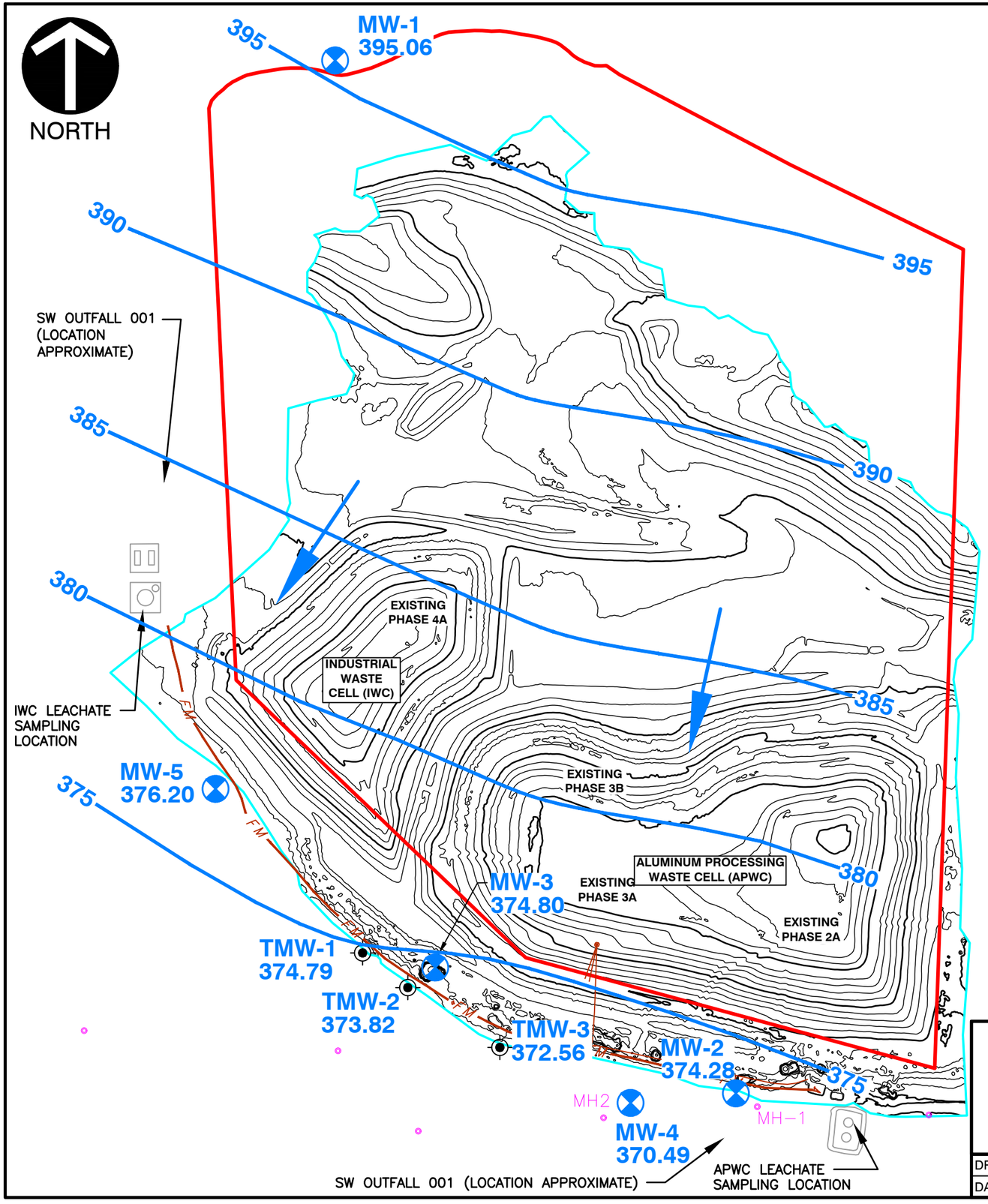
FORMER EWS SITE
CLASS II CAMDEN LANDFILL
CAMDEN, TENNESSEE

SITE LOCATION MAP 2Q2022

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

P:\2018\181-364\-CADD\Dwg\181-364_ FIGURE 1 - SITE LOCATION MAP.dwg[LAYOUT1] LS:(4/25/2022 - pcampbell) - LP: 7/11/2022 4:04 PM



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
- FM — LEACHATE FORCE MAIN

NOTE:

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

$$i = \frac{395.06' \text{ (MW–1)} - 370.49' \text{ (MW–4)}}{1{,}910'} = 0.0129 \text{ ft/ft}$$

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 2022
POTENTIOMETRIC SURFACE MAP

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

Table 1

Former Environmental Waste Solutions Camden Class II Landfill

Field Parameters and Potentiometric Data - 2nd Quarter 2022

Monitoring Well/ Sample Location	Date	Sample Time	Top of Casing Elevation[1] (Feet MSL)	Bottom of Well Elevation (Feet)	Well Diameter (Feet)	Well Volume Gallons	Depth to Water (Feet)[2]	Potentiometric Surface (Feet MSL)	Temp. (˚C)	Conductivity (µS/cm)	Specific Conductivity (µS/cm)	pH (SU)	Dissolved Oxygen (mg/l)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
MW-1 (up-gradient)	5/12/2022	10:20	416.47	385.97	0.17	1.5	21.41	395.06	16.3	88.1	105.6	4.96	0.97	107.7	19.9
MW-2*	5/12/2022	NS	380.35	367.70	0.17	1.1	6.07	374.28	16.9	213.0	251.9	5.92	4.07	197.2	15.3
MW-3	5/12/2022	13:20	392.90	365.10	0.17	1.6	18.10	374.80	16.6	137.2	163.6	6.12	0.75	29.6	18.9
MW-4	5/12/2022	12:25	381.47	358.37	0.17	2.1	10.98	370.49	15.3	67.8	83.1	5.65	2.70	204.3	3.60
MW-5	5/12/2022	11:30	385.25	351.40	0.17	4.2	9.05	376.20	18.1	301.4	346.2	4.87	0.56	284.2	8.99
TMW-1	5/13/2022	11:45	381.19	348.99	0.085	1.1	6.40	374.79	15.9	148.4	179.5	5.21	3.48	219.7	8.05
TMW-2	5/13/2022	10:55	384.27	356.77	0.085	0.7	10.45	373.82	16.5	139.5	167.1	5.15	5.17	224.2	10.3
TMW-3	5/13/2022	9:15	381.37	353.37	0.085	0.8	8.81	372.56	16.1	263.7	317.4	4.90	0.91	196.2	6.91
Leachate (IWC-L)	5/13/2022	12:45	NA	NA	NA	NA	NA	NA	23.0	190,184	197,168	3.45	2.51	280.3	3.56
***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 12, 2022.

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

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

NS= Not Sampled

NA= Not Applicable.

Table 2
Former EWS Camden Class II Landfill IDL 03-0212 (Terminated)
Groundwater and Leachate Analytical Data - 2nd Quarter 2022

Parameter	MCL/GWPS (mg/l)	(upgradient) MW-1		MW-3		Duplicate (MW-3)		MW-4		MW-5		TMW-1		TMW-2		TMW-3		IWC-Leachate*		APWC-Leachate**		Field Blank	
		5/12/2022	Qualifier	5/12/2022	Qualifier	5/12/2022	Qualifier	5/12/2022	Qualifier	5/12/2022	Qualifier	5/13/2022	Qualifier	5/13/2022	Qualifier	5/13/2022	Qualifier	5/13/2022	Qualifier	5/13/2022	Qualifier	5/12/2022	Qualifier
		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)	
Hardness	-	**20.5**		**54.8**		**56.1**		**27.1**		**92.1**		**60.6**		**54**		**88.2**		**43,600**		NS**		<2.50	
Alkalinity	-	**47.5**		**31.6**		**31.5**		**22.2**		<20.0		**21.6**		**23.7**		**20.7**		<20.0		NS**		<20.0	
Ammonia Nitrogen	-	<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		**1870**		NS**		<0.250	
COD	-	<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		**4450**		NS**		<20.0	
Boron	-	<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<2.00		NS**		<0.200	
Bromide	-	<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<100		NS**		<1.00	
Chloride	250 [2]	**2.05**		**8.02**		**8.04**		**9.90**		**76.5**		**38.3**		**37.7**		**67.8**		**92,400**		NS**		<1.00	
Fluoride	2 [2]	<0.150		**0.253**		**0.253**		<0.150		<0.150		<0.150		<0.150		<0.150		<15.0		NS**		<0.150	
Nitrate	10 [1]	<0.100		<0.100		<0.100		**0.851**		**1.12**		**1.57**		**0.819**		**7.31**		<10.0		NS**		<0.100	
Sulfate	250 [2]	<5.00		**30.4**		**30.5**		<5.00		**17.3**		<5.00		<5.00		<5.00		**850**		NS**		<5.00	
Aluminum	0.2 [2]	**0.231**		**0.183**		**0.19**		<0.100		<0.100		<0.100		**0.102**		<0.100		**270**		NS**		<0.100	
Antimony	0.006	<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.400		NS**		<0.00400	
Arsenic	0.01	**0.0195**		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.200		NS**		<0.00200	
Barium	2	**0.0188**		**0.0326**		**0.0349**		**0.00749**		**0.0547**		**0.0125**		**0.0266**		**0.0476**		**2.48**		NS**		<0.00200	
Beryllium	0.004	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.200		NS**		<0.00200	
Total Cadmium	0.005	<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		**13**		NS**		<0.00100	
Calcium	-	**3.52**		**14.0**		**14.4**		**5.7**		**17.2**		**16.6**		**13.6**		**22.7**		**15,200**		NS**		<1.00	
Chromium	0.1	<0.00200		<0.00200		<0.00200		<0.00200		**0.0063**		<0.00200		<0.00200		<0.00200		<0.200		NS**		<0.00200	
Cobalt	0.006 [3]	**0.0606**		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		**0.408**		NS**		<0.00200	
Copper	1.3	<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		**1.82**		NS**		<0.00500	
Iron	0.3 [2]	**15.3**		**0.437**		**0.422**		<0.100		**0.447**		<0.100		<0.100		**0.173**		**345**		NS**		<0.100	
Lead	0.015	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		**0.958**		NS**		<0.00200	
Magnesium	-	**2.83**		**4.85**		**4.87**		**3.12**		**11.9**		**4.64**		**4.89**		**7.64**		**1390**		NS**		<1.00	
Manganese	0.05 [2]	**0.922**		**0.168**		**0.166**		**0.0141**		**0.263**		**0.00567**		<0.00500		**0.00905**		**34.5**		NS**		<0.00500	
Nickel	0.10 [1]	**0.00644**		**0.00272**		**0.0028**		<0.00200		**0.00624**		<0.00200		<0.00200		<0.00200		**0.567**		NS**		<0.00200	
Potassium	-	<2.00		**3.6**		**3.64**		<2.00		<2.00		<2.00		<2.00		**2.11**		**15,000**		NS**		<2.00	
Selenium	0.05	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.200		NS**		<0.00200	
Silver	0.10 [2]	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.200		NS**		<0.00200	
Sodium	-	**2.70**		**5.29**		**5.37**		**3.56**		**19.8**		**4.41**		**5.29**		**15.8**		**24,700**		NS**		<2.00	
Thallium	0.002	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.200		NS**		<0.00200	
Vanadium	-	<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.500		NS**		<0.00500	
Zinc	5 [2]	<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		**160**		NS**		<0.0250	
Mercury	0.002	**0.000817**		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.00200		NS**		<0.000200	
Acetone	-	<0.0500		<0.0500		<0.0500	J3 J4	<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		**1.52**		NS**		<0.0500	J3 J4

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

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 2022

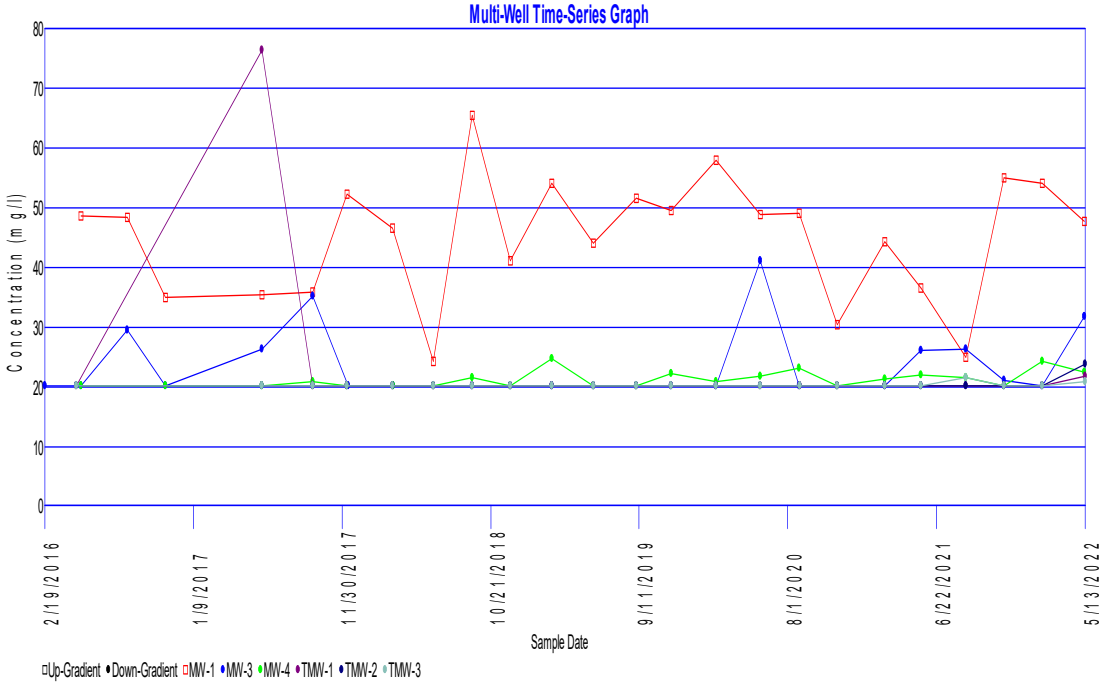
Intra-Well Statistical Summary (Upgradient Background Well MW-1)							
Constituent	Well	% Non Detects	Normality	Intra-well NPPL	Intra-well PPL	SSI	Mann-Kendall Trend Analysis[1]
Arsenic	MW-1	0.00	non-parametric	Pass	--	No	No Trend
Barium	MW-1	8.11	non-parametric	Pass	--	No	**Upward Trend**
Chloride	MW-1	0.00	non-parametric	Pass	--	No	**Downward**
Cobalt	MW-1	0.00	log-normal	--	Pass	No	**Upward Trend**
Nickel	MW-1	29.73	non-parametric	Pass	--	No	No Trend
Mercury	MW-1	29.73	non-parametric	Pass	--	No	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]
Aluminum	MW-3	59.46	non-parametric	Pass	--	No	No Trend
	TMW-2		non-parametric	Pass	--	No	**Downward Trend**
Barium	MW-3	8.11	non-parametric	Pass	--	No	**Downward Trend**
	MW-4		non-parametric	Pass	--	No	**Upward Trend**
	MW-5		non-parametric	Pass	--	No	**Upward Trend**
	TMW-1		non-parametric	Pass	--	No	No Trend
	TMW-2		non-parametric	Pass	--	No	No Trend
	TMW-3		non-parametric	Pass	--	No	**Upward Trend**
Total Cadmium	MW-3	100.00	non-parametric	Pass	--	No	**Downward Trend**
Chloride	MW-3	0.00	non-parametric	**Fail**	--	**Yes**	**Downward Trend**
	MW-4		non-parametric	**Fail**	--	**Yes**	**Upward Trend**
	MW-5		non-parametric	**Fail**	--	**Yes**	**Upward Trend**
	TMW-1		non-parametric	**Fail**	--	**Yes**	**Upward Trend**
	TMW-2		non-parametric	**Fail**	--	**Yes**	**Upward Trend**
	TMW-3		non-parametric	**Fail**	--	**Yes**	**Upward Trend**
Chromium	MW-5	91.89	non-parametric	Pass	--	No	**Upward Trend**
Fluoride	MW-3	96.3	non-parametric	**Fail**	--	**Yes**	No Trend
Nickel	MW-3	30.56	non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend
Sulfate	MW-3	60.00	non-parametric	**Fail**	--	**Yes**	No Trend
	MW-5		non-parametric	Pass	--	No	**Upward Trend**

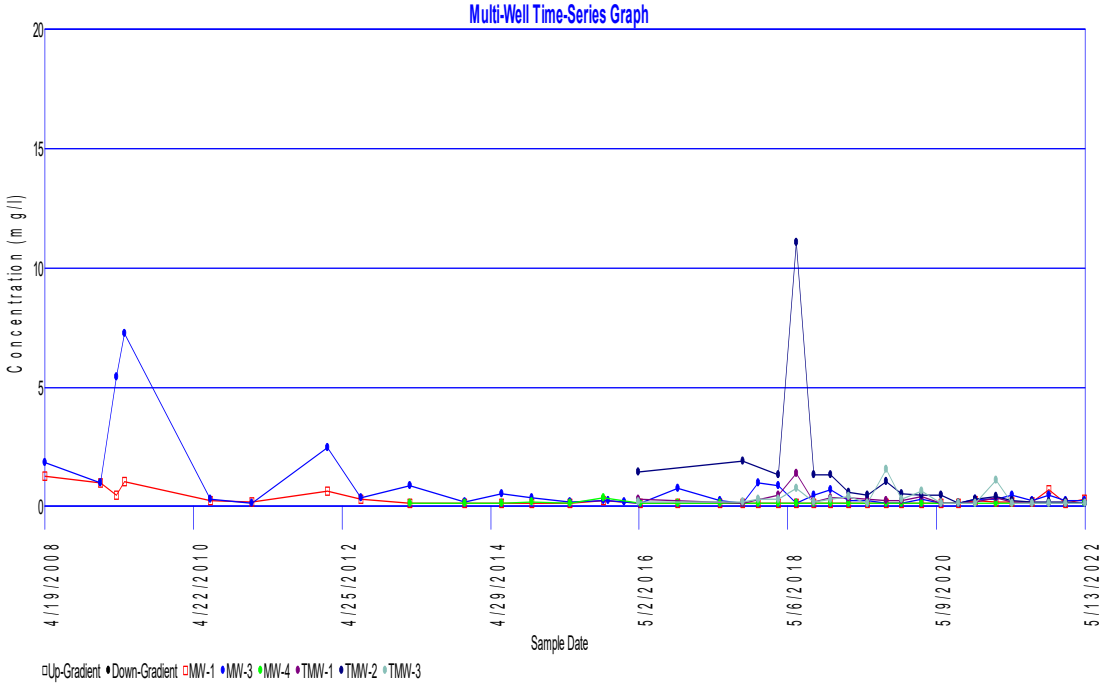
[1] **Mann-Kendall Trend Analysis was completed using recent data since the November 10, 2016 sampling event.**

APPENDIX B
STATISTICAL EVALUATIONS & TIME SERIES PLOTS

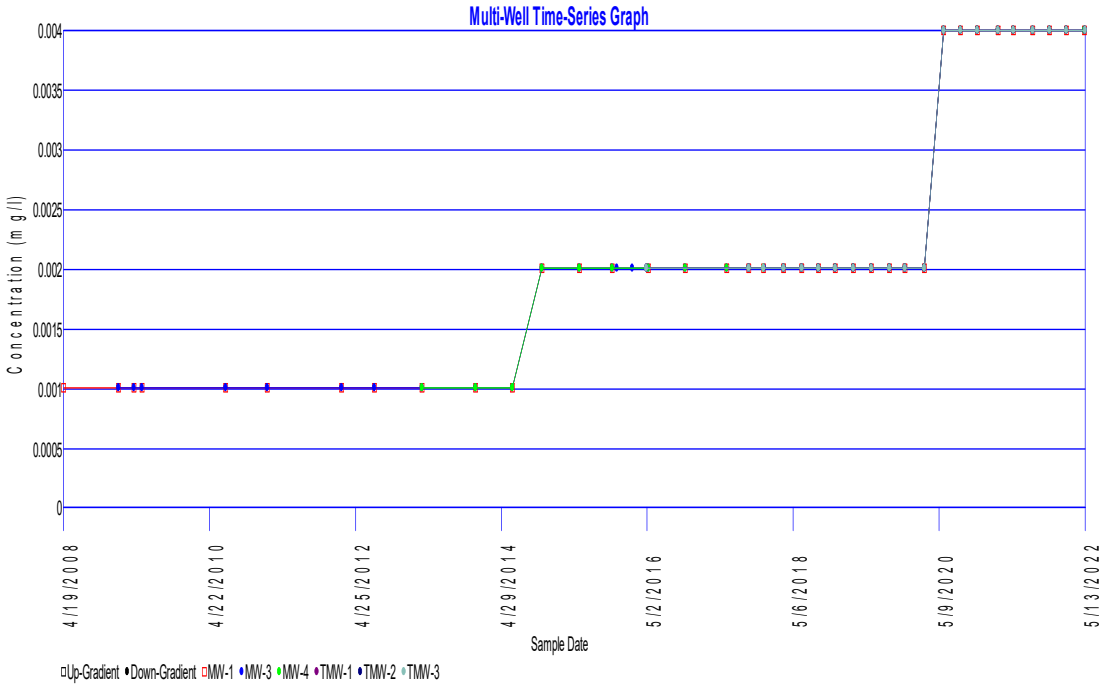
Alkalinity



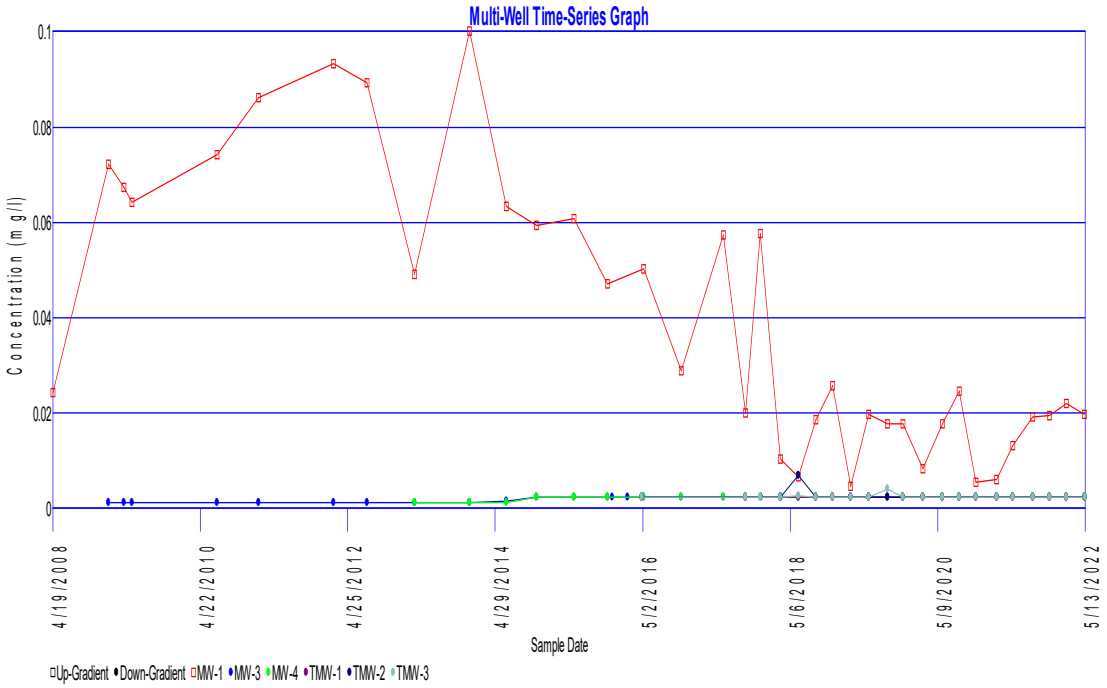
Aluminum



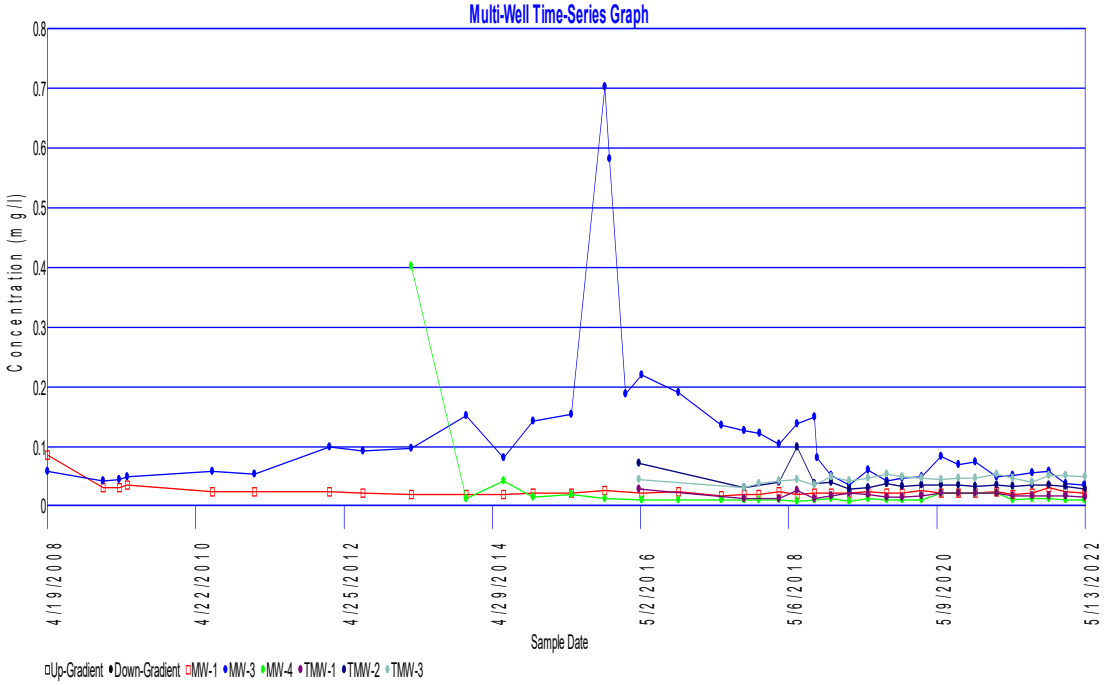
Antimony



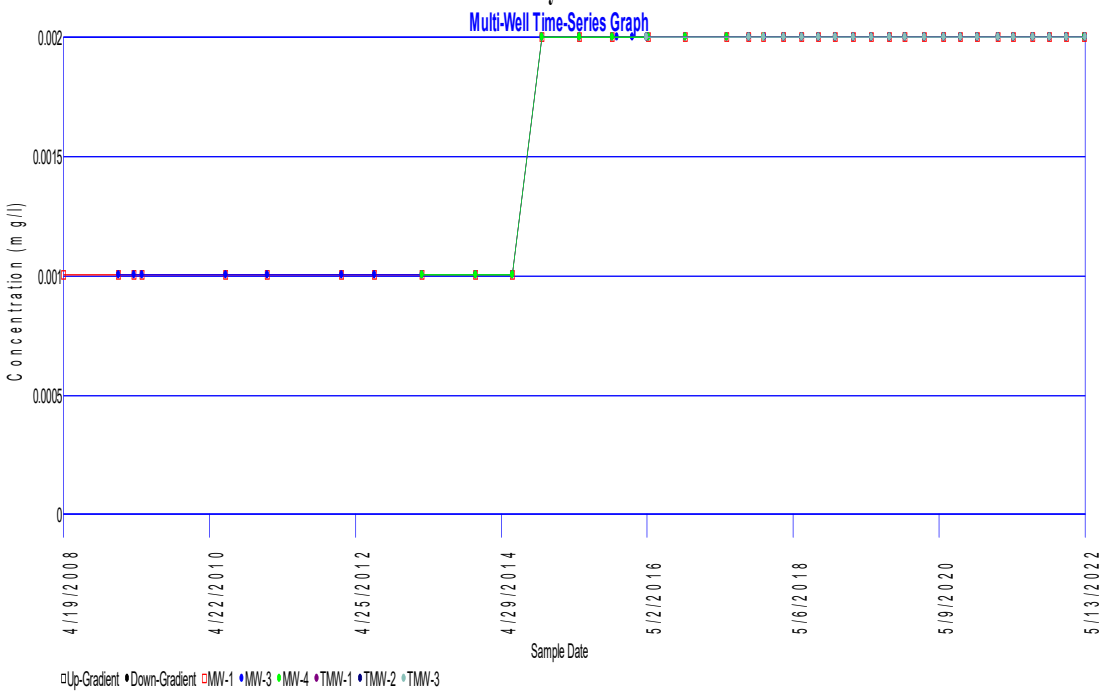
Arsenic

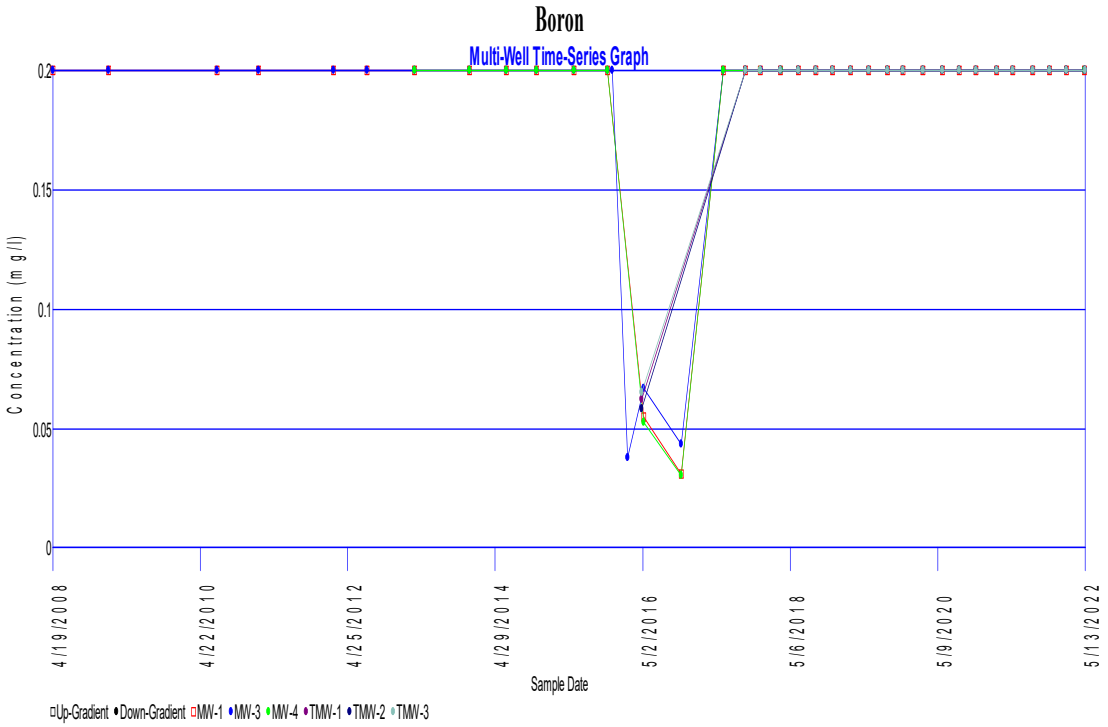


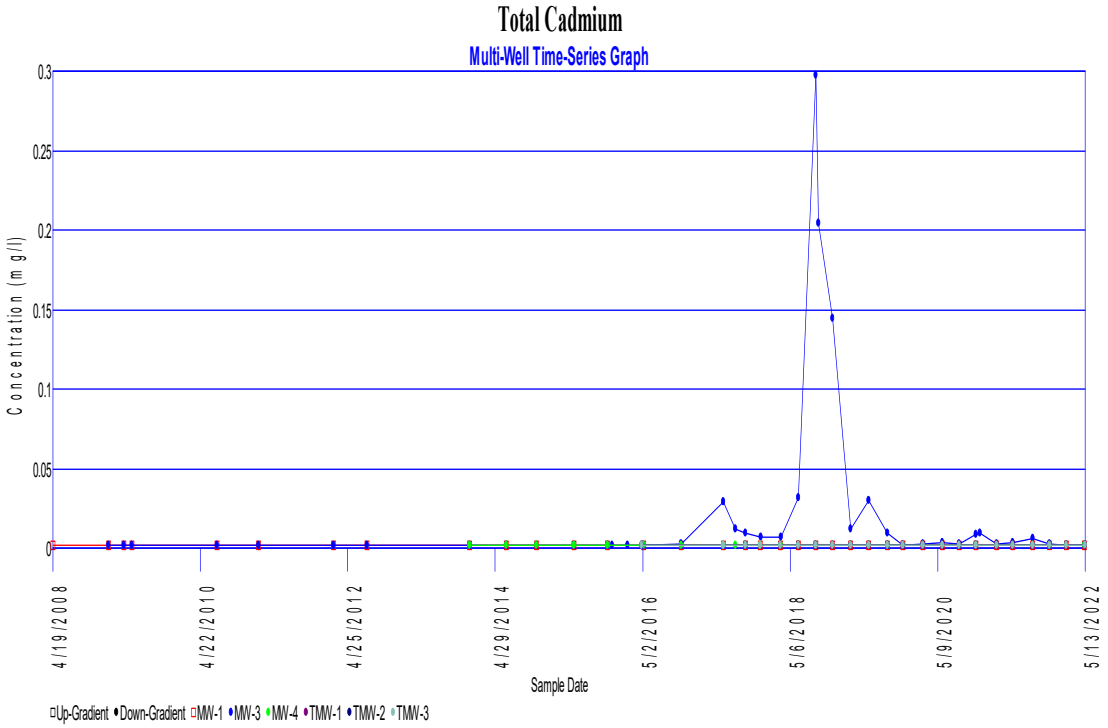
Barium



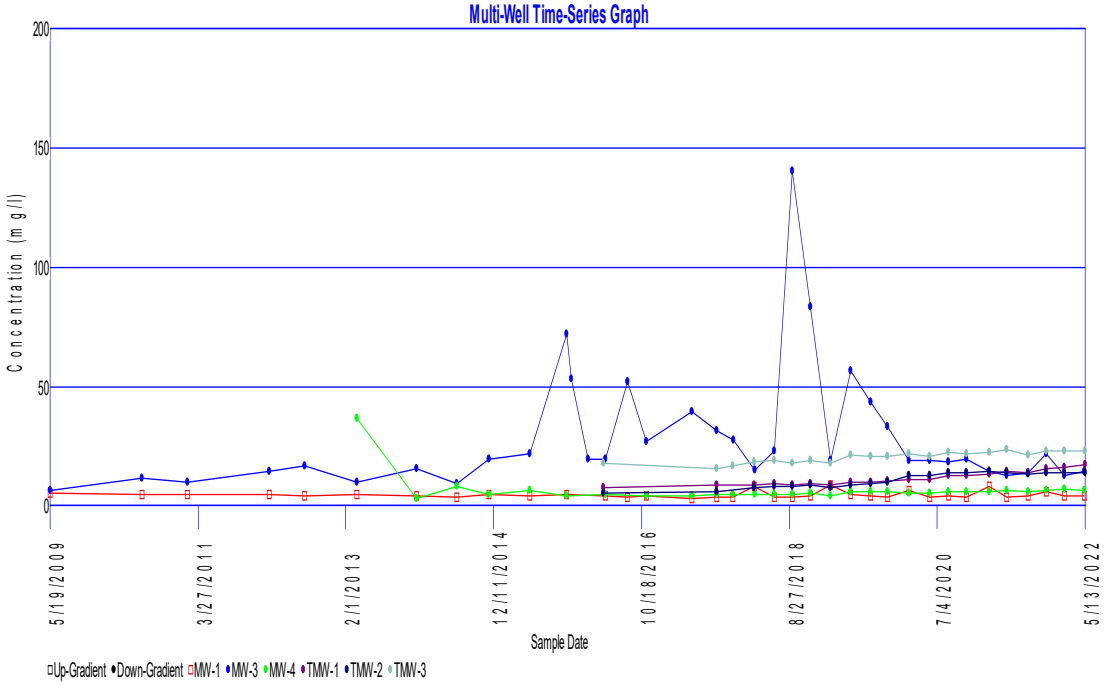
Beryllium



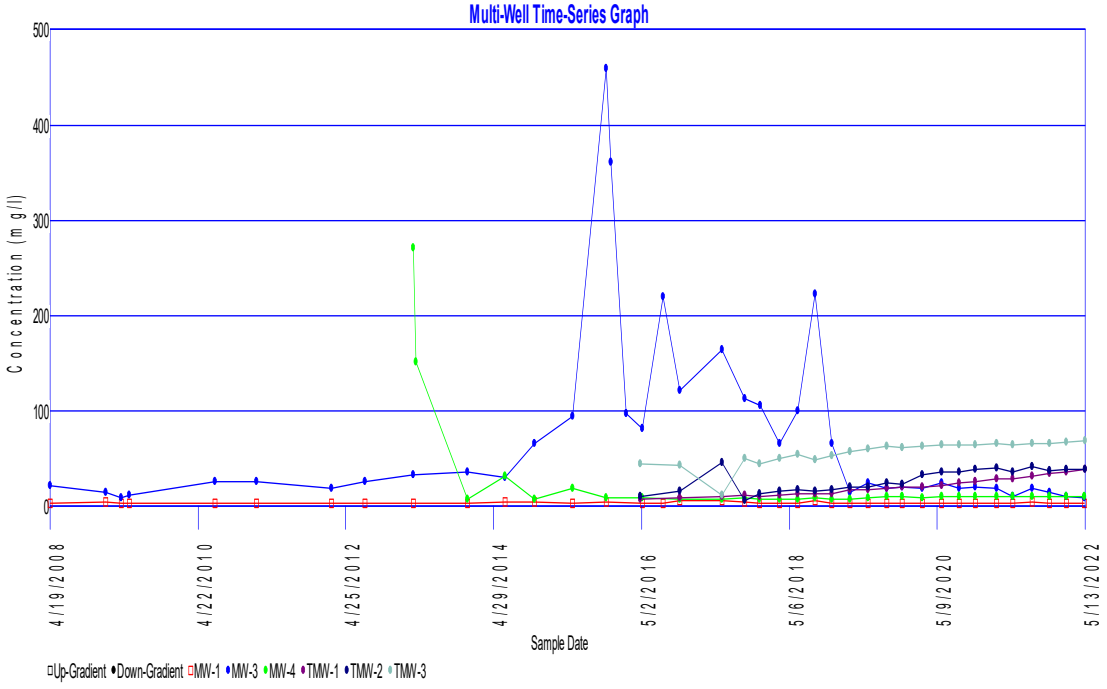

Boron
Multi-Well Time-Series Graph
0.2
0.15
0.1
0.05
0
Concentration (mg/l)
4/19/2008
4/22/2010
4/25/2012
4/29/2014
5/2/2016
5/6/2018
5/9/2020
5/13/2022
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 TMW-1 TMW-2 TMW-3


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
4/22/2010
4/25/2012
4/29/2014
5/2/2016
5/6/2018
5/9/2020
5/13/2022
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 TMW-1 TMW-2 TMW-3

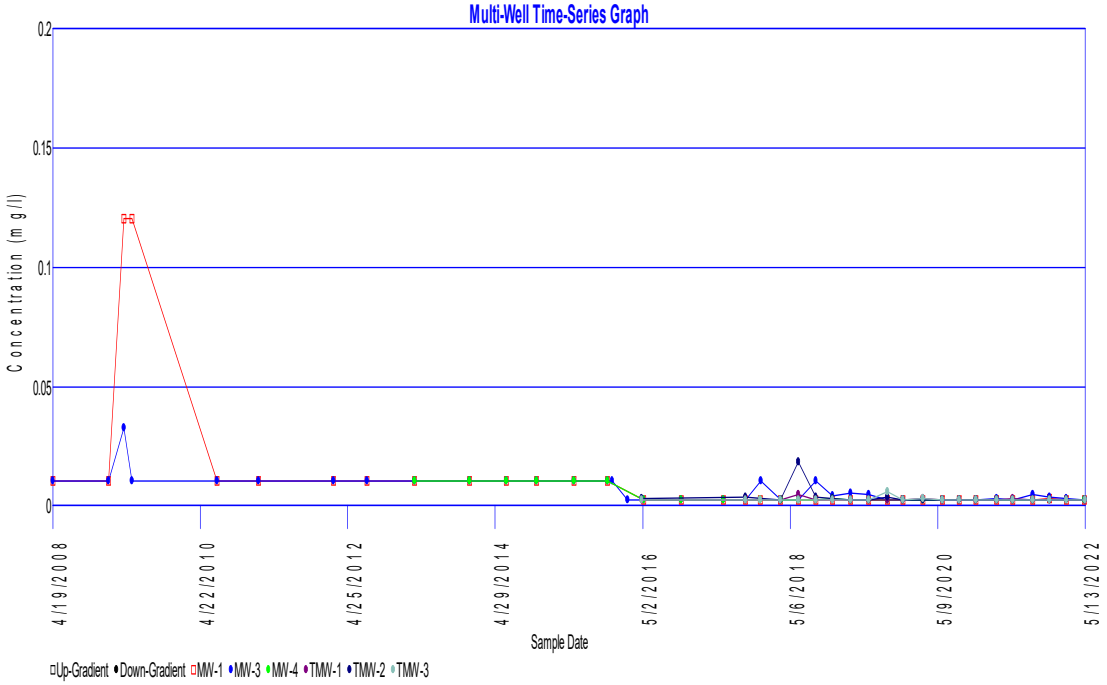
Calcium



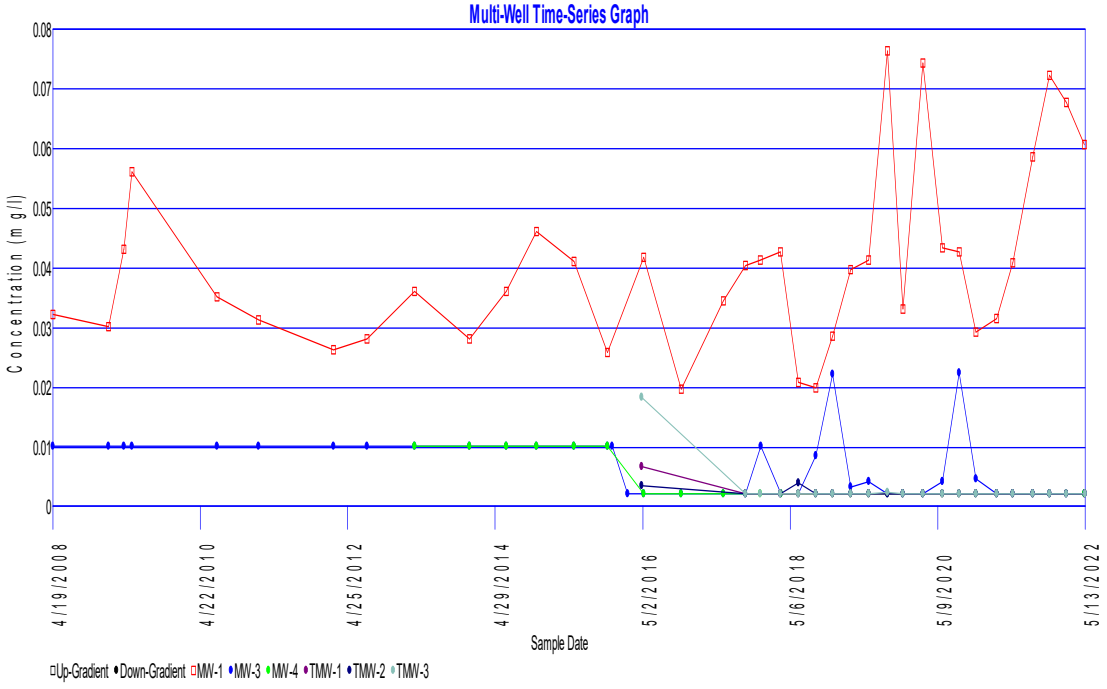
Chloride



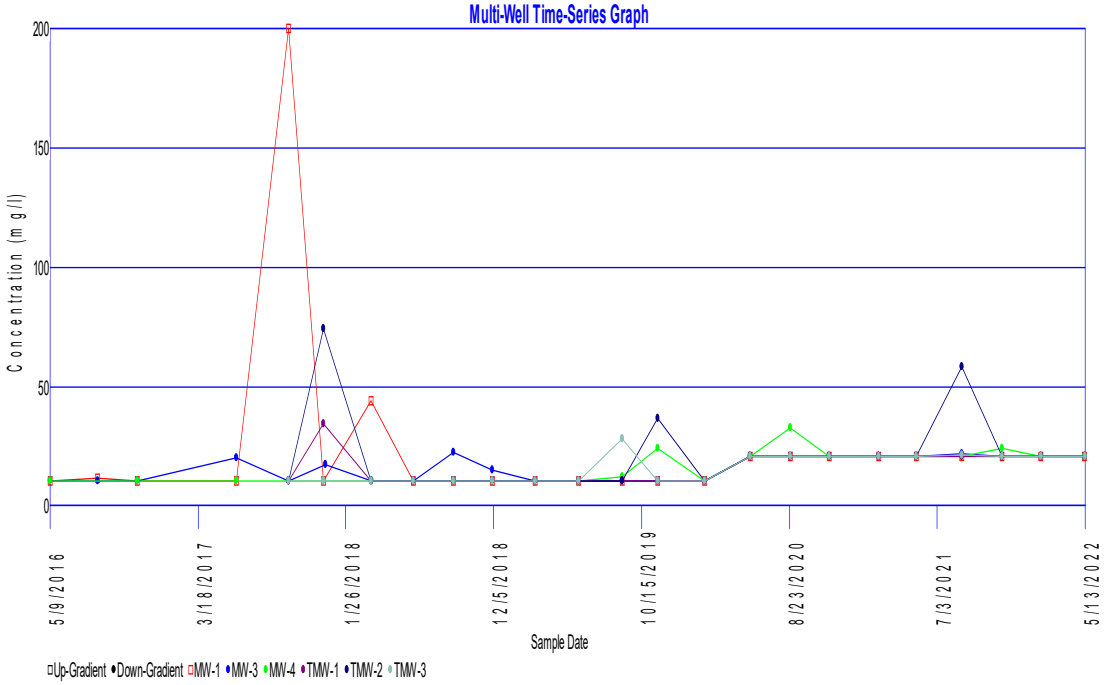
Chromium



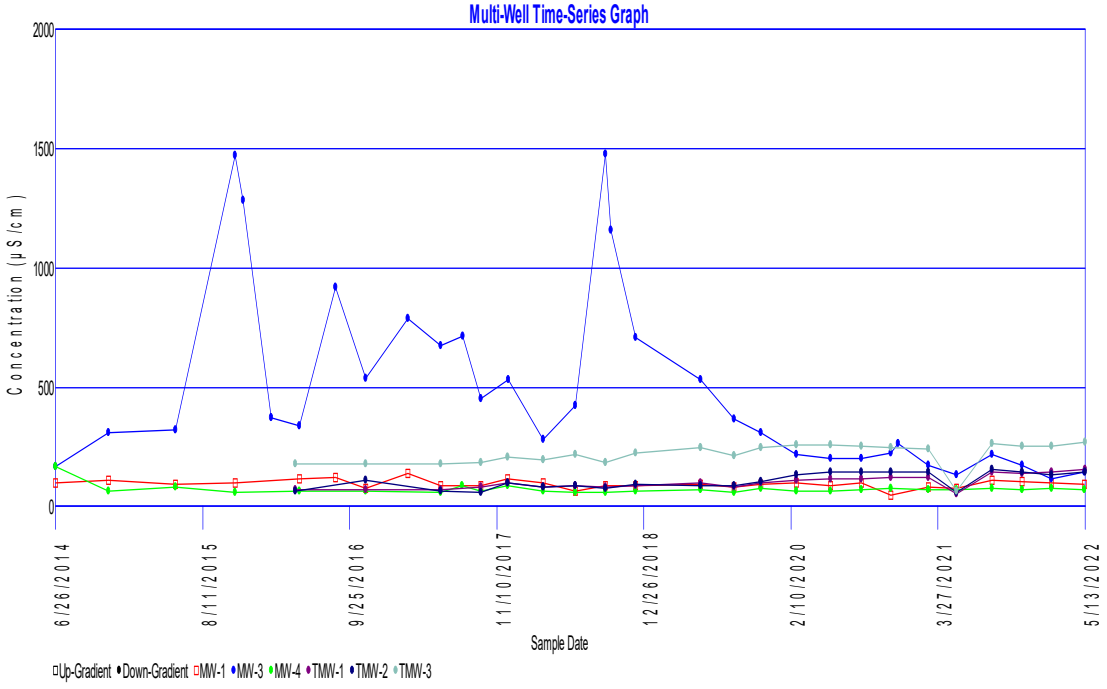
Cobalt



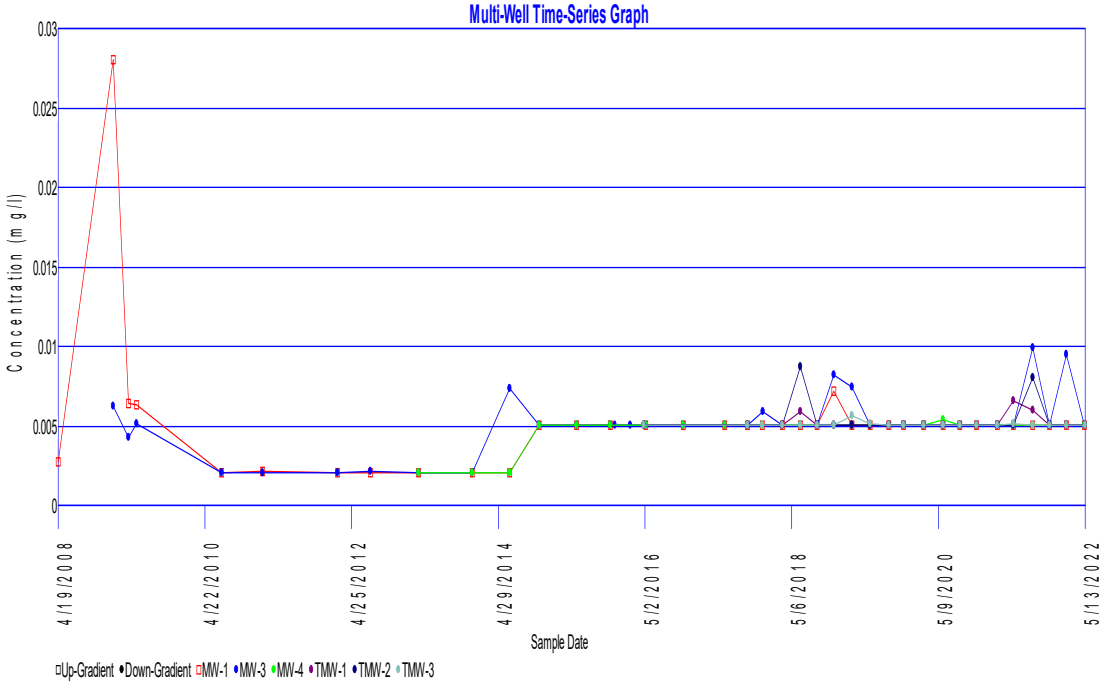
COD



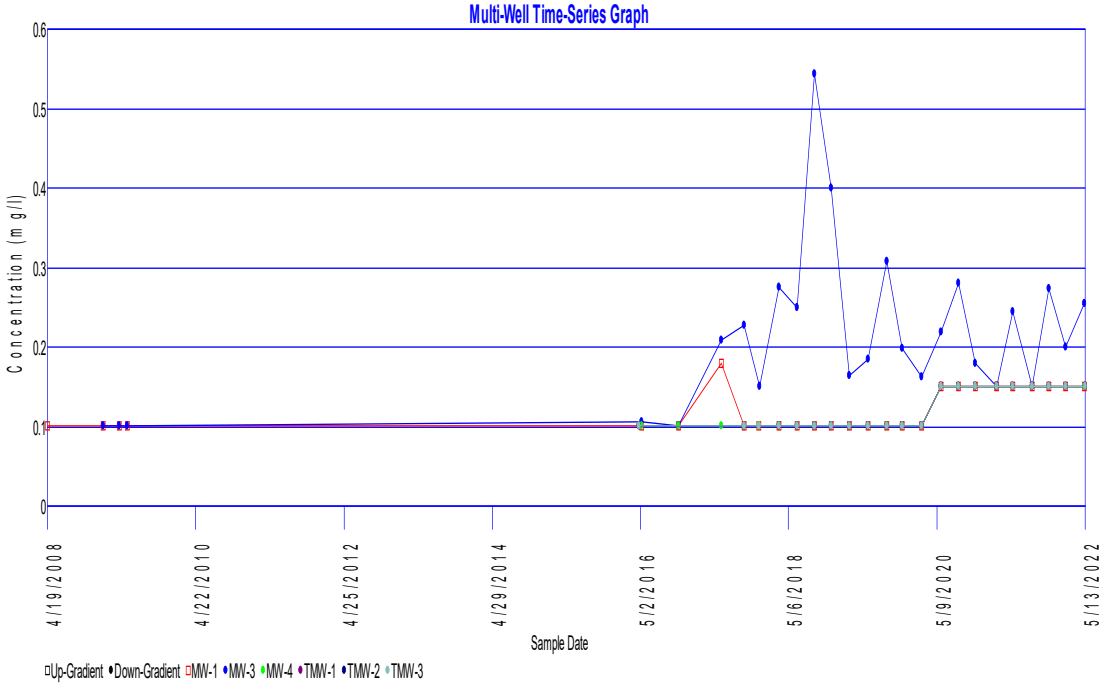
Conductivity



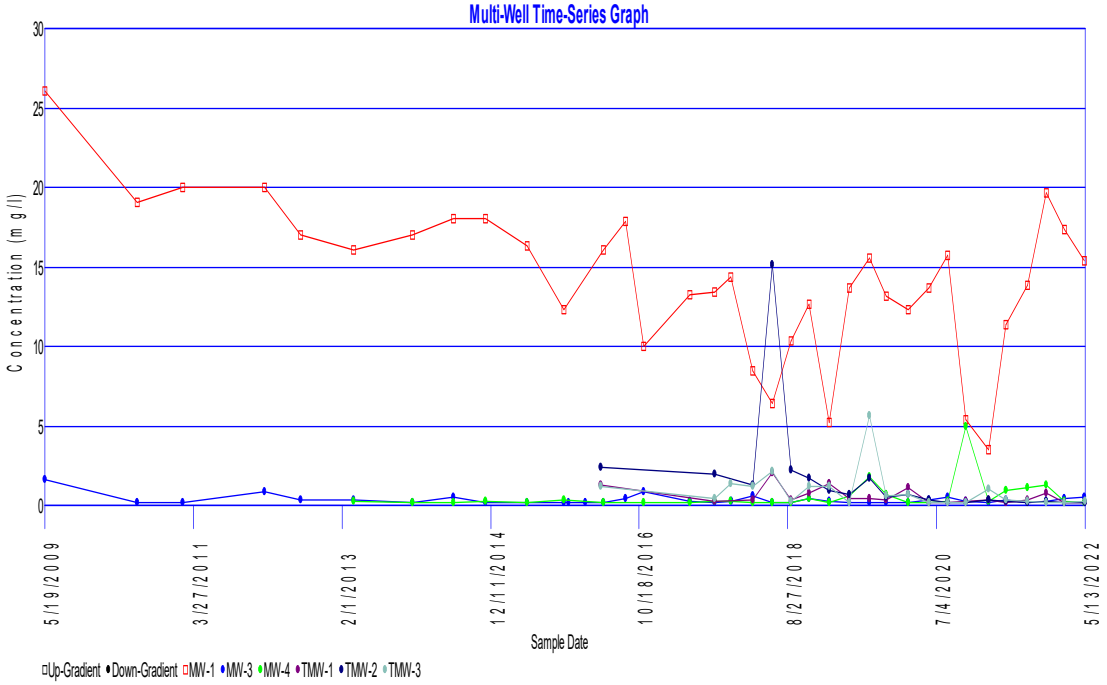
Copper



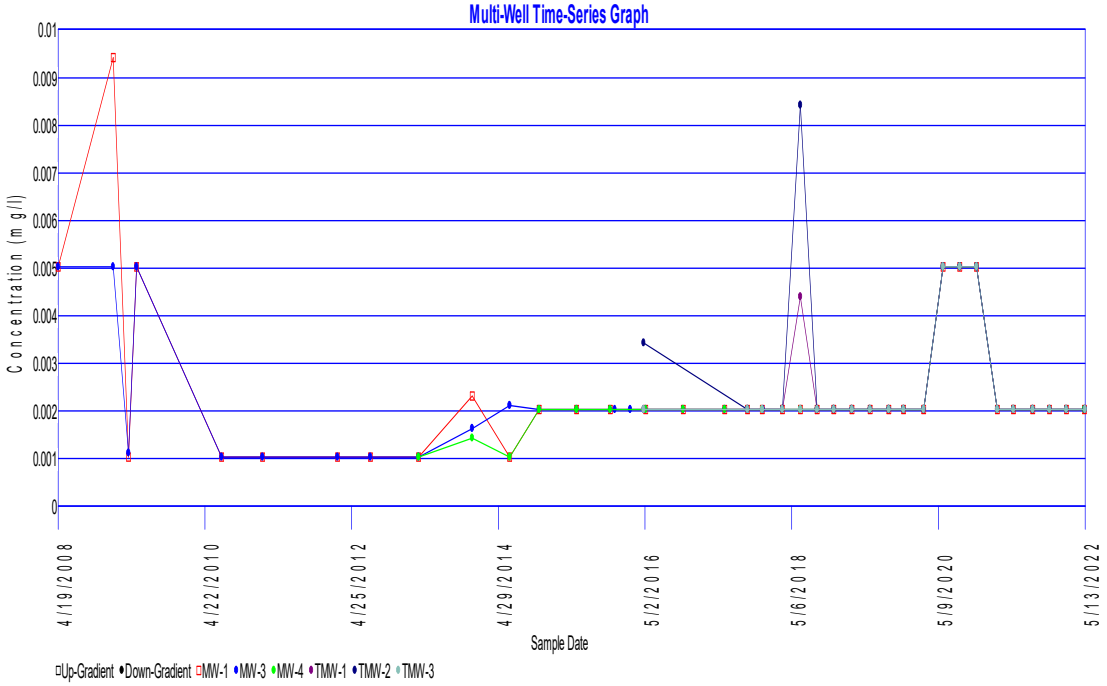
Fluoride



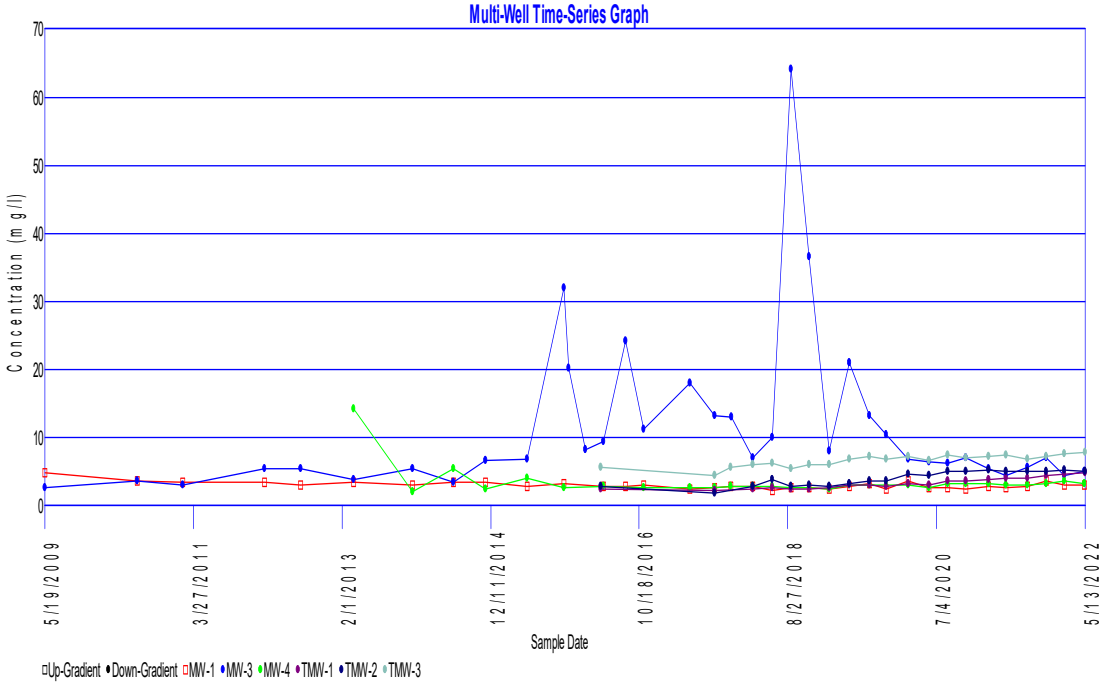
Iron


Multi-Well Time-Series Graph
Concentration (mg/l)
30
25
20
15
10
5
0
5/19/2009
3/27/2011
2/1/2013
12/11/2014
10/18/2016
8/27/2018
7/4/2020
5/13/2022
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 TMW-1 TMW-2 TMW-3

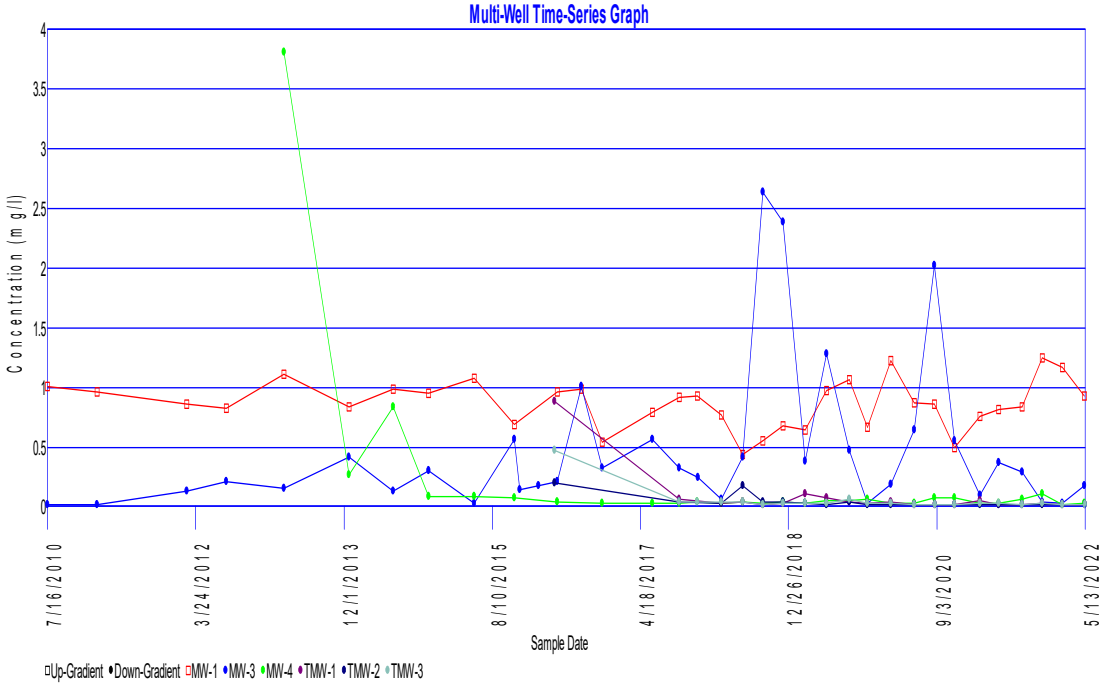
Lead


Multi-Well Time-Series Graph
Concentration (mg/l)
0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
4/19/2008
4/22/2010
4/25/2012
4/29/2014
5/2/2016
5/6/2018
5/9/2020
5/13/2022
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 TMW-1 TMW-2 TMW-3

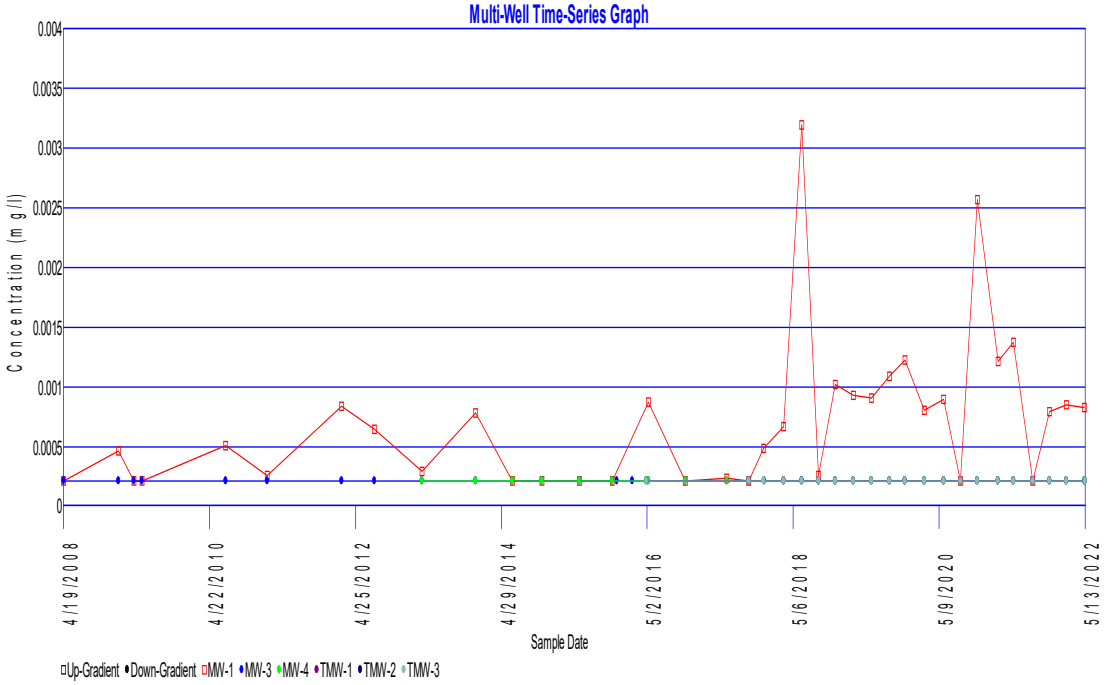
Magnesium



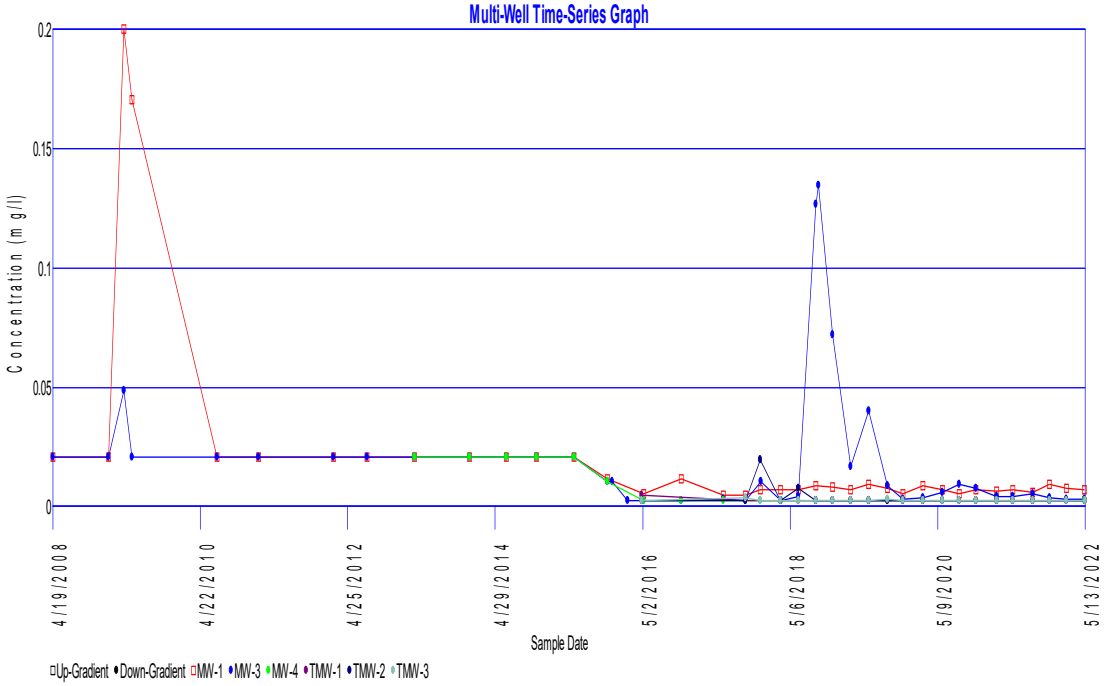
Manganese



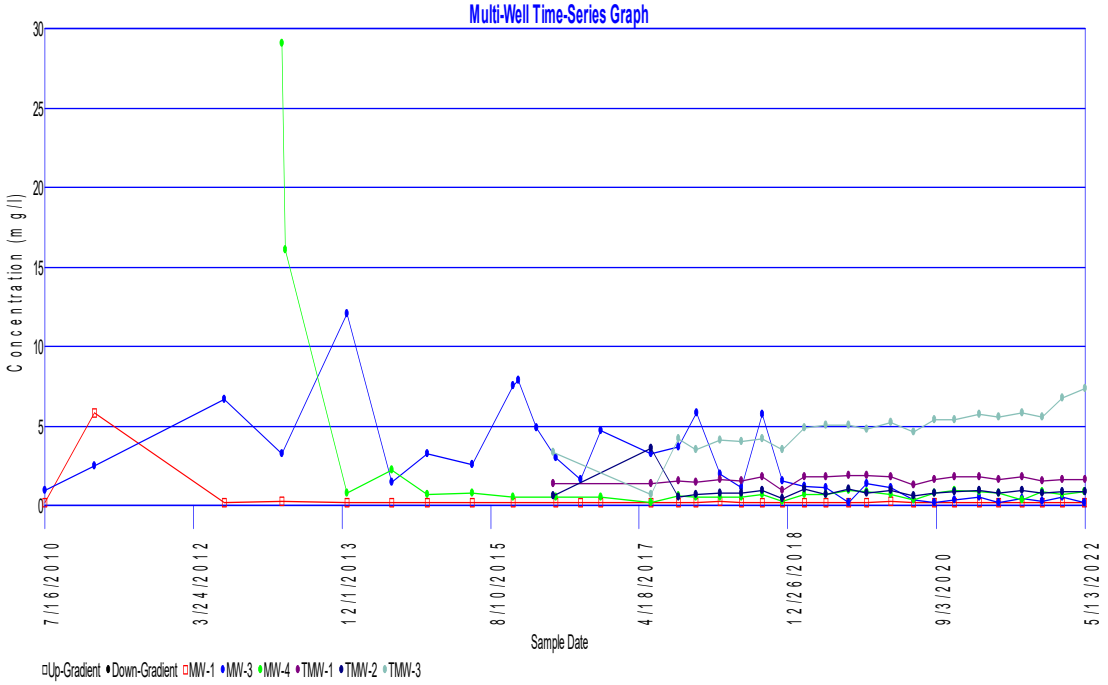
Mercury



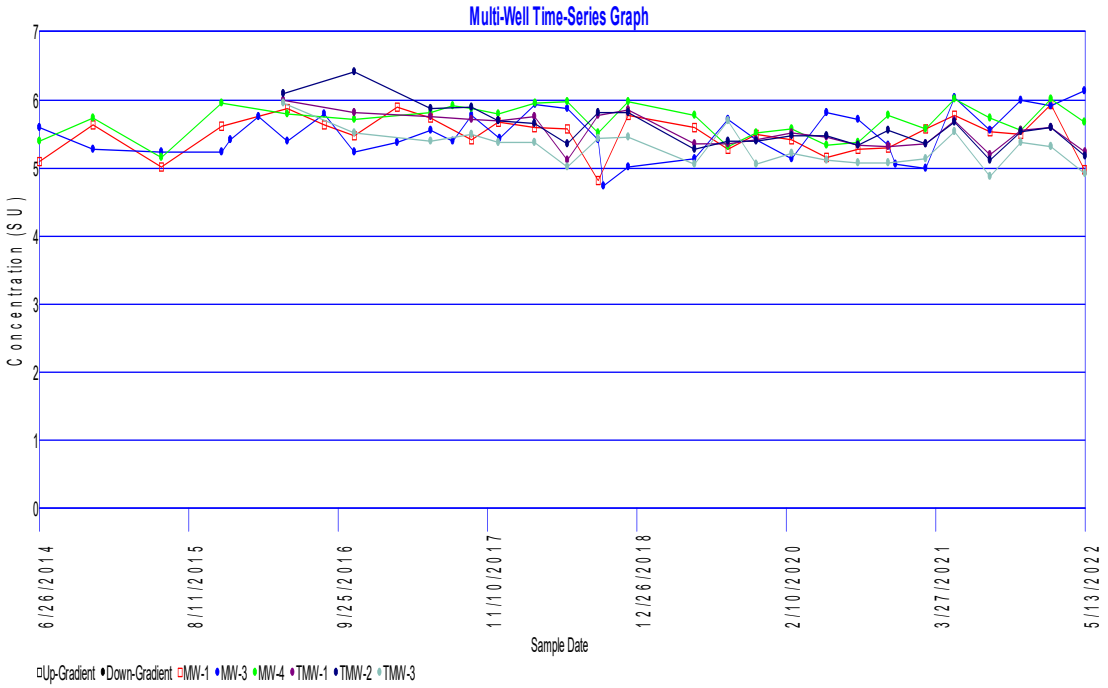
Nickel



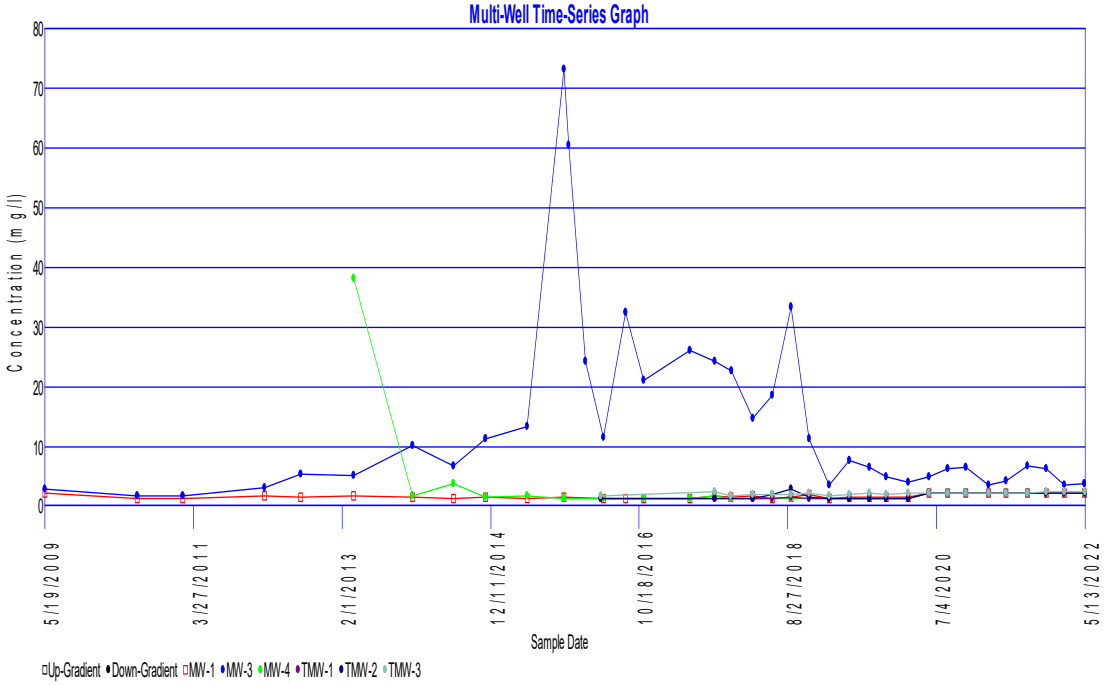
Nitrate


Multi-Well Time-Series Graph
Concentration (mg/l)
30
25
20
15
10
5
0
7/16/2010
3/24/2012
12/1/2013
8/10/2015
4/18/2017
12/26/2018
9/3/2020
5/13/2022
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 TMW-1 TMW-2 TMW-3

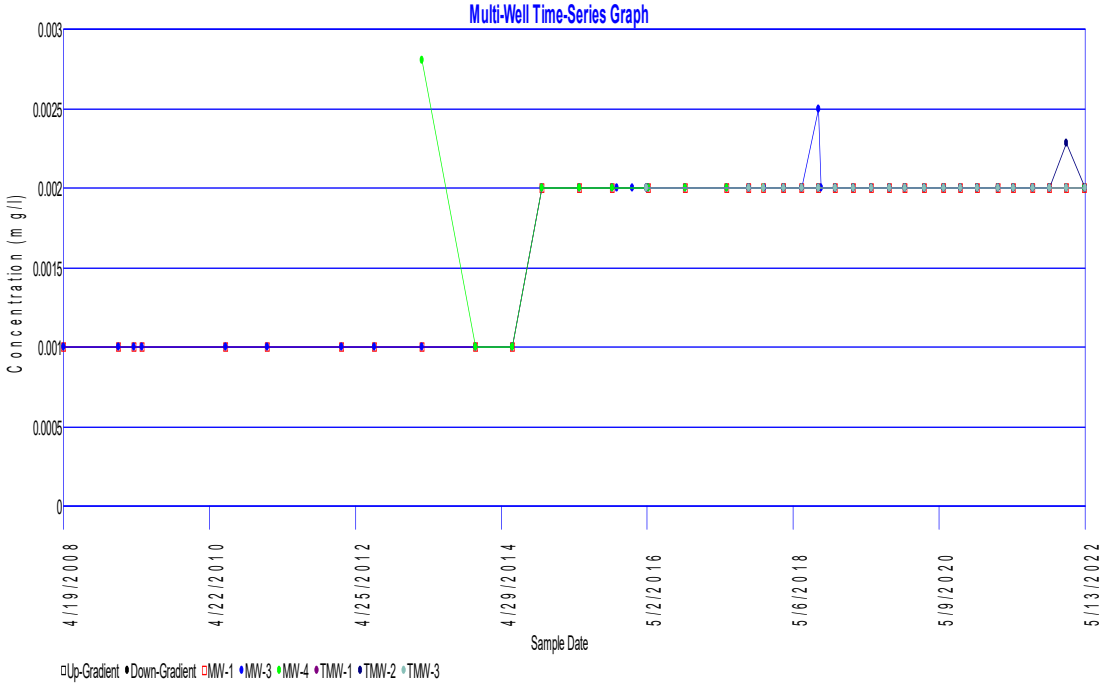
pH


Multi-Well Time-Series Graph
Concentration (SU)
7
6
5
4
3
2
1
0
6/26/2014
8/11/2015
9/25/2016
11/10/2017
12/26/2018
2/10/2020
3/27/2021
5/13/2022
Sample Date
Up-Gradient Down-Gradient MW-1 MW-3 MW-4 TMW-1 TMW-2 TMW-3

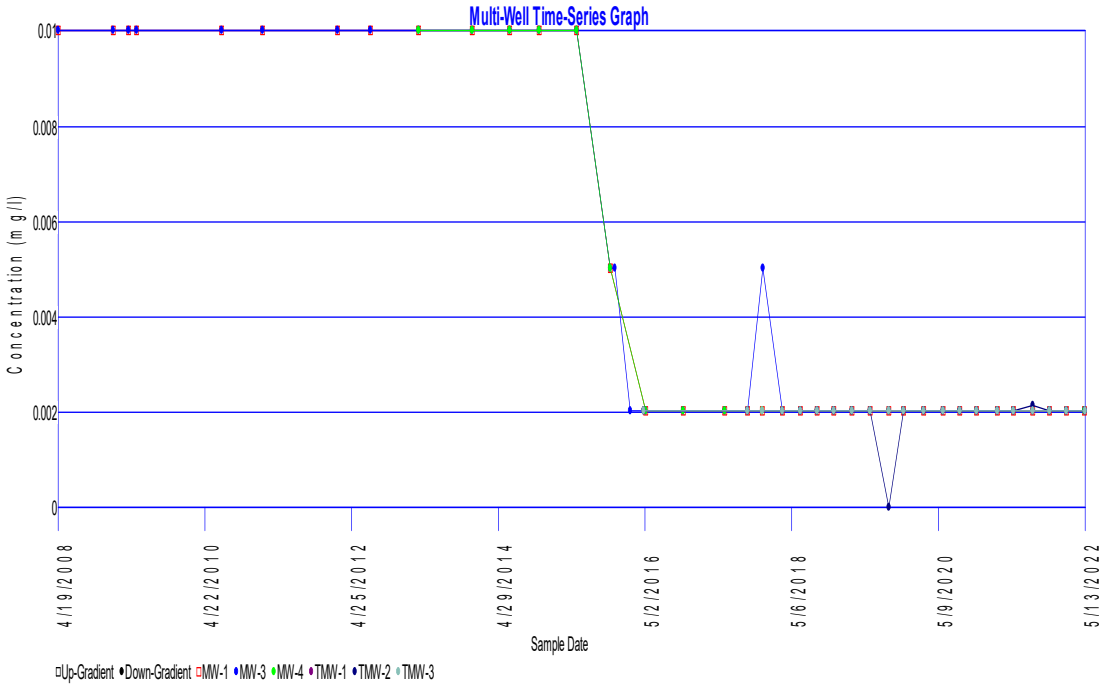
Potassium



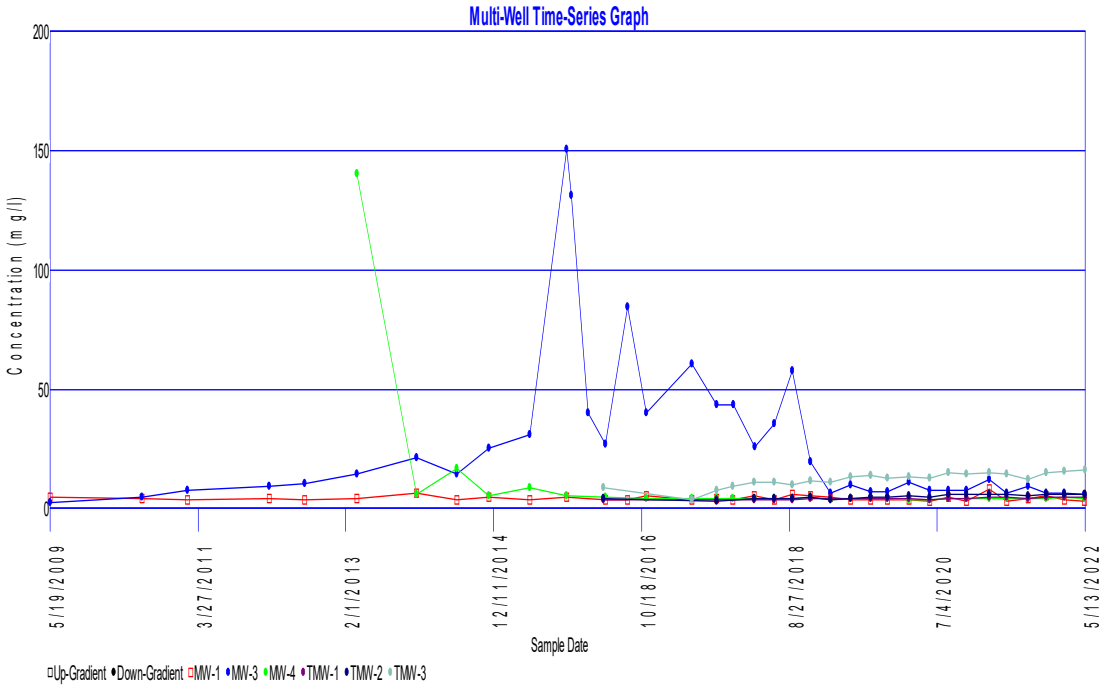
Selenium



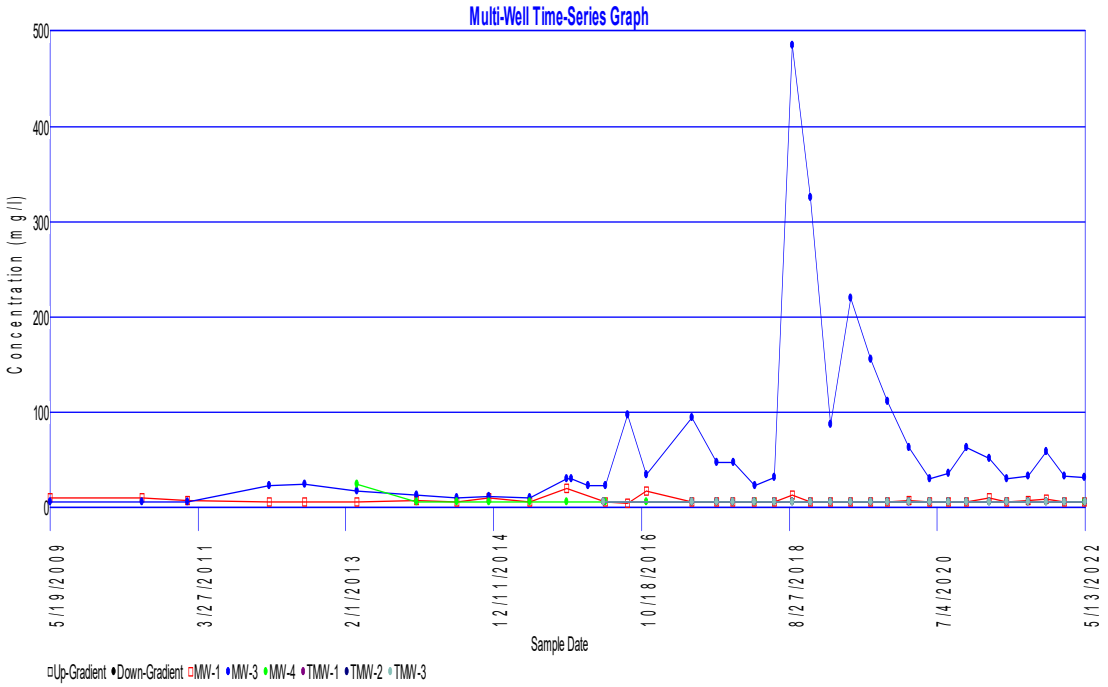
Silver



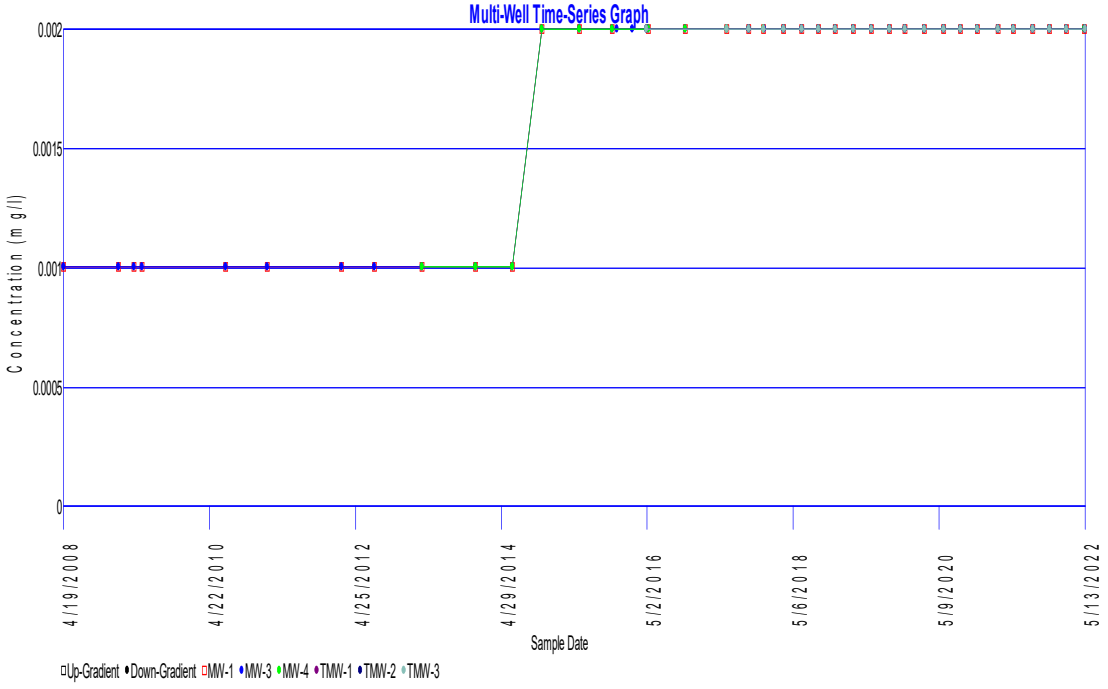
Sodium



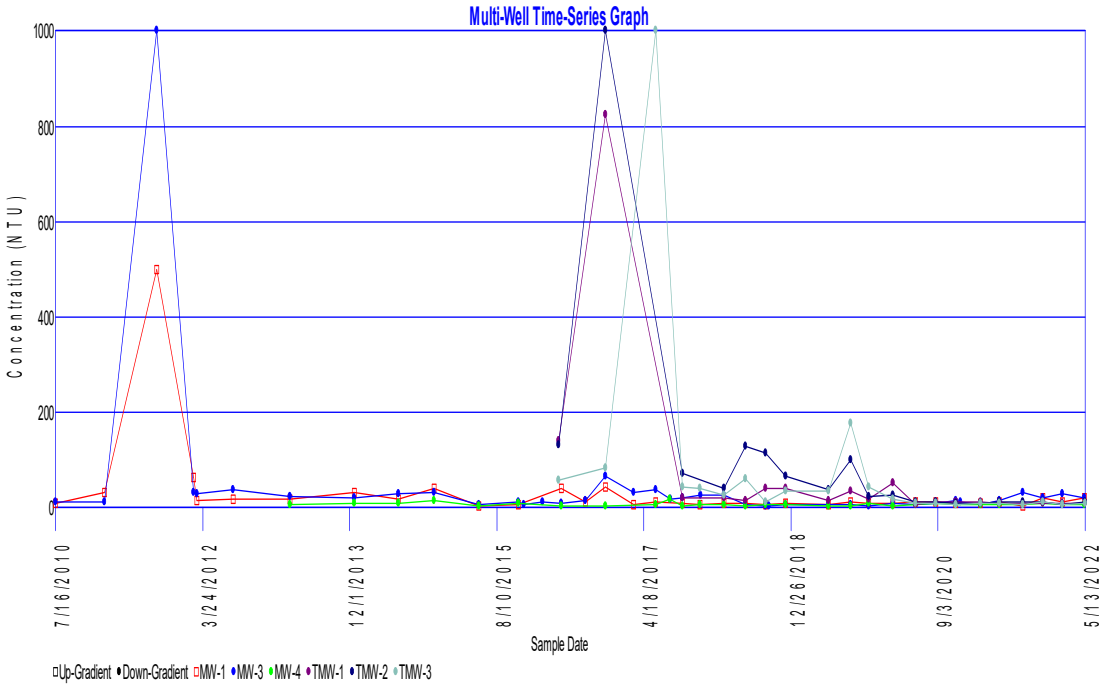
Sulfate



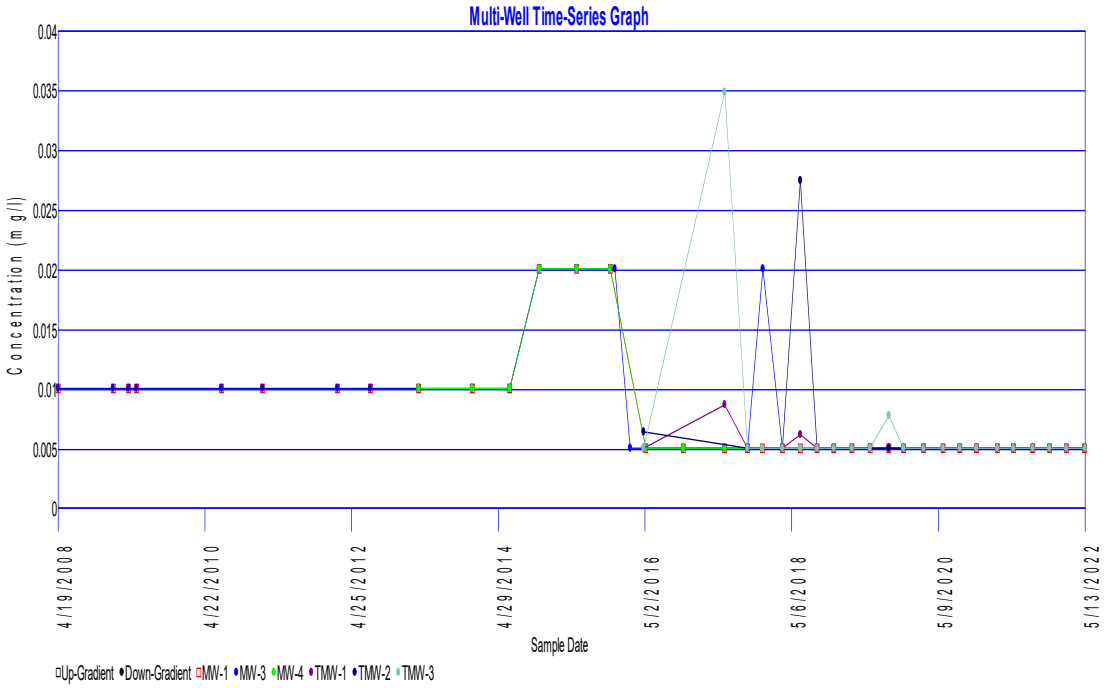
Thallium



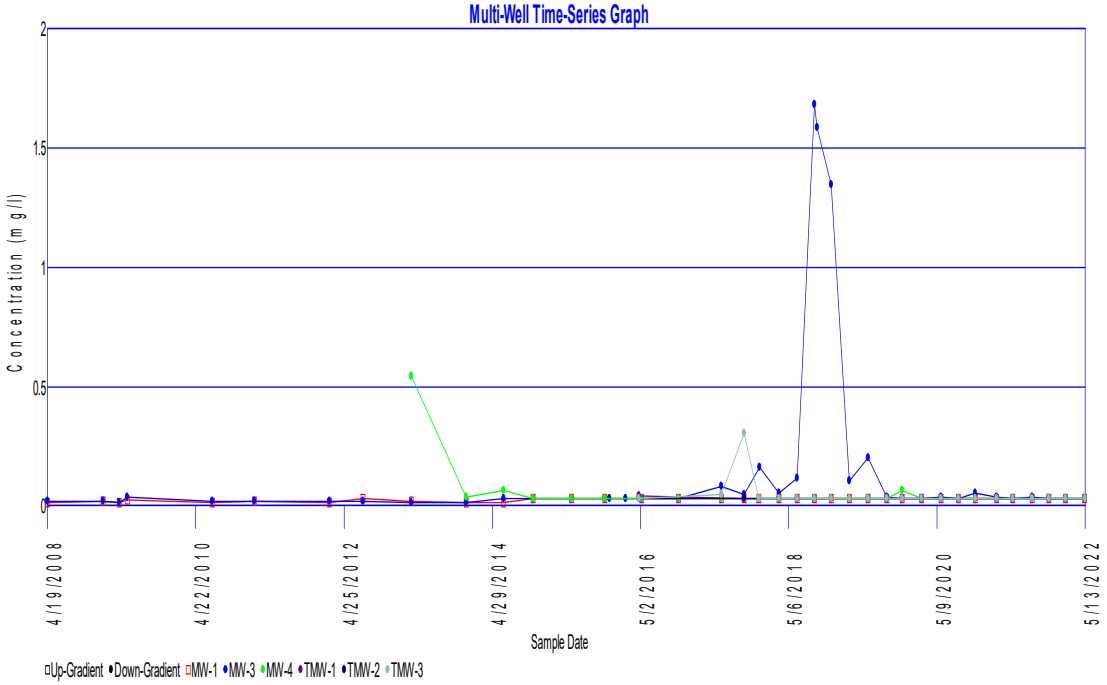
Turbidity



Vanadium



Zinc


Multi-Well Time-Series Graph
2
1.5
1
0.5
0
Concentration (mg/l)
4/19/2008
4/22/2010
4/25/2012
4/29/2014
5/2/2016
5/6/2018
5/9/2020
5/13/2022
Sample Date
Up-Gradient
Down-Gradient
MW-1
MW-3
MW-4
TMW-1
TMW-2
TMW-3

Basic Statistics

Parameter: Aluminum

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

Total Measurements	37
Total Non-Detects	22 (59.4595%)
Pooled Mean	0.233784
Pooled Std Dev	0.276937
Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	37
Background Mean	0.233784
Background Std Dev	0.276937

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	37	22	59.4595	8.65

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.233784	0.276937	0	703	19

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	2.76098

Kruskal-Wallis Statistics

Non-Detect Rank	11.5
Background Rank Sum	703
Background Rank Mean	19
H Statistic	1.42109e-014
H Adjusted for Ties	1.79869e-014

Basic Statistics

Parameter: Arsenic

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

Total Measurements	37
Total Non-Detects	0 (0%)
Pooled Mean	0.0387284
Pooled Std Dev	0.0284668
Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	37
Background Mean	0.0387284
Background Std Dev	0.0284668

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total	
MW-1	37	0	0	1.43295	
Location	**Mean**	**Std Dev**	**Std Err**	**Rank Sum**	**Rank Mean**
MW-1	0.0387284	0.0284668	0	703	19

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	0.0291729

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	703
Background Rank Mean	19
H Statistic	1.42109e-014
H Adjusted for Ties	1.42109e-014

Basic Statistics

Parameter: Barium

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

Total Measurements	37
Total Non-Detects	3 (8.10811%)
Pooled Mean	0.0223784
Pooled Std Dev	0.0110325
Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	37
Background Mean	0.0223784
Background Std Dev	0.0110325

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total	
MW-1	37	3	8.10811	0.828	
Location	**Mean**	**Std Dev**	**Std Err**	**Rank Sum**	**Rank Mean**
MW-1	0.0223784	0.0110325	0	703	19

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	6.93889e-018
SS Total	0.0043818

Kruskal-Wallis Statistics

Non-Detect Rank	2
Background Rank Sum	703
Background Rank Mean	19
H Statistic	1.42109e-014
H Adjusted for Ties	1.42176e-014

Basic Statistics

Parameter: Total Cadmium

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

Total Measurements	36
Total Non-Detects	36 (100%)
Pooled Mean	0.001
Pooled Std Dev	6.59749e-019
Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	36
Background Mean	0.001
Background Std Dev	6.59749e-019

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	36	36	100	0.036

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.001	6.59749e-019	0	666	18.5

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	-5.42101e-020

Kruskal-Wallis Statistics

Non-Detect Rank	18.5
Background Rank Sum	666
Background Rank Mean	18.5
H Statistic	0
H Adjusted for Ties	0

Basic Statistics

Parameter: Chloride

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

Total Measurements	38
Total Non-Detects	0 (0%)
Pooled Mean	2.65263
Pooled Std Dev	0.970683
Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	38
Background Mean	2.65263
Background Std Dev	0.970683

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total	
MW-1	38	0	0	100.8	
Location	**Mean**	**Std Dev**	**Std Err**	**Rank Sum**	**Rank Mean**
MW-1	2.65263	0.970683	0	741	19.5

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	34.8623

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	741
Background Rank Mean	19.5
H Statistic	0
H Adjusted for Ties	0

Basic Statistics

Parameter: Cobalt

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

Total Measurements	37
Total Non-Detects	0 (0%)
Pooled Mean	0.0403108
Pooled Std Dev	0.0148921
Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	37
Background Mean	0.0403108
Background Std Dev	0.0148921

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	37	0	0	1.4915

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0403108	0.0148921	0	703	19

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	2.77556e-017
SS Total	0.00798394

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	703
Background Rank Mean	19
H Statistic	1.42109e-014
H Adjusted for Ties	1.42109e-014

Basic Statistics

Parameter: Fluoride

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

Total Measurements	27
Total Non-Detects	26 (96.2963%)
Pooled Mean	0.119556
Pooled Std Dev	0.0265001
Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	27
Background Mean	0.119556
Background Std Dev	0.0265001

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	27	26	96.2963	3.228

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.119556	0.0265001	0	378	14

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	0.0182587

Kruskal-Wallis Statistics

Non-Detect Rank	13.5
Background Rank Sum	378
Background Rank Mean	14
H Statistic	0
H Adjusted for Ties	0

Basic Statistics

Parameter: Mercury

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

Total Measurements	37
Total Non-Detects	11 (29.7297%)
Pooled Mean	0.000699784
Pooled Std Dev	0.000641129
Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	37
Background Mean	0.000699784
Background Std Dev	0.000641129

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total	
MW-1	37	11	29.7297	0.025892	
Location	**Mean**	**Std Dev**	**Std Err**	**Rank Sum**	**Rank Mean**
MW-1	0.000699784	0.000641129	0	703	19

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	3.38813e-021
SS Total	1.47977e-005

Kruskal-Wallis Statistics

Non-Detect Rank	6
Background Rank Sum	703
Background Rank Mean	19
H Statistic	1.42109e-014
H Adjusted for Ties	1.45914e-014

Basic Statistics

Parameter: Nickel

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

Total Measurements	37
Total Non-Detects	11 (29.7297%)
Pooled Mean	0.0203797
Pooled Std Dev	0.0405282
Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	37
Background Mean	0.0203797
Background Std Dev	0.0405282

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	37	11	29.7297	0.75405

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0203797	0.0405282	0	703	19

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	0.0591312

Kruskal-Wallis Statistics

Non-Detect Rank	6
Background Rank Sum	703
Background Rank Mean	19
H Statistic	1.42109e-014
H Adjusted for Ties	1.45914e-014

Basic Statistics

Parameter: Sulfate

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

Total Measurements	35
Total Non-Detects	21 (60%)
Pooled Mean	6.55314
Pooled Std Dev	3.30856
Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	35
Background Mean	6.55314
Background Std Dev	3.30856

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	35	21	60	229.36

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	6.55314	3.30856	0	630	18

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	372.183

Kruskal-Wallis Statistics

Non-Detect Rank	11
Background Rank Sum	630
Background Rank Mean	18
H Statistic	1.42109e-014
H Adjusted for Ties	1.81188e-014

Basic Statistics

Parameter: Mercury

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

Total Measurements	37
Total Non-Detects	11 (29.7297%)
Pooled Mean	0.000699784
Pooled Std Dev	0.000641129
Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	37
Background Mean	0.000699784
Background Std Dev	0.000641129

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	37	11	29.7297	0.025892

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.000699784	0.000641129	0	703	19

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	3.38813e-021
SS Total	1.47977e-005

Kruskal-Wallis Statistics

Non-Detect Rank	6
Background Rank Sum	703
Background Rank Mean	19
H Statistic	1.42109e-014
H Adjusted for Ties	1.45914e-014

Basic Statistics

Parameter: Chromium

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

Total Measurements	37
Total Non-Detects	34 (91.8919%)
Pooled Mean	0.0109862
Pooled Std Dev	0.0266815
Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	37
Background Mean	0.0109862
Background Std Dev	0.0266815

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	37	34	91.8919	0.40649

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0109862	0.0266815	0	703	19

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	0.0256284

Kruskal-Wallis Statistics

Non-Detect Rank	17.5
Background Rank Sum	703
Background Rank Mean	19
H Statistic	1.42109e-014
H Adjusted for Ties	6.33965e-014

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 = 18 for 37 measurements

Sum of b values = 1.23928
Sample Standard Deviation = 0.276937
W Statistic = 0.55626

5% Critical value of 0.936 exceeds 0.55626
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.55626
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Arsenic

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 18 for 37 measurements

Sum of b values = 0.160601
Sample Standard Deviation = 0.0284668
W Statistic = 0.884126

5% Critical value of 0.936 exceeds 0.884126
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.884126
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 = 18 for 37 measurements

Sum of b values = 0.0436426
Sample Standard Deviation = 0.0110325
W Statistic = 0.434679

5% Critical value of 0.936 exceeds 0.434679
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.434679
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 = 19 for 38 measurements

Sum of b values = 5.30355
Sample Standard Deviation = 0.970683
W Statistic = 0.806821

5% Critical value of 0.938 exceeds 0.806821
Evidence of non-normality at 95% level of significance

1% Critical value of 0.916 exceeds 0.806821
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 = 18 for 37 measurements

Sum of b values = 0.084376
Sample Standard Deviation = 0.0148921
W Statistic = 0.891705

5% Critical value of 0.936 exceeds 0.891705
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.891705
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 = 18 for 37 measurements

Sum of b values = 0.148319
Sample Standard Deviation = 0.0405282
W Statistic = 0.372028

5% Critical value of 0.936 exceeds 0.372028
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.372028
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Mercury

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 18 for 37 measurements

Sum of b values = 0.00329409
Sample Standard Deviation = 0.000641129
W Statistic = 0.733295

5% Critical value of 0.936 exceeds 0.733295
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.733295
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 = 18 for 36 measurements

Sum of b values = 0
Sample Standard Deviation = 6.59749e-019
W Statistic = 0

5% Critical value of 0.935 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chromium

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 18 for 37 measurements

Sum of b values = 0.0935766
Sample Standard Deviation = 0.0266815
W Statistic = 0.341674

5% Critical value of 0.936 exceeds 0.341674
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.341674
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Fluoride

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 13 for 27 measurements

Sum of b values = 0.1103
Sample Standard Deviation = 0.0265001
W Statistic = 0.666316

5% Critical value of 0.923 exceeds 0.666316
Evidence of non-normality at 95% level of significance

1% Critical value of 0.894 exceeds 0.666316
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 = 17 for 35 measurements

Sum of b values = 15.0063
Sample Standard Deviation = 3.30856
W Statistic = 0.605053

5% Critical value of 0.934 exceeds 0.605053
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.605053
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 = 18 for 37 measurements

Sum of b values = 5.32061
Sample Standard Deviation = 1.02923
W Statistic = 0.742331

5% Critical value of 0.936 exceeds 0.742331
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.742331
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 = 18 for 37 measurements

Sum of b values = 5.12339
Sample Standard Deviation = 0.888517
W Statistic = 0.923594

5% Critical value of 0.936 exceeds 0.923594
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 is less than 0.923594
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 = 18 for 37 measurements

Sum of b values = 1.9171
Sample Standard Deviation = 0.352271
W Statistic = 0.822684

5% Critical value of 0.936 exceeds 0.822684
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.822684
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 = 19 for 38 measurements

Sum of b values = 1.81309
Sample Standard Deviation = 0.314634
W Statistic = 0.897479

5% Critical value of 0.938 exceeds 0.897479
Evidence of non-normality at 95% level of significance

1% Critical value of 0.916 exceeds 0.897479
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 = 18 for 37 measurements

Sum of b values = 2.06295
Sample Standard Deviation = 0.351483
W Statistic = 0.956901

5% Critical value of 0.936 is less than 0.956901
Data is normally distributed at 95% level of significance

1% Critical value of 0.914 is less than 0.956901
Data is normally distributed 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 = 18 for 36 measurements

Sum of b values = 0
Sample Standard Deviation = 1.80155e-015
W Statistic = 0

5% Critical value of 0.935 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chromium

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 18 for 37 measurements

Sum of b values = 5.91023
Sample Standard Deviation = 1.22195
W Statistic = 0.649828

5% Critical value of 0.936 exceeds 0.649828
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.649828
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 = 13 for 27 measurements

Sum of b values = 1.17267
Sample Standard Deviation = 0.290607
W Statistic = 0.626279

5% Critical value of 0.923 exceeds 0.626279
Evidence of non-normality at 95% level of significance

1% Critical value of 0.894 exceeds 0.626279
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 = 18 for 37 measurements

Sum of b values = 3.59115
Sample Standard Deviation = 0.784259
W Statistic = 0.582431

5% Critical value of 0.936 exceeds 0.582431
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.582431
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Mercury

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 18 for 37 measurements

Sum of b values = 6.00057
Sample Standard Deviation = 1.07576
W Statistic = 0.86428

5% Critical value of 0.936 exceeds 0.86428
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.86428
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 = 17 for 35 measurements

Sum of b values = 3.2186
Sample Standard Deviation = 0.645711
W Statistic = 0.730769

5% Critical value of 0.934 exceeds 0.730769
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 exceeds 0.730769
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

From 36 baseline samples
Baseline mean = -3.28549
Baseline std Dev = 0.34729

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 = 36 (background observations) - 1
t(0.95, 36) = 1.68957

Date	Samples	Mean	Interval	Significant
5/12/2022	1	-2.80346	[0, -2.69063]	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) = 36
Maximum Baseline Concentration = 0.1
Confidence Level = 97.3%
False Positive Rate = 2.7%

Baseline Measurem	Date	Value
	4/19/2008	0.024
	1/21/2009	0.072
	4/9/2009	0.067
	5/19/2009	0.064
	7/16/2010	0.074
	2/8/2011	0.086
	2/17/2012	0.093
	7/31/2012	0.089
	3/27/2013	0.049
	12/23/2013	0.1
	6/26/2014	0.063
	11/21/2014	0.059
	5/28/2015	0.0604
	11/11/2015	0.0469
	5/9/2016	0.05
	11/10/2016	0.0286
	6/8/2017	0.0571
	9/28/2017	0.0199
	12/11/2017	0.0573
	3/21/2018	0.0101
	6/19/2018	0.0063
	9/12/2018	0.0184
	12/4/2018	0.0254
	3/5/2019	0.00449
	6/4/2019	0.0194
	9/5/2019	0.0176
	11/20/2019	0.0176
	2/27/2020	0.00807
	6/2/2020	0.0174
	8/26/2020	0.0244
	11/17/2020	0.00513
	3/2/2021	0.00576
	5/20/2021	0.0131
	8/26/2021	0.019
	11/18/2021	0.0192
	2/9/2022	0.0219

Date	Count	Mean	Significant
5/12/2022	1	0.0195	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Barium

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

Total Percent Non-Detects = 8.33333%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 36
Maximum Baseline Concentration = 0.084
Confidence Level = 97.3%
False Positive Rate = 2.7%

Baseline Measurem	Date	Value
	4/19/2008	0.084
	1/21/2009	0.028
	4/9/2009	0.028
	5/19/2009	0.033
	7/16/2010	0.021
	2/8/2011	0.021
	2/17/2012	0.022
	7/31/2012	0.019
	3/27/2013	0.018
	12/23/2013	0.017
	6/26/2014	0.018
	11/21/2014	0.02
	5/28/2015	0.0188
	11/11/2015	0.0237
	5/9/2016	0.02
	11/10/2016	0.0207
	6/8/2017	0.0146
	9/28/2017	0.0175
	12/11/2017	0.0166
	3/21/2018	0.0212
	6/19/2018	0.0163
	9/12/2018	0.0186
	12/4/2018	0.0199
	3/5/2019	0.0184
	6/4/2019	0.0219
	9/5/2019	0.0199
	11/20/2019	0.0194
	2/27/2020	0.0241
	6/2/2020	-0.02
	8/26/2020	-0.02
	11/17/2020	-0.02
	3/2/2021	0.0222
	5/20/2021	0.0177
	8/26/2021	0.0198
	11/18/2021	0.0276
	2/9/2022	0.0213

Date	Count	Mean	Significant
5/12/2022	1	0.0188	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) = 36
Maximum Baseline Concentration = 5.68
Confidence Level = 97.3%
False Positive Rate = 2.7%

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

Date	Count	Mean	Significant
5/12/2022	1	2.05	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 = 30.5556%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 36
Maximum Baseline Concentration = 0.2
Confidence Level = 97.3%
False Positive Rate = 2.7%

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

Date	Count	Mean	Significant
5/12/2022	1	0.00644	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Mercury

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

Total Percent Non-Detects = 30.5556%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 36
Maximum Baseline Concentration = 0.00319
Confidence Level = 97.3%
False Positive Rate = 2.7%

Baseline Measurem	Date	Value
	4/19/2008	-0.0002
	1/21/2009	0.00045
	4/9/2009	-0.0002
	5/19/2009	-0.0002
	7/16/2010	0.0005
	2/8/2011	0.00024
	2/17/2012	0.00083
	7/31/2012	0.00063
	3/27/2013	0.00028
	12/23/2013	0.00077
	6/26/2014	-0.0002
	11/21/2014	-0.0002
	5/28/2015	-0.0002
	11/11/2015	-0.0002
	5/9/2016	0.000858
	11/10/2016	-0.0002
	6/8/2017	0.000222
	9/28/2017	-0.0002
	12/11/2017	0.000473
	3/21/2018	0.000651
	6/19/2018	0.00319
	9/12/2018	0.000244
	12/4/2018	0.00101
	3/5/2019	0.000922
	6/4/2019	0.000889
	9/5/2019	0.00108
	11/20/2019	0.00121
	2/27/2020	0.000796
	6/2/2020	0.000888
	8/26/2020	-0.0002
	11/17/2020	0.00256
	3/2/2021	0.0012
	5/20/2021	0.00136
	8/26/2021	-0.0002
	11/18/2021	0.000785
	2/9/2022	0.000837

Date	Count	Mean	Significant
5/12/2022	1	0.000817	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Aluminum

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

Total Percent Non-Detects = 40.5263%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 37
Maximum Background Value = 1.2
Confidence Level = 86%
False Positive Rate = 14%

Location	Date	Count	Mean	Significant
MW-5	5/12/2022	1	0.1	FALSE
MW-3	5/12/2022	1	0.183	FALSE
MW-4	5/12/2022	1	0.1	FALSE
TMW-1	5/13/2022	1	0.1	FALSE
TMW-2	5/13/2022	1	0.102	FALSE
TMW-3	5/13/2022	1	0.1	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Barium

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

Total Percent Non-Detects = 5.75916%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 37
Maximum Background Value = 0.084
Confidence Level = 86%
False Positive Rate = 14%

Location	Date	Count	Mean	Significant
MW-5	5/12/2022	1	0.0547	FALSE
MW-3	5/12/2022	1	0.0326	FALSE
MW-4	5/12/2022	1	0.00749	FALSE
TMW-1	5/13/2022	1	0.0125	FALSE
TMW-2	5/13/2022	1	0.0266	FALSE
TMW-3	5/13/2022	1	0.0476	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Total Cadmium

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

Total Percent Non-Detects = 87.9581%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 36
Maximum Background Value = 0.001
Confidence Level = 85.7%
False Positive Rate = 14.3%

Location	Date	Count	Mean	Significant
MW-5	5/12/2022	1	0.001	FALSE
MW-3	5/12/2022	1	0.001	FALSE
MW-4	5/12/2022	1	0.001	FALSE
TMW-1	5/13/2022	1	0.001	FALSE
TMW-2	5/13/2022	1	0.001	FALSE
TMW-3	5/13/2022	1	0.001	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Chloride

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

Total Percent Non-Detects = 0%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 38
Maximum Background Value = 5.68
Confidence Level = 86.4%
False Positive Rate = 13.6%

Location	Date	Count	Mean	Significant
MW-5	5/12/2022	1	76.5	TRUE
MW-3	5/12/2022	1	8.02	TRUE
MW-4	5/12/2022	1	9.9	TRUE
TMW-1	5/13/2022	1	38.3	TRUE
TMW-2	5/13/2022	1	37.7	TRUE
TMW-3	5/13/2022	1	67.8	TRUE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Chromium

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

Total Percent Non-Detects = 73.1579%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 37
Maximum Background Value = 0.12
Confidence Level = 86%
False Positive Rate = 14%

Location	Date	Count	Mean	Significant
MW-5	5/12/2022	1	0.00625	FALSE
MW-3	5/12/2022	1	0.002	FALSE
MW-4	5/12/2022	1	0.002	FALSE
TMW-1	5/13/2022	1	0.002	FALSE
TMW-2	5/13/2022	1	0.002	FALSE
TMW-3	5/13/2022	1	0.002	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Fluoride

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

Total Percent Non-Detects = 86.9565%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 27
Maximum Background Value = 0.178
Confidence Level = 81.8%
False Positive Rate = 18.2%

Location	Date	Count	Mean	Significant
MW-5	5/12/2022	1	0.15	FALSE
MW-3	**5/12/2022**	**1**	**0.253**	**TRUE**
MW-4	5/12/2022	1	0.15	FALSE
TMW-1	5/13/2022	1	0.15	FALSE
TMW-2	5/13/2022	1	0.15	FALSE
TMW-3	5/13/2022	1	0.15	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Nickel

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

Total Percent Non-Detects = 57.8125%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 37
Maximum Background Value = 0.2
Confidence Level = 86%
False Positive Rate = 14%

Location	Date	Count	Mean	Significant
MW-5	5/12/2022	1	0.00624	FALSE
MW-3	5/12/2022	1	0.00272	FALSE
MW-4	5/12/2022	1	0.002	FALSE
TMW-1	5/13/2022	1	0.002	FALSE
TMW-2	5/13/2022	1	0.002	FALSE
TMW-3	5/13/2022	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 = 64.9215%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 35
Maximum Background Value = 18.8
Confidence Level = 85.4%
False Positive Rate = 14.6%

Location	Date	Count	Mean	Significant
MW-5	5/12/2022	1	17.3	FALSE
MW-3	**5/12/2022**	**1**	**30.4**	**TRUE**
MW-4	5/12/2022	1	5	FALSE
TMW-1	5/13/2022	1	5	FALSE
TMW-2	5/13/2022	1	5	FALSE
TMW-3	5/13/2022	1	5	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 = 97 - 133 = -36

Tied Grou	Value	Members
1	0.0176	2

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1256.67
Z-Score = -0.98732
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.98732| <= 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 = 149 - 78 = 71

Tied Grou	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

There are 0 time periods with multiple data

A = 84
B = 0
C = 6
D = 0
E = 8
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1253
Z-Score = 1.97753
Comparison Level at 95% confidence level = 1.65463 (upward trend)
1.97753 > 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 = 76 - 151 = -75

Tied Grou	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

There are 0 time periods with multiple data

A = 84
B = 0
C = 6
D = 0
E = 8
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1253
Z-Score = -2.09053
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-2.09053 < -1.65463 indicating a downward 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 = 159 - 71 = 88

Tied Grou	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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1256.67
Z-Score = 2.4542
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.4542 > 1.65463 indicating an upward 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 = 116 - 115 = 1

Tied GrouValue	Members

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1257.67
Z-Score = 0
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Mercury

Location: MW-1

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

95% Confidence Level

S Statistic = 136 - 89 = 47

Tied Grou	Value	Members
1	0.0002	4

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

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1249
Z-Score = 1.3016
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.3016| <= 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 = 98 - 123 = -25

Tied Grou	Value	Members
1	0.1	5

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

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1241
Z-Score = -0.68128
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.68128| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-3

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

95% Confidence Level

S Statistic = 63 - 190 = -127

Tied GrouValue	Members

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 25806
b = 95634
c = 1012
Group Variance = 1433.67
Z-Score = -3.32772
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-3.32772 < -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 = 151 - 73 = 78

Tied Grou	Value	Members
1	0.00749	2
2	0.02	4

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

There are 0 time periods with multiple data

A = 174
B = 0
C = 24
D = 0
E = 14
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1248
Z-Score = 2.17963
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.17963 > 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 = 196 - 35 = 161

Tied GrouValue	Members

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1257.67
Z-Score = 4.51167
Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.51167 > 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 = 93 - 72 = 21

Tied Grou	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

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 14706
b = 52326
c = 684
Group Variance = 808.333
Z-Score = 0.703452
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.703452| <= 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 = 61 - 109 = -48

Tied Grou	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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 14706
b = 52326
c = 684
Group Variance = 816
Z-Score = -1.64533
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.64533| <= 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 = 139 - 50 = 89

Tied Grou	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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 17100
b = 61560
c = 760
Group Variance = 949
Z-Score = 2.8566
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.8566 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Total Cadmium

Location: MW-3

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

95% Confidence Level

S Statistic = 90 - 209 = -119

Tied Grou	Value	Members
1	0.001	2

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 33000
b = 124200
c = 1200
Group Variance = 1832.33
Z-Score = -2.75664
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-2.75664 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-3

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

95% Confidence Level

S Statistic = 36 - 193 = -157

Tied Grou	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

There are 0 time periods with multiple data

A = 36
B = 0
C = 0
D = 0
E = 4
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1255.67
Z-Score = -4.40238
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-4.40238 < -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 = 199 - 32 = 167

Tied GrouValue	Members

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1257.67
Z-Score = 4.68086
Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.68086 > 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 = 161 - 69 = 92

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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1256.67
Z-Score = 2.56703
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.56703 > 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 = 228 - 3 = 225

Tied GrouValue	Members

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1257.67
Z-Score = 6.31634
Comparison Level at 95% confidence level = 1.65463 (upward trend)
6.31634 > 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 = 194 - 37 = 157

Tied GrouValue	Members

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1257.67
Z-Score = 4.39888
Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.39888 > 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 = 219 - 12 = 207

Tied GrouValue	Members

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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1257.67
Z-Score = 5.80877
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.80877 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chromium

Location: MW-5

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

95% Confidence Level

S Statistic = 146 - 79 = 67

Tied Grou	Value	Members
1	0.002	4

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

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1249
Z-Score = 1.86751
Comparison Level at 95% confidence level = 1.65463 (upward trend)
1.86751 > 1.65463 indicating an upward 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 = 118 - 112 = 6

Tied Grou	Value	Members
1	0.15	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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1256.67
Z-Score = 0.141046
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.141046| <= 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 = 116 - 134 = -18

Tied Grou	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

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0
a = 25806
b = 95634
c = 1012
Group Variance = 1430
Z-Score = -0.449553
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.449553| <= 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 = 95 - 135 = -40

Tied Grou	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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1256.67
Z-Score = -1.10016
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.10016| <= 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 = 90 - 140 = -50

Tied Grou	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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1256.67
Z-Score = -1.38225
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.38225| <= 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 = 215 - 6 = 209

Tied Grou	Value	Members
1	5	5

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

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1241
Z-Score = 5.90442
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.90442 > 1.65463 indicating an upward trend

APPENDIX C
LABORATORY ANALYTICAL REPORTS & FIELD INFORMATION LOGS

ANALYTICAL REPORT

June 07, 2022

Civil & Environmental Consultants - TN

Sample Delivery Group:	L1493431
Samples Received:	05/13/2022
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

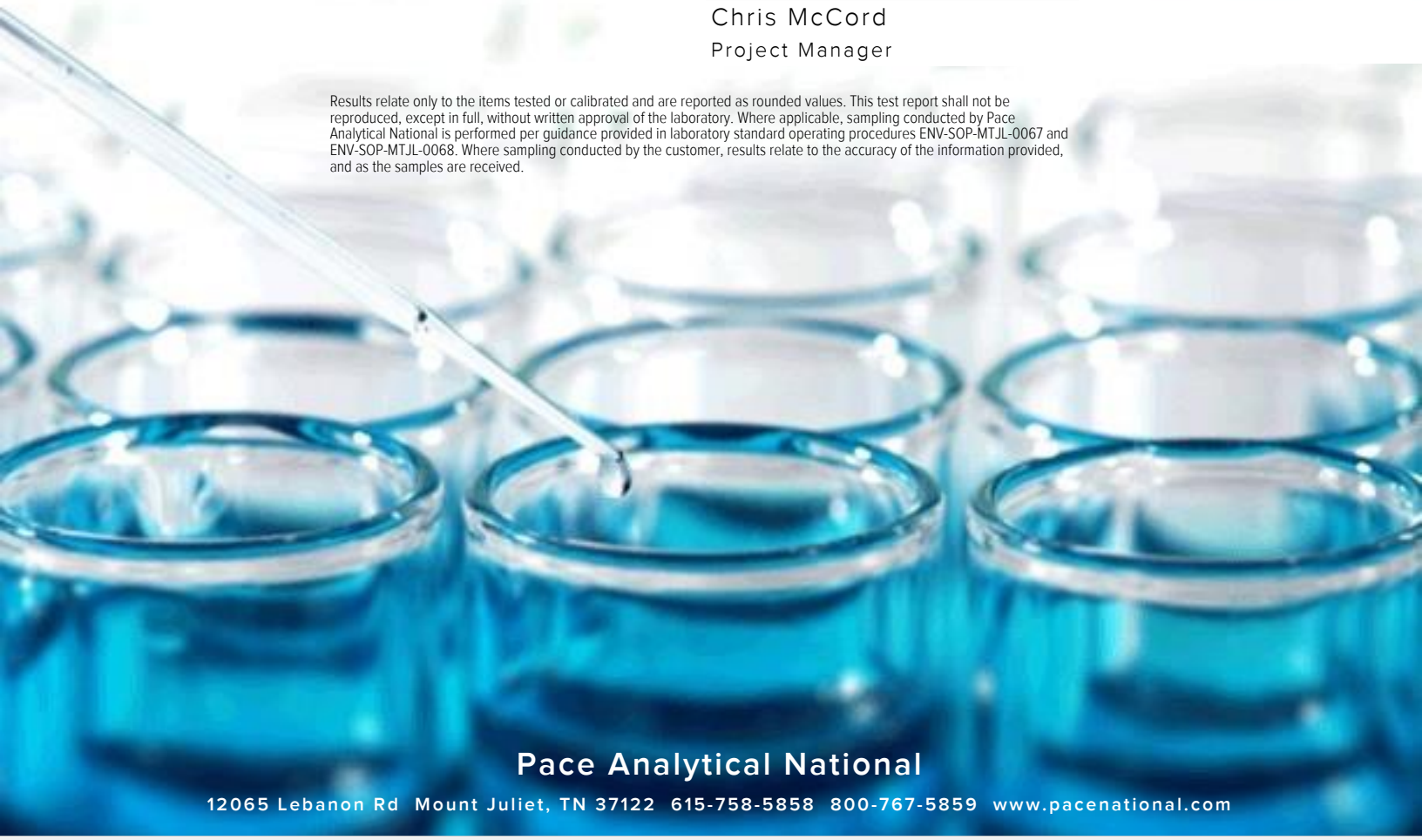


TABLE OF CONTENTS

MW-1 L1493431-01 GW

Collected by: Adrian Baugh | Collected date/time: 05/12/22 10:20 | Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1866300	1	05/23/22 15:29	05/23/22 15:29	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1868975	1	05/25/22 09:38	05/25/22 09:38	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1872662	1	06/06/22 17:12	06/06/22 17:12	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1868321	1	05/23/22 21:00	05/24/22 02:40	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1863717	1	05/13/22 23:56	05/13/22 23:56	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1864235	1	05/31/22 09:45	06/01/22 12:20	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1865754	1	05/19/22 12:58	05/22/22 18:14	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/23/22 15:29	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/25/22 17:14	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1864410	1	05/17/22 12:16	05/17/22 12:16	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1864684	1	05/17/22 12:08	05/17/22 21:01	HMH	Mt. Juliet, TN

MW-3 L1493431-02 GW

Collected by: Adrian Baugh | Collected date/time: 05/12/22 13:20 | Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1866300	1	05/23/22 15:32	05/23/22 15:32	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1868975	1	05/25/22 09:41	05/25/22 09:41	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1872662	1	06/06/22 17:14	06/06/22 17:14	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1868321	1	05/23/22 21:00	05/24/22 02:40	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1863717	1	05/14/22 00:58	05/14/22 00:58	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1864235	1	05/31/22 09:45	06/01/22 12:22	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1865754	1	05/19/22 12:58	05/22/22 18:16	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/23/22 15:32	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/25/22 17:17	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1864410	1	05/17/22 12:37	05/17/22 12:37	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1864684	1.03	05/17/22 12:08	05/17/22 21:13	HMH	Mt. Juliet, TN

MW-4 L1493431-03 GW

Collected by: Adrian Baugh | Collected date/time: 05/12/22 12:25 | Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1866300	1	05/23/22 15:35	05/23/22 15:35	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1868975	1	05/25/22 09:49	05/25/22 09:49	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1872662	1	06/06/22 17:15	06/06/22 17:15	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1868321	1	05/23/22 21:00	05/24/22 02:40	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1863717	1	05/14/22 01:13	05/14/22 01:13	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1864235	1	05/31/22 09:45	06/01/22 12:24	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1865754	1	05/19/22 12:58	05/22/22 18:19	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/23/22 15:35	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/25/22 17:21	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1864410	1	05/17/22 12:58	05/17/22 12:58	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1864684	1.03	05/17/22 12:08	05/17/22 21:25	HMH	Mt. Juliet, TN

MW-5 L1493431-04 GW

Collected by: Adrian Baugh | Collected date/time: 05/12/22 11:30 | Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1866300	1	05/23/22 15:39	05/23/22 15:39	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1868975	1	05/25/22 09:51	05/25/22 09:51	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1872662	1	06/06/22 17:21	06/06/22 17:21	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1868321	1	05/23/22 21:00	05/24/22 02:41	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1863717	1	05/14/22 01:29	05/14/22 01:29	LBR	Mt. Juliet, TN

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

MW-5 L1493431-04 GW

Collected by: Adrian Baugh | Collected date/time: 05/12/22 11:30 | Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7470A	WG1864235	1	05/31/22 09:45	06/01/22 12:30	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1865754	1	05/19/22 12:58	05/22/22 18:22	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/23/22 15:39	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/25/22 17:24	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1864410	1	05/17/22 13:19	05/17/22 13:19	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1864684	1	05/17/22 12:08	05/17/22 21:37	HMH	Mt. Juliet, TN

TMW-1 L1493431-05 GW

Collected by: Adrian Baugh | Collected date/time: 05/13/22 11:45 | Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1866300	1	05/23/22 19:24	05/23/22 19:24	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1869725	1	05/26/22 16:49	05/26/22 16:49	JAR	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1872662	1	06/06/22 17:23	06/06/22 17:23	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1868321	1	05/23/22 21:00	05/24/22 02:41	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1863717	1	05/14/22 01:59	05/14/22 01:59	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1864235	1	05/31/22 09:45	06/01/22 12:32	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1865754	1	05/19/22 12:58	05/22/22 18:25	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/23/22 19:24	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/25/22 17:34	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1864410	1	05/17/22 13:39	05/17/22 13:39	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1865277	1.01	05/18/22 13:05	05/18/22 16:41	HLA	Mt. Juliet, TN

TMW-2 L1493431-06 GW

Collected by: Adrian Baugh | Collected date/time: 05/13/22 10:55 | Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1866300	1	05/23/22 19:27	05/23/22 19:27	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1869725	1	05/26/22 16:51	05/26/22 16:51	JAR	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1872662	1	06/06/22 17:24	06/06/22 17:24	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1868321	1	05/23/22 21:00	05/24/22 02:41	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1863717	1	05/14/22 02:15	05/14/22 02:15	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1864236	1	05/31/22 09:47	06/01/22 10:44	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1865754	1	05/19/22 12:58	05/22/22 18:27	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/23/22 19:27	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/25/22 17:38	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1864410	1	05/17/22 14:00	05/17/22 14:00	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1865277	1.03	05/18/22 13:05	05/18/22 16:16	HLA	Mt. Juliet, TN

TMW-3 L1493431-07 GW

Collected by: Adrian Baugh | Collected date/time: 05/13/22 09:15 | Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1866300	1	05/23/22 19:31	05/23/22 19:31	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1869725	1	05/26/22 16:53	05/26/22 16:53	JAR	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1872662	1	06/06/22 17:26	06/06/22 17:26	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1868321	1	05/23/22 21:00	05/24/22 02:41	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1863717	1	05/14/22 02:30	05/14/22 02:30	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1864236	1	05/31/22 09:47	06/01/22 10:50	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1865754	1	05/19/22 12:58	05/22/22 18:35	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/23/22 19:31	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/25/22 17:41	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1864410	1	05/17/22 14:21	05/17/22 14:21	BMB	Mt. Juliet, TN

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

TMW-3 L1493431-07 GW

Collected by: Adrian Baugh | Collected date/time: 05/13/22 09:15 | Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
EDB / DBCP by Method 8011	WG1865277	1.06	05/18/22 13:05	05/18/22 16:53	HLA	Mt. Juliet, TN

DUPLICATE L1493431-08 GW

Collected by: Adrian Baugh | Collected date/time: 05/12/22 00:00 | Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1866300	1	05/23/22 19:34	05/23/22 19:34	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1868975	1	05/25/22 09:53	05/25/22 09:53	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1872662	1	06/06/22 17:27	06/06/22 17:27	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1868321	1	05/23/22 21:00	05/24/22 02:41	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1863717	1	05/13/22 23:25	05/13/22 23:25	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1864236	1	05/31/22 09:47	06/01/22 10:55	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1865754	1	05/19/22 12:58	05/22/22 18:38	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/23/22 19:34	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/25/22 17:45	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1866001	1	05/18/22 18:54	05/18/22 18:54	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1865277	1.02	05/18/22 13:05	05/18/22 17:05	HLA	Mt. Juliet, TN

FIELD BLANK L1493431-09 GW

Collected by: Adrian Baugh | Collected date/time: 05/12/22 13:45 | Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1866300	1	05/23/22 19:37	05/23/22 19:37	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1868975	1	05/25/22 09:55	05/25/22 09:55	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1872662	1	06/06/22 17:29	06/06/22 17:29	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1868315	1	05/24/22 12:00	05/24/22 17:47	JAR	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1863717	1	05/13/22 23:41	05/13/22 23:41	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1864236	1	05/31/22 09:47	06/01/22 10:57	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1865754	1	05/19/22 12:58	05/22/22 18:41	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/23/22 19:37	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	1	05/22/22 20:25	05/25/22 17:48	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1866001	1	05/18/22 18:35	05/18/22 18:35	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1865277	1	05/18/22 13:05	05/18/22 17:18	HLA	Mt. Juliet, TN

TRIP BLANK L1493431-10 GW

Collected by: Adrian Baugh | Collected date/time: 05/12/22 00:00 | Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1866001	1	05/18/22 17:19	05/18/22 17:19	ACG	Mt. Juliet, TN

CASE NARRATIVE

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

Chris McCord
Project Manager

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	20.5		2.50	1	05/23/2022 15:29	WG1866300

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	47.5		20.0	1	05/25/2022 09:38	WG1868975

Sample Narrative:
L1493431-01 WG1868975: 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	06/06/2022 17:12	WG1872662

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/24/2022 02:40	WG1868321

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/13/2022 23:56	WG1863717
Chloride	2.05		1.00	1	05/13/2022 23:56	WG1863717
Fluoride	ND		0.150	1	05/13/2022 23:56	WG1863717
Nitrate	ND		0.100	1	05/13/2022 23:56	WG1863717
Sulfate	ND		5.00	1	05/13/2022 23:56	WG1863717

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	0.000817		0.000200	1	06/01/2022 12:20	WG1864235

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	05/22/2022 18:14	WG1865754

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.231		0.100	1	05/23/2022 15:29	WG1866300
Antimony	ND		0.00400	1	05/23/2022 15:29	WG1866300
Arsenic	0.0195		0.00200	1	05/23/2022 15:29	WG1866300
Barium	0.0188		0.00200	1	05/25/2022 17:14	WG1866300
Beryllium	ND		0.00200	1	05/23/2022 15:29	WG1866300
Cadmium	ND		0.00100	1	05/23/2022 15:29	WG1866300
Calcium	3.52		1.00	1	05/23/2022 15:29	WG1866300
Chromium	ND		0.00200	1	05/23/2022 15:29	WG1866300
Cobalt	0.0606		0.00200	1	05/23/2022 15:29	WG1866300
Copper	ND		0.00500	1	05/23/2022 15:29	WG1866300

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	15.3		0.100	1	05/23/2022 15:29	WG1866300
Lead	ND		0.00200	1	05/23/2022 15:29	WG1866300
Magnesium	2.83		1.00	1	05/23/2022 15:29	WG1866300
Manganese	0.922		0.00500	1	05/25/2022 17:14	WG1866300
Nickel	0.00644		0.00200	1	05/23/2022 15:29	WG1866300
Potassium	ND		2.00	1	05/23/2022 15:29	WG1866300
Selenium	ND		0.00200	1	05/25/2022 17:14	WG1866300
Silver	ND		0.00200	1	05/23/2022 15:29	WG1866300
Sodium	2.70		2.00	1	05/23/2022 15:29	WG1866300
Thallium	ND		0.00200	1	05/23/2022 15:29	WG1866300
Vanadium	ND		0.00500	1	05/23/2022 15:29	WG1866300
Zinc	ND		0.0250	1	05/23/2022 15:29	WG1866300

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	05/17/2022 12:16	WG1864410
Acrylonitrile	ND		0.0100	1	05/17/2022 12:16	WG1864410
Benzene	ND		0.00100	1	05/17/2022 12:16	WG1864410
Bromochloromethane	ND		0.00100	1	05/17/2022 12:16	WG1864410
Bromodichloromethane	ND		0.00100	1	05/17/2022 12:16	WG1864410
Bromoform	ND		0.00100	1	05/17/2022 12:16	WG1864410
Bromomethane	ND		0.00500	1	05/17/2022 12:16	WG1864410
Carbon disulfide	ND		0.00100	1	05/17/2022 12:16	WG1864410
Carbon tetrachloride	ND		0.00100	1	05/17/2022 12:16	WG1864410
Chlorobenzene	ND		0.00100	1	05/17/2022 12:16	WG1864410
Chlorodibromomethane	ND		0.00100	1	05/17/2022 12:16	WG1864410
Chloroethane	ND		0.00500	1	05/17/2022 12:16	WG1864410
Chloroform	ND		0.00500	1	05/17/2022 12:16	WG1864410
Chloromethane	ND		0.00250	1	05/17/2022 12:16	WG1864410
Dibromomethane	ND		0.00100	1	05/17/2022 12:16	WG1864410
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/17/2022 12:16	WG1864410
1,2-Dibromoethane	ND		0.00100	1	05/17/2022 12:16	WG1864410
1,2-Dichlorobenzene	ND		0.00100	1	05/17/2022 12:16	WG1864410
1,4-Dichlorobenzene	ND		0.00100	1	05/17/2022 12:16	WG1864410
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/17/2022 12:16	WG1864410
1,1-Dichloroethane	ND		0.00100	1	05/17/2022 12:16	WG1864410
1,2-Dichloroethane	ND		0.00100	1	05/17/2022 12:16	WG1864410
1,1-Dichloroethene	ND		0.00100	1	05/17/2022 12:16	WG1864410
cis-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 12:16	WG1864410
trans-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 12:16	WG1864410
1,2-Dichloropropane	ND		0.00100	1	05/17/2022 12:16	WG1864410
cis-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 12:16	WG1864410
trans-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 12:16	WG1864410
Ethylbenzene	ND		0.00100	1	05/17/2022 12:16	WG1864410
2-Hexanone	ND		0.0100	1	05/17/2022 12:16	WG1864410
Iodomethane	ND		0.0100	1	05/17/2022 12:16	WG1864410
2-Butanone (MEK)	ND		0.0100	1	05/17/2022 12:16	WG1864410
Methylene Chloride	ND		0.00500	1	05/17/2022 12:16	WG1864410
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/17/2022 12:16	WG1864410
Styrene	ND		0.00100	1	05/17/2022 12:16	WG1864410
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 12:16	WG1864410
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 12:16	WG1864410
Tetrachloroethene	ND		0.00100	1	05/17/2022 12:16	WG1864410
Toluene	ND		0.00100	1	05/17/2022 12:16	WG1864410
1,1,1-Trichloroethane	ND		0.00100	1	05/17/2022 12:16	WG1864410

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	05/17/2022 12:16	WG1864410
Trichloroethene	ND	J4	0.00100	1	05/17/2022 12:16	WG1864410
Trichlorofluoromethane	ND		0.00500	1	05/17/2022 12:16	WG1864410
1,2,3-Trichloropropane	ND		0.00250	1	05/17/2022 12:16	WG1864410
Vinyl acetate	ND		0.0100	1	05/17/2022 12:16	WG1864410
Vinyl chloride	ND		0.00100	1	05/17/2022 12:16	WG1864410
Xylenes, Total	ND		0.00300	1	05/17/2022 12:16	WG1864410
(S) Toluene-d8	*108*		*80.0-120*		*05/17/2022 12:16*	WG1864410
(S) 4-Bromofluorobenzene	*100*		*77.0-126*		*05/17/2022 12:16*	WG1864410
(S) 1,2-Dichloroethane-d4	*97.2*		*70.0-130*		*05/17/2022 12:16*	WG1864410

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	05/17/2022 21:01	WG1864684
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/17/2022 21:01	WG1864684

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	54.8		2.50	1	05/23/2022 15:32	WG1866300

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	31.6		20.0	1	05/25/2022 09:41	WG1868975

Sample Narrative:

L1493431-02 WG1868975: 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	06/06/2022 17:14	WG1872662

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/24/2022 02:40	WG1868321

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/14/2022 00:58	WG1863717
Chloride	8.02		1.00	1	05/14/2022 00:58	WG1863717
Fluoride	0.253		0.150	1	05/14/2022 00:58	WG1863717
Nitrate	ND		0.100	1	05/14/2022 00:58	WG1863717
Sulfate	30.4		5.00	1	05/14/2022 00:58	WG1863717

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/01/2022 12:22	WG1864235

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	05/22/2022 18:16	WG1865754

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.183		0.100	1	05/23/2022 15:32	WG1866300
Antimony	ND		0.00400	1	05/23/2022 15:32	WG1866300
Arsenic	ND		0.00200	1	05/23/2022 15:32	WG1866300
Barium	0.0326		0.00200	1	05/25/2022 17:17	WG1866300
Beryllium	ND		0.00200	1	05/23/2022 15:32	WG1866300
Cadmium	ND		0.00100	1	05/23/2022 15:32	WG1866300
Calcium	14.0		1.00	1	05/23/2022 15:32	WG1866300
Chromium	ND		0.00200	1	05/23/2022 15:32	WG1866300
Cobalt	ND		0.00200	1	05/23/2022 15:32	WG1866300
Copper	ND		0.00500	1	05/23/2022 15:32	WG1866300

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.437		0.100	1	05/23/2022 15:32	WG1866300
Lead	ND		0.00200	1	05/23/2022 15:32	WG1866300
Magnesium	4.85		1.00	1	05/23/2022 15:32	WG1866300
Manganese	0.168		0.00500	1	05/25/2022 17:17	WG1866300
Nickel	0.00272		0.00200	1	05/23/2022 15:32	WG1866300
Potassium	3.60		2.00	1	05/23/2022 15:32	WG1866300
Selenium	ND		0.00200	1	05/25/2022 17:17	WG1866300
Silver	ND		0.00200	1	05/23/2022 15:32	WG1866300
Sodium	5.29		2.00	1	05/23/2022 15:32	WG1866300
Thallium	ND		0.00200	1	05/23/2022 15:32	WG1866300
Vanadium	ND		0.00500	1	05/23/2022 15:32	WG1866300
Zinc	ND		0.0250	1	05/23/2022 15:32	WG1866300

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	05/17/2022 12:37	WG1864410
Acrylonitrile	ND		0.0100	1	05/17/2022 12:37	WG1864410
Benzene	ND		0.00100	1	05/17/2022 12:37	WG1864410
Bromochloromethane	ND		0.00100	1	05/17/2022 12:37	WG1864410
Bromodichloromethane	ND		0.00100	1	05/17/2022 12:37	WG1864410
Bromoform	ND		0.00100	1	05/17/2022 12:37	WG1864410
Bromomethane	ND		0.00500	1	05/17/2022 12:37	WG1864410
Carbon disulfide	ND		0.00100	1	05/17/2022 12:37	WG1864410
Carbon tetrachloride	ND		0.00100	1	05/17/2022 12:37	WG1864410
Chlorobenzene	ND		0.00100	1	05/17/2022 12:37	WG1864410
Chlorodibromomethane	ND		0.00100	1	05/17/2022 12:37	WG1864410
Chloroethane	ND		0.00500	1	05/17/2022 12:37	WG1864410
Chloroform	ND		0.00500	1	05/17/2022 12:37	WG1864410
Chloromethane	ND		0.00250	1	05/17/2022 12:37	WG1864410
Dibromomethane	ND		0.00100	1	05/17/2022 12:37	WG1864410
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/17/2022 12:37	WG1864410
1,2-Dibromoethane	ND		0.00100	1	05/17/2022 12:37	WG1864410
1,2-Dichlorobenzene	ND		0.00100	1	05/17/2022 12:37	WG1864410
1,4-Dichlorobenzene	ND		0.00100	1	05/17/2022 12:37	WG1864410
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/17/2022 12:37	WG1864410
1,1-Dichloroethane	ND		0.00100	1	05/17/2022 12:37	WG1864410
1,2-Dichloroethane	ND		0.00100	1	05/17/2022 12:37	WG1864410
1,1-Dichloroethene	ND		0.00100	1	05/17/2022 12:37	WG1864410
cis-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 12:37	WG1864410
trans-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 12:37	WG1864410
1,2-Dichloropropane	ND		0.00100	1	05/17/2022 12:37	WG1864410
cis-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 12:37	WG1864410
trans-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 12:37	WG1864410
Ethylbenzene	ND		0.00100	1	05/17/2022 12:37	WG1864410
2-Hexanone	ND		0.0100	1	05/17/2022 12:37	WG1864410
Iodomethane	ND		0.0100	1	05/17/2022 12:37	WG1864410
2-Butanone (MEK)	ND		0.0100	1	05/17/2022 12:37	WG1864410
Methylene Chloride	ND		0.00500	1	05/17/2022 12:37	WG1864410
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/17/2022 12:37	WG1864410
Styrene	ND		0.00100	1	05/17/2022 12:37	WG1864410
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 12:37	WG1864410
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 12:37	WG1864410
Tetrachloroethene	ND		0.00100	1	05/17/2022 12:37	WG1864410
Toluene	ND		0.00100	1	05/17/2022 12:37	WG1864410
1,1,1-Trichloroethane	ND		0.00100	1	05/17/2022 12:37	WG1864410

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	05/17/2022 12:37	WG1864410
Trichloroethene	ND	J4	0.00100	1	05/17/2022 12:37	WG1864410
Trichlorofluoromethane	ND		0.00500	1	05/17/2022 12:37	WG1864410
1,2,3-Trichloropropane	ND		0.00250	1	05/17/2022 12:37	WG1864410
Vinyl acetate	ND		0.0100	1	05/17/2022 12:37	WG1864410
Vinyl chloride	ND		0.00100	1	05/17/2022 12:37	WG1864410
Xylenes, Total	ND		0.00300	1	05/17/2022 12:37	WG1864410
(S) Toluene-d8	*105*		*80.0-120*		*05/17/2022 12:37*	WG1864410
(S) 4-Bromofluorobenzene	*104*		*77.0-126*		*05/17/2022 12:37*	WG1864410
(S) 1,2-Dichloroethane-d4	*97.8*		*70.0-130*		*05/17/2022 12:37*	WG1864410

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	05/17/2022 21:13	WG1864684
1,2-Dibromo-3-Chloropropane	ND		0.0000206	1.03	05/17/2022 21:13	WG1864684

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	27.1		2.50	1	05/23/2022 15:35	WG1866300

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	22.2		20.0	1	05/25/2022 09:49	WG1868975

Sample Narrative:

L1493431-03 WG1868975: 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	06/06/2022 17:15	WG1872662

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/24/2022 02:40	WG1868321

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/14/2022 01:13	WG1863717
Chloride	9.90		1.00	1	05/14/2022 01:13	WG1863717
Fluoride	ND		0.150	1	05/14/2022 01:13	WG1863717
Nitrate	0.851		0.100	1	05/14/2022 01:13	WG1863717
Sulfate	ND		5.00	1	05/14/2022 01:13	WG1863717

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/01/2022 12:24	WG1864235

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	05/22/2022 18:19	WG1865754

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	05/23/2022 15:35	WG1866300
Antimony	ND		0.00400	1	05/23/2022 15:35	WG1866300
Arsenic	ND		0.00200	1	05/23/2022 15:35	WG1866300
Barium	0.00749		0.00200	1	05/25/2022 17:21	WG1866300
Beryllium	ND		0.00200	1	05/23/2022 15:35	WG1866300
Cadmium	ND		0.00100	1	05/23/2022 15:35	WG1866300
Calcium	5.70		1.00	1	05/23/2022 15:35	WG1866300
Chromium	ND		0.00200	1	05/23/2022 15:35	WG1866300
Cobalt	ND		0.00200	1	05/23/2022 15:35	WG1866300
Copper	ND		0.00500	1	05/23/2022 15:35	WG1866300

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	05/23/2022 15:35	WG1866300
Lead	ND		0.00200	1	05/23/2022 15:35	WG1866300
Magnesium	3.12		1.00	1	05/23/2022 15:35	WG1866300
Manganese	0.0141		0.00500	1	05/25/2022 17:21	WG1866300
Nickel	ND		0.00200	1	05/23/2022 15:35	WG1866300
Potassium	ND		2.00	1	05/23/2022 15:35	WG1866300
Selenium	ND		0.00200	1	05/25/2022 17:21	WG1866300
Silver	ND		0.00200	1	05/23/2022 15:35	WG1866300
Sodium	3.56		2.00	1	05/23/2022 15:35	WG1866300
Thallium	ND		0.00200	1	05/23/2022 15:35	WG1866300
Vanadium	ND		0.00500	1	05/23/2022 15:35	WG1866300
Zinc	ND		0.0250	1	05/23/2022 15:35	WG1866300

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	05/17/2022 12:58	WG1864410
Acrylonitrile	ND		0.0100	1	05/17/2022 12:58	WG1864410
Benzene	ND		0.00100	1	05/17/2022 12:58	WG1864410
Bromochloromethane	ND		0.00100	1	05/17/2022 12:58	WG1864410
Bromodichloromethane	ND		0.00100	1	05/17/2022 12:58	WG1864410
Bromoform	ND		0.00100	1	05/17/2022 12:58	WG1864410
Bromomethane	ND		0.00500	1	05/17/2022 12:58	WG1864410
Carbon disulfide	ND		0.00100	1	05/17/2022 12:58	WG1864410
Carbon tetrachloride	ND		0.00100	1	05/17/2022 12:58	WG1864410
Chlorobenzene	ND		0.00100	1	05/17/2022 12:58	WG1864410
Chlorodibromomethane	ND		0.00100	1	05/17/2022 12:58	WG1864410
Chloroethane	ND		0.00500	1	05/17/2022 12:58	WG1864410
Chloroform	ND		0.00500	1	05/17/2022 12:58	WG1864410
Chloromethane	ND		0.00250	1	05/17/2022 12:58	WG1864410
Dibromomethane	ND		0.00100	1	05/17/2022 12:58	WG1864410
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/17/2022 12:58	WG1864410
1,2-Dibromoethane	ND		0.00100	1	05/17/2022 12:58	WG1864410
1,2-Dichlorobenzene	ND		0.00100	1	05/17/2022 12:58	WG1864410
1,4-Dichlorobenzene	ND		0.00100	1	05/17/2022 12:58	WG1864410
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/17/2022 12:58	WG1864410
1,1-Dichloroethane	ND		0.00100	1	05/17/2022 12:58	WG1864410
1,2-Dichloroethane	ND		0.00100	1	05/17/2022 12:58	WG1864410
1,1-Dichloroethene	ND		0.00100	1	05/17/2022 12:58	WG1864410
cis-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 12:58	WG1864410
trans-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 12:58	WG1864410
1,2-Dichloropropane	ND		0.00100	1	05/17/2022 12:58	WG1864410
cis-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 12:58	WG1864410
trans-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 12:58	WG1864410
Ethylbenzene	ND		0.00100	1	05/17/2022 12:58	WG1864410
2-Hexanone	ND		0.0100	1	05/17/2022 12:58	WG1864410
Iodomethane	ND		0.0100	1	05/17/2022 12:58	WG1864410
2-Butanone (MEK)	ND		0.0100	1	05/17/2022 12:58	WG1864410
Methylene Chloride	ND		0.00500	1	05/17/2022 12:58	WG1864410
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/17/2022 12:58	WG1864410
Styrene	ND		0.00100	1	05/17/2022 12:58	WG1864410
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 12:58	WG1864410
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 12:58	WG1864410
Tetrachloroethene	ND		0.00100	1	05/17/2022 12:58	WG1864410
Toluene	ND		0.00100	1	05/17/2022 12:58	WG1864410
1,1,1-Trichloroethane	ND		0.00100	1	05/17/2022 12:58	WG1864410

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

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	05/17/2022 12:58	WG1864410
Trichloroethene	ND	J4	0.00100	1	05/17/2022 12:58	WG1864410
Trichlorofluoromethane	ND		0.00500	1	05/17/2022 12:58	WG1864410
1,2,3-Trichloropropane	ND		0.00250	1	05/17/2022 12:58	WG1864410
Vinyl acetate	ND		0.0100	1	05/17/2022 12:58	WG1864410
Vinyl chloride	ND		0.00100	1	05/17/2022 12:58	WG1864410
Xylenes, Total	ND		0.00300	1	05/17/2022 12:58	WG1864410
(S) Toluene-d8	*106*		*80.0-120*		*05/17/2022 12:58*	WG1864410
(S) 4-Bromofluorobenzene	*104*		*77.0-126*		*05/17/2022 12:58*	WG1864410
(S) 1,2-Dichloroethane-d4	*96.8*		*70.0-130*		*05/17/2022 12:58*	WG1864410

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	05/17/2022 21:25	WG1864684
1,2-Dibromo-3-Chloropropane	ND		0.0000206	1.03	05/17/2022 21:25	WG1864684

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	92.1		2.50	1	05/23/2022 15:39	WG1866300

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	05/25/2022 09:51	WG1868975

Sample Narrative:
L1493431-04 WG1868975: 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	06/06/2022 17:21	WG1872662

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/24/2022 02:41	WG1868321

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/14/2022 01:29	WG1863717
Chloride	76.5		1.00	1	05/14/2022 01:29	WG1863717
Fluoride	ND		0.150	1	05/14/2022 01:29	WG1863717
Nitrate	1.12		0.100	1	05/14/2022 01:29	WG1863717
Sulfate	17.3		5.00	1	05/14/2022 01:29	WG1863717

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/01/2022 12:30	WG1864235

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	05/22/2022 18:22	WG1865754

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	05/23/2022 15:39	WG1866300
Antimony	ND		0.00400	1	05/23/2022 15:39	WG1866300
Arsenic	ND		0.00200	1	05/23/2022 15:39	WG1866300
Barium	0.0547		0.00200	1	05/25/2022 17:24	WG1866300
Beryllium	ND		0.00200	1	05/23/2022 15:39	WG1866300
Cadmium	ND		0.00100	1	05/23/2022 15:39	WG1866300
Calcium	17.2		1.00	1	05/23/2022 15:39	WG1866300
Chromium	0.00625		0.00200	1	05/23/2022 15:39	WG1866300
Cobalt	ND		0.00200	1	05/23/2022 15:39	WG1866300
Copper	ND		0.00500	1	05/23/2022 15:39	WG1866300

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.447		0.100	1	05/23/2022 15:39	WG1866300
Lead	ND		0.00200	1	05/23/2022 15:39	WG1866300
Magnesium	11.9		1.00	1	05/23/2022 15:39	WG1866300
Manganese	0.263		0.00500	1	05/25/2022 17:24	WG1866300
Nickel	0.00624		0.00200	1	05/23/2022 15:39	WG1866300
Potassium	ND		2.00	1	05/23/2022 15:39	WG1866300
Selenium	ND		0.00200	1	05/25/2022 17:24	WG1866300
Silver	ND		0.00200	1	05/23/2022 15:39	WG1866300
Sodium	19.8		2.00	1	05/23/2022 15:39	WG1866300
Thallium	ND		0.00200	1	05/23/2022 15:39	WG1866300
Vanadium	ND		0.00500	1	05/23/2022 15:39	WG1866300
Zinc	ND		0.0250	1	05/23/2022 15:39	WG1866300

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	05/17/2022 13:19	WG1864410
Acrylonitrile	ND		0.0100	1	05/17/2022 13:19	WG1864410
Benzene	ND		0.00100	1	05/17/2022 13:19	WG1864410
Bromochloromethane	ND		0.00100	1	05/17/2022 13:19	WG1864410
Bromodichloromethane	ND		0.00100	1	05/17/2022 13:19	WG1864410
Bromoform	ND		0.00100	1	05/17/2022 13:19	WG1864410
Bromomethane	ND		0.00500	1	05/17/2022 13:19	WG1864410
Carbon disulfide	ND		0.00100	1	05/17/2022 13:19	WG1864410
Carbon tetrachloride	ND		0.00100	1	05/17/2022 13:19	WG1864410
Chlorobenzene	ND		0.00100	1	05/17/2022 13:19	WG1864410
Chlorodibromomethane	ND		0.00100	1	05/17/2022 13:19	WG1864410
Chloroethane	ND		0.00500	1	05/17/2022 13:19	WG1864410
Chloroform	ND		0.00500	1	05/17/2022 13:19	WG1864410
Chloromethane	ND		0.00250	1	05/17/2022 13:19	WG1864410
Dibromomethane	ND		0.00100	1	05/17/2022 13:19	WG1864410
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/17/2022 13:19	WG1864410
1,2-Dibromoethane	ND		0.00100	1	05/17/2022 13:19	WG1864410
1,2-Dichlorobenzene	ND		0.00100	1	05/17/2022 13:19	WG1864410
1,4-Dichlorobenzene	ND		0.00100	1	05/17/2022 13:19	WG1864410
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/17/2022 13:19	WG1864410
1,1-Dichloroethane	ND		0.00100	1	05/17/2022 13:19	WG1864410
1,2-Dichloroethane	ND		0.00100	1	05/17/2022 13:19	WG1864410
1,1-Dichloroethene	ND		0.00100	1	05/17/2022 13:19	WG1864410
cis-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 13:19	WG1864410
trans-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 13:19	WG1864410
1,2-Dichloropropane	ND		0.00100	1	05/17/2022 13:19	WG1864410
cis-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 13:19	WG1864410
trans-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 13:19	WG1864410
Ethylbenzene	ND		0.00100	1	05/17/2022 13:19	WG1864410
2-Hexanone	ND		0.0100	1	05/17/2022 13:19	WG1864410
Iodomethane	ND		0.0100	1	05/17/2022 13:19	WG1864410
2-Butanone (MEK)	ND		0.0100	1	05/17/2022 13:19	WG1864410
Methylene Chloride	ND		0.00500	1	05/17/2022 13:19	WG1864410
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/17/2022 13:19	WG1864410
Styrene	ND		0.00100	1	05/17/2022 13:19	WG1864410
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 13:19	WG1864410
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 13:19	WG1864410
Tetrachloroethene	ND		0.00100	1	05/17/2022 13:19	WG1864410
Toluene	ND		0.00100	1	05/17/2022 13:19	WG1864410
1,1,1-Trichloroethane	ND		0.00100	1	05/17/2022 13:19	WG1864410

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	05/17/2022 13:19	WG1864410
Trichloroethene	ND	J4	0.00100	1	05/17/2022 13:19	WG1864410
Trichlorofluoromethane	ND		0.00500	1	05/17/2022 13:19	WG1864410
1,2,3-Trichloropropane	ND		0.00250	1	05/17/2022 13:19	WG1864410
Vinyl acetate	ND		0.0100	1	05/17/2022 13:19	WG1864410
Vinyl chloride	ND		0.00100	1	05/17/2022 13:19	WG1864410
Xylenes, Total	ND		0.00300	1	05/17/2022 13:19	WG1864410
(S) Toluene-d8	*106*		*80.0-120*		*05/17/2022 13:19*	WG1864410
(S) 4-Bromofluorobenzene	*97.7*		*77.0-126*		*05/17/2022 13:19*	WG1864410
(S) 1,2-Dichloroethane-d4	*96.4*		*70.0-130*		*05/17/2022 13:19*	WG1864410

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	05/17/2022 21:37	WG1864684
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/17/2022 21:37	WG1864684

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

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	60.6		2.50	1	05/23/2022 19:24	WG1866300

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	21.6		20.0	1	05/26/2022 16:49	WG1869725

Sample Narrative:

L1493431-05 WG1869725: 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	06/06/2022 17:23	WG1872662

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/24/2022 02:41	WG1868321

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/14/2022 01:59	WG1863717
Chloride	38.3		1.00	1	05/14/2022 01:59	WG1863717
Fluoride	ND		0.150	1	05/14/2022 01:59	WG1863717
Nitrate	1.57		0.100	1	05/14/2022 01:59	WG1863717
Sulfate	ND		5.00	1	05/14/2022 01:59	WG1863717

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/01/2022 12:32	WG1864235

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	05/22/2022 18:25	WG1865754

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	05/23/2022 19:24	WG1866300
Antimony	ND		0.00400	1	05/23/2022 19:24	WG1866300
Arsenic	ND		0.00200	1	05/23/2022 19:24	WG1866300
Barium	0.0125		0.00200	1	05/25/2022 17:34	WG1866300
Beryllium	ND		0.00200	1	05/23/2022 19:24	WG1866300
Cadmium	ND		0.00100	1	05/23/2022 19:24	WG1866300
Calcium	16.6		1.00	1	05/23/2022 19:24	WG1866300
Chromium	ND		0.00200	1	05/23/2022 19:24	WG1866300
Cobalt	ND		0.00200	1	05/23/2022 19:24	WG1866300
Copper	ND		0.00500	1	05/23/2022 19:24	WG1866300

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	05/23/2022 19:24	WG1866300
Lead	ND		0.00200	1	05/23/2022 19:24	WG1866300
Magnesium	4.64		1.00	1	05/23/2022 19:24	WG1866300
Manganese	0.00567		0.00500	1	05/25/2022 17:34	WG1866300
Nickel	ND		0.00200	1	05/23/2022 19:24	WG1866300
Potassium	ND		2.00	1	05/23/2022 19:24	WG1866300
Selenium	ND		0.00200	1	05/25/2022 17:34	WG1866300
Silver	ND		0.00200	1	05/23/2022 19:24	WG1866300
Sodium	4.41		2.00	1	05/23/2022 19:24	WG1866300
Thallium	ND		0.00200	1	05/23/2022 19:24	WG1866300
Vanadium	ND		0.00500	1	05/23/2022 19:24	WG1866300
Zinc	ND		0.0250	1	05/23/2022 19:24	WG1866300

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	05/17/2022 13:39	WG1864410
Acrylonitrile	ND		0.0100	1	05/17/2022 13:39	WG1864410
Benzene	ND		0.00100	1	05/17/2022 13:39	WG1864410
Bromochloromethane	ND		0.00100	1	05/17/2022 13:39	WG1864410
Bromodichloromethane	ND		0.00100	1	05/17/2022 13:39	WG1864410
Bromoform	ND		0.00100	1	05/17/2022 13:39	WG1864410
Bromomethane	ND		0.00500	1	05/17/2022 13:39	WG1864410
Carbon disulfide	ND		0.00100	1	05/17/2022 13:39	WG1864410
Carbon tetrachloride	ND		0.00100	1	05/17/2022 13:39	WG1864410
Chlorobenzene	ND		0.00100	1	05/17/2022 13:39	WG1864410
Chlorodibromomethane	ND		0.00100	1	05/17/2022 13:39	WG1864410
Chloroethane	ND		0.00500	1	05/17/2022 13:39	WG1864410
Chloroform	ND		0.00500	1	05/17/2022 13:39	WG1864410
Chloromethane	ND		0.00250	1	05/17/2022 13:39	WG1864410
Dibromomethane	ND		0.00100	1	05/17/2022 13:39	WG1864410
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/17/2022 13:39	WG1864410
1,2-Dibromoethane	ND		0.00100	1	05/17/2022 13:39	WG1864410
1,2-Dichlorobenzene	ND		0.00100	1	05/17/2022 13:39	WG1864410
1,4-Dichlorobenzene	ND		0.00100	1	05/17/2022 13:39	WG1864410
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/17/2022 13:39	WG1864410
1,1-Dichloroethane	ND		0.00100	1	05/17/2022 13:39	WG1864410
1,2-Dichloroethane	ND		0.00100	1	05/17/2022 13:39	WG1864410
1,1-Dichloroethene	ND		0.00100	1	05/17/2022 13:39	WG1864410
cis-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 13:39	WG1864410
trans-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 13:39	WG1864410
1,2-Dichloropropane	ND		0.00100	1	05/17/2022 13:39	WG1864410
cis-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 13:39	WG1864410
trans-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 13:39	WG1864410
Ethylbenzene	ND		0.00100	1	05/17/2022 13:39	WG1864410
2-Hexanone	ND		0.0100	1	05/17/2022 13:39	WG1864410
Iodomethane	ND		0.0100	1	05/17/2022 13:39	WG1864410
2-Butanone (MEK)	ND		0.0100	1	05/17/2022 13:39	WG1864410
Methylene Chloride	ND		0.00500	1	05/17/2022 13:39	WG1864410
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/17/2022 13:39	WG1864410
Styrene	ND		0.00100	1	05/17/2022 13:39	WG1864410
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 13:39	WG1864410
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 13:39	WG1864410
Tetrachloroethene	ND		0.00100	1	05/17/2022 13:39	WG1864410
Toluene	ND		0.00100	1	05/17/2022 13:39	WG1864410
1,1,1-Trichloroethane	ND		0.00100	1	05/17/2022 13:39	WG1864410

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	05/17/2022 13:39	WG1864410
Trichloroethene	ND	J4	0.00100	1	05/17/2022 13:39	WG1864410
Trichlorofluoromethane	ND		0.00500	1	05/17/2022 13:39	WG1864410
1,2,3-Trichloropropane	ND		0.00250	1	05/17/2022 13:39	WG1864410
Vinyl acetate	ND		0.0100	1	05/17/2022 13:39	WG1864410
Vinyl chloride	ND		0.00100	1	05/17/2022 13:39	WG1864410
Xylenes, Total	ND		0.00300	1	05/17/2022 13:39	WG1864410
(S) Toluene-d8	*108*		*80.0-120*		*05/17/2022 13:39*	WG1864410
(S) 4-Bromofluorobenzene	*99.2*		*77.0-126*		*05/17/2022 13:39*	WG1864410
(S) 1,2-Dichloroethane-d4	*98.7*		*70.0-130*		*05/17/2022 13:39*	WG1864410

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000202	1.01	05/18/2022 16:41	WG1865277
1,2-Dibromo-3-Chloropropane	ND		0.0000202	1.01	05/18/2022 16:41	WG1865277

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	54.0		2.50	1	05/23/2022 19:27	WG1866300

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	23.7		20.0	1	05/26/2022 16:51	WG1869725

Sample Narrative:
L1493431-06 WG1869725: 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	06/06/2022 17:24	WG1872662

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/24/2022 02:41	WG1868321

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/14/2022 02:15	WG1863717
Chloride	37.7		1.00	1	05/14/2022 02:15	WG1863717
Fluoride	ND		0.150	1	05/14/2022 02:15	WG1863717
Nitrate	0.819		0.100	1	05/14/2022 02:15	WG1863717
Sulfate	ND		5.00	1	05/14/2022 02:15	WG1863717

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/01/2022 10:44	WG1864236

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	05/22/2022 18:27	WG1865754

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.102		0.100	1	05/23/2022 19:27	WG1866300
Antimony	ND		0.00400	1	05/23/2022 19:27	WG1866300
Arsenic	ND		0.00200	1	05/23/2022 19:27	WG1866300
Barium	0.0266		0.00200	1	05/25/2022 17:38	WG1866300
Beryllium	ND		0.00200	1	05/23/2022 19:27	WG1866300
Cadmium	ND		0.00100	1	05/23/2022 19:27	WG1866300
Calcium	13.6		1.00	1	05/23/2022 19:27	WG1866300
Chromium	ND		0.00200	1	05/23/2022 19:27	WG1866300
Cobalt	ND		0.00200	1	05/23/2022 19:27	WG1866300
Copper	ND		0.00500	1	05/23/2022 19:27	WG1866300

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	05/23/2022 19:27	WG1866300
Lead	ND		0.00200	1	05/23/2022 19:27	WG1866300
Magnesium	4.89		1.00	1	05/23/2022 19:27	WG1866300
Manganese	ND		0.00500	1	05/25/2022 17:38	WG1866300
Nickel	ND		0.00200	1	05/23/2022 19:27	WG1866300
Potassium	ND		2.00	1	05/23/2022 19:27	WG1866300
Selenium	ND		0.00200	1	05/25/2022 17:38	WG1866300
Silver	ND		0.00200	1	05/23/2022 19:27	WG1866300
Sodium	5.29		2.00	1	05/23/2022 19:27	WG1866300
Thallium	ND		0.00200	1	05/23/2022 19:27	WG1866300
Vanadium	ND		0.00500	1	05/23/2022 19:27	WG1866300
Zinc	ND		0.0250	1	05/23/2022 19:27	WG1866300

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	05/17/2022 14:00	WG1864410
Acrylonitrile	ND		0.0100	1	05/17/2022 14:00	WG1864410
Benzene	ND		0.00100	1	05/17/2022 14:00	WG1864410
Bromochloromethane	ND		0.00100	1	05/17/2022 14:00	WG1864410
Bromodichloromethane	ND		0.00100	1	05/17/2022 14:00	WG1864410
Bromoform	ND		0.00100	1	05/17/2022 14:00	WG1864410
Bromomethane	ND		0.00500	1	05/17/2022 14:00	WG1864410
Carbon disulfide	ND		0.00100	1	05/17/2022 14:00	WG1864410
Carbon tetrachloride	ND		0.00100	1	05/17/2022 14:00	WG1864410
Chlorobenzene	ND		0.00100	1	05/17/2022 14:00	WG1864410
Chlorodibromomethane	ND		0.00100	1	05/17/2022 14:00	WG1864410
Chloroethane	ND		0.00500	1	05/17/2022 14:00	WG1864410
Chloroform	ND		0.00500	1	05/17/2022 14:00	WG1864410
Chloromethane	ND		0.00250	1	05/17/2022 14:00	WG1864410
Dibromomethane	ND		0.00100	1	05/17/2022 14:00	WG1864410
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/17/2022 14:00	WG1864410
1,2-Dibromoethane	ND		0.00100	1	05/17/2022 14:00	WG1864410
1,2-Dichlorobenzene	ND		0.00100	1	05/17/2022 14:00	WG1864410
1,4-Dichlorobenzene	ND		0.00100	1	05/17/2022 14:00	WG1864410
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/17/2022 14:00	WG1864410
1,1-Dichloroethane	ND		0.00100	1	05/17/2022 14:00	WG1864410
1,2-Dichloroethane	ND		0.00100	1	05/17/2022 14:00	WG1864410
1,1-Dichloroethene	ND		0.00100	1	05/17/2022 14:00	WG1864410
cis-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 14:00	WG1864410
trans-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 14:00	WG1864410
1,2-Dichloropropane	ND		0.00100	1	05/17/2022 14:00	WG1864410
cis-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 14:00	WG1864410
trans-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 14:00	WG1864410
Ethylbenzene	ND		0.00100	1	05/17/2022 14:00	WG1864410
2-Hexanone	ND		0.0100	1	05/17/2022 14:00	WG1864410
Iodomethane	ND		0.0100	1	05/17/2022 14:00	WG1864410
2-Butanone (MEK)	ND		0.0100	1	05/17/2022 14:00	WG1864410
Methylene Chloride	ND		0.00500	1	05/17/2022 14:00	WG1864410
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/17/2022 14:00	WG1864410
Styrene	ND		0.00100	1	05/17/2022 14:00	WG1864410
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 14:00	WG1864410
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 14:00	WG1864410
Tetrachloroethene	ND		0.00100	1	05/17/2022 14:00	WG1864410
Toluene	ND		0.00100	1	05/17/2022 14:00	WG1864410
1,1,1-Trichloroethane	ND		0.00100	1	05/17/2022 14:00	WG1864410

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	05/17/2022 14:00	WG1864410
Trichloroethene	ND	J4	0.00100	1	05/17/2022 14:00	WG1864410
Trichlorofluoromethane	ND		0.00500	1	05/17/2022 14:00	WG1864410
1,2,3-Trichloropropane	ND		0.00250	1	05/17/2022 14:00	WG1864410
Vinyl acetate	ND		0.0100	1	05/17/2022 14:00	WG1864410
Vinyl chloride	ND		0.00100	1	05/17/2022 14:00	WG1864410
Xylenes, Total	ND		0.00300	1	05/17/2022 14:00	WG1864410
(S) Toluene-d8	*104*		*80.0-120*		*05/17/2022 14:00*	WG1864410
(S) 4-Bromofluorobenzene	*103*		*77.0-126*		*05/17/2022 14:00*	WG1864410
(S) 1,2-Dichloroethane-d4	*98.3*		*70.0-130*		*05/17/2022 14:00*	WG1864410

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	05/18/2022 16:16	WG1865277
1,2-Dibromo-3-Chloropropane	ND		0.0000206	1.03	05/18/2022 16:16	WG1865277

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	88.2		2.50	1	05/23/2022 19:31	WG1866300

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	20.7		20.0	1	05/26/2022 16:53	WG1869725

Sample Narrative:
L1493431-07 WG1869725: 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	06/06/2022 17:26	WG1872662

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/24/2022 02:41	WG1868321

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/14/2022 02:30	WG1863717
Chloride	67.8		1.00	1	05/14/2022 02:30	WG1863717
Fluoride	ND		0.150	1	05/14/2022 02:30	WG1863717
Nitrate	7.31		0.100	1	05/14/2022 02:30	WG1863717
Sulfate	ND		5.00	1	05/14/2022 02:30	WG1863717

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/01/2022 10:50	WG1864236

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	05/22/2022 18:35	WG1865754

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	05/23/2022 19:31	WG1866300
Antimony	ND		0.00400	1	05/23/2022 19:31	WG1866300
Arsenic	ND		0.00200	1	05/23/2022 19:31	WG1866300
Barium	0.0476		0.00200	1	05/25/2022 17:41	WG1866300
Beryllium	ND		0.00200	1	05/23/2022 19:31	WG1866300
Cadmium	ND		0.00100	1	05/23/2022 19:31	WG1866300
Calcium	22.7		1.00	1	05/23/2022 19:31	WG1866300
Chromium	ND		0.00200	1	05/23/2022 19:31	WG1866300
Cobalt	ND		0.00200	1	05/23/2022 19:31	WG1866300
Copper	ND		0.00500	1	05/23/2022 19:31	WG1866300

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.173		0.100	1	05/23/2022 19:31	WG1866300
Lead	ND		0.00200	1	05/23/2022 19:31	WG1866300
Magnesium	7.64		1.00	1	05/23/2022 19:31	WG1866300
Manganese	0.00905		0.00500	1	05/25/2022 17:41	WG1866300
Nickel	ND		0.00200	1	05/23/2022 19:31	WG1866300
Potassium	2.11		2.00	1	05/23/2022 19:31	WG1866300
Selenium	ND		0.00200	1	05/25/2022 17:41	WG1866300
Silver	ND		0.00200	1	05/23/2022 19:31	WG1866300
Sodium	15.8		2.00	1	05/23/2022 19:31	WG1866300
Thallium	ND		0.00200	1	05/23/2022 19:31	WG1866300
Vanadium	ND		0.00500	1	05/23/2022 19:31	WG1866300
Zinc	ND		0.0250	1	05/23/2022 19:31	WG1866300

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	05/17/2022 14:21	WG1864410
Acrylonitrile	ND		0.0100	1	05/17/2022 14:21	WG1864410
Benzene	ND		0.00100	1	05/17/2022 14:21	WG1864410
Bromochloromethane	ND		0.00100	1	05/17/2022 14:21	WG1864410
Bromodichloromethane	ND		0.00100	1	05/17/2022 14:21	WG1864410
Bromoform	ND		0.00100	1	05/17/2022 14:21	WG1864410
Bromomethane	ND		0.00500	1	05/17/2022 14:21	WG1864410
Carbon disulfide	ND		0.00100	1	05/17/2022 14:21	WG1864410
Carbon tetrachloride	ND		0.00100	1	05/17/2022 14:21	WG1864410
Chlorobenzene	ND		0.00100	1	05/17/2022 14:21	WG1864410
Chlorodibromomethane	ND		0.00100	1	05/17/2022 14:21	WG1864410
Chloroethane	ND		0.00500	1	05/17/2022 14:21	WG1864410
Chloroform	ND		0.00500	1	05/17/2022 14:21	WG1864410
Chloromethane	ND		0.00250	1	05/17/2022 14:21	WG1864410
Dibromomethane	ND		0.00100	1	05/17/2022 14:21	WG1864410
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/17/2022 14:21	WG1864410
1,2-Dibromoethane	ND		0.00100	1	05/17/2022 14:21	WG1864410
1,2-Dichlorobenzene	ND		0.00100	1	05/17/2022 14:21	WG1864410
1,4-Dichlorobenzene	ND		0.00100	1	05/17/2022 14:21	WG1864410
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/17/2022 14:21	WG1864410
1,1-Dichloroethane	ND		0.00100	1	05/17/2022 14:21	WG1864410
1,2-Dichloroethane	ND		0.00100	1	05/17/2022 14:21	WG1864410
1,1-Dichloroethene	ND		0.00100	1	05/17/2022 14:21	WG1864410
cis-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 14:21	WG1864410
trans-1,2-Dichloroethene	ND		0.00100	1	05/17/2022 14:21	WG1864410
1,2-Dichloropropane	ND		0.00100	1	05/17/2022 14:21	WG1864410
cis-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 14:21	WG1864410
trans-1,3-Dichloropropene	ND		0.00100	1	05/17/2022 14:21	WG1864410
Ethylbenzene	ND		0.00100	1	05/17/2022 14:21	WG1864410
2-Hexanone	ND		0.0100	1	05/17/2022 14:21	WG1864410
Iodomethane	ND		0.0100	1	05/17/2022 14:21	WG1864410
2-Butanone (MEK)	ND		0.0100	1	05/17/2022 14:21	WG1864410
Methylene Chloride	ND		0.00500	1	05/17/2022 14:21	WG1864410
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/17/2022 14:21	WG1864410
Styrene	ND		0.00100	1	05/17/2022 14:21	WG1864410
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 14:21	WG1864410
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/17/2022 14:21	WG1864410
Tetrachloroethene	ND		0.00100	1	05/17/2022 14:21	WG1864410
Toluene	ND		0.00100	1	05/17/2022 14:21	WG1864410
1,1,1-Trichloroethane	ND		0.00100	1	05/17/2022 14:21	WG1864410

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	05/17/2022 14:21	WG1864410
Trichloroethene	ND	J4	0.00100	1	05/17/2022 14:21	WG1864410
Trichlorofluoromethane	ND		0.00500	1	05/17/2022 14:21	WG1864410
1,2,3-Trichloropropane	ND		0.00250	1	05/17/2022 14:21	WG1864410
Vinyl acetate	ND		0.0100	1	05/17/2022 14:21	WG1864410
Vinyl chloride	ND		0.00100	1	05/17/2022 14:21	WG1864410
Xylenes, Total	ND		0.00300	1	05/17/2022 14:21	WG1864410
(S) Toluene-d8	*107*		*80.0-120*		*05/17/2022 14:21*	WG1864410
(S) 4-Bromofluorobenzene	*102*		*77.0-126*		*05/17/2022 14:21*	WG1864410
(S) 1,2-Dichloroethane-d4	*101*		*70.0-130*		*05/17/2022 14:21*	WG1864410

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	05/18/2022 16:53	WG1865277
1,2-Dibromo-3-Chloropropane	ND		0.0000212	1.06	05/18/2022 16:53	WG1865277

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	56.1		2.50	1	05/23/2022 19:34	WG1866300

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	31.5		20.0	1	05/25/2022 09:53	WG1868975

Sample Narrative:
L1493431-08 WG1868975: 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	06/06/2022 17:27	WG1872662

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/24/2022 02:41	WG1868321

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/13/2022 23:25	WG1863717
Chloride	8.04		1.00	1	05/13/2022 23:25	WG1863717
Fluoride	0.253		0.150	1	05/13/2022 23:25	WG1863717
Nitrate	ND		0.100	1	05/13/2022 23:25	WG1863717
Sulfate	30.5		5.00	1	05/13/2022 23:25	WG1863717

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/01/2022 10:55	WG1864236

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	05/22/2022 18:38	WG1865754

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.190		0.100	1	05/23/2022 19:34	WG1866300
Antimony	ND		0.00400	1	05/23/2022 19:34	WG1866300
Arsenic	ND		0.00200	1	05/23/2022 19:34	WG1866300
Barium	0.0349		0.00200	1	05/25/2022 17:45	WG1866300
Beryllium	ND		0.00200	1	05/23/2022 19:34	WG1866300
Cadmium	ND		0.00100	1	05/23/2022 19:34	WG1866300
Calcium	14.4		1.00	1	05/23/2022 19:34	WG1866300
Chromium	ND		0.00200	1	05/23/2022 19:34	WG1866300
Cobalt	ND		0.00200	1	05/23/2022 19:34	WG1866300
Copper	ND		0.00500	1	05/23/2022 19:34	WG1866300

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.422		0.100	1	05/23/2022 19:34	WG1866300
Lead	ND		0.00200	1	05/23/2022 19:34	WG1866300
Magnesium	4.87		1.00	1	05/23/2022 19:34	WG1866300
Manganese	0.166		0.00500	1	05/25/2022 17:45	WG1866300
Nickel	0.00280		0.00200	1	05/23/2022 19:34	WG1866300
Potassium	3.64		2.00	1	05/23/2022 19:34	WG1866300
Selenium	ND		0.00200	1	05/25/2022 17:45	WG1866300
Silver	ND		0.00200	1	05/23/2022 19:34	WG1866300
Sodium	5.37		2.00	1	05/23/2022 19:34	WG1866300
Thallium	ND		0.00200	1	05/23/2022 19:34	WG1866300
Vanadium	ND		0.00500	1	05/23/2022 19:34	WG1866300
Zinc	ND		0.0250	1	05/23/2022 19:34	WG1866300

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND	J3 J4	0.0500	1	05/18/2022 18:54	WG1866001
Acrylonitrile	ND	J3	0.0100	1	05/18/2022 18:54	WG1866001
Benzene	ND		0.00100	1	05/18/2022 18:54	WG1866001
Bromochloromethane	ND		0.00100	1	05/18/2022 18:54	WG1866001
Bromodichloromethane	ND		0.00100	1	05/18/2022 18:54	WG1866001
Bromoform	ND		0.00100	1	05/18/2022 18:54	WG1866001
Bromomethane	ND		0.00500	1	05/18/2022 18:54	WG1866001
Carbon disulfide	ND		0.00100	1	05/18/2022 18:54	WG1866001
Carbon tetrachloride	ND		0.00100	1	05/18/2022 18:54	WG1866001
Chlorobenzene	ND		0.00100	1	05/18/2022 18:54	WG1866001
Chlorodibromomethane	ND		0.00100	1	05/18/2022 18:54	WG1866001
Chloroethane	ND		0.00500	1	05/18/2022 18:54	WG1866001
Chloroform	ND		0.00500	1	05/18/2022 18:54	WG1866001
Chloromethane	ND		0.00250	1	05/18/2022 18:54	WG1866001
Dibromomethane	ND		0.00100	1	05/18/2022 18:54	WG1866001
1,2-Dibromo-3-Chloropropane	ND	J3	0.00500	1	05/18/2022 18:54	WG1866001
1,2-Dibromoethane	ND		0.00100	1	05/18/2022 18:54	WG1866001
1,2-Dichlorobenzene	ND		0.00100	1	05/18/2022 18:54	WG1866001
1,4-Dichlorobenzene	ND		0.00100	1	05/18/2022 18:54	WG1866001
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/18/2022 18:54	WG1866001
1,1-Dichloroethane	ND		0.00100	1	05/18/2022 18:54	WG1866001
1,2-Dichloroethane	ND		0.00100	1	05/18/2022 18:54	WG1866001
1,1-Dichloroethene	ND		0.00100	1	05/18/2022 18:54	WG1866001
cis-1,2-Dichloroethene	ND		0.00100	1	05/18/2022 18:54	WG1866001
trans-1,2-Dichloroethene	ND		0.00100	1	05/18/2022 18:54	WG1866001
1,2-Dichloropropane	ND		0.00100	1	05/18/2022 18:54	WG1866001
cis-1,3-Dichloropropene	ND		0.00100	1	05/18/2022 18:54	WG1866001
trans-1,3-Dichloropropene	ND		0.00100	1	05/18/2022 18:54	WG1866001
Ethylbenzene	ND		0.00100	1	05/18/2022 18:54	WG1866001
2-Hexanone	ND		0.0100	1	05/18/2022 18:54	WG1866001
Iodomethane	ND		0.0100	1	05/18/2022 18:54	WG1866001
2-Butanone (MEK)	ND	J3	0.0100	1	05/18/2022 18:54	WG1866001
Methylene Chloride	ND	J4	0.00500	1	05/18/2022 18:54	WG1866001
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/18/2022 18:54	WG1866001
Styrene	ND		0.00100	1	05/18/2022 18:54	WG1866001
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/18/2022 18:54	WG1866001
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/18/2022 18:54	WG1866001
Tetrachloroethene	ND		0.00100	1	05/18/2022 18:54	WG1866001
Toluene	ND		0.00100	1	05/18/2022 18:54	WG1866001
1,1,1-Trichloroethane	ND		0.00100	1	05/18/2022 18:54	WG1866001

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	05/18/2022 18:54	WG1866001
Trichloroethene	ND		0.00100	1	05/18/2022 18:54	WG1866001
Trichlorofluoromethane	ND		0.00500	1	05/18/2022 18:54	WG1866001
1,2,3-Trichloropropane	ND		0.00250	1	05/18/2022 18:54	WG1866001
Vinyl acetate	ND	J3	0.0100	1	05/18/2022 18:54	WG1866001
Vinyl chloride	ND		0.00100	1	05/18/2022 18:54	WG1866001
Xylenes, Total	ND		0.00300	1	05/18/2022 18:54	WG1866001
(S) Toluene-d8	*104*		*80.0-120*		*05/18/2022 18:54*	WG1866001
(S) 4-Bromofluorobenzene	*106*		*77.0-126*		*05/18/2022 18:54*	WG1866001
(S) 1,2-Dichloroethane-d4	*111*		*70.0-130*		*05/18/2022 18:54*	WG1866001

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	05/18/2022 17:05	WG1865277
1,2-Dibromo-3-Chloropropane	ND		0.0000204	1.02	05/18/2022 17:05	WG1865277

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	ND	J	2.50	1	05/23/2022 19:37	WG1866300

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	05/25/2022 09:55	WG1868975

Sample Narrative:

L1493431-09 WG1868975: 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	06/06/2022 17:29	WG1872662

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	05/24/2022 17:47	WG1868315

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/13/2022 23:41	WG1863717
Chloride	ND		1.00	1	05/13/2022 23:41	WG1863717
Fluoride	ND		0.150	1	05/13/2022 23:41	WG1863717
Nitrate	ND		0.100	1	05/13/2022 23:41	WG1863717
Sulfate	ND		5.00	1	05/13/2022 23:41	WG1863717

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	06/01/2022 10:57	WG1864236

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	05/22/2022 18:41	WG1865754

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	05/23/2022 19:37	WG1866300
Antimony	ND		0.00400	1	05/23/2022 19:37	WG1866300
Arsenic	ND		0.00200	1	05/23/2022 19:37	WG1866300
Barium	ND		0.00200	1	05/25/2022 17:48	WG1866300
Beryllium	ND		0.00200	1	05/23/2022 19:37	WG1866300
Cadmium	ND		0.00100	1	05/23/2022 19:37	WG1866300
Calcium	ND		1.00	1	05/23/2022 19:37	WG1866300
Chromium	ND		0.00200	1	05/23/2022 19:37	WG1866300
Cobalt	ND		0.00200	1	05/23/2022 19:37	WG1866300
Copper	ND		0.00500	1	05/23/2022 19:37	WG1866300

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	05/23/2022 19:37	WG1866300
Lead	ND		0.00200	1	05/23/2022 19:37	WG1866300
Magnesium	ND		1.00	1	05/23/2022 19:37	WG1866300
Manganese	ND		0.00500	1	05/25/2022 17:48	WG1866300
Nickel	ND		0.00200	1	05/23/2022 19:37	WG1866300
Potassium	ND		2.00	1	05/23/2022 19:37	WG1866300
Selenium	ND		0.00200	1	05/25/2022 17:48	WG1866300
Silver	ND		0.00200	1	05/23/2022 19:37	WG1866300
Sodium	ND		2.00	1	05/23/2022 19:37	WG1866300
Thallium	ND		0.00200	1	05/23/2022 19:37	WG1866300
Vanadium	ND		0.00500	1	05/23/2022 19:37	WG1866300
Zinc	ND		0.0250	1	05/23/2022 19:37	WG1866300

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND	J3 J4	0.0500	1	05/18/2022 18:35	WG1866001
Acrylonitrile	ND	J3	0.0100	1	05/18/2022 18:35	WG1866001
Benzene	ND		0.00100	1	05/18/2022 18:35	WG1866001
Bromochloromethane	ND		0.00100	1	05/18/2022 18:35	WG1866001
Bromodichloromethane	ND		0.00100	1	05/18/2022 18:35	WG1866001
Bromoform	ND		0.00100	1	05/18/2022 18:35	WG1866001
Bromomethane	ND		0.00500	1	05/18/2022 18:35	WG1866001
Carbon disulfide	ND		0.00100	1	05/18/2022 18:35	WG1866001
Carbon tetrachloride	ND		0.00100	1	05/18/2022 18:35	WG1866001
Chlorobenzene	ND		0.00100	1	05/18/2022 18:35	WG1866001
Chlorodibromomethane	ND		0.00100	1	05/18/2022 18:35	WG1866001
Chloroethane	ND		0.00500	1	05/18/2022 18:35	WG1866001
Chloroform	ND		0.00500	1	05/18/2022 18:35	WG1866001
Chloromethane	ND		0.00250	1	05/18/2022 18:35	WG1866001
Dibromomethane	ND		0.00100	1	05/18/2022 18:35	WG1866001
1,2-Dibromo-3-Chloropropane	ND	J3	0.00500	1	05/18/2022 18:35	WG1866001
1,2-Dibromoethane	ND		0.00100	1	05/18/2022 18:35	WG1866001
1,2-Dichlorobenzene	ND		0.00100	1	05/18/2022 18:35	WG1866001
1,4-Dichlorobenzene	ND		0.00100	1	05/18/2022 18:35	WG1866001
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/18/2022 18:35	WG1866001
1,1-Dichloroethane	ND		0.00100	1	05/18/2022 18:35	WG1866001
1,2-Dichloroethane	ND		0.00100	1	05/18/2022 18:35	WG1866001
1,1-Dichloroethene	ND		0.00100	1	05/18/2022 18:35	WG1866001
cis-1,2-Dichloroethene	ND		0.00100	1	05/18/2022 18:35	WG1866001
trans-1,2-Dichloroethene	ND		0.00100	1	05/18/2022 18:35	WG1866001
1,2-Dichloropropane	ND		0.00100	1	05/18/2022 18:35	WG1866001
cis-1,3-Dichloropropene	ND		0.00100	1	05/18/2022 18:35	WG1866001
trans-1,3-Dichloropropene	ND		0.00100	1	05/18/2022 18:35	WG1866001
Ethylbenzene	ND		0.00100	1	05/18/2022 18:35	WG1866001
2-Hexanone	ND		0.0100	1	05/18/2022 18:35	WG1866001
Iodomethane	ND		0.0100	1	05/18/2022 18:35	WG1866001
2-Butanone (MEK)	ND	J3	0.0100	1	05/18/2022 18:35	WG1866001
Methylene Chloride	ND	J4	0.00500	1	05/18/2022 18:35	WG1866001
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/18/2022 18:35	WG1866001
Styrene	ND		0.00100	1	05/18/2022 18:35	WG1866001
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/18/2022 18:35	WG1866001
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/18/2022 18:35	WG1866001
Tetrachloroethene	ND		0.00100	1	05/18/2022 18:35	WG1866001
Toluene	ND		0.00100	1	05/18/2022 18:35	WG1866001
1,1,1-Trichloroethane	ND		0.00100	1	05/18/2022 18:35	WG1866001

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	05/18/2022 18:35	WG1866001
Trichloroethene	ND		0.00100	1	05/18/2022 18:35	WG1866001
Trichlorofluoromethane	ND		0.00500	1	05/18/2022 18:35	WG1866001
1,2,3-Trichloropropane	ND		0.00250	1	05/18/2022 18:35	WG1866001
Vinyl acetate	ND	J3	0.0100	1	05/18/2022 18:35	WG1866001
Vinyl chloride	ND		0.00100	1	05/18/2022 18:35	WG1866001
Xylenes, Total	ND		0.00300	1	05/18/2022 18:35	WG1866001
(S) Toluene-d8	*103*		*80.0-120*		*05/18/2022 18:35*	WG1866001
(S) 4-Bromofluorobenzene	*112*		*77.0-126*		*05/18/2022 18:35*	WG1866001
(S) 1,2-Dichloroethane-d4	*111*		*70.0-130*		*05/18/2022 18:35*	WG1866001

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	05/18/2022 17:18	WG1865277
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/18/2022 17:18	WG1865277

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND	J3 J4	0.0500	1	05/18/2022 17:19	WG1866001
Acrylonitrile	ND	J3	0.0100	1	05/18/2022 17:19	WG1866001
Benzene	ND		0.00100	1	05/18/2022 17:19	WG1866001
Bromochloromethane	ND		0.00100	1	05/18/2022 17:19	WG1866001
Bromodichloromethane	ND		0.00100	1	05/18/2022 17:19	WG1866001
Bromoform	ND		0.00100	1	05/18/2022 17:19	WG1866001
Bromomethane	ND		0.00500	1	05/18/2022 17:19	WG1866001
Carbon disulfide	ND		0.00100	1	05/18/2022 17:19	WG1866001
Carbon tetrachloride	ND		0.00100	1	05/18/2022 17:19	WG1866001
Chlorobenzene	ND		0.00100	1	05/18/2022 17:19	WG1866001
Chlorodibromomethane	ND		0.00100	1	05/18/2022 17:19	WG1866001
Chloroethane	ND		0.00500	1	05/18/2022 17:19	WG1866001
Chloroform	ND		0.00500	1	05/18/2022 17:19	WG1866001
Chloromethane	ND		0.00250	1	05/18/2022 17:19	WG1866001
Dibromomethane	ND		0.00100	1	05/18/2022 17:19	WG1866001
1,2-Dibromo-3-Chloropropane	ND	J3	0.00500	1	05/18/2022 17:19	WG1866001
1,2-Dibromoethane	ND		0.00100	1	05/18/2022 17:19	WG1866001
1,2-Dichlorobenzene	ND		0.00100	1	05/18/2022 17:19	WG1866001
1,4-Dichlorobenzene	ND		0.00100	1	05/18/2022 17:19	WG1866001
trans-1,4-Dichloro-2-butene	ND		0.00250	1	05/18/2022 17:19	WG1866001
1,1-Dichloroethane	ND		0.00100	1	05/18/2022 17:19	WG1866001
1,2-Dichloroethane	ND		0.00100	1	05/18/2022 17:19	WG1866001
1,1-Dichloroethene	ND		0.00100	1	05/18/2022 17:19	WG1866001
cis-1,2-Dichloroethene	ND		0.00100	1	05/18/2022 17:19	WG1866001
trans-1,2-Dichloroethene	ND		0.00100	1	05/18/2022 17:19	WG1866001
1,2-Dichloropropane	ND		0.00100	1	05/18/2022 17:19	WG1866001
cis-1,3-Dichloropropene	ND		0.00100	1	05/18/2022 17:19	WG1866001
trans-1,3-Dichloropropene	ND		0.00100	1	05/18/2022 17:19	WG1866001
Ethylbenzene	ND		0.00100	1	05/18/2022 17:19	WG1866001
2-Hexanone	ND		0.0100	1	05/18/2022 17:19	WG1866001
Iodomethane	ND		0.0100	1	05/18/2022 17:19	WG1866001
2-Butanone (MEK)	ND	J3	0.0100	1	05/18/2022 17:19	WG1866001
Methylene Chloride	ND	J4	0.00500	1	05/18/2022 17:19	WG1866001
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/18/2022 17:19	WG1866001
Styrene	ND		0.00100	1	05/18/2022 17:19	WG1866001
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/18/2022 17:19	WG1866001
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/18/2022 17:19	WG1866001
Tetrachloroethene	ND		0.00100	1	05/18/2022 17:19	WG1866001
Toluene	ND		0.00100	1	05/18/2022 17:19	WG1866001
1,1,1-Trichloroethane	ND		0.00100	1	05/18/2022 17:19	WG1866001
1,1,2-Trichloroethane	ND		0.00100	1	05/18/2022 17:19	WG1866001
Trichloroethene	ND		0.00100	1	05/18/2022 17:19	WG1866001
Trichlorofluoromethane	ND		0.00500	1	05/18/2022 17:19	WG1866001
1,2,3-Trichloropropane	ND		0.00250	1	05/18/2022 17:19	WG1866001
Vinyl acetate	ND	J3	0.0100	1	05/18/2022 17:19	WG1866001
Vinyl chloride	ND		0.00100	1	05/18/2022 17:19	WG1866001
Xylenes, Total	ND		0.00300	1	05/18/2022 17:19	WG1866001
(S) Toluene-d8	*107*		*80.0-120*		*05/18/2022 17:19*	WG1866001
(S) 4-Bromofluorobenzene	*99.9*		*77.0-126*		*05/18/2022 17:19*	WG1866001
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*05/18/2022 17:19*	WG1866001

QUALITY CONTROL SUMMARY

Method Blank (MB)

(MB) R3796001-2 05/25/22 09:11

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

L1493306-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493306-01 05/25/22 09:25 • (DUP) R3796001-3 05/25/22 09:28

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	303	308	1	1.53		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1493674-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1493674-07 05/25/22 10:25 • (DUP) R3796001-4 05/25/22 10:29

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) R3796001-1 05/25/22 09:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	101	101	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

Method Blank (MB)

(MB) R3797077-2 05/26/22 16:11

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

L1493575-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493575-01 05/26/22 16:55 • (DUP) R3797077-3 05/26/22 16:59

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	119	135	1	12.3		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5 Headspace

L1493701-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493701-01 05/26/22 17:18 • (DUP) R3797077-4 05/26/22 17:21

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	385	399	1	3.62		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5 Headspace

Laboratory Control Sample (LCS)

(LCS) R3797077-1 05/26/22 16:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	103	103	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

Method Blank (MB)

(MB) R3800054-1 06/06/22 17:02

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

L1493250-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1493250-02 06/06/22 17:09 • (DUP) R3800054-5 06/06/22 17:11

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	1.70	1.72	1	0.996		10

L1493595-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1493595-06 06/06/22 17:44 • (DUP) R3800054-7 06/06/22 17:45

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) R3800054-2 06/06/22 17:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ammonia Nitrogen	7.50	7.44	99.2	90.0-110	

L1493250-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493250-01 06/06/22 17:05 • (MS) R3800054-3 06/06/22 17:06 • (MSD) R3800054-4 06/06/22 17:08

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	5.00	0.255	5.48	5.39	105	103	1	90.0-110			1.71	10

L1493595-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1493595-05 06/06/22 17:41 • (MS) R3800054-6 06/06/22 17:42

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	5.18	104	1	90.0-110	

Method Blank (MB)

(MB) R3795548-1 05/24/22 17:46

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

L1493431-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1493431-09 05/24/22 17:47 • (DUP) R3795548-3 05/24/22 17:47

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

L1493654-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1493654-02 05/24/22 17:50 • (DUP) R3795548-4 05/24/22 17:51

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) R3795548-2 05/24/22 17:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	500	483	96.6	90.0-110	

L1493654-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493654-09 05/24/22 17:57 • (MS) R3795548-5 05/24/22 17:57 • (MSD) R3795548-6 05/24/22 17:57

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
COD	500	ND	478	481	95.7	96.2	1	80.0-120			0.579	20

Method Blank (MB)

(MB) R3795816-1 05/24/22 02:39

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

L1492504-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1492504-01 05/24/22 02:39 • (DUP) R3795816-3 05/24/22 02:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	76.4	63.6	1	18.3		20

L1493614-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493614-01 05/24/22 02:42 • (DUP) R3795816-4 05/24/22 02:42

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	ND	ND	1	18.1		20

Laboratory Control Sample (LCS)

(LCS) R3795816-2 05/24/22 02:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	500	490	97.9	90.0-110	

L1494636-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1494636-07 05/24/22 02:43 • (MS) R3795816-5 05/24/22 02:43 • (MSD) R3795816-6 05/24/22 02:44

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	503	487	101	97.5	1	80.0-120			3.24	20

Method Blank (MB)

(MB) R3791845-1 05/13/22 10:33

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

L1493431-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493431-01 05/13/22 23:56 • (DUP) R3791845-7 05/14/22 00:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	0.000		15
Chloride	2.05	2.04	1	0.450		15
Fluoride	ND	ND	1	0.000		15
Nitrate	ND	ND	1	0.305		15
Sulfate	ND	ND	1	1.53		15

L1493431-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1493431-07 05/14/22 02:30 • (DUP) R3791845-8 05/14/22 02:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	0.000		15
Chloride	67.8	67.8	1	0.124		15
Fluoride	ND	ND	1	0.000		15
Nitrate	7.31	7.31	1	0.0493		15
Sulfate	ND	ND	1	0.000		15

Laboratory Control Sample (LCS)

(LCS) R3791845-2 05/13/22 10:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	39.6	98.9	80.0-120	
Chloride	40.0	38.6	96.6	80.0-120	
Fluoride	8.00	7.93	99.1	80.0-120	
Nitrate	8.00	7.84	98.0	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3791845-2 05/13/22 10:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sulfate	40.0	40.3	101	80.0-120	

L1493306-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493306-01 05/13/22 21:53 • (MS) R3791845-5 05/13/22 22:08 • (MSD) R3791845-6 05/13/22 22:24

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	ND	42.8	42.7	84.6	84.4	1	80.0-120			0.178	15
Chloride	50.0	251	291	291	80.0	79.9	1	80.0-120	E	E V	0.0218	15
Fluoride	5.00	0.657	5.95	5.94	106	106	1	80.0-120			0.187	15
Nitrate	5.00	4.92	10.2	10.3	107	107	1	80.0-120	E	E	0.137	15
Sulfate	50.0	186	217	217	62.7	62.7	1	80.0-120	E J6	E J6	0.0213	15

L1493431-07 Original Sample (OS) • Matrix Spike (MS)

(OS) L1493431-07 05/14/22 02:30 • (MS) R3791845-9 05/14/22 03:01

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	ND	53.7	107	1	80.0-120	
Chloride	50.0	67.8	117	98.5	1	80.0-120	E
Fluoride	5.00	ND	5.32	106	1	80.0-120	
Nitrate	5.00	7.31	12.5	104	1	80.0-120	E
Sulfate	50.0	ND	54.3	109	1	80.0-120	

Method Blank (MB)

(MB) R3798175-1 06/01/22 11:35

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) R3798175-2 06/01/22 11:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00307	102	80.0-120	

L1493286-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493286-01 06/01/22 11:43 • (MS) R3798175-3 06/01/22 11:44 • (MSD) R3798175-4 06/01/22 11:46

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.00300	ND	0.00338	0.00337	113	112	1	75.0-125			0.317	20

Method Blank (MB)

(MB) R3798101-1 06/01/22 10:40

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) R3798101-2 06/01/22 10:42

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00297	99.0	80.0-120	

L1493431-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493431-06 06/01/22 10:44 • (MS) R3798101-3 06/01/22 10:46 • (MSD) R3798101-4 06/01/22 10:48

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 %
Mercury	0.00300	ND	0.00301	0.00293	100	97.8	1	75.0-125			2.43	20

QUALITY CONTROL SUMMARY

L1493431-01,02,03,04,05,06,07,08,09

Method Blank (MB)

(MB) R3794806-8 05/22/22 20:29

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) R3794806-9 05/22/22 20:31

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.886	88.6	80.0-120	

L1494643-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1494643-02 05/22/22 20:34 • (MS) R3794806-11 05/22/22 20:39 • (MSD) R3794806-12 05/22/22 20:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	1.04	1.02	92.9	90.3	1	75.0-125			2.49	20

L1494644-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1494644-04 05/22/22 20:44 • (MS) R3794806-13 05/22/22 20:47 • (MSD) R3794806-14 05/22/22 20:49

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	1.01	1.01	92.3	92.3	1	75.0-125			0.0278	20

Method Blank (MB)

(MB) R3795254-1 05/23/22 15:09

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	0.000262	J	0.000180	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
Nickel	U		0.000816	0.00200
Potassium	U		0.108	2.00
Silver	U		0.0000700	0.00200
Sodium	U		0.376	2.00
Thallium	0.000177	J	0.000121	0.00200
Vanadium	0.000724	J	0.000664	0.00500
Zinc	U		0.00302	0.0250

Method Blank (MB)

(MB) R3796072-1 05/25/22 16:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Barium	U		0.000381	0.00200
Manganese	U		0.000704	0.00500
Selenium	U		0.000300	0.00200

Laboratory Control Sample (LCS)

(LCS) R3795254-2 05/23/22 15:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	5.00	4.83	96.6	80.0-120	
Antimony	0.0500	0.0465	93.0	80.0-120	
Arsenic	0.0500	0.0465	93.1	80.0-120	
Beryllium	0.0500	0.0496	99.2	80.0-120	
Cadmium	0.0500	0.0533	107	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3795254-2 05/23/22 15:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	5.00	4.93	98.7	80.0-120	
Chromium	0.0500	0.0487	97.5	80.0-120	
Cobalt	0.0500	0.0497	99.3	80.0-120	
Copper	0.0500	0.0490	98.0	80.0-120	
Iron	5.00	4.88	97.6	80.0-120	
Lead	0.0500	0.0487	97.4	80.0-120	
Magnesium	5.00	5.03	101	80.0-120	
Nickel	0.0500	0.0486	97.2	80.0-120	
Potassium	5.00	5.04	101	80.0-120	
Silver	0.0500	0.0492	98.5	80.0-120	
Sodium	5.00	5.09	102	80.0-120	
Thallium	0.0500	0.0485	97.1	80.0-120	
Vanadium	0.0500	0.0491	98.2	80.0-120	
Zinc	0.500	0.468	93.7	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3796072-2 05/25/22 16:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	0.0500	0.0454	90.9	80.0-120	
Manganese	0.0500	0.0472	94.5	80.0-120	
Selenium	0.0500	0.0501	100	80.0-120	

L1493421-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493421-01 05/23/22 15:15 • (MS) R3795254-4 05/23/22 15:22 • (MSD) R3795254-5 05/23/22 15:25

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum	5.00	ND	4.67	4.77	93.3	95.4	1	75.0-125			2.22	20
Antimony	0.0500	ND	0.0469	0.0456	93.8	91.2	1	75.0-125			2.82	20
Arsenic	0.0500	ND	0.0492	0.0505	98.0	101	1	75.0-125			2.60	20
Beryllium	0.0500	ND	0.0490	0.0503	97.9	101	1	75.0-125			2.68	20
Cadmium	0.0500	ND	0.0513	0.0514	103	103	1	75.0-125			0.226	20
Calcium	5.00	ND	4.99	5.23	97.4	102	1	75.0-125			4.69	20
Chromium	0.0500	ND	0.0521	0.0515	104	103	1	75.0-125			1.16	20
Cobalt	0.0500	ND	0.0514	0.0517	103	103	1	75.0-125			0.633	20
Copper	0.0500	ND	0.0516	0.0520	103	104	1	75.0-125			0.850	20
Iron	5.00	0.140	5.11	5.13	99.5	99.8	1	75.0-125			0.353	20

L1493421-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493421-01 05/23/22 15:15 • (MS) R3795254-4 05/23/22 15:22 • (MSD) R3795254-5 05/23/22 15:25

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 %
Lead	0.0500	ND	0.0486	0.0500	97.1	99.9	1	75.0-125			2.86	20
Magnesium	5.00	ND	4.94	5.05	98.8	101	1	75.0-125			2.16	20
Nickel	0.0500	ND	0.0526	0.0530	105	106	1	75.0-125			0.761	20
Potassium	5.00	ND	4.98	5.09	99.5	102	1	75.0-125			2.17	20
Silver	0.0500	ND	0.0490	0.0500	98.1	100	1	75.0-125			2.05	20
Sodium	5.00	ND	5.10	5.19	102	104	1	75.0-125			1.73	20
Thallium	0.0500	ND	0.0490	0.0498	98.0	99.6	1	75.0-125			1.59	20
Vanadium	0.0500	ND	0.0527	0.0523	104	103	1	75.0-125			0.669	20
Zinc	0.500	ND	0.477	0.486	95.4	97.2	1	75.0-125			1.87	20

L1493421-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493421-01 05/25/22 17:01 • (MS) R3796072-4 05/25/22 17:07 • (MSD) R3796072-5 05/25/22 17:11

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	0.0500	ND	0.0454	0.0465	89.9	92.0	1	75.0-125			2.38	20
Manganese	0.0500	ND	0.0477	0.0500	91.6	96.2	1	75.0-125			4.65	20
Selenium	0.0500	ND	0.0492	0.0512	98.5	102	1	75.0-125			3.94	20

Method Blank (MB)

(MB) R3794027-2 05/17/22 07:24

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) R3794027-2 05/17/22 07:24

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1,1,2-Trichloroethane	U		0.000158	0.00100
Trichloroethene	U		0.000190	0.00100
Trichlorofluoromethane	U		0.000160	0.00500
1,2,3-Trichloropropane	U		0.000237	0.00250
Vinyl acetate	U		0.000692	0.0100
Vinyl chloride	U		0.000234	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*107*			*80.0-120*
(S) 4-Bromofluorobenzene	*98.6*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*93.9*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3794027-1 05/17/22 06:42

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.0250	0.0248	99.2	19.0-160	
Acrylonitrile	0.0250	0.0261	104	55.0-149	
Benzene	0.00500	0.00504	101	70.0-123	
Bromochloromethane	0.00500	0.00596	119	76.0-122	
Bromodichloromethane	0.00500	0.00509	102	75.0-120	
Bromoform	0.00500	0.00512	102	68.0-132	
Bromomethane	0.00500	0.00485	97.0	10.0-160	
Carbon disulfide	0.00500	0.00410	82.0	61.0-128	
Carbon tetrachloride	0.00500	0.00581	116	68.0-126	
Chlorobenzene	0.00500	0.00536	107	80.0-121	
Chlorodibromomethane	0.00500	0.00527	105	77.0-125	
Chloroethane	0.00500	0.00441	88.2	47.0-150	
Chloroform	0.00500	0.00532	106	73.0-120	
Chloromethane	0.00500	0.00481	96.2	41.0-142	
Dibromomethane	0.00500	0.00534	107	80.0-120	
1,2-Dibromo-3-Chloropropane	0.00500	0.00432	86.4	58.0-134	
1,2-Dibromoethane	0.00500	0.00527	105	80.0-122	
1,2-Dichlorobenzene	0.00500	0.00520	104	79.0-121	
1,4-Dichlorobenzene	0.00500	0.00525	105	79.0-120	
trans-1,4-Dichloro-2-butene	0.00500	0.00584	117	33.0-144	
1,1-Dichloroethane	0.00500	0.00501	100	70.0-126	
1,2-Dichloroethane	0.00500	0.00514	103	70.0-128	
1,1-Dichloroethene	0.00500	0.00528	106	71.0-124	

Laboratory Control Sample (LCS)

(LCS) R3794027-1 05/17/22 06:42

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
cis-1,2-Dichloroethene	0.00500	0.00546	109	73.0-120	
trans-1,2-Dichloroethene	0.00500	0.00516	103	73.0-120	
1,2-Dichloropropane	0.00500	0.00531	106	77.0-125	
cis-1,3-Dichloropropene	0.00500	0.00481	96.2	80.0-123	
trans-1,3-Dichloropropene	0.00500	0.00449	89.8	78.0-124	
Ethylbenzene	0.00500	0.00512	102	79.0-123	
2-Hexanone	0.0250	0.0237	94.8	67.0-149	
Iodomethane	0.0250	0.0273	109	33.0-147	
2-Butanone (MEK)	0.0250	0.0239	95.6	44.0-160	
Methylene Chloride	0.00500	0.00522	104	67.0-120	
4-Methyl-2-pentanone (MIBK)	0.0250	0.0235	94.0	68.0-142	
Styrene	0.00500	0.00538	108	73.0-130	
1,1,1,2-Tetrachloroethane	0.00500	0.00563	113	75.0-125	
1,1,2,2-Tetrachloroethane	0.00500	0.00390	78.0	65.0-130	
Tetrachloroethene	0.00500	0.00547	109	72.0-132	
Toluene	0.00500	0.00504	101	79.0-120	
1,1,1-Trichloroethane	0.00500	0.00552	110	73.0-124	
1,1,2-Trichloroethane	0.00500	0.00543	109	80.0-120	
Trichloroethene	0.00500	0.00659	132	78.0-124	J4
Trichlorofluoromethane	0.00500	0.00537	107	59.0-147	
1,2,3-Trichloropropane	0.00500	0.00503	101	73.0-130	
Vinyl acetate	0.0250	0.00453	18.1	11.0-160	
Vinyl chloride	0.00500	0.00460	92.0	67.0-131	
Xylenes, Total	0.0150	0.0157	105	79.0-123	
(S) Toluene-d8			*103*	*80.0-120*	
(S) 4-Bromofluorobenzene			*105*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*98.9*	*70.0-130*	

Method Blank (MB)

(MB) R3794205-3 05/18/22 17:00

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) R3794205-3 05/18/22 17:00

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	*105*			*80.0-120*
(S) 4-Bromofluorobenzene	*110*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*

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

(LCS) R3794205-1 05/18/22 16:02 • (LCSD) R3794205-2 05/18/22 16:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.0250	0.0312	0.0600	125	240	19.0-160		J3 J4	63.2	27
Acrylonitrile	0.0250	0.0222	0.0310	88.8	124	55.0-149		J3	33.1	20
Benzene	0.00500	0.00499	0.00518	99.8	104	70.0-123			3.74	20
Bromochloromethane	0.00500	0.00533	0.00571	107	114	76.0-122			6.88	20
Bromodichloromethane	0.00500	0.00480	0.00515	96.0	103	75.0-120			7.04	20
Bromoform	0.00500	0.00473	0.00526	94.6	105	68.0-132			10.6	20
Bromomethane	0.00500	0.00535	0.00505	107	101	10.0-160			5.77	25
Carbon disulfide	0.00500	0.00534	0.00450	107	90.0	61.0-128			17.1	20
Carbon tetrachloride	0.00500	0.00545	0.00543	109	109	68.0-126			0.368	20
Chlorobenzene	0.00500	0.00479	0.00500	95.8	100	80.0-121			4.29	20
Chlorodibromomethane	0.00500	0.00474	0.00502	94.8	100	77.0-125			5.74	20
Chloroethane	0.00500	0.00524	0.00467	105	93.4	47.0-150			11.5	20
Chloroform	0.00500	0.00505	0.00535	101	107	73.0-120			5.77	20
Chloromethane	0.00500	0.00513	0.00459	103	91.8	41.0-142			11.1	20
Dibromomethane	0.00500	0.00514	0.00573	103	115	80.0-120			10.9	20
1,2-Dibromo-3-Chloropropane	0.00500	0.00410	0.00513	82.0	103	58.0-134		J3	22.3	20
1,2-Dibromoethane	0.00500	0.00480	0.00496	96.0	99.2	80.0-122			3.28	20
1,2-Dichlorobenzene	0.00500	0.00445	0.00510	89.0	102	79.0-121			13.6	20
1,4-Dichlorobenzene	0.00500	0.00479	0.00506	95.8	101	79.0-120			5.48	20
trans-1,4-Dichloro-2-butene	0.00500	0.00445	0.00405	89.0	81.0	33.0-144			9.41	20
1,1-Dichloroethane	0.00500	0.00493	0.00519	98.6	104	70.0-126			5.14	20
1,2-Dichloroethane	0.00500	0.00481	0.00527	96.2	105	70.0-128			9.13	20
1,1-Dichloroethene	0.00500	0.00520	0.00494	104	98.8	71.0-124			5.13	20

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

(LCS) R3794205-1 05/18/22 16:02 • (LCSD) R3794205-2 05/18/22 16:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
cis-1,2-Dichloroethene	0.00500	0.00522	0.00545	104	109	73.0-120			4.31	20
trans-1,2-Dichloroethene	0.00500	0.00521	0.00495	104	99.0	73.0-120			5.12	20
1,2-Dichloropropane	0.00500	0.00468	0.00521	93.6	104	77.0-125			10.7	20
cis-1,3-Dichloropropene	0.00500	0.00478	0.00500	95.6	100	80.0-123			4.50	20
trans-1,3-Dichloropropene	0.00500	0.00473	0.00470	94.6	94.0	78.0-124			0.636	20
Ethylbenzene	0.00500	0.00484	0.00498	96.8	99.6	79.0-123			2.85	20
2-Hexanone	0.0250	0.0242	0.0273	96.8	109	67.0-149			12.0	20
Iodomethane	0.0250	0.0259	0.0260	104	104	33.0-147			0.385	26
2-Butanone (MEK)	0.0250	0.0237	0.0319	94.8	128	44.0-160		J3	29.5	20
Methylene Chloride	0.00500	0.00613	0.00523	123	105	67.0-120	J4		15.8	20
4-Methyl-2-pentanone (MIBK)	0.0250	0.0244	0.0284	97.6	114	68.0-142			15.2	20
Styrene	0.00500	0.00470	0.00509	94.0	102	73.0-130			7.97	20
1,1,1,2-Tetrachloroethane	0.00500	0.00493	0.00537	98.6	107	75.0-125			8.54	20
1,1,2,2-Tetrachloroethane	0.00500	0.00496	0.00457	99.2	91.4	65.0-130			8.18	20
Tetrachloroethene	0.00500	0.00493	0.00480	98.6	96.0	72.0-132			2.67	20
Toluene	0.00500	0.00471	0.00468	94.2	93.6	79.0-120			0.639	20
1,1,1-Trichloroethane	0.00500	0.00553	0.00540	111	108	73.0-124			2.38	20
1,1,2-Trichloroethane	0.00500	0.00494	0.00511	98.8	102	80.0-120			3.38	20
Trichloroethene	0.00500	0.00472	0.00521	94.4	104	78.0-124			9.87	20
Trichlorofluoromethane	0.00500	0.00556	0.00497	111	99.4	59.0-147			11.2	20
1,2,3-Trichloropropane	0.00500	0.00507	0.00515	101	103	73.0-130			1.57	20
Vinyl acetate	0.0250	0.0278	0.0101	111	40.4	11.0-160		J3	93.4	20
Vinyl chloride	0.00500	0.00532	0.00481	106	96.2	67.0-131			10.1	20
Xylenes, Total	0.0150	0.0145	0.0152	96.7	101	79.0-123			4.71	20
(S) Toluene-d8				*104*	*99.4*	*80.0-120*				
(S) 4-Bromofluorobenzene				*105*	*107*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*106*	*108*	*70.0-130*				

Method Blank (MB)

(MB) R3793342-1 05/17/22 17:45

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

L1492567-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1492567-12 05/17/22 18:34 • (DUP) R3793342-3 05/17/22 18:22

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) R3793342-4 05/17/22 20:36 • (LCSD) R3793342-5 05/17/22 23:14

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	0.000342	0.000330	137	132	60.0-140			3.57	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000285	0.000283	114	113	60.0-140			0.704	20

L1492567-13 Original Sample (OS) • Matrix Spike (MS)

(OS) L1492567-13 05/17/22 18:09 • (MS) R3793342-2 05/17/22 17:57

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ethylene Dibromide	0.000102	ND	0.000110	108	1.02	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000102	ND	0.000112	110	1.02	72.0-148	

Method Blank (MB)

(MB) R3793846-1 05/18/22 15:52

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

L1493431-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1493431-05 05/18/22 16:41 • (DUP) R3793846-3 05/18/22 16:29

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) R3793846-4 05/18/22 18:43 • (LCSD) R3793846-5 05/18/22 21:42

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	0.000320	0.000318	128	127	60.0-140			0.627	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000241	0.000244	96.4	97.6	60.0-140			1.24	20

L1493431-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1493431-06 05/18/22 16:16 • (MS) R3793846-2 05/18/22 16:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ethylene Dibromide	0.000113	ND	0.000118	104	1.13	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000113	ND	0.000116	103	1.13	72.0-148	

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
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.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

Company Name/Address:
Civil & Environmental Consultants - TN

117 Seaboard Ln.
Suite E100
Franklin. TN 37067

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

Pres Chk

Report to:
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):
Adrian Baugh

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

Site/Facility ID #
CAMDEN, TN

P.O. #

Quote #

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

Date Results Needed

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	**WetChem** 250mlHDPE-NoPres	ALK 100ml Amb-NoPres	COD,NH3 250mlHDPE-H2SO4	Diss. Metals-FF 250mlHDPE-HNO3	SV8011 40mlClr-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl	V8260AP1-Trip Blank 40mlAmb-HCl-Blk			Remarks	Sample # (lab only)
MW-1	Grab	GW		5/12/22	1620	11	X	X	X	X	X	X	X					-01
MW-3		GW		5/12/22	1320	11	X	X	X	X	X	X	X					-02
MW-4		GW		5/12/22	1225	11	X	X	X	X	X	X	X					-03
MW-5		GW		5/12/22	1130	11	X	X	X	X	X	X	X					-04
TMW-1		GW		5/13/22	1145	11	X	X	X	X	X	X	X					-05
TMW-2		GW		5/13/22	1055	11	X	X	X	X	X	X	X					-06
TMW-3		GW		5/13/22	915	11	X	X	X	X	X	X	X					-07
DUPLICATE		GW		5/12/22		11	X	X	X	X	X	X	X					-08
FIELD BLANK		GW		5/12/22	1345	10	X	X	X		X	X	X					-09
EQUIPMENT BLANK		GW				10	X	X	X		X	X	X					

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

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

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier clt

Tracking #

Relinquished by : (Signature) Adrian Baugh — Date: 5/13/22 — Time: 1528 — Received by: (Signature)

Relinquished by : (Signature) — Date: — Time: — Received by: (Signature)

Relinquished by : (Signature) — Date: — Time: — Received for lab by: (Signature) Kaitlyn Mitchell — Date: 5/13/22 — Time: 1528

Trip Blank Received: Yes / No (HCl / MeoH) TBR x2

Temp: 2.2+0=2.2 °C, 1.7+0=1.7 °C AL — Bottles Received: 90+2TB

If preservation required by Login: Date/Time

Hold: — Condition: NCF / OK

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
Once

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 # L1493431
K170

Acctnum: **CEC**
Template:**T133579**
Prelogin: **P923980**
PM: **526 - Chris McCord**
PB: cl 5/10/22
Shipped Via: **Courier**

Company Name/Address:
Civil & Environmental Consultants - TN

117 Seaboard Ln.
Suite E100
Franklin. TN 37067

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

Email To: pcampbell@cecinc.com

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Philip Campbell

Project Description:
Former EWS Camden Class 2 Landfill

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Please Circle: PT MT CT ET

Phone: **615-333-7797**

Client Project #
181-364

Lab Project #
CEC-EWS CAMDEN LF

Collected by (print):
Adrian Baugh

Site/Facility ID #
CAMDEN, TN

P.O. #

Collected by (signature):
ABaugh

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed

Chain of Custody Page ___ of ___

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SDG # L1493431

Table #

Acctnum: **CEC**
Template: **T133579**
Prelogin: **P923980**
PM: **526 - Chris McCord**
PB: CK 5/10/22

Shipped Via: **Courier**

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

Analysis / Container / Preservative

* 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 CLT

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
On Ice

	Date:	Time:		
Relinquished by : (Signature)	5/13/22	1528	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR (x2)
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 2.2-D=2.2 1.7+D=1.7 °C Bottles Received: 90+2TB
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 5/13/22 Time: 1528

If preservation required by Login: Date/Time
HCl

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

June 03, 2022

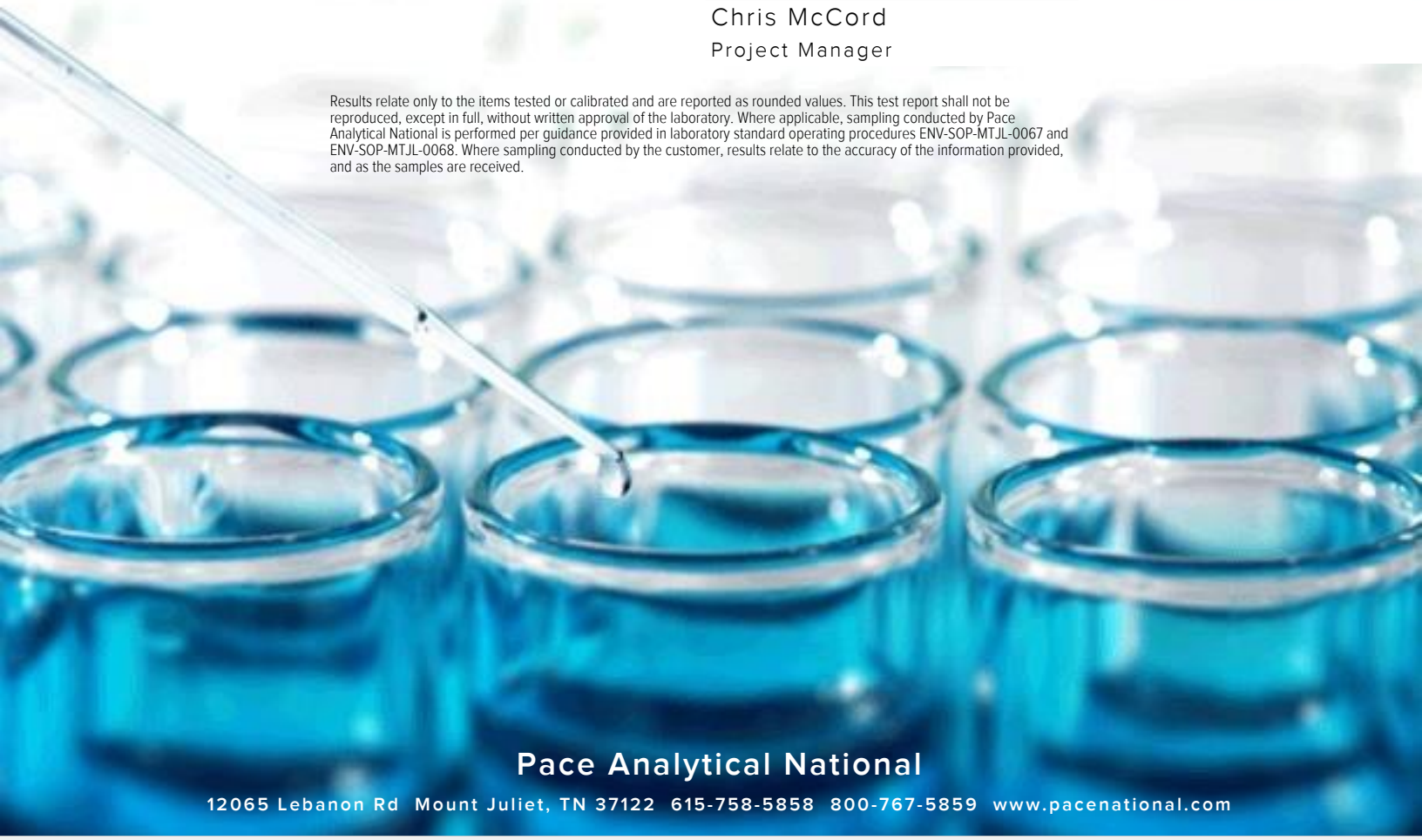
Civil & Environmental Consultants - TN

Sample Delivery Group:	L1493455
Samples Received:	05/13/2022
Project Number:	181-364
Description:	EWS Camden Class 2 Landfill
Site:	CAMDEN, TN
Report To:	Philip Campbell 117 Seaboard Ln. Suite E100 Franklin, TN 37067

Entire Report Reviewed By:

Chris McCord
Project Manager

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



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

TABLE OF CONTENTS

SAMPLE SUMMARY

IWC-L L1493455-01 GW

Collected by: Adrian Baugh
Collected date/time: 05/13/22 12:45
Received date/time: 05/13/22 15:28

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1866300	1	05/23/22 19:21	05/23/22 19:21	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1869725	1	05/26/22 17:12	05/26/22 17:12	JAR	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1869945	200	05/26/22 15:09	05/26/22 15:09	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1868315	40	05/24/22 12:00	05/24/22 17:47	JAR	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1863717	100	05/14/22 04:03	05/14/22 04:03	LBR	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1871975	100	06/01/22 13:02	06/01/22 13:02	LBR	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1871975	5000	06/01/22 13:15	06/01/22 13:15	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1864236	10	05/31/22 09:47	06/01/22 10:59	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1866291	10	05/19/22 16:00	05/22/22 22:13	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	100	05/22/22 20:25	05/23/22 19:21	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1866300	100	05/22/22 20:25	05/25/22 18:52	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1867088	25	05/20/22 21:43	05/20/22 21:43	ADM	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1865277	1	05/18/22 13:05	05/18/22 17:30	HLA	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	43600		250	1	05/23/2022 19:21	WG1866300

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	05/26/2022 17:12	WG1869725

Sample Narrative:

L1493455-01 WG1869725: 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	1870		50.0	200	05/26/2022 15:09	WG1869945

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	4450		800	40	05/24/2022 17:47	WG1868315

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	06/01/2022 13:02	WG1871975
Chloride	92400		5000	5000	06/01/2022 13:15	WG1871975
Fluoride	ND		15.0	100	06/01/2022 13:02	WG1871975
Nitrate	ND		10.0	100	05/14/2022 04:03	WG1863717
Sulfate	850		500	100	06/01/2022 13:02	WG1871975

Sample Narrative:

L1493455-01 WG1863717: Dilution due to matrix, sample is acidic.

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.00200	10	06/01/2022 10:59	WG1864236

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		2.00	10	05/22/2022 22:13	WG1866291

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	270		10.0	100	05/23/2022 19:21	WG1866300
Antimony	ND		0.400	100	05/23/2022 19:21	WG1866300
Arsenic	ND		0.200	100	05/23/2022 19:21	WG1866300
Barium	2.48		0.200	100	05/25/2022 18:52	WG1866300
Beryllium	ND		0.200	100	05/23/2022 19:21	WG1866300
Cadmium	13.0		0.100	100	05/23/2022 19:21	WG1866300
Calcium	15200		100	100	05/23/2022 19:21	WG1866300

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chromium	ND		0.200	100	05/23/2022 19:21	WG1866300
Cobalt	0.408		0.200	100	05/23/2022 19:21	WG1866300
Copper	1.82		0.500	100	05/23/2022 19:21	WG1866300
Iron	345		10.0	100	05/23/2022 19:21	WG1866300
Lead	0.958		0.200	100	05/23/2022 19:21	WG1866300
Magnesium	1390		100	100	05/23/2022 19:21	WG1866300
Manganese	34.5		0.500	100	05/25/2022 18:52	WG1866300
Nickel	0.567		0.200	100	05/23/2022 19:21	WG1866300
Potassium	15000		200	100	05/23/2022 19:21	WG1866300
Selenium	ND		0.200	100	05/25/2022 18:52	WG1866300
Silver	ND		0.200	100	05/23/2022 19:21	WG1866300
Sodium	24700		200	100	05/23/2022 19:21	WG1866300
Thallium	ND		0.200	100	05/23/2022 19:21	WG1866300
Vanadium	ND		0.500	100	05/23/2022 19:21	WG1866300
Zinc	160		2.50	100	05/23/2022 19:21	WG1866300

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	1.52		1.25	25	05/20/2022 21:43	WG1867088
Acrylonitrile	ND		0.250	25	05/20/2022 21:43	WG1867088
Benzene	ND		0.0250	25	05/20/2022 21:43	WG1867088
Bromochloromethane	ND		0.0250	25	05/20/2022 21:43	WG1867088
Bromodichloromethane	ND		0.0250	25	05/20/2022 21:43	WG1867088
Bromoform	ND		0.0250	25	05/20/2022 21:43	WG1867088
Bromomethane	ND		0.125	25	05/20/2022 21:43	WG1867088
Carbon disulfide	ND		0.0250	25	05/20/2022 21:43	WG1867088
Carbon tetrachloride	ND		0.0250	25	05/20/2022 21:43	WG1867088
Chlorobenzene	ND		0.0250	25	05/20/2022 21:43	WG1867088
Chlorodibromomethane	ND		0.0250	25	05/20/2022 21:43	WG1867088
Chloroethane	ND		0.125	25	05/20/2022 21:43	WG1867088
Chloroform	ND		0.125	25	05/20/2022 21:43	WG1867088
Chloromethane	ND		0.0625	25	05/20/2022 21:43	WG1867088
Dibromomethane	ND		0.0250	25	05/20/2022 21:43	WG1867088
1,2-Dibromo-3-Chloropropane	ND		0.125	25	05/20/2022 21:43	WG1867088
1,2-Dibromoethane	ND		0.0250	25	05/20/2022 21:43	WG1867088
1,2-Dichlorobenzene	ND		0.0250	25	05/20/2022 21:43	WG1867088
1,4-Dichlorobenzene	ND		0.0250	25	05/20/2022 21:43	WG1867088
trans-1,4-Dichloro-2-butene	ND		0.0625	25	05/20/2022 21:43	WG1867088
1,1-Dichloroethane	ND		0.0250	25	05/20/2022 21:43	WG1867088
1,2-Dichloroethane	ND		0.0250	25	05/20/2022 21:43	WG1867088
1,1-Dichloroethene	ND		0.0250	25	05/20/2022 21:43	WG1867088
cis-1,2-Dichloroethene	ND		0.0250	25	05/20/2022 21:43	WG1867088
trans-1,2-Dichloroethene	ND		0.0250	25	05/20/2022 21:43	WG1867088
1,2-Dichloropropane	ND		0.0250	25	05/20/2022 21:43	WG1867088
cis-1,3-Dichloropropene	ND		0.0250	25	05/20/2022 21:43	WG1867088
trans-1,3-Dichloropropene	ND		0.0250	25	05/20/2022 21:43	WG1867088
Ethylbenzene	ND		0.0250	25	05/20/2022 21:43	WG1867088
2-Hexanone	ND		0.250	25	05/20/2022 21:43	WG1867088
Iodomethane	ND		0.250	25	05/20/2022 21:43	WG1867088
2-Butanone (MEK)	ND		0.250	25	05/20/2022 21:43	WG1867088
Methylene Chloride	ND		0.125	25	05/20/2022 21:43	WG1867088
4-Methyl-2-pentanone (MIBK)	ND		0.250	25	05/20/2022 21:43	WG1867088
Styrene	ND		0.0250	25	05/20/2022 21:43	WG1867088
1,1,1,2-Tetrachloroethane	ND		0.0250	25	05/20/2022 21:43	WG1867088
1,1,2,2-Tetrachloroethane	ND		0.0250	25	05/20/2022 21:43	WG1867088

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
Tetrachloroethene	ND		0.0250	25	05/20/2022 21:43	WG1867088
Toluene	ND		0.0250	25	05/20/2022 21:43	WG1867088
1,1,1-Trichloroethane	ND		0.0250	25	05/20/2022 21:43	WG1867088
1,1,2-Trichloroethane	ND		0.0250	25	05/20/2022 21:43	WG1867088
Trichloroethene	ND		0.0250	25	05/20/2022 21:43	WG1867088
Trichlorofluoromethane	ND		0.125	25	05/20/2022 21:43	WG1867088
1,2,3-Trichloropropane	ND		0.0625	25	05/20/2022 21:43	WG1867088
Vinyl acetate	ND		0.250	25	05/20/2022 21:43	WG1867088
Vinyl chloride	ND		0.0250	25	05/20/2022 21:43	WG1867088
Xylenes, Total	ND		0.0750	25	05/20/2022 21:43	WG1867088
(S) Toluene-d8	*111*		*80.0-120*		*05/20/2022 21:43*	WG1867088
(S) 4-Bromofluorobenzene	*105*		*77.0-126*		*05/20/2022 21:43*	WG1867088
(S) 1,2-Dichloroethane-d4	*102*		*70.0-130*		*05/20/2022 21:43*	WG1867088

Sample Narrative:

L1493455-01 WG1867088: Lowest possible dilution due to sample foaming.

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	0.000375		0.0000200	1	05/18/2022 17:30	WG1865277
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	05/18/2022 17:30	WG1865277

Method Blank (MB)

(MB) R3797077-2 05/26/22 16:11

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

L1493575-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493575-01 05/26/22 16:55 • (DUP) R3797077-3 05/26/22 16:59

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	119	135	1	12.3		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5 Headspace

L1493701-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493701-01 05/26/22 17:18 • (DUP) R3797077-4 05/26/22 17:21

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	385	399	1	3.62		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5 Headspace

Laboratory Control Sample (LCS)

(LCS) R3797077-1 05/26/22 16:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	103	103	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

Method Blank (MB)

(MB) R3796505-1 05/26/22 13:35

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

L1493448-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493448-01 05/26/22 13:47 • (DUP) R3796505-5 05/26/22 13:48

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) R3796505-2 05/26/22 13:36

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ammonia Nitrogen	7.50	7.85	105	90.0-110	

L1493285-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493285-03 05/26/22 13:42 • (MS) R3796505-3 05/26/22 13:44 • (MSD) R3796505-4 05/26/22 13:45

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 %
Ammonia Nitrogen	5.00	0.282	5.49	5.60	104	106	1	90.0-110			2.07	10

Method Blank (MB)

(MB) R3795548-1 05/24/22 17:46

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

L1493431-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1493431-09 05/24/22 17:47 • (DUP) R3795548-3 05/24/22 17:47

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

L1493654-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1493654-02 05/24/22 17:50 • (DUP) R3795548-4 05/24/22 17:51

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) R3795548-2 05/24/22 17:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	500	483	96.6	90.0-110	

L1493654-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493654-09 05/24/22 17:57 • (MS) R3795548-5 05/24/22 17:57 • (MSD) R3795548-6 05/24/22 17:57

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
COD	500	ND	478	481	95.7	96.2	1	80.0-120			0.579	20

Method Blank (MB)

(MB) R3791845-1 05/13/22 10:33

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate	U		0.0480	0.100

L1493431-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1493431-01 05/13/22 23:56 • (DUP) R3791845-7 05/14/22 00:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	ND	ND	1	0.305		15

L1493431-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1493431-07 05/14/22 02:30 • (DUP) R3791845-8 05/14/22 02:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	7.31	7.31	1	0.0493		15

Laboratory Control Sample (LCS)

(LCS) R3791845-2 05/13/22 10:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate	8.00	7.84	98.0	80.0-120	

L1493306-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493306-01 05/13/22 21:53 • (MS) R3791845-5 05/13/22 22:08 • (MSD) R3791845-6 05/13/22 22:24

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate	5.00	4.92	10.2	10.3	107	107	1	80.0-120	E	E	0.137	15

L1493431-07 Original Sample (OS) • Matrix Spike (MS)

(OS) L1493431-07 05/14/22 02:30 • (MS) R3791845-9 05/14/22 03:01

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate	5.00	7.31	12.5	104	1	80.0-120	E

Method Blank (MB)

(MB) R3798273-1 06/01/22 10:08

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
Sulfate	U		0.594	5.00

L1495351-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1495351-11 06/01/22 12:00 • (DUP) R3798273-3 06/01/22 12:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	5.89	6.06	1	2.78		15
Chloride	826	839	1	1.59	E	15
Fluoride	ND	ND	1	1.38		15
Sulfate	425	448	1	5.40	E	15

L1496151-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1496151-02 06/02/22 01:51 • (DUP) R3798703-1 06/02/22 02:04

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	2.28		15
Chloride	82.5	79.7	1	3.41		15
Fluoride	ND	ND	1	0.000		15
Sulfate	88.7	86.0	1	3.01		15

Laboratory Control Sample (LCS)

(LCS) R3798273-2 06/01/22 10:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	37.9	94.7	80.0-120	
Chloride	40.0	38.6	96.5	80.0-120	
Fluoride	8.00	7.66	95.8	80.0-120	
Sulfate	40.0	38.4	96.1	80.0-120	

L1495351-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1495351-11 06/01/22 12:00 • (MS) R3798273-4 06/01/22 12:25 • (MSD) R3798273-5 06/01/22 12:37

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	5.89	53.6	54.0	95.4	96.2	1	80.0-120			0.749	15
Chloride	50.0	826	858	860	64.6	67.6	1	80.0-120	E V	E V	0.173	15
Fluoride	5.00	ND	4.41	4.62	85.7	89.9	1	80.0-120			4.65	15
Sulfate	50.0	425	480	481	110	113	1	80.0-120	E	E	0.378	15

L1496151-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1496151-02 06/02/22 01:51 • (MS) R3798703-2 06/02/22 02:18

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	ND	48.1	94.5	1	80.0-120	
Chloride	50.0	82.5	127	88.2	1	80.0-120	E
Fluoride	5.00	ND	4.89	97.8	1	80.0-120	
Sulfate	50.0	88.7	133	88.4	1	80.0-120	E

QUALITY CONTROL SUMMARY

L1493455-01

Method Blank (MB)

(MB) R3798101-1 06/01/22 10:40

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) R3798101-2 06/01/22 10:42

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00297	99.0	80.0-120	

L1493431-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493431-06 06/01/22 10:44 • (MS) R3798101-3 06/01/22 10:46 • (MSD) R3798101-4 06/01/22 10:48

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 %
Mercury	0.00300	ND	0.00301	0.00293	100	97.8	1	75.0-125			2.43	20

Method Blank (MB)

(MB) R3794634-1 05/20/22 19:07

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) R3794634-2 05/20/22 19:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.985	98.5	80.0-120	

L1493595-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493595-07 05/20/22 19:12 • (MS) R3794634-4 05/20/22 19:17 • (MSD) R3794634-5 05/20/22 19:20

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 %
Boron	1.00	ND	0.962	0.918	96.2	91.8	1	75.0-125			4.72	20

Method Blank (MB)

(MB) R3795254-1 05/23/22 15:09

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	0.000262	J	0.000180	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
Nickel	U		0.000816	0.00200
Potassium	U		0.108	2.00
Silver	U		0.0000700	0.00200
Sodium	U		0.376	2.00
Thallium	0.000177	J	0.000121	0.00200
Vanadium	0.000724	J	0.000664	0.00500
Zinc	U		0.00302	0.0250

Method Blank (MB)

(MB) R3796072-1 05/25/22 16:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Barium	U		0.000381	0.00200
Manganese	U		0.000704	0.00500
Selenium	U		0.000300	0.00200

Laboratory Control Sample (LCS)

(LCS) R3795254-2 05/23/22 15:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	5.00	4.83	96.6	80.0-120	
Antimony	0.0500	0.0465	93.0	80.0-120	
Arsenic	0.0500	0.0465	93.1	80.0-120	
Beryllium	0.0500	0.0496	99.2	80.0-120	
Cadmium	0.0500	0.0533	107	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3795254-2 05/23/22 15:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	5.00	4.93	98.7	80.0-120	
Chromium	0.0500	0.0487	97.5	80.0-120	
Cobalt	0.0500	0.0497	99.3	80.0-120	
Copper	0.0500	0.0490	98.0	80.0-120	
Iron	5.00	4.88	97.6	80.0-120	
Lead	0.0500	0.0487	97.4	80.0-120	
Magnesium	5.00	5.03	101	80.0-120	
Nickel	0.0500	0.0486	97.2	80.0-120	
Potassium	5.00	5.04	101	80.0-120	
Silver	0.0500	0.0492	98.5	80.0-120	
Sodium	5.00	5.09	102	80.0-120	
Thallium	0.0500	0.0485	97.1	80.0-120	
Vanadium	0.0500	0.0491	98.2	80.0-120	
Zinc	0.500	0.468	93.7	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3796072-2 05/25/22 16:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	0.0500	0.0454	90.9	80.0-120	
Manganese	0.0500	0.0472	94.5	80.0-120	
Selenium	0.0500	0.0501	100	80.0-120	

L1493421-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493421-01 05/23/22 15:15 • (MS) R3795254-4 05/23/22 15:22 • (MSD) R3795254-5 05/23/22 15:25

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum	5.00	ND	4.67	4.77	93.3	95.4	1	75.0-125			2.22	20
Antimony	0.0500	ND	0.0469	0.0456	93.8	91.2	1	75.0-125			2.82	20
Arsenic	0.0500	ND	0.0492	0.0505	98.0	101	1	75.0-125			2.60	20
Beryllium	0.0500	ND	0.0490	0.0503	97.9	101	1	75.0-125			2.68	20
Cadmium	0.0500	ND	0.0513	0.0514	103	103	1	75.0-125			0.226	20
Calcium	5.00	ND	4.99	5.23	97.4	102	1	75.0-125			4.69	20
Chromium	0.0500	ND	0.0521	0.0515	104	103	1	75.0-125			1.16	20
Cobalt	0.0500	ND	0.0514	0.0517	103	103	1	75.0-125			0.633	20
Copper	0.0500	ND	0.0516	0.0520	103	104	1	75.0-125			0.850	20
Iron	5.00	0.140	5.11	5.13	99.5	99.8	1	75.0-125			0.353	20

L1493421-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493421-01 05/23/22 15:15 • (MS) R3795254-4 05/23/22 15:22 • (MSD) R3795254-5 05/23/22 15:25

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 %
Lead	0.0500	ND	0.0486	0.0500	97.1	99.9	1	75.0-125			2.86	20
Magnesium	5.00	ND	4.94	5.05	98.8	101	1	75.0-125			2.16	20
Nickel	0.0500	ND	0.0526	0.0530	105	106	1	75.0-125			0.761	20
Potassium	5.00	ND	4.98	5.09	99.5	102	1	75.0-125			2.17	20
Silver	0.0500	ND	0.0490	0.0500	98.1	100	1	75.0-125			2.05	20
Sodium	5.00	ND	5.10	5.19	102	104	1	75.0-125			1.73	20
Thallium	0.0500	ND	0.0490	0.0498	98.0	99.6	1	75.0-125			1.59	20
Vanadium	0.0500	ND	0.0527	0.0523	104	103	1	75.0-125			0.669	20
Zinc	0.500	ND	0.477	0.486	95.4	97.2	1	75.0-125			1.87	20

L1493421-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1493421-01 05/25/22 17:01 • (MS) R3796072-4 05/25/22 17:07 • (MSD) R3796072-5 05/25/22 17:11

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	0.0500	ND	0.0454	0.0465	89.9	92.0	1	75.0-125			2.38	20
Manganese	0.0500	ND	0.0477	0.0500	91.6	96.2	1	75.0-125			4.65	20
Selenium	0.0500	ND	0.0492	0.0512	98.5	102	1	75.0-125			3.94	20

Method Blank (MB)

(MB) R3794501-2 05/20/22 13:32

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) R3794501-2 05/20/22 13:32

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	*111*			*80.0-120*
(S) 4-Bromofluorobenzene	*103*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*105*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3794501-1 05/20/22 12:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.0250	0.0196	78.4	19.0-160	
Acrylonitrile	0.0250	0.0203	81.2	55.0-149	
Benzene	0.00500	0.00527	105	70.0-123	
Bromochloromethane	0.00500	0.00559	112	76.0-122	
Bromodichloromethane	0.00500	0.00491	98.2	75.0-120	
Bromoform	0.00500	0.00360	72.0	68.0-132	
Bromomethane	0.00500	0.00714	143	10.0-160	
Carbon disulfide	0.00500	0.00485	97.0	61.0-128	
Carbon tetrachloride	0.00500	0.00485	97.0	68.0-126	
Chlorobenzene	0.00500	0.00526	105	80.0-121	
Chlorodibromomethane	0.00500	0.00416	83.2	77.0-125	
Chloroethane	0.00500	0.00583	117	47.0-150	
Chloroform	0.00500	0.00526	105	73.0-120	
Chloromethane	0.00500	0.00369	73.8	41.0-142	
Dibromomethane	0.00500	0.00494	98.8	80.0-120	
1,2-Dibromo-3-Chloropropane	0.00500	0.00342	68.4	58.0-134	
1,2-Dibromoethane	0.00500	0.00490	98.0	80.0-122	
1,2-Dichlorobenzene	0.00500	0.00575	115	79.0-121	
1,4-Dichlorobenzene	0.00500	0.00512	102	79.0-120	
trans-1,4-Dichloro-2-butene	0.00500	0.00236	47.2	33.0-144	
1,1-Dichloroethane	0.00500	0.00501	100	70.0-126	
1,2-Dichloroethane	0.00500	0.00478	95.6	70.0-128	
1,1-Dichloroethene	0.00500	0.00507	101	71.0-124	

Laboratory Control Sample (LCS)

(LCS) R3794501-1 05/20/22 12:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
cis-1,2-Dichloroethene	0.00500	0.00445	89.0	73.0-120	
trans-1,2-Dichloroethene	0.00500	0.00484	96.8	73.0-120	
1,2-Dichloropropane	0.00500	0.00466	93.2	77.0-125	
cis-1,3-Dichloropropene	0.00500	0.00468	93.6	80.0-123	
trans-1,3-Dichloropropene	0.00500	0.00459	91.8	78.0-124	
Ethylbenzene	0.00500	0.00539	108	79.0-123	
2-Hexanone	0.0250	0.0206	82.4	67.0-149	
Iodomethane	0.0250	0.0201	80.4	33.0-147	
2-Butanone (MEK)	0.0250	0.0160	64.0	44.0-160	
Methylene Chloride	0.00500	0.00467	93.4	67.0-120	
4-Methyl-2-pentanone (MIBK)	0.0250	0.0224	89.6	68.0-142	
Styrene	0.00500	0.00496	99.2	73.0-130	
1,1,1,2-Tetrachloroethane	0.00500	0.00467	93.4	75.0-125	
1,1,2,2-Tetrachloroethane	0.00500	0.00481	96.2	65.0-130	
Tetrachloroethene	0.00500	0.00551	110	72.0-132	
Toluene	0.00500	0.00546	109	79.0-120	
1,1,1-Trichloroethane	0.00500	0.00499	99.8	73.0-124	
1,1,2-Trichloroethane	0.00500	0.00479	95.8	80.0-120	
Trichloroethene	0.00500	0.00538	108	78.0-124	
Trichlorofluoromethane	0.00500	0.00535	107	59.0-147	
1,2,3-Trichloropropane	0.00500	0.00463	92.6	73.0-130	
Vinyl acetate	0.0250	0.0327	131	11.0-160	
Vinyl chloride	0.00500	0.00471	94.2	67.0-131	
Xylenes, Total	0.0150	0.0160	107	79.0-123	
(S) Toluene-d8			*105*	*80.0-120*	
(S) 4-Bromofluorobenzene			*102*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*104*	*70.0-130*	

Method Blank (MB)

(MB) R3793846-1 05/18/22 15:52

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

L1493431-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1493431-05 05/18/22 16:41 • (DUP) R3793846-3 05/18/22 16:29

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) R3793846-4 05/18/22 18:43 • (LCSD) R3793846-5 05/18/22 21:42

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	0.000320	0.000318	128	127	60.0-140			0.627	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000241	0.000244	96.4	97.6	60.0-140			1.24	20

L1493431-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1493431-06 05/18/22 16:16 • (MS) R3793846-2 05/18/22 16:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ethylene Dibromide	0.000113	ND	0.000118	104	1.13	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000113	ND	0.000116	103	1.13	72.0-148	

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

Company Name/Address:
Civil & Environmental Consultants - TN

117 Seaboard Ln.
Suite E100
Franklin. TN 37067

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

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):
Adrian Baugh

Collected by (Signature):
A Baugh

Immediately Packed on Ice N___ Y X

Site/Facility ID #
CAMDEN, TN

P.O. #

Quote #

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

Date Results Needed

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 # L1493455
K175

Acctnum: **CEC**
Template: **T133582**
Prelogin: **P923983**
PM: **526 - Chris McCord**
PB: CB 5/10/22
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	Diss Metals 250mlHDPE-NoPres	SV8011 40mlClr-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl	Remarks	Sample # (lab only)
IWC-L		GW		5/13/22	1245	11	X	X	X	X	X	X	X		-01
APWC-L		GW				11	X	X	X	X	X	X	X	DRY	

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

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

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier clt

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
on ice

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: (Yes) / No HCl / MeoH TBR
A Baugh	5/13/22	1528		x1
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
				1.4+0=1.4 ACK 1DT1TB
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:
				5/13/22 1528

If preservation required by Login: Date/Time
HCl

Hold:

Condition: NCF / OK

GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-1
LOCATION	Camden, TN	TEMPERATURE & WEATHER	80s Sunny
DATE & TIME	5/12/22 935	EVENT FREQUENCY	Quarterly
PURGE METHOD	Peristaltic Pump	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	30.5	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	21.41	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	9.09	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	2.85	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
Ø	21.41	946	17.0	4.58	61.1	50.6	5.26	252.2	31.2
.6	21.49	950	16.4	4.38	46.4	38.7	4.08	282.7	22.8
1.0	21.55	954	16.2	4.54	59.2	49.8	3.25	197.0	26.6
1.25	21.55	958	16.1	4.67	69.8	58.0	2.56	164.5	23.7
1.5	21.55	1002	16.0	4.78	81.1	67.3	1.95	141.4	19.4
1.75	21.55	1006	16.0	4.86	91.8	76.1	1.57	126.8	17.7
2.25	21.57	1010	16.0	4.90	96.1	79.1	1.32	119.5	17.3
2.6	21.57	1014	16.1	4.93	101.7	84.5	1.11	112.3	20.1
2.85	21.57	1018	16.3	4.96	105.6	88.1	.97	107.7	19.9

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
2.85	21.57	1020	16.3	4.96	105.6	88.1	.97	107.7	19.9

Preservatives Used	See COC	Sample Charateristics (Odor, Color)	V. Fine Iron Solids
Number of Containers	See COC	Sampler Signature	ABaugh

WELL DATA

Number of Baffles	Ø Forced off	Well Cap Dedicated/In Place?	Y
Lock Condition	fair	Fittings/Well Head Condition	good
Pad/Casing Quality	good	Well Clear of Weeds/Accessible?	covered in thorns/weeds

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	**MONITORING WELL I.D.**	MW-2
LOCATION	Camden, TN	**TEMPERATURE & WEATHER**	80s Sunny
DATE & TIME	5/12/2022	**EVENT FREQUENCY**	Quarterly
PURGE METHOD	NA, parameters only	**FIELD REPRESENTATIVE**	Bargh
TOTAL WELL DEPTH (feet)	10	**SAMPLING EQUIPMENT**	Bailer
DEPTH TO WATER (feet)	6.07	**IS SAMPLE EQUIPMENT DEDICATED?**	No
CASING DIAMETER (inches)	2	**DUPLICATE COLLECTED?**	N
WATER COLUMN (feet)	3.93	**FIELD BLANK COLLECTED?**	N
PURGE VOLUME (gallons)	—	**EQUIPMENT BLANK COLLECTED?**	N

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
—	6.07	1150	16.9	5.92	251.9	213.0	4.07	197.2	15.3

Preservatives Used	—	**Sample Charateristics (Odor, Color)**	—
Number of Containers	✓	**Sampler Signature**	ABargh

WELL DATA

Number of Baffles	4	**Well Cap Dedicated/In Place?**	Cap ok
Lock Condition	fair	**Fittings/Well Head Condition**	N/A
Pad/Casing Quality	okay	**Well Clear of Weeds/Accessible?**	Covered in weeds

GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-3
LOCATION	Camden, TN	TEMPERATURE & WEATHER	80s Sunny
DATE & TIME	5/12/22 1240	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	27	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	18.1	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	Y
WATER COLUMN (feet)	8.9	FIELD BLANK COLLECTED?	yes 1345
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	18.1	1258	16.4	5.93	160.5	133.8	2.44	-34.9	30.9
0.75	18.11	1302	16.2	5.89	162.0	134.8	1.14	7.7	17.8
1.25	18.11	1307	16.6	6.12	163.2	137.0	.86	24.9	18.0
1.75	18.11	1311	16.8	6.12	163.5	137.2	.75	26.5	17.8
2.95	18.11	1315	16.7	6.12	163.6	137.4	.75	27.8	18.8
2.15	18.11	1319	16.6	6.12	163.6	137.2	.75	29.6	18.9

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
2.15	18.11	1320	16.6	6.12	163.6	137.2	.75	29.6	18.9

Preservatives Used	See COC	Sample Charateristics (Odor, Color)	Very fine tan solids
Number of Containers	See COC	Sampler Signature	

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	Yes
Lock Condition	Good	Fittings/Well Head Condition	Sample hose leaks air
Pad/Casing Quality	OK	Well Clear of Weeds/Accessible?	Covered in weeds

GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-4
LOCATION	Camden, TN	TEMPERATURE & WEATHER	80s Sunny
DATE & TIME	5/12/2022 1200	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	23.1	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	10.98	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	12.12	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	1.75	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
Ø	10.98	1205	16.4	5.93	93.3	76.6	4.14	187.0	7.10
.75	11.1	1209	15.4	5.66	84.1	68.6	2.83	196.7	3.80
1.1	11.1	1213	15.4	5.66	83.5	68.2	2.79	199.5	4.65
1.5	11.1	1217	15.4	5.65	83.2	67.9	2.73	201.4	3.75
1.75	11.1	1221	15.3	5.65	83.1	67.8	2.70	204.3	3.60

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.75	11.1	1225	15.3	5.65	83.1	67.8	2.70	204.3	3.60
Preservatives Used	See COC			Sample Charateristics (Odor, Color)			Mildor	Clear	
Number of Containers	See COC			Sampler Signature			A Baugh		

WELL DATA

Number of Baffles	Ø	Well Cap Dedicated/In Place?	good
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	OK	Well Clear of Weeds/Accessible?	Treedown across road; covered in weeds

GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-5
LOCATION	Camden, TN	TEMPERATURE & WEATHER	80s Sunny
DATE & TIME	5/12/22 1045	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	33.85	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	9.05	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	24.80	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	1.85	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
.8	9.05	1054	18.8	4.87	382.3	332.7	2.16	222.5	10.9
.25	9.41	1058	17.9	4.74	354.4	306.3	.71	252.8	34.4
.75	9.43	1102	17.8	4.78	352.1	304.1	.66	259.1	39.8
1.0	9.45	1106	17.8	4.77	349.8	301.5	.61	266.2	45.1
1.15	9.44	1100	17.8	4.79	347.4	299.8	.55	274.5	37.2
1.25	9.45	1104	18.1	4.81	346.6	301.3	.58	276.6	25.6
1.40	9.45	1114	18.1	4.83	342.3	302.0	.57	279.8	15.9
1.55	9.45	1122	18.1	4.85	347.3	301.7	.56	282.6	13.9
1.7	9.45	1126	18.0	4.87	346.5	300.3	.55	283.6	12.8
1.85	9.45	1130	18.1	4.87	346.2	301.4	.56	284.2	11.8

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU	
1.85	9.45	1130	18.1	4.87	346.2	301.4	.56	284.2	8.99	@ metals
Preservatives Used	See COC			Sample Charateristics (Odor, Color)			Very fine tan solids			
Number of Containers	See COC			Sampler Signature			AB Baugh			

WELL DATA

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

GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-1
LOCATION	Camden, TN	TEMPERATURE & WEATHER	80s P.C.
DATE & TIME	5/13/2022 1115	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	32.50	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	6.40	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	26.1	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	3.15	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
Ø	6.40	1120	15.7	5.27	181.6	144.3	3.91	209.7	29.5
.8	7.61	1124	15.7	5.27	181.9	144.5	3.73	211.9	32.1
1.4	8.03	1128	15.8	5.22	179.2	148.1	3.60	216.7	25.9
1.8	8.44	1132	15.8	5.20	179.5	148.4	3.54	218.5	25.0
2.2	8.71	1136	15.9	5.21	179.2	148.1	3.52	218.7	25.5
2.65	8.71	1140	15.9	5.21	179.3	148.2	3.50	219.2	10.23
3.15	8.71	1144	15.9	5.21	179.5	148.4	3.48	219.7	8.05

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.15	8.71	1145	15.9	5.21	179.5	148.4	3.48	219.7	8.05

Preservatives Used	See COC	Sample Charateristics (Odor, Color)	clear
Number of Containers	See COC	Sampler Signature	Baugh

WELL DATA

Number of Baffles	Jersey Barrier	Well Cap Dedicated/In Place?	Y
Lock Condition	OK	Fittings/Well Head Condition	NA
Pad/Casing Quality	OK	Well Clear of Weeds/Accessible?	Covered in weeds

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-2
LOCATION	Camden, TN	TEMPERATURE & WEATHER	80s Sunny
DATE & TIME	5/13/2022 945	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	27.50	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	10.45	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	17.05	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	6.0	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	10.45	958	16.6	5.38	151.8	128.1	6.04	206.8	301
.65	13.7	1002	16.3	5.30	156.0	130.0	5.60	208.1	144.9
1.0	14.5	1006	16.2	5.28	157.6	131.3	5.58	210.0	118.1
1.5	14.0	1010	16.1	5.27	154.4	132.2	5.48	210.9	69.0
2.0	15.0	1014	16.1	5.15	162.0	134.1	5.42	218.6	50.8
2.25	15.1	1018	16.0	5.15	167.8	135.0	5.40	219.2	38.7
2.50	15.1	1022	16.0	5.14	163.3	135.2	5.38	220.1	27.8
3.1	15.1	1026	15.9	5.13	162.9	134.6	5.40	221	20.4
3.5	15.2	1030	16.0	5.13	164.3	136.2	5.38	221.1	20.6
4.0	15.2	1034	16.2	5.13	164.9	137.1	5.39	222.4	18.9
4.25	15.3	1038	16.2	5.14	165.3	137.6	5.36	222.1	16.5
4.5	15.3	1042	16.2	5.14	165.7	138.0	5.31	225.5	15.5

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
6.0	15.3	1055	16.5	5.15	167.1	139.5	5.17	224.2	10.3

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

WELL DATA

Number of Baffles	Jersey Barrel	Well Cap Dedicated/In Place?	Y
Lock Condition	OK	Fittings/Well Head Condition	N/A
Pad/Casing Quality	OK	Well Clear of Weeds/Accessible?	covered in weeds

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-3
LOCATION	Camden, TN	TEMPERATURE & WEATHER	80s Sunny
DATE & TIME	5/13/22 845	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	28.00	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	8.81	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	19.19	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	1.8	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	8.81	858	15.9	4.84	344.4	253.2	2.16	215.4	114.2
.75	11.0	902	15.6	4.92	321.1	263.7	1.17	207.1	54.9
1.25	10.7	906	16.3	4.89	318.4	265.5	1.05	200.8	33.1
1.5	10.6	910	16.3	4.87	318.8	265.6	.99	201.8	16.4
1.8	10.5	914	16.1	4.90	317.4	263.7	.91	196.2	6.91

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.8	10.5	915	16.1	4.90	317.4	263.7	.91	196.2	6.91

Preservatives Used	See COC	Sample Charateristics (Odor, Color)	clear
Number of Containers	See COC	Sampler Signature	JBaugh

WELL DATA

Number of Baffles	Jersey Barrier	Well Cap Dedicated/In Place?	ok
Lock Condition	ok	Fittings/Well Head Condition	N/A
Pad/Casing Quality	ok Temp	Well Clear of Weeds/Accessible?	Covered in weeds

GROUNDWATER MONITORING FIELD INFORMATION LOG

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

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	**MONITORING WELL I.D.**	Leachate (IWC)
LOCATION	Camden, TN	**TEMPERATURE & WEATHER**	80s Sunny
DATE & TIME	5/13/2022 1215	**EVENT FREQUENCY**	Quarterly
PURGE METHOD	Grab	**FIELD REPRESENTATIVE**	Bayh
TOTAL WELL DEPTH (feet)	NA	**SAMPLING EQUIPMENT**	—
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
—	-	1245	23	3.45	19716	19084	2.51	280.3	3.56

Preservatives Used	See COC	**Sample Charateristics (Odor, Color)**	Leachate Clear
Number of Containers	See COC	**Sampler Signature**	

WELL DATA

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

Purged leachate from IWC Landfill for 10 minutes before collecting sample

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**	80s Sunny
DATE & TIME	5/13/22	**EVENT FREQUENCY**	Quarterly
PURGE METHOD	Grab	**FIELD REPRESENTATIVE**	Baugh
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**	A Baugh

WELL DATA

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

DRY

EQUIPMENT CALIBRATION LOG

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

EQUIPMENT CALIBRATION FORM

NAME OF REPRESENTATIVE	Baugh
LOCATION	Forbes EWS
DATE AND TIME	5/11/2022
Equipment and Model # (ex. YSI Pro Plus 556)	YSI DSS / Hach 2100
Equipment Serial #	YSI DSS #1 Hach 3

pH Calibration

pH buffer Calibration Standard	Buffer solution exp. date	Pre-Cal Reading (S.U.)	ph mV Value	Accepted Range mV	Within Range? (Yes or No)	Post-Cal Reading (S.U.)	Calibrated? (yes/no)
4	10/2023	4.02	162.4	160 to 180	Y	4.00	Y
7	10/2023	7.01	-7.6	+/-50	Y	7.00	Y
10	10/2023	10.05	-181.3	-160 to -180	Y	10.02	Y

Temperature Calibration Check

Cert. Thermometer Value (deg C)	Meter Value (deg C)
24.1	24.0

DO Calibration

Actual Barometric Pressure	Barometric Pressure (mm Hg)	D.O. Value (% Saturated)	Unit reading (%)	% DO accepted?
745.0	744.4	98.0	94.8	Y

Specific Spec. Cond. Calibration

Sp. Spec. Cond. Calibration Standard buffer solution	Buffer solution exp. date	Pre Cal Reading (umhos)	Post Cal Reading (umhos)
1360	7/2027	1352	1360

ORP Calibration

ORP Calibration (mV)	Buffer solution exp. date	Pre Cal Reading (mV)	Post Cal Reading (mV)
226.7	10/22	225.3	226.7

Hach Model 2100P Turbidimeter Calibration

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