



June 27, 2023

Leland Hares
Tennessee Department of Environment and Conservation
Division of Solid Waste
8383 Wolf Lake Drive
Bartlett, TN 38133

Civil and Environmental Consultants, Inc.
117 Seaboard Lane, Suite E-100
Franklin, TN 37067

RE: Eplex Construction Landfill
1st Semi-Annual Groundwater Detection Monitoring Report 2023
May 2023 Sampling Event

Dear Mr. Hares,

Tioga Environmental Consultants is pleased to submit the attached Semi-Annual Groundwater Monitoring Report for the May 26, 2023 sampling event for the Eplex Construction Landfill located in Collierville, Tennessee.

Cobalt was identified in monitoring wells MW-1 (the established background well) and MW-4 at concentrations above the EPA tapwater screening level. Based on data from Hazardous Trace Elements in Tennessee Soils and Other Regolith (TDEC Division of Geology, 2001), cobalt has been identified in Shelby County soils at a range of 1.3 to 12 mg/kg. The cobalt concentration identified in monitoring wells MW-1 and MW-4 are likely due, at least in some part, to contributions from naturally occurring cobalt concentrations. This is supported by the lack of statistical variance in historical cobalt concentrations. This is further supported by current and historical detections of cobalt in monitoring well MW-1, the historically established background well. No other constituents were identified at concentrations above their respective screening levels.

Statistical analysis of the data from groundwater sampling events at the landfill did not identify a variance for any constituent. Based on the data from the current sampling event, migration of leachate from the landfill is not likely occurring and it is recommendation of Tioga that the landfill remains in detection monitoring.

Down-to-earth partners. Sky's-the-limit solutions.

The next semi-annual sampling event is scheduled for November 2023 in accordance with the groundwater detection monitoring plan for the site. If you have any questions or we may be of further assistance, please contact us at (901) 791-2432.

Sincerely,
TIOGA ENVIRONMENTAL CONSULTANTS, INC.

Luke Hall
Senior Geologist



CC: 561416.01

Down-to-earth partners. Sky's-the-limit solutions.



1st Semi-Annual Groundwater Detection Monitoring Report 2023

EPLEX CONSTRUCTION LANDFILL

May 2023 Event

Project No. 561416.01

Prepared For:

Leland Hares
Tennessee Department of Environment and Conservation
Division of Solid Waste
8383 Wolf Lake Drive
Bartlett, TN 38133

Civil and Environmental Consultants, Inc.
117 Seaboard Lane, Suite E-100
Franklin, TN 37067

Prepared By:



LUKE HALL, PG



357 North Main Street
Memphis, Tennessee 38103

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1.0 EXECUTIVE SUMMARY

One constituent, cobalt, was identified in monitoring wells MW-1 and MW-4 at concentrations above the EPA maximum contaminant level. However, cobalt has been documented to be at naturally occurring concentrations in Shelby County, Tennessee. Due to this, at least some of the identified cobalt concentrations are likely due to naturally occurring cobalt as opposed to migration of leachate. Further evidence of this is the identification of cobalt in MW-1, the potentiometrically upgradient well. Due to the existence of naturally occurring cobalt, the lack of drinking water wells in the vicinity of the landfill, and the lack of evidence of leachate migration from the landfill, the identified cobalt concentrations do not pose a risk to local drinking water sources.

All other constituents were below their respective screening levels. No statistically significant increases over background concentrations were identified. Based on the information collected, migration of leachate from the landfill is not currently occurring.

2.0 BACKGROUND

The Eplex Construction Landfill, located at 10636 Shelton Road in Collierville, TN, was awarded permit #DML790000050 on June 9, 1997. In 2023, the Tennessee Department of Environment and Conservation assumed responsibility for groundwater monitoring of the landfill.

Seven monitoring wells were installed at the Eplex Construction Landfill as part of the monitoring program. Based on current potentiometric data, MW-1 and MW-4 are upgradient and MW-5 and MW-6 are downgradient, indicating a northwesterly groundwater flow direction towards Wolf River. Monitoring well MW-1 was previously established as the upgradient well for statistical analysis. Monitoring well MW-7 has been gauged as dry since at least 2021. Original correspondence with TDEC and landfill staff was that the well was dry due to construction of a nearby lake. However, it is possible that the casing of the well has collapsed and is inoperable. A vicinity map and sample location map are included as Figure 1 and Figure 2, respectively, in Appendix 1.

3.0 SAMPLING METHODS

Sample collection was performed by Karim Bouzeid, PG and Thornton Brooksbank, GIT of Tioga Environmental Consultants in Memphis, TN on May 26, 2023. Groundwater samples were collected using low-flow sampling methods. Each monitoring well was opened, and the potentiometric surface elevation was measured. In addition, the total depth of each monitoring well was measured. The pump was lowered to approximately the halfway point of the screened interval of the well and the well was purged. During purging, each monitoring well was monitored for pH, conductivity, temperature, dissolved oxygen, and turbidity. Following parameter stabilization, groundwater samples were collected.

Groundwater samples were delivered to Waypoint Analytical in Memphis, TN for analysis. Sample collection sheets are offered with the laboratory analytical reports in Appendix 3.

4.0 POTENTIOMETRIC DATA

Current potentiometric surface elevation data is offered as Table 1. Monitoring well MW-1 serves as the established background well and is highlighted blue.

Table 1
Potentiometric Elevations
(Elevations in feet above mean sea level)

Well ID	Top of Casing Elevation	Well Depth Below Casing Elevation	Dec 2018*	July 2019*	Jan 2020*	July 2020*	May 2021*	Dec 14, 2021	June 7, 2022	Nov 16, 2022	May 26, 2023
MW-1	311.50	57.44	263	264	264	265	265	262.19	263.58	262.17	263.57
MW-2	297.33	72.80	260	262	261	261	262	260.21	261.31	259.82	261.20
MW-3	294.41	52.94	263	264	264	263	264	260.33	261.47	259.85	261.35
MW-4	290.16	41.35	263	264	263	263	264	261.21	263.40	260.85	262.27
MW-5	293.00	53.01	264	264	264	264	266	259.14	260.47	258.90	260.35
MW-6	312.76	82.30	261	262	262	262	263	259.99	260.41	259.89	261.28
MW-7	Well gauged dry at 28.78 feet below casing elevation										

Top of Casing Elevations were taken from the Harris & Associates Land Surveyors, LLC ground surface survey dated July 25, 2019 and riser elevations were measured on December 14, 2021 by Tioga. Values reported for July 2018 through May 2021 noted with * were reported by another consultant and cannot be verified for accuracy.

An estimate of the velocity of horizontal movement of groundwater in the aquifer in which the monitoring wells at the Eplex Construction Landfill are installed was calculated using the Darcy equation. The average hydraulic conductivity of 2.5×10^{-2} cm/s and the effective porosity of 20% were taken from a table of Representative Values of Hydraulic Conductivity and Permeability found in Domenico and Schwartz, Physical and Chemical Hydrogeology (1990), using medium grained sand as the likely aquifer matrix for the Eplex Construction Landfill.

The hydraulic gradient of 0.001 was calculated from data collected during the May 26, 2023 sampling event.

Darcy equation: $V = (K/n)(dH/dL)$

Where: V= average linear velocity of groundwater

K= hydraulic conductivity

n= effective porosity

(dH/dL)= horizontal component of hydraulic gradient

3.22 feet/2,995 feet (Monitoring Wells 1 & 5)

The average linear velocity of groundwater for the uppermost subject aquifer is calculated to be approximately 139 feet per year. This value is based on an assumed hydraulic conductivity and effective porosity. The values will be updated in future reports when more field data are acquired.

Based on potentiometric elevation data collected during the groundwater sampling event on May 26, 2023, groundwater flow direction at the Eplex Construction Landfill is primarily

to the northwest toward Wolf River. A potentiometric surface map is offered as Figure 3 in Appendix 1.

5.0 ANALYTICAL RESULTS

Constituents with detectable concentrations in at least one monitoring well from the May 26, 2023 groundwater sampling event are offered in Table 2. Groundwater samples collected from landfill compliance monitoring wells were analyzed by Waypoint Analytical of Memphis, TN in accordance with EPA Methods, 4500NH3D-2011 (Ammonia Nitrogen), 9056A (fluoride/sulfate), and SW-6020B/7470A (metals). Conductivity and pH were measured in the field.

Table 2
Compliance Monitoring Well Groundwater Analytical Detection Summary
May 26, 2023
(in mg/L)

Constituent	MCL	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	Duplicate (MW-6)
Ammonia	--	0.497	BDL	BDL	1.47	BDL	0.705	0.683
Arsenic, As	0.01	0.0047	BDL	0.0011	0.0094	0.0021	0.0017	0.0021
Barium, Ba	2	0.09	0.031	0.124	0.197	0.054	0.047	0.048
Chromium, Cr	0.1	0.004	0.001	BDL	BDL	0.002	0.001	0.001
Cobalt, Co	0.006*	0.035	BDL	0.005	0.007	0.003	0.004	0.004
Copper, Cu	1.3	0.0139	0.0028	BDL	BDL	0.0017	BDL	BDL
Fluoride	4.0	0.149	BDL	BDL	BDL	BDL	BDL	BDL
Lead	0.015	0.009	0.0015	BDL	BDL	0.0010	BDL	BDL
Nickel, Ni	0.039***	0.0042	BDL	0.0139	0.0054	0.0011	BDL	0.0011
Zinc, Zn	0.6*	0.0298	0.0125	0.0149	BDL	BDL	BDL	BDL
Vanadium	0.086	0.009	0.005	BDL	BDL	0.005	BDL	BDL
Mercury	0.002	0.00042	0.00026	BDL	BDL	BDL	0.00119	0.00078
Sulfate	250	1.58	BDL	13.8	4.65	9.73	10.1	10.3
Conductivity (uS/cm ²)	---	526	106.5	1,006	1,148	435.4	303.6	---

BDL-Below (laboratory) Detection Limit.

MCL – Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or

*EPA Region 9 Tapwater Screening Level or

** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk

-- MCL not established

Assessment, the EPA tapwater screening level for nickel soluble salts is used.

Background well is highlighted blue.

Bold RED indicates a sample above respective regulatory limit.

Duplicate from MW-6

Conductivity presented is the last reading taken before sample collection

Cobalt was identified in monitoring wells MW-1 and MW-4, at 0.035 mg/L and 0.007 mg/L, respectively, above the EPA region 9 tapwater screening level of 0.006 mg/L.

5.0 STATISTICAL ANALYSIS

5.1 METHODOLOGY

Statistical analysis of the analytical results was performed in accordance with TDEC Rule 1200-1-7-.04 and the EPA guidance document, “Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance,” EPA 530/R-09-007 by utilizing the ChemStat RCRA analysis software. Constituents which were not identified at detectable concentrations in any monitoring well were not considered for statistical analysis.

First, the Shapiro-Francia Test was used to determine if the data was normally distributed. For each constituent assessed the data exhibited non-normal distribution of values. Constituents with a non-normal distribution were analyzed for variance using the Kruskal-Wallis test.

For constituents where a statistical variance was identified, a Mann-Kendall Trend Analysis was performed. The purpose of the Mann-Kendall Analysis is to statistically assess if there is a monotonic upward or downward trend of the variable of interest over time. A monotonic upward (downward) trend means that the variable consistently increases (decreases) through time. Data results from these tests are included in Appendix 4.

Statistical analysis is performed under the assumption that monitoring well MW-1 is potentiometrically upgradient of the landfill and is a background well. Potentiometric data supports this hypothesis.

5.2 RESULTS

Results from statistical analysis of the Eplex Landfill for the May 26, 2023 sampling event are offered in Table 3. No data sets exhibited a normal distribution using the Shapiro-Francia Test. Analysis of datasets using the Kruskal-Wallis test did not show statistically significant variance in any constituent, therefore, Mann-Kendall trend analysis was not performed.

**Table 3
Compliance Monitoring Well Statistical Analysis Summary
May 26, 2023**

Constituent	MW-1		MW-2		MW-3		MW-4		MW-5		MW-6	
	KW	MK	KW	MK	KW	MK	KW	MK	KW	MK	KW	MK
Statistical Analysis												
Ammonia	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/
Arsenic, As	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/
Barium, Ba	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/
Chromium, Cr	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/
Cobalt, Co	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/
Copper, Cu	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/
Fluoride	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/
Lead	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/
Nickel, Ni	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/
Zinc, Zn	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/
Vanadium	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/
Mercury	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/
Sulfate	NO	/	NO	/	NO	/	NO	/	NO	/	NO	/

Based upon the statistical analysis, statistically significant increases over background concentrations were not identified.

A historical laboratory analytical results table is included in Appendix 2. A table showing past analytical data is not offered for monitoring well MW-7. The reports made available for review by Tioga did not include data for MW-7 and no sample was collected from this location during the current event. Based on repeated gauging of the monitoring well as “dry” at a consistent elevation higher than the potentiometric surface value for other monitoring wells, it is possible that the casing of monitoring well MW-7 has collapsed. Statistical analysis data is included in Appendix 4.

6.0 RECOMMENDATIONS AND DISCUSSION

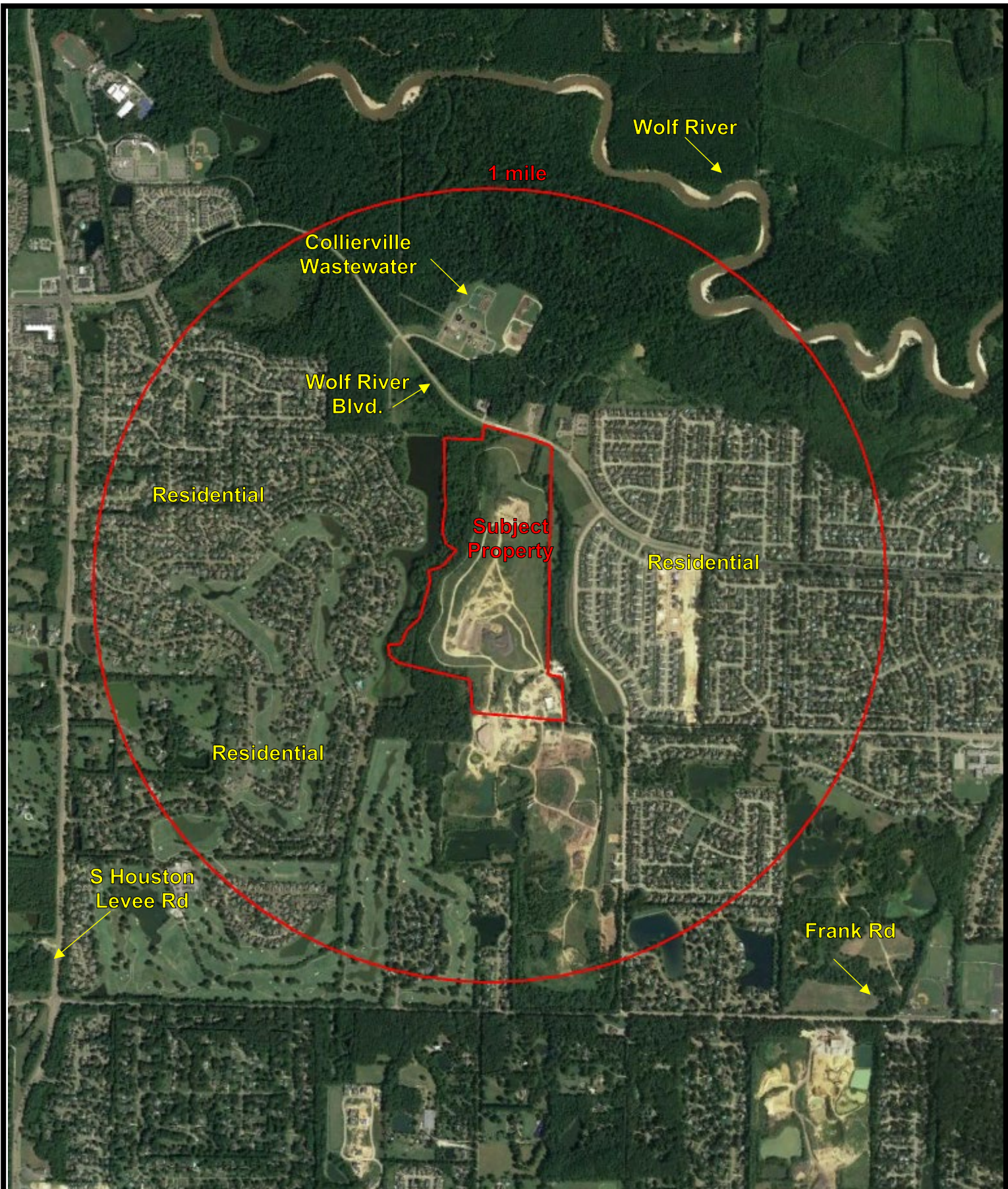
Cobalt concentrations in monitoring wells MW-1 and MW-4 were identified above the EPA region 9 tapwater screening level (0.006 mg/L). Based on data from Hazardous Trace Elements in Tennessee Soils and Other Regolith (TDEC Division of Geology, 2001), cobalt has been identified in Shelby County soils at a range of 1.3 to 12 mg/kg. The cobalt concentration identified in monitoring wells MW-1 and MW-4 are likely due, at least in some part, to contributions from naturally occurring cobalt concentrations. This is supported by the lack of statistical variance in historical cobalt concentrations. This is further supported by current and historical detections of cobalt in monitoring well MW-1, the historically established background well. In addition to the above mentioned lines of evidence, the inherent immobility of metals and the lack of drinking water wells in the

vicinity of the landfill suggests that a risk to drinking water supplies from the identified cobalt concentrations is unlikely.

All other constituents were below their respective screening levels. No statistically significant increases over background concentrations were identified. Based on the information collected, migration of leachate from the landfill is not currently occurring.

Continued detection monitoring is recommended. The next semi-annual groundwater monitoring event will be conducted in November 2023.

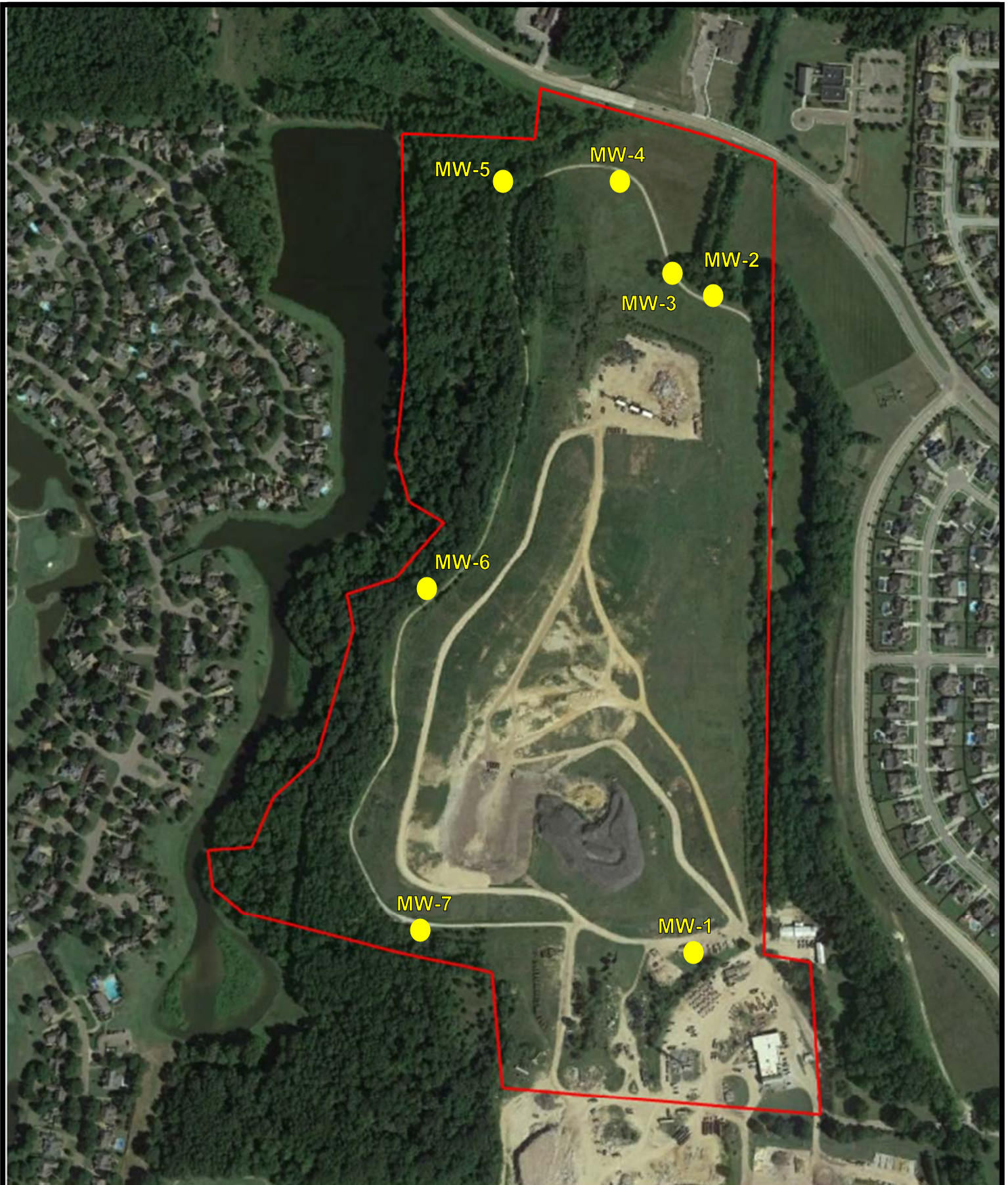
APPENDIX 1
FIGURES



Tioga
ENVIRONMENTAL CONSULTANTS

Eplex Construction Landfill Groundwater
Monitoring Report - May 2023 Event

DESCRIPTION:	Vicinity Map	PROJECT#:	561416.01
LOCATION:	Collierville, TN	DATE:	May 2023



NOT TO SCALE



Tioga

ENVIRONMENTAL CONSULTANTS

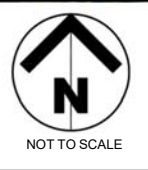
Eplex Construction Landfill Groundwater
Monitoring Report - May 2023 Event

DESCRIPTION:	Site Map	PROJECT #:	561416.01
LOCATION:	Collierville, TN	DATE:	May 2023



LEGEND

- Monitoring Well
- 261 Potentiometric Contour
- (262.19) Potentiometric Elevation
- ➔ Groundwater Flow Direction



Eplex Construction Landfill Groundwater Monitoring Report - May 2023 Event	
DESCRIPTION: Potentiometric Surface Map	PROJECT #: 561416.01
LOCATION: Collierville, TN	DATE: May 2023

APPENDIX 2
ANALYTICAL RESULTS TABLES

Eplex Construction Landfill: Collierville, TN
MW-1

Constituent	Screening Level	Sample Date																	
		7/1/2014	8/1/2015	12/1/2015	8/1/2016	12/1/2016	6/1/2017	12/1/2017	7/1/2018	12/1/2018	7/1/2019	1/1/2020	7/1/2020	5/1/2021	12/14/2021	6/7/2022	11/16/2022	5/26/2023	
Antimony, Sb	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	
Arsenic, As	0.01	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0058	0.0047
Barium, Ba	2	0.023	0.024	0.018	0.2	0.051	0.081	0.095	0.111	0.121	0.268	0.291	0.498	0.14	0.037	0.031	0.073	0.09	
Beryllium, Be	0.004	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0004	BD	BD	BD	BD	
Cadmium, Cd	0.005	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	BD	BD	BD	
Chromium, Cr	0.1	BD	BD	BD	BD	BD	BD	BD	0.009	0.01	BD	BD	BD	BD	BD	0.001	0.003	0.004	
Cobalt, Co	0.006*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.086	0.045	BD	0.07	0.035	
Copper, Cu**	1.3	0.066	0.011	BD	0.031	0.038	BD	0.055	0.041	0.046	0.05	0.056	0.063	0.015	0.0017	0.0011	0.0031	0.0139	
Lead, Pb	0.015	BD	BD	BD	BD	BD	BD	BD	0.006	0.009	0.012	0.015	0.018	0.021	BD	BD	0.002	0.009	
Nickel, Ni	0.039***	0.008	BD	BD	0.008	0.012	0.027	0.009	0.01	0.01	0.018	0.011	0.01	0.0035	0.0026	BD	0.0049	0.0042	
Selenium, Se	0.05	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	
Silver, Ag	0.094*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	
Thallium, Tl	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	
Vanadium, V**	0.086*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.013	BD	BD	0.006	0.009	
Zinc, Zn**	0.6*	0.088	0.066	0.017	0.101	0.124	1.028	1.11	1.742	1.821	1.221	2.011	2.109	0.071	BD	BD	0.0148	0.0298	
Mercury, Hg (Total)	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0002	0.00042	
Fluoride, F	0.8*	0.02	0.19	0.22	0.52	0.6	1.55	1	1.76	1.79	2.05	2.57	3.62	BD	0.127	BD	BD	0.149	
Ammonia	--	BD	BD	BD	0.37	0.41	0.75	0.55	0.42	0.68	0.74	1.26	1.33	0.12	BD	0.213	BD	0.497	
Sulfate	250**	BD	BD	BD	7	8	12	9	10	14	15	16	32	16	5.09	3.33	3.37	1.58	

BD=Below Laboratory Detection Level

"--" Data not available

MCL – Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or *EPA Region 9 Tapwater Screening Level or ** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk Assessment, the EPA tapwater screening level for nickel soluble salts is used

Eplex Construction Landfill: Collierville, TN
MW-2

Constituent	Screening Level	Sample Date																	
		7/1/2014	8/1/2015	12/1/2015	8/1/2016	12/1/2016	6/1/2017	12/1/2017	7/1/2018	12/1/2018	7/1/2019	1/1/2020	7/1/2020	5/1/2021	12/14/2021	6/7/2022	11/16/2022	5/26/2023	
Antimony, Sb	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Arsenic, As	0.01	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Barium, Ba	2	0.026	0.035	0.043	0.35	0.044	0.061	0.073	0.078	0.081	0.076	0.081	0.097	0.031	0.03	BD	0.048	0.031	
Beryllium, Be	0.004	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	BD	BD	BD	
Cadmium, Cd	0.005	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	
Chromium, Cr	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	0.014	0.001	
Cobalt, Co	0.006*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	
Copper, Cu**	1.3	0.06	0.009	BD	0.038	0.039	0.22	0.02	0.026	0.018	BD	BD	BD	0.024	BD	BD	0.0061	0.0028	
Lead, Pb	0.015	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.005	BD	BD	0.0034	0.0015	
Nickel, Ni	0.039***	0.015	BD	BD	BD	0.012	0.01	BD	0.009	0.006	0.006	0.005	BD	0.003	BD	BD	0.0036	BD	
Selenium, Se	0.05	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	
Silver, Ag	0.094*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	
Thallium, Tl	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	
Vanadium, V**	0.086*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.021	0.005	
Zinc, Zn**	0.6*	0.155	0.061	0.018	0.086	0.091	0.121	0.141	0.732	0.887	0.92	0.753	0.807	0.054	0.0109	BD	0.0171	0.0125	
Mercury, Hg (Total)	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.00026	
Fluoride, F	0.8*	0.18	0.24	0.29	0.61	0.75	0.96	1.09	1.05	1.03	0.5	0.78	1.001	BD	BD	BD	BD	BD	
Ammonia,	--	BD	BD	BD	0.38	0.42	0.5	0.59	0.49	0.3	0.29	0.65	0.81	BD	BD	BD	BD	BD	
Sulfate,	250**	BD	BD	BD	3	5	8	11	10	10	9	9	12	BD	1.74	BD	BD	BD	

BD=Below Laboratory Detection Level

"--" Data not available

MCL - Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or *EPA Region 9 Tapwater Screening Level or ** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk Assessment, the EPA tapwater screening level for nickel soluble salts is used

Eplex Construction Landfill: Collierville, TN
MW-3

Constituent	Screening Level	Sample Date																
		7/1/2014	8/1/2015	12/1/2015	8/1/2016	12/1/2016	6/1/2017	12/1/2017	7/1/2018	12/1/2018	7/1/2019	1/1/2020	7/1/2020	5/1/2021	12/14/2021	6/7/2022	11/16/2022	5/26/2023
Antimony, Sb	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Arsenic, As	0.01	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	0.0011
Barium, Ba	2	0.039	0.042	0.031	0.039	0.033	0.028	0.031	0.084	0.064	0.055	0.078	0.09	0.084	0.037	0.123	0.055	0.124
Beryllium, Be	0.004	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	BD	BD	BD	BD
Cadmium, Cd	0.005	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.009	BD	BD	BD	BD
Chromium, Cr	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Cobalt, Co	0.006*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.004	0.001	0.004	0.002	0.005
Copper, Cu**	1.3	0.054	0.008	BD	0.45	0.043	0.031	0.033	0.049	0.04	BD	BD	BD	0.031	0.0132	0.001	0.0035	BD
Lead, Pb	0.015	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0075	BD	BD	BD
Nickel, Ni	0.039***	0.008	BD	BD	BD	BD	BD	BD	0.009	0.009	0.009	0.006	0.007	0.008	BD	0.0137	0.003	0.0139
Selenium, Se	0.05	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Silver, Ag	0.094*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Thallium, Tl	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Vanadium, V**	0.086*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	BD	BD	BD
Zinc, Zn**	0.6*	0.028	0.061	0.021	0.164	0.141	0.173	1.002	1	1.11	0.107	0.324	0.543	0.061	0.0191	0.0114	BD	0.0149
Mercury, Hg (Total)	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Fluoride, F	0.8*	0.26	0.13	0.18	0.34	0.22	0.75	1	0.92	0.58	0.49	0.62	0.745	BD	BD	BD	BD	BD
Ammonia,	--	BD	BD	BD	0.36	0.4	0.55	0.62	0.71	0.31	0.3	0.59	0.71	0.11	BD	BD	BD	BD
Sulfate,	250**	BD	BD	BD	2	4	7	8	11	10	11	11	9	BD	15.9	10.6	16.8	13.8

BD=Below Laboratory Detection Level

"--" Data not available

MCL – Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or *EPA Region 9 Tapwater Screening Level or ** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk Assessment, the EPA tapwater screening level for nickel soluble salts is used

Eplex Construction Landfill: Collierville, TN
MW-4

Constituent	Screening Level	Sample Date																	
		7/1/2014	8/1/2015	12/1/2015	8/1/2016	12/1/2016	6/1/2017	12/1/2017	7/1/2018	12/1/2018	7/1/2019	1/1/2020	7/1/2020	5/1/2021	12/14/2021	6/7/2022	11/16/2022	5/26/2023	
Antimony, Sb	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	
Arsenic, As	0.01	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0052	0.0035	0.0261	0.0094	
Barium, Ba	2	0.037	0.063	0.044	0.086	0.081	0.07	0.083	0.095	0.055	0.053	0.079	0.091	0.19	0.131	0.194	0.278	0.0197	
Beryllium, Be	0.004	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	BD	BD	BD	
Cadmium, Cd	0.005	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	BD	BD	BD	
Chromium, Cr	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD	BD	BD	
Cobalt, Co	0.006*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.008	0.001	0.006	0.003	0.007
Copper, Cu**	1.3	0.055	0.009	BD	0.017	0.022	0.031	0.039	0.052	0.032	0.032	BD	BD	0.057	0.0012	0.0011	0.0018	BD	
Lead, Pb	0.015	BD	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.016	0.001	BD	BD	BD	
Nickel, Ni	0.039***	0.007	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.006	0.0026	0.0046	0.0072	0.0054	
Selenium, Se	0.05	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	
Silver, Ag	0.094*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	
Thallium, Tl	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	
Vanadium, V**	0.086*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.003	BD	BD	BD	
Zinc, Zn**	0.6*	0.103	0.06	0.034	0.091	0.112	0.121	0.115	0.129	0.099	0.117	0.505	0.67	0.067	BD	BD	BD	BD	
Mercury, Hg (Total)	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	
Fluoride, F	0.8*	0.12	BD	BD	0.41	0.56	0.52	0.47	1.24	1.09	0.65	0.73	0.791	BD	0.162	BD	BD	BD	
Ammonia, --	--	BD	BD	BD	0.45	0.46	0.4	0.59	0.63	0.4	0.37	0.42	0.52	1.1	BD	BD	BD	1.47	
Sulfate,	250**	BD	BD	BD	13	9	9	10	12	11	9	15	11	BD	6.64	5.99	6.49	4.65	

BD=Below Laboratory Detection Level

"--" Data not available

MCL – Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or *EPA Region 9 Tapwater Screening Level or ** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk Assessment, the EPA tapwater screening level for nickel soluble salts is used

Eplex Construction Landfill: Collierville, TN
MW-5

Constituent	Screening Level	Sample Date																
		7/1/2014	8/1/2015	12/1/2015	8/1/2016	12/1/2016	6/1/2017	12/1/2017	7/1/2018	12/1/2018	7/1/2019	1/1/2020	7/1/2020	5/1/2021	12/14/2021	6/7/2022	11/16/2022	5/26/2023
Antimony, Sb	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Arsenic, As	0.01	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0013	BD	BD	0.0021
Barium, Ba	2	0.023	0.03	0.071	0.023	0.036	0.044	0.055	0.06	0.059	0.052	0.072	0.088	0.031	0.058	0.049	0.051	0.054
Beryllium, Be	0.004	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Cadmium, Cd	0.005	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.005	BD	BD	BD	BD
Chromium, Cr	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	BD	0.001	0.002
Cobalt, Co	0.006*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	BD	0.001	0.003
Copper, Cu**	1.3	0.026	0.006	BD	0.028	0.026	0.025	0.027	0.031	0.028	BD	BD	BD	0.013	0.0016	BD	BD	0.0017
Lead, Pb	0.015	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0011	BD	BD	0.001
Nickel, Ni	0.039***	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0013	BD	0.0011	0.0011
Selenium, Se	0.05	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Silver, Ag	0.094*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Thallium, Tl	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Vanadium, V**	0.086*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	0.006	BD	BD	0.005
Zinc, Zn**	0.6*	0.051	0.053	0.022	0.222	0.184	0.15	0.109	0.274	0.374	0.222	0.446	0.544	BD	BD	BD	BD	BD
Mercury, Hg (Total)	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.00023	BD	BD	BD
Fluoride, F	0.8*	0.11	0.22	0.25	1.26	0.92	0.76	0.83	0.88	0.74	0.6	0.97	0.781	BD	BD	BD	BD	BD
Ammonia,	--	BD	BD	BD	0.39	0.42	0.36	0.6	0.61	0.6	0.48	0.81	0.74	BD	BD	BD	BD	BD
Sulfate,	250**	BD	BD	BD	98	84	28	17	16	13	10	15	18	11	8.53	11.1	6.41	9.73

BD=Below Laboratory Detection Level

"--" Data not available

MCL – Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or *EPA Region 9 Tapwater Screening Level or ** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk Assessment, the EPA tapwater screening level for nickel soluble salts is used

Eplex Construction Landfill: Collierville, TN
MW-6

Constituent	Screening Level	Sample Date																
		7/1/2014	8/1/2015	12/1/2015	8/1/2016	12/1/2016	6/1/2017	12/1/2017	7/1/2018	12/1/2018	7/1/2019	1/1/2020	7/1/2020	5/1/2021	12/14/2021	6/7/2022	11/16/2022	5/26/2023
Antimony, Sb	0.006	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Arsenic, As	0.01	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0036	0.0017
Barium, Ba	2	0.017	0.022	0.009	0.023	0.061	0.034	0.044	0.063	0.071	0.092	0.089	0.078	0.031	0.033	0.049	0.042	0.047
Beryllium, Be	0.004	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Cadmium, Cd	0.005	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Chromium, Cr	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	BD	0.005	0.001
Cobalt, Co	0.006*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	BD	0.006	0.002	0.004
Copper, Cu**	1.3	0.046	0.008	0.005	0.046	0.048	0.027	0.03	0.038	0.022	BD	BD	BD	0.018	0.0018	BD	0.0017	BD
Lead, Pb	0.015	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.0012	BD
Nickel, Ni	0.039***	BD	BD	BD	0.012	0.006	0.006	0.006	0.006	0.006	BD	BD	BD	BD	BD	0.0025	0.0026	BD
Selenium, Se	0.05	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	BD
Silver, Ag	0.094*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Thallium, Tl	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Vanadium, V**	0.086*	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.001	0.005	BD	0.013	BD
Zinc, Zn**	0.6*	0.076	0.069	0.1	0.16	0.1	0.114	0.272	0.37	0.355	0.103	0.247	0.372	BD	BD	BD	BD	BD
Mercury, Hg (Total)	0.002	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.00025	BD	BD	0.00119
Fluoride, F	0.8*	BD	BD	BD	0.35	0.21	0.19	0.55	0.92	0.79	0.61	0.76	0.209	BD	BD	BD	BD	BD
Ammonia	--	BD	BD	BD	0.41	0.44	0.36	0.42	0.44	0.57	0.44	0.57	0.68	0.42	0.42	0.543	BD	0.705
Sulfate	250**	BD	BD	BD	9	10	11	10	11	10	9	11	12	8	8.89	11.1	9.02	10.1

BD=Below Laboratory Detection Level

"--" Data not available

MCL - Maximum Contaminant Level from TDEC Rule 1200-1-7-.04 or *EPA Region 9 Tapwater Screening Level or ** Secondary Drinking Water Standard

*** - MCL for Nickel was redacted. Based on the recommendations of the TDEC Department of Risk Assessment, the EPA tapwater screening level for nickel soluble salts is used

APPENDIX 3

LABORATORY RESULTS, CHAIN OF CUSTODY, AND FIELD SHEETS



6/7/2023

Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis, TN, 38103

Ref: Analytical Testing
Lab Report Number: 23-146-0192
Client Project Description: Blaylock & Brown Construction LF
Project #561416.01
Project Number: Walnut Grove Rd Landfill

Dear Mr. Luke Hall:

Waypoint Analytical, LLC. received sample(s) on 5/26/2023 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with the applicable analytical method. Where the laboratory was not responsible for the sampling stage (refer to the chain of custody) results apply to the sample as received.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance.

The results are shown on the attached Report of Analysis(s). Results for solid matrices are reported on an as-received basis unless otherwise indicated. This report shall not be reproduced except in full and relates only to the samples included in this report.

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,

Rebekah Ross
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.



Certification Summary

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/29/2024
Arkansas	State Program	88-0650	02/07/2024
California	State Program	2904	06/30/2023
Florida	State Program - NELAP	E871157	06/30/2023
Georgia	State Program	C044	11/14/2025
Georgia	State Program	04015	06/30/2023
Illinois	State Program - NELAP	200078	10/10/2023
Kentucky	State Program	80215	06/30/2023
Kentucky	State Program	KY90047	12/31/2023
Louisiana	State Program - NELAP	LA037	12/31/2023
Louisiana	State Program - NELAP	04015	06/30/2023
Mississippi	State Program	MS	11/14/2025
North Carolina	State Program	47701	07/31/2023
North Carolina	State Program	415	12/31/2023
Pennsylvania	State Program - NELAP	68-03195	05/31/2024
South Carolina	State Program	84002	06/30/2023
Tennessee	State Program	02027	11/14/2025
Texas	State Program - NELAP	T104704180	09/30/2023
Virginia	State Program	00106	06/30/2023
Virginia	State Program - NELAP	460181	09/14/2023

Sample Summary Table

Report Number: 23-146-0192
Client Project Description: Blaylock & Brown Construction LF
Project #561416.01

Lab No	Client Sample ID	Matrix	Date Collected	Date Received
99616	MW-2	Aqueous	05/26/2023 10:00	05/26/2023
99617	MW-3	Aqueous	05/26/2023 11:36	05/26/2023
99618	MW-4	Aqueous	05/26/2023 12:46	05/26/2023
99619	MW-5	Aqueous	05/26/2023 13:32	05/26/2023
99620	MW-6	Aqueous	05/26/2023 14:27	05/26/2023
99621	Duplicate	Aqueous	05/26/2023	05/26/2023
99622	MW-1	Aqueous	05/26/2023 15:28	05/26/2023
99623	Rinse Blank	Aqueous	05/26/2023	05/26/2023

Client: Tioga Environmental Consultants
Project: Blaylock & Brown Construction LF
Lab Report Number: 23-146-0192
Date: 6/7/2023

CASE NARRATIVE

Total Aqueous Mercury Analysis - CVAA Method 7470A

Analyte: Mercury

QC Batch No: L685365/L685030

The matrix spike and/or the matrix spike duplicate was outside quality control acceptance ranges. A post digestion spike was performed and passed quality control acceptance ranges. No matrix interference is suspected.

06510
Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock & Brown Construction LF
Information : Project #561416.01

Report Date : 06/07/2023
Received : 05/26/2023



Report Number : **23-146-0192**

REPORT OF ANALYSIS

Rebekah Ross
Project Manager

Lab No : **99616**

Matrix: **Aqueous**

Sample ID : **MW-2**

Sampled: **5/26/2023 10:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	05/31/23 23:08	CPW	6020B
Arsenic	<0.0010	mg/L	0.0010	1	05/31/23 23:08	CPW	6020B
Barium	0.031	mg/L	0.001	1	05/31/23 23:08	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	05/31/23 23:08	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	05/31/23 23:08	CPW	6020B
Cobalt	<0.001	mg/L	0.001	1	05/31/23 23:08	CPW	6020B
Chromium	0.001	mg/L	0.001	1	05/31/23 23:08	CPW	6020B
Copper	0.0028	mg/L	0.0010	1	05/31/23 23:08	CPW	6020B
Nickel	<0.0010	mg/L	0.0010	1	05/31/23 23:08	CPW	6020B
Lead	0.0015	mg/L	0.0010	1	05/31/23 23:08	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	05/31/23 23:08	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	05/31/23 23:08	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	05/31/23 23:08	CPW	6020B
Vanadium	0.005	mg/L	0.005	1	05/31/23 23:08	CPW	6020B
Zinc	12.5	µg/L	10.0	1	05/31/23 23:08	CPW	6020B
Mercury	0.00026	mg/L	0.00020	1	06/01/23 14:09	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	06/06/23 11:53	SRJ	9056A
Ammonia Nitrogen	<0.100	mg/L	0.100	1	06/07/23 11:53	JFM	4500NH3D-2011
Sulfate	<1.00	mg/L	1.00	1	06/06/23 11:53	SRJ	9056A

**Qualifiers/
Definitions**

DF

Dilution Factor

MQL

Method Quantitation Limit

06510
Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock & Brown Construction LF
Information : Project #561416.01

Report Date : 06/07/2023
Received : 05/26/2023



Report Number : **23-146-0192**

REPORT OF ANALYSIS

Rebekah Ross
Project Manager

Lab No : **99617**
Sample ID : **MW-3**

Matrix: **Aqueous**
Sampled: **5/26/2023 11:36**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	05/31/23 23:19	CPW	6020B
Arsenic	0.0011	mg/L	0.0010	1	05/31/23 23:19	CPW	6020B
Barium	0.124	mg/L	0.001	1	05/31/23 23:19	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	05/31/23 23:19	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	05/31/23 23:19	CPW	6020B
Cobalt	0.005	mg/L	0.001	1	05/31/23 23:19	CPW	6020B
Chromium	<0.001	mg/L	0.001	1	05/31/23 23:19	CPW	6020B
Copper	<0.0010	mg/L	0.0010	1	05/31/23 23:19	CPW	6020B
Nickel	0.0139	mg/L	0.0010	1	05/31/23 23:19	CPW	6020B
Lead	<0.0010	mg/L	0.0010	1	05/31/23 23:19	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	05/31/23 23:19	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	05/31/23 23:19	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	05/31/23 23:19	CPW	6020B
Vanadium	<0.005	mg/L	0.005	1	05/31/23 23:19	CPW	6020B
Zinc	14.9	µg/L	10.0	1	05/31/23 23:19	CPW	6020B
Mercury	<0.00020	mg/L	0.00020	1	06/01/23 14:11	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	06/06/23 12:19	SRJ	9056A
Ammonia Nitrogen	<0.100	mg/L	0.100	1	06/07/23 11:53	JFM	4500NH3D-2011
Sulfate	13.8	mg/L	1.00	1	06/06/23 12:19	SRJ	9056A

**Qualifiers/
Definitions**

DF

Dilution Factor

MQL

Method Quantitation Limit

06510
Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock & Brown Construction LF
Information : Project #561416.01

Report Date : 06/07/2023
Received : 05/26/2023



Report Number : **23-146-0192**

REPORT OF ANALYSIS

Rebekah Ross
Project Manager

Lab No : **99618**

Matrix: **Aqueous**

Sample ID : **MW-4**

Sampled: **5/26/2023 12:46**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	05/31/23 23:23	CPW	6020B
Arsenic	0.0094	mg/L	0.0010	1	05/31/23 23:23	CPW	6020B
Barium	0.197	mg/L	0.001	1	05/31/23 23:23	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	05/31/23 23:23	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	05/31/23 23:23	CPW	6020B
Cobalt	0.007	mg/L	0.001	1	05/31/23 23:23	CPW	6020B
Chromium	<0.001	mg/L	0.001	1	05/31/23 23:23	CPW	6020B
Copper	<0.0010	mg/L	0.0010	1	05/31/23 23:23	CPW	6020B
Nickel	0.0054	mg/L	0.0010	1	05/31/23 23:23	CPW	6020B
Lead	<0.0010	mg/L	0.0010	1	05/31/23 23:23	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	05/31/23 23:23	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	05/31/23 23:23	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	05/31/23 23:23	CPW	6020B
Vanadium	<0.005	mg/L	0.005	1	05/31/23 23:23	CPW	6020B
Zinc	<10.0	µg/L	10.0	1	05/31/23 23:23	CPW	6020B
Mercury	<0.00020	mg/L	0.00020	1	06/01/23 14:15	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	06/06/23 12:45	SRJ	9056A
Ammonia Nitrogen	1.47	mg/L	0.100	1	06/07/23 11:53	JFM	4500NH3D-2011
Sulfate	4.65	mg/L	1.00	1	06/06/23 12:45	SRJ	9056A

**Qualifiers/
Definitions**

DF

Dilution Factor

MQL

Method Quantitation Limit

06510
Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock & Brown Construction LF
Information : Project #561416.01

Report Date : 06/07/2023
Received : 05/26/2023



Report Number : **23-146-0192**

REPORT OF ANALYSIS

Rebekah Ross
Project Manager

Lab No : **99619**
Sample ID : **MW-5**

Matrix: **Aqueous**
Sampled: **5/26/2023 13:32**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	05/31/23 23:27	CPW	6020B
Arsenic	0.0021	mg/L	0.0010	1	05/31/23 23:27	CPW	6020B
Barium	0.054	mg/L	0.001	1	05/31/23 23:27	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	05/31/23 23:27	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	05/31/23 23:27	CPW	6020B
Cobalt	0.003	mg/L	0.001	1	05/31/23 23:27	CPW	6020B
Chromium	0.002	mg/L	0.001	1	05/31/23 23:27	CPW	6020B
Copper	0.0017	mg/L	0.0010	1	05/31/23 23:27	CPW	6020B
Nickel	0.0011	mg/L	0.0010	1	05/31/23 23:27	CPW	6020B
Lead	0.0010	mg/L	0.0010	1	05/31/23 23:27	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	05/31/23 23:27	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	05/31/23 23:27	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	05/31/23 23:27	CPW	6020B
Vanadium	0.005	mg/L	0.005	1	05/31/23 23:27	CPW	6020B
Zinc	<10.0	µg/L	10.0	1	05/31/23 23:27	CPW	6020B
Mercury	<0.00020	mg/L	0.00020	1	06/01/23 14:16	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	06/06/23 13:10	SRJ	9056A
Ammonia Nitrogen	<0.100	mg/L	0.100	1	06/07/23 11:53	JFM	4500NH3D-2011
Sulfate	9.73	mg/L	1.00	1	06/06/23 13:10	SRJ	9056A

**Qualifiers/
Definitions**

DF

Dilution Factor

MQL

Method Quantitation Limit

06510
Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock & Brown Construction LF
Information : Project #561416.01

Report Date : 06/07/2023
Received : 05/26/2023



Report Number : **23-146-0192**

REPORT OF ANALYSIS

Rebekah Ross
Project Manager

Lab No : **99620**
Sample ID : **MW-6**

Matrix: **Aqueous**
Sampled: **5/26/2023 14:27**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	05/31/23 23:31	CPW	6020B
Arsenic	0.0017	mg/L	0.0010	1	05/31/23 23:31	CPW	6020B
Barium	0.047	mg/L	0.001	1	05/31/23 23:31	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	05/31/23 23:31	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	05/31/23 23:31	CPW	6020B
Cobalt	0.004	mg/L	0.001	1	05/31/23 23:31	CPW	6020B
Chromium	0.001	mg/L	0.001	1	05/31/23 23:31	CPW	6020B
Copper	<0.0010	mg/L	0.0010	1	05/31/23 23:31	CPW	6020B
Nickel	<0.0010	mg/L	0.0010	1	05/31/23 23:31	CPW	6020B
Lead	<0.0010	mg/L	0.0010	1	05/31/23 23:31	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	05/31/23 23:31	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	05/31/23 23:31	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	05/31/23 23:31	CPW	6020B
Vanadium	<0.005	mg/L	0.005	1	05/31/23 23:31	CPW	6020B
Zinc	<10.0	µg/L	10.0	1	05/31/23 23:31	CPW	6020B
Mercury	0.00119	mg/L	0.00020	1	06/01/23 14:18	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	06/06/23 13:36	SRJ	9056A
Ammonia Nitrogen	0.705	mg/L	0.100	1	06/07/23 11:53	JFM	4500NH3D-2011
Sulfate	10.1	mg/L	1.00	1	06/06/23 13:36	SRJ	9056A

**Qualifiers/
Definitions**

DF

Dilution Factor

MQL

Method Quantitation Limit

06510
Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock & Brown Construction LF
Information : Project #561416.01

Report Date : 06/07/2023
Received : 05/26/2023



Report Number : **23-146-0192**

REPORT OF ANALYSIS

Rebekah Ross
Project Manager

Lab No : **99621**

Matrix: **Aqueous**

Sample ID : **Duplicate**

Sampled: **5/26/2023 0:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	05/31/23 23:35	CPW	6020B
Arsenic	0.0021	mg/L	0.0010	1	05/31/23 23:35	CPW	6020B
Barium	0.048	mg/L	0.001	1	05/31/23 23:35	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	05/31/23 23:35	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	05/31/23 23:35	CPW	6020B
Cobalt	0.004	mg/L	0.001	1	05/31/23 23:35	CPW	6020B
Chromium	0.001	mg/L	0.001	1	05/31/23 23:35	CPW	6020B
Copper	<0.0010	mg/L	0.0010	1	05/31/23 23:35	CPW	6020B
Nickel	0.0011	mg/L	0.0010	1	05/31/23 23:35	CPW	6020B
Lead	<0.0010	mg/L	0.0010	1	05/31/23 23:35	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	05/31/23 23:35	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	05/31/23 23:35	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	05/31/23 23:35	CPW	6020B
Vanadium	<0.005	mg/L	0.005	1	05/31/23 23:35	CPW	6020B
Zinc	<10.0	µg/L	10.0	1	05/31/23 23:35	CPW	6020B
Mercury	0.00078	mg/L	0.00020	1	06/01/23 14:19	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	06/06/23 14:28	SRJ	9056A
Ammonia Nitrogen	0.683	mg/L	0.100	1	06/07/23 11:53	JFM	4500NH3D-2011
Sulfate	10.3	mg/L	1.00	1	06/06/23 14:28	SRJ	9056A

**Qualifiers/
Definitions**

DF

Dilution Factor

MQL

Method Quantitation Limit

06510
Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock & Brown Construction LF
Information : Project #561416.01

Report Date : 06/07/2023
Received : 05/26/2023



Report Number : **23-146-0192**

REPORT OF ANALYSIS

Rebekah Ross
Project Manager

Lab No : **99622**

Matrix: **Aqueous**

Sample ID : **MW-1**

Sampled: **5/26/2023 15:28**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	05/31/23 23:39	CPW	6020B
Arsenic	0.0047	mg/L	0.0010	1	05/31/23 23:39	CPW	6020B
Barium	0.090	mg/L	0.001	1	05/31/23 23:39	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	05/31/23 23:39	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	05/31/23 23:39	CPW	6020B
Cobalt	0.035	mg/L	0.001	1	05/31/23 23:39	CPW	6020B
Chromium	0.004	mg/L	0.001	1	05/31/23 23:39	CPW	6020B
Copper	0.0139	mg/L	0.0010	1	05/31/23 23:39	CPW	6020B
Nickel	0.0042	mg/L	0.0010	1	05/31/23 23:39	CPW	6020B
Lead	0.0090	mg/L	0.0010	1	05/31/23 23:39	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	05/31/23 23:39	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	05/31/23 23:39	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	05/31/23 23:39	CPW	6020B
Vanadium	0.009	mg/L	0.005	1	05/31/23 23:39	CPW	6020B
Zinc	29.8	µg/L	10.0	1	05/31/23 23:39	CPW	6020B
Mercury	0.00042	mg/L	0.00020	1	06/01/23 14:21	FDS	7470A
Fluoride (w/o distillation)	0.149	mg/L	0.125	1	06/06/23 14:54	SRJ	9056A
Ammonia Nitrogen	0.497	mg/L	0.100	1	06/07/23 11:53	JFM	4500NH3D-2011
Sulfate	1.58	mg/L	1.00	1	06/06/23 14:54	SRJ	9056A

**Qualifiers/
Definitions**

DF

Dilution Factor

MQL

Method Quantitation Limit

06510
Tioga Environmental Consultants
Mr. Luke Hall
357 North Main Street
Memphis , TN 38103

Project ID :
Project Blaylock & Brown Construction LF
Information : Project #561416.01

Report Date : 06/07/2023
Received : 05/26/2023



Report Number : **23-146-0192**

REPORT OF ANALYSIS

Rebekah Ross
Project Manager

Lab No : **99623**
Sample ID : **Rinse Blank**

Matrix: **Aqueous**
Sampled: **5/26/2023 0:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Silver	<0.0010	mg/L	0.0010	1	05/31/23 23:43	CPW	6020B
Arsenic	<0.0010	mg/L	0.0010	1	05/31/23 23:43	CPW	6020B
Barium	<0.001	mg/L	0.001	1	05/31/23 23:43	CPW	6020B
Beryllium	<0.0010	mg/L	0.0010	1	05/31/23 23:43	CPW	6020B
Cadmium	<0.0010	mg/L	0.0010	1	05/31/23 23:43	CPW	6020B
Cobalt	<0.001	mg/L	0.001	1	05/31/23 23:43	CPW	6020B
Chromium	<0.001	mg/L	0.001	1	05/31/23 23:43	CPW	6020B
Copper	<0.0010	mg/L	0.0010	1	05/31/23 23:43	CPW	6020B
Nickel	<0.0010	mg/L	0.0010	1	05/31/23 23:43	CPW	6020B
Lead	<0.0010	mg/L	0.0010	1	05/31/23 23:43	CPW	6020B
Antimony	<0.0010	mg/L	0.0010	1	05/31/23 23:43	CPW	6020B
Selenium	<0.001	mg/L	0.001	1	05/31/23 23:43	CPW	6020B
Thallium	<0.0010	mg/L	0.0010	1	05/31/23 23:43	CPW	6020B
Vanadium	<0.005	mg/L	0.005	1	05/31/23 23:43	CPW	6020B
Zinc	<10.0	µg/L	10.0	1	05/31/23 23:43	CPW	6020B
Mercury	<0.00020	mg/L	0.00020	1	06/01/23 14:22	FDS	7470A
Fluoride (w/o distillation)	<0.125	mg/L	0.125	1	06/06/23 15:20	SRJ	9056A
Ammonia Nitrogen	<0.100	mg/L	0.100	1	06/07/23 11:53	JFM	4500NH3D-2011
Sulfate	<1.00	mg/L	1.00	1	06/06/23 15:20	SRJ	9056A

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

Shipment Receipt Form

Customer Number: **06510**
 Customer Name: **Tioga Environmental Consultants**
 Report Number: **23-146-0192**

Shipping Method

Fed Ex US Postal Lab Other :
 UPS Client Courier Thermometer ID:

Shipping container/cooler uncompromised?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Number of coolers/boxes received	<input type="text" value="1"/>		
Custody seals intact on shipping container/cooler?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Not Present
Custody seals intact on sample bottles?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Not Present
Chain of Custody (COC) present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
COC agrees with sample label(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
COC properly completed	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Samples in proper containers?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Sample containers intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Sufficient sample volume for indicated test(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
All samples received within holding time?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Cooler temperature in compliance?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Water - Sample containers properly preserved	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A
Water - VOA vials free of headspace	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Trip Blanks received with VOAs	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Soil VOA method 5035 – compliance criteria met	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
<input type="checkbox"/> High concentration container (48 hr)		<input type="checkbox"/> Low concentration EnCore samplers (48 hr)	
<input type="checkbox"/> High concentration pre-weighed (methanol -14 d)		<input type="checkbox"/> Low conc pre-weighed vials (Sod Bis -14 d)	
Special precautions or instructions included?	<input type="radio"/> Yes	<input checked="" type="radio"/> No	

Comments:

Signature:

Date & Time:



Kit ID:	210021
Initiated By:	Rebekah Barger Ross
Initiated Date:	5/22/2023
Project Comment	

CHAIN-OF-CUSTODY



Tioga Environmental Consultants
 Blaylock and Brown Construction Landfill

23-146-0192
 06510
 05-26-2023
 16:19:24

Company Name Tioga Environmental Consultants	Company Number 06510	Client Project Manager/Contact Mr. Luke Hall	Purchase Order Number
Site Name Blaylock & Brown Construction LF	Project Number 56145.01	<input type="checkbox"/> RUSH – Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed	Method of Shipment <input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input type="checkbox"/> Client Drop Off Other
LIMS Project ID	Project Manager Phone # 901-791-2432	Project Manager Email lhall@tiogaenv.com	Site/Facility ID #

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
5/26/23	10:00	MW-2	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
5/26/23	10:00	MW-2	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
5/26/23	10:00	MW-2	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
5/26/23	11:30p	MW-3	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
5/26/23	11:30p	MW-3	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
5/26/23	11:30p	MW-3	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
5/26/23	12:46	MW-4	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
5/26/23	12:46	MW-4	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate

For Laboratory Use Only			Sampled by (Name, Print) Karin Benzoid		Client Remarks/Comments			
Ice Q/N	Custody Seals Y/N	Lab Comments	Relinquished by: (SIGNATURE) <i>[Signature]</i>	Date Time 5/26/23 16:16	Received by: (SIGNATURE)	Date Time		
Blank/ Cooler Temp T100 2.4°C			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time		
			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time		
			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time		



Kit ID:	210021
Initiated By:	Rebekah Barger Ross
Initiated Date:	5/22/2023
Project Comment	

CHAIN-OF-CUSTODY



Tioga Environmental Consultants
 Blaylock and Brown Construction Landfill

23-146-0192
 06510
 05-26-2023
 16:19:24

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
Tioga Environmental Consultants	06510	Mr. Luke Hall	
Site Name	Project Number	<input type="checkbox"/> RUSH – Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed	Method of Shipment <input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input type="checkbox"/> Client Drop Off Other
Blaylock & Brown Construction LF	561415.01		
LIMS Project ID	Project Manager Phone #	Project Manager Email	Site/Facility ID #
	901-791-2432	lhall@tiogaenv.com	

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
5/26/23	12:46	MW-4	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
5/26/23	13:32	MW-5	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
5/26/23	13:32	MW-5	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
5/26/23	13:32	MW-5	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
5/26/23	14:27	MW-6	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
5/26/23	14:27	MW-6	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
5/26/23	14:27	MW-6	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
5/26/23		Duplicate	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals

For Laboratory Use Only			Sampled by (Name - Print)		Client Remarks/Comments			
Ice	Custody Seals	Lab Comments	Karin Benzel					
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
			<i>[Signature]</i>	5/26/23	16:16			
			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
Blank/Cooler Temp			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
T100	2.49 Coff				<i>[Signature]</i>	5/26/23	16:16	



Kit ID:	210021
Initiated By:	Rebekah Barger Ross
Initiated Date:	5/22/2023
Project Comment	

CHAIN-OF-CUSTODY



Tioga Environmental Consultants
 Blaylock and Brown Construction Landfill

23-146-0192
 06510
 05-26-2023
 16:19:24

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
Tioga Environmental Consultants	06510	Mr. Luke Hall	
Site Name	Project Number	<input type="checkbox"/> RUSH – Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed	Method of Shipment <input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input type="checkbox"/> Client Drop Off Other
Blaylock & Brown Construction LF	561415.01		
LIMS Project ID	Project Manager Phone #	Project Manager Email	Site/Facility ID #
	901-791-2432	lhall@tiogaenv.com	

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
5/24/23		Duplicate	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
5/24/23		Duplicate	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
5/24/23	1528	MW-1	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
5/24/23	1528	MW-1	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
5/24/23	1528	MW-1	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia
5/24/23		Rinse Blank	AQU	G	1	Plastic - Pint	HNO3 - Nitric Acid	Appx I Metals
5/24/23		Rinse Blank	AQU	G	1	Plastic - Pint	NONE	Fluoride, Sulfate
5/24/23		Rinse Blank	AQU	G	1	Plastic - Pint	H2SO4 - Sulfuric Acid	Ammonia

For Laboratory Use Only			Sampled by (Name - Print)		Client Remarks/Comments			
Ice	Custody	Lab Comments	Kerim Bouzeid					
Seals								
Blank/Cooler Temp								
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
					<i>[Signature]</i>	5/24/23 16:16		
					Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
							<i>[Signature]</i>	5/26/23 16:16

Project Name: Blaylock and Brown Construction Landfill
 Site Location: 10635 Shelton Road
 Sampler Name: KB/TB

Well ID: MW-2
 Project Number: 561315.02
 Order of Sampling: 1-1

Start Date: 5/26/2023 Finish Date: 5/26/2023
 Purge Rate: _____ mL / minute
 Purge Method: Disposable Bailer / Submersible Pump / Peristaltic Pump
 Sampling Method: Disposable Bailer / Submersible Pump / Peristaltic Pump
 Pump Control Setting: _____
 Well Diameter: 0.75" / 1" / 2" / 4" / OTHER: _____
 T.O.C. Elev. AMSL 292.25 ~~298.68~~ + casing = 292.33
 Total Depth of Well: 50.00
 Approximate Depth of Water Column
 (h= TD of well - water level [TOC]): _____
 Calculated Well Volume (V=6hd²)
 (V = vol in gal; D = well diam. in ft): _____
 Groundwater Elevation AMSL 261.2

Water Level Measurements		
Date	Time	B.T.O.C.
<u>5/26/23</u>		<u>36.13</u>

WELL DEVELOPMENT/PURGING DATA								
Date/Time	Cumulative Volume (mL)	pH (SU)	Specific Conductivity (µS/cm° mS/cm°)	Temperature (Celsius)	Turbidity (NTU)	D.O. (mg/l)	ORP (mV)	Comments
<u>5/26/23 9:33</u>	<u>0.5</u>	<u>5.51</u>	<u>106.1</u>	<u>17.6</u>	<u>1215</u>	<u>8.73</u>	<u>143</u>	
<u>5/26/23 9:38</u>	<u>1.0</u>	<u>5.50</u>	<u>105.7</u>	<u>17.7</u>	<u>1173</u>	<u>8.74</u>	<u>137.7</u>	
<u>5/26/23 9:43</u>	<u>1.5</u>	<u>5.55</u>	<u>107.3</u>	<u>17.6</u>	<u>1167</u>	<u>6.27</u>	<u>144.9</u>	
<u>5/26/23 9:48</u>	<u>2.0</u>	<u>5.57</u>	<u>106.4</u>	<u>17.8</u>	<u>1166</u>	<u>5.90</u>	<u>146.4</u>	
<u>5/26/23 9:53</u>	<u>2.5</u>	<u>5.56</u>	<u>106.7</u>	<u>17.8</u>	<u>1158</u>	<u>5.89</u>	<u>150.2</u>	
<u>5/26/23 9:58</u>	<u>3.0</u>	<u>5.56</u>	<u>106.5</u>	<u>17.8</u>	<u>1159</u>	<u>5.83</u>	<u>151.7</u>	

Purging Criteria (Low Flow): Attempt to keep the static water level from decreasing more than an initial 0.33'
 While looking at 3 consecutive data sets, the pH should be + or - 0.1 Standard Unit (SU), the Specific Conductivity should be within 5%, the temperature should be stable, and the turbidity should be less than 10 NTU or 3 readings within 10%. (SEDSPRO Document) According to the old EPA guidelines the ORP should be + or - 10 millivolts and D.O. should be + or - 0.3 mg/L.

Well Casing Volume Factor: 3/4" wells = 0.022 gal/ft 1" wells = 0.041 gal/ft 2" wells = 0.163 gallons/ft 4" wells = 0.653 gallons/ft
 EXAMPLE: Multiply the height in feet of the water column in the SCREEN and multiply by the appropriate factor for well diameter above.

Sample ID	Date	Time	Sample Container	Preservative
<u>MW-2</u>	<u>5/26/23</u>	<u>10:00</u>		<u>Nitric Sulfuric None</u>

Signature: [Signature]

Date: 5/26/23

Project Name: Blaylock and Brown Construction Landfill
 Site Location: 10635 Shelton Road
 Sampler Name: KB/TB

Well ID: MW-3
 Project Number: 561315.02
 Order of Sampling: 1-2

Start Date: 5/26/23 Finish Date: 5/26/23
 Purge Rate: 100 mL / minute
 Purge Method: Disposable Bailer / Submersible Pump / Peristaltic Pump
 Sampling Method: Disposable Bailer / Submersible Pump / Peristaltic Pump
 Pump Control Setting: 105
 Well Diameter: 0.75" / 1" / 2" / 4" / OTHER:
 T.O.C. Elev. AMSL 290.39 + casing = 294.4
 Total Depth of Well: 55.00
 Approximate Depth of Water Column
 (h= TD of well - water level [TOC]): 21.95
 Calculated Well Volume (V=6hd²)
 (V = vol in gal; D = well diam. in ft): 3.65
 Groundwater Elevation AMSL 261.35

Water Level Measurements		
Date	Time	B.T.O.C.
<u>5/26/23</u>	<u>10:47</u>	<u>33.05</u>

WELL DEVELOPMENT/PURGING DATA								
Date/Time	Cumulative Volume (mL L)	pH (SU)	Specific Conductivity (µS/cm° mS/cm°)	Temperature (Celsius)	Turbidity (NTU)	D.O. (mg/l)	ORP (mV)	Comments
<u>5/26/2023 11:20</u>	<u>0.5L</u>	<u>6.25</u>	<u>961</u>	<u>24.0</u>	<u>17.0</u>	<u>5.61</u>	<u>78.3</u>	
<u>5/26/2023 11:25</u>	<u>1.0L</u>	<u>6.24</u>	<u>987</u>	<u>24.2</u>	<u>9.9</u>	<u>2.36</u>	<u>68.0</u>	
<u>5/26/2023 11:30</u>	<u>1.5L</u>	<u>6.23</u>	<u>1011</u>	<u>23.0</u>	<u>5.43</u>	<u>2.33</u>	<u>51.7</u>	
<u>5/26/2023 11:35</u>	<u>2.0</u>	<u>6.24</u>	<u>1006</u>	<u>22.9</u>	<u>5.18</u>	<u>2.2</u>	<u>49.7</u>	

Purging Criteria (Low Flow): Attempt to keep the static water level from decreasing more than an initial 0.33'
 While looking at 3 consecutive data sets, the pH should be + or - 0.1 Standard Unit (SU), the Specific Conductivity should be within 5%, the temperature should be stable, and the turbidity should be less than 10 NTU or 3 readings within 10%. (SEDSPRO Document) According to the old EPA guidelines the ORP should be + or - 10 millivolts and D.O. should be + or - 0.3 mg/L.

Well Casing Volume Factor: 3/4" wells ≈ 0.022 gal/ft 1" wells = 0.041 gal/ft 2" wells = 0.163 gallons/ft 4" wells = 0.653 gallons/ft
 EXAMPLE: Multiply the height in feet of the water column in the SCREEN and multiply by the appropriate factor for well diameter above.

Sample ID	Date	Time	Sample Container	Preservative
<u>MW-3</u>	<u>5/26/23</u>	<u>11:36</u>		<u>Nitric</u>
				<u>Sulfuric</u>
				<u>NONE</u>

Signature: [Handwritten Signature]

Date: 5/26/23

Project Name: Blaylock and Brown Construction Landfill
 Site Location: 10635 Shelton Road
 Sampler Name: KB/TB

Well ID: MW-14
 Project Number: 561315.02
 Order of Sampling: 1-3

Start Date: 5/26/23 Finish Date: 5/26/23
 Purge Rate: 10/10 mL / minute
 Purge Method: Disposable Bailer / Submersible Pump / Peristaltic Pump
 Sampling Method: Disposable Bailer / Submersible Pump / Peristaltic Pump
 Pump Control Setting: 10/5
 Well Diameter: 0.75" / 1" / 2" / 4" / OTHER:
 T.O.C. Elev. AMSL 288.87 + casing = 290.16
 Total Depth of Well: 45 / 100
 Approximate Depth of Water Column
 (h= TD of well - water level [TOC]): 17.11
 Calculated Well Volume (V=6hd²)
 (V = vol in gal; D = well diam. in ft): 2.9
 Groundwater Elevation AMSL 262.27

Water Level Measurements		
Date	Time	B.T.O.C.
5/26/23	12:15	27.89

WELL DEVELOPMENT/PURGING DATA								
Date/Time	Cumulative Volume (mL) ①	pH (SU)	Specific Conductivity ($\mu\text{S}/\text{cm}^\circ$ mS/cm $^\circ$)	Temperature (Celsius)	Turbidity (NTU)	D.O. (mg/l)	ORP (mV)	Comments
5/26/23 12:30	0.5L	6.25	1385	14.9	16.9	0.9	5.2	
5/26/23 12:35	1.0L	6.27	1212	14.6	12.5	1.16	48.8	
5/26/23 12:40	1.5L	6.26	1133	14.4	10.47	1.14	44.2	
5/26/23 12:45	2.0L	6.26	1148	14.5	4.19	1.17	41.8	

Purging Criteria (Low Flow): Attempt to keep the static water level from decreasing more than an initial 0.33' While looking at 3 consecutive data sets, the pH should be + or- 0.1 Standard Unit (SU), the Specific Conductivity should be within 5%, the temperature should be stable, and the turbidity should be less than 10 NTU or 3 readings within 10%. (SEDSPRO Document) According to the old EPA guidelines the ORP should be + or - 10 millivolts and D.O. should be + or - 0.3 mg/L.

Well Casing Volume Factor: 3/4" wells = 0.022 gal/ft 1" wells = 0.041 gal/ft 2" wells = 0.163 gallons/ft 4" wells = 0.653 gallons/ft
 EXAMPLE: Multiply the height in feet of the water column in the SCREEN and multiply by the appropriate factor for well diameter above.

Sample ID	Date	Time	Sample Container	Preservative
MW-14	5/26/23	12:46		Nitric Sulfuric None

Signature: _____ Date: 5/26/23

Project Name: Blaylock and Brown Construction Landfill
 Site Location: 10635 Shelton Road
 Sampler Name: MB/TB

Well ID: MW-5
 Project Number: 561315.02
 Order of Sampling: 1-4

Start Date: 5/26/23 Finish Date: 5/26/23
 Purge Rate: 100 mL / minute
 Purge Method: Disposable Bailer / Submersible Pump / Peristaltic Pump
 Sampling Method: Disposable Bailer / Submersible Pump / Peristaltic Pump
 Pump Control Setting: 10/5
 Well Diameter: 0.75" / 1" / 2" / 4" / OTHER:
 T.O.C. Elev. AMSL 288.97 + casing = 293.00
 Total Depth of Well: 55.00
 Approximate Depth of Water Column
 (h= TD of well - water level [TOC]): 22.35
 Calculated Well Volume (V=6hd²)
 (V = vol in gal; D = well diam. in ft): 3.7
 Groundwater Elevation AMSL 260.35

Water Level Measurements		
Date	Time	B.T.O.C.
5/26/23	1304	32.65

WELL DEVELOPMENT/PURGING DATA								
Date/Time	Cumulative Volume (mL)	pH (SU)	Specific Conductivity (µS/cm ² mS/cm ²)	Temperature (Celsius)	Turbidity (NTU)	D.O. (mg/l)	ORP (mV)	Comments
5/26/23 1315	0.5	5.44	441.1	19.5	944	1.61	37.5	
5/26/23 1320	1.0	5.42	439.2	19.1	86.3	1.50	34.3	
5/26/23 1325	1.5	5.40	436.0	19.0	75.5	1.44	29.8	
5/26/23 1330	2.0	5.89	435.4	18.9	68.8	1.36	27.5	

Purging Criteria (Low Flow): Attempt to keep the static water level from decreasing more than an initial 0.33' While looking at 3 consecutive data sets, the pH should be + or- 0.1 Standard Unit (SU), the Specific Conductivity should be within 5%, the temperature should be stable, and the turbidity should be less than 10 NTU or 3 readings within 10%. (SEDS PRO Document) According to the old EPA guidelines the ORP should be + or - 10 millivolts and D.O. should be + or - 0.3 mg/L.

Well Casing Volume Factor: 3/4" wells ≈ 0.022 gal/ft 1" wells = 0.041 gal/ft 2" wells = 0.163 gallons/ft 4" wells = 0.653 gallons/ft
 EXAMPLE: Multiply the height in feet of the water column in the SCREEN and multiply by the appropriate factor for well diameter above.

Sample ID	Date	Time	Sample Container	Preservative
MW-5	5/26/23	1332		Sulfuric Nitric None

Signature: *Travis [Signature]* Date: 5/26/23

Project Name: Blaylock and Brown Construction Landfill
 Site Location: 10635 Shelton Road
 Sampler Name: KB/TB

Well ID: MW-6
 Project Number: 561315.02
 Order of Sampling: 1-5

Start Date: 5/26/23 Finish Date: 5/26/23
 Purge Rate: 100 mL / minute
 Purge Method: Disposable Bailer / Submersible Pump / Peristaltic Pump
 Sampling Method: Disposable Bailer / Submersible Pump / Peristaltic Pump
 Pump Control Setting: 10/5
 Well Diameter: 0.75" / 1" / 2" / 4" / OTHER:
 T.O.C. Elev. AMSL 309.31 + casing = 312.76
 Total Depth of Well: 85.00
 Approximate Depth of Water Column
 (h= TD of well - water level [TOC]): 33.53
 Calculated Well Volume (V=6hd²)
 (V = vol in gal; D = well diam. in ft): 5.6
 Groundwater Elevation AMSL 261.29

Water Level Measurements		
Date	Time	B.T.O.C.
5/26/23	14:05	51.47

WELL DEVELOPMENT/PURGING DATA								
Date/Time	Cumulative Volume (mL)	pH (SU)	Specific Conductivity (µS/cm ² mS/cm ²)	Temperature (Celsius)	Turbidity (NTU)	D.O. (mg/l)	ORP (mV)	Comments
5/26/23 14:10	0.5L	5.99	277.6	23.1	94.2	0.62	35.5	
5/26/23 14:15	1.0L	6.03	278.6	23.2	66.3	0.87	31.4	
5/26/23 14:20	1.5L	6.01	300.9	22.9	54.0	0.77	24.1	
5/26/23 14:25	2.0L	6.03	302.0	22.7	57.7	0.87	40.0	

Purging Criteria (Low Flow): Attempt to keep the static water level from decreasing more than an initial 0.33' While looking at 3 consecutive data sets, the pH should be + or - 0.1 Standard Unit (SU), the Specific Conductivity should be within 5%, the temperature should be stable, and the turbidity should be less than 10 NTU or 3 readings within 10%. (SEDSPRO Document) According to the old EPA guidelines the ORP should be + or - 10 millivolts and D.O. should be + or - 0.3 mg/L.

Well Casing Volume Factor: 3/4" wells ≈ 0.022 gal/ft 1" wells = 0.041 gal/ft 2" wells = 0.163 gallons/ft 4" wells = 0.653 gallons/ft
 EXAMPLE: Multiply the height in feet of the water column in the SCREEN and multiply by the appropriate factor for well diameter above.

Sample ID	Date	Time	Sample Container	Preservative
MW-6	5/26/23	14:27	40 mL amber	HCl
Duplicate	5/26/23			Nitric Sulfuric NONE

Signature: [Handwritten Signature]

Date: 5/26/23

Project Name: Blaylock and Brown Construction Landfill
 Site Location: 10635 Shelton Road
 Sampler Name: YB/TB

Well ID: MW-1
 Project Number: 561315.02
 Order of Sampling: 1-6

Start Date: 5/26/23 Finish Date: 5/26/23
 Purge Rate: 10/10 mL/minute
 Purge Method: Disposable Bailer / Submersible Pump / Peristaltic Pump
 Sampling Method: Disposable Bailer / Submersible Pump / Peristaltic Pump
 Pump Control Setting: 10/5
 Well Diameter: 0.75" / 1" / 2" / 4" / OTHER:
 T.O.C. Elev. AMSL: 308.34 + casing = 311.50
 Total Depth of Well: 60.00
 Approximate Depth of Water Column
 (h= TD of well - water level [TOC]): 12.07
 Calculated Well Volume (V=6hd²)
 (V = vol in gal; D = well diam. in ft): 2.0
 Groundwater Elevation AMSL: 263.57

Water Level Measurements		
Date	Time	B.T.O.C.
5/26/23	1500	47.93

WELL DEVELOPMENT/PURGING DATA								
Date/Time	Cumulative Volume (mL)	pH (SU)	Specific Conductivity (µS/cm ² mS/cm ²)	Temperature (Celsius)	Turbidity (NTU)	D.O. (mg/l)	ORP (mV)	Comments
5/26/23 1510	0.51	6.23	615	25.3	855	4.67	65.6	
5/26/23 1515	1.01	6.23	548	24.6	866.3	4.97	58	
5/26/23 1520	1.51	6.23	537	24.6	602.4	4.78	56.8	
5/26/23 1525	2.01	6.23	526	24.5	858	4.66	57	

Purging Criteria (Low Flow): Attempt to keep the static water level from decreasing more than an initial 0.33'
 While looking at 3 consecutive data sets, the pH should be + or - 0.1 Standard Unit (SU), the Specific Conductivity should be within 5%, the temperature should be stable, and the turbidity should be less than 10 NTU or 3 readings within 10%. (SEDSPRO Document) According to the old EPA guidelines the ORP should be + or - 10 millivolts and D.O. should be + or - 0.3 mg/L.

Well Casing Volume Factor: 3/4" wells = 0.022 gal/ft 1" wells = 0.041 gal/ft 2" wells = 0.163 gallons/ft 4" wells = 0.653 gallons/ft
 EXAMPLE: Multiply the height in feet of the water column in the SCREEN and multiply by the appropriate factor for well diameter above.

Sample ID	Date	Time	Sample Container	Preservative
MW-1	5/26/23	1528		Nitric
Rinse Blank				Sulfuric
				None

Signature:  Date: 5/26/23

APPENDIX 4
STATISTICAL ANALYSIS DATA

Concentrations (mg/l)

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 18

Percent Non-Detects: 17.6471%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	2 (11.7647%)	7/1/2014	0.088	0.088
			8/1/2015	0.066	0.066
			12/1/2015	0.017	0.017
			8/1/2016	0.101	0.101
			12/1/2016	0.124	0.124
			6/1/2017	1.028	1.028
			12/1/2017	1.11	1.11
			7/1/2018	1.742	1.742
			12/1/2018	1.821	1.821
			7/1/2019	1.221	1.221
			1/1/2020	2.011	2.011
			7/1/2020	2.109	2.109
			5/1/2021	0.071	0.071
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	14.8	14.8
			5/26/2023	0.0298	0.0298

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	1 (5.88235%)	7/1/2014	0.155	0.155
			8/1/2015	0.061	0.061
			12/1/2015	0.018	0.018
			8/1/2016	0.086	0.086
			12/1/2016	0.091	0.091
			6/1/2017	0.121	0.121
			12/1/2017	0.141	0.141
			7/1/2018	0.732	0.732
			12/1/2018	0.887	0.887
			7/1/2019	0.92	0.92
			1/1/2020	0.753	0.753
			7/1/2020	0.807	0.807
			5/1/2021	0.054	0.054
			12/14/2021	0.011	0.011
			6/7/2022	ND<0	ND<0
			11/16/2022	17.1	17.1
			5/26/2023	0.0125	0.0125
MW-3	17	1 (5.88235%)	7/1/2014	0.028	0.028
			8/1/2015	0.061	0.061
			12/1/2015	0.021	0.021
			8/1/2016	0.164	0.164
			12/1/2016	0.141	0.141

			6/1/2017	0.173	0.173
			12/1/2017	1.002	1.002
			7/1/2018	1	1
			12/1/2018	1.11	1.11
			7/1/2019	0.107	0.107
			1/1/2020	0.324	0.324
			7/1/2020	0.543	0.543
			5/1/2021	0.061	0.061
			12/14/2021	0.012	0.012
			6/7/2022	0.0114	0.0114
			11/16/2022	ND<0	ND<0
			5/26/2023	0.0149	0.0149
<hr/>					
MW-4	17	4 (23.5294%)	7/1/2014	0.103	0.103
			8/1/2015	0.06	0.06
			12/1/2015	0.034	0.034
			8/1/2016	0.091	0.091
			12/1/2016	0.112	0.112
			6/1/2017	0.121	0.121
			12/1/2017	0.115	0.115
			7/1/2018	0.129	0.129
			12/1/2018	0.099	0.099
			7/1/2019	0.117	0.117
			1/1/2020	0.505	0.505
			7/1/2020	0.67	0.67
			5/1/2021	0.067	0.067
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-5	17	5 (29.4118%)	7/1/2014	0.051	0.051
			8/1/2015	0.053	0.053
			12/1/2015	0.022	0.022
			8/1/2016	0.222	0.222
			12/1/2016	0.184	0.184
			6/1/2017	0.15	0.15
			12/1/2017	0.109	0.109
			7/1/2018	0.274	0.274
			12/1/2018	0.374	0.374
			7/1/2019	0.222	0.222
			1/1/2020	0.446	0.446
			7/1/2020	0.544	0.544
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-6	17	5 (29.4118%)	7/1/2014	0.076	0.076
			8/1/2015	0.069	0.069
			12/1/2015	0.1	0.1
			8/1/2016	0.16	0.16
			12/1/2016	0.1	0.1
			6/1/2017	0.114	0.114
			12/1/2017	0.272	0.272
			7/1/2018	0.37	0.37

12/1/2018	0.355	0.355
7/1/2019	0.103	0.103
1/1/2020	0.247	0.247
7/1/2020	0.372	0.372
5/1/2021	ND<0	ND<0
12/14/2021	ND<0	ND<0
6/7/2022	ND<0	ND<0
11/16/2022	ND<0	ND<0
5/26/2023	ND<0	ND<0

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Concentrations (mg/l)

Parameter: VanaDiUm

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 90

Percent Non-Detects: 88.2353%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	14 (82.3529%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.013	0.013
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.006	0.006
			5/26/2023	0.009	0.009

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	16 (94.1176%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.005	0.005

MW-3	17	16 (94.1176%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0

			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.001	0.001
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-4	17	16 (94.1176%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.003	0.003
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-5	17	14 (82.3529%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.002	0.002
			12/14/2021	0.006	0.006
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.005	0.005
<hr/>					
MW-6	17	14 (82.3529%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0

12/1/2018	ND<0	ND<0
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	0.001	0.001
12/14/2021	0.005	0.005
6/7/2022	ND<0	ND<0
11/16/2022	0.013	0.013
5/26/2023	ND<0	ND<0

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Concentrations (mg/l)

Parameter: Sulfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 24

Percent Non-Detects: 23.5294%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	3 (17.6471%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	7	7
			12/1/2016	8	8
			6/1/2017	12	12
			12/1/2017	9	9
			7/1/2018	10	10
			12/1/2018	14	14
			7/1/2019	15	15
			1/1/2020	16	16
			7/1/2020	32	32
			5/1/2021	16	16
			12/14/2021	5.09	5.09
			6/7/2022	3.33	3.33
			11/16/2022	3.37	3.37
			5/26/2023	1.58	1.58

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	7 (41.1765%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	3	3
			12/1/2016	5	5
			6/1/2017	8	8
			12/1/2017	11	11
			7/1/2018	10	10
			12/1/2018	10	10
			7/1/2019	9	9
			1/1/2020	9	9
			7/1/2020	12	12
			5/1/2021	ND<0	ND<0
			12/14/2021	1.74	1.74
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0

MW-3	17	4 (23.5294%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	2	2
			12/1/2016	4	4

			6/1/2017	7	7
			12/1/2017	8	8
			7/1/2018	11	11
			12/1/2018	10	10
			7/1/2019	11	11
			1/1/2020	11	11
			7/1/2020	9	9
			5/1/2021	ND<0	ND<0
			12/14/2021	15.9	15.9
			6/7/2022	10.6	10.6
			11/16/2022	16.8	16.8
			5/26/2023	13.8	13.8
<hr/>					
MW-4	17	4 (23.5294%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	13	13
			12/1/2016	9	9
			6/1/2017	9	9
			12/1/2017	10	10
			7/1/2018	12	12
			12/1/2018	11	11
			7/1/2019	9	9
			1/1/2020	15	15
			7/1/2020	11	11
			5/1/2021	ND<0	ND<0
			12/14/2021	6.64	6.64
			6/7/2022	5.99	5.99
			11/16/2022	6.49	6.49
			5/26/2023	4.65	4.65
<hr/>					
MW-5	17	3 (17.6471%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	98	98
			12/1/2016	84	84
			6/1/2017	28	28
			12/1/2017	17	17
			7/1/2018	16	16
			12/1/2018	13	13
			7/1/2019	10	10
			1/1/2020	15	15
			7/1/2020	18	18
			5/1/2021	11	11
			12/14/2021	8.53	8.53
			6/7/2022	11.1	11.1
			11/16/2022	6.41	6.41
			5/26/2023	9.73	9.73
<hr/>					
MW-6	17	3 (17.6471%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	9	9
			12/1/2016	10	10
			6/1/2017	11	11
			12/1/2017	10	10
			7/1/2018	11	11

12/1/2018	10	10
7/1/2019	9	9
1/1/2020	11	11
7/1/2020	12	12
5/1/2021	8	8
12/14/2021	8.89	8.89
6/7/2022	11.1	11.1
11/16/2022	9.02	9.02
5/26/2023	10.1	10.1

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Concentrations (mg/l)

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 52

Percent Non-Detects: 50.9804%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	3 (17.6471%)	7/1/2014	0.008	0.008
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.008	0.008
			12/1/2016	0.012	0.012
			6/1/2017	0.027	0.027
			12/1/2017	0.009	0.009
			7/1/2018	0.01	0.01
			12/1/2018	0.01	0.01
			7/1/2019	0.018	0.018
			1/1/2020	0.011	0.011
			7/1/2020	0.01	0.01
			5/1/2021	0.0035	0.0035
			12/14/2021	0.0026	0.0026
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0049	0.0049
			5/26/2023	0.0042	0.0042

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	8 (47.0588%)	7/1/2014	0.015	0.015
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	0.012	0.012
			6/1/2017	0.01	0.01
			12/1/2017	ND<0	ND<0
			7/1/2018	0.009	0.009
			12/1/2018	0.006	0.006
			7/1/2019	0.006	0.006
			1/1/2020	0.005	0.005
			7/1/2020	ND<0	ND<0
			5/1/2021	0.003	0.003
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0036	0.0036
			5/26/2023	ND<0	ND<0

MW-3	17	7 (41.1765%)	7/1/2014	0.008	0.008
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0

			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	0.009	0.009
			12/1/2018	0.009	0.009
			7/1/2019	0.009	0.009
			1/1/2020	0.006	0.006
			7/1/2020	0.007	0.007
			5/1/2021	0.008	0.008
			12/14/2021	ND<0	ND<0
			6/7/2022	0.0137	0.0137
			11/16/2022	0.003	0.003
			5/26/2023	0.0139	0.0139
<hr/>					
MW-4	17	11 (64.7059%)	7/1/2014	0.007	0.007
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.006	0.006
			12/14/2021	0.0026	0.0026
			6/7/2022	0.0046	0.0046
			11/16/2022	0.0072	0.0072
			5/26/2023	0.0054	0.0054
<hr/>					
MW-5	17	14 (82.3529%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.0013	0.0013
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0011	0.0011
			5/26/2023	0.0011	0.0011
<hr/>					
MW-6	17	9 (52.9412%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.012	0.012
			12/1/2016	0.006	0.006
			6/1/2017	0.006	0.006
			12/1/2017	0.006	0.006
			7/1/2018	0.006	0.006

12/1/2018	0.006	0.006
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	ND<0	ND<0
12/14/2021	ND<0	ND<0
6/7/2022	0.0025	0.0025
11/16/2022	0.0026	0.0026
5/26/2023	ND<0	ND<0

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Concentrations (mg/l)

Parameter: MercUry

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 96

Percent Non-Detects: 94.1176%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	15 (88.2353%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0002	0.0002
			5/26/2023	0.00042	0.00042

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	16 (94.1176%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.00026	0.00026

MW-3	17	17 (100%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0

			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
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MW-4	17	17 (100%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-5	17	16 (94.1176%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.00023	0.00023
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-6	17	15 (88.2353%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0

12/1/2018	ND<0	ND<0
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	ND<0	ND<0
12/14/2021	0.00025	0.00025
6/7/2022	ND<0	ND<0
11/16/2022	ND<0	ND<0
5/26/2023	0.00119	0.00119

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Concentrations (mg/l)

Parameter: **Lead**

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 84

Percent Non-Detects: 82.3529%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	9 (52.9412%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	0.006	0.006
			12/1/2018	0.009	0.009
			7/1/2019	0.012	0.012
			1/1/2020	0.015	0.015
			7/1/2020	0.018	0.018
			5/1/2021	0.021	0.021
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.002	0.002
			5/26/2023	0.009	0.009

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	14 (82.3529%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.005	0.005
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0034	0.0034
			5/26/2023	0.0015	0.0015
MW-3	17	16 (94.1176%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0

			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.0075	0.0075
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-4	17	14 (82.3529%)	7/1/2014	ND<0	ND<0
			8/1/2015	0.006	0.006
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.016	0.016
			12/14/2021	0.001	0.001
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-5	17	15 (88.2353%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.0011	0.0011
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.001	0.001
<hr/>					
MW-6	17	16 (94.1176%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0

12/1/2018	ND<0	ND<0
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	ND<0	ND<0
12/14/2021	ND<0	ND<0
6/7/2022	ND<0	ND<0
11/16/2022	0.0012	0.0012
5/26/2023	ND<0	ND<0

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Concentrations (mg/l)

Parameter: FIUoriDe

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 32

Percent Non-Detects: 31.3725%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	3 (17.6471%)	7/1/2014	0.02	0.02
			8/1/2015	0.19	0.19
			12/1/2015	0.22	0.22
			8/1/2016	0.52	0.52
			12/1/2016	0.6	0.6
			6/1/2017	1.55	1.55
			12/1/2017	1	1
			7/1/2018	1.76	1.76
			12/1/2018	1.79	1.79
			7/1/2019	2.05	2.05
			1/1/2020	2.57	2.57
			7/1/2020	3.62	3.62
			5/1/2021	ND<0	ND<0
			12/14/2021	0.127	0.127
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.149	0.149

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	5 (29.4118%)	7/1/2014	0.18	0.18
			8/1/2015	0.24	0.24
			12/1/2015	0.29	0.29
			8/1/2016	0.61	0.61
			12/1/2016	0.75	0.75
			6/1/2017	0.96	0.96
			12/1/2017	1.09	1.09
			7/1/2018	1.05	1.05
			12/1/2018	1.03	1.03
			7/1/2019	0.5	0.5
			1/1/2020	0.78	0.78
			7/1/2020	1.001	1.001
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0

MW-3	17	5 (29.4118%)	7/1/2014	0.26	0.26
			8/1/2015	0.13	0.13
			12/1/2015	0.18	0.18
			8/1/2016	0.34	0.34
			12/1/2016	0.22	0.22

			6/1/2017	0.75	0.75
			12/1/2017	1	1
			7/1/2018	0.92	0.92
			12/1/2018	0.58	0.58
			7/1/2019	0.49	0.49
			1/1/2020	0.62	0.62
			7/1/2020	0.745	0.745
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-4	17	6 (35.2941%)	7/1/2014	0.12	0.12
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.41	0.41
			12/1/2016	0.56	0.56
			6/1/2017	0.52	0.52
			12/1/2017	0.47	0.47
			7/1/2018	1.24	1.24
			12/1/2018	1.09	1.09
			7/1/2019	0.65	0.65
			1/1/2020	0.73	0.73
			7/1/2020	0.791	0.791
			5/1/2021	ND<0	ND<0
			12/14/2021	0.162	0.162
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-5	17	5 (29.4118%)	7/1/2014	0.11	0.11
			8/1/2015	0.22	0.22
			12/1/2015	0.25	0.25
			8/1/2016	1.26	1.26
			12/1/2016	0.92	0.92
			6/1/2017	0.76	0.76
			12/1/2017	0.83	0.83
			7/1/2018	0.88	0.88
			12/1/2018	0.74	0.74
			7/1/2019	0.6	0.6
			1/1/2020	0.97	0.97
			7/1/2020	0.781	0.781
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-6	17	8 (47.0588%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.35	0.35
			12/1/2016	0.21	0.21
			6/1/2017	0.19	0.19
			12/1/2017	0.55	0.55
			7/1/2018	0.92	0.92

12/1/2018	0.79	0.79
7/1/2019	0.61	0.61
1/1/2020	0.76	0.76
7/1/2020	0.209	0.209
5/1/2021	ND<0	ND<0
12/14/2021	ND<0	ND<0
6/7/2022	ND<0	ND<0
11/16/2022	ND<0	ND<0
5/26/2023	ND<0	ND<0

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Concentrations (mg/l)

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 28

Percent Non-Detects: 27.451%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	2 (11.7647%)	7/1/2014	0.066	0.066
			8/1/2015	0.011	0.011
			12/1/2015	ND<0	ND<0
			8/1/2016	0.031	0.031
			12/1/2016	0.038	0.038
			6/1/2017	ND<0	ND<0
			12/1/2017	0.055	0.055
			7/1/2018	0.041	0.041
			12/1/2018	0.046	0.046
			7/1/2019	0.05	0.05
			1/1/2020	0.056	0.056
			7/1/2020	0.063	0.063
			5/1/2021	0.015	0.015
			12/14/2021	0.0017	0.0017
			6/7/2022	0.0011	0.0011
			11/16/2022	0.0031	0.0031
			5/26/2023	0.0139	0.0139

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	6 (35.2941%)	7/1/2014	0.06	0.06
			8/1/2015	0.009	0.009
			12/1/2015	ND<0	ND<0
			8/1/2016	0.038	0.038
			12/1/2016	0.039	0.039
			6/1/2017	0.22	0.22
			12/1/2017	0.02	0.02
			7/1/2018	0.026	0.026
			12/1/2018	0.018	0.018
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.024	0.024
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0061	0.0061
			5/26/2023	0.0028	0.0028

MW-3	17	5 (29.4118%)	7/1/2014	0.054	0.054
			8/1/2015	0.008	0.008
			12/1/2015	ND<0	ND<0
			8/1/2016	0.45	0.45
			12/1/2016	0.043	0.043

			6/1/2017	0.031	0.031
			12/1/2017	0.033	0.033
			7/1/2018	0.049	0.049
			12/1/2018	0.04	0.04
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.031	0.031
			12/14/2021	0.0132	0.0132
			6/7/2022	0.001	0.001
			11/16/2022	0.0035	0.0035
			5/26/2023	ND<0	ND<0
<hr/>					
MW-4	17	4 (23.5294%)	7/1/2014	0.055	0.055
			8/1/2015	0.009	0.009
			12/1/2015	ND<0	ND<0
			8/1/2016	0.017	0.017
			12/1/2016	0.022	0.022
			6/1/2017	0.031	0.031
			12/1/2017	0.039	0.039
			7/1/2018	0.052	0.052
			12/1/2018	0.032	0.032
			7/1/2019	0.032	0.032
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.057	0.057
			12/14/2021	0.0012	0.0012
			6/7/2022	0.0011	0.0011
			11/16/2022	0.0018	0.0018
			5/26/2023	ND<0	ND<0
<hr/>					
MW-5	17	6 (35.2941%)	7/1/2014	0.026	0.026
			8/1/2015	0.006	0.006
			12/1/2015	ND<0	ND<0
			8/1/2016	0.028	0.028
			12/1/2016	0.026	0.026
			6/1/2017	0.025	0.025
			12/1/2017	0.027	0.027
			7/1/2018	0.031	0.031
			12/1/2018	0.028	0.028
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.013	0.013
			12/14/2021	0.0016	0.0016
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.0017	0.0017
<hr/>					
MW-6	17	5 (29.4118%)	7/1/2014	0.046	0.046
			8/1/2015	0.008	0.008
			12/1/2015	0.005	0.005
			8/1/2016	0.046	0.046
			12/1/2016	0.048	0.048
			6/1/2017	0.027	0.027
			12/1/2017	0.03	0.03
			7/1/2018	0.038	0.038

12/1/2018	0.022	0.022
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	0.018	0.018
12/14/2021	0.0018	0.0018
6/7/2022	ND<0	ND<0
11/16/2022	0.0017	0.0017
5/26/2023	ND<0	ND<0

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Concentrations (mg/l)

Parameter: Cobalt

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 80

Percent Non-Detects: 78.4314%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	13 (76.4706%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.086	0.086
			12/14/2021	0.045	0.045
			6/7/2022	ND<0	ND<0
			11/16/2022	0.07	0.07
			5/26/2023	0.035	0.035

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	16 (94.1176%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.001	0.001
			5/26/2023	ND<0	ND<0
MW-3	17	12 (70.5882%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0

			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.004	0.004
			12/14/2021	0.001	0.001
			6/7/2022	0.004	0.004
			11/16/2022	0.002	0.002
			5/26/2023	0.005	0.005
<hr/>					
MW-4	17	12 (70.5882%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	0.008	0.008
			12/14/2021	0.001	0.001
			6/7/2022	0.006	0.006
			11/16/2022	0.003	0.003
			5/26/2023	0.007	0.007
<hr/>					
MW-5	17	14 (82.3529%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.002	0.002
			6/7/2022	ND<0	ND<0
			11/16/2022	0.001	0.001
			5/26/2023	0.003	0.003
<hr/>					
MW-6	17	13 (76.4706%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0

12/1/2018	ND<0	ND<0
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	0.002	0.002
12/14/2021	ND<0	ND<0
6/7/2022	0.006	0.006
11/16/2022	0.002	0.002
5/26/2023	0.004	0.004

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Concentrations (mg/l)

Parameter: ChromiUm

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 87

Percent Non-Detects: 85.2941%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	12 (70.5882%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	0.009	0.009
			12/1/2018	0.01	0.01
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	0.001	0.001
			11/16/2022	0.003	0.003
			5/26/2023	0.004	0.004

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	14 (82.3529%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.001	0.001
			6/7/2022	ND<0	ND<0
			11/16/2022	0.014	0.014
			5/26/2023	0.001	0.001

MW-3	17	17 (100%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0

			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-4	17	16 (94.1176%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.001	0.001
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-5	17	14 (82.3529%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.002	0.002
			6/7/2022	ND<0	ND<0
			11/16/2022	0.001	0.001
			5/26/2023	0.002	0.002
<hr/>					
MW-6	17	14 (82.3529%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0

12/1/2018	ND<0	ND<0
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	ND<0	ND<0
12/14/2021	0.002	0.002
6/7/2022	ND<0	ND<0
11/16/2022	0.005	0.005
5/26/2023	0.001	0.001

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Concentrations (mg/l)

Parameter: BariUm

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 1

Percent Non-Detects: 0.980392%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	0 (0%)	7/1/2014	0.023	0.023
			8/1/2015	0.024	0.024
			12/1/2015	0.018	0.018
			8/1/2016	0.2	0.2
			12/1/2016	0.051	0.051
			6/1/2017	0.081	0.081
			12/1/2017	0.095	0.095
			7/1/2018	0.111	0.111
			12/1/2018	0.121	0.121
			7/1/2019	0.268	0.268
			1/1/2020	0.291	0.291
			7/1/2020	0.498	0.498
			5/1/2021	0.14	0.14
			12/14/2021	0.037	0.037
			6/7/2022	0.031	0.031
			11/16/2022	0.073	0.073
			5/26/2023	0.09	0.09

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	1 (5.88235%)	7/1/2014	0.026	0.026
			8/1/2015	0.035	0.035
			12/1/2015	0.043	0.043
			8/1/2016	0.35	0.35
			12/1/2016	0.044	0.044
			6/1/2017	0.061	0.061
			12/1/2017	0.073	0.073
			7/1/2018	0.078	0.078
			12/1/2018	0.081	0.081
			7/1/2019	0.076	0.076
			1/1/2020	0.081	0.081
			7/1/2020	0.097	0.097
			5/1/2021	0.031	0.031
			12/14/2021	0.03	0.03
			6/7/2022	ND<0	ND<0
			11/16/2022	0.048	0.048
			5/26/2023	0.031	0.031

MW-3	17	0 (0%)	7/1/2014	0.039	0.039
			8/1/2015	0.042	0.042
			12/1/2015	0.031	0.031
			8/1/2016	0.039	0.039
			12/1/2016	0.033	0.033

			6/1/2017	0.028	0.028
			12/1/2017	0.031	0.031
			7/1/2018	0.084	0.084
			12/1/2018	0.064	0.064
			7/1/2019	0.055	0.055
			1/1/2020	0.078	0.078
			7/1/2020	0.09	0.09
			5/1/2021	0.084	0.084
			12/14/2021	0.037	0.037
			6/7/2022	0.123	0.123
			11/16/2022	0.055	0.055
			5/26/2023	0.124	0.124
<hr/>					
MW-4	17	0 (0%)	7/1/2014	0.037	0.037
			8/1/2015	0.063	0.063
			12/1/2015	0.044	0.044
			8/1/2016	0.086	0.086
			12/1/2016	0.081	0.081
			6/1/2017	0.07	0.07
			12/1/2017	0.083	0.083
			7/1/2018	0.095	0.095
			12/1/2018	0.055	0.055
			7/1/2019	0.053	0.053
			1/1/2020	0.079	0.079
			7/1/2020	0.091	0.091
			5/1/2021	0.19	0.19
			12/14/2021	0.131	0.131
			6/7/2022	0.194	0.194
			11/16/2022	0.278	0.278
			5/26/2023	0.197	0.197
<hr/>					
MW-5	17	0 (0%)	7/1/2014	0.023	0.023
			8/1/2015	0.03	0.03
			12/1/2015	0.071	0.071
			8/1/2016	0.023	0.023
			12/1/2016	0.036	0.036
			6/1/2017	0.044	0.044
			12/1/2017	0.055	0.055
			7/1/2018	0.06	0.06
			12/1/2018	0.059	0.059
			7/1/2019	0.052	0.052
			1/1/2020	0.072	0.072
			7/1/2020	0.088	0.088
			5/1/2021	0.031	0.031
			12/14/2021	0.058	0.058
			6/7/2022	0.049	0.049
			11/16/2022	0.051	0.051
			5/26/2023	0.054	0.054
<hr/>					
MW-6	17	0 (0%)	7/1/2014	0.017	0.017
			8/1/2015	0.022	0.022
			12/1/2015	0.009	0.009
			8/1/2016	0.023	0.023
			12/1/2016	0.061	0.061
			6/1/2017	0.034	0.034
			12/1/2017	0.044	0.044
			7/1/2018	0.063	0.063

12/1/2018	0.071	0.071
7/1/2019	0.092	0.092
1/1/2020	0.089	0.089
7/1/2020	0.078	0.078
5/1/2021	0.031	0.031
12/14/2021	0.033	0.033
6/7/2022	0.049	0.049
11/16/2022	0.042	0.042
5/26/2023	0.047	0.047

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Concentrations (mg/l)

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 89

Percent Non-Detects: 87.2549%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	15 (88.2353%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0058	0.0058
			5/26/2023	0.0047	0.0047

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	16 (94.1176%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.0018	0.0018
			5/26/2023	ND<0	ND<0

MW-3	17	15 (88.2353%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0

			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	0.001	0.001
			5/26/2023	0.0011	0.0011
<hr/>					
MW-4	17	13 (76.4706%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.0052	0.0052
			6/7/2022	0.0035	0.0035
			11/16/2022	0.0261	0.0261
			5/26/2023	0.0094	0.0094
<hr/>					
MW-5	17	15 (88.2353%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0
			12/1/2018	ND<0	ND<0
			7/1/2019	ND<0	ND<0
			1/1/2020	ND<0	ND<0
			7/1/2020	ND<0	ND<0
			5/1/2021	ND<0	ND<0
			12/14/2021	0.0013	0.0013
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	0.0021	0.0021
<hr/>					
MW-6	17	15 (88.2353%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	ND<0	ND<0
			12/1/2016	ND<0	ND<0
			6/1/2017	ND<0	ND<0
			12/1/2017	ND<0	ND<0
			7/1/2018	ND<0	ND<0

12/1/2018	ND<0	ND<0
7/1/2019	ND<0	ND<0
1/1/2020	ND<0	ND<0
7/1/2020	ND<0	ND<0
5/1/2021	ND<0	ND<0
12/14/2021	ND<0	ND<0
6/7/2022	ND<0	ND<0
11/16/2022	0.0036	0.0036
5/26/2023	0.0017	0.0017

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Concentrations (mg/l)

Parameter: Ammonia

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 102

Total Non-Detect: 38

Percent Non-Detects: 37.2549%

Total Background Measurements: 17

There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-1	17	5 (29.4118%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.37	0.37
			12/1/2016	0.41	0.41
			6/1/2017	0.75	0.75
			12/1/2017	0.55	0.55
			7/1/2018	0.42	0.42
			12/1/2018	0.68	0.68
			7/1/2019	0.74	0.74
			1/1/2020	1.26	1.26
			7/1/2020	1.33	1.33
			5/1/2021	0.12	0.12
			12/14/2021	ND<0	ND<0
			6/7/2022	0.213	0.213
			11/16/2022	ND<0	ND<0
			5/26/2023	0.497	0.497

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-2	17	8 (47.0588%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.38	0.38
			12/1/2016	0.42	0.42
			6/1/2017	0.5	0.5
			12/1/2017	0.59	0.59
			7/1/2018	0.49	0.49
			12/1/2018	0.3	0.3
			7/1/2019	0.29	0.29
			1/1/2020	0.65	0.65
			7/1/2020	0.81	0.81
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0

MW-3	17	7 (41.1765%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.36	0.36
			12/1/2016	0.4	0.4

			6/1/2017	0.55	0.55
			12/1/2017	0.62	0.62
			7/1/2018	0.71	0.71
			12/1/2018	0.31	0.31
			7/1/2019	0.3	0.3
			1/1/2020	0.59	0.59
			7/1/2020	0.71	0.71
			5/1/2021	0.11	0.11
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-4	17	6 (35.2941%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.45	0.45
			12/1/2016	0.46	0.46
			6/1/2017	0.4	0.4
			12/1/2017	0.59	0.59
			7/1/2018	0.63	0.63
			12/1/2018	0.4	0.4
			7/1/2019	0.37	0.37
			1/1/2020	0.42	0.42
			7/1/2020	0.52	0.52
			5/1/2021	1.1	1.1
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	1.47	1.47
<hr/>					
MW-5	17	8 (47.0588%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.39	0.39
			12/1/2016	0.42	0.42
			6/1/2017	0.36	0.36
			12/1/2017	0.6	0.6
			7/1/2018	0.61	0.61
			12/1/2018	0.6	0.6
			7/1/2019	0.48	0.48
			1/1/2020	0.81	0.81
			7/1/2020	0.74	0.74
			5/1/2021	ND<0	ND<0
			12/14/2021	ND<0	ND<0
			6/7/2022	ND<0	ND<0
			11/16/2022	ND<0	ND<0
			5/26/2023	ND<0	ND<0
<hr/>					
MW-6	17	4 (23.5294%)	7/1/2014	ND<0	ND<0
			8/1/2015	ND<0	ND<0
			12/1/2015	ND<0	ND<0
			8/1/2016	0.41	0.41
			12/1/2016	0.44	0.44
			6/1/2017	0.36	0.36
			12/1/2017	0.42	0.42
			7/1/2018	0.44	0.44

12/1/2018	0.57	0.57
7/1/2019	0.44	0.44
1/1/2020	0.57	0.57
7/1/2020	0.68	0.68
5/1/2021	0.42	0.42
12/14/2021	0.42	0.42
6/7/2022	0.543	0.543
11/16/2022	ND<0	ND<0
5/26/2023	0.705	0.705

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
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Shapiro-Francia Test of Normality

Parameter: Zinc

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m²)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.07485	9.90113	0
3	0	-1.8957	13.4948	0
4	0	-1.77438	16.6432	0
5	0	-1.66456	19.414	0
6	0	-1.57179	21.8845	0
7	0	-1.49852	24.13	0
8	0	-1.42554	26.1622	0
9	0	-1.35946	28.0104	0
10	0	-1.29884	29.6973	0
11	0	-1.24809	31.2551	0
12	0	-1.19522	32.6836	0
13	0	-1.1455	33.9958	0
14	0	-1.10306	35.2125	0
15	0	-1.05812	36.3322	0
16	0	-1.01522	37.3628	0
17	0	-0.974114	38.3117	0
18	0	-0.938476	39.1925	0
19	0.011	-0.900227	40.0029	-0.0099025
20	0.0114	-0.863249	40.7481	-0.0197435
21	0.012	-0.830953	41.4386	-0.029715
22	0.0125	-0.796056	42.0723	-0.0396657
23	0.0149	-0.7621	42.6531	-0.051021
24	0.017	-0.729003	43.1845	-0.063414
25	0.018	-0.699883	43.6743	-0.0760119
26	0.021	-0.668209	44.1208	-0.0900443
27	0.022	-0.637192	44.5269	-0.104063
28	0.028	-0.609791	44.8987	-0.121137
29	0.0298	-0.579873	45.235	-0.138417
30	0.034	-0.550465	45.538	-0.157133
31	0.051	-0.524401	45.813	-0.183877
32	0.053	-0.49585	46.0588	-0.210157
33	0.054	-0.467699	46.2776	-0.235413
34	0.06	-0.439913	46.4711	-0.261808
35	0.061	-0.415193	46.6435	-0.287135
36	0.061	-0.388022	46.794	-0.310804
37	0.061	-0.361133	46.9245	-0.332833
38	0.066	-0.337155	47.0381	-0.355085
39	0.067	-0.310738	47.1347	-0.375905
40	0.069	-0.284535	47.2156	-0.395538
41	0.071	-0.258527	47.2825	-0.413893
42	0.076	-0.235269	47.3378	-0.431774
43	0.086	-0.209575	47.3818	-0.449797
44	0.088	-0.184017	47.4156	-0.46599
45	0.091	-0.161119	47.4416	-0.480652
46	0.091	-0.135774	47.46	-0.493008
47	0.099	-0.110516	47.4722	-0.503949

48	0.1	-0.0853288	47.4795	-0.512482
49	0.1	-0.0627062	47.4834	-0.518752
50	0.101	-0.0376076	47.4849	-0.522551
51	0.103	-0.0125328	47.485	-0.523842
52	0.103	0.0125328	47.4852	-0.522551
53	0.107	0.0376076	47.4866	-0.518527
54	0.109	0.0627062	47.4905	-0.511692
55	0.112	0.0853288	47.4978	-0.502135
56	0.114	0.110516	47.51	-0.489536
57	0.115	0.135774	47.5284	-0.473922
58	0.117	0.161119	47.5544	-0.455071
59	0.121	0.184017	47.5883	-0.432805
60	0.121	0.209575	47.6322	-0.407446
61	0.124	0.235269	47.6875	-0.378273
62	0.129	0.258527	47.7544	-0.344923
63	0.141	0.284535	47.8353	-0.304804
64	0.141	0.310738	47.9319	-0.26099
65	0.15	0.337155	48.0456	-0.210416
66	0.155	0.361133	48.176	-0.154441
67	0.16	0.388022	48.3265	-0.0923571
68	0.164	0.415193	48.4989	-0.0242653
69	0.173	0.439913	48.6925	0.0518397
70	0.184	0.467699	48.9112	0.137896
71	0.222	0.49585	49.1571	0.247975
72	0.222	0.524401	49.4321	0.364392
73	0.247	0.550465	49.7351	0.500357
74	0.272	0.579873	50.0713	0.658082
75	0.274	0.609791	50.4432	0.825165
76	0.324	0.637192	50.8492	1.03162
77	0.355	0.668209	51.2957	1.26883
78	0.37	0.699883	51.7855	1.52779
79	0.372	0.729003	52.317	1.79898
80	0.374	0.7621	52.8978	2.084
81	0.446	0.796056	53.5315	2.43904
82	0.505	0.830953	54.222	2.85867
83	0.543	0.863249	54.9672	3.32742
84	0.544	0.900227	55.7776	3.81714
85	0.67	0.938476	56.6583	4.44592
86	0.732	0.974114	57.6072	5.15897
87	0.753	1.01522	58.6379	5.92343
88	0.807	1.05812	59.7575	6.77734
89	0.887	1.10306	60.9742	7.75575
90	0.92	1.1455	62.2864	8.80962
91	1	1.19522	63.715	10.0048
92	1.002	1.24809	65.2727	11.2554
93	1.028	1.29884	66.9597	12.5906
94	1.11	1.35946	68.8078	14.0996
95	1.11	1.42554	70.84	15.682
96	1.221	1.49852	73.0855	17.5117
97	1.742	1.57179	75.5561	20.2497
98	1.821	1.66456	78.3268	23.2809
99	2.011	1.77438	81.4752	26.8492
100	2.109	1.8957	85.0689	30.8472
101	14.8	2.07485	89.3739	61.5549
102	17.1	2.36561	94.97	102.007

Data Set Standard Deviation = 2.23388
Numerator = 10405.4
Denominator = 47866.1
W Statistic = 0.217386 = 10405.4 / 47866.1

**5% Critical value of 0.976 exceeds 0.217386
Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.217386
Evidence of non-normality at 99% level of significance**

Shapiro-Francia Test of Normality

Parameter: VanaDiUm

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.07485	9.90113	0
3	0	-1.8957	13.4948	0
4	0	-1.77438	16.6432	0
5	0	-1.66456	19.414	0
6	0	-1.57179	21.8845	0
7	0	-1.49852	24.13	0
8	0	-1.42554	26.1622	0
9	0	-1.35946	28.0104	0
10	0	-1.29884	29.6973	0
11	0	-1.24809	31.2551	0
12	0	-1.19522	32.6836	0
13	0	-1.1455	33.9958	0
14	0	-1.10306	35.2125	0
15	0	-1.05812	36.3322	0
16	0	-1.01522	37.3628	0
17	0	-0.974114	38.3117	0
18	0	-0.938476	39.1925	0
19	0	-0.900227	40.0029	0
20	0	-0.863249	40.7481	0
21	0	-0.830953	41.4386	0
22	0	-0.796056	42.0723	0
23	0	-0.7621	42.6531	0
24	0	-0.729003	43.1845	0
25	0	-0.699883	43.6743	0
26	0	-0.668209	44.1208	0
27	0	-0.637192	44.5269	0
28	0	-0.609791	44.8987	0
29	0	-0.579873	45.235	0
30	0	-0.550465	45.538	0
31	0	-0.524401	45.813	0
32	0	-0.49585	46.0588	0
33	0	-0.467699	46.2776	0
34	0	-0.439913	46.4711	0
35	0	-0.415193	46.6435	0
36	0	-0.388022	46.794	0
37	0	-0.361133	46.9245	0
38	0	-0.337155	47.0381	0
39	0	-0.310738	47.1347	0
40	0	-0.284535	47.2156	0
41	0	-0.258527	47.2825	0
42	0	-0.235269	47.3378	0
43	0	-0.209575	47.3818	0
44	0	-0.184017	47.4156	0
45	0	-0.161119	47.4416	0
46	0	-0.135774	47.46	0
47	0	-0.110516	47.4722	0

48	0	-0.0853288	47.4795	0
49	0	-0.0627062	47.4834	0
50	0	-0.0376076	47.4849	0
51	0	-0.0125328	47.485	0
52	0	0.0125328	47.4852	0
53	0	0.0376076	47.4866	0
54	0	0.0627062	47.4905	0
55	0	0.0853288	47.4978	0
56	0	0.110516	47.51	0
57	0	0.135774	47.5284	0
58	0	0.161119	47.5544	0
59	0	0.184017	47.5883	0
60	0	0.209575	47.6322	0
61	0	0.235269	47.6875	0
62	0	0.258527	47.7544	0
63	0	0.284535	47.8353	0
64	0	0.310738	47.9319	0
65	0	0.337155	48.0456	0
66	0	0.361133	48.176	0
67	0	0.388022	48.3265	0
68	0	0.415193	48.4989	0
69	0	0.439913	48.6925	0
70	0	0.467699	48.9112	0
71	0	0.49585	49.1571	0
72	0	0.524401	49.4321	0
73	0	0.550465	49.7351	0
74	0	0.579873	50.0713	0
75	0	0.609791	50.4432	0
76	0	0.637192	50.8492	0
77	0	0.668209	51.2957	0
78	0	0.699883	51.7855	0
79	0	0.729003	52.317	0
80	0	0.7621	52.8978	0
81	0	0.796056	53.5315	0
82	0	0.830953	54.222	0
83	0	0.863249	54.9672	0
84	0	0.900227	55.7776	0
85	0	0.938476	56.6583	0
86	0	0.974114	57.6072	0
87	0	1.01522	58.6379	0
88	0	1.05812	59.7575	0
89	0	1.10306	60.9742	0
90	0	1.1455	62.2864	0
91	0.001	1.19522	63.715	0.00119522
92	0.001	1.24809	65.2727	0.00244331
93	0.002	1.29884	66.9597	0.00504098
94	0.003	1.35946	68.8078	0.00911937
95	0.005	1.42554	70.84	0.0162471
96	0.005	1.49852	73.0855	0.0237397
97	0.005	1.57179	75.5561	0.0315986
98	0.006	1.66456	78.3268	0.041586
99	0.006	1.77438	81.4752	0.0522323
100	0.009	1.8957	85.0689	0.0692935
101	0.013	2.07485	89.3739	0.0962665
102	0.013	2.36561	94.97	0.12702

Data Set Standard Deviation = 0.00230007
Numerator = 0.016134
Denominator = 0.0507447
W Statistic = 0.317944 = 0.016134 / 0.0507447

**5% Critical value of 0.976 exceeds 0.317944
Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.317944
Evidence of non-normality at 99% level of significance**

Shapiro-Francia Test of Normality

Parameter: Sulfate

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m²)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.07485	9.90113	0
3	0	-1.8957	13.4948	0
4	0	-1.77438	16.6432	0
5	0	-1.66456	19.414	0
6	0	-1.57179	21.8845	0
7	0	-1.49852	24.13	0
8	0	-1.42554	26.1622	0
9	0	-1.35946	28.0104	0
10	0	-1.29884	29.6973	0
11	0	-1.24809	31.2551	0
12	0	-1.19522	32.6836	0
13	0	-1.1455	33.9958	0
14	0	-1.10306	35.2125	0
15	0	-1.05812	36.3322	0
16	0	-1.01522	37.3628	0
17	0	-0.974114	38.3117	0
18	0	-0.938476	39.1925	0
19	0	-0.900227	40.0029	0
20	0	-0.863249	40.7481	0
21	0	-0.830953	41.4386	0
22	0	-0.796056	42.0723	0
23	0	-0.7621	42.6531	0
24	0	-0.729003	43.1845	0
25	1.58	-0.699883	43.6743	-1.10582
26	1.74	-0.668209	44.1208	-2.2685
27	2	-0.637192	44.5269	-3.54288
28	3	-0.609791	44.8987	-5.37226
29	3.33	-0.579873	45.235	-7.30324
30	3.37	-0.550465	45.538	-9.1583
31	4	-0.524401	45.813	-11.2559
32	4.65	-0.49585	46.0588	-13.5616
33	5	-0.467699	46.2776	-15.9001
34	5.09	-0.439913	46.4711	-18.1393
35	5.99	-0.415193	46.6435	-20.6263
36	6.41	-0.388022	46.794	-23.1135
37	6.49	-0.361133	46.9245	-25.4572
38	6.64	-0.337155	47.0381	-27.696
39	7	-0.310738	47.1347	-29.8711
40	7	-0.284535	47.2156	-31.8629
41	8	-0.258527	47.2825	-33.9311
42	8	-0.235269	47.3378	-35.8132
43	8	-0.209575	47.3818	-37.4898
44	8	-0.184017	47.4156	-38.962
45	8.53	-0.161119	47.4416	-40.3363
46	8.89	-0.135774	47.46	-41.5434
47	9	-0.110516	47.4722	-42.538

48	9	-0.0853288	47.4795	-43.306
49	9	-0.0627062	47.4834	-43.8703
50	9	-0.0376076	47.4849	-44.2088
51	9	-0.0125328	47.485	-44.3216
52	9	0.0125328	47.4852	-44.2088
53	9	0.0376076	47.4866	-43.8703
54	9	0.0627062	47.4905	-43.306
55	9	0.0853288	47.4978	-42.538
56	9.02	0.110516	47.51	-41.5411
57	9.73	0.135774	47.5284	-40.2201
58	10	0.161119	47.5544	-38.6089
59	10	0.184017	47.5883	-36.7687
60	10	0.209575	47.6322	-34.673
61	10	0.235269	47.6875	-32.3203
62	10	0.258527	47.7544	-29.735
63	10	0.284535	47.8353	-26.8896
64	10	0.310738	47.9319	-23.7823
65	10	0.337155	48.0456	-20.4107
66	10	0.361133	48.176	-16.7994
67	10.1	0.388022	48.3265	-12.8803
68	10.6	0.415193	48.4989	-8.47929
69	11	0.439913	48.6925	-3.64025
70	11	0.467699	48.9112	1.50444
71	11	0.49585	49.1571	6.95878
72	11	0.524401	49.4321	12.7272
73	11	0.550465	49.7351	18.7823
74	11	0.579873	50.0713	25.1609
75	11	0.609791	50.4432	31.8686
76	11	0.637192	50.8492	38.8777
77	11	0.668209	51.2957	46.228
78	11	0.699883	51.7855	53.9267
79	11.1	0.729003	52.317	62.0187
80	11.1	0.7621	52.8978	70.478
81	12	0.796056	53.5315	80.0307
82	12	0.830953	54.222	90.0021
83	12	0.863249	54.9672	100.361
84	12	0.900227	55.7776	111.164
85	13	0.938476	56.6583	123.364
86	13	0.974114	57.6072	136.027
87	13.8	1.01522	58.6379	150.038
88	14	1.05812	59.7575	164.851
89	15	1.10306	60.9742	181.397
90	15	1.1455	62.2864	198.58
91	15	1.19522	63.715	216.508
92	15.9	1.24809	65.2727	236.353
93	16	1.29884	66.9597	257.134
94	16	1.35946	68.8078	278.885
95	16	1.42554	70.84	301.694
96	16.8	1.49852	73.0855	326.869
97	17	1.57179	75.5561	353.59
98	18	1.66456	78.3268	383.552
99	28	1.77438	81.4752	433.234
100	32	1.8957	85.0689	493.897
101	84	2.07485	89.3739	668.184
102	98	2.36561	94.97	900.014

Data Set Standard Deviation = 13.1299
Numerator = 810025
Denominator = 1.65361e+006
W Statistic = 0.489852 = 810025 / 1.65361e+006

**5% Critical value of 0.976 exceeds 0.489852
Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.489852
Evidence of non-normality at 99% level of significance**

Shapiro-Francia Test of Normality

Parameter: Nickel

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m²)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.07485	9.90113	0
3	0	-1.8957	13.4948	0
4	0	-1.77438	16.6432	0
5	0	-1.66456	19.414	0
6	0	-1.57179	21.8845	0
7	0	-1.49852	24.13	0
8	0	-1.42554	26.1622	0
9	0	-1.35946	28.0104	0
10	0	-1.29884	29.6973	0
11	0	-1.24809	31.2551	0
12	0	-1.19522	32.6836	0
13	0	-1.1455	33.9958	0
14	0	-1.10306	35.2125	0
15	0	-1.05812	36.3322	0
16	0	-1.01522	37.3628	0
17	0	-0.974114	38.3117	0
18	0	-0.938476	39.1925	0
19	0	-0.900227	40.0029	0
20	0	-0.863249	40.7481	0
21	0	-0.830953	41.4386	0
22	0	-0.796056	42.0723	0
23	0	-0.7621	42.6531	0
24	0	-0.729003	43.1845	0
25	0	-0.699883	43.6743	0
26	0	-0.668209	44.1208	0
27	0	-0.637192	44.5269	0
28	0	-0.609791	44.8987	0
29	0	-0.579873	45.235	0
30	0	-0.550465	45.538	0
31	0	-0.524401	45.813	0
32	0	-0.49585	46.0588	0
33	0	-0.467699	46.2776	0
34	0	-0.439913	46.4711	0
35	0	-0.415193	46.6435	0
36	0	-0.388022	46.794	0
37	0	-0.361133	46.9245	0
38	0	-0.337155	47.0381	0
39	0	-0.310738	47.1347	0
40	0	-0.284535	47.2156	0
41	0	-0.258527	47.2825	0
42	0	-0.235269	47.3378	0
43	0	-0.209575	47.3818	0
44	0	-0.184017	47.4156	0
45	0	-0.161119	47.4416	0
46	0	-0.135774	47.46	0
47	0	-0.110516	47.4722	0

48	0	-0.0853288	47.4795	0
49	0	-0.0627062	47.4834	0
50	0	-0.0376076	47.4849	0
51	0	-0.0125328	47.485	0
52	0	0.0125328	47.4852	0
53	0.0011	0.0376076	47.4866	4.13684e-005
54	0.0011	0.0627062	47.4905	0.000110345
55	0.0013	0.0853288	47.4978	0.000221273
56	0.0025	0.110516	47.51	0.000497563
57	0.0026	0.135774	47.5284	0.000850575
58	0.0026	0.161119	47.5544	0.00126949
59	0.0026	0.184017	47.5883	0.00174793
60	0.003	0.209575	47.6322	0.00237665
61	0.003	0.235269	47.6875	0.00308246
62	0.0035	0.258527	47.7544	0.00398731
63	0.0036	0.284535	47.8353	0.00501163
64	0.0042	0.310738	47.9319	0.00631673
65	0.0046	0.337155	48.0456	0.00786765
66	0.0049	0.361133	48.176	0.0096372
67	0.005	0.388022	48.3265	0.0115773
68	0.0054	0.415193	48.4989	0.0138194
69	0.006	0.439913	48.6925	0.0164588
70	0.006	0.467699	48.9112	0.019265
71	0.006	0.49585	49.1571	0.0222401
72	0.006	0.524401	49.4321	0.0253865
73	0.006	0.550465	49.7351	0.0286893
74	0.006	0.579873	50.0713	0.0321686
75	0.006	0.609791	50.4432	0.0358273
76	0.006	0.637192	50.8492	0.0396505
77	0.006	0.668209	51.2957	0.0436597
78	0.007	0.699883	51.7855	0.0485589
79	0.007	0.729003	52.317	0.0536619
80	0.0072	0.7621	52.8978	0.059149
81	0.008	0.796056	53.5315	0.0655175
82	0.008	0.830953	54.222	0.0721651
83	0.008	0.863249	54.9672	0.0790711
84	0.008	0.900227	55.7776	0.0862729
85	0.009	0.938476	56.6583	0.0947192
86	0.009	0.974114	57.6072	0.103486
87	0.009	1.01522	58.6379	0.112623
88	0.009	1.05812	59.7575	0.122146
89	0.009	1.10306	60.9742	0.132074
90	0.01	1.1455	62.2864	0.143529
91	0.01	1.19522	63.715	0.155481
92	0.01	1.24809	65.2727	0.167962
93	0.01	1.29884	66.9597	0.18095
94	0.011	1.35946	68.8078	0.195904
95	0.012	1.42554	70.84	0.213011
96	0.012	1.49852	73.0855	0.230993
97	0.012	1.57179	75.5561	0.249855
98	0.0137	1.66456	78.3268	0.272659
99	0.0139	1.77438	81.4752	0.297323
100	0.015	1.8957	85.0689	0.325758
101	0.018	2.07485	89.3739	0.363106
102	0.027	2.36561	94.97	0.426977

Data Set Standard Deviation = 0.00501307
Numerator = 0.18231
Denominator = 0.241055
W Statistic = 0.7563 = 0.18231 / 0.241055

**5% Critical value of 0.976 exceeds 0.7563
Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.7563
Evidence of non-normality at 99% level of significance**

Shapiro-Francia Test of Normality

Parameter: MercUry

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.07485	9.90113	0
3	0	-1.8957	13.4948	0
4	0	-1.77438	16.6432	0
5	0	-1.66456	19.414	0
6	0	-1.57179	21.8845	0
7	0	-1.49852	24.13	0
8	0	-1.42554	26.1622	0
9	0	-1.35946	28.0104	0
10	0	-1.29884	29.6973	0
11	0	-1.24809	31.2551	0
12	0	-1.19522	32.6836	0
13	0	-1.1455	33.9958	0
14	0	-1.10306	35.2125	0
15	0	-1.05812	36.3322	0
16	0	-1.01522	37.3628	0
17	0	-0.974114	38.3117	0
18	0	-0.938476	39.1925	0
19	0	-0.900227	40.0029	0
20	0	-0.863249	40.7481	0
21	0	-0.830953	41.4386	0
22	0	-0.796056	42.0723	0
23	0	-0.7621	42.6531	0
24	0	-0.729003	43.1845	0
25	0	-0.699883	43.6743	0
26	0	-0.668209	44.1208	0
27	0	-0.637192	44.5269	0
28	0	-0.609791	44.8987	0
29	0	-0.579873	45.235	0
30	0	-0.550465	45.538	0
31	0	-0.524401	45.813	0
32	0	-0.49585	46.0588	0
33	0	-0.467699	46.2776	0
34	0	-0.439913	46.4711	0
35	0	-0.415193	46.6435	0
36	0	-0.388022	46.794	0
37	0	-0.361133	46.9245	0
38	0	-0.337155	47.0381	0
39	0	-0.310738	47.1347	0
40	0	-0.284535	47.2156	0
41	0	-0.258527	47.2825	0
42	0	-0.235269	47.3378	0
43	0	-0.209575	47.3818	0
44	0	-0.184017	47.4156	0
45	0	-0.161119	47.4416	0
46	0	-0.135774	47.46	0
47	0	-0.110516	47.4722	0

48	0	-0.0853288	47.4795	0
49	0	-0.0627062	47.4834	0
50	0	-0.0376076	47.4849	0
51	0	-0.0125328	47.485	0
52	0	0.0125328	47.4852	0
53	0	0.0376076	47.4866	0
54	0	0.0627062	47.4905	0
55	0	0.0853288	47.4978	0
56	0	0.110516	47.51	0
57	0	0.135774	47.5284	0
58	0	0.161119	47.5544	0
59	0	0.184017	47.5883	0
60	0	0.209575	47.6322	0
61	0	0.235269	47.6875	0
62	0	0.258527	47.7544	0
63	0	0.284535	47.8353	0
64	0	0.310738	47.9319	0
65	0	0.337155	48.0456	0
66	0	0.361133	48.176	0
67	0	0.388022	48.3265	0
68	0	0.415193	48.4989	0
69	0	0.439913	48.6925	0
70	0	0.467699	48.9112	0
71	0	0.49585	49.1571	0
72	0	0.524401	49.4321	0
73	0	0.550465	49.7351	0
74	0	0.579873	50.0713	0
75	0	0.609791	50.4432	0
76	0	0.637192	50.8492	0
77	0	0.668209	51.2957	0
78	0	0.699883	51.7855	0
79	0	0.729003	52.317	0
80	0	0.7621	52.8978	0
81	0	0.796056	53.5315	0
82	0	0.830953	54.222	0
83	0	0.863249	54.9672	0
84	0	0.900227	55.7776	0
85	0	0.938476	56.6583	0
86	0	0.974114	57.6072	0
87	0	1.01522	58.6379	0
88	0	1.05812	59.7575	0
89	0	1.10306	60.9742	0
90	0	1.1455	62.2864	0
91	0	1.19522	63.715	0
92	0	1.24809	65.2727	0
93	0	1.29884	66.9597	0
94	0	1.35946	68.8078	0
95	0	1.42554	70.84	0
96	0	1.49852	73.0855	0
97	0.0002	1.57179	75.5561	0.000314358
98	0.00023	1.66456	78.3268	0.000697207
99	0.00025	1.77438	81.4752	0.0011408
100	0.00026	1.8957	85.0689	0.00163368
101	0.00042	2.07485	89.3739	0.00250512
102	0.00119	2.36561	94.97	0.0053202

Data Set Standard Deviation = 0.000131697
Numerator = 2.83045e-005
Denominator = 0.000166364
W Statistic = 0.170136 = 2.83045e-005 / 0.000166364

5% Critical value of 0.976 exceeds 0.170136
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.170136
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Lead

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m²)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.07485	9.90113	0
3	0	-1.8957	13.4948	0
4	0	-1.77438	16.6432	0
5	0	-1.66456	19.414	0
6	0	-1.57179	21.8845	0
7	0	-1.49852	24.13	0
8	0	-1.42554	26.1622	0
9	0	-1.35946	28.0104	0
10	0	-1.29884	29.6973	0
11	0	-1.24809	31.2551	0
12	0	-1.19522	32.6836	0
13	0	-1.1455	33.9958	0
14	0	-1.10306	35.2125	0
15	0	-1.05812	36.3322	0
16	0	-1.01522	37.3628	0
17	0	-0.974114	38.3117	0
18	0	-0.938476	39.1925	0
19	0	-0.900227	40.0029	0
20	0	-0.863249	40.7481	0
21	0	-0.830953	41.4386	0
22	0	-0.796056	42.0723	0
23	0	-0.7621	42.6531	0
24	0	-0.729003	43.1845	0
25	0	-0.699883	43.6743	0
26	0	-0.668209	44.1208	0
27	0	-0.637192	44.5269	0
28	0	-0.609791	44.8987	0
29	0	-0.579873	45.235	0
30	0	-0.550465	45.538	0
31	0	-0.524401	45.813	0
32	0	-0.49585	46.0588	0
33	0	-0.467699	46.2776	0
34	0	-0.439913	46.4711	0
35	0	-0.415193	46.6435	0
36	0	-0.388022	46.794	0
37	0	-0.361133	46.9245	0
38	0	-0.337155	47.0381	0
39	0	-0.310738	47.1347	0
40	0	-0.284535	47.2156	0
41	0	-0.258527	47.2825	0
42	0	-0.235269	47.3378	0
43	0	-0.209575	47.3818	0
44	0	-0.184017	47.4156	0
45	0	-0.161119	47.4416	0
46	0	-0.135774	47.46	0
47	0	-0.110516	47.4722	0

48	0	-0.0853288	47.4795	0
49	0	-0.0627062	47.4834	0
50	0	-0.0376076	47.4849	0
51	0	-0.0125328	47.485	0
52	0	0.0125328	47.4852	0
53	0	0.0376076	47.4866	0
54	0	0.0627062	47.4905	0
55	0	0.0853288	47.4978	0
56	0	0.110516	47.51	0
57	0	0.135774	47.5284	0
58	0	0.161119	47.5544	0
59	0	0.184017	47.5883	0
60	0	0.209575	47.6322	0
61	0	0.235269	47.6875	0
62	0	0.258527	47.7544	0
63	0	0.284535	47.8353	0
64	0	0.310738	47.9319	0
65	0	0.337155	48.0456	0
66	0	0.361133	48.176	0
67	0	0.388022	48.3265	0
68	0	0.415193	48.4989	0
69	0	0.439913	48.6925	0
70	0	0.467699	48.9112	0
71	0	0.49585	49.1571	0
72	0	0.524401	49.4321	0
73	0	0.550465	49.7351	0
74	0	0.579873	50.0713	0
75	0	0.609791	50.4432	0
76	0	0.637192	50.8492	0
77	0	0.668209	51.2957	0
78	0	0.699883	51.7855	0
79	0	0.729003	52.317	0
80	0	0.7621	52.8978	0
81	0	0.796056	53.5315	0
82	0	0.830953	54.222	0
83	0	0.863249	54.9672	0
84	0	0.900227	55.7776	0
85	0.001	0.938476	56.6583	0.000938476
86	0.001	0.974114	57.6072	0.00191259
87	0.0011	1.01522	58.6379	0.00302933
88	0.0012	1.05812	59.7575	0.00429908
89	0.0015	1.10306	60.9742	0.00595367
90	0.002	1.1455	62.2864	0.00824468
91	0.0034	1.19522	63.715	0.0123084
92	0.005	1.24809	65.2727	0.0185489
93	0.006	1.29884	66.9597	0.0263419
94	0.006	1.35946	68.8078	0.0344987
95	0.0075	1.42554	70.84	0.0451902
96	0.009	1.49852	73.0855	0.0586769
97	0.009	1.57179	75.5561	0.072823
98	0.012	1.66456	78.3268	0.0927977
99	0.015	1.77438	81.4752	0.119413
100	0.016	1.8957	85.0689	0.149745
101	0.018	2.07485	89.3739	0.187092
102	0.021	2.36561	94.97	0.23677

Data Set Standard Deviation = 0.00391389
Numerator = 0.0560599
Denominator = 0.146935
W Statistic = 0.381528 = 0.0560599 / 0.146935

5% Critical value of 0.976 exceeds 0.381528
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.381528
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: FIUoriDe

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m²)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.07485	9.90113	0
3	0	-1.8957	13.4948	0
4	0	-1.77438	16.6432	0
5	0	-1.66456	19.414	0
6	0	-1.57179	21.8845	0
7	0	-1.49852	24.13	0
8	0	-1.42554	26.1622	0
9	0	-1.35946	28.0104	0
10	0	-1.29884	29.6973	0
11	0	-1.24809	31.2551	0
12	0	-1.19522	32.6836	0
13	0	-1.1455	33.9958	0
14	0	-1.10306	35.2125	0
15	0	-1.05812	36.3322	0
16	0	-1.01522	37.3628	0
17	0	-0.974114	38.3117	0
18	0	-0.938476	39.1925	0
19	0	-0.900227	40.0029	0
20	0	-0.863249	40.7481	0
21	0	-0.830953	41.4386	0
22	0	-0.796056	42.0723	0
23	0	-0.7621	42.6531	0
24	0	-0.729003	43.1845	0
25	0	-0.699883	43.6743	0
26	0	-0.668209	44.1208	0
27	0	-0.637192	44.5269	0
28	0	-0.609791	44.8987	0
29	0	-0.579873	45.235	0
30	0	-0.550465	45.538	0
31	0	-0.524401	45.813	0
32	0	-0.49585	46.0588	0
33	0.02	-0.467699	46.2776	-0.00935397
34	0.11	-0.439913	46.4711	-0.0577445
35	0.12	-0.415193	46.6435	-0.107568
36	0.127	-0.388022	46.794	-0.156846
37	0.13	-0.361133	46.9245	-0.203794
38	0.149	-0.337155	47.0381	-0.25403
39	0.162	-0.310738	47.1347	-0.304369
40	0.18	-0.284535	47.2156	-0.355586
41	0.18	-0.258527	47.2825	-0.402121
42	0.19	-0.235269	47.3378	-0.446822
43	0.19	-0.209575	47.3818	-0.486641
44	0.209	-0.184017	47.4156	-0.525101
45	0.21	-0.161119	47.4416	-0.558936
46	0.22	-0.135774	47.46	-0.588806
47	0.22	-0.110516	47.4722	-0.61312

48	0.22	-0.0853288	47.4795	-0.631892
49	0.24	-0.0627062	47.4834	-0.646941
50	0.25	-0.0376076	47.4849	-0.656343
51	0.26	-0.0125328	47.485	-0.659602
52	0.29	0.0125328	47.4852	-0.655967
53	0.34	0.0376076	47.4866	-0.643181
54	0.35	0.0627062	47.4905	-0.621234
55	0.41	0.0853288	47.4978	-0.586249
56	0.47	0.110516	47.51	-0.534306
57	0.49	0.135774	47.5284	-0.467777
58	0.5	0.161119	47.5544	-0.387217
59	0.52	0.184017	47.5883	-0.291528
60	0.52	0.209575	47.6322	-0.18255
61	0.55	0.235269	47.6875	-0.0531515
62	0.56	0.258527	47.7544	0.0916238
63	0.58	0.284535	47.8353	0.256654
64	0.6	0.310738	47.9319	0.443097
65	0.6	0.337155	48.0456	0.64539
66	0.61	0.361133	48.176	0.865681
67	0.61	0.388022	48.3265	1.10238
68	0.62	0.415193	48.4989	1.3598
69	0.65	0.439913	48.6925	1.64574
70	0.73	0.467699	48.9112	1.98716
71	0.74	0.49585	49.1571	2.35409
72	0.745	0.524401	49.4321	2.74477
73	0.75	0.550465	49.7351	3.15761
74	0.75	0.579873	50.0713	3.59252
75	0.76	0.609791	50.4432	4.05596
76	0.76	0.637192	50.8492	4.54023
77	0.78	0.668209	51.2957	5.06143
78	0.781	0.699883	51.7855	5.60804
79	0.79	0.729003	52.317	6.18395
80	0.791	0.7621	52.8978	6.78677
81	0.83	0.796056	53.5315	7.4475
82	0.88	0.830953	54.222	8.17874
83	0.92	0.863249	54.9672	8.97293
84	0.92	0.900227	55.7776	9.80114
85	0.92	0.938476	56.6583	10.6645
86	0.96	0.974114	57.6072	11.5997
87	0.97	1.01522	58.6379	12.5844
88	1	1.05812	59.7575	13.6426
89	1	1.10306	60.9742	14.7456
90	1.001	1.1455	62.2864	15.8923
91	1.03	1.19522	63.715	17.1234
92	1.05	1.24809	65.2727	18.4339
93	1.09	1.29884	66.9597	19.8496
94	1.09	1.35946	68.8078	21.3314
95	1.24	1.42554	70.84	23.0991
96	1.26	1.49852	73.0855	24.9872
97	1.55	1.57179	75.5561	27.4235
98	1.76	1.66456	78.3268	30.3531
99	1.79	1.77438	81.4752	33.5292
100	2.05	1.8957	85.0689	37.4154
101	2.57	2.07485	89.3739	42.7478
102	3.62	2.36561	94.97	51.3113

Data Set Standard Deviation = 0.598069
Numerator = 2632.85
Denominator = 3430.92
W Statistic = 0.76739 = 2632.85 / 3430.92

**5% Critical value of 0.976 exceeds 0.76739
Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.76739
Evidence of non-normality at 99% level of significance**

Shapiro-Francia Test of Normality

Parameter: Copper

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m²)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.07485	9.90113	0
3	0	-1.8957	13.4948	0
4	0	-1.77438	16.6432	0
5	0	-1.66456	19.414	0
6	0	-1.57179	21.8845	0
7	0	-1.49852	24.13	0
8	0	-1.42554	26.1622	0
9	0	-1.35946	28.0104	0
10	0	-1.29884	29.6973	0
11	0	-1.24809	31.2551	0
12	0	-1.19522	32.6836	0
13	0	-1.1455	33.9958	0
14	0	-1.10306	35.2125	0
15	0	-1.05812	36.3322	0
16	0	-1.01522	37.3628	0
17	0	-0.974114	38.3117	0
18	0	-0.938476	39.1925	0
19	0	-0.900227	40.0029	0
20	0	-0.863249	40.7481	0
21	0	-0.830953	41.4386	0
22	0	-0.796056	42.0723	0
23	0	-0.7621	42.6531	0
24	0	-0.729003	43.1845	0
25	0	-0.699883	43.6743	0
26	0	-0.668209	44.1208	0
27	0	-0.637192	44.5269	0
28	0	-0.609791	44.8987	0
29	0.001	-0.579873	45.235	-0.000579873
30	0.0011	-0.550465	45.538	-0.00118538
31	0.0011	-0.524401	45.813	-0.00176223
32	0.0012	-0.49585	46.0588	-0.00235725
33	0.0016	-0.467699	46.2776	-0.00310556
34	0.0017	-0.439913	46.4711	-0.00385342
35	0.0017	-0.415193	46.6435	-0.00455924
36	0.0017	-0.388022	46.794	-0.00521888
37	0.0018	-0.361133	46.9245	-0.00586892
38	0.0018	-0.337155	47.0381	-0.0064758
39	0.0028	-0.310738	47.1347	-0.00734587
40	0.0031	-0.284535	47.2156	-0.00822793
41	0.0035	-0.258527	47.2825	-0.00913277
42	0.005	-0.235269	47.3378	-0.0103091
43	0.006	-0.209575	47.3818	-0.0115666
44	0.0061	-0.184017	47.4156	-0.0126891
45	0.008	-0.161119	47.4416	-0.013978
46	0.008	-0.135774	47.46	-0.0150642
47	0.009	-0.110516	47.4722	-0.0160589

48	0.009	-0.0853288	47.4795	-0.0168268
49	0.011	-0.0627062	47.4834	-0.0175166
50	0.013	-0.0376076	47.4849	-0.0180055
51	0.0132	-0.0125328	47.485	-0.0181709
52	0.0139	0.0125328	47.4852	-0.0179967
53	0.015	0.0376076	47.4866	-0.0174326
54	0.017	0.0627062	47.4905	-0.0163666
55	0.018	0.0853288	47.4978	-0.0148307
56	0.018	0.110516	47.51	-0.0128414
57	0.02	0.135774	47.5284	-0.0101259
58	0.022	0.161119	47.5544	-0.00658129
59	0.022	0.184017	47.5883	-0.00253291
60	0.024	0.209575	47.6322	0.00249688
61	0.025	0.235269	47.6875	0.00837861
62	0.026	0.258527	47.7544	0.0151003
63	0.026	0.284535	47.8353	0.0224982
64	0.026	0.310738	47.9319	0.0305774
65	0.027	0.337155	48.0456	0.0396806
66	0.027	0.361133	48.176	0.0494312
67	0.028	0.388022	48.3265	0.0602958
68	0.028	0.415193	48.4989	0.0719213
69	0.03	0.439913	48.6925	0.0851187
70	0.031	0.467699	48.9112	0.0996173
71	0.031	0.49585	49.1571	0.114989
72	0.031	0.524401	49.4321	0.131245
73	0.031	0.550465	49.7351	0.14831
74	0.031	0.579873	50.0713	0.166286
75	0.032	0.609791	50.4432	0.185799
76	0.032	0.637192	50.8492	0.206189
77	0.033	0.668209	51.2957	0.22824
78	0.038	0.699883	51.7855	0.254836
79	0.038	0.729003	52.317	0.282538
80	0.038	0.7621	52.8978	0.311497
81	0.039	0.796056	53.5315	0.342544
82	0.039	0.830953	54.222	0.374951
83	0.04	0.863249	54.9672	0.409481
84	0.041	0.900227	55.7776	0.44639
85	0.043	0.938476	56.6583	0.486744
86	0.046	0.974114	57.6072	0.531554
87	0.046	1.01522	58.6379	0.578254
88	0.046	1.05812	59.7575	0.626928
89	0.048	1.10306	60.9742	0.679875
90	0.049	1.1455	62.2864	0.736004
91	0.05	1.19522	63.715	0.795765
92	0.052	1.24809	65.2727	0.860666
93	0.054	1.29884	66.9597	0.930803
94	0.055	1.35946	68.8078	1.00557
95	0.055	1.42554	70.84	1.08398
96	0.056	1.49852	73.0855	1.1679
97	0.057	1.57179	75.5561	1.25749
98	0.06	1.66456	78.3268	1.35736
99	0.063	1.77438	81.4752	1.46915
100	0.066	1.8957	85.0689	1.59426
101	0.22	2.07485	89.3739	2.05073
102	0.45	2.36561	94.97	3.11526

Data Set Standard Deviation = 0.0508438
Numerator = 9.70482
Denominator = 24.7961
W Statistic = 0.391384 = 9.70482 / 24.7961

**5% Critical value of 0.976 exceeds 0.391384
Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.391384
Evidence of non-normality at 99% level of significance**

Shapiro-Francia Test of Normality

Parameter: Cobalt

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m²)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.07485	9.90113	0
3	0	-1.8957	13.4948	0
4	0	-1.77438	16.6432	0
5	0	-1.66456	19.414	0
6	0	-1.57179	21.8845	0
7	0	-1.49852	24.13	0
8	0	-1.42554	26.1622	0
9	0	-1.35946	28.0104	0
10	0	-1.29884	29.6973	0
11	0	-1.24809	31.2551	0
12	0	-1.19522	32.6836	0
13	0	-1.1455	33.9958	0
14	0	-1.10306	35.2125	0
15	0	-1.05812	36.3322	0
16	0	-1.01522	37.3628	0
17	0	-0.974114	38.3117	0
18	0	-0.938476	39.1925	0
19	0	-0.900227	40.0029	0
20	0	-0.863249	40.7481	0
21	0	-0.830953	41.4386	0
22	0	-0.796056	42.0723	0
23	0	-0.7621	42.6531	0
24	0	-0.729003	43.1845	0
25	0	-0.699883	43.6743	0
26	0	-0.668209	44.1208	0
27	0	-0.637192	44.5269	0
28	0	-0.609791	44.8987	0
29	0	-0.579873	45.235	0
30	0	-0.550465	45.538	0
31	0	-0.524401	45.813	0
32	0	-0.49585	46.0588	0
33	0	-0.467699	46.2776	0
34	0	-0.439913	46.4711	0
35	0	-0.415193	46.6435	0
36	0	-0.388022	46.794	0
37	0	-0.361133	46.9245	0
38	0	-0.337155	47.0381	0
39	0	-0.310738	47.1347	0
40	0	-0.284535	47.2156	0
41	0	-0.258527	47.2825	0
42	0	-0.235269	47.3378	0
43	0	-0.209575	47.3818	0
44	0	-0.184017	47.4156	0
45	0	-0.161119	47.4416	0
46	0	-0.135774	47.46	0
47	0	-0.110516	47.4722	0

48	0	-0.0853288	47.4795	0
49	0	-0.0627062	47.4834	0
50	0	-0.0376076	47.4849	0
51	0	-0.0125328	47.485	0
52	0	0.0125328	47.4852	0
53	0	0.0376076	47.4866	0
54	0	0.0627062	47.4905	0
55	0	0.0853288	47.4978	0
56	0	0.110516	47.51	0
57	0	0.135774	47.5284	0
58	0	0.161119	47.5544	0
59	0	0.184017	47.5883	0
60	0	0.209575	47.6322	0
61	0	0.235269	47.6875	0
62	0	0.258527	47.7544	0
63	0	0.284535	47.8353	0
64	0	0.310738	47.9319	0
65	0	0.337155	48.0456	0
66	0	0.361133	48.176	0
67	0	0.388022	48.3265	0
68	0	0.415193	48.4989	0
69	0	0.439913	48.6925	0
70	0	0.467699	48.9112	0
71	0	0.49585	49.1571	0
72	0	0.524401	49.4321	0
73	0	0.550465	49.7351	0
74	0	0.579873	50.0713	0
75	0	0.609791	50.4432	0
76	0	0.637192	50.8492	0
77	0	0.668209	51.2957	0
78	0	0.699883	51.7855	0
79	0	0.729003	52.317	0
80	0	0.7621	52.8978	0
81	0.001	0.796056	53.5315	0.000796056
82	0.001	0.830953	54.222	0.00162701
83	0.001	0.863249	54.9672	0.00249026
84	0.001	0.900227	55.7776	0.00339048
85	0.002	0.938476	56.6583	0.00526744
86	0.002	0.974114	57.6072	0.00721566
87	0.002	1.01522	58.6379	0.00924611
88	0.002	1.05812	59.7575	0.0113624
89	0.003	1.10306	60.9742	0.0146715
90	0.003	1.1455	62.2864	0.0181081
91	0.004	1.19522	63.715	0.0228889
92	0.004	1.24809	65.2727	0.0278813
93	0.004	1.29884	66.9597	0.0330766
94	0.005	1.35946	68.8078	0.0398739
95	0.006	1.42554	70.84	0.0484272
96	0.006	1.49852	73.0855	0.0574183
97	0.007	1.57179	75.5561	0.0684208
98	0.008	1.66456	78.3268	0.0817373
99	0.035	1.77438	81.4752	0.143841
100	0.045	1.8957	85.0689	0.229147
101	0.07	2.07485	89.3739	0.374386
102	0.086	2.36561	94.97	0.577829

Data Set Standard Deviation = 0.012175
Numerator = 0.333886
Denominator = 1.42183
W Statistic = 0.234828 = 0.333886 / 1.42183

**5% Critical value of 0.976 exceeds 0.234828
Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.234828
Evidence of non-normality at 99% level of significance**

Shapiro-Francia Test of Normality

Parameter: ChromiUm

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.07485	9.90113	0
3	0	-1.8957	13.4948	0
4	0	-1.77438	16.6432	0
5	0	-1.66456	19.414	0
6	0	-1.57179	21.8845	0
7	0	-1.49852	24.13	0
8	0	-1.42554	26.1622	0
9	0	-1.35946	28.0104	0
10	0	-1.29884	29.6973	0
11	0	-1.24809	31.2551	0
12	0	-1.19522	32.6836	0
13	0	-1.1455	33.9958	0
14	0	-1.10306	35.2125	0
15	0	-1.05812	36.3322	0
16	0	-1.01522	37.3628	0
17	0	-0.974114	38.3117	0
18	0	-0.938476	39.1925	0
19	0	-0.900227	40.0029	0
20	0	-0.863249	40.7481	0
21	0	-0.830953	41.4386	0
22	0	-0.796056	42.0723	0
23	0	-0.7621	42.6531	0
24	0	-0.729003	43.1845	0
25	0	-0.699883	43.6743	0
26	0	-0.668209	44.1208	0
27	0	-0.637192	44.5269	0
28	0	-0.609791	44.8987	0
29	0	-0.579873	45.235	0
30	0	-0.550465	45.538	0
31	0	-0.524401	45.813	0
32	0	-0.49585	46.0588	0
33	0	-0.467699	46.2776	0
34	0	-0.439913	46.4711	0
35	0	-0.415193	46.6435	0
36	0	-0.388022	46.794	0
37	0	-0.361133	46.9245	0
38	0	-0.337155	47.0381	0
39	0	-0.310738	47.1347	0
40	0	-0.284535	47.2156	0
41	0	-0.258527	47.2825	0
42	0	-0.235269	47.3378	0
43	0	-0.209575	47.3818	0
44	0	-0.184017	47.4156	0
45	0	-0.161119	47.4416	0
46	0	-0.135774	47.46	0
47	0	-0.110516	47.4722	0

48	0	-0.0853288	47.4795	0
49	0	-0.0627062	47.4834	0
50	0	-0.0376076	47.4849	0
51	0	-0.0125328	47.485	0
52	0	0.0125328	47.4852	0
53	0	0.0376076	47.4866	0
54	0	0.0627062	47.4905	0
55	0	0.0853288	47.4978	0
56	0	0.110516	47.51	0
57	0	0.135774	47.5284	0
58	0	0.161119	47.5544	0
59	0	0.184017	47.5883	0
60	0	0.209575	47.6322	0
61	0	0.235269	47.6875	0
62	0	0.258527	47.7544	0
63	0	0.284535	47.8353	0
64	0	0.310738	47.9319	0
65	0	0.337155	48.0456	0
66	0	0.361133	48.176	0
67	0	0.388022	48.3265	0
68	0	0.415193	48.4989	0
69	0	0.439913	48.6925	0
70	0	0.467699	48.9112	0
71	0	0.49585	49.1571	0
72	0	0.524401	49.4321	0
73	0	0.550465	49.7351	0
74	0	0.579873	50.0713	0
75	0	0.609791	50.4432	0
76	0	0.637192	50.8492	0
77	0	0.668209	51.2957	0
78	0	0.699883	51.7855	0
79	0	0.729003	52.317	0
80	0	0.7621	52.8978	0
81	0	0.796056	53.5315	0
82	0	0.830953	54.222	0
83	0	0.863249	54.9672	0
84	0	0.900227	55.7776	0
85	0	0.938476	56.6583	0
86	0	0.974114	57.6072	0
87	0	1.01522	58.6379	0
88	0.001	1.05812	59.7575	0.00105812
89	0.001	1.10306	60.9742	0.00216118
90	0.001	1.1455	62.2864	0.00330669
91	0.001	1.19522	63.715	0.00450191
92	0.001	1.24809	65.2727	0.00575
93	0.001	1.29884	66.9597	0.00704883
94	0.002	1.35946	68.8078	0.00976776
95	0.002	1.42554	70.84	0.0126188
96	0.002	1.49852	73.0855	0.0156159
97	0.003	1.57179	75.5561	0.0203312
98	0.004	1.66456	78.3268	0.0269895
99	0.005	1.77438	81.4752	0.0358614
100	0.009	1.8957	85.0689	0.0529226
101	0.01	2.07485	89.3739	0.0736711
102	0.014	2.36561	94.97	0.10679

Data Set Standard Deviation = 0.00202251
Numerator = 0.011404
Denominator = 0.0392366
W Statistic = 0.290648 = 0.011404 / 0.0392366

5% Critical value of 0.976 exceeds 0.290648
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.290648
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: BariUm

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m²)	sum(mx)
1	0	-2.36561	5.59613	0
2	0.009	-2.07485	9.90113	-0.0186736
3	0.017	-1.8957	13.4948	-0.0509005
4	0.018	-1.77438	16.6432	-0.0828393
5	0.022	-1.66456	19.414	-0.11946
6	0.023	-1.57179	21.8845	-0.155611
7	0.023	-1.49852	24.13	-0.190077
8	0.023	-1.42554	26.1622	-0.222864
9	0.023	-1.35946	28.0104	-0.254132
10	0.024	-1.29884	29.6973	-0.285304
11	0.026	-1.24809	31.2551	-0.317754
12	0.028	-1.19522	32.6836	-0.35122
13	0.03	-1.1455	33.9958	-0.385585
14	0.03	-1.10306	35.2125	-0.418677
15	0.031	-1.05812	36.3322	-0.451479
16	0.031	-1.01522	37.3628	-0.482951
17	0.031	-0.974114	38.3117	-0.513148
18	0.031	-0.938476	39.1925	-0.542241
19	0.031	-0.900227	40.0029	-0.570148
20	0.031	-0.863249	40.7481	-0.596909
21	0.031	-0.830953	41.4386	-0.622669
22	0.033	-0.796056	42.0723	-0.648938
23	0.033	-0.7621	42.6531	-0.674088
24	0.034	-0.729003	43.1845	-0.698874
25	0.035	-0.699883	43.6743	-0.72337
26	0.036	-0.668209	44.1208	-0.747425
27	0.037	-0.637192	44.5269	-0.771001
28	0.037	-0.609791	44.8987	-0.793564
29	0.037	-0.579873	45.235	-0.815019
30	0.039	-0.550465	45.538	-0.836487
31	0.039	-0.524401	45.813	-0.856939
32	0.042	-0.49585	46.0588	-0.877764
33	0.042	-0.467699	46.2776	-0.897408
34	0.043	-0.439913	46.4711	-0.916324
35	0.044	-0.415193	46.6435	-0.934592
36	0.044	-0.388022	46.794	-0.951665
37	0.044	-0.361133	46.9245	-0.967555
38	0.044	-0.337155	47.0381	-0.98239
39	0.047	-0.310738	47.1347	-0.996995
40	0.048	-0.284535	47.2156	-1.01065
41	0.049	-0.258527	47.2825	-1.02332
42	0.049	-0.235269	47.3378	-1.03485
43	0.051	-0.209575	47.3818	-1.04554
44	0.051	-0.184017	47.4156	-1.05492
45	0.052	-0.161119	47.4416	-1.0633
46	0.053	-0.135774	47.46	-1.0705
47	0.054	-0.110516	47.4722	-1.07646

48	0.055	-0.0853288	47.4795	-1.08116
49	0.055	-0.0627062	47.4834	-1.08461
50	0.055	-0.0376076	47.4849	-1.08667
51	0.055	-0.0125328	47.485	-1.08736
52	0.058	0.0125328	47.4852	-1.08664
53	0.059	0.0376076	47.4866	-1.08442
54	0.06	0.0627062	47.4905	-1.08066
55	0.061	0.0853288	47.4978	-1.07545
56	0.061	0.110516	47.51	-1.06871
57	0.063	0.135774	47.5284	-1.06016
58	0.063	0.161119	47.5544	-1.05
59	0.064	0.184017	47.5883	-1.03823
60	0.07	0.209575	47.6322	-1.02356
61	0.071	0.235269	47.6875	-1.00685
62	0.071	0.258527	47.7544	-0.988498
63	0.072	0.284535	47.8353	-0.968011
64	0.073	0.310738	47.9319	-0.945327
65	0.073	0.337155	48.0456	-0.920715
66	0.076	0.361133	48.176	-0.893269
67	0.078	0.388022	48.3265	-0.863003
68	0.078	0.415193	48.4989	-0.830618
69	0.078	0.439913	48.6925	-0.796305
70	0.079	0.467699	48.9112	-0.759357
71	0.081	0.49585	49.1571	-0.719193
72	0.081	0.524401	49.4321	-0.676716
73	0.081	0.550465	49.7351	-0.632129
74	0.081	0.579873	50.0713	-0.585159
75	0.083	0.609791	50.4432	-0.534546
76	0.084	0.637192	50.8492	-0.481022
77	0.084	0.668209	51.2957	-0.424892
78	0.086	0.699883	51.7855	-0.364703
79	0.088	0.729003	52.317	-0.30055
80	0.089	0.7621	52.8978	-0.232723
81	0.09	0.796056	53.5315	-0.161078
82	0.09	0.830953	54.222	-0.0862926
83	0.091	0.863249	54.9672	-0.00773689
84	0.092	0.900227	55.7776	0.075084
85	0.095	0.938476	56.6583	0.164239
86	0.095	0.974114	57.6072	0.25678
87	0.097	1.01522	58.6379	0.355257
88	0.111	1.05812	59.7575	0.472708
89	0.121	1.10306	60.9742	0.606179
90	0.123	1.1455	62.2864	0.747076
91	0.124	1.19522	63.715	0.895283
92	0.131	1.24809	65.2727	1.05878
93	0.14	1.29884	66.9597	1.24062
94	0.19	1.35946	68.8078	1.49892
95	0.194	1.42554	70.84	1.77547
96	0.197	1.49852	73.0855	2.07068
97	0.2	1.57179	75.5561	2.38504
98	0.268	1.66456	78.3268	2.83114
99	0.278	1.77438	81.4752	3.32442
100	0.291	1.8957	85.0689	3.87607
101	0.35	2.07485	89.3739	4.60226
102	0.498	2.36561	94.97	5.78034

Data Set Standard Deviation = 0.0732436
Numerator = 33.4123
Denominator = 51.4574
W Statistic = 0.64932 = 33.4123 / 51.4574

**5% Critical value of 0.976 exceeds 0.64932
Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.64932
Evidence of non-normality at 99% level of significance**

Shapiro-Francia Test of Normality

Parameter: Arsenic

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m²)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.07485	9.90113	0
3	0	-1.8957	13.4948	0
4	0	-1.77438	16.6432	0
5	0	-1.66456	19.414	0
6	0	-1.57179	21.8845	0
7	0	-1.49852	24.13	0
8	0	-1.42554	26.1622	0
9	0	-1.35946	28.0104	0
10	0	-1.29884	29.6973	0
11	0	-1.24809	31.2551	0
12	0	-1.19522	32.6836	0
13	0	-1.1455	33.9958	0
14	0	-1.10306	35.2125	0
15	0	-1.05812	36.3322	0
16	0	-1.01522	37.3628	0
17	0	-0.974114	38.3117	0
18	0	-0.938476	39.1925	0
19	0	-0.900227	40.0029	0
20	0	-0.863249	40.7481	0
21	0	-0.830953	41.4386	0
22	0	-0.796056	42.0723	0
23	0	-0.7621	42.6531	0
24	0	-0.729003	43.1845	0
25	0	-0.699883	43.6743	0
26	0	-0.668209	44.1208	0
27	0	-0.637192	44.5269	0
28	0	-0.609791	44.8987	0
29	0	-0.579873	45.235	0
30	0	-0.550465	45.538	0
31	0	-0.524401	45.813	0
32	0	-0.49585	46.0588	0
33	0	-0.467699	46.2776	0
34	0	-0.439913	46.4711	0
35	0	-0.415193	46.6435	0
36	0	-0.388022	46.794	0
37	0	-0.361133	46.9245	0
38	0	-0.337155	47.0381	0
39	0	-0.310738	47.1347	0
40	0	-0.284535	47.2156	0
41	0	-0.258527	47.2825	0
42	0	-0.235269	47.3378	0
43	0	-0.209575	47.3818	0
44	0	-0.184017	47.4156	0
45	0	-0.161119	47.4416	0
46	0	-0.135774	47.46	0
47	0	-0.110516	47.4722	0

48	0	-0.0853288	47.4795	0
49	0	-0.0627062	47.4834	0
50	0	-0.0376076	47.4849	0
51	0	-0.0125328	47.485	0
52	0	0.0125328	47.4852	0
53	0	0.0376076	47.4866	0
54	0	0.0627062	47.4905	0
55	0	0.0853288	47.4978	0
56	0	0.110516	47.51	0
57	0	0.135774	47.5284	0
58	0	0.161119	47.5544	0
59	0	0.184017	47.5883	0
60	0	0.209575	47.6322	0
61	0	0.235269	47.6875	0
62	0	0.258527	47.7544	0
63	0	0.284535	47.8353	0
64	0	0.310738	47.9319	0
65	0	0.337155	48.0456	0
66	0	0.361133	48.176	0
67	0	0.388022	48.3265	0
68	0	0.415193	48.4989	0
69	0	0.439913	48.6925	0
70	0	0.467699	48.9112	0
71	0	0.49585	49.1571	0
72	0	0.524401	49.4321	0
73	0	0.550465	49.7351	0
74	0	0.579873	50.0713	0
75	0	0.609791	50.4432	0
76	0	0.637192	50.8492	0
77	0	0.668209	51.2957	0
78	0	0.699883	51.7855	0
79	0	0.729003	52.317	0
80	0	0.7621	52.8978	0
81	0	0.796056	53.5315	0
82	0	0.830953	54.222	0
83	0	0.863249	54.9672	0
84	0	0.900227	55.7776	0
85	0	0.938476	56.6583	0
86	0	0.974114	57.6072	0
87	0	1.01522	58.6379	0
88	0	1.05812	59.7575	0
89	0	1.10306	60.9742	0
90	0.001	1.1455	62.2864	0.0011455
91	0.0011	1.19522	63.715	0.00246025
92	0.0013	1.24809	65.2727	0.00408276
93	0.0017	1.29884	66.9597	0.00629078
94	0.0018	1.35946	68.8078	0.00873781
95	0.0021	1.42554	70.84	0.0117315
96	0.0035	1.49852	73.0855	0.0169763
97	0.0036	1.57179	75.5561	0.0226347
98	0.0047	1.66456	78.3268	0.0304581
99	0.0052	1.77438	81.4752	0.0396849
100	0.0058	1.8957	85.0689	0.0506799
101	0.0094	2.07485	89.3739	0.0701835
102	0.0261	2.36561	94.97	0.131926

Data Set Standard Deviation = 0.00289688
Numerator = 0.0174045
Denominator = 0.0804952
W Statistic = 0.216218 = 0.0174045 / 0.0804952

5% Critical value of 0.976 exceeds 0.216218
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.216218
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Ammonia

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Number of Measurements = 102

i	x(i)	m(i)	sum(m²)	sum(mx)
1	0	-2.36561	5.59613	0
2	0	-2.07485	9.90113	0
3	0	-1.8957	13.4948	0
4	0	-1.77438	16.6432	0
5	0	-1.66456	19.414	0
6	0	-1.57179	21.8845	0
7	0	-1.49852	24.13	0
8	0	-1.42554	26.1622	0
9	0	-1.35946	28.0104	0
10	0	-1.29884	29.6973	0
11	0	-1.24809	31.2551	0
12	0	-1.19522	32.6836	0
13	0	-1.1455	33.9958	0
14	0	-1.10306	35.2125	0
15	0	-1.05812	36.3322	0
16	0	-1.01522	37.3628	0
17	0	-0.974114	38.3117	0
18	0	-0.938476	39.1925	0
19	0	-0.900227	40.0029	0
20	0	-0.863249	40.7481	0
21	0	-0.830953	41.4386	0
22	0	-0.796056	42.0723	0
23	0	-0.7621	42.6531	0
24	0	-0.729003	43.1845	0
25	0	-0.699883	43.6743	0
26	0	-0.668209	44.1208	0
27	0	-0.637192	44.5269	0
28	0	-0.609791	44.8987	0
29	0	-0.579873	45.235	0
30	0	-0.550465	45.538	0
31	0	-0.524401	45.813	0
32	0	-0.49585	46.0588	0
33	0	-0.467699	46.2776	0
34	0	-0.439913	46.4711	0
35	0	-0.415193	46.6435	0
36	0	-0.388022	46.794	0
37	0	-0.361133	46.9245	0
38	0	-0.337155	47.0381	0
39	0.11	-0.310738	47.1347	-0.0341812
40	0.12	-0.284535	47.2156	-0.0683254
41	0.213	-0.258527	47.2825	-0.123392
42	0.29	-0.235269	47.3378	-0.19162
43	0.3	-0.209575	47.3818	-0.254492
44	0.3	-0.184017	47.4156	-0.309697
45	0.31	-0.161119	47.4416	-0.359644
46	0.36	-0.135774	47.46	-0.408523
47	0.36	-0.110516	47.4722	-0.448309

48	0.36	-0.0853288	47.4795	-0.479027
49	0.37	-0.0627062	47.4834	-0.502228
50	0.37	-0.0376076	47.4849	-0.516143
51	0.38	-0.0125328	47.485	-0.520906
52	0.39	0.0125328	47.4852	-0.516018
53	0.4	0.0376076	47.4866	-0.500975
54	0.4	0.0627062	47.4905	-0.475892
55	0.4	0.0853288	47.4978	-0.441761
56	0.41	0.110516	47.51	-0.396449
57	0.41	0.135774	47.5284	-0.340782
58	0.42	0.161119	47.5544	-0.273112
59	0.42	0.184017	47.5883	-0.195825
60	0.42	0.209575	47.6322	-0.107803
61	0.42	0.235269	47.6875	-0.00899021
62	0.42	0.258527	47.7544	0.0995913
63	0.42	0.284535	47.8353	0.219096
64	0.42	0.310738	47.9319	0.349606
65	0.44	0.337155	48.0456	0.497954
66	0.44	0.361133	48.176	0.656853
67	0.44	0.388022	48.3265	0.827583
68	0.45	0.415193	48.4989	1.01442
69	0.46	0.439913	48.6925	1.21678
70	0.48	0.467699	48.9112	1.44128
71	0.49	0.49585	49.1571	1.68424
72	0.497	0.524401	49.4321	1.94487
73	0.5	0.550465	49.7351	2.2201
74	0.52	0.579873	50.0713	2.52164
75	0.543	0.609791	50.4432	2.85275
76	0.55	0.637192	50.8492	3.20321
77	0.55	0.668209	51.2957	3.57072
78	0.57	0.699883	51.7855	3.96966
79	0.57	0.729003	52.317	4.38519
80	0.59	0.7621	52.8978	4.83483
81	0.59	0.796056	53.5315	5.3045
82	0.59	0.830953	54.222	5.79476
83	0.6	0.863249	54.9672	6.31271
84	0.6	0.900227	55.7776	6.85285
85	0.61	0.938476	56.6583	7.42532
86	0.62	0.974114	57.6072	8.02927
87	0.63	1.01522	58.6379	8.66886
88	0.65	1.05812	59.7575	9.35664
89	0.68	1.10306	60.9742	10.1067
90	0.68	1.1455	62.2864	10.8857
91	0.705	1.19522	63.715	11.7283
92	0.71	1.24809	65.2727	12.6144
93	0.71	1.29884	66.9597	13.5366
94	0.74	1.35946	68.8078	14.5426
95	0.74	1.42554	70.84	15.5975
96	0.75	1.49852	73.0855	16.7214
97	0.81	1.57179	75.5561	17.9945
98	0.81	1.66456	78.3268	19.3428
99	1.1	1.77438	81.4752	21.2947
100	1.26	1.8957	85.0689	23.6832
101	1.33	2.07485	89.3739	26.4428
102	1.47	2.36561	94.97	29.9202

Data Set Standard Deviation = 0.32865
Numerator = 895.221
Denominator = 1036.04
W Statistic = 0.86408 = 895.221 / 1036.04

**5% Critical value of 0.976 exceeds 0.86408
Evidence of non-normality at 95% level of significance**

**1% Critical value of 0.967 exceeds 0.86408
Evidence of non-normality at 99% level of significance**

Kruskal-Wallis Non-Parametric Test

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	0.088	44
	8/1/2015	0.066	38
	12/1/2015	0.017	24
	8/1/2016	0.101	50
	12/1/2016	0.124	61
	6/1/2017	1.028	93
	12/1/2017	1.11	94
	7/1/2018	1.742	97
	12/1/2018	1.821	98
	7/1/2019	1.221	96
	1/1/2020	2.011	99
	7/1/2020	2.109	100
	5/1/2021	0.071	41
	12/14/2021	ND<0	9.5
	6/7/2022	ND<0	9.5
	11/16/2022	14.8	101
5/26/2023	0.0298	29	

Rank Sum = 1084

Rank Mean = 63.7647

Background Rank Sum = 1084

Background Rank Mean = 63.7647

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	0.155	66
	8/1/2015	0.061	35
	12/1/2015	0.018	25
	8/1/2016	0.086	43
	12/1/2016	0.091	45
	6/1/2017	0.121	59
	12/1/2017	0.141	63
	7/1/2018	0.732	86
	12/1/2018	0.887	89
	7/1/2019	0.92	90
	1/1/2020	0.753	87
	7/1/2020	0.807	88
	5/1/2021	0.054	33
	12/14/2021	0.011	19
	6/7/2022	ND<0	9.5
	11/16/2022	17.1	102
5/26/2023	0.0125	22	

Rank Sum = 961.5

Rank Mean = 56.5588

MW-3	7/1/2014	0.028	28
	8/1/2015	0.061	36
	12/1/2015	0.021	26
	8/1/2016	0.164	68
	12/1/2016	0.141	64
	6/1/2017	0.173	69
	12/1/2017	1.002	92
	7/1/2018	1	91
	12/1/2018	1.11	95
	7/1/2019	0.107	53
	1/1/2020	0.324	76
	7/1/2020	0.543	83
	5/1/2021	0.061	37
	12/14/2021	0.012	21
	6/7/2022	0.0114	20
	11/16/2022	ND<0	9.5
	5/26/2023	0.0149	23

Rank Sum = 891.5

Rank Mean = 52.4412

MW-4	7/1/2014	0.103	51
	8/1/2015	0.06	34
	12/1/2015	0.034	30
	8/1/2016	0.091	46
	12/1/2016	0.112	55
	6/1/2017	0.121	60
	12/1/2017	0.115	57
	7/1/2018	0.129	62
	12/1/2018	0.099	47
	7/1/2019	0.117	58
	1/1/2020	0.505	82
	7/1/2020	0.67	85
	5/1/2021	0.067	39
	12/14/2021	ND<0	9.5
	6/7/2022	ND<0	9.5
	11/16/2022	ND<0	9.5
	5/26/2023	ND<0	9.5

Rank Sum = 744

Rank Mean = 43.7647

MW-5	7/1/2014	0.051	31
	8/1/2015	0.053	32
	12/1/2015	0.022	27
	8/1/2016	0.222	71
	12/1/2016	0.184	70
	6/1/2017	0.15	65
	12/1/2017	0.109	54
	7/1/2018	0.274	75
	12/1/2018	0.374	80
	7/1/2019	0.222	72
	1/1/2020	0.446	81
	7/1/2020	0.544	84
	5/1/2021	ND<0	9.5
	12/14/2021	ND<0	9.5
	6/7/2022	ND<0	9.5
	11/16/2022	ND<0	9.5
	5/26/2023	ND<0	9.5

Rank Sum = 789.5
Rank Mean = 46.4412

MW-6	7/1/2014	0.076	42
	8/1/2015	0.069	40
	12/1/2015	0.1	48
	8/1/2016	0.16	67
	12/1/2016	0.1	49
	6/1/2017	0.114	56
	12/1/2017	0.272	74
	7/1/2018	0.37	78
	12/1/2018	0.355	77
	7/1/2019	0.103	52
	1/1/2020	0.247	73
	7/1/2020	0.372	79
	5/1/2021	ND<0	9.5
	12/14/2021	ND<0	9.5
	6/7/2022	ND<0	9.5
	11/16/2022	ND<0	9.5
	5/26/2023	ND<0	9.5

Rank Sum = 782.5
Rank Mean = 46.0294

Calculation Results:

Kruskal-Wallis H Statistic = 5.67484

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 5.70611

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

5.67484 < 11.0705 indicating no significant group difference at 5% significance level

5.70611 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: VanaDiUm

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	45.5
	8/1/2015	ND<0	45.5
	12/1/2015	ND<0	45.5
	8/1/2016	ND<0	45.5
	12/1/2016	ND<0	45.5
	6/1/2017	ND<0	45.5
	12/1/2017	ND<0	45.5
	7/1/2018	ND<0	45.5
	12/1/2018	ND<0	45.5
	7/1/2019	ND<0	45.5
	1/1/2020	ND<0	45.5
	7/1/2020	ND<0	45.5
	5/1/2021	0.013	101
	12/14/2021	ND<0	45.5
	6/7/2022	ND<0	45.5
11/16/2022	0.006	98	
5/26/2023	0.009	100	

Rank Sum = 936

Rank Mean = 55.0588

Background Rank Sum = 936

Background Rank Mean = 55.0588

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	45.5
	8/1/2015	ND<0	45.5
	12/1/2015	ND<0	45.5
	8/1/2016	ND<0	45.5
	12/1/2016	ND<0	45.5
	6/1/2017	ND<0	45.5
	12/1/2017	ND<0	45.5
	7/1/2018	ND<0	45.5
	12/1/2018	ND<0	45.5
	7/1/2019	ND<0	45.5
	1/1/2020	ND<0	45.5
	7/1/2020	ND<0	45.5
	5/1/2021	ND<0	45.5
	12/14/2021	ND<0	45.5
	6/7/2022	ND<0	45.5
11/16/2022	ND<0	45.5	
5/26/2023	0.005	95	

Rank Sum = 823

Rank Mean = 48.4118

MW-3	7/1/2014	ND<0	45.5
	8/1/2015	ND<0	45.5
	12/1/2015	ND<0	45.5
	8/1/2016	ND<0	45.5
	12/1/2016	ND<0	45.5
	6/1/2017	ND<0	45.5
	12/1/2017	ND<0	45.5
	7/1/2018	ND<0	45.5
	12/1/2018	ND<0	45.5
	7/1/2019	ND<0	45.5
	1/1/2020	ND<0	45.5
	7/1/2020	ND<0	45.5
	5/1/2021	0.001	91
	12/14/2021	ND<0	45.5
	6/7/2022	ND<0	45.5
	11/16/2022	ND<0	45.5
	5/26/2023	ND<0	45.5

Rank Sum = 819

Rank Mean = 48.1765

MW-4	7/1/2014	ND<0	45.5
	8/1/2015	ND<0	45.5
	12/1/2015	ND<0	45.5
	8/1/2016	ND<0	45.5
	12/1/2016	ND<0	45.5
	6/1/2017	ND<0	45.5
	12/1/2017	ND<0	45.5
	7/1/2018	ND<0	45.5
	12/1/2018	ND<0	45.5
	7/1/2019	ND<0	45.5
	1/1/2020	ND<0	45.5
	7/1/2020	ND<0	45.5
	5/1/2021	0.003	94
	12/14/2021	ND<0	45.5
	6/7/2022	ND<0	45.5
	11/16/2022	ND<0	45.5
	5/26/2023	ND<0	45.5

Rank Sum = 822

Rank Mean = 48.3529

MW-5	7/1/2014	ND<0	45.5
	8/1/2015	ND<0	45.5
	12/1/2015	ND<0	45.5
	8/1/2016	ND<0	45.5
	12/1/2016	ND<0	45.5
	6/1/2017	ND<0	45.5
	12/1/2017	ND<0	45.5
	7/1/2018	ND<0	45.5
	12/1/2018	ND<0	45.5
	7/1/2019	ND<0	45.5
	1/1/2020	ND<0	45.5
	7/1/2020	ND<0	45.5
	5/1/2021	0.002	93
	12/14/2021	0.006	99
	6/7/2022	ND<0	45.5
	11/16/2022	ND<0	45.5
	5/26/2023	0.005	96

Rank Sum = 925
Rank Mean = 54.4118

MW-6	7/1/2014	ND<0	45.5
	8/1/2015	ND<0	45.5
	12/1/2015	ND<0	45.5
	8/1/2016	ND<0	45.5
	12/1/2016	ND<0	45.5
	6/1/2017	ND<0	45.5
	12/1/2017	ND<0	45.5
	7/1/2018	ND<0	45.5
	12/1/2018	ND<0	45.5
	7/1/2019	ND<0	45.5
	1/1/2020	ND<0	45.5
	7/1/2020	ND<0	45.5
	5/1/2021	0.001	92
	12/14/2021	0.005	97
	6/7/2022	ND<0	45.5
	11/16/2022	0.013	102
	5/26/2023	ND<0	45.5

Rank Sum = 928
Rank Mean = 54.5882

Calculation Results:

Kruskal-Wallis H Statistic = 1.18772

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 3.79385

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

1.18772 < 11.0705 indicating no significant group difference at 5% significance level

3.79385 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: **Sulfate**

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	12.5
	8/1/2015	ND<0	12.5
	12/1/2015	ND<0	12.5
	8/1/2016	7	39
	12/1/2016	8	41
	6/1/2017	12	81
	12/1/2017	9	47
	7/1/2018	10	58
	12/1/2018	14	88
	7/1/2019	15	89
	1/1/2020	16	93
	7/1/2020	32	100
	5/1/2021	16	94
	12/14/2021	5.09	34
	6/7/2022	3.33	29
	11/16/2022	3.37	30
5/26/2023	1.58	25	

Rank Sum = 885.5

Rank Mean = 52.0882

Background Rank Sum = 885.5

Background Rank Mean = 52.0882

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	12.5
	8/1/2015	ND<0	12.5
	12/1/2015	ND<0	12.5
	8/1/2016	3	28
	12/1/2016	5	33
	6/1/2017	8	42
	12/1/2017	11	69
	7/1/2018	10	59
	12/1/2018	10	60
	7/1/2019	9	48
	1/1/2020	9	49
	7/1/2020	12	82
	5/1/2021	ND<0	12.5
	12/14/2021	1.74	26
	6/7/2022	ND<0	12.5
	11/16/2022	ND<0	12.5
5/26/2023	ND<0	12.5	

Rank Sum = 583.5

Rank Mean = 34.3235

MW-3	7/1/2014	ND<0	12.5
	8/1/2015	ND<0	12.5
	12/1/2015	ND<0	12.5
	8/1/2016	2	27
	12/1/2016	4	31
	6/1/2017	7	40
	12/1/2017	8	43
	7/1/2018	11	70
	12/1/2018	10	61
	7/1/2019	11	71
	1/1/2020	11	72
	7/1/2020	9	50
	5/1/2021	ND<0	12.5
	12/14/2021	15.9	92
	6/7/2022	10.6	68
	11/16/2022	16.8	96
	5/26/2023	13.8	87

Rank Sum = 858
Rank Mean = 50.4706

MW-4	7/1/2014	ND<0	12.5
	8/1/2015	ND<0	12.5
	12/1/2015	ND<0	12.5
	8/1/2016	13	85
	12/1/2016	9	51
	6/1/2017	9	52
	12/1/2017	10	62
	7/1/2018	12	83
	12/1/2018	11	73
	7/1/2019	9	53
	1/1/2020	15	90
	7/1/2020	11	74
	5/1/2021	ND<0	12.5
	12/14/2021	6.64	38
	6/7/2022	5.99	35
	11/16/2022	6.49	37
	5/26/2023	4.65	32

Rank Sum = 815
Rank Mean = 47.9412

MW-5	7/1/2014	ND<0	12.5
	8/1/2015	ND<0	12.5
	12/1/2015	ND<0	12.5
	8/1/2016	98	102
	12/1/2016	84	101
	6/1/2017	28	99
	12/1/2017	17	97
	7/1/2018	16	95
	12/1/2018	13	86
	7/1/2019	10	63
	1/1/2020	15	91
	7/1/2020	18	98
	5/1/2021	11	75
	12/14/2021	8.53	45
	6/7/2022	11.1	79
	11/16/2022	6.41	36
	5/26/2023	9.73	57

Rank Sum = 1161.5
 Rank Mean = 68.3235

MW-6	7/1/2014	ND<0	12.5
	8/1/2015	ND<0	12.5
	12/1/2015	ND<0	12.5
	8/1/2016	9	54
	12/1/2016	10	64
	6/1/2017	11	76
	12/1/2017	10	65
	7/1/2018	11	77
	12/1/2018	10	66
	7/1/2019	9	55
	1/1/2020	11	78
	7/1/2020	12	84
	5/1/2021	8	44
	12/14/2021	8.89	46
	6/7/2022	11.1	80
	11/16/2022	9.02	56
	5/26/2023	10.1	67

Rank Sum = 949.5
 Rank Mean = 55.8529

Calculation Results:

Kruskal-Wallis H Statistic = 11.8657

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 12.022

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

11.8657 > 11.0705 indicating a significant group difference at 5% significance level

12.022 > 11.0705 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634

Mean background rank is 52.0882

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	34.3235	-17.7647	23.6098
MW-3	50.4706	-1.61765	23.6098
MW-4	47.9412	-4.14706	23.6098
MW-5	68.3235	16.2353	23.6098
MW-6	55.8529	3.76471	23.6098

Individual Well Comparisons at Groupwise 5% Significance Level (1% Significance Level per comparison)

1% Z score is 2.32634

Mean background rank is 52.0882

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	34.3235	-17.7647	23.6098
MW-3	50.4706	-1.61765	23.6098
MW-4	47.9412	-4.14706	23.6098
MW-5	68.3235	16.2353	23.6098
MW-6	55.8529	3.76471	23.6098

Kruskal-Wallis Non-Parametric Test

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	0.008	81
	8/1/2015	ND<0	26.5
	12/1/2015	ND<0	26.5
	8/1/2016	0.008	82
	12/1/2016	0.012	95
	6/1/2017	0.027	102
	12/1/2017	0.009	85
	7/1/2018	0.01	90
	12/1/2018	0.01	91
	7/1/2019	0.018	101
	1/1/2020	0.011	94
	7/1/2020	0.01	92
	5/1/2021	0.0035	62
	12/14/2021	0.0026	57
	6/7/2022	ND<0	26.5
	11/16/2022	0.0049	66
	5/26/2023	0.0042	64

Rank Sum = 1241.5

Rank Mean = 73.0294

Background Rank Sum = 1241.5

Background Rank Mean = 73.0294

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	0.015	100
	8/1/2015	ND<0	26.5
	12/1/2015	ND<0	26.5
	8/1/2016	ND<0	26.5
	12/1/2016	0.012	96
	6/1/2017	0.01	93
	12/1/2017	ND<0	26.5
	7/1/2018	0.009	86
	12/1/2018	0.006	69
	7/1/2019	0.006	70
	1/1/2020	0.005	67
	7/1/2020	ND<0	26.5
	5/1/2021	0.003	60
	12/14/2021	ND<0	26.5
	6/7/2022	ND<0	26.5
	11/16/2022	0.0036	63
	5/26/2023	ND<0	26.5

Rank Sum = 916

Rank Mean = 53.8824

MW-3	7/1/2014	0.008	83
	8/1/2015	ND<0	26.5
	12/1/2015	ND<0	26.5
	8/1/2016	ND<0	26.5
	12/1/2016	ND<0	26.5
	6/1/2017	ND<0	26.5
	12/1/2017	ND<0	26.5
	7/1/2018	0.009	87
	12/1/2018	0.009	88
	7/1/2019	0.009	89
	1/1/2020	0.006	71
	7/1/2020	0.007	78
	5/1/2021	0.008	84
	12/14/2021	ND<0	26.5
	6/7/2022	0.0137	98
	11/16/2022	0.003	61
	5/26/2023	0.0139	99

Rank Sum = 1023.5

Rank Mean = 60.2059

MW-4	7/1/2014	0.007	79
	8/1/2015	ND<0	26.5
	12/1/2015	ND<0	26.5
	8/1/2016	ND<0	26.5
	12/1/2016	ND<0	26.5
	6/1/2017	ND<0	26.5
	12/1/2017	ND<0	26.5
	7/1/2018	ND<0	26.5
	12/1/2018	ND<0	26.5
	7/1/2019	ND<0	26.5
	1/1/2020	ND<0	26.5
	7/1/2020	ND<0	26.5
	5/1/2021	0.006	72
	12/14/2021	0.0026	58
	6/7/2022	0.0046	65
	11/16/2022	0.0072	80
	5/26/2023	0.0054	68

Rank Sum = 713.5

Rank Mean = 41.9706

MW-5	7/1/2014	ND<0	26.5
	8/1/2015	ND<0	26.5
	12/1/2015	ND<0	26.5
	8/1/2016	ND<0	26.5
	12/1/2016	ND<0	26.5
	6/1/2017	ND<0	26.5
	12/1/2017	ND<0	26.5
	7/1/2018	ND<0	26.5
	12/1/2018	ND<0	26.5
	7/1/2019	ND<0	26.5
	1/1/2020	ND<0	26.5
	7/1/2020	ND<0	26.5
	5/1/2021	ND<0	26.5
	12/14/2021	0.0013	55
	6/7/2022	ND<0	26.5
	11/16/2022	0.0011	53
	5/26/2023	0.0011	54

Rank Sum = 533
 Rank Mean = 31.3529

MW-6	7/1/2014	ND<0	26.5
	8/1/2015	ND<0	26.5
	12/1/2015	ND<0	26.5
	8/1/2016	0.012	97
	12/1/2016	0.006	73
	6/1/2017	0.006	74
	12/1/2017	0.006	75
	7/1/2018	0.006	76
	12/1/2018	0.006	77
	7/1/2019	ND<0	26.5
	1/1/2020	ND<0	26.5
	7/1/2020	ND<0	26.5
	5/1/2021	ND<0	26.5
	12/14/2021	ND<0	26.5
	6/7/2022	0.0025	56
	11/16/2022	0.0026	59
	5/26/2023	ND<0	26.5

Rank Sum = 825.5
 Rank Mean = 48.5588

Calculation Results:

Kruskal-Wallis H Statistic = 20.3951

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 23.5092

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

20.3951 > 11.0705 indicating a significant group difference at 5% significance level

23.5092 > 11.0705 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634

Mean background rank is 73.0294

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	53.8824	-19.1471	23.6098
MW-3	60.2059	-12.8235	23.6098
MW-4	41.9706	-31.0588	23.6098
MW-5	31.3529	-41.6765	23.6098
MW-6	48.5588	-24.4706	23.6098

Individual Well Comparisons at Groupwise 5% Significance Level (1% Significance Level per comparison)

1% Z score is 2.32634

Mean background rank is 73.0294

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	53.8824	-19.1471	23.6098
MW-3	60.2059	-12.8235	23.6098
MW-4	41.9706	-31.0588	23.6098
MW-5	31.3529	-41.6765	23.6098
MW-6	48.5588	-24.4706	23.6098

Kruskal-Wallis Non-Parametric Test

Parameter: MercUry

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	48.5
	8/1/2015	ND<0	48.5
	12/1/2015	ND<0	48.5
	8/1/2016	ND<0	48.5
	12/1/2016	ND<0	48.5
	6/1/2017	ND<0	48.5
	12/1/2017	ND<0	48.5
	7/1/2018	ND<0	48.5
	12/1/2018	ND<0	48.5
	7/1/2019	ND<0	48.5
	1/1/2020	ND<0	48.5
	7/1/2020	ND<0	48.5
	5/1/2021	ND<0	48.5
	12/14/2021	ND<0	48.5
	6/7/2022	ND<0	48.5
11/16/2022	0.0002	97	
5/26/2023	0.00042	101	

Rank Sum = 925.5

Rank Mean = 54.4412

Background Rank Sum = 925.5

Background Rank Mean = 54.4412

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	48.5
	8/1/2015	ND<0	48.5
	12/1/2015	ND<0	48.5
	8/1/2016	ND<0	48.5
	12/1/2016	ND<0	48.5
	6/1/2017	ND<0	48.5
	12/1/2017	ND<0	48.5
	7/1/2018	ND<0	48.5
	12/1/2018	ND<0	48.5
	7/1/2019	ND<0	48.5
	1/1/2020	ND<0	48.5
	7/1/2020	ND<0	48.5
	5/1/2021	ND<0	48.5
	12/14/2021	ND<0	48.5
	6/7/2022	ND<0	48.5
11/16/2022	ND<0	48.5	
5/26/2023	0.00026	100	

Rank Sum = 876

Rank Mean = 51.5294

MW-3	7/1/2014	ND<0	48.5
	8/1/2015	ND<0	48.5
	12/1/2015	ND<0	48.5
	8/1/2016	ND<0	48.5
	12/1/2016	ND<0	48.5
	6/1/2017	ND<0	48.5
	12/1/2017	ND<0	48.5
	7/1/2018	ND<0	48.5
	12/1/2018	ND<0	48.5
	7/1/2019	ND<0	48.5
	1/1/2020	ND<0	48.5
	7/1/2020	ND<0	48.5
	5/1/2021	ND<0	48.5
	12/14/2021	ND<0	48.5
	6/7/2022	ND<0	48.5
	11/16/2022	ND<0	48.5
	5/26/2023	ND<0	48.5

Rank Sum = 824.5

Rank Mean = 48.5

MW-4	7/1/2014	ND<0	48.5
	8/1/2015	ND<0	48.5
	12/1/2015	ND<0	48.5
	8/1/2016	ND<0	48.5
	12/1/2016	ND<0	48.5
	6/1/2017	ND<0	48.5
	12/1/2017	ND<0	48.5
	7/1/2018	ND<0	48.5
	12/1/2018	ND<0	48.5
	7/1/2019	ND<0	48.5
	1/1/2020	ND<0	48.5
	7/1/2020	ND<0	48.5
	5/1/2021	ND<0	48.5
	12/14/2021	ND<0	48.5
	6/7/2022	ND<0	48.5
	11/16/2022	ND<0	48.5
	5/26/2023	ND<0	48.5

Rank Sum = 824.5

Rank Mean = 48.5

MW-5	7/1/2014	ND<0	48.5
	8/1/2015	ND<0	48.5
	12/1/2015	ND<0	48.5
	8/1/2016	ND<0	48.5
	12/1/2016	ND<0	48.5
	6/1/2017	ND<0	48.5
	12/1/2017	ND<0	48.5
	7/1/2018	ND<0	48.5
	12/1/2018	ND<0	48.5
	7/1/2019	ND<0	48.5
	1/1/2020	ND<0	48.5
	7/1/2020	ND<0	48.5
	5/1/2021	ND<0	48.5
	12/14/2021	0.00023	98
	6/7/2022	ND<0	48.5
	11/16/2022	ND<0	48.5
	5/26/2023	ND<0	48.5

Rank Sum = 874
Rank Mean = 51.4118

MW-6	7/1/2014	ND<0	48.5
	8/1/2015	ND<0	48.5
	12/1/2015	ND<0	48.5
	8/1/2016	ND<0	48.5
	12/1/2016	ND<0	48.5
	6/1/2017	ND<0	48.5
	12/1/2017	ND<0	48.5
	7/1/2018	ND<0	48.5
	12/1/2018	ND<0	48.5
	7/1/2019	ND<0	48.5
	1/1/2020	ND<0	48.5
	7/1/2020	ND<0	48.5
	5/1/2021	ND<0	48.5
	12/14/2021	0.00025	99
	6/7/2022	ND<0	48.5
	11/16/2022	ND<0	48.5
	5/26/2023	0.00119	102

Rank Sum = 928.5
Rank Mean = 54.6176

Calculation Results:

Kruskal-Wallis H Statistic = 0.706386

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 4.24756

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

0.706386 < 11.0705 indicating no significant group difference at 5% significance level

4.24756 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: **Lead**

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	42.5
	8/1/2015	ND<0	42.5
	12/1/2015	ND<0	42.5
	8/1/2016	ND<0	42.5
	12/1/2016	ND<0	42.5
	6/1/2017	ND<0	42.5
	12/1/2017	ND<0	42.5
	7/1/2018	0.006	93
	12/1/2018	0.009	96
	7/1/2019	0.012	98
	1/1/2020	0.015	99
	7/1/2020	0.018	101
	5/1/2021	0.021	102
	12/14/2021	ND<0	42.5
	6/7/2022	ND<0	42.5
	11/16/2022	0.002	90
5/26/2023	0.009	97	

Rank Sum = 1158.5

Rank Mean = 68.1471

Background Rank Sum = 1158.5

Background Rank Mean = 68.1471

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	42.5
	8/1/2015	ND<0	42.5
	12/1/2015	ND<0	42.5
	8/1/2016	ND<0	42.5
	12/1/2016	ND<0	42.5
	6/1/2017	ND<0	42.5
	12/1/2017	ND<0	42.5
	7/1/2018	ND<0	42.5
	12/1/2018	ND<0	42.5
	7/1/2019	ND<0	42.5
	1/1/2020	ND<0	42.5
	7/1/2020	ND<0	42.5
	5/1/2021	0.005	92
	12/14/2021	ND<0	42.5
	6/7/2022	ND<0	42.5
	11/16/2022	0.0034	91
5/26/2023	0.0015	89	

Rank Sum = 867

Rank Mean = 51

MW-3	7/1/2014	ND<0	42.5
	8/1/2015	ND<0	42.5
	12/1/2015	ND<0	42.5
	8/1/2016	ND<0	42.5
	12/1/2016	ND<0	42.5
	6/1/2017	ND<0	42.5
	12/1/2017	ND<0	42.5
	7/1/2018	ND<0	42.5
	12/1/2018	ND<0	42.5
	7/1/2019	ND<0	42.5
	1/1/2020	ND<0	42.5
	7/1/2020	ND<0	42.5
	5/1/2021	ND<0	42.5
	12/14/2021	0.0075	95
	6/7/2022	ND<0	42.5
	11/16/2022	ND<0	42.5
	5/26/2023	ND<0	42.5

Rank Sum = 775

Rank Mean = 45.5882

MW-4	7/1/2014	ND<0	42.5
	8/1/2015	0.006	94
	12/1/2015	ND<0	42.5
	8/1/2016	ND<0	42.5
	12/1/2016	ND<0	42.5
	6/1/2017	ND<0	42.5
	12/1/2017	ND<0	42.5
	7/1/2018	ND<0	42.5
	12/1/2018	ND<0	42.5
	7/1/2019	ND<0	42.5
	1/1/2020	ND<0	42.5
	7/1/2020	ND<0	42.5
	5/1/2021	0.016	100
	12/14/2021	0.001	85
	6/7/2022	ND<0	42.5
	11/16/2022	ND<0	42.5
	5/26/2023	ND<0	42.5

Rank Sum = 874

Rank Mean = 51.4118

MW-5	7/1/2014	ND<0	42.5
	8/1/2015	ND<0	42.5
	12/1/2015	ND<0	42.5
	8/1/2016	ND<0	42.5
	12/1/2016	ND<0	42.5
	6/1/2017	ND<0	42.5
	12/1/2017	ND<0	42.5
	7/1/2018	ND<0	42.5
	12/1/2018	ND<0	42.5
	7/1/2019	ND<0	42.5
	1/1/2020	ND<0	42.5
	7/1/2020	ND<0	42.5
	5/1/2021	ND<0	42.5
	12/14/2021	0.0011	87
	6/7/2022	ND<0	42.5
	11/16/2022	ND<0	42.5
	5/26/2023	0.001	86

Rank Sum = 810.5
 Rank Mean = 47.6765

MW-6	7/1/2014	ND<0	42.5
	8/1/2015	ND<0	42.5
	12/1/2015	ND<0	42.5
	8/1/2016	ND<0	42.5
	12/1/2016	ND<0	42.5
	6/1/2017	ND<0	42.5
	12/1/2017	ND<0	42.5
	7/1/2018	ND<0	42.5
	12/1/2018	ND<0	42.5
	7/1/2019	ND<0	42.5
	1/1/2020	ND<0	42.5
	7/1/2020	ND<0	42.5
	5/1/2021	ND<0	42.5
	12/14/2021	ND<0	42.5
	6/7/2022	ND<0	42.5
	11/16/2022	0.0012	88
	5/26/2023	ND<0	42.5

Rank Sum = 768
 Rank Mean = 45.1765

Calculation Results:

Kruskal-Wallis H Statistic = 7.125

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 16.1379

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

7.125 < 11.0705 indicating no significant group difference at 5% significance level

16.1379 > 11.0705 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634

Mean background rank is 68.1471

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	51	-17.1471	23.6098
MW-3	45.5882	-22.5588	23.6098
MW-4	51.4118	-16.7353	23.6098
MW-5	47.6765	-20.4706	23.6098
MW-6	45.1765	-22.9706	23.6098

Individual Well Comparisons at Groupwise 5% Significance Level (1% Significance Level per comparison)

1% Z score is 2.32634

Mean background rank is 68.1471

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	51	-17.1471	23.6098
MW-3	45.5882	-22.5588	23.6098
MW-4	51.4118	-16.7353	23.6098
MW-5	47.6765	-20.4706	23.6098
MW-6	45.1765	-22.9706	23.6098

Kruskal-Wallis Non-Parametric Test

Parameter: FIUoriDe

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	0.02	33
	8/1/2015	0.19	42
	12/1/2015	0.22	46
	8/1/2016	0.52	59
	12/1/2016	0.6	64
	6/1/2017	1.55	97
	12/1/2017	1	88
	7/1/2018	1.76	98
	12/1/2018	1.79	99
	7/1/2019	2.05	100
	1/1/2020	2.57	101
	7/1/2020	3.62	102
	5/1/2021	ND<0	16.5
	12/14/2021	0.127	36
	6/7/2022	ND<0	16.5
	11/16/2022	ND<0	16.5
	5/26/2023	0.149	38

Rank Sum = 1052.5

Rank Mean = 61.9118

Background Rank Sum = 1052.5

Background Rank Mean = 61.9118

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	0.18	40
	8/1/2015	0.24	49
	12/1/2015	0.29	52
	8/1/2016	0.61	66
	12/1/2016	0.75	73
	6/1/2017	0.96	86
	12/1/2017	1.09	93
	7/1/2018	1.05	92
	12/1/2018	1.03	91
	7/1/2019	0.5	58
	1/1/2020	0.78	77
	7/1/2020	1.001	90
	5/1/2021	ND<0	16.5
	12/14/2021	ND<0	16.5
	6/7/2022	ND<0	16.5
	11/16/2022	ND<0	16.5
	5/26/2023	ND<0	16.5

Rank Sum = 949.5

Rank Mean = 55.8529

MW-3	7/1/2014	0.26	51
	8/1/2015	0.13	37
	12/1/2015	0.18	41
	8/1/2016	0.34	53
	12/1/2016	0.22	47
	6/1/2017	0.75	74
	12/1/2017	1	89
	7/1/2018	0.92	83
	12/1/2018	0.58	63
	7/1/2019	0.49	57
	1/1/2020	0.62	68
	7/1/2020	0.745	72
	5/1/2021	ND<0	16.5
	12/14/2021	ND<0	16.5
	6/7/2022	ND<0	16.5
	11/16/2022	ND<0	16.5
	5/26/2023	ND<0	16.5

Rank Sum = 817.5

Rank Mean = 48.0882

MW-4	7/1/2014	0.12	35
	8/1/2015	ND<0	16.5
	12/1/2015	ND<0	16.5
	8/1/2016	0.41	55
	12/1/2016	0.56	62
	6/1/2017	0.52	60
	12/1/2017	0.47	56
	7/1/2018	1.24	95
	12/1/2018	1.09	94
	7/1/2019	0.65	69
	1/1/2020	0.73	70
	7/1/2020	0.791	80
	5/1/2021	ND<0	16.5
	12/14/2021	0.162	39
	6/7/2022	ND<0	16.5
	11/16/2022	ND<0	16.5
	5/26/2023	ND<0	16.5

Rank Sum = 814

Rank Mean = 47.8824

MW-5	7/1/2014	0.11	34
	8/1/2015	0.22	48
	12/1/2015	0.25	50
	8/1/2016	1.26	96
	12/1/2016	0.92	84
	6/1/2017	0.76	75
	12/1/2017	0.83	81
	7/1/2018	0.88	82
	12/1/2018	0.74	71
	7/1/2019	0.6	65
	1/1/2020	0.97	87
	7/1/2020	0.781	78
	5/1/2021	ND<0	16.5
	12/14/2021	ND<0	16.5
	6/7/2022	ND<0	16.5
	11/16/2022	ND<0	16.5
	5/26/2023	ND<0	16.5

Rank Sum = 933.5
Rank Mean = 54.9118

MW-6	7/1/2014	ND<0	16.5
	8/1/2015	ND<0	16.5
	12/1/2015	ND<0	16.5
	8/1/2016	0.35	54
	12/1/2016	0.21	45
	6/1/2017	0.19	43
	12/1/2017	0.55	61
	7/1/2018	0.92	85
	12/1/2018	0.79	79
	7/1/2019	0.61	67
	1/1/2020	0.76	76
	7/1/2020	0.209	44
	5/1/2021	ND<0	16.5
	12/14/2021	ND<0	16.5
	6/7/2022	ND<0	16.5
	11/16/2022	ND<0	16.5
	5/26/2023	ND<0	16.5

Rank Sum = 686
Rank Mean = 40.3529

Calculation Results:

Kruskal-Wallis H Statistic = 5.5918

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 5.7698

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

5.5918 < 11.0705 indicating no significant group difference at 5% significance level

5.7698 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	0.066	100
	8/1/2015	0.011	49
	12/1/2015	ND<0	14.5
	8/1/2016	0.031	70
	12/1/2016	0.038	78
	6/1/2017	ND<0	14.5
	12/1/2017	0.055	94
	7/1/2018	0.041	84
	12/1/2018	0.046	86
	7/1/2019	0.05	91
	1/1/2020	0.056	96
	7/1/2020	0.063	99
	5/1/2021	0.015	53
	12/14/2021	0.0017	34
	6/7/2022	0.0011	30
	11/16/2022	0.0031	40
	5/26/2023	0.0139	52

Rank Sum = 1085

Rank Mean = 63.8235

Background Rank Sum = 1085

Background Rank Mean = 63.8235

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	0.06	98
	8/1/2015	0.009	47
	12/1/2015	ND<0	14.5
	8/1/2016	0.038	79
	12/1/2016	0.039	81
	6/1/2017	0.22	101
	12/1/2017	0.02	57
	7/1/2018	0.026	62
	12/1/2018	0.018	55
	7/1/2019	ND<0	14.5
	1/1/2020	ND<0	14.5
	7/1/2020	ND<0	14.5
	5/1/2021	0.024	60
	12/14/2021	ND<0	14.5
	6/7/2022	ND<0	14.5
	11/16/2022	0.0061	44
	5/26/2023	0.0028	39

Rank Sum = 810

Rank Mean = 47.6471

MW-3	7/1/2014	0.054	93
	8/1/2015	0.008	45
	12/1/2015	ND<0	14.5
	8/1/2016	0.45	102
	12/1/2016	0.043	85
	6/1/2017	0.031	71
	12/1/2017	0.033	77
	7/1/2018	0.049	90
	12/1/2018	0.04	83
	7/1/2019	ND<0	14.5
	1/1/2020	ND<0	14.5
	7/1/2020	ND<0	14.5
	5/1/2021	0.031	72
	12/14/2021	0.0132	51
	6/7/2022	0.001	29
	11/16/2022	0.0035	41
	5/26/2023	ND<0	14.5

Rank Sum = 911.5

Rank Mean = 53.6176

MW-4	7/1/2014	0.055	95
	8/1/2015	0.009	48
	12/1/2015	ND<0	14.5
	8/1/2016	0.017	54
	12/1/2016	0.022	58
	6/1/2017	0.031	73
	12/1/2017	0.039	82
	7/1/2018	0.052	92
	12/1/2018	0.032	75
	7/1/2019	0.032	76
	1/1/2020	ND<0	14.5
	7/1/2020	ND<0	14.5
	5/1/2021	0.057	97
	12/14/2021	0.0012	32
	6/7/2022	0.0011	31
	11/16/2022	0.0018	37
	5/26/2023	ND<0	14.5

Rank Sum = 908

Rank Mean = 53.4118

MW-5	7/1/2014	0.026	63
	8/1/2015	0.006	43
	12/1/2015	ND<0	14.5
	8/1/2016	0.028	67
	12/1/2016	0.026	64
	6/1/2017	0.025	61
	12/1/2017	0.027	65
	7/1/2018	0.031	74
	12/1/2018	0.028	68
	7/1/2019	ND<0	14.5
	1/1/2020	ND<0	14.5
	7/1/2020	ND<0	14.5
	5/1/2021	0.013	50
	12/14/2021	0.0016	33
	6/7/2022	ND<0	14.5
	11/16/2022	ND<0	14.5
	5/26/2023	0.0017	35

Rank Sum = 710
Rank Mean = 41.7647

MW-6	7/1/2014	0.046	87
	8/1/2015	0.008	46
	12/1/2015	0.005	42
	8/1/2016	0.046	88
	12/1/2016	0.048	89
	6/1/2017	0.027	66
	12/1/2017	0.03	69
	7/1/2018	0.038	80
	12/1/2018	0.022	59
	7/1/2019	ND<0	14.5
	1/1/2020	ND<0	14.5
	7/1/2020	ND<0	14.5
	5/1/2021	0.018	56
	12/14/2021	0.0018	38
	6/7/2022	ND<0	14.5
	11/16/2022	0.0017	36
	5/26/2023	ND<0	14.5

Rank Sum = 828.5
Rank Mean = 48.7353

Calculation Results:

Kruskal-Wallis H Statistic = 5.38395

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 5.49754

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

5.38395 < 11.0705 indicating no significant group difference at 5% significance level

5.49754 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: Cobalt

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	40.5
	8/1/2015	ND<0	40.5
	12/1/2015	ND<0	40.5
	8/1/2016	ND<0	40.5
	12/1/2016	ND<0	40.5
	6/1/2017	ND<0	40.5
	12/1/2017	ND<0	40.5
	7/1/2018	ND<0	40.5
	12/1/2018	ND<0	40.5
	7/1/2019	ND<0	40.5
	1/1/2020	ND<0	40.5
	7/1/2020	ND<0	40.5
	5/1/2021	0.086	102
	12/14/2021	0.045	100
	6/7/2022	ND<0	40.5
11/16/2022	0.07	101	
5/26/2023	0.035	99	

Rank Sum = 928.5

Rank Mean = 54.6176

Background Rank Sum = 928.5

Background Rank Mean = 54.6176

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	40.5
	8/1/2015	ND<0	40.5
	12/1/2015	ND<0	40.5
	8/1/2016	ND<0	40.5
	12/1/2016	ND<0	40.5
	6/1/2017	ND<0	40.5
	12/1/2017	ND<0	40.5
	7/1/2018	ND<0	40.5
	12/1/2018	ND<0	40.5
	7/1/2019	ND<0	40.5
	1/1/2020	ND<0	40.5
	7/1/2020	ND<0	40.5
	5/1/2021	ND<0	40.5
	12/14/2021	ND<0	40.5
	6/7/2022	ND<0	40.5
11/16/2022	0.001	81	
5/26/2023	ND<0	40.5	

Rank Sum = 729

Rank Mean = 42.8824

MW-3	7/1/2014	ND<0	40.5
	8/1/2015	ND<0	40.5
	12/1/2015	ND<0	40.5
	8/1/2016	ND<0	40.5
	12/1/2016	ND<0	40.5
	6/1/2017	ND<0	40.5
	12/1/2017	ND<0	40.5
	7/1/2018	ND<0	40.5
	12/1/2018	ND<0	40.5
	7/1/2019	ND<0	40.5
	1/1/2020	ND<0	40.5
	7/1/2020	ND<0	40.5
	5/1/2021	0.004	91
	12/14/2021	0.001	82
	6/7/2022	0.004	92
	11/16/2022	0.002	85
	5/26/2023	0.005	94

Rank Sum = 930

Rank Mean = 54.7059

MW-4	7/1/2014	ND<0	40.5
	8/1/2015	ND<0	40.5
	12/1/2015	ND<0	40.5
	8/1/2016	ND<0	40.5
	12/1/2016	ND<0	40.5
	6/1/2017	ND<0	40.5
	12/1/2017	ND<0	40.5
	7/1/2018	ND<0	40.5
	12/1/2018	ND<0	40.5
	7/1/2019	ND<0	40.5
	1/1/2020	ND<0	40.5
	7/1/2020	ND<0	40.5
	5/1/2021	0.008	98
	12/14/2021	0.001	83
	6/7/2022	0.006	95
	11/16/2022	0.003	89
	5/26/2023	0.007	97

Rank Sum = 948

Rank Mean = 55.7647

MW-5	7/1/2014	ND<0	40.5
	8/1/2015	ND<0	40.5
	12/1/2015	ND<0	40.5
	8/1/2016	ND<0	40.5
	12/1/2016	ND<0	40.5
	6/1/2017	ND<0	40.5
	12/1/2017	ND<0	40.5
	7/1/2018	ND<0	40.5
	12/1/2018	ND<0	40.5
	7/1/2019	ND<0	40.5
	1/1/2020	ND<0	40.5
	7/1/2020	ND<0	40.5
	5/1/2021	ND<0	40.5
	12/14/2021	0.002	86
	6/7/2022	ND<0	40.5
	11/16/2022	0.001	84
	5/26/2023	0.003	90

Rank Sum = 827
Rank Mean = 48.6471

MW-6	7/1/2014	ND<0	40.5
	8/1/2015	ND<0	40.5
	12/1/2015	ND<0	40.5
	8/1/2016	ND<0	40.5
	12/1/2016	ND<0	40.5
	6/1/2017	ND<0	40.5
	12/1/2017	ND<0	40.5
	7/1/2018	ND<0	40.5
	12/1/2018	ND<0	40.5
	7/1/2019	ND<0	40.5
	1/1/2020	ND<0	40.5
	7/1/2020	ND<0	40.5
	5/1/2021	0.002	87
	12/14/2021	ND<0	40.5
	6/7/2022	0.006	96
	11/16/2022	0.002	88
	5/26/2023	0.004	93

Rank Sum = 890.5
Rank Mean = 52.3824

Calculation Results:

Kruskal-Wallis H Statistic = 2.35664

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 4.55336

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

2.35664 < 11.0705 indicating no significant group difference at 5% significance level

4.55336 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: ChromiUm

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	44
	8/1/2015	ND<0	44
	12/1/2015	ND<0	44
	8/1/2016	ND<0	44
	12/1/2016	ND<0	44
	6/1/2017	ND<0	44
	12/1/2017	ND<0	44
	7/1/2018	0.009	100
	12/1/2018	0.01	101
	7/1/2019	ND<0	44
	1/1/2020	ND<0	44
	7/1/2020	ND<0	44
	5/1/2021	ND<0	44
	12/14/2021	ND<0	44
	6/7/2022	0.001	88
	11/16/2022	0.003	97
5/26/2023	0.004	98	

Rank Sum = 1012

Rank Mean = 59.5294

Background Rank Sum = 1012

Background Rank Mean = 59.5294

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	44
	8/1/2015	ND<0	44
	12/1/2015	ND<0	44
	8/1/2016	ND<0	44
	12/1/2016	ND<0	44
	6/1/2017	ND<0	44
	12/1/2017	ND<0	44
	7/1/2018	ND<0	44
	12/1/2018	ND<0	44
	7/1/2019	ND<0	44
	1/1/2020	ND<0	44
	7/1/2020	ND<0	44
	5/1/2021	ND<0	44
	12/14/2021	0.001	89
	6/7/2022	ND<0	44
	11/16/2022	0.014	102
5/26/2023	0.001	90	

Rank Sum = 897

Rank Mean = 52.7647

MW-3	7/1/2014	ND<0	44
	8/1/2015	ND<0	44
	12/1/2015	ND<0	44
	8/1/2016	ND<0	44
	12/1/2016	ND<0	44
	6/1/2017	ND<0	44
	12/1/2017	ND<0	44
	7/1/2018	ND<0	44
	12/1/2018	ND<0	44
	7/1/2019	ND<0	44
	1/1/2020	ND<0	44
	7/1/2020	ND<0	44
	5/1/2021	ND<0	44
	12/14/2021	ND<0	44
	6/7/2022	ND<0	44
	11/16/2022	ND<0	44
	5/26/2023	ND<0	44

Rank Sum = 748

Rank Mean = 44

MW-4	7/1/2014	ND<0	44
	8/1/2015	ND<0	44
	12/1/2015	ND<0	44
	8/1/2016	ND<0	44
	12/1/2016	ND<0	44
	6/1/2017	ND<0	44
	12/1/2017	ND<0	44
	7/1/2018	ND<0	44
	12/1/2018	ND<0	44
	7/1/2019	ND<0	44
	1/1/2020	ND<0	44
	7/1/2020	ND<0	44
	5/1/2021	ND<0	44
	12/14/2021	0.001	91
	6/7/2022	ND<0	44
	11/16/2022	ND<0	44
	5/26/2023	ND<0	44

Rank Sum = 795

Rank Mean = 46.7647

MW-5	7/1/2014	ND<0	44
	8/1/2015	ND<0	44
	12/1/2015	ND<0	44
	8/1/2016	ND<0	44
	12/1/2016	ND<0	44
	6/1/2017	ND<0	44
	12/1/2017	ND<0	44
	7/1/2018	ND<0	44
	12/1/2018	ND<0	44
	7/1/2019	ND<0	44
	1/1/2020	ND<0	44
	7/1/2020	ND<0	44
	5/1/2021	ND<0	44
	12/14/2021	0.002	94
	6/7/2022	ND<0	44
	11/16/2022	0.001	92
	5/26/2023	0.002	95

Rank Sum = 897
Rank Mean = 52.7647

MW-6	7/1/2014	ND<0	44
	8/1/2015	ND<0	44
	12/1/2015	ND<0	44
	8/1/2016	ND<0	44
	12/1/2016	ND<0	44
	6/1/2017	ND<0	44
	12/1/2017	ND<0	44
	7/1/2018	ND<0	44
	12/1/2018	ND<0	44
	7/1/2019	ND<0	44
	1/1/2020	ND<0	44
	7/1/2020	ND<0	44
	5/1/2021	ND<0	44
	12/14/2021	0.002	96
	6/7/2022	ND<0	44
	11/16/2022	0.005	99
	5/26/2023	0.001	93

Rank Sum = 904
Rank Mean = 53.1765

Calculation Results:

Kruskal-Wallis H Statistic = 2.89619

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 7.6316

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

2.89619 < 11.0705 indicating no significant group difference at 5% significance level

7.6316 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: BariUm

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	0.023	6
	8/1/2015	0.024	10
	12/1/2015	0.018	4
	8/1/2016	0.2	97
	12/1/2016	0.051	43
	6/1/2017	0.081	71
	12/1/2017	0.095	85
	7/1/2018	0.111	88
	12/1/2018	0.121	89
	7/1/2019	0.268	98
	1/1/2020	0.291	100
	7/1/2020	0.498	102
	5/1/2021	0.14	93
	12/14/2021	0.037	27
	6/7/2022	0.031	15
	11/16/2022	0.073	64
	5/26/2023	0.09	81

Rank Sum = 1073

Rank Mean = 63.1176

Background Rank Sum = 1073

Background Rank Mean = 63.1176

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	0.026	11
	8/1/2015	0.035	25
	12/1/2015	0.043	34
	8/1/2016	0.35	101
	12/1/2016	0.044	35
	6/1/2017	0.061	55
	12/1/2017	0.073	65
	7/1/2018	0.078	67
	12/1/2018	0.081	72
	7/1/2019	0.076	66
	1/1/2020	0.081	73
	7/1/2020	0.097	87
	5/1/2021	0.031	16
	12/14/2021	0.03	13
	6/7/2022	ND<0	1
	11/16/2022	0.048	40
	5/26/2023	0.031	17

Rank Sum = 778

Rank Mean = 45.7647

MW-3	7/1/2014	0.039	30
	8/1/2015	0.042	32
	12/1/2015	0.031	18
	8/1/2016	0.039	31
	12/1/2016	0.033	22
	6/1/2017	0.028	12
	12/1/2017	0.031	19
	7/1/2018	0.084	76
	12/1/2018	0.064	59
	7/1/2019	0.055	48
	1/1/2020	0.078	68
	7/1/2020	0.09	82
	5/1/2021	0.084	77
	12/14/2021	0.037	28
	6/7/2022	0.123	90
	11/16/2022	0.055	49
	5/26/2023	0.124	91

Rank Sum = 832

Rank Mean = 48.9412

MW-4	7/1/2014	0.037	29
	8/1/2015	0.063	57
	12/1/2015	0.044	36
	8/1/2016	0.086	78
	12/1/2016	0.081	74
	6/1/2017	0.07	60
	12/1/2017	0.083	75
	7/1/2018	0.095	86
	12/1/2018	0.055	50
	7/1/2019	0.053	46
	1/1/2020	0.079	70
	7/1/2020	0.091	83
	5/1/2021	0.19	94
	12/14/2021	0.131	92
	6/7/2022	0.194	95
	11/16/2022	0.278	99
	5/26/2023	0.197	96

Rank Sum = 1220

Rank Mean = 71.7647

MW-5	7/1/2014	0.023	7
	8/1/2015	0.03	14
	12/1/2015	0.071	61
	8/1/2016	0.023	8
	12/1/2016	0.036	26
	6/1/2017	0.044	37
	12/1/2017	0.055	51
	7/1/2018	0.06	54
	12/1/2018	0.059	53
	7/1/2019	0.052	45
	1/1/2020	0.072	63
	7/1/2020	0.088	79
	5/1/2021	0.031	20
	12/14/2021	0.058	52
	6/7/2022	0.049	41
	11/16/2022	0.051	44
	5/26/2023	0.054	47

Rank Sum = 702
 Rank Mean = 41.2941

MW-6	7/1/2014	0.017	3
	8/1/2015	0.022	5
	12/1/2015	0.009	2
	8/1/2016	0.023	9
	12/1/2016	0.061	56
	6/1/2017	0.034	24
	12/1/2017	0.044	38
	7/1/2018	0.063	58
	12/1/2018	0.071	62
	7/1/2019	0.092	84
	1/1/2020	0.089	80
	7/1/2020	0.078	69
	5/1/2021	0.031	21
	12/14/2021	0.033	23
	6/7/2022	0.049	42
	11/16/2022	0.042	33
	5/26/2023	0.047	39

Rank Sum = 648
 Rank Mean = 38.1176

Calculation Results:

Kruskal-Wallis H Statistic = 16.8605

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 16.8605

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

16.8605 > 11.0705 indicating a significant group difference at 5% significance level

16.8605 > 11.0705 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634

Mean background rank is 63.1176

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	45.7647	-17.3529	23.6098
MW-3	48.9412	-14.1765	23.6098
MW-4	71.7647	8.64706	23.6098
MW-5	41.2941	-21.8235	23.6098
MW-6	38.1176	-25	23.6098

Individual Well Comparisons at Groupwise 5% Significance Level (1% Significance Level per comparison)

1% Z score is 2.32634

Mean background rank is 63.1176

Well	Mean Rank	Dif from Bkg	Critical Value
MW-2	45.7647	-17.3529	23.6098
MW-3	48.9412	-14.1765	23.6098
MW-4	71.7647	8.64706	23.6098
MW-5	41.2941	-21.8235	23.6098
MW-6	38.1176	-25	23.6098

Kruskal-Wallis Non-Parametric Test

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	45
	8/1/2015	ND<0	45
	12/1/2015	ND<0	45
	8/1/2016	ND<0	45
	12/1/2016	ND<0	45
	6/1/2017	ND<0	45
	12/1/2017	ND<0	45
	7/1/2018	ND<0	45
	12/1/2018	ND<0	45
	7/1/2019	ND<0	45
	1/1/2020	ND<0	45
	7/1/2020	ND<0	45
	5/1/2021	ND<0	45
	12/14/2021	ND<0	45
	6/7/2022	ND<0	45
11/16/2022	0.0058	100	
5/26/2023	0.0047	98	

Rank Sum = 873

Rank Mean = 51.3529

Background Rank Sum = 873

Background Rank Mean = 51.3529

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	45
	8/1/2015	ND<0	45
	12/1/2015	ND<0	45
	8/1/2016	ND<0	45
	12/1/2016	ND<0	45
	6/1/2017	ND<0	45
	12/1/2017	ND<0	45
	7/1/2018	ND<0	45
	12/1/2018	ND<0	45
	7/1/2019	ND<0	45
	1/1/2020	ND<0	45
	7/1/2020	ND<0	45
	5/1/2021	ND<0	45
	12/14/2021	ND<0	45
	6/7/2022	ND<0	45
11/16/2022	0.0018	94	
5/26/2023	ND<0	45	

Rank Sum = 814

Rank Mean = 47.8824

MW-3	7/1/2014	ND<0	45
	8/1/2015	ND<0	45
	12/1/2015	ND<0	45
	8/1/2016	ND<0	45
	12/1/2016	ND<0	45
	6/1/2017	ND<0	45
	12/1/2017	ND<0	45
	7/1/2018	ND<0	45
	12/1/2018	ND<0	45
	7/1/2019	ND<0	45
	1/1/2020	ND<0	45
	7/1/2020	ND<0	45
	5/1/2021	ND<0	45
	12/14/2021	ND<0	45
	6/7/2022	ND<0	45
	11/16/2022	0.001	90
	5/26/2023	0.0011	91

Rank Sum = 856
Rank Mean = 50.3529

MW-4	7/1/2014	ND<0	45
	8/1/2015	ND<0	45
	12/1/2015	ND<0	45
	8/1/2016	ND<0	45
	12/1/2016	ND<0	45
	6/1/2017	ND<0	45
	12/1/2017	ND<0	45
	7/1/2018	ND<0	45
	12/1/2018	ND<0	45
	7/1/2019	ND<0	45
	1/1/2020	ND<0	45
	7/1/2020	ND<0	45
	5/1/2021	ND<0	45
	12/14/2021	0.0052	99
	6/7/2022	0.0035	96
	11/16/2022	0.0261	102
	5/26/2023	0.0094	101

Rank Sum = 983
Rank Mean = 57.8235

MW-5	7/1/2014	ND<0	45
	8/1/2015	ND<0	45
	12/1/2015	ND<0	45
	8/1/2016	ND<0	45
	12/1/2016	ND<0	45
	6/1/2017	ND<0	45
	12/1/2017	ND<0	45
	7/1/2018	ND<0	45
	12/1/2018	ND<0	45
	7/1/2019	ND<0	45
	1/1/2020	ND<0	45
	7/1/2020	ND<0	45
	5/1/2021	ND<0	45
	12/14/2021	0.0013	92
	6/7/2022	ND<0	45
	11/16/2022	ND<0	45
	5/26/2023	0.0021	95

Rank Sum = 862
Rank Mean = 50.7059

MW-6	7/1/2014	ND<0	45
	8/1/2015	ND<0	45
	12/1/2015	ND<0	45
	8/1/2016	ND<0	45
	12/1/2016	ND<0	45
	6/1/2017	ND<0	45
	12/1/2017	ND<0	45
	7/1/2018	ND<0	45
	12/1/2018	ND<0	45
	7/1/2019	ND<0	45
	1/1/2020	ND<0	45
	7/1/2020	ND<0	45
	5/1/2021	ND<0	45
	12/14/2021	ND<0	45
	6/7/2022	ND<0	45
	11/16/2022	0.0036	97
	5/26/2023	0.0017	93

Rank Sum = 865
Rank Mean = 50.8824

Calculation Results:

Kruskal-Wallis H Statistic = 1.07619

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 3.2057

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

1.07619 < 11.0705 indicating no significant group difference at 5% significance level

3.2057 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties

Kruskal-Wallis Non-Parametric Test

Parameter: Ammonia

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Kruskal Wallis Ranks

Background Locations

Loc. ID	Date	Value	Rank
MW-1	7/1/2014	ND<0	19.5
	8/1/2015	ND<0	19.5
	12/1/2015	ND<0	19.5
	8/1/2016	0.37	49
	12/1/2016	0.41	56
	6/1/2017	0.75	96
	12/1/2017	0.55	76
	7/1/2018	0.42	58
	12/1/2018	0.68	89
	7/1/2019	0.74	94
	1/1/2020	1.26	100
	7/1/2020	1.33	101
	5/1/2021	0.12	40
	12/14/2021	ND<0	19.5
	6/7/2022	0.213	41
	11/16/2022	ND<0	19.5
5/26/2023	0.497	72	

Rank Sum = 969.5

Rank Mean = 57.0294

Background Rank Sum = 969.5

Background Rank Mean = 57.0294

Compliance Locations

Loc. ID	Date	Value	Rank
MW-2	7/1/2014	ND<0	19.5
	8/1/2015	ND<0	19.5
	12/1/2015	ND<0	19.5
	8/1/2016	0.38	51
	12/1/2016	0.42	59
	6/1/2017	0.5	73
	12/1/2017	0.59	80
	7/1/2018	0.49	71
	12/1/2018	0.3	43
	7/1/2019	0.29	42
	1/1/2020	0.65	88
	7/1/2020	0.81	97
	5/1/2021	ND<0	19.5
	12/14/2021	ND<0	19.5
	6/7/2022	ND<0	19.5
	11/16/2022	ND<0	19.5
5/26/2023	ND<0	19.5	

Rank Sum = 760

Rank Mean = 44.7059

MW-3	7/1/2014	ND<0	19.5
	8/1/2015	ND<0	19.5
	12/1/2015	ND<0	19.5
	8/1/2016	0.36	46
	12/1/2016	0.4	53
	6/1/2017	0.55	77
	12/1/2017	0.62	86
	7/1/2018	0.71	92
	12/1/2018	0.31	45
	7/1/2019	0.3	44
	1/1/2020	0.59	81
	7/1/2020	0.71	93
	5/1/2021	0.11	39
	12/14/2021	ND<0	19.5
	6/7/2022	ND<0	19.5
	11/16/2022	ND<0	19.5
	5/26/2023	ND<0	19.5

Rank Sum = 792.5

Rank Mean = 46.6176

MW-4	7/1/2014	ND<0	19.5
	8/1/2015	ND<0	19.5
	12/1/2015	ND<0	19.5
	8/1/2016	0.45	68
	12/1/2016	0.46	69
	6/1/2017	0.4	54
	12/1/2017	0.59	82
	7/1/2018	0.63	87
	12/1/2018	0.4	55
	7/1/2019	0.37	50
	1/1/2020	0.42	60
	7/1/2020	0.52	74
	5/1/2021	1.1	99
	12/14/2021	ND<0	19.5
	6/7/2022	ND<0	19.5
	11/16/2022	ND<0	19.5
	5/26/2023	1.47	102

Rank Sum = 917

Rank Mean = 53.9412

MW-5	7/1/2014	ND<0	19.5
	8/1/2015	ND<0	19.5
	12/1/2015	ND<0	19.5
	8/1/2016	0.39	52
	12/1/2016	0.42	61
	6/1/2017	0.36	47
	12/1/2017	0.6	83
	7/1/2018	0.61	85
	12/1/2018	0.6	84
	7/1/2019	0.48	70
	1/1/2020	0.81	98
	7/1/2020	0.74	95
	5/1/2021	ND<0	19.5
	12/14/2021	ND<0	19.5
	6/7/2022	ND<0	19.5
	11/16/2022	ND<0	19.5
	5/26/2023	ND<0	19.5

Rank Sum = 831
Rank Mean = 48.8824

MW-6	7/1/2014	ND<0	19.5
	8/1/2015	ND<0	19.5
	12/1/2015	ND<0	19.5
	8/1/2016	0.41	57
	12/1/2016	0.44	65
	6/1/2017	0.36	48
	12/1/2017	0.42	62
	7/1/2018	0.44	66
	12/1/2018	0.57	78
	7/1/2019	0.44	67
	1/1/2020	0.57	79
	7/1/2020	0.68	90
	5/1/2021	0.42	63
	12/14/2021	0.42	64
	6/7/2022	0.543	75
	11/16/2022	ND<0	19.5
	5/26/2023	0.705	91

Rank Sum = 983
Rank Mean = 57.8235

Calculation Results:

Kruskal-Wallis H Statistic = 2.97806

Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 3.14034

95% Confidence comparison value is 11.0705 at 5 degrees of freedom

2.97806 < 11.0705 indicating no significant group difference at 5% significance level

3.14034 < 11.0705 indicating no significant group difference at 5% significance level when adjusted for ties